Moisture Our Reference:	UNITS	64292-1	64292-2	64292-8	64292-11
Your Reference	-------------	BH1	BH1	BH2	BH2
Depth	------------	0.3-0.5	0.6-0.8	0.4-0.5	1.2-1.3
Date Sampled		2/11/2011	2/11/2011	2/11/2011	2/11/2011
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	3/11/2011	3/11/2011	3/11/2011	3/11/2011
Date analysed	-	4/11/2011	4/11/2011	4/11/2011	4/11/2011
Moisture	%	7.6	11	6.9	15

Asbestos ID - soils Our Reference:	UNITS	64292-1	64292-2	64292-8
Your Reference	-------------	BH1	BH1	BH2
Depth	------------	0.3-0.5	0.6-0.8	0.4-0.5
Date Sampled		2/11/2011	2/11/2011	2/11/2011
Type of sample		Soil	Soil	Soil
Date analysed	-	4/11/2011	4/11/2011	4/11/2011
Sample mass tested	g	Approx 40g	Approx 40g	Approx 40g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.

QUALITY CONTROL vTRH & BTEX in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/11/2011	64292-1	03/11/2011 || 03/11/2011	LCS-3	03/11/2011
Date analysed	-			05/11/2011	64292-1	05/11/2011 || 05/11/2011	LCS-3	05/11/2011
vTRH C_6 - C_9	mg/kg	25	Org-016	<25	64292-1	<25 || <25	LCS-3	106%
Benzene	mg/kg	0.2	Org-016	<0.2	64292-1	<0.2 || <0.2	LCS-3	111%
Toluene	mg/kg	0.5	Org-016	<0.5	64292-1	<0.5 || <0.5	LCS-3	106%
Ethylbenzene	mg/kg	1	Org-016	<1	64292-1	<1 || <1	LCS-3	101%
m+p-xylene	mg/kg	2	Org-016	<2	64292-1	<2 || <2	LCS-3	105%
o-Xylene	mg/kg	1	Org-016	<1	64292-1	<1 || <1	LCS-3	105%
Surrogate aaa-Trifluorotoluene	%		Org-016	110	64292-1	96 || 106 || RPD: 10	LCS-3	100%

QUALITY CONTROL sTRH in Soil (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/11/2011	64292-1	03/11/2011 || 03/11/2011	LCS-3	03/11/2011
Date analysed	-			04/11/2011	64292-1	04/11/2011 || 04/11/2011	LCS-3	04/11/2011
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	64292-1	<50 || <50	LCS-3	95%
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	64292-1	<100 || <100	LCS-3	103%
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	64292-1	<100 || <100	LCS-3	93%
Surrogate o-Terphenyl	%		Org-003	102	64292-1	103 || 104 || RPD: 1	LCS-3	99%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/11/2011	64292-1	03/11/2011 || 03/11/2011	LCS-3	03/11/2011
Date analysed	-			04/11/2011	64292-1	04/11/2011 || 04/11/2011	LCS-3	04/11/2011
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	64292-1	<0.1 || <0.1	LCS-3	105%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	64292-1	<0.1 || <0.1	LCS-3	100%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	64292-1	<0.1 || <0.1	LCS-3	107%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	64292-1	<0.1 || <0.1	LCS-3	103%
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	64292-1	<0.1 || <0.1	LCS-3	107%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	64292-1	<0.1 || <0.1	LCS-3	106%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Benzo(b+k)fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	64292-1	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	64292-1	<0.05 || 0.05	LCS-3	111%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		Org-012 subset	120	64292-1	120 || 120 || RPD: 0	LCS-3	119%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/11/2011	64292-1	03/11/2011 || 03/11/2011	LCS-3	03/11/2011
Date analysed	-			05/11/2011	64292-1	05/11/2011 || 05/11/2011	LCS-3	05/11/2011
HCB	mg/kg	0.1	Org-005	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	64292-1	<0.1 || <0.1	LCS-3	95%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	64292-1	<0.1 || <0.1	LCS-3	103%
Heptachlor	mg/kg	0.1	Org-005	<0.1	64292-1	<0.1 || <0.1	LCS-3	89%
delta-BHC	mg/kg	0.1	Org-005	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	64292-1	<0.1 || <0.1	LCS-3	91%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	64292-1	<0.1 || <0.1	LCS-3	94%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	64292-1	<0.1 || <0.1	LCS-3	101%
Dieldrin	mg/kg	0.1	Org-005	<0.1	64292-1	<0.1 || <0.1	LCS-3	97%
Endrin	mg/kg	0.1	Org-005	<0.1	64292-1	<0.1 || <0.1	LCS-3	94%
pp-DDD	mg/kg	0.1	Org-005	<0.1	64292-1	<0.1 || <0.1	LCS-3	112%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	64292-1	<0.1 || <0.1	LCS-3	94%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-005	104	64292-1	103 || 103 || RPD: 0	LCS-3	97%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/11/2011	64292-1	03/11/2011 || 03/11/2011	LCS-3	03/11/2011
Date analysed	-			05/11/2011	64292-1	05/11/2011 || 05/11/2011	LCS-3	05/11/2011
Diazinon	mg/kg	0.1	Org-008	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Dimethoate	mg/kg	0.1	Org-008	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Ronnel	mg/kg	0.1	Org-008	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	64292-1	<0.1 || <0.1	LCS-3	90%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	64292-1	<0.1 || <0.1	LCS-3	106%
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	64292-1	<0.1 || <0.1	LCS-3	118%
Surrogate TCLMX	%		Org-008	104	64292-1	103 || 103 || RPD: 0	LCS-3	104%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			03/11/2011	64292-1	03/11/2011 || 03/11/2011	LCS-3	03/11/2011
Date analysed	-			05/11/2011	64292-1	05/11/2011 || 05/11/2011	LCS-3	05/11/2011
Arochlor 1016	mg/kg	0.1	Org-006	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221*	mg/kg	0.1	Org-006	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	Org-006	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	Org-006	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	Org-006	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	Org-006	<0.1	64292-1	<0.1 || <0.1	LCS-3	101%
Arochlor 1260	mg/kg	0.1	Org-006	<0.1	64292-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	104	64292-1	103 || 103 || RPD: 0	LCS-3	110%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date digested	-			03/11/2011	64292-1	03/11/2011 || 03/11/2011	LCS-1	03/11/2011
Date analysed	-			03/11/2011	64292-1	03/11/2011 || 03/11/2011	LCS-1	03/11/2011
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	64292-1	<4 || <4	LCS-1	103%
Cadmium	mg/kg	0.5	Metals-020 ICP-AES	<0.5	64292-1	0.7 || 0.6 || RPD: 15	LCS-1	102%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	64292-1	22 || 24 || RPD: 9	LCS-1	101%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	64292-1	27 || 30 || RPD: 11	LCS-1	102%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	64292-1	17 || 18 || RPD: 6	LCS-1	100%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	64292-1	<0.1 || <0.1	LCS-1	114%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	64292-1	61 || 73 || RPD: 18	LCS-1	101%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	64292-1	32 || 36 || RPD: 12	LCS-1	102%

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			[NT]
Date analysed	-			[NT]
Moisture	%	0.1	Inorg-008	[NT]

QUALITY CONTROL Asbestos ID - soils	UNITS	PQL	METHOD	Blank
Date analysed	-			[NT]

QUALITY CONTROL vTRH & BTEX in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	64292-2	03/11/2011
Date analysed	-	[NT]	[NT]	64292-2	05/11/2011
vTRH C_6 - C_9	mg/kg	[NT]	[NT]	64292-2	108%
Benzene	mg/kg	[NT]	[NT]	64292-2	114%
Toluene	mg/kg	[NT]	[NT]	64292-2	108%
Ethylbenzene	mg/kg	[NT]	[NT]	64292-2	103%
m+p-xylene	mg/kg	[NT]	[NT]	64292-2	107%
o-Xylene	mg/kg	[NT]	[NT]	64292-2	106%
Surrogate aaa-Trifluorotoluene	%	[NT]	[NT]	64292-2	110%

QUALITY CONTROL sTRH in Soil (C10-C36)	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	64292-2	03/11/2011
Date analysed	-	[NT]	[NT]	64292-2	04/11/2011
TRH C_{10} - C_{14}	mg/kg	[NT]	[NT]	64292-2	99%
TRH C_{15} - C_{28}	mg/kg	[NT]	[NT]	64292-2	108%
TRH C_{29} - C_{36}	mg/kg	[NT]	[NT]	64292-2	96%
Surrogate o-Terphenyl	%	[NT]	[NT]	64292-2	103%

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	64292-2	03/11/2011
Date analysed	-	[NT]	[NT]	64292-2	04/11/2011
Naphthalene	mg/kg	[NT]	[NT]	64292-2	102%
Acenaphthylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	[NT]	[NT]	64292-2	99%
Phenanthrene	mg/kg	[NT]	[NT]	64292-2	103%
Anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Fluoranthene	mg/kg	[NT]	[NT]	64292-2	102%
Pyrene	mg/kg	[NT]	[NT]	64292-2	106%
Benzo(a)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	[NT]	[NT]	64292-2	106%
Benzo(b+k)fluoranthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	[NT]	[NT]	64292-2	111%
Indeno(1,2,3-c,d)pyrene	mg/kg	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%	[NT]	[NT]	64292-2	119%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	64292-2	03/11/2011
Date analysed	-	[NT]	[NT]	64292-2	05/11/2011
HCB	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	[NT]	[NT]	64292-2	99%
gamma-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	[NT]	[NT]	64292-2	108%
Heptachlor	mg/kg	[NT]	[NT]	64292-2	93%
delta-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	[NT]	[NT]	64292-2	95%
Heptachlor Epoxide	mg/kg	[NT]	[NT]	64292-2	98%
gamma-Chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDE	mg/kg	[NT]	[NT]	64292-2	106%
Dieldrin	mg/kg	[NT]	[NT]	64292-2	101%
Endrin	mg/kg	[NT]	[NT]	64292-2	99%
pp-DDD	mg/kg	[NT]	[NT]	64292-2	111%
Endosulfan II	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDT	mg/kg	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	[NT]	[NT]	64292-2	98%
Methoxychlor	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	64292-2	98%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	64292-2	03/11/2011
Date analysed	-	[NT]	[NT]	64292-2	05/11/2011
Diazinon	mg/kg	[NT]	[NT]	[NR]	[NR]
Dimethoate	mg/kg	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos-methyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Ronnel	mg/kg	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos	mg/kg	[NT]	[NT]	64292-2	88%
Fenitrothion	mg/kg	[NT]	[NT]	64292-2	104%
Bromophos-ethyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	[NT]	[NT]	64292-2	96%
Surrogate TCLMX	%	[NT]	[NT]	64292-2	100%

QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	64292-2	03/11/2011
Date analysed	-	[NT]	[NT]	64292-2	05/11/2011
Arochlor 1016	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1221*	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	mg/kg	[NT]	[NT]	64292-2	101%
Arochlor 1260	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	64292-2	105%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	[NT]	[NT]	64292-2	03/11/2011
Date analysed	-	[NT]	[NT]	64292-2	03/11/2011
Arsenic	mg/kg	[NT]	[NT]	64292-2	85%
Cadmium	mg/kg	[NT]	[NT]	64292-2	86%
Chromium	mg/kg	[NT]	[NT]	64292-2	87%
Copper	mg/kg	[NT]	[NT]	64292-2	98%
Lead	mg/kg	[NT]	[NT]	64292-2	85%
Mercury	mg/kg	[NT]	[NT]	64292-2	112%
Nickel	mg/kg	[NT]	[NT]	64292-2	86%
Zinc	mg/kg	[NT]	[NT]	64292-2	86%

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Alex Tam
Asbestos ID was authorised by Approved Signatory:	Lulu Guo

INS: Insufficient sample for this test
NA: Test not required
<: Less than

PQL: Practical Quantitation Limit
RPD: Relative Percent Difference
>: Greater than

NT: Not tested
NA: Test not required
LCS: Laboratory Control Sample

Quality Control Definitions

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

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

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

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

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

Laboratory Acceptance Criteria

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

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client:

Environmental Investigation Services
PO Box 976
North Ryde BC NSW 1670

ph: 02 9888 5000
Fax: 02 9888 5001

Attention: Cameron Hollands

Sample log in details:

Your reference:	**E25326K, Proposed Cycleway Rydalmere**
Envirolab Reference:	**64292**
Date received:	2/11/2011
Date results expected to be reported:	**9/11/11**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	13 Soils
Turnaround time requested:	Standard
Temperature on receipt	Cool
Cooling Method:	Ice Pack

Comments:

Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples.

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst
ph: 02 9910 6200 fax: 02 9910 6201
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

SAMPLE AND CHAIN OF CUSTODY FORM

TO:
Envirolab Services Pty Ltd
12 Ashley Street
Chatswood NSW 2067
Phone: (02) 99106200
Fax: (02) 99106201

Attention: Aileen

EIS Job Number: E 25326K

Date Results Required: Standard TAT

Sheet 1 / 1

FROM:
Environmental Investigation Services
Rear 115 Wicks Road
Macquarie Park NSW 2113
Phone: (02) 9888 5000
Fax: (02) 9888 5004

Contact:

Project: Proposed Cycleway Rydalmere
Location:
Sampler: Cameron Hollands

Sample Preservation:
In esky on ice

Tests Required

Date Sampled	Lab Ref:	Borehole/ Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 6	Combo 6a	Combo 13	8 Metals	TPH	BTEX	PAHs	OCP/OPP/ PCBs	Asbestos	TCLP 6 Metals	TCLP PAHs	
2/11/11	1	BH1	0.3 – 0.5	Glass jar + Asb Bag	0	Fill		X										
	2		0.6 – 0.8	Glass jar + Asb Bag	0	Fill		X										
	3		1 – 1.1	Glass jar + Asb Bag	0.1	Fill ?												
	4		1.3 – 1.5	Glass jar	0	Silty clay												
	5		1.7 – 1.8	Glass jar	0	" "												
	6		2.4 – 2.6	Glass jar	0	" "												
				Glass jar + Asb Bag														
	7	BH2	0.2 – 0.3	Glass jar + Asb Bag	0	Fill												
	8		0.4 – 0.5	Glass jar + Asb Bag	0	Fill		X										
	9		0.6 – 0.7	Glass jar + Asb Bag	0	Fill												
	10		1 – 1.1	Glass jar + Asb Bag	0.2	Fill												
	11		1.2 – 1.3	Glass jar	0	Silty clay	X											
	12		2.4 – 2.5	Glass jar	0.1	" "												
	13		3.5 – 3.6	Glass jar	0	Silty sand												
				Glass jar + Asb Bag														
				Glass jar + Asb Bag														
				Glass jar + Asb Bag														
				Glass jar + Asb Bag														
				Glass jar + Asb Bag														
				Glass jar + Asb Bag														
				Glass jar + Asb Bag														
				Glass jar + Asb Bag														
				Glass jar + Asb Bag														
				Glass jar + Asb Bag														
				Glass jar + Asb Bag														

ENVIROLAB
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 64292
Date Received: 2-11-11
Time Received: 14 40
Received by: Jia Liu
Temp: [✓ Cool]/Ambient
Cooling: Ice/[✓ Icepack]
Security: Intact/Broken/None

Remarks (comments/detection limits required):

Relinquished By:	Date:	Time:	Received By:	
Cameron Hollands	2/11/11	PM	Jia Liu.	2-11-11

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 64292-A

Client:

Environmental Investigation Services
PO Box 976
North Ryde BC
NSW 1670

Attention: Cameron Hollands

Sample log in details:

Your Reference:	**E25326K, Proposed Cycleway Rydalmere**
No. of samples:	Additional testing on 2 soils
Date samples received / completed instructions received	2/11/2011 / 09/11/11

Analysis Details:

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

Report Details:

Date results requested by: / Issue Date:	16/11/11 / 15/11/11
Date of Preliminary Report:	Not issued

NATA accreditation number 2901. This document shall not be reproduced except in full.
Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:

Rhian Morgan
Rhian Morgan
Reporting Supervisor

Metals in TCLP USEPA1311 Our Reference:	UNITS	64292-A-1	64292-A-8
Your Reference	-------------	BH1	BH2
Depth	------------	0.3-0.5	0.4-0.5
Date Sampled		2/11/2011	2/11/2011
Type of sample		Soil	Soil
Date extracted	-	11/11/2011	11/11/2011
Date analysed	-	14/11/2011	14/11/2011
pH of soil for fluid# determ.	pH units	6.6	7.1
pH of soil for fluid # determ. (acid)	pH units	1.7	1.7
Extraction fluid used	-	1	1
pH of final Leachate	pH units	5.0	5.0
Nickel in TCLP	mg/L	0.07	0.1

Method ID	Methodology Summary
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using AS 4439 and USEPA 1311.
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP).
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA 21st ED, 4500-H+.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.

QUALITY CONTROL Metals in TCLP USEPA1311	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			11/11/2011	[NT]	[NT]	LCS-1	14/11/2011
Date analysed	-			14/11/2011	[NT]	[NT]	LCS-1	14/11/2011
Nickel in TCLP	mg/L	0.02	Metals-020 ICP-AES	<0.02	[NT]	[NT]	LCS-1	99%

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

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

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

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

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Laboratory Acceptance Criteria

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

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client:

Environmental Investigation Services	ph: 02 9888 5000
PO Box 976	Fax: 02 9888 5001
North Ryde BC NSW 1670	

Attention: Cameron Hollands

Sample log in details:

Your reference:	**E25326K, Proposed Cycleway Rydalmere**
Envirolab Reference:	**64292-A**
Date received:	2/11/2011
Date results expected to be reported:	**16/11/11**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	Additional testing on 2 soils
Turnaround time requested:	Standard
Temperature on receipt	Cool
Cooling Method:	Ice Pack

Comments:
Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples.

Contact details:
Please direct any queries to Aileen Hie or Jacinta Hurst
ph: 02 9910 6200 fax: 02 9910 6201
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

From: Rhian Morgan
Sent: Wednesday, 9 November 2011 11:12 AM
To: Aileen Hie
Subject: FW: Request for additional TCLP analysis - Registration '64292 - E25326K, Proposed Cycleway Rydalmere'

Regards,

64292A
due 16/11/11
std T/A

Rhian Morgan
Envirolab Services Pty Ltd
12 Ashley St Chatswood NSW 2067
T 02 9910 6200   F 02 9910 6299
rmorgan@envirolabservices.com.au | www.envirolabservices.com.au

-----Original Message-----
From: Cameron Hollands [mailto:chollands@jkgroup.net.au]
Sent: Wednesday, 9 November 2011 11:08
To: Rhian Morgan
Subject: Request for additional TCLP analysis - Registration '64292 - E25326K, Proposed Cycleway Rydalmere'

Rhian,

RE: Request for additional TCLP analysis - Registration '64292 - E25326K, Proposed Cycleway Rydalmere'

Please conduct the following TCLP analysis standard TAT:
BH1(0.3-0.5m) & BH2(0.4-0.5m) - nickel
-1 -8

Regards,
For and on behalf of
ENVIRONMENTAL INVESTIGATION SERVICES

Cameron Hollands
Environmental Scientist

115 Wicks Road, Macquarie Park, NSW, 2113 PO Box 976, North Ryde BC, NSW, 1670
Tel: 02 9888 5000
Fax: 02 9888 5004
email: chollands@jkgroup.net.au
Web: www.jkgroup.net.au

* * * IMPORTANT * * *
This email and any attachments are confidential and may be privileged in which case neither is intended to be waived. If you have received this message in error, please notify us and remove it from your system. It is your responsibility to check any attachments for viruses and defects before opening or sending them on. At the Company's discretion we may send a paper copy for confirmation. In the event of any discrepancy between paper and electronic versions the paper version is to take precedence.

APPENDIX C

(Site History Assessment Documents)

c\X

4 NOV 2011

ADVANCE LEGAL SEARCHERS PTY LTD

(ACN 147 943 842)
ABN 82 147 943 842

P.O. Box 149
Yagoona NSW 2199

Telephone: +612 9754 1590
Mobile: 0412 169 809
Facsimile: +612 9754 1364
Email: alsearch@optusnet.com.au

3rd November, 2011

ENVIRONMENTAL INVESTIGATION SERVICES
PO BOX 976,
NORTH RYDE BC NSW 1670

Attention: Cameron Hollands,

RE: **1 Park Road, Rydalmere**
Job No. E25326K

Current Search

Folio Identifier 1/575846 (title attached)
DP 575846 (plan attached)
Dated 31st October, 2011
Registered Proprietor:
ZBIGNIEW LESZEK MILEWSKI
TERESA MILEWSKI

Title Tree
Lot 1 DP 575846

Folio Identifier 1/575846

Certificate of Title Volume 12745 Folio 46

Certificate of Title Volume 5018 Folio 1

Certificate of Title Volume 2030 Folio 103

*****

Summary of proprietor(s)
Lot 1 DP 575846

Year	**Proprietor**
	(Lot 1 DP 575846)
2010 – todate	Zbigniew Leszek Milewski Teresa Milewski
1988 – 2010	Henk J. Dukino Holdings Pty Limited
(2011 – todate)	*(lease to Ziggy's Cranes Pty Ltd, shown on folio identifier 1/575846)*
(1992 – 2011)	*(leases shown on historical search identifier 1/575846)*
	(Lot 1 DP 575846 – CTVol 12745 Fol 46)
1981 – 1988	Hink J. Dukino Holdings Pty Limited
1979 – 1981	Stephen Ray Anderson, director Karen Lynne Anderson, wife Bryon George John Pritchard, director Muriel Helen Pritchard, wife
1975 – 1979	Bruce Papandrea, dealer Dorothy Joyce Papandrea, wife
	(Sydney Harbour Lands – CTVol 5018 Fol 1)
1939 – 1975	The Maritime Services Board of New South Wales
(1939 – 1966)	*(various leases shown on CTVol 5018 Fol 1)*
	(Sydney Harbour Lands – CTVol 2030 Fol 103)
1936 – 1939	The Maritime Services Board of New South Wales
1910 – 1936	The Sydney Harbour Trust Commissioners
(1910 – 1939)	*(various commercial leases shown on CTVol 2030 Fol 103)*

*****

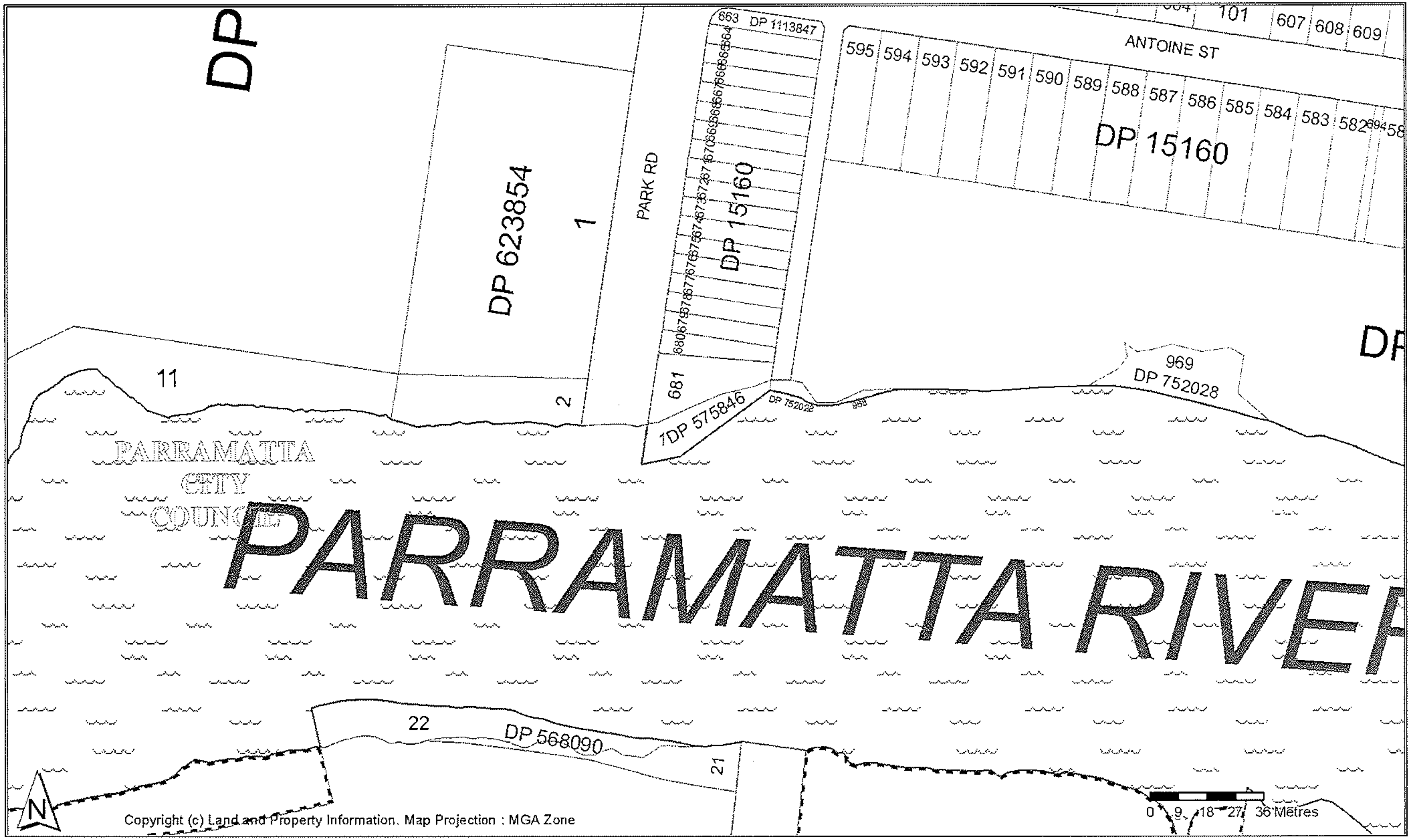
Land & Property Information

Cadastral Records Enquiry Report

Ref : EIS - Rydalmere

Requested Parcel : Lot 1 DP 575846
Identified Parcel : Lot 1 DP 575846

Locality : RYDALMERE
LGA : PARRAMATTA
Parish : FIELD OF MARS
County : CUMBERLAND



Copyright (c) Land and Property Information. Map Projection : MGA Zone

Report Generated 12:46:46 PM, 31 October, 2011
Copyright © Land and Property Information ABN: 84 104 377 806

This information is provided as a searching aid only. While every endeavour is made to ensure the current cadastral pattern is accurately reflected, the Registrar General cannot guarantee the information provided.
For all ACTIVITY PRIOR to SEPT 2002 you must refer to the RGs Charting and Reference Maps.

PLAN FORM 2

Plan Drawing only to appear in this space

DP575846

*OFFICE USE ONLY

N O O I A I A

D. P. 575846

Registered: 13-3-1975

C.A.:

Title System: TORRENS

Purpose: SUBDIVISION

Ref. Map: ERMINGTON RYDALMERE SHIO

Last Plan: D.P. 15160*

PLAN
OF 346·2 m² (LOT I) BEING PART
OF LAND IN CERTIFICATE OF TITLE
VOL. 5018 FOL.1

Reduction Ratio 1: 400
Lengths are in metres.

~~Municipality~~ City	PARRAMATTA
Locality:	RYDALMERE
Parish:	FIELD OF MARS
County:	CUMBERLAND

~~This is sheet 1 of my plan in ——— sheets.~~
(Delete if inapplicable).

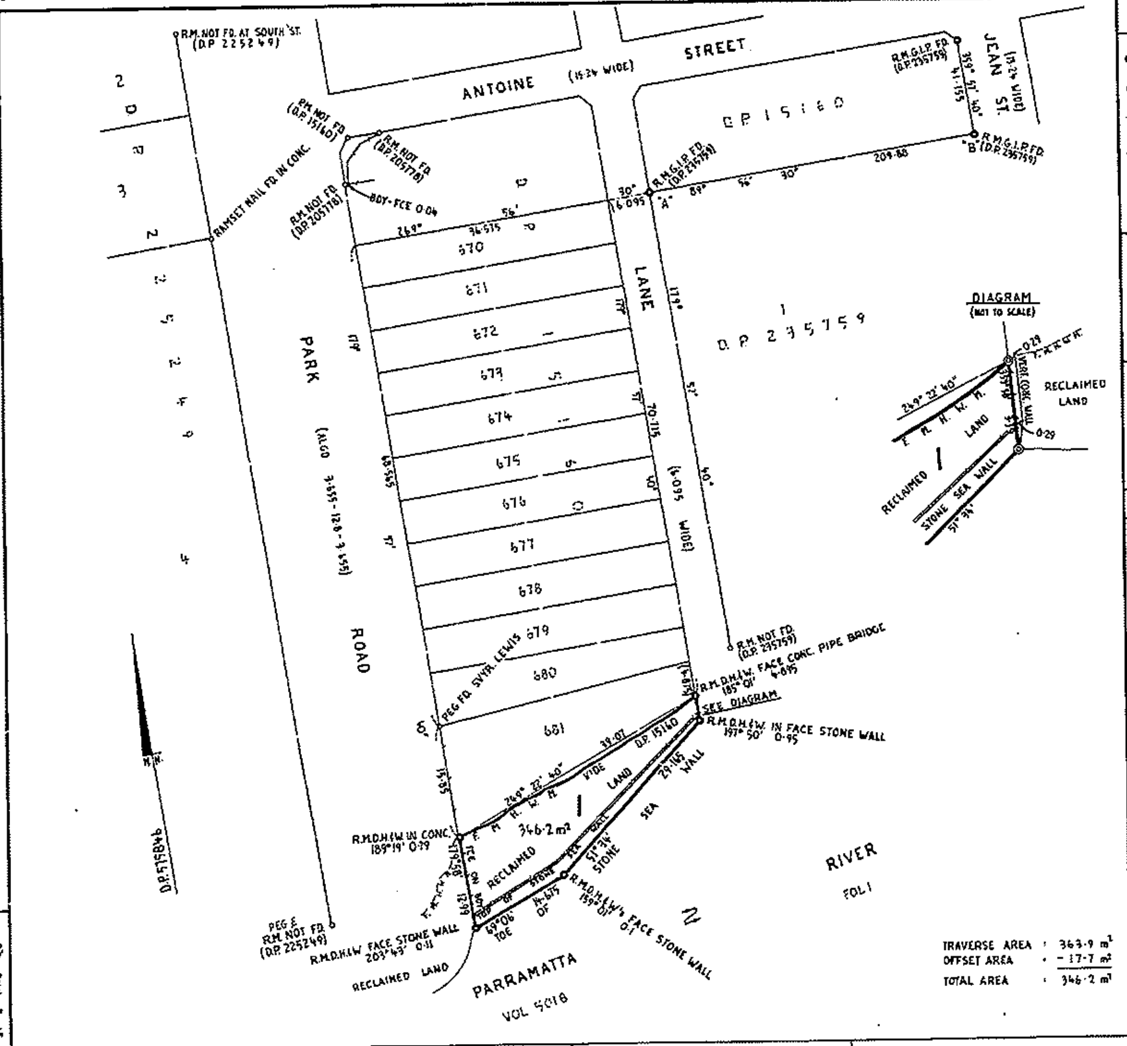
I, Ian Stuart Jones
of Sydney (M.S.B of N.S.W.)
a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan
is accurate and has been made *(1) by me (2) under my immediate supervision in accordance with the Survey Practice Regulations, 1933, and was completed on †
13th November, 1974

Signature Ian Jones
Surveyor registered under Surveyors Act, 1929, as amended.
Datum Line of Azimuth: A-B
*Strike out either (1) or (2). †Insert date of survey.

Panel for use only for statements of intention to dedicate public roads or to create public reserves, drainage reserves, easements or restrictions as to user.*

Signatures and seals only.

SENIOR SURVEYOR
THE MARITIME SERVICES BOARD OF N.S.W.



Council Clerk's Certificate

I hereby certify that –

(a) the requirements of the Local Government Act, 1919, (other than the requirements for the registration of plans), and

*(b) the requirements of section 34B of the †Metropolitan Water, Sewerage and Drainage Act, 1924, as amended. †Hunter District Water, Sewerage, and Drainage Act, 1938, as amended

have been complied with by the applicant in relation to the

proposed ....
(Insert "new road", "subdivision" or "consolidated lot") set out herein

Subdivision No. ....

Date ....

(Signature) ....
Council Clerk

*This part of certificate to be deleted where the application is only for a consolidated lot or the opening of a new road or where the land to be subdivided is wholly outside the areas of operations of the Metropolitan Water Sewerage and Drainage Board and the Hunter District Water Board.
†Delete if inapplicable.

M.P.D.

Table of mm 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 | 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390

Drawn by K. Southall
F.Bk. 410/xxx
Plot F.M.D.ª

Examined
Bearings Magnetic
P.I. 348

J. Allsopp
Officer-in-Charge, Survey Draftsmen
The Maritime Services Board of N.S.W.

SURVEYOR'S REFERENCE. R.P. 841

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

I, Jack Hayward Watson, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 14th day of March, 1975.

Jwatson

D.P. 575846

Req:R979325 /Doc:DP 0575846 P /Rev:16-Sep-1992 /Sts:OK.OK /Prt:31-Oct-2011 12:41 /Pgs:ALL /Seq:1 of 1
Ref:ALS /Src:T

Advance Legal Searchers Pty Ltd Phone: 02 9754 1590

LPI On-Line

Advance Legal Searchers Pty Ltd hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act.

Information provided through Tri-Search an approved LPI*NSW* Information Broker

```
          LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH
          ------------------------------------------------------------


    FOLIO: 1/575846
    ------

               SEARCH DATE        TIME                EDITION NO    DATE
               -----------        ----                ----------    ----
               31/10/2011        12:43 PM                 4        15/2/2011


    LAND
    ----
    LOT 1 IN DEPOSITED PLAN 575846
       AT RYDALMERE
       LOCAL GOVERNMENT AREA PARRAMATTA
       PARISH OF FIELD OF MARS    COUNTY OF CUMBERLAND
       TITLE DIAGRAM DP575846

    FIRST SCHEDULE
    --------------
    ZBIGNIEW LESZEK MILEWSKI
    TERESA MILEWSKI
        AS JOINT TENANTS                                           (T AF520080)

    SECOND SCHEDULE (3 NOTIFICATIONS)
    ---------------
    1   LAND EXCLUDES MINERALS
    2   Q102632    EASEMENT FOR TRANSMISSION LINE AFFECTING THAT PART
                   OF THE LAND WITHIN DESCRIBED SHOWN AS VAR WIDTH IN
                   DP450598
    3   AG64752    LEASE TO ZIGGY'S CRANES PTY LTD OF 1 PARK ROAD,
                   RYDALMERE. EXPIRES: 30/6/2015. OPTION OF RENEWAL: 5
                   YEARS.

    NOTATIONS
    ---------
    UNREGISTERED DEALINGS: NIL

            ***  END OF SEARCH  ***
```

Advance Legal Searchers
Pty Ltd Phone: 02 9754 1590
LPI On-Line

Advance Legal Searchers Pty Ltd hereby certifies that the information contained in this document has been provided electronically by the Registrar General.

Information provided through Tri-Search an approved LPI*NSW* Information Broker

```
        LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH
        -----------------------------------------------------------------

                                                 SEARCH DATE
                                                 -----------
                                                 31/10/2011 12:44PM

   FOLIO: 1/575846
   ------

          First Title(s): SEE PRIOR TITLE(S)
          Prior Title(s): VOL 12745 FOL 46

   Recorded    Number     Type of Instrument              C.T. Issue
   --------    ------     ------------------              ----------
   28/3/1988              TITLE AUTOMATION PROJECT        LOT RECORDED
                                                          FOLIO NOT CREATED

  18/10/1988              CONVERTED TO COMPUTER FOLIO     FOLIO CREATED
                                                          CT NOT ISSUED

   28/2/1992   E289261    LEASE                           EDITION 1

   11/3/1992   E314092    DEPARTMENTAL DEALING            EDITION 2

   21/4/2010   AF443886   CAVEAT

   27/5/2010   AF520080   TRANSFER                        EDITION 3

   15/2/2011   AG64752    LEASE                           EDITION 4

                       ***  END OF SEARCH  ***
```

12745046

[redacted]CATE OF TITLE

NEW SOUTH WALES

[redacted] PROPERTY ACT, 1900

Vol. 12745 Fol. 46

Appln. No. 16304

Prior Title Vol.5018 Fol.1

Edition issued 3-4-1975.

(Page 1) Vol. 12745 Fol. 46

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

JWatson

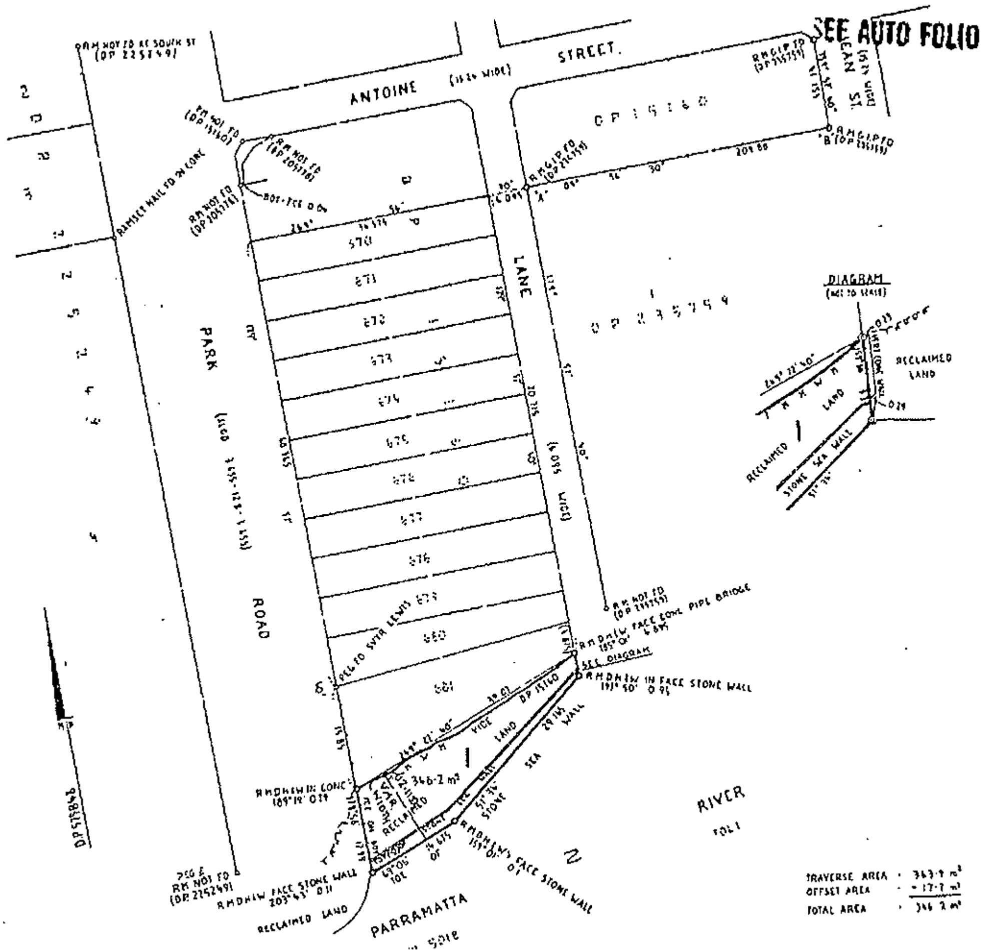
Registrar General.

CANCELLED

PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES

SEE AUTO FOLIO



ESTATE AND LAND REFERRED TO

S

Estate in Fee Simple in Lot 1 in Deposited Plan 575846 at Rydalmere in the City of Parramatta Parish of Field of Mars and County of Cumberland being part of the land referred to in Schedule 2 of The Sydney Harbour Trust Act, 1900. EXCEPTING THEREOUT all mines or deposits of coal, ironstone, kerosene, shale, limestone, slate or other minerals.

FIRST SCHEDULE

~~THE MARITIME SERVICES BOARD OF NEW SOUTH WALES.~~

SECOND SCHEDULE

NIL

GRN
XM

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

RG 2/72

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED.

Vol. 12745 Fol. 46

P290249 Te
Q234114
CT 2.2.77
Q102633
R366947 Te – 8 M
S247201 D – 2 Te
T549910 Lea
X9569 L

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar General
~~Bruce Papandrea of Rydalmere, Dealer and Dorothy Joyce Papandrea his wife as joint tenants~~	~~Transfer~~	~~P290249~~		~~20-6-1975~~	
~~Stephen Roy Anderson, Company Director as 3/10 share, [illegible] Anderson his wife as 3/10 share, Byron George John Fulwood, Company Director as 3/10 share and Wilma Mary Fulwood his wife as 1/10 share all as tenants in common~~	~~Transfer~~	~~[illegible]~~		~~[illegible]~~	
Henk J. Dukino Holdings Pty Limited	Transfer	S247202	- - - -	13-1-1981	

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar General	CANCELLATION		
~~Lease~~	~~Q234114~~	~~———~~	~~to R&D Chemicals Pty Ltd Date of Expiry 5-11-1977~~	29-12-1976		Expired	15-8-1979	
Transfer	Q102633 P	———	Easement for Transmission Line (as more fully set out in the said instrument) affecting that part of the land within described shown as "VAR WIDTH" in the plan hereon.	27-4-1977				
~~Mortgage~~	~~R366945~~		~~to Bank of New South Wales~~	~~[illegible]~~		Discharged	S247201	
~~T549910 Lease to R. & D. Chemicals Pty. Ltd of premises being known as 1 Park Road, Rydalmere expires 6-8-1985. Registered 23-5-1983.~~								
X009569 P Lease to Auburn Towing Service Pty. Limited. Expires 31-5-1990 with option of renewal for 3 years. Registered 5-8-1987.						Expired	X009569.	

CANCELLED

SEE AUTO FOLIO

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

CH

17 NOV 2011

ADVANCE LEGAL SEARCHERS PTY LTD
(ACN 147 943 842)
ABN 82 147 943 842

P.O. Box 149
Yagoona NSW 2199

Telephone: +612 9754 1590
Mobile: 0412 169 809
Facsimile: +612 9754 1364
Email: alsearch@optusnet.com.au

16th November, 2011

ENVIRONMENTAL INVESTIGATION SERVICES
PO BOX 976,
NORTH RYDE BC NSW 1670

Attention: Cameron Hollands,

RE: **1 Park Road, Rydalmere**
Job No. E25326K

Current Search

Folio Identifier 681/15160 (title attached)
DP 15160 (plan attached)
Dated 14th November, 2011
Registered Proprietor:
ZBIGNIEW LESZEK MILEWSKI
TERESA MILEWSKI

Title Tree
Lot 681 DP 15160

Folio Identifier 681/15160

Certificate of Title Volume 4562 Folio 245

Certificate of Title Volume 4237 Folio 37

Certificate of Title Volume 4128 Folio 250

PA 27763

Conveyance Book 1429 No. 491

*****

Summary of proprietor(s)
Lot 681 DP 15160

Year	**Proprietor**
	(Lot 681 DP 15160)
2010 – todate	Zbigniew Leszek Milewski Teresa Milewski
1989 – 2010	Henk J. Dukino Holdings Pty Limited
(2011 – todate)	*(lease to Ziggy's Cranes Pty Ltd, shown on folio identifier 681/15160)*
(1992 – 2011)	*(various leases shown on historical search identifier 681/15160)*
	(Lot 681 DP 15160 – Area 19 Perches – CTVol 45625 Fol 245)
1981 – 1989	Hink J. Dukino Holdings Pty Limited
1979 – 1981	Stephen Ray Anderson, company director Karen Lynne Anderson, wife Bryon George John Pritchard, company director Helen May Pritchard, wife
1965 – 1979	Bruce Papandrea, panel beater Dorothy Joyce Papandrea, wife
1962 – 1965	Dangar Gedye & Malloch Limited
1960 – 1962	Progress Realty Pty Limited
1959 – 1960	Brewither Hodge Pty Limited
1952 – 1959	Leask Timber Products Pty Limited
1933 – 1952	Thomas Alfred Woolnough Johnstone, labourer Sarah Johnstone, widow
	(Lots 654 to 681 DP 15160 and other lands – Area 17 Acres 3 Roods 25 Perches – CTVol 4237 Fol 37)
1932 – 1933	Thomas Alfred Woolnough Johnstone, labourer Sarah Johnstone, widow
1929 – 1932	John Bridge Limited
	(Lot 10 of Shepherd's Estate, part of portion 123, Parish of Field of Mars – Area 18 Acres 1 Rood 24 Perches – CTVol 4128 Fol 250)
1928 – 1929	John Bridge Limited
	(Lot 10 of Shepherd's Estate, part of potion 123, Parish of Field of Mars – Area 18 Acres 1 Rood 14 Perches – Conv Bk 1429 No. 491)
1926 – 1928	Brodie & Bridge Limited
1911 – 1926	Sydney Hercules Randall, carrier

*****

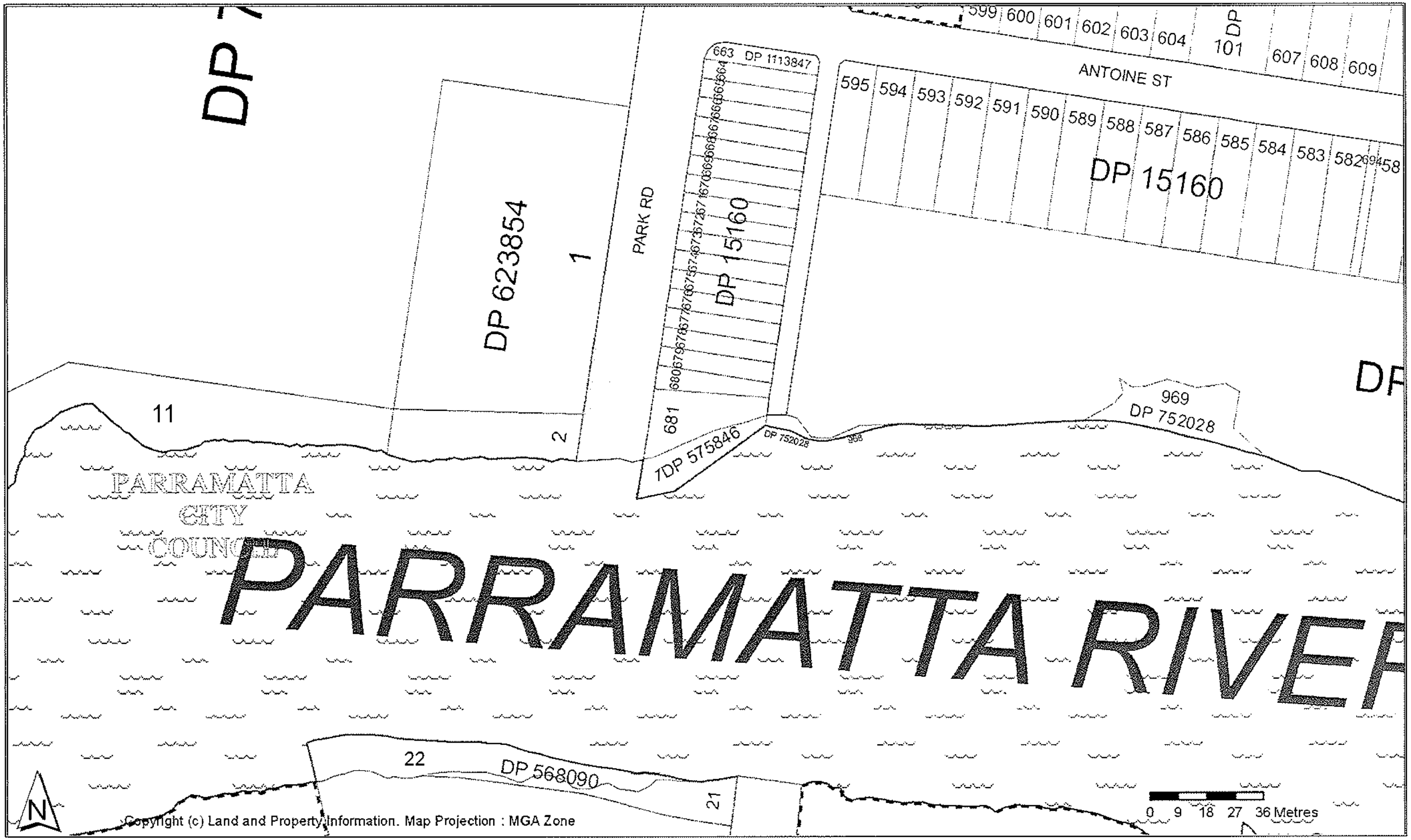
Land & Property Information

Cadastral Records Enquiry Report

Ref : EIS - Rydalmere

Requested Parcel : Lot 681 DP 15160 **Identified Parcel** : Lot 681 DP 15160

Locality : RYDALMERE **LGA** : PARRAMATTA **Parish** : FIELD OF MARS **County** : CUMBERLAND



Report Generated 3:21:16 PM, 14 November, 2011
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This information is provided as a searching aid only. While every endeavour is made to ensure the current cadastral pattern is accurately reflected, the Registrar General cannot guarantee the information provided. For all ACTIVITY PRIOR to SEPT 2002 you must refer to the RGs Charting and Reference Maps.

Advance Legal Searchers Pty Ltd
Phone: 02 9754 1590
LPI On-Line

Advance Legal Searchers Pty Ltd hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act.

Information provided through Tri-Search an approved LPI NSW Information Broker

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH
-----------------------------------------------------------------


FOLIO: 681/15160
------

          SEARCH DATE       TIME              EDITION NO    DATE
          -----------       ----              ----------    ----
          14/11/2011        3:18 PM               4         15/2/2011


LAND
----
LOT 681 IN DEPOSITED PLAN 15160
   LOCAL GOVERNMENT AREA PARRAMATTA
   PARISH OF FIELD OF MARS   COUNTY OF CUMBERLAND
   TITLE DIAGRAM DP15160

FIRST SCHEDULE
--------------
ZBIGNIEW LESZEK MILEWSKI
TERESA MILEWSKI
    AS JOINT TENANTS                                         (T AF520080)

SECOND SCHEDULE (3 NOTIFICATIONS)
---------------
1   RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2   Q102632   EASEMENT FOR TRANSMISSION LINE AFFECTING THE PART OF
              THE LAND ABOVE DESCRIBED SHOWN SO BURDENED IN VOL 4562
              FOL 245
3   AG64752   LEASE TO ZIGGY'S CRANES PTY LTD OF 1 PARK ROAD,
              RYDALMERE. EXPIRES: 30/6/2015. OPTION OF RENEWAL: 5
              YEARS.

NOTATIONS
---------
UNREGISTERED DEALINGS: NIL

        ***  END OF SEARCH  ***
```

Advance Legal Searchers Pty Ltd Phone: 02 9754 1590

LPI On-Line

Advance Legal Searchers Pty Ltd hereby certifies that the information contained in this document has been provided electronically by the Registrar General.

Information provided through Tri-Search an approved LPI*NSW* Information Broker

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

14/11/2011 3:19PM

FOLIO: 681/15160

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 4562 FOL 245

Recorded	Number	Type of Instrument	C.T. Issue
21/12/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
2/8/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
28/2/1992	E289261	LEASE	EDITION 1
11/3/1992	E314092	DEPARTMENTAL DEALING	EDITION 2
21/4/2010	AF443886	CAVEAT	
27/5/2010	AF520080	TRANSFER	EDITION 3
15/2/2011	AG64752	LEASE	EDITION 4

*** END OF SEARCH ***

ADVANCE LEGAL SEARCHERS PTY LTD

(ACN 147 943 842)
ABN 82 147 943 842

P.O. Box 149
Yagoona NSW 2199

Telephone: +612 9754 1590
Mobile: 0412 169 809
Facsimile: +612 9754 1364
Email: alsearch@optusnet.com.au

16th November, 2011

ENVIRONMENTAL INVESTIGATION SERVICES
PO BOX 976,
NORTH RYDE BC NSW 1670

Attention: Cameron Hollands,

RE: **1 Park Road, Rydalmere**
Job No. E25326K

Current Search

Folio Identifier 681/15160 (title attached)
DP 15160 (plan attached)
Dated 14th November, 2011
Registered Proprietor:
ZBIGNIEW LESZEK MILEWSKI
TERESA MILEWSKI

Title Tree
Lot 681 DP 15160

Folio Identifier 681/15160

Certificate of Title Volume 4562 Folio 245

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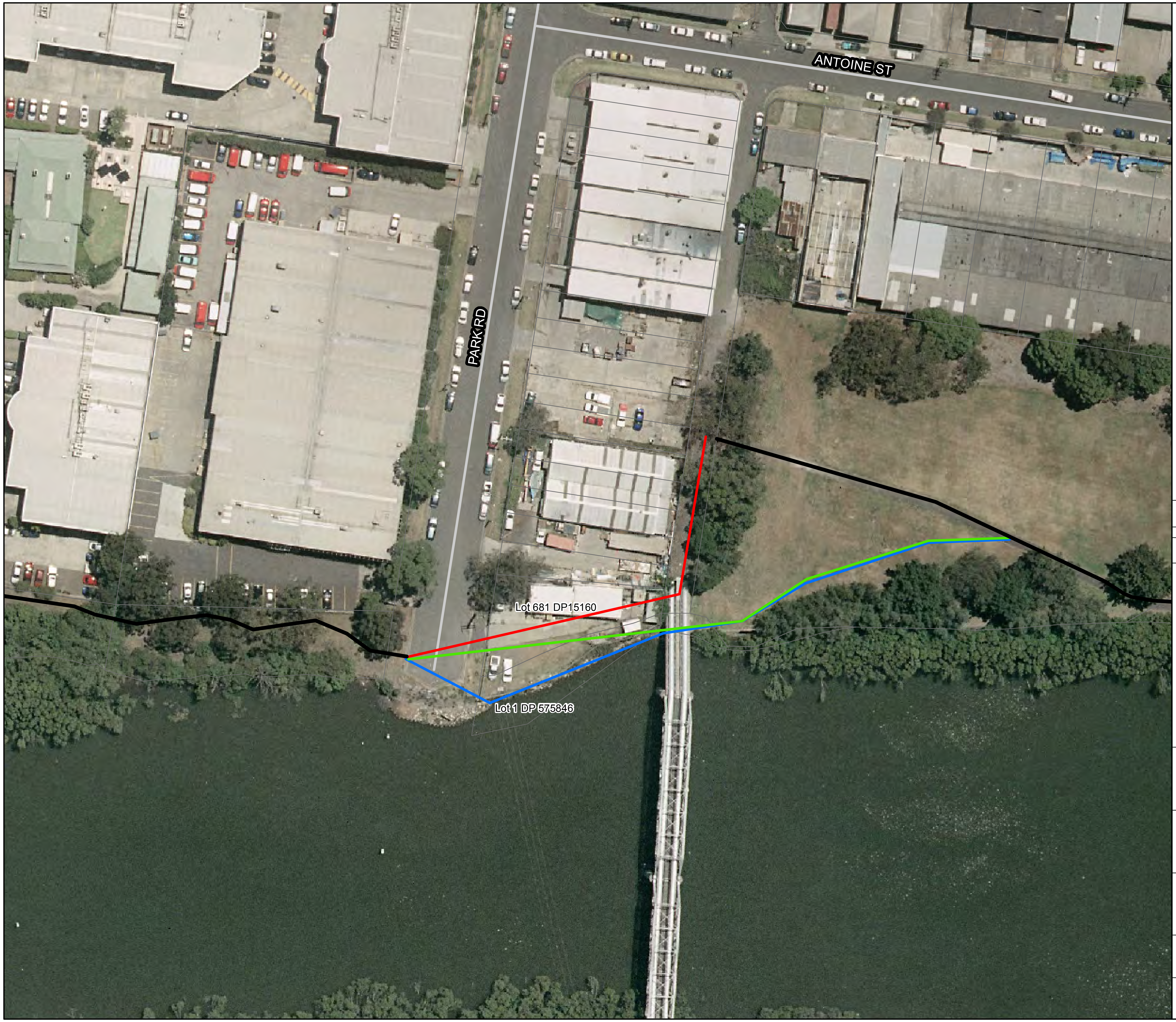
1926 – 1928	Brodie & Bridge Limited
1911 – 1926	Sydney Hercules Randall, carrier

*****

APPENDIX D

(Feasibility Study Plan - Proposed Cycleway Route Options)



Legend

- ☐ Cadastre
- ▬ Existing Shared Paths

Option_Nam

- 🟥 Option 1
- 🟩 Option 2
- 🟦 Option 3

P1	02-05-2011	WL/MC	JPH	CH
Issue	Date	By	Chkd	Appd

N

ARUP

Level 10 201 Kent Street
PO Box 76 Millers Point
Sydney, 2000
Tel +61 (2) 9320 9320
Fax +61 (2) 9320 9321
www.arup.com

Metres
0 10 20 40

Client
Parramatta City Council

Job Title
Reid Park Extension Feasibility Study

Drawing Title
Route Options

Scale at A3	Job No
1:800	**221706**
Coordinate System	Figure No
GDA94 MGA Zone 56	**009**

J:\221706 Park Road Shared Path\05 Arup Project Data\GIS\Project Files

© Arup 2011

APPENDIX E

(Sampling Protocols and QA/QC Definitions)

SOIL AND GROUNDWATER SAMPLING PROTOCOLS

These protocols specify the basic procedures to be used when sampling soils or groundwater for environmental site assessments undertaken by EIS. The purpose of these protocols is to provide standard methods for: sampling, decontamination procedures for sampling equipment, sample preservation, sample storage and sample handling. Deviations from these procedures must be recorded.

Soil Sampling

a) Prepare a test pit/borehole log.

b) Layout sampling equipment on clean plastic sheeting to prevent direct contact with ground surface. The work area should be at a distance from the drill/rig excavator such that the drill rig/excavator can operate in a safe manner.

c) Ensure all sampling equipment has been decontaminated prior to use.

d) Remove any surface debris from the immediate area of the sampling location.

e) Collect samples and place in glass jar with a Teflon seal. This should be undertaken as quickly as possibly to prevent the loss of volatiles. If possible, fill the glass jars completely.

f) Collect samples for asbestos analysis and place in a zip-lock plastic bag.

g) Label the jar and/or bag with the EIS job number, sample location (eg. BH1), sampling depth interval and date. If more than one sample container is used, this should also be indicated (eg. 2 = Sample jar 1 of 2 jars).

h) Photoionisation detector (PID) screening of volatile organic compounds (VOCs) should be undertaken on samples using the soil sample headspace method. Headspace measurements are taken following equilibration of the headspace gasses in partly filled zip-lock plastic bags. PID headspace data is recorded on the borehole/test pit log and the chain of custody forms.

i) Record the lithology of the sample and sample depth on the borehole/test pit log in accordance with AS1726-1993[19].

j) Store the sample in a sample container cooled with ice or chill packs. On completion of the sampling the sample container should be delivered to the lab immediately or stored in the refrigerator prior to delivery to the lab. All samples are preserved in accordance with AS 4482.1:2005, AS 4482.2:1999 and AS/NZS 5667.1:1998.

k) Check for the presence of groundwater after completion of each borehole using an electronic dip metre or water whistle. Boreholes should be left open until the end of fieldwork. All groundwater levels in the boreholes should be rechecked on the completion of the fieldwork.

---

[19] *Geotechnical Site Investigations*, Standards Australia 1993 (AS1726-1993)

l) Backfill the boreholes/test pits with the excavation cuttings or clean sand prior to leaving the site.

Decontamination Procedures for Soil Sampling Equipment

a) All of the equipment associated with the soil sampling procedure should be decontaminated between every sampling location.

b) The following equipment and materials are required for the decontamination procedure:
   - Phosphate free detergent (Decon 90)
   - Potable water
   - Stiff brushes
   - Plastic sheets

c) Ensure the decontamination materials are clean prior to proceeding with the decontamination.

d) Fill both buckets with clean potable water and add phosphate free detergent to one bucket.

e) In the bucket containing the detergent scrub the sampling equipment until all the material attached to the equipment has been removed.

f) Rinse sampling equipment in the bucket containing potable water.

g) Place cleaned equipment on clean plastic sheets.

If all materials are not removed by this procedure, high-pressure water cleaning is recommended. If any equipment is not completely decontaminated by both these processes that equipment should not be used until it has been thoroughly cleaned.

Groundwater Sampling

Groundwater samples are more sensitive to contamination than soil samples and therefore adhesion to this protocol is particularly important to obtain reliable, reproducible results. The recommendations detailed in AS/NZS 5667.1:1998 are considered to form a minimum standard.

The basis of this protocol is to maintain the security of the borehole and obtain accurate and representative groundwater samples. The following procedure should be used for collection of groundwater samples from previously installed groundwater monitoring wells.

a) After monitoring well installation, at least three bore volumes should be pumped from the monitoring wells (well development) to remove any water introduced during the drilling process and/or the water that is disturbed during installation of the monitoring well. This should be completed prior to purging and sampling.

b) Groundwater monitoring wells should then be left to recharge for at least three days before purging and sampling. Prior to purging or sampling the condition of each well should observed and any anomalies recorded on the field data sheets. The following information should be noted: the condition of the well, noting any signs of damage, tampering or complete destruction; the condition and operation of the well lock; the condition of the protective casing and the cement footing (raised or cracked); and, the presence of water between protective casing and well.

c) Take the groundwater level from the collar of the piezometer/monitoring well using an electronic dip meter. The collar level should be taken (if required) during the site visit using a dumpy level and staff.

d) Purging and sampling of piezometers/monitoring wells is done on the same site visit when using micro-purge (or low flow) techniques. Layout and organize all equipment associated with groundwater sampling in a location where they will not interfere with the sampling procedure and will not pose a risk of contaminating samples. Equipment generally required includes:

- Micropore filtration system or Stericup single-use filters (for heavy metals samples).
- Filter paper for Micropore filtration system.
- Bucket with volume increments.
- Sample containers: teflon bottles with 1 ml nitric acid, 75mL glass vials with 1 mL hydrochloric acid, 1 L amber glass bottles.
- Bucket with volume increments.
- Flow cell.
- pH/EC/Eh/T meters.
- Plastic drums used for transportation of purged water.
- Esky and ice.
- Nitrile gloves.
- Distilled water (for cleaning).
- Electronic dip meter.
- Micro-purge pump pack and pump head.
- Air and water tubing for Micro-purge.
- Groundwater sampling forms.

e) If single-use stericup filtration is not being used, clean the Micropore filtration system thoroughly with distilled water prior to use and between each sample. Filter paper should be changed between samples. 0.45um filter paper should be placed below the glass fibre filter paper in the filtration system.

f) Ensure all non-disposable sampling equipment is decontaminated or that new disposable equipment is available prior to any work commencing at a new location. The procedure for decontamination of groundwater equipment is outlined at the end of this section.

g) Disposable gloves should be used whenever samples are taken to protect the sampler and to assist in avoidance of contamination.

h) Groundwater samples are obtained from the monitoring wells using low flow/micro-purge sampling equipment to reduce the disturbance of the water column and loss of volatiles.

i) During pumping to purge the well, the pH, temperature, conductivity, dissolved oxygen, redox potential and groundwater levels are monitored (where possible) using calibrated field instruments to assess the development of steady state conditions. Steady state conditions are generally considered to have been achieved when the difference in the pH measurements was less than 0.2 units and the difference in conductivity was less than 10%.

j) All measurements are recorded on specific data sheets.

k) Once steady state conditions are considered to have been achieved, groundwater samples are obtained directly from the pump tubing and placed in appropriate glass bottles, BTEX vials or plastic bottles.

l) All samples are preserved in accordance with water sampling requirements detailed in the NEPM 1999 and placed in an insulated container with ice. Groundwater samples are preserved by immediate storage in an insulated sample container with ice in accordance with AS/NZS 5667.1:1998.

m) Record the sample on the appropriate log in accordance with AS1726:1993. At the end of each water sampling complete a chain of custody form.

Decontamination Procedures for Groundwater Sampling Equipment

a) All of the equipment associated with the groundwater sampling procedure (other than single-use items) should be decontaminated between every sampling location.

b) The following equipment and materials are required for the decontamination procedure:
   - Phosphate free detergent.
   - Potable water.
   - Distilled water
   - Plastic Sheets or bulk bags (plastic bags)

c) Fill one bucket with clean potable water and phosphate free detergent, and one bucket with distilled water.

d) Flush potable water and detergent through pump head. Wash sampling equipment and pump head using brushes in the bucket containing detergent until all materials attached to the equipment are removed.

e) Flush pump head with distilled water.

f) Change water and detergent solution after each sampling location.

g) Rinse sampling equipment in the bucket containing distilled water.

h) Place cleaned equipment on clean plastic sheets.

i) If all materials are not removed by this procedure that equipment should not be used until it has been thoroughly cleaned

QA/QC DEFINITIONS

The QA/QC terms used in this report are defined below. The definitions are in accordance with US EPA publication SW-846, entitled *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (1994[20]) methods and those described in *Environmental Sampling and Analysis, A Practical Guide,* (H. Keith 1991[21]).

Practical Quantitation Limit (PQL), Limit of Reporting (LOR) and Estimated Quantitation Limit (EQL)

These terms all refer to the concentration above which results can be expressed with a minimum 95% confidence level. The laboratory reporting limits are generally set at ten times the standard deviation for the Method Detection limit (MDL) for each specific analyte. For the purposes of this report the LOR, PQL, and EQL are considered to be equivalent.

When assessing laboratory data it should be borne in mind that values at or near the PQL have two important limitations.*"The uncertainty of the measurement value can approach, and even equal, the reported value. Secondly, confirmation of the analytes reported is virtually impossible unless identification uses highly selective methods. These issues diminish when reliably measurable amounts of analytes are present. Accordingly, legal and regulatory actions should be limited to data at or above the reliable detection limit"* Keith 1991.

Precision

The degree to which data generated from repeated measurements differ from one another due to random errors. Precision is measured using the standard deviation or Relative Percent Difference (RPD). Acceptable targets for precision in this report will be less than 50% RPD for concentrations greater than ten times the PQL, less than 75% RPD for concentrations between five and ten times the PQL and less than 100% RPD for concentrations that are less than five times the PQL.

Accuracy

Accuracy is a measure of the agreement between an experimental result and the true value of the parameter being measured. The assessment of accuracy for an analysis can be achieved through the analysis of known reference materials or assessed by the analysis of surrogates, field blanks, trip spikes and matrix spikes.

---

[20] *SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* US EPA, 1994 (US EPA SW-846)

[21] *Environmental Sampling and Analysis, A Practical Guide*, Keith, H, 1991 (Keith 1991)

The proximity of an averaged result to the true value, where all random errors have been statistically removed. Accuracy is measured by percent recovery. Acceptable limits for accuracy generally lie between 70% to 130% recoveries. Certain laboratory methods may allow for values that lie outside these limits.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is primarily dependent upon the design and implementation of the sampling program. Representativeness of the data is partially ensured by the avoidance of contamination, adherence to sample handing and analysis protocols and use of proper chain-of-custody and documentation procedures.

Completeness

Completeness is a measure of the number of valid measurements in a data set compared to the total number of measurements made and overall performance against DQIs. The following information is assessed for completeness:

- Chain-of-custody forms;
- Sample receipt form;
- All sample results reported;
- All blank data reported;
- All laboratory duplicate and RPDs calculated;
- All surrogate spike data reported;
- All matrix spike and lab control spike (LCS) data reported and RPDs calculated;
- Spike recovery acceptable limits reported; and
- NATA stamp on reports.

Comparability

Comparability is the evaluation of the similarity of conditions (eg. sample depth, sample homogeneity) under which separate sets of data are produced. Data comparability checks include a bias assessment that may arise from the following sources:

- Collection and analysis of samples by different personnel;
- Use of different techniques;
- Collection and analysis by the same personnel using the same methods but at different times; and
- Spatial and temporal changes (due to environmental dynamics).

Blanks

The purpose of laboratory and field blanks is to check for artifacts and interferences that may arise during sampling and analysis.

Matrix Spikes

Samples are spiked with laboratory grade standards to detect interactive effects between the sample matrix and the analytes being measured. Matrix Spikes are reported as a percent recovery and are prepared for 1 in every 20 samples. Sample batches that contain less than 20 samples may be reported with a Matrix Spike from another batch. The percent recovery is calculated using the formula;

$$\frac{(\text{Spike Sample Result} - \text{Sample Result}) \times 100}{\text{Concentration of Spike Added}}$$

Acceptable recovery limits are 70% to 130%.

Surrogate Spikes

Samples are spiked with a known concentration of compounds that are chemically related to the analyte being investigated but unlikely to be detected in the environment. The purpose of the Surrogate Spikes is to check the accuracy of the analytical technique. Surrogate Spikes are reported as percent recovery.

Duplicates

Laboratory duplicates measure precision, expressed as Relative Percent Difference. Duplicates are prepared from a single field sample and analysed as two separate extraction procedures in the laboratory. The RPD is calculated using the formula where D1 is the sample concentration and D2 is the duplicate sample concentration:

$$\frac{(D1 - D2) \times 100}{\{(D1 + D2)/2\}}$$

From:	Cameron Hollands <chollands@jkgroup.net.au>
Sent:	Tuesday, 9 February 2010 11:17 AM
To:	Adam Cook
Subject:	Environmental assessment - Reid park Valley Cycleway - additinoal sampling

EIS

ENVIRONMENTAL INVESTIGATION SERVICES
A division of Jeffery & Katauskas Pty Ltd
ABN 17 003 550 801

Adam,

RE: Environmental assessment - Reid park Valley Cycleway

During the proposed development soil is to be excavated. This soil may me either **1)** capped on-site OR **2)** disposed off-site to a landfill.

If the soil is going to a landfill a chemical waste classification must be assigned. We have received the laboratory results that indicate 5 samples are above the leachate potential threshold. To assign a detailed waste classification we recommend additional leachate analysis on 6 samples for a total of $363 +GST incl.), we will include the report for no additional cost.

Please advise.

Regards,
For and on behalf of
ENVIRONMENTAL INVESTIGATION SERVICES

Cameron Hollands
Environmental Scientist

115 Wicks Road, Macquarie Park, NSW, 2113
PO Box 976, North Ryde BC, NSW, 1670
Tel: 02 9888 5000
Fax: 02 9888 5004
email: chollands@jkgroup.net.au
Web: www.jkgroup.net.au

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M E M O

Folder Number:F2009/02442

To	Chief Executive Officer	**Date**	3 June 2011
Copies			
From	Acting Service Manager Open Space and Natural Resources	**Through**	
Subject	National Bike Path Projects Final Report – Closing Parramatta Valley Regional Cycleway Missing Link Project		

Council was successful in obtaining $400,000 funding under the Federal Governments National Bike Paths Program to construct Sections 22-24 of the Parramatta Valley Cycleway along the Parramatta River foreshore in Rydalmere.

The project has now been completed and we are required to submit a final report (including an audited financial statement) to claim the grant. Could you please sign page 9 of the attached final report and return the application to me after signing. If you require any additional information please contact me on x5131 or 0408 624 886.

Thanking you.

James Smallhorn
Acting Service Manager Open Space & Natural Resources.

Attach.

Chris Curtis

From:	Cameron Hollands <chollands@jkgroup.net.au>
Sent:	Monday, 31 May 2010 2:14 PM
To:	craig@thegcgroup.com.au
Cc:	Richard Bass; Richard James; Adam Cook
Subject:	Rydalmere proposed cycleway - asbestos management plan outline

EIS

ENVIRONMENTAL INVESTIGATION SERVICES
A division of Jeffery & Katauskas Pty Ltd
ABN 17 003 550 801

Craig, Dick, Richard and Craig,

RE: Rydalmere proposed cycleway - asbestos management plan outline

Key Parties

Parramatta City Council
Environmental Investigation Services (EIS)
GC Civil Pty
AS1 licensed friable asbestos removal contractor (to be confirmed)

Documentation Required

- Asbestos management and removal control plan – to be prepared by EIS
- Safe Work Method Statement – to be prepared by GC Civil Pty
- Risk Assessment – to be prepared by GC Civil Pty
- WorkCover Permit – to be applied for by AS1 licensed asbestos contractor
- Site specific induction training – to be prepared by EIS
- Waste classification documents (as required) - to be prepared by EIS
- Documentation of ongoing site management including air monitoring and site inspections - to be prepared and implemented by EIS
- All other general requirements as per tender and other relevant regulations
- Consideration should be given to a community enquiry and response System

On-Site Management

- A clean area must be established at the site. This area is used can be utilized as an office, eating area, toilets etc. This should include waste bins, wash facilities, spray bottles, clean PPE. Showers are not considered necessary at this stage - to be arranged by GC Civil Pty
- An isolated decontamination area must be established between the work area and the clean area. This must have adequate decontamination facilities - to be arranged by GC Civil Pty
- Traffic must be managed on site to minimize soil disturbance - to be arranged by GC Civil Pty
- Ensure dust suppression activities are undertaken – to be implemented by GC Civil Pty and confirmed by EIS

- Asbestos fibre air monitoring conducted on a daily basis – to be contracted through EIS
- Display of daily air monitoring reports on site at each entry/exit point – to be implemented by EIS
- Ongoing site management by daily inspections - to be implemented by EIS
- Ensure personnel are adequately trained – to be implemented by EIS and AS1 licensed asbestos contractor
- Ensure personnel wear correct PPE –to be implemented by EIS
- Excess waste soil to be disposed must be accompanied by waste classification documentation - to be prepared by EIS
- Non-compliances such as excessive air fibre laboratory results or failure to conform with specifications outlined in the Management Plan will trigger corrective action (this may include a stop work notice)

Health & Safety Precautions

- All personnel must use adequate PPE (as per training instructions)
- All personnel must follow correct decontamination activities when existing the work area (prior to lunch and at the the end of each shift).
- All other general requirements as per tender

Dust suppression - to be implemented by GC Civil Pty

- Application of water spray to excavated surfaces, exposed soil, stockpiled soil and to vehicles exiting the site
- Application of shade cloth to existing fences to limit wind across the site
- Erection of fences in areas where fencing does not exist
- Use of warning signage between the work area and each adjacent property
- Any soil exposed or stockpiled for greater than approximately half a day or overnight should be covered/sealed using plastic sheeting and sandbags

Failure of Air Monitoring Results - to be implemented by EIS

- 0.01 to 0.02 Fibres/ml: Inspection of the site and review of procedures
- >0.02 to 0.05 Fibres/ml: Stop work, inspection of the site, review of procedures, clean-up and rectification works where required

Mounded soil on Site

- Prior to the mounding of soil, EIS or the AS1 licensed asbestos contractor must inspect the soil to ensure excess volumes of asbestos materials are not present.
- Dust suppression activities should be maintained whilst the mound is exposed
- The mound must be covered in geofrabric and covered in clean topsoil at the earliest practicable time
- If the mound remains exposed for extended periods of time, dust suppression should undertaken followed by covering with plastic.

Export of Excess Waste Soil

- Excess soil to be taken off site must be stockpiled in areas away from adjacent businesses.
- Waste classification must be undertaken i.e. additional soil samples collected and report issued (allow 3 days for laboratory turnaround time)
- Truck loading must be undertaken with the use of water spray
- The waste must be wet (but minimize runoff) and covered to prevent dust release
- Tipping dockets must be maintained and provided to EIS.

End of Each Work Shift

- All exposed soil must be covered before the end of each shift
- All equipment and vehicles must be decontaminated
- All personnel must undertake personal decontamination
- Site must be secured

Capping System

- Emu bob of remaining areas (this requires additional specific training)
- Cover with fresh topsoil
- Sown with appropriate grass species

Regards,
For and on behalf of
ENVIRONMENTAL INVESTIGATION SERVICES

Cameron Hollands
Environmental Scientist

115 Wicks Road, Macquarie Park, NSW, 2113
PO Box 976, North Ryde BC, NSW, 1670
Tel: 02 9888 5000
Fax: 02 9888 5004
email: chollands@jkgroup.net.au
Web: www.jkgroup.net.au

* * * IMPORTANT * * *
This email and any attachments are confidential and may be privileged in which case neither is intended to be waived. If you have received this message in error, please notify us and remove it from your system. It is your responsibility to check any attachments for viruses and defects before opening or sending them on. At the Company's discretion we may send a paper copy for confirmation. In the event of any discrepancy between paper and electronic versions the paper version is to take precedence.

From:	Richard Bass <rbass@parracity.nsw.gov.au>
Sent:	Monday, 30 August 2010 8:13 AM
To:	Jenna Ritson
Subject:	FW: 10-8936 Airborne Asbestos Monitoring Report for 23 and 25 Aug 2010
Attachments:	10-8936-DUE-9897-35[1].pdf; 10-8936-DUE-9896-34[1].pdf

Jen
Please trim

Richard Bass
Project Manager
Capital Projects
Parramatta City Council
PO Box 32 Parramatta 2124
Ph: 9806 5619
Fax: 9806 5905
Email: rbass@parracity.nsw.gov.au

From: Cameron Hollands [mailto:chollands@jkgroup.net.au]
Sent: Thursday, 26 August 2010 1:08 PM
To: Richard Bass; michael.coric@transpac.com.au; 'Craig Simpson'
Subject: FW: 10-8936 Airborne Asbestos Monitoring Report for 23 and 25 Aug 2010

Gents,

Air monitoring results attached.

Regards,
For and on behalf of
ENVIRONMENTAL INVESTIGATION SERVICES

Cameron Hollands
Environmental Scientist

115 Wicks Road, Macquarie Park, NSW, 2113
PO Box 976, North Ryde BC, NSW, 1670
Tel: 02 9888 5000
Fax: 02 9888 5004
email: chollands@jkgroup.net.au
Web: www.jkgroup.net.au

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From: Neil Kumar [mailto:Neil.Kumar@heggies.com]
Sent: Wednesday, 25 August 2010 9:11 PM

To: Neil Kumar; 'Cameron Hollands'
Subject: 10-8936 Airborne Asbestos Monitoring Report for 23 and 25 Aug 2010

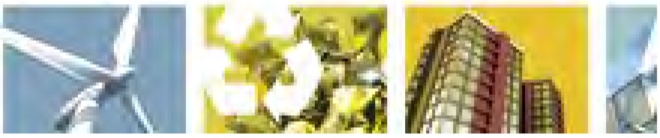
Hi Cameron

Please find attached Airborne Asbestos Monitoring Reports for Monday 23 and Wednesday 25 August 2010.

All airborne fibre concentrations were found to be less than the detection limit at the locations monitored.

Thanks

Neil Kumar
Principal - Hazardous Materials I MLegalSt BAppSc DipAppSc MRACI LCA AAIPM AFFIL.AIBS Certified Environmental Pra
E: neil.kumar@heggies.com **I** T: +61 2 9428 8100 **I** F: +61 2 9427 8200 **I** M: +61 411 535 013
Heggies Pty Ltd 2 Lincoln Street Lane Cove NSW 2066 Australia PO Box 176 Lane Cove NSW 1595



Heggies Laboratory Services - Sydney Office
ABN: 29 001 584 612
http://www.heggies.com

HSEC Division, 2 Lincoln Street, Lane Cove West NSW 2066
T: 61 2 9427 8100 F: 61 2 9427 8200

HEGGIES

Airborne Asbestos Monitoring Report

Test method in accordance with NOHSC:3003(2005) **This document may not be produced except in full**

Reference: 10-8936-DUE-35
Date: Wednesday, 25 August 2010
Removal Contractor: Transpacific Industrial Solutions Pty Ltd
Job Location: Reid Park Valley, Rydalmere, NSW 2116

Client: Environmental Investigation Services
115 Wicks Road
Macquarie Park
NSW 2113

Date of Test	Sample Code	Type	Mon Loc'n	Airflow (L/min)			TIME			Factor	Count		CONC'N	REM
				ON	OFF	AVGE	ON	OFF	TOTAL(min)		Fields	Fibres	(fibres/mL)	
25/08/2010	**Blank**		0				N/A	N/A			100	0	N/A	
25/08/2010	DUE-123	1	19	1.01	1.01	1.01	09:13	16:20	427	481	100	0	<0.01	
25/08/2010	DUE-124	1	8	1.01	1.01	1.01	09:15	16:22	427	481	100	0	<0.01	
25/08/2010	DUE-125	1	9	1.01	1.01	1.01	09:17	16:24	427	481	100	0	<0.01	
25/08/2010	DUE-126	1	18	1.01	1.01	1.01	09:19	16:26	427	481	100	0	<0.01	

Monitoring Locations :

0	Blank
8	Main entry gate adjacent Cardinal Parking
9	Temporary dry decontamination/change area
18	On fence adjacent Tanks and former Borehole 9
19	Fence location marked as CH 280

Sample Types:

1 Removal

Remarks:

Notes On Sampling:

The above results only relate to the samples tested. This report confirms preliminary report _N/A

NATA ACCREDITED LABORATORY
NUMBER:3130

This document is issued in accordance with NATA's accreditation requirements and is accredited for compliance with ISO / IEC 17025. The results of the tests, calibrations and / or measurements included in this document are traceable to Australian / national standards. This document shall not be reproduced except in full.

Sampled By: Neil Kumar

Approved Counter: Neil Kumar

Approved Signatory: Neil Kumar

The accompanying report is

NATA endorsed

You can be assured it was prepared to exacting international and Australian technical standards by a facility that is regularly audited by the National Association of Testing Authorities.

NATA is a cornerstone of Australia's standards and conformance infrastructure. Its role is to serve the national and public interest by ensuring that member facilities provide test, measurement, calibration and inspection reports that are consistently reliable and of the highest quality.

As a not-for-profit, government-endorsed body of long standing, NATA brings experience, impartiality and best-practice expertise to a huge range of industries. These include biotechnology, IT, health, forensics, inspection and research & development.

More than 3000 laboratories in Australia and worldwide are members of NATA.

When selecting a technical facility, why risk one that hasn't been formally recognised by Australia's national body responsible for technical audit?

Know you can trust the reports your organisation relies on.

For more information, or to verify the facility's membership and scope of accreditation, visit the NATA web site www.nata.com.au

National Association of Testing Authorities, Australia
www.nata.com.au
7 Leeds Street, Rhodes NSW 2138
PO Box 7507, Silverwater NSW 2128
Ph: +61 2 9736 8222 Fax: +61 2 9743 5311

HEGGIES

Heggies Laboratory Services - Sydney Office
ABN: 29 001 584 612
http://www.heggies.com

HSEC Division, 2 Lincoln Street, Lane Cove West NSW 2066
T: 61 2 9427 8100 F: 61 2 9427 8200

Airborne Asbestos Monitoring Report

Test method in accordance with NOHSC:3003(2005) **This document may not be produced except in full**

Reference: 10-8936-DUE-34
Date: Monday, 23 August 2010
Removal Contractor: Transpacific Industrial Solutions Pty Ltd
Job Location: Reid Park Valley, Rydalmere, NSW 2116

Client: Environmental Investigation Services
115 Wicks Road
Macquarie Park
NSW 2113

Date of Test	Sample Code	Type	Mon Loc'n	Airflow (L/min)			TIME			Factor	Count		CONC'N	REM
				ON	OFF	AVGE	ON	OFF	TOTAL(min)		Fields	Fibres	(fibres/mL)	
23/08/2010	**Blank**		0				N/A	N/A			100	0	N/A	
23/08/2010	DUE-119	1	19	1.01	1.01	1.01	09:48	16:10	382	481	100	0	<0.01	
23/08/2010	DUE-120	1	8	1.01	1.01	1.01	09:50	16:12	382	481	100	0	<0.01	
23/08/2010	DUE-121	1	18	1.01	1.01	1.01	09:52	16:14	382	481	100	0	<0.01	
23/08/2010	DUE-122	1	9	1.01	1.01	1.01	09:54	16:15	381	481	100	0	<0.01	

Monitoring Locations :

0	Blank
8	Main entry gate adjacent Cardinal Parking
9	Temporary dry decontamination/change area
18	On fence adjacent Tanks and former Borehole 9
19	Fence location marked as CH 280

Sample Types:
1 Removal

Remarks:

Notes On Sampling:
The above results only relate to the samples tested. This report confirms preliminary report _N/A

NATA ACCREDITED LABORATORY NUMBER:3130

This document is issued in accordance with NATA's accreditation requirements and is accredited for compliance with ISO / IEC 17025. The results of the tests, calibrations and / or measurements included in this document are traceable to Australian / national standards. This document shall not be reproduced except in full.

Sampled By: Neil Kumar

NK

Approved Counter: Neil Kumar

NK

Approved Signatory: Neil Kumar

NATA

The accompanying report is

NATA endorsed

You can be assured it was prepared to exacting international and Australian technical standards by a facility that is regularly audited by the National Association of Testing Authorities.

NATA is a cornerstone of Australia's standards and conformance infrastructure. Its role is to serve the national and public interest by ensuring that member facilities provide test, measurement, calibration and inspection reports that are consistently reliable and of the highest quality.

As a not-for-profit, government-endorsed body of long standing, NATA brings experience, impartiality and best-practice expertise to a huge range of industries. These include biotechnology, IT, health, forensics, inspection and research & development.

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Know you can trust the reports your organisation relies on.

For more information, or to verify the facility's membership and scope of accreditation, visit the NATA web site www.nata.com.au

Accreditation
Assessment
Training

National Association of Testing Authorities, Australia
www.nata.com.au
7 Leeds Street, Rhodes NSW 2138
PO Box 7507, Silverwater NSW 2128
Ph: +61 2 9736 8222 Fax: +61 2 9743 5311

Be Absolutely Assured

Approximate Scale (m)

0 40 80 120 160 200

Note: Reference should be made to the text for a full understanding of this plan

Base image courtest of Google Earch Pro

LEGEND:

● **BH1** BOREHOLE LOCATION AND NUMBER

▨ **TP101** TEST PIT LOCATION AND NUMBER

- - - - APPROXIMATE SITE BOUNDARY

BOREHOLE AND TEST PIT LOCATION PLAN

REID PARK VALLEY, RYDALMERE

EIS
ENVIRONMENTAL
INVESTIGATION
SERVICES

Job No: E23649K
Figure: 2

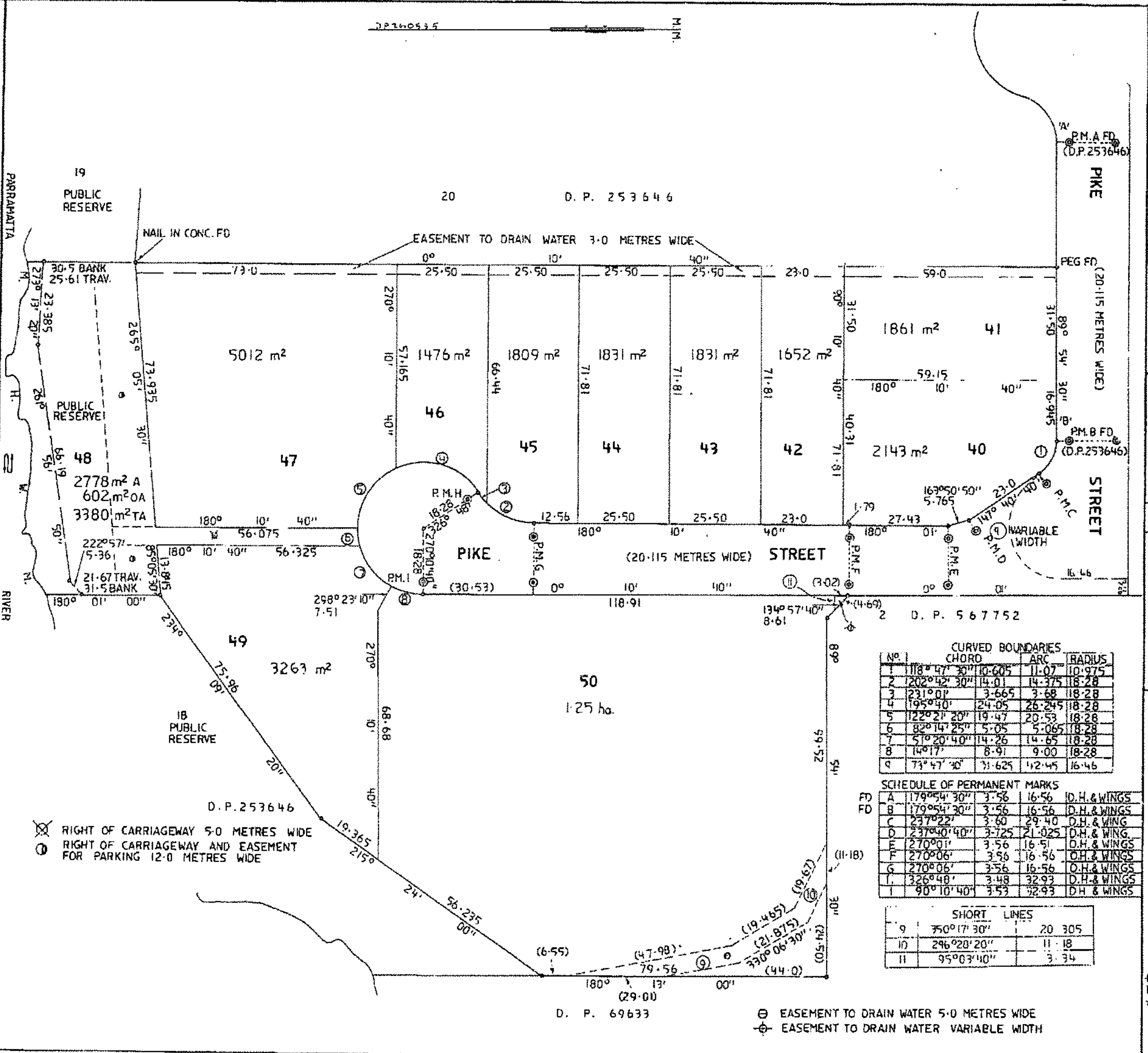
Site 28.

PLAN FORM 2

Plan Drawing only to appear in this space

* OFFICE USE ONLY

Signatures and seals only.



CURVED BOUNDARIES

Nº.	CHORD		ARC	RADIUS
1	118° 47' 30"	10·605	11·07	10·975
2	202° 42' 30"	14·01	14·375	18·28
3	231° 01'	3·665	3·68	18·28
4	195° 40'	24·05	26·245	18·28
5	122° 21' 20"	19·47	20·53	18·28
6	82° 14' 25"	5·05	5·065	18·28
7	51° 20' 40"	14·26	14·65	18·28
8	14° 17'	8·91	9·00	18·28
9	73° 47' 30"	31·625	42·45	16·46

SCHEDULE OF PERMANENT MARKS

FD	A	179° 54' 30"	3·56	16·56	D.H. & WINGS
FD	B	179° 54' 30"	3·56	16·56	D.H. & WINGS
	C	237° 22'	3·60	29·40	D.H. & WING
	D	237° 40' 40"	3·725	21·025	D.H. & WING.
	E	270° 01'	3·56	16·51	D.H. & WINGS
	F	270° 06'	3·56	16·56	D.H. & WINGS
	G	270° 06'	3·56	16·56	D.H. & WINGS
	I.	326° 48'	3·48	32·93	D.H. & WINGS
	I	90° 10' 40"	3·53	32·93	D.H. & WINGS

SHORT LINES

9	350° 17' 30"	20·305
10	296° 20' 20"	11·18
11	95° 03' 40"	3·34

D. P. 260535

Registered: 30.9.1980

C.A.: Nº 32/3488 OF 22·7·1980

Title System. TORRENS

Purpose: SUBDIVISION

Ref. Map: ERMINGTON - RYDALMERE SH 11

Last Plan: D.P. 253646

PLAN OF SUBDIVISION OF LOT 17 IN D.P. 253646

Reduction Ratio 1: 800
Lengths are in metres.

~~Mun/Shire~~ City PARRAMATTA

Locality RYDALMERE

Parish: FIELD OF MARS

County: CUMBERLAND

~~This is sheet 1 of my plan in~~ ~~sheets~~
(Delete if inapplicable).

I, KEITH JOSEPH AUSTIN of K.J. AUSTIN & CO. 406 CHAPEL ROAD BANKSTOWN a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan is accurate and has been made ~~*(1) by me~~ *(2) under my immediate supervision in accordance with the Survey Practice Regulations, 1933, and was completed on † 29 MAY 1979

Signature Keith Austin

Surveyor registered under Surveyors Act, 1929, as amended.
Datum Line of Azimuth. 'A'—'B'
*Strike out either (1) or (2). †Insert date of survey.

Panel for use only for statements of intention to dedicate public roads or to create public reserves, drainage reserves, easements or restrictions as to user.

PURSUANT TO SEC. 88 B OF THE CONVEYANCEING ACT 1919 - 1964, IT IS INTENDED TO CREATE IN TERMS OF THE ACCOMPANYING INSTRUMENT SIGNED BY THE COUNCIL CLERK:

1. EASEMENT TO DRAIN WATER 3·0 METRES WIDE
2. EASEMENT TO DRAIN WATER 5·0 METRES WIDE
3. EASEMENT TO DRAIN WATER VARIABLE WIDTH
4. RIGHT OF CARRIAGEWAY 5·0 METRES WIDE
5. RIGHT OF CARRIAGEWAY AND EASEMENT FOR PARKING 12·0 METRES WIDE

~~THE LOCATION OF THE EXISTING MEAN HIGH WATER MARK AS SHOWN HEREON IS SUBSTANTIALLY THE SAME AS THAT SHOWN IN D.P. 253646.~~

IT IS INTENDED TO DEDICATE PIKE STREET TO THE PUBLIC AS ROAD

~~LOT 48 IS PUBLIC RESERVE~~
IT IS INTENDED TO CREATE LOT 48 AS PUBLIC RESERVE

Council Clerk's Certificate

I hereby certify that —

(a) the requirements of the Local Government Act, 1919 (other than the requirements for the registration of plans), and

*(b) the requirements of section 340 of the †Metropolitan Water, Sewerage and Drainage Act, 1924, as amended. †Hunter District Water, Sewerage, and Drainage Act, 1938, as amended

have been complied with by the applicant in relation to the proposed * subdivision *
(insert "new road", "subdivision" or "consolidated lot") set out herein

Subdivision No. 32/3488
Date ~~June~~ JULY 22
(Signature) Council Clerk

*This part of certificate to be deleted where the application is only for a consolidated lot or the opening of a new road or where the land to be subdivided is wholly outside the areas of operations of the Metropolitan Water Sewerage and Drainage Board and the Hunter District Water Board.
†Delete if inapplicable.

M. P. D.

Table of mm

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

SURVEYOR'S REFERENCE 1230 — 8563 — 1

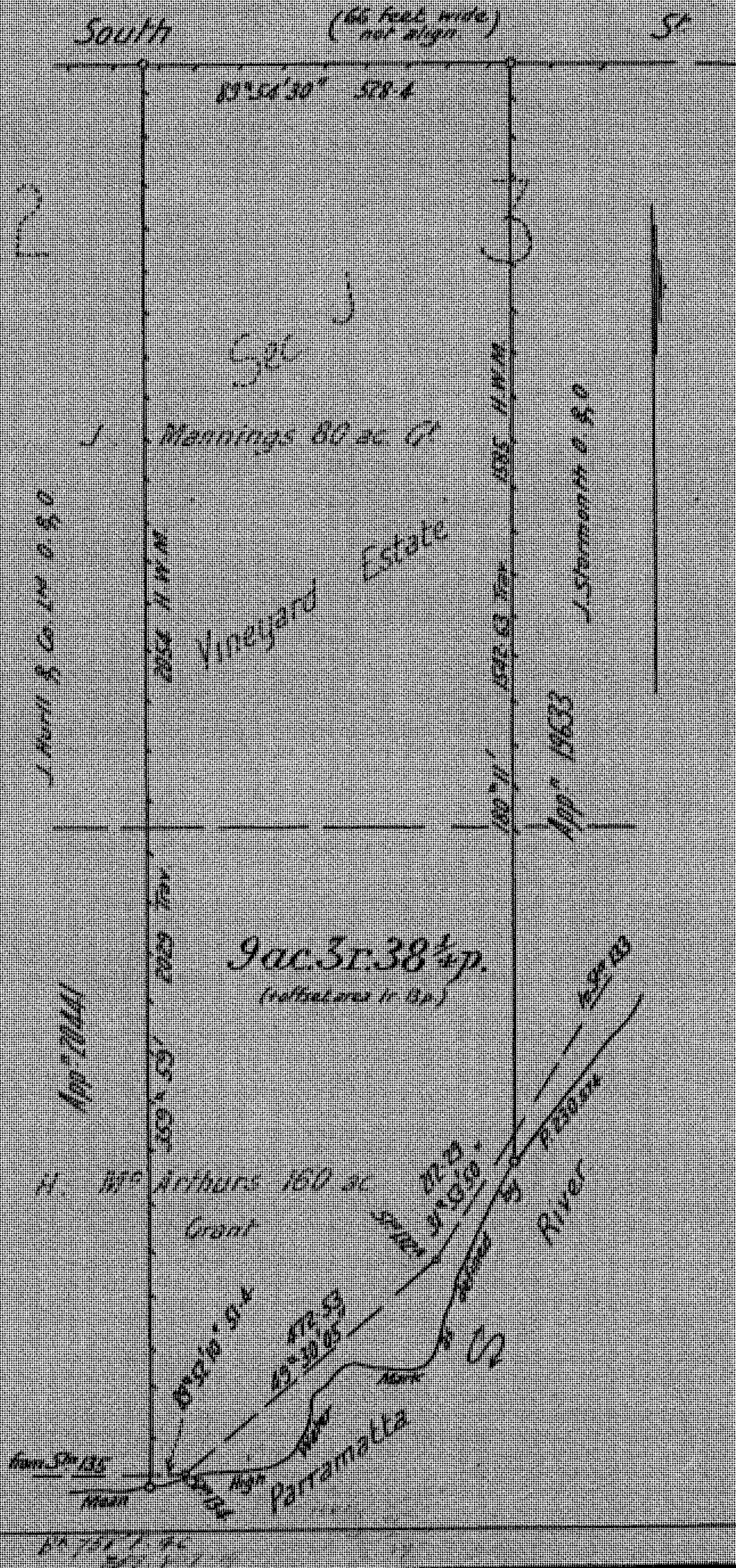
D. P. 260535

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 2nd day of October, 1980

F P 80057

Municipality of Ermington & Rydalmere
P.A. 30057

Plan of part of
Lot 3 Sec. J Vineyard Estate Rydalmere
Parish of the Field of Mars County of Cumberland
Scale 2 Chs to an Inch



I certify that this plan has been compiled from the information shewn on R. P. Appns 20441 & 19633 and plan at Lands Dept catalogued P 230. snk and is correct for the purposes of the Real Property Act

Licensed Surveyor

OCT. 28

Signatures and seals only.

THOMAS PERCIVAL SPENCER

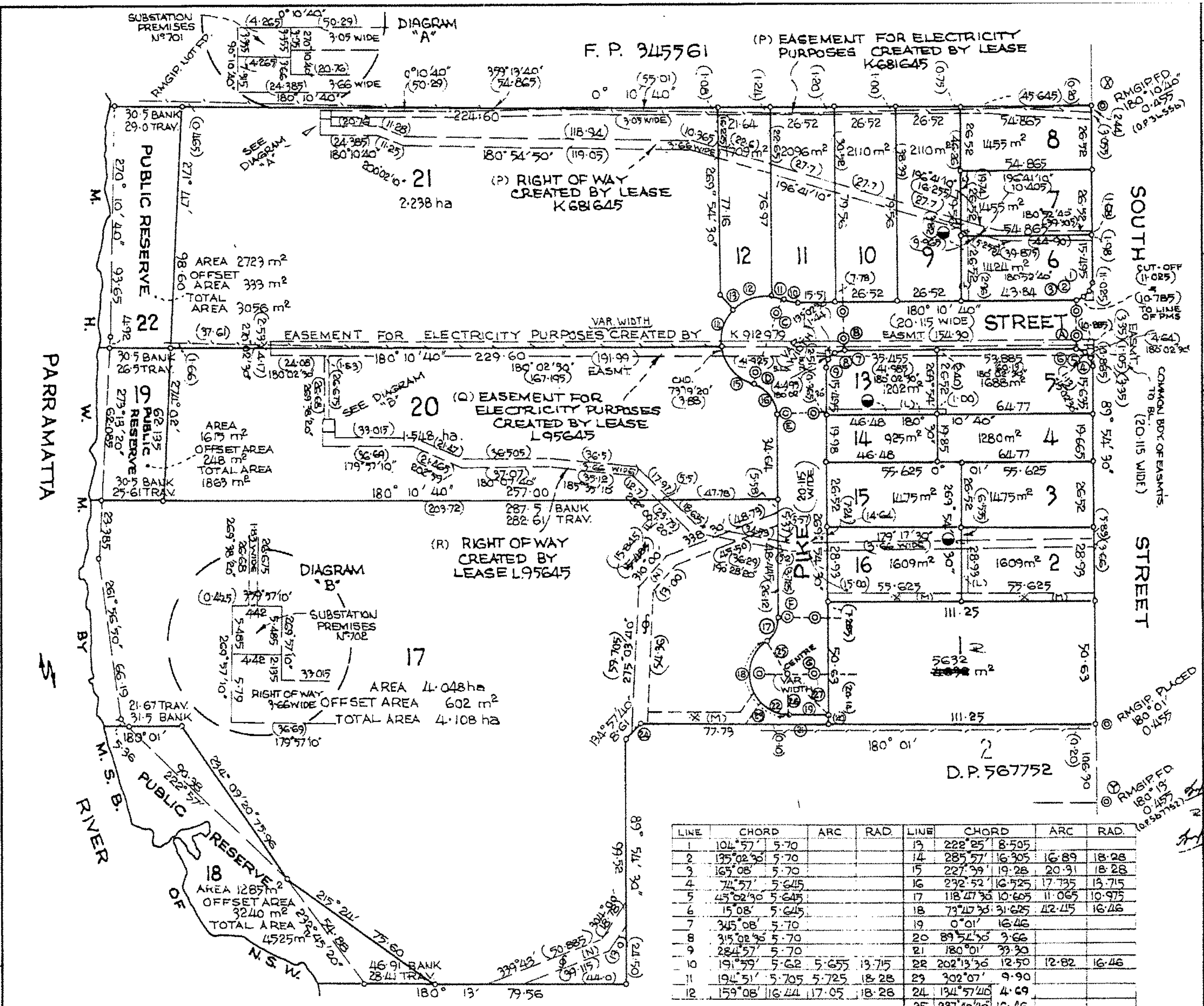
135561

[illegible] attorneys

appointed under [illegible]

appointed under [illegible]

[illegible] attorneys
THOMAS PERCIVAL SPENCER
and
NEIL ALEXANDER [illegible]
who are personally known to [illegible]



(L) ● EASEMENT TO DRAIN WATER ONE WIDE

(M) ✳ EASEMENT TO DRAIN WATER 3·66 WIDE

(N) ∮ EASEMENT TO DRAIN WATER FIVE WIDE

F. P. 69633

LINE	CHORD		ARC	RAD.
1	104°57'	5·70		
2	135°02'30"	5·70		
3	165°08'	5·70		
4	74°57'	5·645		
5	45°02'30"	5·645		
6	15°08'	5·645		
7	345°08'	5·70		
8	315°02'30"	5·70		
9	284°57'	5·70		
10	191°59'	5·62	5·655	13·715
11	194°51'	5·705	5·725	18·28
12	159°08'	16·44	17·05	18·28

LINE	CHORD		ARC	RAD.
13	222°25'	8·505		
14	285°57'	16·305	16·89	18·28
15	227°39'	19·28	20·31	18·28
16	232°52'	16·525	17·735	13·715
17	118°47'30"	10·605	11·065	10·975
18	73°47'30"	31·625	42·45	16·46
19	0°01'	16·46		
20	89°52'30"	3·66		
21	180°01'	33·30		
22	202°13'30"	12·50	12·82	16·46
29	302°07'	9·90		
24	134°57'40"	4·69		
25	237°40'40"	16·46		
26	89°54'30"	16·46		
27	44°57'40"	29·30		

SCHEDULE OF PERMANENT MARKS DRILL HOLES & WINGS IN KERBS

A	90°10'40"	3·56	90°10'40"	16·56
B	90°10'40"	3·56	90°10'40"	16·56
C	289°49'	3·46	289°49'	32·92
D	109°49'	3·56	109°49'	33·02
E	179°54'30"	3·56	179°54'30"	16·56
F	179°54'30"	3·56	179°54'30"	16·56
G	359°54'30"	12·90	179°54'30"	12·90

--- TO CENTRES

M.M. DP 253646

D. P. 253646 Ⓔ

Y O 2 2 A I A

Registered: jm 7·6·1977

C.A.: Nº 3340/3682/W/32/3141 OF 1·2·1977

Title System: TORRENS

Purpose: SUBDIVISION

Ref. Map: ERMINGTON RYDALMERE SH 11

Last Plan: D.P 345323 D.P 567752

PLAN OF SUBDIVISION OF LOT 1 IN F.P. 345323 AND LOT 1 IN D.P. 567752

Reduction Ratio 1: 1250
Lengths are in metres.

~~Mun/Shire~~ City PARRAMATTA

Locality: RYDALMERE

Parish: FIELD OF MARS

County: CUMBERLAND

~~This is sheet 1 of my plan~~ in ~~sheets~~.
(Delete if inapplicable).

I, PAUL KEEN of G.H. MARTIN & CUTLER 47A KING ST. SYDNEY a surveyor registered under the Surveyors Act, 1929, amended, hereby certify that the survey represented in this plan is accurate and has been made *(1) by me (2) ~~under my immediate supervision~~ in accordance with the Survey Practice Regulations, 1933, and was completed on † 22 ND. DEC. 1976

Signature P Keen

Surveyor registered under Surveyors Act, 1929, as amended.
Datum Line of Azimuth. X–Y
*Strike out either (1) or (2) †Insert date of survey

Panel for use only for statements of intention to dedicate public roads or to create public reserves, drainage reserves, easements or restrictions as to user.

IT IS INTENDED TO DEDICATE PIKE STREET TO THE PUBLIC FOR ROAD. ~~LOTS 18, 19, 22 AS PUBLIC RESERVE~~

∮ PURSUANT TO SEC. 88B OF THE CONVEYANCING ACT IT IS INTENDED TO CREATE
(1) EASEMENTS TO DRAIN WATER ONE WIDE
(2) EASEMENTS TO DRAIN WATER 3·66 WIDE
(3) EASEMENT TO DRAIN WATER FIVE WIDE
AS SET OUT IN THE ACCOMPANYING INSTR. SIGNED BY THE COUNCIL CLERK

IT IS INTENDED TO CREATE LOTS 18, 19, & 22 AS PUBLIC RESERVE

THE DEDICATION OF PIKE STREET IS SUBJECT TO EASEMENTS FOR ELECTRICITY PURPOSES & AND A RIGHT OF WAY CREATED BY K.912979 L. 95645

∮ INSTRUMENT FILED AS Q92950

Qualified statement of intention to dedicate Pike Street accepted by Council
Council Clerk.

DP 253646

Council Clerk's Certificate

I hereby certify that —

(a) the requirements of the Local Government Act, 1919, (other than the requirements for the registration of plans), and

*(b) the requirements of section 34B of the †Metropolitan Water, Sewerage and Drainage Act, 1924, as amended. †Hunter District Water, Sewerage, and Drainage Act, 1938, as amended

have been complied with by the applicant in relation to the proposed subdivision
(Insert "new road", "subdivision" or "consolidated lot") set out herein

Subdivision No. 3340/3682/W/32/3141

Date 1st February 1977

(Signature)
Council Clerk

*This part of certificate to be deleted where the application is only for a consolidated lot or the opening of a new road or where the land to be subdivided is wholly outside the area of operations of the Metropolitan Water Sewerage and Drainage Board and the Hunter District Water Board.
†Delete if inapplicable.

M.P.D.

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

SURVEYOR'S REFERENCE 268-72

PLAN FORM 2

Plan Drawing only to appear in this space

DP567752

Signatures and seals only.

THE COMMON SEAL OF
WILLIAM HILES LIMITED
WAS HERETO AFFIXED
PURSUANT TO A RESOLUTION
OF THE BOARD OF DIRECTORS
IN THE PRESENCE OF

DIRECTOR

SECRETARY

Associated Securities ~~A.G.C. (ADVANCES)~~ LIMITED
MORTGAGEE UNDER MORTGAGE
NO. N~~2G4024~~ CONSENTS TO THE
WITHIN SUBDIVISION. SIGNED ON
BEHALF OF Associated Securities ~~A.G.C. (ADVANCES)~~ LIMITED
BY ITS ATTORNEY:

J.P.

THE COMMON SEAL OF
REGIONAL LANDHOLDINGS
LIMITED
WAS HERETO AFFIXED
PURSUANT TO A RESOLUTION
OF THE BOARD OF DIRECTORS
IN THE PRESENCE OF

DIRECTOR

SECRETARY

MOSCOW NARODNY BANK LIMITED
MORTGAGEE UNDER MORTGAGE
N237023 CONSENTS TO THE
WITHIN SUBDIVISION. SIGNED
ON BEHALF OF MOSCOW NARODNY
BANK LIMITED BY ITS ATTORNEY

V. G. Keeney

Council Clerk's Certificate

I hereby certify that —

(a) the requirements of the Local Government Act, 1919 (other than the requirements for the registration of plans), and

*(b) the requirements of section 349 of the †Metropolitan Water, Sewerage and Drainage Act, 1924, as amended. †Hunter District Water, Sewerage, and Drainage Act, 1938, as amended

have been complied with by the applicant in relation to the proposed SUBDIVISION
(insert "new road", "subdivision" or "consolidated lot") set out herein

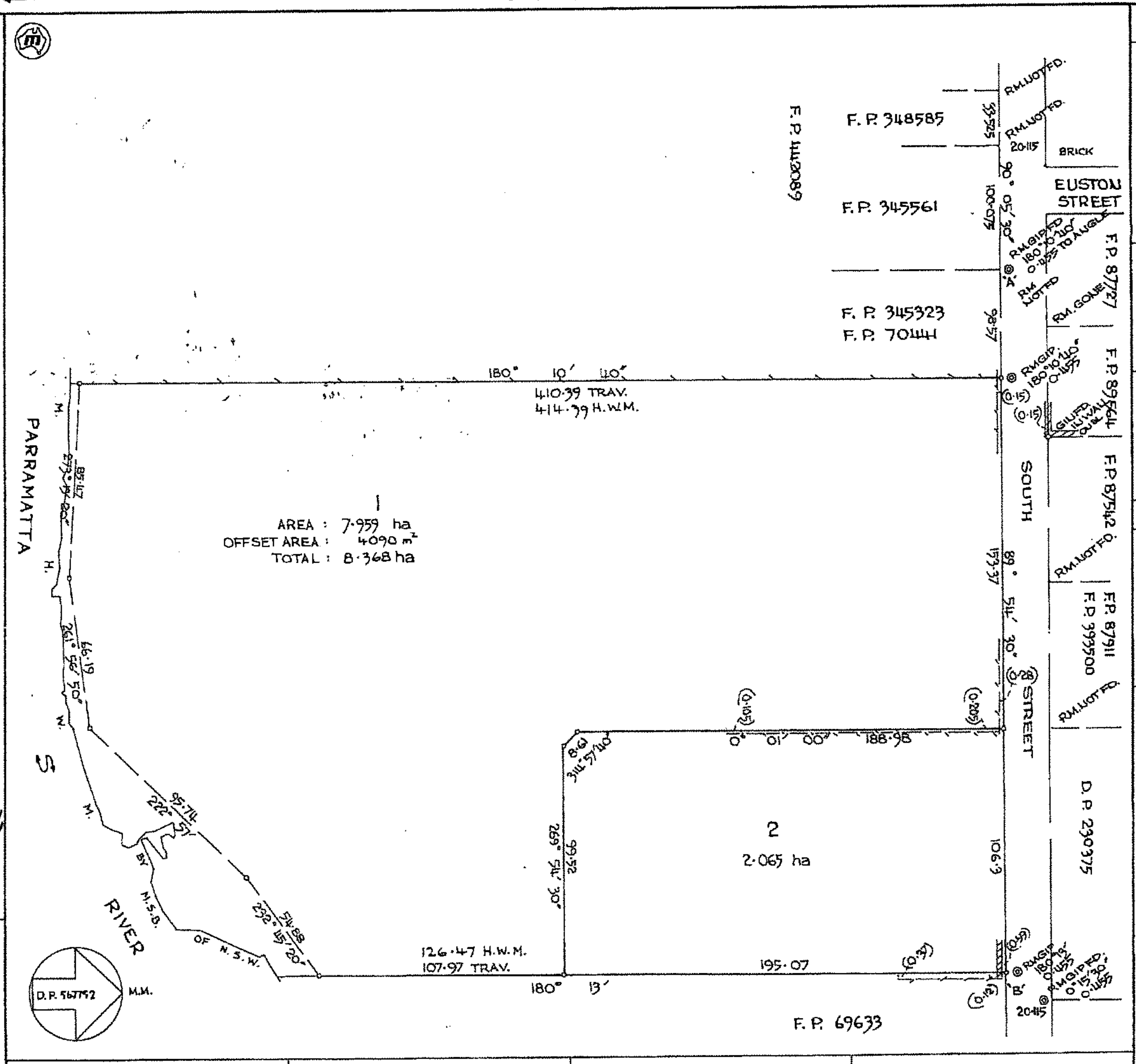
Subdivision No. 2953/7704/2/32/2400

Date 14/8/73

(Signature) Council Clerk

*This part of certificate to be deleted where the application is only for a consolidated lot or the opening of a new road or where the land to be subdivided is wholly outside the areas of operations of the Metropolitan Water Sewerage and Drainage Board and the Hunter District Water Board.
†Delete if inapplicable.

MPD.



WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

* OFFICE USE ONLY

D. P. 567752

N O O 2 A I A

Registered: 21.2.1974

C.A.: Nº 2953/7704/2/32/2400 OF 14.8.73

Title System: TORRENS

Purpose: SUBDIVISION

Ref. Map: ERMINGTON-RYDALMERE 5K II

Last Plan: D.P. 80057 D.P. 345323

PLAN OF SUBDIVISION
OF THE LAND IN
CERTIFICATES OF TITLE
VOLUME 4361 FOLIO 84.
VOLUME 4796 FOLIO 103

Reduction Ratio 1: 1250
Lengths are in metres.

Mun./Shire City: PARRAMATTA

Locality: RYDALMERE

Parish: FIELD OF MARS

County: CUMBERLAND

~~This is sheet 1 of my plan in sheets.~~
(Delete if inapplicable).

I, PAUL KEEN
of G.H. MARTIN & CUTLER
a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan is accurate and has been made *(1) by me (2) under my immediate supervision in accordance with the Survey Practice Regulations, 1933, and was completed on † 16TH MAY 1973.

Signature P Keen

Surveyor registered under Surveyors Act, 1929, as amended.
Datum Line of Azimuth. A–B (D.P. 80057)
*Strike out either (1) or (2). †Insert date of survey.

Panel for use only for statements of intention to dedicate public roads or to create public reserves, drainage reserves, easements or restrictions as to user.

MARITIME SERVICES BOARD APPROVAL TO DEFINITION OF HIGH WATER MARK FILED WITH PAPERS

SURVEYOR'S REFERENCE: 268/72

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 24th day of January, 1977

CONVERSION TABLE ADDED IN
DEPARTMENT OF LANDS

DP 80057

FEET	INCHES	METRES
-	6	0.152
-	6 1/2	0.165
-	8	0.203
-	9	0.229
-	10 5/8	0.270
2	5	0.737
3	4	1.016
4	10	1.473
5	10 3/4	1.797
12	-	3.658
42	-	12.802
50	-	15.240
50	8 1/4	15.450
54	-	16.459
66	-	20.117
100	-	30.480
101	3 3/8	30.871
108	-	32.918
125	7	38.278
150	-	45.720
198	8 5/8	60.569
204	-	62.179
300	-	91.440

LINKS	METRES
51.4	10.340
134	26.957
135	27.158
212.29	42.706
472.59	95.058
520.4	106.297
1542.60	310.320
1585	318.851
2029	408.170
2054	413.199

AC	RD	P	SQ M
-	1	19 1/2	1505
-	2	4 3/4	2144

AC	RD	P	HA
9	3	38 1/4	4.042
80	-	-	32.37
160	-	-	64.75

B395358

F.P.345323.

Plan Form No. 6 (for transfers, leases, etc).

Municipality of Ermington and Rydalmere
Shire of

PLAN

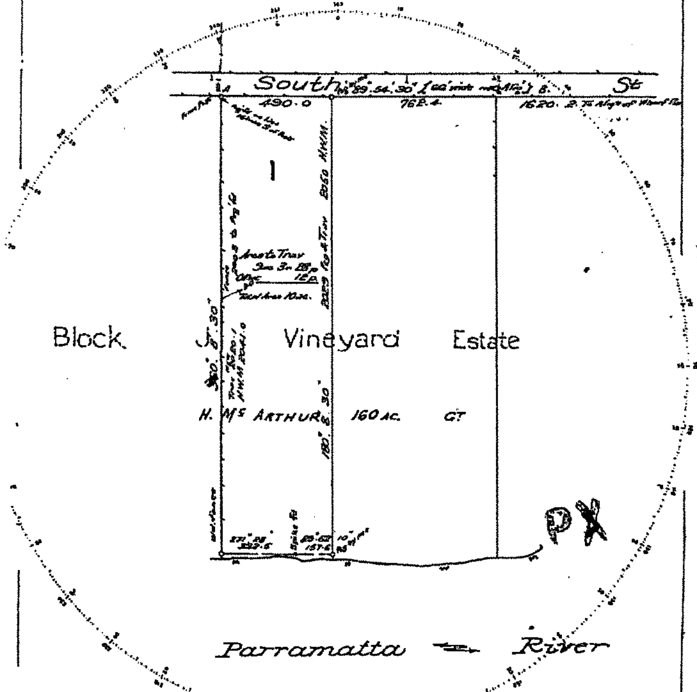
of part of Land in C of T Vol 2701 Fol 229.

Parish of Field of Mars County of Cumberland

Scale 4 Chains to an Inch.

B 395358

M.P.S. (R.P.) 45323



FOR EVIDENCE OF COUNCIL'S APPROVAL SEE DEALING

c/A No 4 of 10-1-1922

Note. from Spike B. Broad arrow on Oak 300°35' 40.0
214°45' 11.24 Blazed Oak

I William Arthur Chadwick of Sydney. Licensed Surveyor, specially Licensed under the Real Property Act, do hereby solemnly and sincerely declare that the boundaries and measurements shown in this plan are correct for the purposes of the said Act, and that the survey of the land to which the plan relates has been made ~~under my immediate supervision~~ and I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of the Oaths Act, 1900.

Subscribed and declared before me at this 22nd day of December A.D. 1921

William Chadwick J.P.

William A. Chadwick
Licensed Surveyor.

Datum line of Azimuth A.B.

Date of Survey ?

693 P.92 19.8.46

* Here add by me or under my immediate supervision as the case may be

This is the plan marked "F" referred to in Memorandum of Transfer [illegible]
Dated 2 July 1924

Signatures of parties to be made in this margin.

[illegible] & CO. LTD.

DIRECTORS

M

CONVERSION TABLE ADDED IN DEPARTMENT OF LANDS

DP 345323

FEET INCHES	METRES
66 -	20.117
LINKS	METRES
2	0.402
11.24	2.261
15	3.018
40	8.047
99.1	19.936
101.1	20.338
157.6	31.704
332.5	66.888
490	98.572
762.4	153.370
1620.2	325.932
2003	402.940
2020.1	406.379
2029	408.170
2041	410.584
2050	412.394
AC RD P	SQ M
- - 12	303.5
AC RD P	HA
9 3 28	4.016
10 - -	4.047
160 - -	64.75

10 20 30 40 50 60 70 80 90 100 110 120 130 140 Table of mm

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 12th day of July, 1978

1

Appendix C4

Site Photographs

Photo 1: Commercial / industrial warehousing north of the site

Photo 2: Raised grass mounds in east portion of site

Douglas PARTNERS	**Site Photographs**	PROJECT:	231248.01
	Reid Park Valley – Proposed Pedestrian and Cycleway	PLATE No:	1
	Reid Park Valley, Rydalmere NSW	REV:	0
	CLIENT	City of Parramatta Council	

Photo 3: Raised grass mounds in west portion of site

Site Photographs	PROJECT:	231248.01
Reid Park Valley – Proposed Pedestrian and Cycleway	PLATE No:	2
Reid Park Valley, Rydalmere NSW	REV:	0
CLIENT	City of Parramatta Council	

Appendix D

Data Quality Objectives

1. Data quality objectives

The DSI has been devised broadly in accordance with the seven-step data quality objectives (DQO) process which is provided in Appendix B, Schedule B2 of NEPC *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]* (NEPC, 2013).

Table 1: Data quality objectives

Step	Summary
1: State the problem	In accordance with the project brief, the objective of the DSI is to inform the design development of the potential works (Civil, Structural and Electrical) and determine the presence, type and extent of ground contamination (if any) to inform preparation of a RAP, WHS contamination site management procedures and to inform costs associated with bulk earthworks including the disposal off site of any contaminated site material during construction works. A preliminary conceptual site model (CSM) has been prepared (Section 9) and was used to inform the intrusive investigation design to address the objective. The project team consisted of experienced environmental engineers and scientists working in the roles of Project Principal, Project Reviewer, Project Manager and field staff.
2: Identify the decisions / goal of the study	The site history has identified possible contaminating previous uses and features which are identified in the CSM (Section 9). The CSM identifies the associated CoPC and the likely impacted media. The site assessment criteria (SAC) for each of the CoPC are detailed in Appendix F. The decision is to establish whether or not the results fall below the SAC. On this basis, an assessment of the site's contamination status and exposure risk will be derived and a decision made on whether (or not) further assessment and / or remediation will be required.
3: Identify the information inputs	Inputs will be the analytical results for the CoPC (identified in the CSM, Section 9) from NATA accredited laboratories and methods, where possible. The SAC for each of the CoPC are detailed in Appendix F. A photo-ionisation detector (PID) will be used on-site to screen soils for VOC. PID readings will be used to inform sample selection for laboratory analysis.
4: Define the study boundaries	The lateral boundaries of the investigation area are shown on Drawing 1, Appendix A. The vertical boundaries are to the extent of contamination impact as determined from the site history assessment and site observations. The assessment is limited to the timeframe over which the field works were undertaken. Constraints to the assessment are identified and discussed in the conclusions of the report, Sections 13 and 15.
5: Develop the analytical approach (or decision rule)	The decision rule is to compare all analytical results with the SAC (Appendix F, based on NEPC (2013)). Where guideline values are absent, other sources of guideline values accepted by NEPC (2013) shall be adopted where possible.

Step	Summary
	Where a sample result exceeds the adopted criterion, a further site-specific assessment will be made as to the risk posed by the presence of that contaminant(s). Initial comparisons will be with individual results then, where required, summary statistics (including mean, standard deviation and 95% upper confidence limit (UCL) of the arithmetic mean (95% UCL)) to assess potential risks posed by the site contamination. Quality control results are to be assessed according to their relative percent difference (RPD) values. For field duplicates, triplicates and laboratory results, RPD values should generally be below 30%; for field blanks and rinsates, results should be at or less than the limits of reporting (NEPC, 2013). The field and laboratory quality assurance assessment is included in Appendix J.
6: Specify the performance or acceptance criteria	Baseline condition: Contaminants at the site exceed the human health and environmental SAC and pose a potentially unacceptable risk to receptors (null hypothesis). Alternative condition: Contaminants at the site comply with the human health and environmental SAC and as such, 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 is assumed that the baseline condition is true. Uncertainty that may exist due to the above potential decision errors shall be mitigated as follows: • The statistical assessment, where appropriate and required. • Consideration of data gaps and qualitative data in conjunction with quantitative data in assessing contamination risk at the site.
7: Optimise the design for obtaining data	As the purpose of the investigation is to assess the contamination status of the site, the sampling program is reliant on professional judgement to identify and sample the potentially affected areas. Further details regarding the proposed sampling plan are presented in Section 10.

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.

Appendix E

Sampling Methodology

1. Guidelines

The following key guidelines were consulted for the field work methodology:

- NEPC *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]* (NEPC, 2013).

2. Soil sampling

Soil sampling is carried out in accordance with Douglas' standard operating procedures. The general sampling and sample management procedures comprise:

- Collect soil samples directly from the solid flight auger;
- Place samples into laboratory-prepared glass jars with Teflon lined lids, capping immediately and minimising headspace within the sample jar;
- Collect replicate samples in zip-lock bags for photoionisation detector (PID) screening;
- Collect ~500 ml samples in zip-lock bags for fibrous asbestos and asbestos fines (FA and AF) analysis;
- Wear a new disposable nitrile glove for each sample point thereby minimising potential for cross-contamination;
- Collect 10% replicate samples for quality control (QC) purposes;
- Label sample containers with individual and unique identification details, including project number, sample location and sample depth (where applicable);
- Collect soil samples for acid sulfate soils analysis at every 0.5 m depth interval and at least one sample for every change in strata observed. Place immediately into zip-lock plastic bags after minimising air content and potential for moisture loss and immediately place on ice in a cooled, insulated and sealed container for transport to the laboratory. Once in the laboratory place the samples in a freezer;
- Place samples into a cooled, insulated and sealed container for transport to the laboratory; and
- Use chain of custody documentation.

2.1 Field testing

Field testing is carried out in accordance with Douglas' standard operating procedures. The general sampling and sample management procedures comprise:

PID Field Test

- Calibrate the PID with isobutylene gas at 100 ppm and with fresh air prior to commencement of each successive day's field work;
- Allow the headspace in the PID zip-lock bag samples to equilibrate; and
- Screen using the PID.

3. 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.

Appendix F

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).

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).

The following inputs are relevant to the selection and / or derivation of the SAC:

- Land use: recreational.
  - 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.
- Soil type: sand.

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-C
Metals	
Arsenic	300
Cadmium	90
Chromium (VI)	300
Copper	17 000

Contaminant	HIL-C
Lead	600
Mercury (inorganic)	80
Nickel	1200
Zinc	30 000
PAH	
B(a)P TEQ	3
Total PAH	300
Phenols	
Phenol	40 000
Pentachlorophenol	120
OCP	
DDT+DDE+DDD	400
Aldrin and dieldrin	10
Chlordane	70
Endosulfan	340
Endrin	20
Heptachlor	10
HCB	10
Methoxychlor	400
OPP	
Chlorpyrifos	250
PCB	
PCB	1

Table 2: Health screening levels (mg/kg)

Contaminant	HSL-C	HSL-C	HSL-C
SAND	**0 m to <1 m**	**1 m to <2 m**	**2 m to <4 m**
Benzene	NL	NL	NL
Toluene	NL	NL	NL
Ethylbenzene	NL	NL	NL
Xylenes	NL	NL	NL
Naphthalene	NL	NL	NL
TRH F1	NL	NL	NL

Contaminant	HSL-C	HSL-C	HSL-C
TRH F2	NL	NL	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'

The HSL for direct contact derived from CRC CARE (2011) are in Table 3.

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

Contaminant	DC HSL-C	DC HSL-IMW
Benzene	120	1100
Toluene	18 000	120 000
Ethylbenzene	5300	85 000
Xylenes	15 000	130 000
Naphthalene	1900	29 000
TRH F1	5100	82 000
TRH F2	3800	62 000
TRH F3	5300	85 000
TRH F4	7400	120 000

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

2.2 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 4.

Table 4: Health screening levels for asbestos

Form of asbestos	HSL-C
ACM	0.02%
FA and AF	0.001%
FA and AF and ACM	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.

2.3 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 Table 6, with inputs into their derivation shown in Table 5.

Table 5: Inputs to the derivation of the ecological investigation levels

Variable	Input	Rationale
Age of contaminants	"Aged" (>2 years)	No recent development onsite
pH	7.26	Average calculated from laboratory results
CEC	16.76 cmol_c/kg	Average calculated from laboratory results
Clay content	10%	Assumed as a conservative measure
Traffic volumes	High	-
State / Territory	NSW	-

Table 6: Ecological investigation levels (mg/kg)

Contaminant	EIL-A-B-C
Metals	
Arsenic	100
Copper	230
Nickel	240
Chromium III	410
Lead	1100
Zinc	730
PAH	
Naphthalene	170
OCP	
DDT	180

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

2.4 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 7.

Table 7: 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*
TRH F2	Coarse/ Fine	120*
TRH F3	Coarse	300
TRH F4	Coarse	2800
B(a)P	Coarse	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

2.5 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 8.

Table 8: 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

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. References

CRC CARE. (2011). *Health screening levels for petroleum hydrocarbons in soil and groundwater.* Parts 1 to 3, Technical Report No. 10: Cooperative Research Centre 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.

Appendix G

Summary Results Table

Douglas
PARTNERS

Table A1: Summary of Results of Soil Analysis

			Priority metals								Priority PAH				PAH												Priority TRH						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	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(g,h,i)perylene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	Pyrene	TRH C6 - C10	TRH >C10-C16	F1 ((C6-C10)-BTEX)	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)	F4 (>C34-C40)	TRH C6 - C9	TRH C10-C36	Benzene	Toluene	Ethylbenzene	Total Xylenes
		PQL	4	0.4	1	1	1	0.1	1	1	1	0.05	0.5	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	25	50	25	50	100	100	25	50	0.2	0.5	1	1
Sample ID	Depth	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	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
BH301	0 - 0.1 m	25/11/24	**8**	<0.4	**25**	**31**	**57**	**0.1**	**13**	**100**	<1	<0.05	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH301	0.9 - 1 m	25/11/24	**5**	<0.4	**15**	**6**	**24**	<0.1	**3**	**14**	<1	<0.05	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH301	1.5 - 1.6 m	25/11/24	**9**	<0.4	**9**	**8**	**14**	<0.1	**5**	**18**	<1	<0.05	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH301	1.9 - 2 m	25/11/24	**11**	<0.4	**6**	**4**	**5**	<0.1	<1	**2**	<1	<0.05	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH302	0 - 0.1 m	25/11/24	**7**	<0.4	**20**	**25**	**28**	<0.1	**12**	**52**	<1	<0.05	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH302	1.4 - 1.5 m	25/11/24	**10**	<0.4	**20**	**18**	**84**	<0.1	**6**	**71**	<1	<0.05	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH303	0.1 - 0.2 m	25/11/24	**6**	<0.4	**38**	**70**	**98**	<0.1	**55**	**220**	<1	**0.06**	<0.5	**0.57**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**0.1**	<0.1	<0.1	<0.1	**0.1**	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BD2/20241125	0 m	25/11/24	**10**	<0.4	**44**	**85**	**130**	<0.1	**63**	**280**	<1	<0.05	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH303	0.4 - 0.5 m	25/11/24	**8**	<0.4	**31**	**65**	**79**	<0.1	**56**	**130**	<1	**0.06**	<0.5	**0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**0.2**	<0.1	<0.1	**0.1**	**0.2**	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH304	0.1 - 0.2 m	25/11/24	**9**	<0.4	**25**	**35**	**51**	<0.1	**16**	**100**	<1	**0.09**	<0.5	**0.65**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**0.1**	<0.1	<0.1	<0.1	**0.1**	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH304	0.4 - 0.5 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH304	0.9 - 1 m	25/11/24	<4	<0.4	**9**	**12**	**32**	<0.1	**4**	**35**	<1	**0.2**	<0.5	**2**	<0.1	<0.1	<0.1	**0.2**	**0.1**	**0.2**	<0.1	**0.4**	<0.1	**0.1**	**0.1**	**0.3**	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH305	0.1 - 0.2 m	25/11/24	**6**	**0.9**	**27**	**60**	**91**	**0.1**	**17**	**350**	<1	**0.1**	<0.5	**0.97**	<0.1	<0.1	<0.1	<0.1	**0.1**	**0.1**	<0.1	**0.1**	<0.1	<0.1	<0.1	**0.1**	<25	<50	<25	<50	**160**	<100	<25	**130**	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH305	0.4 - 0.5 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH306	0.1 - 0.2 m	25/11/24	**6**	<0.4	**22**	**49**	**69**	**0.1**	**18**	**150**	<1	**0.2**	<0.5	**2.6**	<0.1	<0.1	<0.1	**0.2**	**0.2**	**0.2**	<0.1	**0.4**	<0.1	**0.1**	**0.2**	**0.4**	<25	<50	<25	<50	**110**	<100	<25	**100**	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BD5/20241125	0 m	25/11/24	**7**	**0.9**	**39**	**110**	**110**	<0.1	**18**	**420**	<1	**0.1**	<0.5	**0.54**	<0.1	<0.1	<0.1	<0.1	**0.1**	<0.1	<0.1	**0.2**	<0.1	<0.1	<0.1	**0.2**	<25	<50	<25	<50	**170**	<100	<25	**150**	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH306	0.4 - 0.5 m	25/11/24	<4	<0.4	**16**	**33**	**52**	<0.1	**6**	**30**	<1	**0.4**	<0.5	**3.7**	<0.1	<0.1	**0.1**	**0.3**	**0.3**	**0.4**	<0.1	**0.6**	<0.1	**0.2**	**0.3**	**0.6**	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH306	0.9 - 1 m	25/11/24	**5**	<0.4	**14**	**17**	**21**	<0.1	**7**	**52**	<1	**0.1**	<0.5	**0.82**	<0.1	<0.1	<0.1	<0.1	<0.1	**0.1**	<0.1	**0.2**	<0.1	<0.1	**0.2**	**0.2**	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH307	0.1 - 0.2 m	25/11/24	**4**	<0.4	**20**	**50**	**81**	<0.1	**84**	**110**	<1	<0.05	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH307	0.9 - 1 m	25/11/24	**5**	<0.4	**8**	**7**	**12**	<0.1	**4**	**19**	<1	<0.05	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH308	0.1 - 0.2 m	25/11/24	<4	<0.4	**17**	**46**	**61**	<0.1	**60**	**190**	<1	**0.2**	<0.5	**2.4**	<0.1	<0.1	<0.1	**0.2**	**0.2**	**0.2**	<0.1	**0.4**	<0.1	**0.1**	**0.1**	**0.4**	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH308	0.4 - 0.5 m	25/11/24	**11**	<0.4	**35**	**50**	**52**	**0.2**	**14**	**100**	<1	**0.06**	<0.5	**0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**0.2**	<0.1	<0.1	**0.1**	**0.2**	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH309	0.1 - 0.2 m	25/11/24	**4**	<0.4	**14**	**39**	**63**	<0.1	**36**	**110**	<1	**0.2**	<0.5	**2.6**	<0.1	<0.1	<0.1	**0.2**	**0.2**	**0.2**	<0.1	**0.4**	<0.1	**0.2**	**0.1**	**0.4**	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH310	0 - 0.1 m	25/11/24	**13**	<0.4	**31**	**40**	**63**	<0.1	**18**	**150**	<1	**0.4**	**0.6**	**4.6**	<0.1	<0.1	<0.1	**0.4**	**0.4**	**0.4**	<0.1	**0.6**	<0.1	**0.2**	**0.4**	**0.7**	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH310	0.9 - 1 m	25/11/24	<4	<0.4	**15**	**90**	**61**	<0.1	**10**	**75**	<1	**0.06**	<0.5	**0.2**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**0.1**	<0.1	<0.1	<0.1	<0.1	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH310	1.9 - 2 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH311	0 - 0.1 m	25/11/24	<4	<0.4	**15**	**46**	**70**	<0.1	**9**	**360**	<1	**0.2**	<0.5	**2.3**	<0.1	<0.1	<0.1	**0.2**	**0.2**	**0.2**	<0.1	**0.3**	<0.1	**0.1**	**0.1**	**0.4**	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH311	0.9 - 1 m	25/11/24	**5**	<0.4	**45**	**42**	**38**	<0.1	**22**	**110**	<1	**0.09**	<0.5	**0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	**0.1**	<0.1	**0.2**	<0.1	<0.1	<0.1	**0.1**	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	NL 170	- 0.7	3 -	300 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- 120	NL 180	NL -	- 300	- 2,800	- -	- -	NL 50	NL 85	NL 70	NL 105
BH308M	0.1 - 0.2 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH302 - [TRIPLICATE]	0 - 0.1 m	25/11/24	**9**	<0.4	**27**	**32**	**45**	<0.1	**23**	**87**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH307 - [TRIPLICATE]	0.1 - 0.2 m	25/11/24	**4**	<0.4	**19**	**53**	**38**	<0.1	**89**	**99**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			300 100	90 -	300 410	17,000 230	600 1,100	80 -	1,200 240	30,000 730	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH303	0.2 - 0.4 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

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 Recreational C including public open space

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

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

Table A1: Summary of Results of Soil Analysis

			riority pheno	Priority OCP									OCP						Priority OPP	OPP															PCB	Asbestos (FA/AF)				Asbestos, Other
			Total Phenolics	DDT+DDE+DDD[c]	Aldrin + Dieldrin	Total Chlordane	Total Endosulfan	Endrin	Heptachlor	Hexachlorobenzene	Methoxychlor	Mirex	Heptachlor Epoxide	Endrin Aldehyde	alpha-BHC	beta-BHC	delta-BHC	Lindane	Chlorpyriphos	Azinphos methyl (Guthion)	Bromophos-ethyl	Chlorpyriphos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Ronnel (fenchlorphos)	Fenitrothion	Fenthion	Malathion	Parathion	Parathion-methyl	Methidathion	Fenamiphos	Total PCB	Asb_Sample_mass	ACM >7mm Estimation	FA and AF Estimation	FA and AF Estimation	Asbestos Summary
		PQL	5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	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
Sample ID	Depth	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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	g	g	g	%(w/w)	
BH301	0 - 0.1 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**594.14**	-	-	<0.001	-
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	0.001 -	
BH301	0.9 - 1 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**755.5**	-	-	<0.001	-
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	0.001 -	
BH301	1.5 - 1.6 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**596.66**	-	-	<0.001	-
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	0.001 -	
BH301	1.9 - 2 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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BH302	0 - 0.1 m	25/11/24	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**763.17**	**0.2754**	-	<0.001	**Detected**
			120 -	400 180	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	- -	- -	- -	- -	- -	- -	250 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	1 -	- -	- -	- -	0.001 -	
BH302	1.4 - 1.5 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**655.25**	-	-	<0.001	-
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	0.001 -	
BH303	0.1 - 0.2 m	25/11/24	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**737.51**	-	**0.007**	<0.001	**Detected**
			120 -	400 180	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	- -	- -	- -	- -	- -	- -	250 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	1 -	- -	- -	- -	0.001 -	
BD2/20241125	0 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	
BH303	0.4 - 0.5 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**683.08**	**0.1673**	-	<0.001	**Detected**
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	0.001 -	
BH304	0.1 - 0.2 m	25/11/24	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**494.32**	-	-	<0.001	-
			120 -	400 180	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	- -	- -	- -	- -	- -	- -	250 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	1 -	- -	- -	- -	0.001 -	
BH304	0.4 - 0.5 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**652.09**	-	-	<0.001	-
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	0.001 -	
BH304	0.9 - 1 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	
BH305	0.1 - 0.2 m	25/11/24	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**537.61**	**1.1648**	**0.5203**	**0.0968**	**Detected**
			120 -	400 180	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	- -	- -	- -	- -	- -	- -	250 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	1 -	- -	- -	- -	0.001 -	
BH305	0.4 - 0.5 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**Detected**
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	
BH306	0.1 - 0.2 m	25/11/24	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**468.22**	**0.1353**	-	<0.001	**Detected**
			120 -	400 180	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	- -	- -	- -	- -	- -	- -	250 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	1 -	- -	- -	- -	0.001 -	
BD5/20241125	0 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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BH306	0.4 - 0.5 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**756.3**	**0.2635**	-	<0.001	**Detected**
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	0.001 -	
BH306	0.9 - 1 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	
BH307	0.1 - 0.2 m	25/11/24	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**849.81**	**0.1436**	-	<0.001	**Detected**
			120 -	400 180	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	- -	- -	- -	- -	- -	- -	250 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	1 -	- -	- -	- -	0.001 -	
BH307	0.9 - 1 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**627.2**	-	-	<0.001	-
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	0.001 -	
BH308	0.1 - 0.2 m	25/11/24	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**751.1**	-	-	<0.001	-
			120 -	400 180	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	- -	- -	- -	- -	- -	- -	250 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	1 -	- -	- -	- -	0.001 -	
BH308	0.4 - 0.5 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**556.08**	**0.0654**	-	<0.001	**Detected**
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	0.001 -	
BH309	0.1 - 0.2 m	25/11/24	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**707.14**	-	**0.1196**	**0.0169**	**Detected**
			120 -	400 180	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	- -	- -	- -	- -	- -	- -	250 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	1 -	- -	- -	- -	0.001 -	
BH310	0 - 0.1 m	25/11/24	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**595.35**	-	**0.0452**	**0.0076**	**Detected**
			120 -	400 180	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	- -	- -	- -	- -	- -	- -	250 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	1 -	- -	- -	- -	0.001 -	
BH310	0.9 - 1 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**347.93**	-	-	<0.001	-
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	0.001 -	
BH310	1.9 - 2 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	
BH311	0 - 0.1 m	25/11/24	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**604.22**	-	**0.0315**	**0.0052**	**Detected**
			120 -	400 180	10 -	70 -	340 -	20 -	10 -	10 -	400 -	20 -	- -	- -	- -	- -	- -	- -	250 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	1 -	- -	- -	- -	0.001 -	
BH311	0.9 - 1 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**429.09**	**3.7635**	**0.3285**	**0.0766**	**Detected**
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	0.001 -	
BH308M	0.1 - 0.2 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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BH302 - [TRIPLICATE]	0 - 0.1 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	
BH307 - [TRIPLICATE]	0.1 - 0.2 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	
BH303	0.2 - 0.4 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**Detected**
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	

Lab result

HIL/HSL vESL/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 Recreational C including public open space

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

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

Table A2: Summary of preliminary waste classification

			Metals								TRH	
			Total Arsenic	Cadmium	Total Chromium	Lead	TCLP Lead	Mercury (inorganic)	Nickel	TCLP Nickel	TRH C6 - C9	TRH C10-C36
		PQL	4	0.4	1	1	0.03	0.1	1	0.02	25	50
Sample ID	Depth	Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/L	mg/kg	mg/kg
BH301	0 - 0.1 m	25/11/24	**8**	<0.4	**25**	**57**	-	**0.1**	**13**	-	<25	<50
BH301	0.9 - 1 m	25/11/24	**5**	<0.4	**15**	**24**	-	<0.1	**3**	-	<25	<50
BH301	1.5 - 1.6 m	25/11/24	**9**	<0.4	**9**	**14**	-	<0.1	**5**	-	<25	<50
BH301	1.9 - 2 m	25/11/24	**11**	<0.4	**6**	**5**	-	<0.1	<1	-	<25	<50
BH302	0 - 0.1 m	25/11/24	**7**	<0.4	**20**	**28**	-	<0.1	**12**	-	<25	<50
BH302 - [TRIPLICATE]	0 - 0.1 m	25/11/24	**9**	<0.4	**27**	**45**	-	<0.1	**23**	-	-	-
BH302	1.4 - 1.5 m	25/11/24	**10**	<0.4	**20**	**84**	-	<0.1	**6**	-	<25	<50
BH303	0.1 - 0.2 m	25/11/24	**6**	<0.4	**38**	**98**	<0.03	<0.1	**55**	**0.03**	<25	<50
BD2/20241125	0 m	25/11/24	**10**	<0.4	**44**	**130**	-	<0.1	**63**	-	<25	<50
BH303	0.4 - 0.5 m	25/11/24	**8**	<0.4	**31**	**79**	-	<0.1	**56**	**0.06**	<25	<50
BH304	0.1 - 0.2 m	25/11/24	**9**	<0.4	**25**	**51**	-	<0.1	**16**	-	<25	<50
BH304	0.4 - 0.5 m	25/11/24	-	-	-	-	-	-	-	-	-	-
BH304	0.9 - 1 m	25/11/24	<4	<0.4	**9**	**32**	-	<0.1	**4**	-	<25	<50
BH305	0.1 - 0.2 m	25/11/24	**6**	**0.9**	**27**	**91**	-	**0.1**	**17**	-	<25	**130**
BH305	0.4 - 0.5 m	25/11/24	-	-	-	-	-	-	-	-	-	-
BH306	0.1 - 0.2 m	25/11/24	**6**	<0.4	**22**	**69**	<0.03	**0.1**	**18**	-	<25	**100**
BD5/20241125	0 m	25/11/24	**7**	**0.9**	**39**	**110**	-	<0.1	**18**	-	<25	**150**
BH306	0.4 - 0.5 m	25/11/24	<4	<0.4	**16**	**52**	-	<0.1	**6**	-	<25	<50
BH306	0.9 - 1 m	25/11/24	**5**	<0.4	**14**	**21**	-	<0.1	**7**	-	<25	<50
BH307	0.1 - 0.2 m	25/11/24	**4**	<0.4	**20**	**81**	-	<0.1	**84**	**0.04**	<25	<50
BH307 - [TRIPLICATE]	0.1 - 0.2 m	25/11/24	**4**	<0.4	**19**	**38**	-	<0.1	**89**	-	-	-
BH307	0.9 - 1 m	25/11/24	**5**	<0.4	**8**	**12**	-	<0.1	**4**	-	<25	<50
BH308	0.1 - 0.2 m	25/11/24	<4	<0.4	**17**	**61**	-	<0.1	**60**	**0.03**	<25	<50
BH308M	0.1 - 0.2 m	25/11/24	-	-	-	-	-	-	-	-	-	-
BH308	0.4 - 0.5 m	25/11/24	**11**	<0.4	**35**	**52**	-	**0.2**	**14**	-	<25	<50
BH309	0.1 - 0.2 m	25/11/24	**4**	<0.4	**14**	**63**	-	<0.1	**36**	-	<25	<50
BH310	0 - 0.1 m	25/11/24	**13**	<0.4	**31**	**63**	-	<0.1	**18**	-	<25	<50
BH310	0.9 - 1 m	25/11/24	<4	<0.4	**15**	**61**	-	<0.1	**10**	-	<25	<50
BH310	1.9 - 2 m	25/11/24	-	-	-	-	-	-	-	-	-	-
BH311	0 - 0.1 m	25/11/24	<4	<0.4	**15**	**70**	-	<0.1	**9**	-	<25	<50
BH311	0.9 - 1 m	25/11/24	**5**	<0.4	**45**	**38**	-	<0.1	**22**	-	<25	<50
									Waste Classification Criteria f			
CT1			100	20	100	100	-	4	40	-	650	10,000
SCC1			500	100	1,900	1,500	-	50	1,050	-	650	10,000
TCLP1			-	-	-	-	5	-	-	2	-	-
CT2			400	80	400	400	-	16	160	-	2,600	40,000
SCC2			2,000	400	7,600	6,000	-	200	4,200	-	2,600	40,000
TCLP2			-	-	-	-	20	-	-	8	-	-

			BTEX				PAH		Phenols	OCP				OPP	PCB
			Benzene	Toluene	Ethylbenzene	Total Xylenes	Benzo(a)pyrene (B(a)P)	Total PAH	Total Phenolics	Scheduled Chemical Waste (standard)	Total Endosulfan	Total Analysed OCP	Mirex	Total Analysed OPP	Total PCB
		PQL	0.2	0.5	1	1	0.05	0.05	5	0.1	0.1	0.1	0.1	0.1	0.1
Sample ID	Depth	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
BH301	0 - 0.1 m	25/11/24	<0.2	<0.5	<1	<1	<0.05	<0.05	-	-	-	-	-	-	-
BH301	0.9 - 1 m	25/11/24	<0.2	<0.5	<1	<1	<0.05	<0.05	-	-	-	-	-	-	-
BH301	1.5 - 1.6 m	25/11/24	<0.2	<0.5	<1	<1	<0.05	<0.05	-	-	-	-	-	-	-
BH301	1.9 - 2 m	25/11/24	<0.2	<0.5	<1	<1	<0.05	<0.05	-	-	-	-	-	-	-
BH302	0 - 0.1 m	25/11/24	<0.2	<0.5	<1	<1	<0.05	<0.05	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH302 - [TRIPLICATE]	0 - 0.1 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-
BH302	1.4 - 1.5 m	25/11/24	<0.2	<0.5	<1	<1	<0.05	<0.05	-	-	-	-	-	-	-
BH303	0.1 - 0.2 m	25/11/24	<0.2	<0.5	<1	<1	**0.06**	**0.57**	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BD2/20241125	0 m	25/11/24	<0.2	<0.5	<1	<1	<0.05	<0.05	-	-	-	-	-	-	-
BH303	0.4 - 0.5 m	25/11/24	<0.2	<0.5	<1	<1	**0.06**	**0.5**	-	-	-	-	-	-	-
BH304	0.1 - 0.2 m	25/11/24	<0.2	<0.5	<1	<1	**0.09**	**0.65**	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH304	0.4 - 0.5 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-
BH304	0.9 - 1 m	25/11/24	<0.2	<0.5	<1	<1	**0.2**	**2**	-	-	-	-	-	-	-
BH305	0.1 - 0.2 m	25/11/24	<0.2	<0.5	<1	<1	**0.1**	**0.97**	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH305	0.4 - 0.5 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-
BH306	0.1 - 0.2 m	25/11/24	<0.2	<0.5	<1	<1	**0.2**	**2.6**	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BD5/20241125	0 m	25/11/24	<0.2	<0.5	<1	<1	**0.1**	**0.54**	-	-	-	-	-	-	-
BH306	0.4 - 0.5 m	25/11/24	<0.2	<0.5	<1	<1	**0.4**	**3.7**	-	-	-	-	-	-	-
BH306	0.9 - 1 m	25/11/24	<0.2	<0.5	<1	<1	**0.1**	**0.82**	-	-	-	-	-	-	-
BH307	0.1 - 0.2 m	25/11/24	<0.2	<0.5	<1	<1	<0.05	<0.05	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH307 - [TRIPLICATE]	0.1 - 0.2 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-
BH307	0.9 - 1 m	25/11/24	<0.2	<0.5	<1	<1	<0.05	<0.05	-	-	-	-	-	-	-
BH308	0.1 - 0.2 m	25/11/24	<0.2	<0.5	<1	<1	**0.2**	**2.4**	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH308M	0.1 - 0.2 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-
BH308	0.4 - 0.5 m	25/11/24	<0.2	<0.5	<1	<1	**0.06**	**0.5**	-	-	-	-	-	-	-
BH309	0.1 - 0.2 m	25/11/24	<0.2	<0.5	<1	<1	**0.2**	**2.6**	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH310	0 - 0.1 m	25/11/24	<0.2	<0.5	<1	<1	**0.4**	**4.6**	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH310	0.9 - 1 m	25/11/24	<0.2	<0.5	<1	<1	**0.06**	**0.2**	-	-	-	-	-	-	-
BH310	1.9 - 2 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-	-	-
BH311	0 - 0.1 m	25/11/24	<0.2	<0.5	<1	<1	**0.2**	**2.3**	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH311	0.9 - 1 m	25/11/24	<0.2	<0.5	<1	<1	**0.09**	**0.5**	-	-	-	-	-	-	-
CT1			10	288	600	1000	0.8	200	288	<50	60	-	-	4	<50
SCC1			18	518	1,080	1,800	10	200	518	<50	108	-	-	7.5	<50
TCLP1			-	-	-	-	-	-	-	-	-	-	-	-	-
CT2			40	1,152	2,400	4,000	3.2	800	1,152	<50	240	-	-	16	<50
SCC2			72	2,073	4,320	7,200	23	800	2,073	<50	432	-	-	30	<50
TCLP2			-	-	-	-	-	-	-	-	-	-	-	-	-

			Asbestos										
			Asbestos ID in materials	Trace Analysis (AS)	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 Comment	Asbestos Summary
		PQL								0.001	0.1		0.001
Sample ID	Depth	Sample Date	-	-	-	-	-	g	g	%(w/w)	g/kg	-	
BH301	0 - 0.1 m	25/11/24	-	-	NAD	NAD	NAD	–	–	<0.001	<0.1	**Nil**	-
BH301	0.9 - 1 m	25/11/24	-	-	NAD	NAD	NAD	–	–	<0.001	<0.1	**Nil**	-
BH301	1.5 - 1.6 m	25/11/24	-	-	NAD	NAD	NAD	–	–	<0.001	<0.1	**Nil**	-
BH301	1.9 - 2 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-
BH302	0 - 0.1 m	25/11/24	-	-	**Detected**	NAD	NAD	**0.2754**	–	<0.001	**0.3608**	**YES**	**Detected**
BH302 - [TRIPLICATE]	0 - 0.1 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-
BH302	1.4 - 1.5 m	25/11/24	-	-	NAD	NAD	NAD	–	–	<0.001	<0.1	**Nil**	-
BH303	0.1 - 0.2 m	25/11/24	-	-	NAD	**Detected**	NAD	–	**0.0070**	<0.001	<0.1	**YES**	**Detected**
BD2/20241125	0 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-
BH303	0.4 - 0.5 m	25/11/24	-	-	**Detected**	NAD	NAD	**0.1673**	–	<0.001	**0.2448**	**YES**	**Detected**
BH304	0.1 - 0.2 m	25/11/24	-	-	NAD	NAD	NAD	–	–	<0.001	<0.1	**Nil**	-
BH304	0.4 - 0.5 m	25/11/24	-	-	NAD	NAD	NAD	–	–	<0.001	<0.1	**Nil**	-
BH304	0.9 - 1 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-
BH305	0.1 - 0.2 m	25/11/24	**Detected**	NAD	**Detected**	NAD	NAD	**1.1648**	**0.5203**	**0.0968**	**3.1344**	**YES**	**Detected**
BH305	0.4 - 0.5 m	25/11/24	**Detected**	NAD	-	-	-	-	-	-	-	-	**Detected**
BH306	0.1 - 0.2 m	25/11/24	-	-	**Detected**	NAD	NAD	**0.1353**	–	<0.001	**0.2889**	**YES**	**Detected**
BD5/20241125	0 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-
BH306	0.4 - 0.5 m	25/11/24	-	-	**Detected**	NAD	NAD	**0.2635**	–	<0.001	**0.3484**	**YES**	**Detected**
BH306	0.9 - 1 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-
BH307	0.1 - 0.2 m	25/11/24	-	-	**Detected**	NAD	NAD	**0.1436**	–	<0.001	**0.1689**	**YES**	**Detected**
BH307 - [TRIPLICATE]	0.1 - 0.2 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-
BH307	0.9 - 1 m	25/11/24	-	-	NAD	NAD	NAD	–	–	<0.001	<0.1	**Nil**	-
BH308	0.1 - 0.2 m	25/11/24	-	-	NAD	NAD	NAD	–	–	<0.001	<0.1	**Nil**	-
BH308M	0.1 - 0.2 m	25/11/24	NAD	NAD	-	-	-	-	-	-	-	-	-
BH308	0.4 - 0.5 m	25/11/24	-	-	**Detected**	NAD	NAD	**0.0654**	–	<0.001	**0.1176**	**YES**	**Detected**
BH309	0.1 - 0.2 m	25/11/24	-	-	**Detected**	NAD	NAD	–	**0.1196**	**0.0169**	**0.1691**	**YES**	**Detected**
BH310	0 - 0.1 m	25/11/24	-	-	NAD	**Detected**	NAD	–	**0.0452**	**0.0076**	<0.1	**YES**	**Detected**
BH310	0.9 - 1 m	25/11/24	-	-	NAD	NAD	NAD	–	–	<0.001	<0.1	**Nil**	-
BH310	1.9 - 2 m	25/11/24	-	-	-	-	-	-	-	-	-	-	-
BH311	0 - 0.1 m	25/11/24	-	-	NAD	**Detected**	NAD	–	**0.0315**	**0.0052**	<0.1	**YES**	**Detected**
BH311	0.9 - 1 m	25/11/24	-	-	**Detected**	NAD	NAD	**3.7635**	**0.3285**	**0.0766**	**9.5364**	**YES**	**Detected**
			Waste Classification Criteria f										
CT1			-	-	-	-	-	-	-	-	-	-	-
SCC1			-	-	-	-	-	-	-	-	-	-	-
TCLP1			-	-	-	-	-	-	-	-	-	-	-
CT2			-	-	-	-	-	-	-	-	-	-	-
SCC2			-	-	-	-	-	-	-	-	-	-	-
TCLP2			-	-	-	-	-	-	-	-	-	-	-

☐ 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 H

Borehole Logs

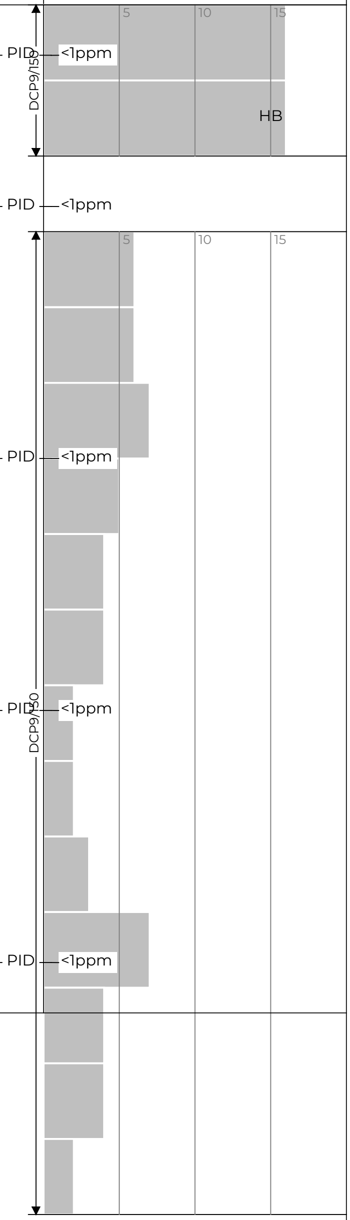
BOREHOLE LOG

CLIENT: City of Parramatta Council
PROJECT: Proposed Pedestrian and Cycleway
LOCATION: Reid Park, Rydalmere, NSW

SURFACE LEVEL: 2.4 AHD
COORDINATE: E:318090.1, N:6256270.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH301
PROJECT No: 231248.00
DATE: 25/11/24
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
25/11/24 No free groundwater observed whilst augering		0.05	FILL / TOPSOIL / SAND: brown; trace rootlets.		FILL			ASS	A/ES		0.10	PID	<1ppm
	2	0.80	FILL / SAND, with gravel: grey-brown; fine to coarse; fine to coarse, sub-angular, sandstone gravel; brick fragments and clay pipe fragments.		FILL	MC to WC	D	*ASS	A/ES		0.40 0.50	PID DCP9/150	<1ppm HB
		1.30	FILL / CLAY, trace sand, trace gravel: brown; medium to high plasticity; fine to medium, sandstone, brick fragments gravel.		FILL	MC	w=PL	ASS	A/ES		0.90 1.00	PID	<1ppm
	1	1.80	FILL / CLAY, with sand, trace gravel: black; medium to high plasticity; fine sand; medium, brick fragments gravel.		FILL	PC		ASS	A/ES		1.40 1.50	PID DCP9/150	<1ppm
		2	Sandy CLAY (CL-CI): dark grey; low to medium plasticity; fine sand.		ALV	F to St		ASS	A/ES		1.90 2.00	PID	<1ppm
	-0		Borehole discontinued at 2.00m depth. Target depth reached.										



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: 2.5t Excavator
METHOD: AD (150mmØ) to 2.0m
REMARKS: *Blind replicate BD1/20241125 sampled at 0.4-0.5m

OPERATOR: Cirillo (LD)

LOGGED: J. Sullivan
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

Generated with CORE-GS by Geroc - Soil Log

BOREHOLE LOG

CLIENT: City of Parramatta Council
PROJECT: Proposed Pedestrian and Cycleway
LOCATION: Reid Park, Rydalmere, NSW

SURFACE LEVEL: 2.8 AHD
COORDINATE: E:318125.1, N:6256265.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH302
PROJECT No: 231248.00
DATE: 25/11/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED

GROUNDWATER: 27/11/24 No free groundwater observed whilst augering

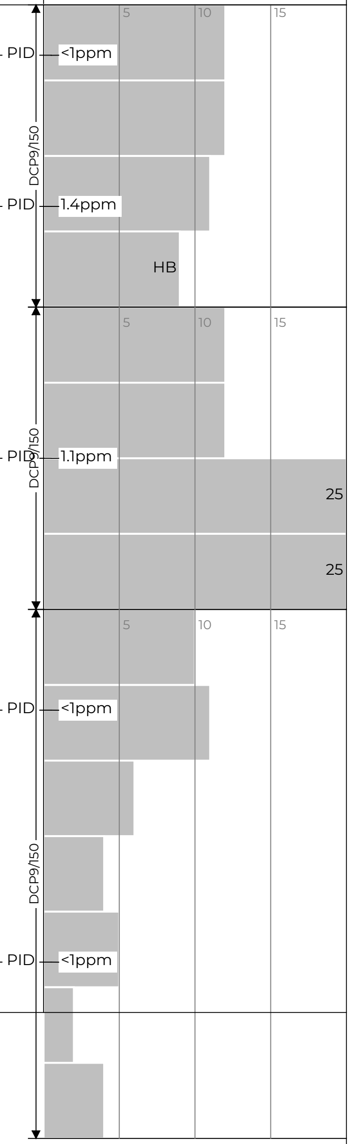
RL (m): 2 (at approx. 0.8 m depth), 1 (at approx. 1.8 m depth), 0 (at approx. 2.8 m depth)

DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY(*)	MOISTURE
0.00–0.05	FILL / TOPSOIL / SAND, with gravel: brown.	▩	FILL		
0.05–1.30	FILL / SAND, with gravel: brown; fine to coarse; fine to coarse, sandstone, brick fragments gravel. 1.00m: cobble/boulder inclusions, igneous	▩	FILL	WC	D
1.30–1.80	FILL / CLAY, trace sand, trace gravel: brown mottled red; medium to high plasticity; fine to medium sand; fine to medium, sandstone and igneous gravel; trace brick fragments and charcoal.	▩	FILL	VC	w=PL
1.80–2.00	CLAY (CL): black; low plasticity. Slight sulphur odour.	▨	ALV	F to St	w=PL

Borehole discontinued at 2.00m depth.
Target depth reached.

SAMPLE / TESTING AND REMARKS

DEPTH (m)	TYPE	TEST TYPE	RESULTS AND REMARKS
0.00–0.10	D/ES	PID (0.10)	<1ppm
0.40–0.50	D/ES	PID (0.40)	1.4ppm
0.90–1.00	* D/ES	PID (0.90)	1.1ppm
1.40–1.50	D/ES	PID (1.40)	<1ppm
1.90–2.00	D/ES	PID (1.90)	<1ppm



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: 2.5t Excavator
METHOD: AD (150mmØ) to 2.0m
REMARKS: * Blind replicate BD2/20241125 sampled at 0.9-1.0m

OPERATOR: Cirillo (LD)

LOGGED: J. Sullivan
CASING: Uncased

Generated with CORE-GS by Geroc - Soil Log

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: City of Parramatta Council
PROJECT: Proposed Pedestrian and Cycleway
LOCATION: Reid Park, Rydalmere, NSW

SURFACE LEVEL: 2.3 AHD
COORDINATE: E:318156.6, N:6256269.3
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH303
PROJECT No: 231248.00
DATE: 25/11/24
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
25/11/24 No Free Groundwater Observed Whilst Augering		0.05	FILL / TOPSOIL / SILTY CLAY: dark brown; with rootlets.	▨	FILL	NA	w=PL					DCP 9/150	5 10 15 HB 17/50mm
			FILL / Clayey SAND, with gravel; fine; low to medium plasticity clay; fine to medium gravel; concrete rubble, bricks.	▨	FILL	ND	D				0.10	PID	<1ppm
								ASS, *	A/ES		0.20		
	2								B				
											0.40	PID	<1ppm
								ASS	A/ES		0.50		
			Borehole discontinued at 0.50m depth. Refusal at 0.5m on inferred concrete.										
		1											
	1												
		2											
	-0												

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: GT10 Truck Rig
METHOD: AD(300mmØ) to 0.4m AD(100mmØ) to 0.5m
REMARKS: *Blind replicate BD2/20241125 sampled at 0.1-0.2m

OPERATOR: Ground Test (TK)

LOGGED: I.Howsam/D.Pham
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Soil Log

BOREHOLE LOG

CLIENT: City of Parramatta Council
PROJECT: Proposed Pedestrian and Cycleway
LOCATION: Reid Park, Rydalmere, NSW

SURFACE LEVEL: 1.8 AHD
COORDINATE: E:318182.3, N:6256261.8
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH304
PROJECT No: 231248.00
DATE: 25/11/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED

GROUNDWATER: 25/11/24 No Free Groundwater Observed Whilst Augering

DEPTH (m)	DESCRIPTION OF STRATA	ORIGIN(#)	CONSIS.(*) / DENSITY(*)	MOISTURE
0.05	FILL / TOPSOIL / SILTY CLAY: dark brown; with rootlets.	FILL	NA	w=PL
0.60	FILL / SAND, with gravel, trace silt: brown; fine; fine to medium gravel; non plastic silt.	FILL	WC	D
0.90	FILL / Gravelly SAND, trace clay: orange-yellow; medium; fine to medium gravel; non plastic clay; ripped sandstone.	FILL	(WC)	M
2.00	Silty CLAY (CL), with sand: dark grey, mottled brown; low to medium plasticity; fine sand.	ALV	F to St	w<PL w=PL

RL (m): 1, 0, -1

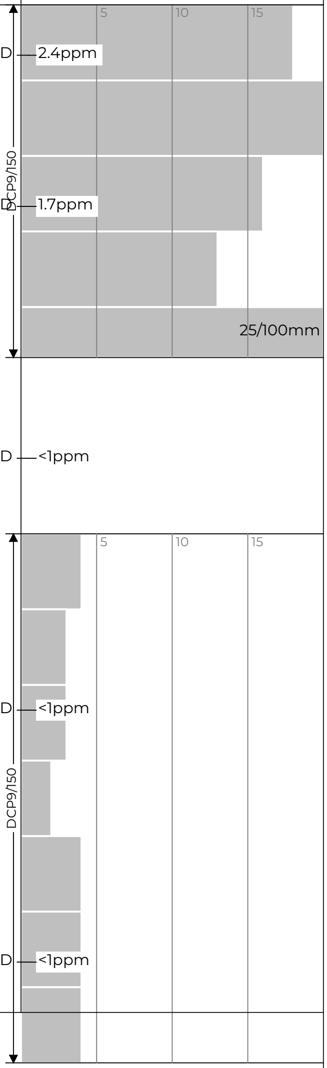
Borehole discontinued at 2.00m depth.
Target depth reached.

SAMPLE

TYPE	INTERVAL DEPTH (m)
A/ES	0.10 – 0.20
A/ES	0.40 – 0.50
A/ES	0.90 – 1.00
A/ES	1.40 – 1.50
D	1.70 – 1.80
A/ES	1.90 – 2.00

TESTING AND REMARKS

DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
0.10	PID	2.4ppm
0.40	PID	1.7ppm
0.90	PID	<1ppm
1.40	PID	<1ppm
1.90	PID	<1ppm



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: GT10 Truck Rig
METHOD: AD(100mmØ) to 2.0m
REMARKS:

OPERATOR: Ground Test (TK)

LOGGED: I.Howsam/D.Pham
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Soil Log

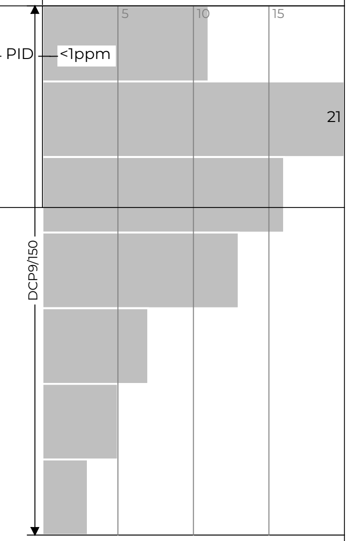
BOREHOLE LOG

CLIENT: City of Parramatta Council
PROJECT: Proposed Pedestrian and Cycleway
LOCATION: Reid Park, Rydalmere, NSW

SURFACE LEVEL: 1.7 AHD
COORDINATE: E:318217.1, N:6256247.8
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH305
PROJECT No: 231248.00
DATE: 25/11/24
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
25/11/24 No Free Groundwater Observed Whilst Augering		0.05	FILL / TOPSOIL / SILTY CLAY: dark brown; with rootlets.	▨	FILL	NA	w=PL				0.10	PID	<1ppm
			FILL / Gravelly SAND, with clay, with silt; fine; fine to medium gravel; low plasticity clay; building rubble, potential asbestos containing materials.	▨	FILL	WC	w<PL	PACM	A/ES		0.10 0.20		
								PACM	ES		0.40	DCP9/150	
			Borehole discontinued at 0.40m depth. Due to potential asbestos containing materials.										



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: GT10 Truck Rig
METHOD: AD(100mmØ) to 0.4m
REMARKS: PACM = Potential Asbestos Containing Material

OPERATOR: Ground Test (TK)

LOGGED: I.Howsam/D.Pham
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

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BOREHOLE LOG

CLIENT: City of Parramatta Council
PROJECT: Proposed Pedestrian and Cycleway
LOCATION: Reid Park, Rydalmere, NSW

SURFACE LEVEL: 1.8 AHD
COORDINATE: E:318250.4, N:6256244.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH306
PROJECT No: 231248.00
DATE: 25/11/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED

GROUNDWATER: 25/11/24 No Free Groundwater Observed Whilst Augering

RL (m): 1, -0, -1

DEPTH (m)	DESCRIPTION OF STRATA	ORIGIN(#)	CONSIS.(*) / DENSITY(*)	MOISTURE
0.05	FILL / TOPSOIL / SILTY CLAY: dark brown; with rootlets.	FILL	NA	w=PL
0.60	FILL / Silty SAND, with gravel, trace clay; fine; non plastic silt; fine to medium gravel. 0.50m: concrete rubble	FILL	(WC)	D
2	Silty SAND (SM), trace clay: dark grey mottled brown; low plasticity silt. From 1.60m: sulphur odour	ALV	L to MD VL to L	M

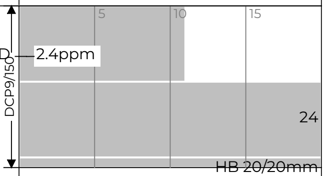
Borehole discontinued at 2.00m depth.
Target depth reached.

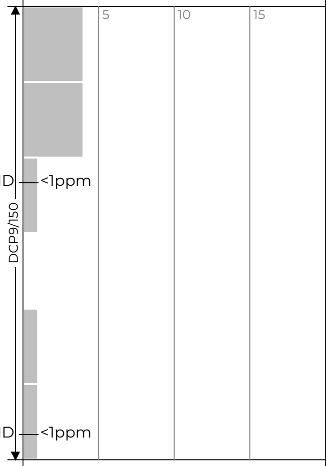
SAMPLE

REMARKS	TYPE	DEPTH (m)
*	A/ES	0.10 – 0.20
	A/ES	0.40 – 0.50
jar only	A/ES	0.50 – 0.60
	A/ES	0.90 – 1.00
	A/ES	1.40 – 1.50
	D	1.70 – 1.80
	A/ES	1.90 – 2.00

TESTING AND REMARKS

DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
0.10	PID	2.4ppm
0.40	PID	<1ppm
0.90	PID	1.1ppm
1.40	PID	<1ppm
1.90	PID	<1ppm





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: GT10 Truck Rig
METHOD: AD(100mmØ) to 2.0m
REMARKS: *Blind replicate BD5/20241125 sampled at 0.1-0.2m

OPERATOR: Ground Test (TK)

LOGGED: I.Howsam/D.Pham
CASING: Uncased

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Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: City of Parramatta Council
PROJECT: Proposed Pedestrian and Cycleway
LOCATION: Reid Park, Rydalmere, NSW

SURFACE LEVEL: 1.8 AHD
COORDINATE: E:318283.5, N:6256242.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH307
PROJECT No: 231248.00
DATE: 25/11/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED

GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE
25/11/24 No Free Groundwater Observed Whilst Augering	0.05	FILL / TOPSOIL / SILTY CLAY: dark brown; with rootlets.	FILL	NA	w=PL
	0.70	FILL / Clayey SAND, trace gravel: brown; medium; low plasticity clay; fine to medium gravel.	FILL	ND	D
	1.10	Silty CLAY / Clayey SILT (CL-ML): Silty clay, with sand: grey, mottled orange/yellow; low plasticity; fine to medium sand. Clayey silt.	ALV	F to St	w=PL
	2	Sandy SILT (ML), trace clay: dark grey, mottled brown; low plasticity.	ALV	S	M

RL (m): 1, 0, -1

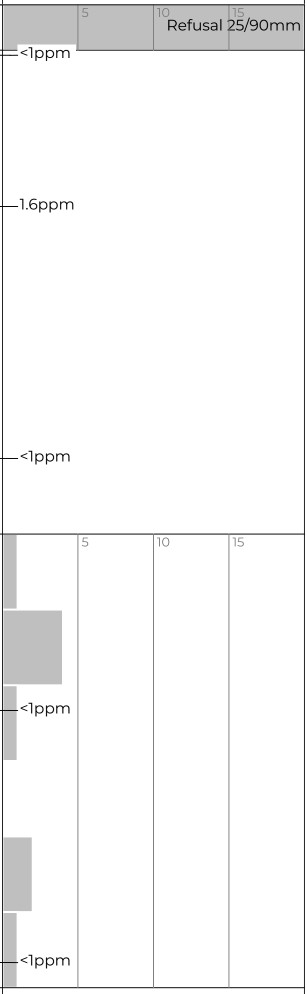
Borehole discontinued at 2.00m depth.
Target depth reached.

SAMPLE

REMARKS	TYPE	INTERVAL	DEPTH (m)
ASS, *	A/ES	0.10 – 0.20	0.10 – 0.20
ASS	A/ES	0.40 – 0.50	0.40 – 0.50
	D	0.70 – 0.80	0.70 – 0.80
ASS	A/ES	0.90 – 1.00	0.90 – 1.00
ASS	A/ES	1.40 – 1.50	1.40 – 1.50
ASS	A/ES	1.90 – 2.00	1.90 – 2.00

TESTING AND REMARKS

DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
0.10	PID	<1ppm
0.40	PID	1.6ppm
0.90	PID	<1ppm
1.40	PID	<1ppm
1.90	PID	<1ppm
0.00	DCP9/150	Refusal 25/90mm
1.05 – 2.00	DCP9/150	



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: GT10 Truck Rig
METHOD: AD(100mmØ) to 2.0m
REMARKS: *Blind replicate *BD7/20241125 sampled at 0.1-0.2m

OPERATOR: Ground Test (TK)

LOGGED: I.Howsam/D.Pham
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT:	City of Parramatta Council	**SURFACE LEVEL:**	2.5 AHD	**LOCATION ID:**	BH308
PROJECT:	Proposed Pedestrian and Cycleway	**COORDINATE:**	E:318320.0, N:6256244.4	**PROJECT No:**	231248.00
LOCATION:	Reid Park, Rydalmere, NSW	**DATUM/GRID:**	MGA2020 Zone 56	**DATE:**	25/11/24
		DIP/AZIMUTH:	90°/---°	**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**
25/11/24 No Free Groundwater Observed Whilst Augering		0.05	FILL / TOPSOIL / SILTY CLAY: dark brown; with rootlets.		FILL	NA	w=PL						5 10 15
		0.20	FILL / Clayey SAND, trace gravel: brown; medium; low plasticity clay; fine to medium gravel.		FILL	WC	D		A/ES		0.10 0.20	PID DCP9/150	1.1ppm 25/140mm
	2		FILL / CLAY, with sand, trace silt: brown; medium plasticity; medium sand; medium gravel. 0.20m: geofabric layer		FILL	ND	w<PL		A/ES		0.40 0.50	PID	1.9ppm
	1	1	Borehole discontinued at 0.90m depth. Refusal on inferred concrete.										
	-0	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: GT10 Truck Rig **OPERATOR:** Ground Test (TK) **LOGGED:** I. Howsam

METHOD: AD(100mmØ) to 0.9m **CASING:** Uncased

REMARKS:

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

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BOREHOLE LOG

CLIENT: City of Parramatta Council
PROJECT: Proposed Pedestrian and Cycleway
LOCATION: Reid Park, Rydalmere, NSW

SURFACE LEVEL: 2.9 AHD
COORDINATE: E:318341.2, N:6256268.6
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH309
PROJECT No: 231248.00
DATE: 25/11/24
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**
25/11/24 No Free Groundwater Observed Whilst Augering		0.05	FILL / TOPSOIL / SILTY CLAY: dark brown; with rootlets.	▩	FILL	NA	w=PL					DCP9/150	25/30mm
			FILL / Clayey SAND, trace gravel: brown; medium; low plasticity clay; fine to medium gravel.	▩	FILL	ND	D		A/ES		0.10 0.20		
			Borehole discontinued at 0.20m depth. Refusal on inferred concrete.										
	2												
		1											
	1												
		2											
	-0												

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: GT10 Truck Rig
METHOD: AD(100mmØ) to 0.2m
REMARKS:

OPERATOR: Ground Test (TK)

LOGGED: I. Howsam
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: City of Parramatta Council
PROJECT: Proposed Pedestrian and Cycleway
LOCATION: Reid Park, Rydalmere, NSW

SURFACE LEVEL: 3.1 AHD
COORDINATE: E:318365.6, N:6256283.8
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH310
PROJECT No: 231248.00
DATE: 25/11/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED

GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE
25/11/24 No free groundwater observed whilst augering	0.00	FILL / SAND, with silt, with gravel: grey-brown; fine to coarse; fine, sub-angular, sandstone, brick fragments gravel.	FILL	WC	D
	0.30	FILL / Sandy SILT: pale grey; non plastic; fine sand. From 0.75m: blue-grey	FILL	WC MC to WC	w=PL
	1.80	FILL / CLAY, with gravel: pale grey; low to medium plasticity; fine to coarse, sub-angular, sandstone and concrete gravel; with fragment of possible asbestos containing material.	FILL	MC	w=PL
	2.00	Borehole discontinued at 2.00m depth. Target depth reached.			

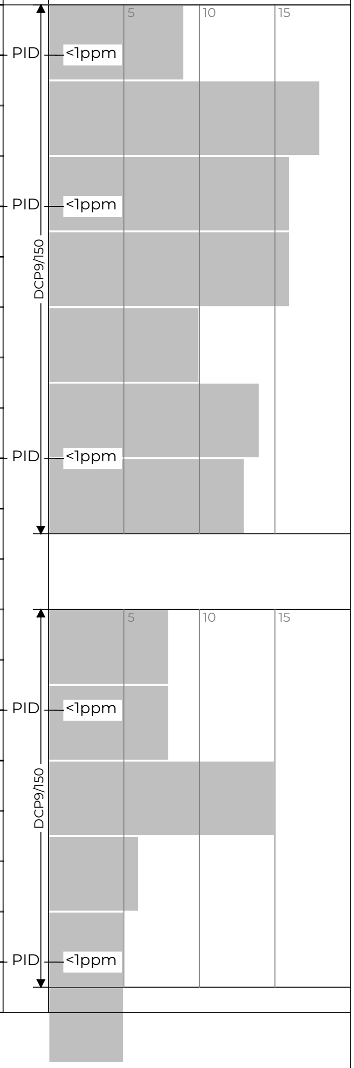
RL (m): 3, 2, 1

SAMPLE

REMARKS	TYPE	DEPTH (m)
	A/ES	0.10
	A/ES	0.40
0.5-1.8m: B Sample	B	0.50
	A/ES	0.90
	A/ES	1.00
	A/ES	1.40
	A/ES	1.50
	A/ES	1.90
	A/ES	2.00

TESTING AND REMARKS

DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
0.10	PID	<1ppm
0.40	PID	<1ppm
0.90	PID	<1ppm
1.40	PID	<1ppm
1.90	PID	<1ppm



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: 2.5t Excavator
METHOD: AD (150mmØ) to 2.0m
REMARKS:

OPERATOR: Cirillo (LD)

LOGGED: J. Sullivan
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

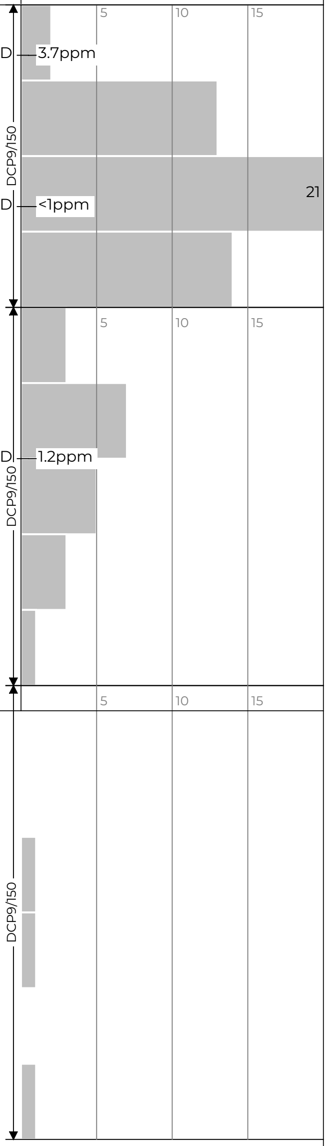
BOREHOLE LOG

CLIENT: City of Parramatta Council
PROJECT: Proposed Pedestrian and Cycleway
LOCATION: Reid Park, Rydalmere, NSW

SURFACE LEVEL: 3.2 AHD
COORDINATE: E:318389.2, N:6256302.6
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH311
PROJECT No: 231248.00
DATE: 25/11/24
SHEET: 1 of 1

GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	TYPE	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
25/11/24 No free groundwater observed whilst augering	0.00	FILL / SAND, with gravel, trace silt: brown; fine to coarse; fine to coarse, sandstone, brick fragments gravel.	FILL	WC	D	ASS	A/ES	0.10	PID	3.7ppm
						ASS	A/ES	0.40 – 0.50	PID	<1ppm
	0.90	0.90m: with metal waste and rope		VC		ASS	A/ES	0.90 – 1.00	PID	1.2ppm
	1.30	From 1.30m: potential asbestos containing material encountered								
	1.40	Borehole discontinued at 1.40m depth. Potential asbestos encountered.								



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: 2.5t Excavator
METHOD: AD (150mmØ) to 1.4m
REMARKS:

OPERATOR: Cirillo (LD)

LOGGED: J. Sullivan
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Soil Log

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

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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:

(SC) Clayey SAND, trace silt; grey, fine to medium grained

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.

Soil Descriptions

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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Rock Strength

Rock strength is defined by the unconfined compressive strength, and it refers to the strength of the rock substance and not the strength of the overall rock mass, which may be considerably weaker due to defects.

The Point Load Strength Index $I_{s(50)}$ is commonly used to provide an estimate of the rock strength and site specific correlations should be developed to allow UCS values to be determined. The point load strength test procedure is described by Australian Standard AS4133.4.1-2007. The terms used to describe rock strength are as follows:

Strength Term	Unconfined Compressive Strength (MPa)	Point Load Index[1] $I_{s(50)}$ MPa	Abbreviation Code
Very low	0.6 - 2	0.03 - 0.1	VL
Low	2 - 6	0.1 - 0.3	L
Medium	6 - 20	0.3 - 1.0	M
High	20 - 60	1 - 3	H
Very high	60 - 200	3 - 10	VH
Extremely high	>200	>10	EH

[1] Rock strength classification is based on UCS. The UCS to $I_{s(50)}$ ratio varies significantly for different rock types and specific ratios may be required for each site. The point load Index ranges shown above are as suggested in AS1726 and should not be relied upon without supporting evidence.

The following abbreviation codes are used for soil layers or seams of material "within rock" but for which the equivalent UCS strength is less than 0.6 MPa.

Scenario	Abbreviation Code
The material encountered has an equivalent UCS strength of less than 0.6 MPa, and therefore is considered to be soil (as per Note 1 of Table 20 of AS 1726-2017). The properties of the material encountered over this interval are described in the "Description of Strata" and soil properties columns.	SOIL
The material encountered has an equivalent UCS strength of less than 0.6 MPa, and therefore is considered to be soil (as per Note 1 of Table 20 of AS 1726-2017). The prominence of the material is such that it can be considered to be a seam (as defined in Table 22 of AS1726-2017) and the properties of the material are described in the defect column.	SEAM

Degree of Weathering

The degree of weathering of rock is classified as follows:

Weathering Term	Description	Abbreviation Code
Residual Soil[1]	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.	RS
Extremely weathered[1]	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible	XW
Highly weathered	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching or may be decreased due to deposition of weathering products in pores.	HW
Moderately weathered	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable but shows little or no change of strength from fresh rock.	MW
Slightly weathered	Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.	SW
Fresh	No signs of decomposition or staining.	FR
Note: If HW and MW cannot be differentiated use DW (see below)		
Distinctly weathered	Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching or may be decreased due to deposition of weathered products in pores.	DW

[1] The parent rock type, of which the residual/extremely weathered material is a derivative, will be stated in the description (where discernible).

Rock Descriptions

Degree of Alteration

The degree of alteration of the rock material (physical or chemical changes caused by hot gasses or liquids at depth) is classified as follows:

Term	Description	Abbreviation Code
Extremely altered	Material is altered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible.	XA
Highly altered	The whole of the rock material is discoloured, usually by staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is changed by alteration. Some primary minerals are altered to clay minerals. Porosity may be increased by leaching or may be decreased due to precipitation of secondary materials in pores.	HA
Moderately altered	The whole of the rock material is discoloured, usually by staining or bleaching to the extent that the colour of the original rock is not recognisable but shows little or no change of strength from fresh rock.	MA
Slightly altered	Rock is slightly discoloured but shows little or no change of strength from fresh rock	SA
Note: If HA and MA cannot be differentiated use DA (see below)		
Distinctly altered	Rock strength usually changed by alteration. The rock may be highly discoloured, usually by staining or bleaching. Porosity may be increased by leaching or may be decreased due to precipitation of secondary minerals in pores.	DA

Degree of Fracturing

The following descriptive classification apply to the spacing of natural occurring fractures in the rock mass. It includes bedding plane partings, joints and other defects, but excludes drilling breaks. These terms are generally not required on investigation logs where fracture spacing is presented as a histogram, and where used are presented in an unabbreviated format.

Term	Description
Fragmented	Fragments of <20 mm
Highly Fractured	Core lengths of 20-40 mm with occasional fragments
Fractured	Core lengths of 30-100 mm with occasional shorter and longer sections
Slightly Fractured	Core lengths of 300 mm or longer with occasional sections of 100-300 mm
Unbroken	Core contains very few fractures

Rock Quality Designation

The quality of the cored rock can be measured using the Rock Quality Designation (RQD) index, defined as:

$$\text{RQD \%} = \frac{\text{cumulative length of 'sound' core sections} > 100 \text{ mm long}}{\text{total drilled length of section being assessed}}$$

where 'sound' rock is assessed to be rock of low strength or stronger. The RQD applies only to natural fractures. If the core is broken by drilling or handling (i.e., drilling breaks) then the broken pieces are fitted back together and are not included in the calculation of RQD.

Stratification Spacing

These terms may be used to describe the spacing of bedding partings in sedimentary rocks. Where used, these terms are generally presented in an unabbreviated format

Term	Separation of Stratification Planes
Thinly laminated	< 6 mm
Laminated	6 mm to 20 mm
Very thinly bedded	20 mm to 60 mm
Thinly bedded	60 mm to 0.2 m
Medium bedded	0.2 m to 0.6 m
Thickly bedded	0.6 m to 2 m
Very thickly bedded	> 2 m

Rock Descriptions

Defect Descriptions

Defect Type

Term	Abbreviation Code
Bedding plane	B
Cleavage	CL
Crushed seam	CS
Crushed zone	CZ
Drilling break	DB
Decomposed seam	DS
Drill lift	DL
Extremely Weathered seam	EW
Fault	F
Fracture	FC
Fragmented	FG
Handling break	HB
Infilled seam	IS
Joint	JT
Lamination	LAM
Shear seam	SS
Shear zone	SZ
Vein	VN
Mechanical break	MB
Parting	P
Sheared Surface	S

Rock Defect Orientation

Term	Abbreviation Code
Horizontal	H
Vertical	V
Sub-horizontal	SH
Sub-vertical	SV

Rock Defect Coating

Term	Abbreviation Code
Clean	CN
Coating	CT
Healed	HE
Infilled	INF
Stained	SN
Tight	TI
Veneer	VNR

Rock Defect Infill

Term	Abbreviation Code
Calcite	CA
Carbonaceous	CBS
Clay	CLAY
Iron oxide	FE
Manganese	MN
Pyrite	Py
Secondary material	MS
Silt	M
Quartz	Qz
Unidentified material	MU

Rock Defect Shape/Planarity

Term	Abbreviation Code
Curved	CU
Discontinuous	DIS
Irregular	IR
Planar	PR
Stepped	ST
Undulating	UN

Rock Defect Roughness

Term	Abbreviation Code
Polished	PO
Rough	RF
Smooth	SM
Slickensided	SL
Very rough	VR

Defect Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

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Sampling, Testing and Excavation Methodology

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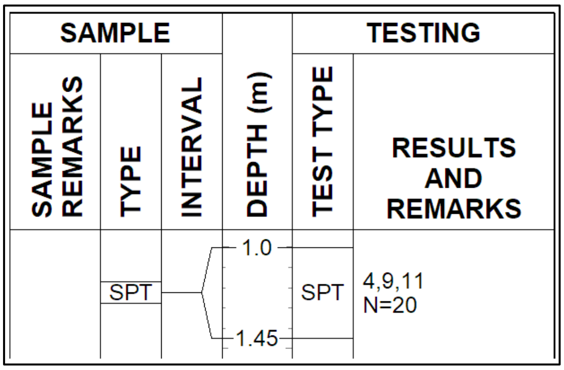
Sampling and Testing

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
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

Field and laboratory testing (continued)

Test Type	Code
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)	DCP/150
Perth sand penetrometer, followed by blow count penetration increment in mm (flat tip, generally in accordance with AS1289.6.3.3)	PSP/150

Groundwater Observations

▷	seepage/inflow
▽	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 I

Laboratory Reports and Chain of Custody

Envirolab Services Pty Ltd
ABN 37 112 535 645
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CERTIFICATE OF ANALYSIS 367552

Client Details

Client	Douglas Partners Pty Ltd
Attention	Cathy Li
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**231248.01, Reid Park Rydalmere**
Number of Samples	28 Soil, 4 Material
Date samples received	27/11/2024
Date completed instructions received	27/11/2024

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

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

Report Details

Date results requested by	04/12/2024
Date of Issue	04/12/2024

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Asbestos Approved By
Analysed by Asbestos Approved Analyst: Lucy Zhu
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Diego Bigolin, Inorganics Supervisor
Dragana Tomas, Senior Chemist
Giovanni Agosti, Group Technical Manager
Liam Timmins, Organics Supervisor
Lucy Zhu, Asbestos Supervisor
Timothy Toll, Senior Chemist

Authorised By
Nancy Zhang, Laboratory Manager

Client Reference: 231248.01, Reid Park Rydalmere

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		367552-1	367552-2	367552-3	367552-4	367552-5
Your Reference	UNITS	BH301	BH301	BH301	BH301	BH302
Depth		0-0.1	0.9-1	1.5-1.6	1.9-2	0-0.1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	30/11/2024	30/11/2024	30/11/2024	30/11/2024	30/11/2024
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	103	94	91	96	106

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		367552-6	367552-7	367552-8	367552-9	367552-11
Your Reference	UNITS	BH302	BH303	BH303	BH304	BH304
Depth		1.4-1.5	0.1-0.2	0.4-0.5	0.1-0.2	0.9-1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	30/11/2024	30/11/2024	30/11/2024	30/11/2024	30/11/2024
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	100	103	105	97	100

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		367552-12	367552-15	367552-16	367552-17	367552-18
Your Reference	UNITS	BH305	BH306	BH306	BH306	BH307
Depth		0.1-0.2	0.1-0.2	0.4-0.5	0.9-1	0.1-0.2
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	30/11/2024	30/11/2024	30/11/2024	30/11/2024	30/11/2024
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	97	104	101	103	89

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		367552-19	367552-20	367552-21	367552-22	367552-23
Your Reference	UNITS	BH307	BH308	BH308	BH309	BH310
Depth		0.9-1	0.1-0.2	0.4-0.5	0.1-0.2	0-0.1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	30/11/2024	30/11/2024	02/12/2024	02/12/2024	02/12/2024
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	92	102	103	109	105

vTRH(C6-C10)/BTEXN in Soil

Our Reference		367552-24	367552-26	367552-27	367552-28	367552-29
Your Reference	UNITS	BH310	BH311	BH311	TB1	TS1
Depth		0.9-1	0-0.1	0.9-1	-	-
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	02/12/2024	02/12/2024	02/12/2024	02/12/2024	02/12/2024
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	[NA]
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	[NA]
vTRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	[NA]
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	101%
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	101%
Ethylbenzene	mg/kg	<1	<1	<1	<1	100%
m+p-xylene	mg/kg	<2	<2	<2	<2	100%
o-Xylene	mg/kg	<1	<1	<1	<1	102%
Naphthalene	mg/kg	<1	<1	<1	<1	[NA]
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	[NA]
Surrogate aaa-Trifluorotoluene	%	102	110	100	110	102

vTRH(C6-C10)/BTEXN in Soil

Our Reference		367552-30	367552-31
Your Reference	UNITS	BD2/20241125	BD5/20241125
Depth		-	-
Date Sampled		25/11/2024	25/11/2024
Type of sample		Soil	Soil
Date extracted	-	28/11/2024	28/11/2024
Date analysed	-	02/12/2024	02/12/2024
TRH C_6 - C_9	mg/kg	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25
vTRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25
Benzene	mg/kg	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1
m+p-xylene	mg/kg	<2	<2
o-Xylene	mg/kg	<1	<1
Naphthalene	mg/kg	<1	<1
Total +ve Xylenes	mg/kg	<1	<1
Surrogate aaa-Trifluorotoluene	%	103	104

svTRH (C10-C40) in Soil						
Our Reference		367552-1	367552-2	367552-3	367552-4	367552-5
Your Reference	UNITS	BH301	BH301	BH301	BH301	BH302
Depth		0-0.1	0.9-1	1.5-1.6	1.9-2	0-0.1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	88	92	85	84	92

svTRH (C10-C40) in Soil						
Our Reference		367552-6	367552-7	367552-8	367552-9	367552-11
Your Reference	UNITS	BH302	BH303	BH303	BH304	BH304
Depth		1.4-1.5	0.1-0.2	0.4-0.5	0.1-0.2	0.9-1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	94	91	83	86	95

svTRH (C10-C40) in Soil						
Our Reference		367552-12	367552-15	367552-16	367552-17	367552-18
Your Reference	UNITS	BH305	BH306	BH306	BH306	BH307
Depth		0.1-0.2	0.1-0.2	0.4-0.5	0.9-1	0.1-0.2
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	30/11/2024	30/11/2024	30/11/2024	30/11/2024	30/11/2024
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	130	100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	130	100	<50	<50	<50
TRH >C_{10}-C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10}-C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16}-C_{34}	mg/kg	160	110	<100	<100	<100
TRH >C_{34}-C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	160	110	<50	<50	<50
Surrogate o-Terphenyl	%	93	96	91	86	87

svTRH (C10-C40) in Soil						
Our Reference		367552-19	367552-20	367552-21	367552-22	367552-23
Your Reference	UNITS	BH307	BH308	BH308	BH309	BH310
Depth		0.9-1	0.1-0.2	0.4-0.5	0.1-0.2	0-0.1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	30/11/2024	30/11/2024	30/11/2024	30/11/2024	30/11/2024
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10}-C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10}-C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16}-C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34}-C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	89	95	90	93	83

svTRH (C10-C40) in Soil						
Our Reference		367552-24	367552-26	367552-27	367552-30	367552-31
Your Reference	UNITS	BH310	BH311	BH311	BD2/20241125	BD5/20241125
Depth		0.9-1	0-0.1	0.9-1	-	-
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	30/11/2024	30/11/2024	30/11/2024	30/11/2024	30/11/2024
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	150
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	150
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	170
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	170
Surrogate o-Terphenyl	%	86	89	82	84	95

PAHs in Soil						
Our Reference	UNITS	367552-1	367552-2	367552-3	367552-4	367552-5
Your Reference		BH301	BH301	BH301	BH301	BH302
Depth		0-0.1	0.9-1	1.5-1.6	1.9-2	0-0.1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	107	104	108	107	111

PAHs in Soil						
Our Reference		367552-6	367552-7	367552-8	367552-9	367552-11
Your Reference	UNITS	BH302	BH303	BH303	BH304	BH304
Depth		1.4-1.5	0.1-0.2	0.4-0.5	0.1-0.2	0.9-1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.1	<0.1	0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.1	0.2	0.1	0.4
Pyrene	mg/kg	<0.1	0.1	0.2	0.1	0.3
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.3	<0.2	0.3	0.3
Benzo(a)pyrene	mg/kg	<0.05	0.06	0.06	0.09	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Total +ve PAH's	mg/kg	<0.05	0.57	0.50	0.65	2.0
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	108	106	108	102	109

PAHs in Soil						
Our Reference		367552-12	367552-15	367552-16	367552-17	367552-18
Your Reference	UNITS	BH305	BH306	BH306	BH306	BH307
Depth		0.1-0.2	0.1-0.2	0.4-0.5	0.9-1	0.1-0.2
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.2	0.3	0.2	<0.1
Anthracene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	0.4	0.6	0.2	<0.1
Pyrene	mg/kg	0.1	0.4	0.6	0.2	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.2	0.3	<0.1	<0.1
Chrysene	mg/kg	0.1	0.2	0.4	0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.4	0.7	0.6	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.1	0.2	0.4	0.1	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.1	0.2	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1	0.2	0.3	<0.1	<0.1
Total +ve PAH's	mg/kg	0.97	2.6	3.7	0.82	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	0.6	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	99	108	107	107	108

PAHs in Soil						
Our Reference		367552-19	367552-20	367552-21	367552-22	367552-23
Your Reference	UNITS	BH307	BH308	BH308	BH309	BH310
Depth		0.9-1	0.1-0.2	0.4-0.5	0.1-0.2	0-0.1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.1	0.1	0.1	0.4
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.4	0.2	0.4	0.6
Pyrene	mg/kg	<0.1	0.4	0.2	0.4	0.7
Benzo(a)anthracene	mg/kg	<0.1	0.2	<0.1	0.2	0.4
Chrysene	mg/kg	<0.1	0.2	<0.1	0.2	0.4
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.6	<0.2	0.7	1
Benzo(a)pyrene	mg/kg	<0.05	0.2	0.06	0.2	0.4
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.1	<0.1	0.2	0.2
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.2	<0.1	0.2	0.4
Total +ve PAH's	mg/kg	<0.05	2.4	0.50	2.6	4.6
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	0.6
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	0.6
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	0.7
Surrogate p-Terphenyl-d14	%	112	101	103	102	98

PAHs in Soil						
Our Reference		367552-24	367552-26	367552-27	367552-30	367552-31
Your Reference	UNITS	BH310	BH311	BH311	BD2/20241125	BD5/20241125
Depth		0.9-1	0-0.1	0.9-1	-	-
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	0.3	0.2	<0.1	0.2
Pyrene	mg/kg	<0.1	0.4	0.1	<0.1	0.2
Benzo(a)anthracene	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	0.2	0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.7	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.06	0.2	0.09	<0.05	0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.2	<0.1	<0.1	0.1
Total +ve PAH's	mg/kg	0.2	2.3	0.50	<0.05	0.54
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	100	98	106	108	109

Organochlorine Pesticides in soil						
Our Reference		367552-5	367552-7	367552-9	367552-12	367552-15
Your Reference	UNITS	BH302	BH303	BH304	BH305	BH306
Depth		0-0.1	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total Positive Aldrin+Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	88	96	97	117	95

Organochlorine Pesticides in soil						
Our Reference		367552-18	367552-20	367552-22	367552-23	367552-26
Your Reference	UNITS	BH307	BH308	BH309	BH310	BH311
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0-0.1	0-0.1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total Positive Aldrin+Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	89	94	110	109	91

Organophosphorus Pesticides in Soil						
Our Reference		367552-5	367552-7	367552-9	367552-12	367552-15
Your Reference	UNITS	BH302	BH303	BH304	BH305	BH306
Depth		0-0.1	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phorate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Disulfoton	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion-Methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenthion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methidathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenamiphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phosalone	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Coumaphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	88	96	97	117	95

Organophosphorus Pesticides in Soil						
Our Reference		367552-18	367552-20	367552-22	367552-23	367552-26
Your Reference	UNITS	BH307	BH308	BH309	BH310	BH311
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0-0.1	0-0.1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phorate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Disulfoton	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion-Methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenthion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methidathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenamiphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phosalone	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Coumaphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	89	94	110	109	91

PCBs in Soil						
Our Reference		367552-5	367552-7	367552-9	367552-12	367552-15
Your Reference	UNITS	BH302	BH303	BH304	BH305	BH306
Depth		0-0.1	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 2-Fluorobiphenyl	%	89	96	88	97	96

PCBs in Soil						
Our Reference		367552-18	367552-20	367552-22	367552-23	367552-26
Your Reference	UNITS	BH307	BH308	BH309	BH310	BH311
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0-0.1	0-0.1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 2-Fluorobiphenyl	%	87	88	95	87	94

Misc Soil - Inorg						
Our Reference		367552-5	367552-7	367552-9	367552-12	367552-15
Your Reference	UNITS	BH302	BH303	BH304	BH305	BH306
Depth		0-0.1	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg						
Our Reference		367552-18	367552-20	367552-22	367552-23	367552-26
Your Reference	UNITS	BH307	BH308	BH309	BH310	BH311
Depth		0.1-0.2	0.1-0.2	0.1-0.2	0-0.1	0-0.1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Acid Extractable metals in soil						
Our Reference		367552-1	367552-2	367552-3	367552-4	367552-5
Your Reference	UNITS	BH301	BH301	BH301	BH301	BH302
Depth		0-0.1	0.9-1	1.5-1.6	1.9-2	0-0.1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
Arsenic	mg/kg	8	5	9	11	7
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	25	15	9	6	20
Copper	mg/kg	31	6	8	4	25
Lead	mg/kg	57	24	14	5	28
Mercury	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	13	3	5	<1	12
Zinc	mg/kg	100	14	18	2	52

Acid Extractable metals in soil						
Our Reference		367552-6	367552-7	367552-8	367552-9	367552-11
Your Reference	UNITS	BH302	BH303	BH303	BH304	BH304
Depth		1.4-1.5	0.1-0.2	0.4-0.5	0.1-0.2	0.9-1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
Arsenic	mg/kg	10	6	8	9	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	20	38	31	25	9
Copper	mg/kg	18	70	65	35	12
Lead	mg/kg	84	98	79	51	32
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	6	55	56	16	4
Zinc	mg/kg	71	220	130	100	35

Acid Extractable metals in soil						
Our Reference		367552-12	367552-15	367552-16	367552-17	367552-18
Your Reference	UNITS	BH305	BH306	BH306	BH306	BH307
Depth		0.1-0.2	0.1-0.2	0.4-0.5	0.9-1	0.1-0.2
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
Arsenic	mg/kg	6	6	<4	5	4
Cadmium	mg/kg	0.9	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	27	22	16	14	20
Copper	mg/kg	60	49	33	17	50
Lead	mg/kg	91	69	52	21	81
Mercury	mg/kg	0.1	0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	17	18	6	7	84
Zinc	mg/kg	350	150	30	52	110

Acid Extractable metals in soil						
Our Reference		367552-19	367552-20	367552-21	367552-22	367552-23
Your Reference	UNITS	BH307	BH308	BH308	BH309	BH310
Depth		0.9-1	0.1-0.2	0.4-0.5	0.1-0.2	0-0.1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
Arsenic	mg/kg	5	<4	11	4	13
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	8	17	35	14	31
Copper	mg/kg	7	46	50	39	40
Lead	mg/kg	12	61	52	63	63
Mercury	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Nickel	mg/kg	4	60	14	36	18
Zinc	mg/kg	19	190	100	110	150

Acid Extractable metals in soil						
Our Reference		367552-24	367552-26	367552-27	367552-30	367552-31
Your Reference	UNITS	BH310	BH311	BH311	BD2/20241125	BD5/20241125
Depth		0.9-1	0-0.1	0.9-1	-	-
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
Arsenic	mg/kg	<4	<4	5	10	7
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	0.9
Chromium	mg/kg	15	15	45	44	39
Copper	mg/kg	90	46	42	85	110
Lead	mg/kg	61	70	38	130	110
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	10	9	22	63	18
Zinc	mg/kg	75	360	110	280	420

Acid Extractable metals in soil			
Our Reference		367552-33	367552-34
Your Reference	UNITS	BH302 - [TRIPLICATE]	BH307 - [TRIPLICATE]
Depth		0-0.1	0.1-0.2
Date Sampled		25/11/2024	25/11/2024
Type of sample		Soil	Soil
Date prepared	-	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024
Arsenic	mg/kg	9	4
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	27	19
Copper	mg/kg	32	53
Lead	mg/kg	45	38
Mercury	mg/kg	<0.1	<0.1
Nickel	mg/kg	23	89
Zinc	mg/kg	87	99

Moisture						
Our Reference		367552-1	367552-2	367552-3	367552-4	367552-5
Your Reference	UNITS	BH301	BH301	BH301	BH301	BH302
Depth		0-0.1	0.9-1	1.5-1.6	1.9-2	0-0.1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
Moisture	%	8.3	17	25	18	10

Moisture						
Our Reference		367552-6	367552-7	367552-8	367552-9	367552-11
Your Reference	UNITS	BH302	BH303	BH303	BH304	BH304
Depth		1.4-1.5	0.1-0.2	0.4-0.5	0.1-0.2	0.9-1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
Moisture	%	17	4.9	5.6	6.6	16

Moisture						
Our Reference		367552-12	367552-15	367552-16	367552-17	367552-18
Your Reference	UNITS	BH305	BH306	BH306	BH306	BH307
Depth		0.1-0.2	0.1-0.2	0.4-0.5	0.9-1	0.1-0.2
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
Moisture	%	10	9.3	16	9.6	4.9

Moisture						
Our Reference		367552-19	367552-20	367552-21	367552-22	367552-23
Your Reference	UNITS	BH307	BH308	BH308	BH309	BH310
Depth		0.9-1	0.1-0.2	0.4-0.5	0.1-0.2	0-0.1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
Moisture	%	20	8.0	13	3.7	11

Client Reference: 231248.01, Reid Park Rydalmere

Moisture						
Our Reference		367552-24	367552-26	367552-27	367552-30	367552-31
Your Reference	UNITS	BH310	BH311	BH311	BD2/20241125	BD5/20241125
Depth		0.9-1	0-0.1	0.9-1	-	-
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/11/2024	28/11/2024	28/11/2024	28/11/2024	28/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
Moisture	%	31	6.7	9.5	4.7	9.6

Misc Inorg - Soil						
Our Reference		367552-1	367552-4	367552-11	367552-17	367552-23
Your Reference	UNITS	BH301	BH301	BH304	BH306	BH310
Depth		0-0.1	1.9-2	0.9-1	0.9-1	0-0.1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	02/12/2024	02/12/2024	02/12/2024	02/12/2024	02/12/2024
Date analysed	-	02/12/2024	02/12/2024	02/12/2024	02/12/2024	02/12/2024
pH 1:5 soil:water	pH Units	7.1	6.1	6.9	8.3	7.9

CEC						
Our Reference	UNITS	367552-1	367552-4	367552-11	367552-17	367552-23
Your Reference		BH301	BH301	BH304	BH306	BH310
Depth		0-0.1	1.9-2	0.9-1	0.9-1	0-0.1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/12/2024	03/12/2024	03/12/2024	03/12/2024	03/12/2024
Date analysed	-	03/12/2024	03/12/2024	03/12/2024	03/12/2024	03/12/2024
Exchangeable Ca	meq/100g	12	0.7	4.4	14	42
Exchangeable K	meq/100g	0.5	0.3	0.4	0.2	0.3
Exchangeable Mg	meq/100g	2.2	1.4	3.6	1.2	0.5
Exchangeable Na	meq/100g	<0.1	<0.1	1	<0.1	<0.1
Cation Exchange Capacity	meq/100g	14	2.4	9.4	15	43

Asbestos ID - soils NEPM						
Our Reference		367552-1	367552-2	367552-3	367552-5	367552-6
Your Reference	UNITS	BH301	BH301	BH301	BH302	BH302
Depth		0-0.1	0.9-1	1.5-1.6	0-0.1	1.4-1.5
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	03/12/2024	03/12/2024	03/12/2024	03/12/2024	03/12/2024
Sample mass tested	g	594.14	755.5	596.66	763.17	655.25
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	Chrysotile asbestos detected Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	0.3608	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	See Above	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	0.2754	–
FA and AF Estimation*	g	–	–	–	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos comments	-	Nil	Nil	Nil	YES	Nil

Asbestos ID - soils NEPM						
Our Reference		367552-7	367552-8	367552-9	367552-10	367552-12
Your Reference	UNITS	BH303	BH303	BH304	BH304	BH305
Depth		0.1-0.2	0.4-0.5	0.1-0.2	0.4-0.5	0.1-0.2
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	03/12/2024	03/12/2024	03/12/2024	03/12/2024	03/12/2024
Sample mass tested	g	737.51	683.08	494.32	652.09	537.61
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	Chrysotile asbestos detected Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	Chrysotile asbestos detected Amosite asbestos detected Crocidolite asbestos detected Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	0.2448	<0.1	<0.1	3.1344
Asbestos ID in soil <0.1g/kg*	-	Chrysotile	See Above	No visible asbestos detected	No visible asbestos detected	See Above
ACM >7mm Estimation*	g	–	0.1673	–	–	1.1648
FA and AF Estimation*	g	0.0070	–	–	–	0.5203
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	0.0968
Asbestos comments	-	YES	YES	Nil	Nil	YES

Asbestos ID - soils NEPM						
Our Reference		367552-15	367552-16	367552-18	367552-19	367552-20
Your Reference	UNITS	BH306	BH306	BH307	BH307	BH308
Depth		0.1-0.2	0.4-0.5	0.1-0.2	0.9-1	0.1-0.2
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	03/12/2024	03/12/2024	03/12/2024	03/12/2024	03/12/2024
Sample mass tested	g	468.22	756.3	849.81	627.2	751.1
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	Chrysotile asbestos detected Amosite asbestos detected Crocidolite asbestos detected Organic fibres detected	Chrysotile asbestos detected Amosite asbestos detected Crocidolite asbestos detected Organic fibres detected	Chrysotile asbestos detected Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos$^{\#1}$	g/kg	0.2889	0.3484	0.1689	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	See Above	See Above	See Above	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	0.1353	0.2635	0.1436	–	–
FA and AF Estimation*	g	–	–	–	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos comments	-	YES	YES	YES	Nil	Nil

Asbestos ID - soils NEPM						
Our Reference		367552-21	367552-22	367552-23	367552-24	367552-26
Your Reference	UNITS	BH308	BH309	BH310	BH310	BH311
Depth		0.4-0.5	0.1-0.2	0-0.1	0.9-1	0-0.1
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	03/12/2024	03/12/2024	03/12/2024	03/12/2024	03/12/2024
Sample mass tested	g	556.08	707.14	595.35	347.93	604.22
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Grey powdery material	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	Chrysotile asbestos detected Organic fibres detected	Chrysotile asbestos detected Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	0.1176	0.1691	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	See Above	See Above	Chrysotile Amosite Crocidolite	No visible asbestos detected	Amosite
ACM >7mm Estimation*	g	0.0654	–	–	–	–
FA and AF Estimation*	g	–	0.1196	0.0452	–	0.0315
FA and AF Estimation*#2	%(w/w)	<0.001	0.0169	0.0076	<0.001	0.0052
Asbestos comments	-	YES	YES	YES	Nil	YES

Asbestos ID - soils NEPM		
Our Reference		367552-27
Your Reference	UNITS	BH311
Depth		0.9-1
Date Sampled		25/11/2024
Type of sample		Soil
Date analysed	-	03/12/2024
Sample mass tested	g	429.09
Sample Description	-	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	Chrysotile asbestos detected Amosite asbestos detected Organic fibres detected
Trace Analysis	-	No asbestos detected
Total Asbestos#1	g/kg	9.5364
Asbestos ID in soil <0.1g/kg*	-	See Above
ACM >7mm Estimation*	g	3.7635
FA and AF Estimation*	g	0.3285
FA and AF Estimation*#2	%(w/w)	0.0766
Asbestos comments	-	YES

Asbestos ID - materials				
Our Reference		367552-13	367552-14	367552-32
Your Reference	UNITS	BH305	BH305	BH308M
Depth		0.1-0.2	0.4-0.5	0.1-0.2
Date Sampled		25/11/2024	25/11/2024	25/11/2024
Type of sample		Material	Material	Material
Date analysed	-	02/12/2024	02/12/2024	02/12/2024
Mass / Dimension of Sample	-	91x52x6mm	15x11x4mm	90x30x5mm
Sample Description	-	Grey fibre cement material	Grey fibre cement material	Assorted fragment
Asbestos ID in materials	-	Chrysotile asbestos detected Amosite asbestos detected Crocidolite asbestos detected	Chrysotile asbestos detected	No asbestos detected
Trace Analysis	-	[NT]	[NT]	No asbestos detected

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. NOTE#1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF relative to the sample mass tested) NOTE#2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Inorg-001	pH - Measured using pH meter and electrode. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-020	Determination of various metals by ICP-AES.
Metals-020	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-OES analytical finish.
Metals-021	Determination of Mercury by Cold Vapour AAS.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021/022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD and/or GC-MS/GC-MSMS. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. ‘EQ PQL’values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. ‘EQ zero’values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. ‘EQ half PQL’values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

Method ID	Methodology Summary
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	367552-7
Date extracted	-			28/11/2024	5	28/11/2024	28/11/2024		28/11/2024	28/11/2024
Date analysed	-			30/11/2024	5	30/11/2024	30/11/2024		30/11/2024	30/11/2024
TRH C_6 - C_9	mg/kg	25	Org-023	<25	5	<25	<25	0	108	109
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	5	<25	<25	0	108	109
Benzene	mg/kg	0.2	Org-023	<0.2	5	<0.2	<0.2	0	99	99
Toluene	mg/kg	0.5	Org-023	<0.5	5	<0.5	<0.5	0	111	112
Ethylbenzene	mg/kg	1	Org-023	<1	5	<1	<1	0	110	111
m+p-xylene	mg/kg	2	Org-023	<2	5	<2	<2	0	111	111
o-Xylene	mg/kg	1	Org-023	<1	5	<1	<1	0	110	111
Naphthalene	mg/kg	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	104	5	106	103	3	105	105

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	367552-23
Date extracted	-			[NT]	18	28/11/2024	28/11/2024		28/11/2024	28/11/2024
Date analysed	-			[NT]	18	30/11/2024	30/11/2024		02/12/2024	02/12/2024
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	18	<25	<25	0	113	112
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	18	<25	<25	0	113	112
Benzene	mg/kg	0.2	Org-023	[NT]	18	<0.2	<0.2	0	111	110
Toluene	mg/kg	0.5	Org-023	[NT]	18	<0.5	<0.5	0	113	111
Ethylbenzene	mg/kg	1	Org-023	[NT]	18	<1	<1	0	117	115
m+p-xylene	mg/kg	2	Org-023	[NT]	18	<2	<2	0	112	111
o-Xylene	mg/kg	1	Org-023	[NT]	18	<1	<1	0	115	113
Naphthalene	mg/kg	1	Org-023	[NT]	18	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	18	89	98	10	108	105

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	22	28/11/2024	28/11/2024		[NT]	[NT]
Date analysed	-			[NT]	22	02/12/2024	02/12/2024		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	22	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	22	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	22	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	22	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	22	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	22	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	22	<1	<1	0	[NT]	[NT]
Naphthalene	mg/kg	1	Org-023	[NT]	22	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	22	109	109	0	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	367552-7
Date extracted	-			28/11/2024	5	28/11/2024	28/11/2024		28/11/2024	28/11/2024
Date analysed	-			30/11/2024	5	29/11/2024	29/11/2024		29/11/2024	29/11/2024
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	5	<50	<50	0	109	103
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	5	<100	<100	0	94	101
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	5	<100	<100	0	100	104
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	5	<50	<50	0	109	103
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	5	<100	<100	0	94	101
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	5	<100	<100	0	100	104
Surrogate o-Terphenyl	%		Org-020	85	5	92	86	7	95	117

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	367552-23
Date extracted	-			[NT]	18	28/11/2024	28/11/2024		28/11/2024	28/11/2024
Date analysed	-			[NT]	18	30/11/2024	30/11/2024		30/11/2024	30/11/2024
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	18	<50	<50	0	108	99
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	18	<100	<100	0	102	100
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	18	<100	<100	0	100	95
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	18	<50	<50	0	108	99
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	18	<100	<100	0	102	100
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	18	<100	<100	0	100	95
Surrogate o-Terphenyl	%		Org-020	[NT]	18	87	94	8	115	109

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	22	28/11/2024	28/11/2024		[NT]	[NT]
Date analysed	-			[NT]	22	30/11/2024	30/11/2024		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	22	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	22	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	22	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	22	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	22	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	22	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	22	93	93	0	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	367552-7
Date extracted	-			28/11/2024	5	28/11/2024	28/11/2024		28/11/2024	28/11/2024
Date analysed	-			29/11/2024	5	29/11/2024	29/11/2024		29/11/2024	29/11/2024
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	72	78
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	78	84
Fluorene	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	78	82
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	80	91
Anthracene	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	0.2	67	76	85
Pyrene	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	0.2	67	78	81
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	0.1	0	90	90
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	5	<0.2	0.3	40	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	5	<0.05	0.1	67	70	75
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	98	5	111	99	11	90	104

QUALITY CONTROL: PAHs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	367552-23
Date extracted	-			[NT]	18	28/11/2024	28/11/2024		28/11/2024	28/11/2024
Date analysed	-			[NT]	18	29/11/2024	29/11/2024		29/11/2024	29/11/2024
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	76	80
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	82	82
Fluorene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	80	80
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	84	92
Anthracene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	80	106
Pyrene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	84	111
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	98	106
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	18	<0.2	0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	18	<0.05	0.06	18	76	90
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	18	108	105	3	98	103

QUALITY CONTROL: PAHs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	22	28/11/2024	28/11/2024		[NT]	[NT]
Date analysed	-			[NT]	22	29/11/2024	29/11/2024		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	22	0.1	0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	22	0.4	0.4	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	22	0.4	0.4	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	22	0.2	0.2	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	22	0.2	0.2	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	22	0.7	0.8	13	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	22	0.2	0.2	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	22	0.2	0.2	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	22	0.2	0.2	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	22	102	95	7	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	367552-7
Date extracted	-			28/11/2024	5	28/11/2024	28/11/2024		28/11/2024	28/11/2024
Date analysed	-			29/11/2024	5	29/11/2024	29/11/2024		29/11/2024	29/11/2024
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	84	88
HCB	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	82	92
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	76	90
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	82	94
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	84	102
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	76	84
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	82	96
Endrin	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	76	88
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	80	102
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	78	96
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	92	5	88	109	21	96	108

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	367552-23
Date extracted	-			[NT]	18	28/11/2024	28/11/2024		[NT]	28/11/2024
Date analysed	-			[NT]	18	29/11/2024	29/11/2024		[NT]	29/11/2024
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	86
HCB	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	80
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	80
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	94
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	96
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	86
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	90
Endrin	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	89
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	98
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	94
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	[NT]	18	89	89	0	[NT]	102

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	22	28/11/2024	28/11/2024		[NT]	[NT]
Date analysed	-			[NT]	22	29/11/2024	29/11/2024		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	[NT]	22	110	89	21	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	367552-7
Date extracted	-			28/11/2024	5	28/11/2024	28/11/2024		28/11/2024	28/11/2024
Date analysed	-			29/11/2024	5	29/11/2024	29/11/2024		29/11/2024	29/11/2024
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	74	86
Mevinphos	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	70	84
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	76	92
Malathion	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	84	96
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	76	90
Fenthion	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	76	94
Bromophos-ethyl	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	70	86
Phosalone	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	92	5	88	109	21	96	108

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	367552-23
Date extracted	-			[NT]	18	28/11/2024	28/11/2024		[NT]	28/11/2024
Date analysed	-			[NT]	18	29/11/2024	29/11/2024		[NT]	29/11/2024
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	84
Mevinphos	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	84
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	90
Malathion	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	96
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	90
Fenthion	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	88
Bromophos-ethyl	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	84
Phosalone	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	[NT]	18	89	89	0	[NT]	102

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	22	28/11/2024	28/11/2024		[NT]	[NT]
Date analysed	-			[NT]	22	29/11/2024	29/11/2024		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Mevinphos	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Fenthion	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Phosalone	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	[NT]	22	110	89	21	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	367552-7
Date extracted	-			28/11/2024	5	28/11/2024	28/11/2024		28/11/2024	28/11/2024
Date analysed	-			29/11/2024	5	29/11/2024	29/11/2024		29/11/2024	29/11/2024
Aroclor 1016	mg/kg	0.1	Org-021/022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021/022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021/022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021/022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021/022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021/022/025	<0.1	5	<0.1	<0.1	0	78	80
Aroclor 1260	mg/kg	0.1	Org-021/022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-Fluorobiphenyl	%		Org-021/022/025	88	5	89	90	1	89	97

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	367552-23
Date extracted	-			[NT]	18	28/11/2024	28/11/2024		[NT]	28/11/2024
Date analysed	-			[NT]	18	29/11/2024	29/11/2024		[NT]	29/11/2024
Aroclor 1016	mg/kg	0.1	Org-021/022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021/022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021/022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021/022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021/022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021/022/025	[NT]	18	<0.1	<0.1	0	[NT]	80
Aroclor 1260	mg/kg	0.1	Org-021/022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-Fluorobiphenyl	%		Org-021/022/025	[NT]	18	87	90	3	[NT]	95

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	22	28/11/2024	28/11/2024		[NT]	[NT]
Date analysed	-			[NT]	22	29/11/2024	29/11/2024		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021/022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021/022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021/022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021/022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021/022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021/022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021/022/025	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-Fluorobiphenyl	%		Org-021/022/025	[NT]	22	95	97	2	[NT]	[NT]

Client Reference: 231248.01, Reid Park Rydalmere

QUALITY CONTROL: Misc Soil - Inorg					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			29/11/2024	[NT]	[NT]	[NT]	[NT]	29/11/2024	[NT]
Date analysed	-			29/11/2024	[NT]	[NT]	[NT]	[NT]	29/11/2024	[NT]
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	[NT]	[NT]	[NT]	[NT]	120	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	367552-7
Date prepared	-			28/11/2024	5	28/11/2024	28/11/2024		28/11/2024	28/11/2024
Date analysed	-			29/11/2024	5	29/11/2024	29/11/2024		29/11/2024	29/11/2024
Arsenic	mg/kg	4	Metals-020	<4	5	7	10	35	111	102
Cadmium	mg/kg	0.4	Metals-020	<0.4	5	<0.4	<0.4	0	104	87
Chromium	mg/kg	1	Metals-020	<1	5	20	29	37	107	94
Copper	mg/kg	1	Metals-020	<1	5	25	25	0	101	110
Lead	mg/kg	1	Metals-020	<1	5	28	36	25	106	81
Mercury	mg/kg	0.1	Metals-021	<0.1	5	<0.1	<0.1	0	96	104
Nickel	mg/kg	1	Metals-020	<1	5	12	20	50	106	94
Zinc	mg/kg	1	Metals-020	<1	5	52	75	36	106	#

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	367552-23
Date prepared	-			[NT]	18	28/11/2024	28/11/2024		28/11/2024	28/11/2024
Date analysed	-			[NT]	18	29/11/2024	29/11/2024		29/11/2024	29/11/2024
Arsenic	mg/kg	4	Metals-020	[NT]	18	4	4	0	117	122
Cadmium	mg/kg	0.4	Metals-020	[NT]	18	<0.4	<0.4	0	110	95
Chromium	mg/kg	1	Metals-020	[NT]	18	20	19	5	113	114
Copper	mg/kg	1	Metals-020	[NT]	18	50	53	6	105	120
Lead	mg/kg	1	Metals-020	[NT]	18	81	40	68	111	95
Mercury	mg/kg	0.1	Metals-021	[NT]	18	<0.1	<0.1	0	96	95
Nickel	mg/kg	1	Metals-020	[NT]	18	84	92	9	111	102
Zinc	mg/kg	1	Metals-020	[NT]	18	110	100	10	112	104

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	22	28/11/2024	28/11/2024		[NT]	[NT]
Date analysed	-			[NT]	22	29/11/2024	29/11/2024		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	22	4	4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	22	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	22	14	16	13	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	22	39	39	0	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	22	63	66	5	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	22	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	22	36	40	11	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	22	110	110	0	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			02/12/2024	4	02/12/2024	02/12/2024		02/12/2024	[NT]
Date analysed	-			02/12/2024	4	02/12/2024	02/12/2024		02/12/2024	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	4	6.1	6.0	2	100	[NT]

QUALITY CONTROL: CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	367552-17
Date prepared	-			03/12/2024	11	03/12/2024	03/12/2024		03/12/2024	03/12/2024
Date analysed	-			03/12/2024	11	03/12/2024	03/12/2024		03/12/2024	03/12/2024
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	11	4.4	4.2	5	92	#
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	11	0.4	0.4	0	99	96
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	11	3.6	3.3	9	89	102
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	11	1	1	0	106	83

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

PAHs in Soil - The RPD for duplicate results is accepted due to the non homogenous nature of sample/s 367552-5,5d.

Acid Extractable Metals in Soil:
- The laboratory RPD acceptance criteria has been exceeded for 367552-5 for Ni. Therefore a triplicate result has been issued as laboratory sample number 367552-33.
- The laboratory RPD acceptance criteria has been exceeded for 367552-18 for Pb. Therefore a triplicate result has been issued as laboratory sample number 367552-34.
- # Percent recovery is not possible to report due to the inhomogeneous nature of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

CEC - # Poor spike recovery was obtained for this sample. The sample was re-digested and re-spiked and the poor recovery was confirmed. This is due to matrix interferences. However, an acceptable recovery was obtained for the LCS.

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

Factual description of asbestos identified in the soil samples: NEPM
Sample 367552-5; Chrysotile asbestos identified in 1.8358g of fibre cement material >7mm

Sample 367552-7; Chrysotile asbestos identified in 0.0088g of fibrous matted material

Sample 367552-8; Chrysotile asbestos identified in 1.1150g of fibre cement material >7mm

Sample 367552-12; Chrysotile, Amosite & Crocidolite asbestos identified in 7.7652g of fibre cement material >7mm

Sample 367552-12; Chrysotile, Amosite & Crocidolite asbestos identified in 0.6504g of fibrous matted material

Sample 367552-15; Chrysotile, Amosite & Crocidolite asbestos identified in 0.9018g of fibre cement material >7mm

Sample 367552-12; Chrysotile, Amosite & Crocidolite asbestos identified in 0.0224g of fibrous matted material

Sample 367552-16; Chrysotile, Amosite & Crocidolite asbestos identified in 1.7567g of fibre cement material >7mm

Sample 367552-18; Chrysotile asbestos identified in 0.9570g of fibre cement material >7mm

Sample 367552-21; Chrysotile asbestos identified in 0.4358g of fibre cement material >7mm

Sample 367552-22; Chrysotile asbestos identified in 0.1495g of fibrous matted material

Sample 367552-23; Chrysotile, Amosite & Crocidolite asbestos identified in 0.0565g of fibrous matted material

Sample 367552-26; Amosite asbestos identified in 0.0394g of fibrous matted material

Sample 367552-27; Chrysotile & Amosite asbestos identified in 25.0900g of fibre cement material >7mm

Sample 367552-27; Chrysotile & Amosite asbestos identified in 2.1898g of fibre cement material <7mm

Douglas PARTNERS | GROUNDED EXPERTISE

CHAIN OF CUSTODY DESPATCH SHEET

Project No: 231248.01	**Suburb:** Reid Park Rydalmere			**To:** Envirolab Services
Project Manager: Cathy Li	**Order Number:**	**Sampler:** IH		12 Ashley St, Chatswood NSW 2067
Email: cathy.li@douglaspartners.com.au; Srikanth.Raghuraman@douglaspartners.com.au				**Attn:** Sample Receipt
Turnaround time: ☑ Standard ☐ 72 hour ☐ 48 hour ☐ 24 hour ☐ Same day				(02) 9910 6200 samplereceipt@envirolab.com

Prior Storage: ☐ Fridge ☐ Freezer ☐ Esky ☐ Shelf **Do samples contain 'potential' HBM?** ☐ No ☐ Yes (If YES, then handle, transport and store in accordance with FPM HAZID)

	Lab ID	Sample ID: Location / Other ID	Sample ID: Depth From	Sample ID: Depth To	Date Sampled	Sample Type: S - soil W - water M - Material	Container Type: G - glass P - plastic	Analytes: Combo8_AN	Combo3_AN	Combo3	pH a&CEC	Asbestos ID in Material	BTEX	AF/FA NEPM					Notes/ Preservation/ Additional Requirements
X	1	BH301	0	0.1	25/11/24	S	G,P		X		X								
	NR	BH301	0.4	0.5	25/11/24	S	G,P												
X	2	BH301	0.9	1	25/11/24	S	G,P		X										
X	3	BH301	~~1.4~~ 1.5	~~1.5~~ 1.6	25/11/24	S	G,P		X										
X	4	BH301	1.9	2	25/11/24	S	G,P			X	X								
X	5	BH302	0	0.1	25/11/24	S	G,P	X											
	NR	BH302	0.4	0.5	25/11/24	S	G,P												
	NR	BH302	0.9	1	25/11/24	S	G,P												
X	6	BH302	1.4	1.5	25/11/24	S	G,P		X										
	NR	BH302	1.9	2	25/11/24	S	G,P												
X	7	BH303	0.1	0.2	25/11/24	S	G,P	X											
X	8	BH303	0.4	0.5	25/11/24	S	G,P		X										
X	9	BH304	0.1	0.2	25/11/24	S	G,P	X											
X	10	BH304	0.4	0.5	25/11/24	S	G,P							X					

ENVIROLAB
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 367556
Date Received: 27/11/24
Time Received: 1330
Received By: CW
Temp: [✓ Cool]/Ambient
Cooling: Ice/[✓ Icepack]
Security: [✓ Intact]/Broken/None

Metals to analyse:

Number of samples in container: **Transported to laboratory by:**

Send results to: Douglas Partners Pty Ltd

Address: 96 Hermitage Road, West Ryde NSW 2114 **Phone:** (02) 9809 0666

Relinquished by: **Date:** **Signed:**

LAB RECEIPT
Lab Ref. No:
Received by: 27/11/24 1330
Date & Time: CW
Signed: CW

Douglas PARTNERS GROUNDED EXPERTISE

CHAIN OF COUSTODY DESPATCH SHEET

Project No:	231248.01	**Suburb:**	Reid Park Rydalmere	**To:**	Envirolab Services
Project Manager:	Cathy Li			**Dispatch date:**	0/01/1900

Lab ID	Sample ID		Date Sampled	Sample Type	Container Type	Analytes											Notes/ Preservation/ Additional Requirements
	Location / Other ID	Depth From	Depth To		S - soil W - water M - Material	G - glass P - plastic	Combo8_AN	Combo3_AN	Combo3	pH a&CEC	Asbestos ID in Material	BTEX	AF/FA NEPM				
X 11	BH304	0.9	1	25/11/24	S	G,P			X	X							
NR	BH304	1.4	1.5	25/11/24	S	G,P											
NR	BH304	1.9	2	25/11/24	S	G,P											
X 12	BH305	0.1	0.2	25/11/24	S	G,P	X										
X 13	BH305/0.1	0.1	0.2	25/11/24	M	P					X						
X 14	BH305/0.4	0.4	0.5	25/11/24	M	P					X						
X 15	BH306	0.1	0.2	25/11/24	S	G,P	X										
X 16	BH306	~~0.5~~ 0.4	~~0.6~~ 0.5	25/11/24	S	G,P		X									367552
X 17	BH306	0.9	1	25/11/24	S	G,P			X	X							27/11/24
NR	BH306	1.4	1.5	25/11/24	S	G,P											CW
NR	BH306	1.9	2	25/11/24	S	G,P											
X 18	BH307	0.1	0.2	25/11/24	S	G,P	X										
NR	BH307	0.4	0.5	25/11/24	S	G,P											
X 19	BH307	0.9	1	25/11/24	S	G,P		X									
NR	BH307	1.4	1.5	25/11/24	S	G,P											
NR	BH307	1.9	2	25/11/24	S	G,P											
X 20	BH308	0.1	0.2	25/11/24	S	G,P	X										
X 21	BH308	0.4	0.5	25/11/24	S	G,P		X									

Douglas Partners GROUNDED EXPERTISE

CHAIN OF CUSTODY DESPATCH SHEET

Project No: 231248.01 **Suburb:** Reid Park Rydalmere **To:** Envirolab Services

Project Manager: Cathy Li **Dispatch date:** 0/01/1900

	Lab ID	Sample ID			Date Sampled	Sample Type	Container Type	Analytes											Notes/ Preservation/ Additional Requirements
		Location / Other ID	Depth From	Depth To		S - soil W - water M - Material	G - glass P - plastic	Combo8_AN	Combo3_AN	Combo3	pH a&CEC	Asbestos ID in Material	BTEX	AF/FA NEPM					
X	22	BH309	0.1	0.2	25/11/24	S	G,P	X											
X	23	BH310	0	0.1	25/11/24	S	G,P	X			X								
	NR	BH310	0.4	0.5	25/11/24	S	G,P												
X	24	BH310	0.9	1	25/11/24	S	G,P		X										
	NR	BH310	1.4	1.5	25/11/24	S	G,P												
	25	BH310	1.9	2	25/11/24	S	G,P												
X	26	BH311	0	0.1	25/11/24	S	G,P	X											367552
	NR	BH311	0.4	0.5	25/11/24	S	G,P												27/11/24
X	27	BH311	0.9	1	25/11/24	S	G,P		X										AN
\	28	TB1											X						
\	29	TS1											X						
	NR	BD01/20241125																	
\	30	BD2/20241125								X									
\	31	BD5/20241125								X									
	NR	BD07/20241125																	
SP	32	BH308M	0.1	0.2	25/11/24	M													

Project No: 231248.01 **Suburb:** Reid Park Rydalmere **To:** Envirolab Services

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200   fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Cathy Li

Sample Login Details

Your reference	231248.01, Reid Park Rydalmere
Envirolab Reference	367552
Date Sample Received	27/11/2024
Date Instructions Received	27/11/2024
Date Results Expected to be Reported	04/12/2024

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	28 Soil, 4 Material
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	12
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Multiple samples not received - assumed samples were not sent as no testing was marked for samples that were not received.

Sample #20-BH308/0.1-0.2: Material sample found in soil sample in bag. Added to the CoC as sample #32-BH308M/0.1-0.2 to be tested for asb ID in material.

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBs in Soil	Misc Soil - Inorg	Acid Extractable metalsin soil	Misc Inorg - Soil	CEC	Asbestos ID - soils NEPM	Asbestos ID - materials	On Hold
BH301-0-0.1	✓	✓	✓					✓	✓	✓	✓		
BH301-0.9-1	✓	✓	✓					✓			✓		
BH301-1.5-1.6	✓	✓	✓					✓			✓		
BH301-1.9-2	✓	✓	✓					✓	✓	✓			
BH302-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓			✓		
BH302-1.4-1.5	✓	✓	✓					✓			✓		
BH303-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓			✓		
BH303-0.4-0.5	✓	✓	✓					✓			✓		
BH304-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓			✓		
BH304-0.4-0.5											✓		
BH304-0.9-1	✓	✓	✓					✓	✓	✓			
BH305-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓			✓		
BH305-0.1-0.2												✓	
BH305-0.4-0.5												✓	
BH306-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓			✓		
BH306-0.4-0.5	✓	✓	✓					✓			✓		
BH306-0.9-1	✓	✓	✓					✓	✓	✓			
BH307-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓			✓		
BH307-0.9-1	✓	✓	✓					✓			✓		
BH308-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓			✓		
BH308-0.4-0.5	✓	✓	✓					✓			✓		
BH309-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓			✓		
BH310-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
BH310-0.9-1	✓	✓	✓					✓			✓		
BH310-1.9-2													✓
BH311-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓			✓		
BH311-0.9-1	✓	✓	✓					✓			✓		
TB1	✓												
TS1	✓												
BD2/20241125	✓	✓	✓					✓					
BD5/20241125	✓	✓	✓					✓					
BH308M-0.1-0.2												✓	

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info
Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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12 Ashley St Chatswood NSW 2067
ph 02 9910 6200   fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 367552-A

Client Details

Client	Douglas Partners Pty Ltd
Attention	Michael Le
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**231248.01, Reid Park Rydalmere**
Number of Samples	Additional analysis
Date samples received	27/11/2024
Date completed instructions received	05/12/2024

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	12/12/2024
Date of Issue	12/12/2024

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

Results Approved By
Giovanni Agosti, Group Technical Manager

Authorised By
Nancy Zhang, Laboratory Manager

Metals from Leaching Fluid pH 2.9 or 5						
Our Reference		367552-A-7	367552-A-8	367552-A-15	367552-A-18	367552-A-20
Your Reference	UNITS	BH303	BH303	BH306	BH307	BH308
Depth		0.1-0.2	0.4-0.5	0.1-0.2	0.1-0.2	0.1-0.2
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	11/12/2024	11/12/2024	11/12/2024	11/12/2024	11/12/2024
Date analysed	-	11/12/2024	11/12/2024	11/12/2024	11/12/2024	11/12/2024
pH of soil for fluid# determ.	pH units	8.1	8.4	8.1	7.9	8.1
pH of soil TCLP (after HCl)	pH units	1.7	1.7	1.7	1.7	1.7
Extraction fluid used		1	1	1	1	1
pH of final Leachate	pH units	4.9	5.0	4.9	5.0	5.1
Lead	mg/L	<0.03	[NA]	<0.03	[NA]	[NA]
Nickel	mg/L	0.03	0.06	[NA]	0.04	0.03

Method ID	Methodology Summary
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using AS 4439. Please note that the mass used may be scaled down from default based on sample mass available. Samples are stored at 2-6oC before and after leachate preparation.
Metals-020	Determination of various metals by ICP-AES following buffer determination as per USEPA 1311 and hence AS 4439.3. Extraction Fluid 1 refers to the pH 5.0 buffer and Extraction Fluid 2 is the pH 2.9 buffer.

QUALITY CONTROL: Metals from Leaching Fluid pH 2.9 or 5						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			11/12/2024	7	11/12/2024	11/12/2024		11/12/2024	[NT]
Date analysed	-			11/12/2024	7	11/12/2024	11/12/2024		11/12/2024	[NT]
Lead	mg/L	0.03	Metals-020	<0.03	7	<0.03	<0.03	0	92	[NT]
Nickel	mg/L	0.02	Metals-020	<0.02	7	0.03	0.03	0	95	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Anna Bui

From: Michael Le <Michael.Le@douglaspartners.com.au>
Sent: Thursday, 5 December 2024 10:55 AM
To: Simon Song
Cc: Envirolab Sydney Sample Receipt; Cathy Li; Srikanth Raghuraman; Huy Tran
Subject: 231248.01 - TCLP request

CAUTION: This email originated from outside of the organisation. Do not act on instructions, click links or open attachments unless you recognise the sender and know the content is authentic and safe.

Hi team,

Could I get the following samples analysed for TCLP on a 5 day TAT?

	Sample location	Depth	Analyte
	Lab report – 367552 – Reid Park Rydalmere		
7	BH303	0.1 - 0.2 m	Nickel and lead
8	BH303	0.4 - 0.5 m	Nickel
18	BH307	0.1 - 0.2 m	Nickel
20	BH308	0.1 - 0.2 m	Nickel
15	BH306	0.1-0.2	Lead
	Lab report – 367555 – Rangihou Reserve		
	BH102	0.1 - 0.2 m	Lead and B(a)P
	BH107	0.1 - 0.2 m	Nickel

Please let me know if you have any issues.

Kind regards,

Michael Le | Occupational Hygienist / Environmental Scientist

☎ 02 9809 0666 📞 +61 437 467 920 Michael.Le@douglaspartners.com.au

www.douglaspartners.com.au
96 Hermitage Road, West Ryde
NSW 2114 | Wallumedegal Country
PO Box 472, West Ryde, NSW 1685

Douglas PARTNERS | GROUNDED EXPERTISE

Click here to learn about our awards and achievements.

ELS REF: 367552-A
TAT: STANDARD
DUE: 12/12/24
AB

END OF YEAR CLOSURE

Our offices will be closed over the Christmas/New Year season, from Friday, 20 December 2024, and will reopen on Monday, 6 January 2025.

Wishing you a joyful holiday season and a prosperous New Year!

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Michael Le

Sample Login Details

Your reference	231248.01, Reid Park Rydalmere
Envirolab Reference	367552-A
Date Sample Received	27/11/2024
Date Instructions Received	05/12/2024
Date Results Expected to be Reported	12/12/2024

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	Additional analysis
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	12
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

Sample ID	pH of soil for fluid#determ.	pH of soil TCLP (after HCl)	Extraction fluid used	pH of final Leachate	Lead	Nickel	On Hold
BH301-0-0.1							✓
BH301-0.9-1							✓
BH301-1.5-1.6							✓
BH301-1.9-2							✓
BH302-0-0.1							✓
BH302-1.4-1.5							✓
BH303-0.1-0.2	✓	✓	✓	✓	✓	✓	
BH303-0.4-0.5	✓	✓	✓	✓		✓	
BH304-0.1-0.2							✓
BH304-0.4-0.5							✓
BH304-0.9-1							✓
BH305-0.1-0.2							✓
BH305-0.1-0.2							✓
BH305-0.4-0.5							✓
BH306-0.1-0.2	✓	✓	✓	✓	✓		
BH306-0.4-0.5							✓
BH306-0.9-1							✓
BH307-0.1-0.2	✓	✓	✓	✓		✓	
BH307-0.9-1							✓
BH308-0.1-0.2	✓	✓	✓	✓		✓	
BH308-0.4-0.5							✓
BH309-0.1-0.2							✓
BH310-0-0.1							✓
BH310-0.9-1							✓
BH310-1.9-2							✓
BH311-0-0.1							✓
BH311-0.9-1							✓
TB1							✓
TS1							✓
BD2/20241125							✓
BD5/20241125							✓
BH308M-0.1-0.2							✓

Sample ID	pH of soil for fluid#determ.	pH of soil TCLP (after HCl)	Extraction fluid used	pH of final Leachate	Lead	Nickel	On Hold
BH302 - [TRIPLICATE]-0-0.1							✓
BH307 - [TRIPLICATE]-0.1-0.2							✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info
Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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ph 02 9910 6200   fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 368084

Client Details

Client	Douglas Partners Pty Ltd
Attention	Cathy Li
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**231248.01, Parramatta**
Number of Samples	1 Material
Date samples received	04/12/2024
Date completed instructions received	04/12/2024

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	11/12/2024
Date of Issue	10/12/2024

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

Asbestos Approved By
Analysed by Asbestos Approved Analyst: Lucy Zhu
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Lucy Zhu, Asbestos Supervisor

Authorised By
Nancy Zhang, Laboratory Manager

Asbestos ID - materials		
Our Reference		368084-1
Your Reference	UNITS	BH303
Date Sampled		25/11/2024
Depth		0.2-0.4
Type of sample		Material
Date analysed	-	06/12/2024
Mass / Dimension of Sample	-	49x47x5mm
Sample Description	-	Grey fibre cement material
Asbestos ID in materials	-	Chrysotile asbestos detected
Trace Analysis	-	[NT]

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

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CHAIN OF CUSTODY DESPATCH SHEET

Project No: 231248.01
Suburb: Parramatta
To: Envirolab Services
12 Ashley St, Chatswood NSW 2067
Project Manager: Cathy Li
Order Number:
Sampler: IS
Email: cathy.li@douglaspartners.com.au; Michael.Le@douglaspartners.com.au; Huy.Tran@douglaspartners.com.au
Attn: Sample Receipt
(02) 9910 6200 samplereceipt@envirolab.com
Turnaround time: ☑ Standard ☐ 72 hour ☐ 48 hour ☐ 24 hour ☐ Same day
Prior Storage: ☐ Fridge ☐ Freezer ☐ Esky ☐ Shelf
Do samples contain 'potential' HBM? ☐ No ☐ Yes (If YES, then handle, transport and store in accordance with FPM HAZID)

Lab ID	Sample ID			Date Sampled	Sample Type	Container Type	Analytes											Notes/ Preservation/ Additional Requirements
	Location / Other ID	Depth From	Depth To		S - soil W - water M - Material	G - glass P - plastic	Asbestso ID in Material											
1	BH303	0.2	0.4	25/11/24	M	P	x											

ENVIROLAB GROUP
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 368084
Date Received: 04/12/24
Time Received: 1255
Received By: DL
Temp: Cool/[✓ Ambient]
Cooling: Ice/Icepack
Security: [✓ Intact]/Broken/None

Metals to analyse:
Number of samples in container:
Transported to laboratory by:
Send results to: Douglas Partners Pty Ltd
Address: 96 Hermitage Road, West Ryde NSW 211
Phone: (02) 9809 0666
Relinquished by:
Date:
Signed:

LAB RECEIPT
Lab Ref. No: 368084
Received by: Dannielle L
Date & Time 04/12/24 1255
Signed: DL

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200   fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Cathy Li

Sample Login Details

Your reference	231248.01, Parramatta
Envirolab Reference	368084
Date Sample Received	04/12/2024
Date Instructions Received	04/12/2024
Date Results Expected to be Reported	11/12/2024

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	1 Material
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	20
Cooling Method	None
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

Sample ID	Asbestos ID - materials
BH303-0.2-0.4	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info
Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

Appendix J

Data Quality Assurance and Quality Control

1. Field and laboratory data quality assurance and quality control

The field and laboratory data quality assurance and quality control (QA / QC) procedures and results are summarised in the following Table 1. Reference should be made to the field work methodology and the laboratory results / certificates of analysis for further details. The relative percentage difference (RPD) results, along with the other field QC samples are included at the end of this appendix.

Table 1: Field and laboratory quality control

Item	Evaluation / acceptance criteria	Compliance
Analytical laboratories used	NATA accreditation	C
Holding times	Various based on type of analysis	C
Intra-laboratory replicates (Table QA1)	10% of primary samples; <30% RPD	PC
Trip Spikes (Table QA3)	1 per sampling event; 60-140% recovery	C
Trip Blanks (Table QA2)	1 per sampling event; <PQL	C
Laboratory / Reagent Blanks	1 per batch; <PQL	C
Laboratory Duplicate	1 per lab batch; As laboratory certificate	C
Matrix Spikes	1 per lab batch; 70-130% recovery (inorganics); 60-140% recovery (organics)	C
Surrogate Spikes	All organics analysis; 70-130% recovery (inorganics); 60-140% recovery (organics)	C
Control Samples	1 per lab batch; 70-130% recovery (inorganics); 60-140% recovery (organics)	PC
Standard Operating Procedures (SOP)	Adopting SOP for all aspects of the sampling field work	C

Notes:
C = compliance; PC = partial compliance; NC = non-compliance

The RPD results were all within the acceptable range, with the exception of those indicated in Table QA1 (results in bold). The exceedances are not, however, considered to be of concern given that:

- The actual differences in the concentrations of the replicate pairs where RPD exceedances occurred were typically low;
- The replicate pairs were collected from fill soils which by its nature are heterogeneous;

- Replicates, rather than homogenised duplicates, were used to minimise risk of volatile loss, hence greater analytical variability between replicate pairs can be expected;
- Most of the recorded concentrations were relatively close to the PQL;
- The majority of RPD results from a replicate pair were within the acceptable limits; and
- All other QA / QC parameters met the data quality indicators.

It is noted that spike recovery was not completed for zinc due to inhomogeneous nature of elements in the sample. However, the laboratory noted that an acceptable recovery was obtained for the laboratory control sample.

In summary, the QC data is determined to be of sufficient quality to be considered acceptable for the assessment.

2. Data quality indicators

The reliability of field procedures and analytical results was assessed against the following data quality indicators (DQI) as outlined in NEPC *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]* (NEPC, 2013):

- Completeness: a measure of the amount of usable data from a data collection activity;
- Comparability: the confidence (qualitative) that data may be considered to be equivalent for each sampling and analytical event;
- Representativeness: the confidence (qualitative) of data representativeness of media present on-site;
- Precision: a measure of variability or reproducibility of data; and
- Accuracy: a measure of closeness of the data to the 'true' value.

Table 2: Data quality indicators

Data quality indicator	Method(s) of achievement
Completeness	Systematic locations sampled. Sample numbers and spacing compliant with the NSW EPA (2022) sampling guidelines.
	Preparation of borehole logs, sample location plan and chain of custody records.
	Laboratory sample receipt information received confirming receipt of samples intact and appropriateness of the chain of custody.
	Samples analysed for CoPC identified in the CSM.
	Completion of CoC documentation.
	NATA accredited laboratory results certificates provided by the laboratory.
	Satisfactory frequency and results for field and laboratory quality control (QC) samples as discussed in Section 1.

Data quality indicator	Method(s) of achievement
Comparability	Using appropriate techniques for sample recovery, storage and transportation, which were the same for the duration of the project.
	Experienced sampler used.
	Use of NATA registered laboratories, with test methods the same or similar between laboratories.
	Satisfactory results for field and laboratory QC samples.
Representativeness	Target media sampled.
	Sample numbers recovered and analysed are considered to be representative of the target media and complying with DQO.
	Samples were extracted and analysed within holding times.
	Samples were analysed in accordance with the COC.
Precision	Field staff followed standard operating procedures.
	Acceptable RPD between original samples and replicates.
	Satisfactory results for all other field and laboratory QC samples.
Accuracy	Field staff followed standard operating procedures.
	Satisfactory results for all field and laboratory QC samples.

Based on the above, it is considered that the DQI have been generally complied with.

3. Conclusion

Based on the results of the field QA and field and laboratory QC, and evaluation against the DQI it is concluded that the field and laboratory test data obtained are reliable and useable for this assessment.

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.

Table QA1: Relative Percentage Difference Results – Soil Sampling

Lab Report No	Sample ID	Depth	Sample Date	Sample Type	Units	Priority metals								Priority PAH				PAH												Priority TRH						TRH		BTEX				Additional PhysChem
						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	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(g,h,i)perylene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	Pyrene	TRH C6 - C10	TRH >C10-C16	F1 ((C6-C10)-BTEX)	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)	F4 (>C34-C40)	TRH C6 - C9	TRH C10-C36	Benzene	Toluene	Ethylbenzene	Total Xylenes	Moisture
367552	BH303	0.1 - 0.2 m	25/11/24	Soil	mg/kg	**6**	<0.4	**38**	**70**	**98**	<0.1	**55**	**220**	<1	**0.06**	<0.5	**0.57**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**0.1**	<0.1	<0.1	<0.1	**0.1**	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	**49,000**
367552	BD2/20241125	0 m	25/11/24	Soil	mg/kg	**10**	<0.4	**44**	**85**	**130**	<0.1	**63**	**280**	<1	<0.05	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<25	<50	<100	<100	<25	<50	<0.2	<0.5	<1	<1	**47,000**
			Difference		mg/kg	4	0	6	15	32	0	8	60	0	0.01	0	0.52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,000
			RPD		%	**50%**	0%	15%	19%	28%	0%	14%	24%	0%	18%	0%	**168%**	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%
367552	BH306	0.1 - 0.2 m	25/11/24	Soil	mg/kg	**6**	<0.4	**22**	**49**	**69**	**0.1**	**18**	**150**	<1	**0.2**	<0.5	**2.6**	<0.1	<0.1	<0.1	**0.2**	**0.2**	**0.2**	<0.1	**0.4**	<0.1	**0.1**	**0.2**	**0.4**	<25	<50	<25	<50	**110**	<100	<25	**100**	<0.2	<0.5	<1	<1	**93,000**
367552	BD5/20241125	0 m	25/11/24	Soil	mg/kg	**7**	**0.9**	**39**	**110**	**110**	<0.1	**18**	**420**	<1	**0.1**	<0.5	**0.54**	<0.1	<0.1	<0.1	<0.1	**0.1**	<0.1	<0.1	**0.2**	<0.1	<0.1	<0.1	**0.2**	<25	<50	<25	<50	**170**	<100	<25	**150**	<0.2	<0.5	<1	<1	**96,000**
			Difference		mg/kg	1	0.5	17	61	41	0	0	270	0	0.1	0	2.06	0	0	0	0.1	0.1	0.1	0	0.2	0	0	0.1	0.2	0	0	0	0	60	0	0	50	0	0	0	0	3,000
			RPD		%	15%	**77%**	**56%**	**77%**	**46%**	0%	0%	**95%**	0%	**67%**	0%	**131%**	0%	0%	0%	**67%**	**67%**	**67%**	0%	**67%**	0%	0%	**67%**	**67%**	0%	0%	0%	0%	**43%**	0%	0%	**40%**	0%	0%	0%	0%	3%

Table QA2: Trip Blank Results - Soil Sampling

Sample ID	Sample Date	Media Being Sampled	Sample Type	Units	Priority PAH	Priority TRH		TRH	BTEX				Lab Report No
					Naphthalene [b]	TRH C6 - C10	F1 ((C6-C10)-BTEX)	TRH C6 - C9	Benzene	Toluene	Ethylbenzene	Total Xylenes	
TB1	25/11/24	Soil	Soil	mg/kg	<1	<25	<25	<25	<0.2	<0.5	<1	<1	367552

Table QA3: Trip Spike Results – Soil Sampling (% Recovery)

Sample ID	Sample Date	Media Being Sampled	Sample Type	Benzene	Toluene	Ethylbenzene	o-Xylene	m+p-Xylene	Lab Report No
TS1	25/11/24	Soil	Soil	101	101	100	102	100	367552

Remediation Action Plan

CBD Cycleway Project: Reid Park, Rydalmere

City of Parramatta Council

P37382.012 | Version A | July 2025

Document Control

Project Details:	
Report Name:	Remediation Action Plan
Site Details:	CBD Cycleway Project: Reid Park, Rydalmere
Client Name:	City of Parramatta Council
Project Reference:	P37382.012 | C0018

Report Version:

Version / Date:	Review Process:			Issued to:	Summary of changes from previous version:
	Prepared:	Reviewed:	Approved:		
VerA: 2/07/2025	NPA	FKW	FKW	Client	Original issue

Report Review:

Version:	Version A				
Prepared by:		Technical Review by:		Authorised for Issue by:	
Name:	Nick Passlow	**Name:**	Fiona Warden	**Name:**	Fiona Warden
Position:	Principal Consultant	**Position:**	Senior Consultant	**Position:**	Senior Consultant

Executive Summary

Progressive Risk Management (PRM) were engaged by City of Parramatta Council (Council or 'the client') to prepare a Remediation Action Plan (RAP) to address known asbestos impacted soils identified at Reid Park, accessed from 27 Pike Street Rydalmere that are associated with the proposed CBD Cycleway Project (the site).

The site as defined by this RAP is limited to portions of Reid Park which are currently being considered for upgrade works as part of the CBD Cycleway project.

The site locality and site layout are provided in **Figure 1** and **Figure 2** respectively.

The site is currently a 3-metre-wide cycleway and adjoining land making up Reid Park, north of Parramatta River. The project will include widening of the existing cycleway, construction of sandstone retaining walls, tree planting and turfing. The depth of works for these upgrades includes up to 0.4 metres below ground level (mbgl) around the pathway, and up to 1 mbgl for tree planting. As such, various earthworks are required to be undertaken into known or suspected contaminated soils along the length of the upgrade works.

The preferred remedial strategy for the asbestos impacted soils is partial excavation and disposal of contaminated material and capping of remaining asbestos impacted fill to be managed under a long-term Environmental Management Plan (EMP).

This RAP has been prepared in accordance with current regulatory guidelines made or approved by the NSW Environment Protection Authority (EPA). The objectives of the remediation are to ensure that the areas of soil contamination that are to be impacted during the planned works, are remediated to make the site suitable for continued public open space land use and ensure the site does not pose an unacceptable risk (in regard to contamination) to site users or the surrounding environment.

In order to fulfil the project objectives, the remediation scope of works includes:

- Review of relevant previous investigations and identify areas that require remediation.
- Evaluation of potential remediation options and establish remediation goals and validation acceptance criteria.
- Detail the validation inspections, reporting and quality requirements to be implemented to support the final validation of the site.
- Development of contingency plans to respond to unexpected finds or site incidents associated with the remediation, which may pose risk to human health/environment.

It is considered that following full implementation of this RAP the site will be suitable for the ongoing open space land use.

This Executive Summary should be read in conjunction with the report from which it originated in its entirety.

Table of Contents

Tables

Appendices

Definitions and Abbreviations

AAM	Asbestos Fibre Air Monitoring
ACC	Asbestos Clearance Certificate
ACM	Asbestos Containing Material
AF/FA	Asbestos Fines/Friable Asbestos
ARCP	Asbestos Removal Control Plan
CoP	City of Parramatta Council
CoPC	Contaminant(s) of Potential Concern
CLM	Contaminated Land Management
CSM	Conceptual Site Model
EIL	Ecological Investigation Level
EMP	Environmental Management Plan
EPA	Environment Protection Authority
ENM	Excavated Natural Material
ESL	Ecological Screening Level
HIL	Health Investigation Level
HSL	Health Screening Level
LAA	Licensed Asbestos Assessor
mBGL	Metres Below Ground Level
NATA	National Association of Testing Authorities
NEPM	National Environment Protection Measure
NSW	New South Wales
PRM	Progressive Risk Management
QAQC	Quality Assurance and Quality Control
SAC	Site Assessment Criteria
SEPP	State Environmental Planning Policy
SPR	Source-Pathway-Receptor
WHS	Work Health and Safety
VENM	Virgin Excavated Natural Material

1. Introduction

Progressive Risk Management (PRM) were engaged by City of Parramatta Council (Council or 'the client') to prepare a Remediation Action Plan (RAP) to address known asbestos impacted soils identified at Reid Park, accessed from 27 Pike Street Rydalmere that are associated with the proposed CBD Cycleway Project (the site).

The site as defined by this RAP is limited to portions of Reid Park which are currently being considered for upgrade works as part of the CBD Cycleway project.

The site locality and site layout are provided in **Figure 1** and **Figure 2** respectively.

1.1. Project Background

The site is currently a 3-metre-wide cycleway and adjoining land making up Reid Park, north of Parramatta River. The project will include widening of the existing cycleway, construction of sandstone retaining walls, tree planting and turfing. The depth of works for these upgrades includes up to 0.4 metres below ground level (mbgl) around the pathway, and up to 1 mbgl for tree planting. As such, various earthworks are required to be undertaken into known or suspected contaminated soils along the length of the upgrade works.

1.2. Objectives

The overall objective for the remedial works is to ensure that the site is made suitable (specifically in regard to contamination) to complete the planned upgrade works to the cycleway, and for its continued use as public recreational land. The RAP objectives are to:

- Set remediation goals and identify remediation strategies that will ensure the site is suitable for the upgrade works and for the continued use as public recreational land.
- Documenting the controls required to manage risks to human health during works.
- Demonstrate that the proposed remediation strategy is acceptable and properly addresses site environmental management and contingency planning.
- Provide a sequence of remedial works to inform the nominated contractor of the scope/extent of works required to successfully deliver the remedial works package.
- Detail the requirements for the validation of the remedial works.
- Present a framework for the reporting on the remedial works and validation program.

This RAP is structured to present a clear and concise approach to the effective environmental management and overall environmental improvement works for the site.

1.3. Scope of Works

In order to fulfil the project objectives, the remediation scope of works includes:

- Review relevant previous investigations and identify areas that require remediation.
- Evaluation of potential remediation options and establish remediation goals and validation acceptance criteria.
- Detail the validation inspections, reporting and quality requirements to be implemented to support the final validation of the site.
- Development of contingency plans to respond to unexpected finds or site incidents associated with the remediation, which may pose risk to human health/environment.

1.4. Limitations

This RAP has been prepared to address only those areas of Reid Park that are to be impacted as part of the CBD Cycleway Project. Groundwater sampling has not been undertaken. Due to the nature of contaminants (asbestos) and the generally shallow nature of the planned upgrade works is unlikely to intercept groundwater, no further investigation into groundwater was considered necessary.

2. Regulatory Framework

2.1. Relevant Guidance

Specific legislative requirements, guidelines, industry approved standards and Codes of Practice that were considered in the preparation of this RAP are listed below:

State Legislation and Environmental Planning:

- NSW Contaminated Land Management Act (CLM Act) 1997.
- Protection of the Environment Operations Act (POEO Act) 1997.
- NSW Environmental Planning and Assessment Act (the EP&A Act 1979).
- Chapter 4 of the State Environmental Planning Policy (Resilience and Hazards) 2021.

Site Contamination Guidelines:

- NSW EPA Guidelines for Consultants Reporting on Contaminated Land, 2020.
- NSW EPA Guidelines for the NSW Site Auditor Scheme (3rd Edition), 2017.
- NSW EPA Guidelines for Consultants Reporting on Contaminated Land, 2020.
- NSW EPA Sampling Design Part 1 Application, 2022.
- National Environment Protection Council (1999, Revised 2013) National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 – Schedule B1 Guideline on Investigation levels for Soil and Groundwater (NEPC, 2013).
- WA Department of Health (DoH) (2021) Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia.

Waste:

- Protection of the Environment Operations (Waste) Regulations (POEO Waste) 2014.
- Waste Avoidance and Resource Recovery Act 2001.
- NSW EPA Waste Classification Guidelines, Part 1 Classifying Waste, 2014.

Asbestos Related:

- NSW Work Health and Safety Act, 2011 WHS Act 2011).
- NSW Work Health and Safety Regulations, 2017 (WHS Reg 2017), Chapter 8 Asbestos, 2017 (NSW WHS Reg 2017).
- NSW EPA Managing Asbestos in or on Soil, 2014 (NSW EPA 2014).
- SafeWork Australia Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition [NOHSC: 3003(2005)]
- SafeWork Australia – How to Safely Remove Asbestos, August 2019.

Council Planning:

- Parramatta Local Environmental Plan 2023.

2.2. State Environmental Planning Policy

Under the State Environmental Planning Policy (Resilience and Hazards) 2021, the remediation works are considered to be Category 2 (not requiring consent) as:

- The development is not Designated Development, State Significant Infrastructure; or State Significant Development under the EP&A regulation.
- The remediation is not proposed on land identified as critical habitat under the Threatened Species Conservation Act 1995.
- Remediation works is not likely to have a significant effect on threatened species, populations, ecological communities or their habitats.
- The site appears to be Excluded Land.
- The remediation does not require consent under another SEPP or a regional environmental plan.

2.3. Compliance Requirements

Disturbance (including removal) of any materials containing asbestos and disposal of any asbestos from the site will need to be completed under an Asbestos Removal Control Plan (ARCP) prepared by a suitably qualified Class A asbestos removal contractor. Where greater than 10m^2 of non-friable asbestos or any quantity of friable asbestos is to be removed, notification to SafeWork NSW will be required at least 5 days prior to removal.

- Works must be undertaken with the Workplace Health and Safety/Regulation as well as the SafeWork NSW guidance listed previously.
- Soil disposed from the site must be classified in accordance with the NSW EPA (2014) Waste Classification Guidelines.
- Notification to SafeWork NSW will be required five days prior to removal, and a Class A licensed asbestos contractor engaged to prepare Asbestos Removal Control Plan (ARCP).
- During all asbestos disturbance works, Asbestos Air Monitoring (AAM) must be completed by a Licensed Asbestos Assessor (LAA), in accordance with NOHSC:3003 (2005).

2.4. Guidance Framework for Remediation

The preferred hierarchy of options for site remediation and/or management is set out in s.6(16) *Assessment of Site Contamination Policy Framework of Schedules A and B* of the NEPM (2013); this hierarchy is followed in New South Wales.

NEPM (2013) broadly summarises the remediation and management of contaminated sites under the headings of: Prevention; Management; and Implementation.

Prevention of contamination includes application of the precautionary principle for decommissioning and redevelopment of potentially contaminated sites.

Management of contamination includes the development of strategies to protect all segments of the environment with the fundamental goal of remediation being to render a site acceptable and safe for long-term continuation of its existing use or proposed use where a change of land use is part of the remediation strategy.

The preferred hierarchy for site soil remediation / management is broadly summarised as:

- Onsite treatment of the contamination so that it is destroyed, or the associated risk is reduced to an acceptable level.
- Offsite 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 site.

If the above are not practicable, then:

- Consolidation / isolation of soil on site by containment with a properly designed barrier.
- Removal of contaminated material to an approved site or facility, followed, where necessary, by replacement with appropriate material.
- A less sensitive land use to minimise the need for remediation works, which may include partial remediation.
- 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.

Implementation strategies including: the need to report contaminated sites to the relevant authorities; public notification of known contamination; and in the case of in-situ management strategies, development of legally enforceable long-term management plans.

When deciding which option to choose, the sustainability (environmental, economic, and social) of each option should be considered, in terms of achieving an appropriate balance between the benefits and effects of undertaking the option. For example, to the extent practical, the requirement for offsite disposal should be minimised. In cases where no readily available or economically feasible method is available for remediation, it may be possible to adopt appropriate regulatory controls or develop other forms of remediation.

3. Site Information and History

3.1. Site Details

A summary of site details is provided in **Table 1**.

Table 1: Site Details	
Site Details:	Proposed CBD Cycleway upgrade area of Reid Park, 27 Pike Street, Rydalmere Portion of park approximately 200m east and west of Pike Street entrance.
Lot Parcel Number:	Lots 18, 19, and 22 of DP253646, and Part Lot 48 of DP260535
Site Area:	Area of works: Approximately 400m long and 5m wide: ~2,000 m^2
Local Council:	City of Parramatta Council
Current Zoning:	RE1 Public Recreation
Site Use:	Reid Park is a grassed and vegetated parkland adjacent the Parramatta River. The area of works is the recreational walkway / concrete path and immediately surrounding areas that are to be upgraded to a larger path / cycle way and sandstone block retaining wall.
Surrounding Land Use:	The site is a narrow band of land running east/west and is generally bordered by industrial land use to the north and the Parramatta River to the south.

3.2. Site History Summary

According to previous investigations on the site detailed below, the site history is summarised as from 1940s to 1970s the site was used for commercial / industrial with the eastern portion of the site formerly part of a James Hardie site.

Following this land use, the site was cleared in the 1970s and remained as vacant grassed land until 2011 when the initial walking track was constructed.

Various investigations undertaken within the area of works and the immediately surrounding area have identified asbestos in soil contamination present.

3.3. Previous Environmental Investigation

The following previous investigations are relevant to the site (with key details summarised in the following sections):

- Douglas Partners (January 2025) Report on Detailed Site Investigation, Proposed Pedestrian and Cycleway, Reid Park Valley, Rydalmere NSW (Ref: 231248.01). Prepared for Council.
- PRM (June 2025) Acid Sulfate Soil Assessment (Ref: P37382.012). Prepared for Council.

3.3.1. DSI (Douglas Partners, 2025)

Douglas Partners (DP) completed a Detailed Site Investigation (DSI) on Reid Park on the areas likely to be impacted as part of the cycleway upgrade works. This DSI included a comprehensive site history review as well as a review of all available previous contaminated land assessment works considered relevant to the project. Intrusive works included 11 boreholes which were augured to a target depth of 2.0m. These boreholes were identified as BH301 to BH311 from west to east and analysis of collected soil samples for contaminants of potential concern. Refer to **Plate 1** below for sample locations.

Plate1: Extract from DSI (DP,2025) showing sample locations.

The key findings of the DP DSI have been summarised as follows:

- Generally, concentrations of contaminants were either below the laboratory reporting limit, or where detected were below the adopted land use category C: public open space site assessment criteria.
- Asbestos contamination was identified within nine of the 11 boreholes:
  - BH305, BH309, BH310 and BH311 exceeded the AF/FA criteria indicating friable asbestos contamination.
  - BH302, BH303, BH306, BH307, BH308 had non-friable asbestos detected.
- Acid Sulfate Soil (ASS) was stated as likely being present within alluvial sediments below the water table.

3.3.2. Acid Sulfate Soil Assessment (PRM, 2025)

The findings of the ASS Assessment indicate there are no PASS or AASS in the material to be disturbed as part of the proposed cycleway project. Acidic fill is present in some locations. The ASS Assessment stated that should excavations encounter natural soil, it would need to be treated as PASS and handled under an Unexpected Finds Procedure.

ACM fragments were identified during field works at 11 of 14 sampling locations beneath the ground surface in friable and non-friable conditions.

3.4. Blue Powder

During the ASS Assessment (PRM, 2025) a blue powder was identified in three sampling locations (BH407, BH408 and BH409 as shown on **Plate 2** below). Upon identification, discussions with Council revealed that this soil was encountered previously and it was to be determined to be residual waste paint pigment. However, no documentation was able to be provided to PRM to support this.

Plate 3: Extract from PRM 2025, blue powder locations in yellow circles

Plate 3: Example of insitu blue powder

As part of these works, PRM undertook asbestos and cyanide analysis on a sample collected of the blue powder. No asbestos and no free cyanide was detected at the reporting limit, and below public open space land use criteria. However, total cyanide result was above the reporting limit (17mg/kg). No land-use criteria was available for total cyanide.

3.5. Environmental Setting

Based upon a review of previous reporting and site conditions, the site environmental setting is summarised in **Table 2**.

Table 2: Environmental Setting
Soil Landscape:
Reference to Sydney 1:100 000 soil mapping indicates that the site is within Lucas Heights residual soils described as gently undulating crest and ridges on plateau surfaces of the Mittagong formation (alternating bands of shale and fine-grained sandstones). Local relief to 30 m, slopes <10%. Rock outcrop is absent. Extensively or completely cleared, dry sclerophyll low forest and woodland.
Acid Sulfate Soils:
The ASS Map of Parramatta Local Environmental Plan (LEP) 2023 indicates the upgrade works are located in an area of Class 2 Acid Sulfate Soil Risk with the part of the site east of 25 Pike Street a Class 5 Acid Sulfate Soil Risk area. In a Class 2 Ass risk area, ASS is likely to be found below the natural ground surface. Class 5 ASS risk areas are located within 500m of adjacent Class 1-4 risk areas. Refer to **Section 3.3.2** for site-specific ASS investigation works.
Geology:
Reference to Sydney 1:100 000 Series Seamless Geology Sheet indicates that the site is underlain by anthropogenic deposits which is described as Anthropocene deposits varying from large manmade clasts (concrete blocks to building demolition rubble) to quarried natural boulders with interstitial sand-sized to clay matrix. The site is located adjacent to estuarine channel deposits to the south described as fine – to medium grind lithic-carbonate-quartz sand (marine-deposited), silt, clay, shell, grave and Ashfield Shale to the which is described as black to light grey shale and laminate.
Hydrogeology:
A search of the groundwater bore database maintained by the Department of Primary Industry was undertaken by DP on 4 December 2024 which indicated that 29 groundwater wells are within a 500 m radius of the site (25 are located on the other side of Parramatta River and are considered to be cross gradient). Based upon the topography and low-lying nature of the site, groundwater is expected to flow south towards Parramatta River.
Topography / Drainage:
The site is near flat with a gentle slope towards Parramatta River, which borders the site to the south. Rainfall at the site is likely to infiltrate into unpaved ground or runoff into the nearby Parramatta River system.
Sensitive Receptors:
Sensitive receptors are considered to include; Parramatta River to the south, mature trees located on or adjacent the work area, site workers during continued upgrade works, site users, including children and surrounding site occupants. Given asbestos in soil is the only contaminant of concern, no further assessment of ecologically sensitive receptors was completed.

4. Conceptual Site Model

The following Conceptual Site Model (CSM) describes the known and potential complete contamination source-pathway-receptor (SPR) linkages based on the previous assessments completed at the site.

Table 3: Conceptual Site Model

Contamination Type	Transport Mechanisms	Exposure Pathway	Receptors	SPR Linkage
AEC: Entire Site – Historic Fill				
Friable Asbestos Containing Fill Material *Friable ACM associated with fill material from the former industrial land including James Hardie land*	• Breakdown of ACM over time releasing fibres. • Release of fibres from plant movement construction activities.	• Inhalation of fibres.	**Onsite:** • Current and future site users. • Onsite personnel, including contractors for the upgrade works. **Offsite:** • Neighbouring residents.	The SPR linkages have the potential to become complete.

4.1. Summary of Contamination Requiring Remediation

Contamination identified above recreational public open space land use criteria C is associated with asbestos in friable and non-friable condition present within fill material across the site footprint.

4.2. Data Gaps

From a review of existing information, the data gaps identified are as follows:

- Groundwater sampling was not undertaken as part of the works completed by DP nor by PRM. However, due to the low contaminant concentrations in soils and the generally shallow nature of the planned upgrade works, no further investigation into groundwater or surface water was considered necessary.
- The extent and exact composition of the blue powder in soil is not known.

5. Remediation Design

5.1. Remediation Goals

The overall goal of the remediation works is to render the site suitable for the proposed upgrade works to occur as well as the ongoing recreation land use of the site following works. As such, the remediation goals include:

- Removal, to the extent practicable, unacceptable risks to human health and the environment from the identified asbestos impacted soils.
- Preventing to the extent practicable, the potential contamination of the surrounding environment.
- Addressing unexpected finds that may be present during site works.
- Demonstrate that the site is suitable for the proposed recreational land use activities associated with the upgrades on site.

5.2. Remediation Extent

Given that asbestos contamination has been identified in the majority of investigation locations, the entire work area associated with the cycleway upgrade is considered to be the remediation extent.

5.3. Remediation Option Assessment

A summary of the remediation option assessment undertaken for the contamination identified is included in **Table 4**.

Table 4: Remediation Option Assessment

Strategy	Discussion
Defer Remediation	This approach was considered inappropriate as the asbestos contaminated soils pose a risk to workers associated with the upgrade works and present a potential long-term hazard to human receptors if not managed or remediated.
Onsite Treatment	Rejected – not an option for the contamination encountered.
Offsite Treatment	Rejected – not an option for the contamination encountered.
Onsite Containment	**Selected:** Remaining or residual contamination that is not impacted as part of the cycleway upgrade works are to remain insitu and be managed under an Environmental Management Plan (EMP). This option reduces the amount of material required to be disposed to landfill.
Excavation/Disposal	**Selected:** Where contaminated soils are excavated as part of works, these are to be disposed off-site and no contaminated soils that are excavated are proposed to be placed into onsite contamination.

Based upon the above, the preferred remediation approach is a combination of off excavation/disposal of material that requires removal for the project design and onsite containment and capping of all residual soils that remain insitu.

The contaminated material remaining below a capping layer to be managed under an EMP.

5.4. Capping Design

A summary of the proposed capping design and relevant considerations across the site are outlined in the following table. Note that all works are to be completed in accordance with the technical specification provided by council and contained in **Appendix A**.

Table 5: Capping Element and Design

Capping Design	Long Term Management
Hardstand areas (bicycle paths / footpaths/ bike racks)	
Installation of surveyed geofabric demarcation layer beneath all hardstand areas. Minimum 125mm reinforced concrete hardstands. Refer to landscape details provided in Appendix A.	The EMP will be prepared with measures and contingencies in place for any works that breach the hardstands.
Turfed areas	
Where sensitive tree root zone is present, then soil within drip-zone is to not be touched. Outside of drip-zone and in areas with no trees, then surveyed geofabric marker layer over site derived contaminated fill material, minimum 200mm of topsoil / growing medium and Kikuyu turf to be placed. Refer to spec landscape details provided in Appendix A.	The EMP will be prepared with measures and contingencies in place for any works that breach the geofabric marker layer.
Tree Pit	
Excavate 1,500 mm wide by 600 mm deep to accommodate the rootball of the tree. Surveyed geofabric marker layer over site derived contaminated fill material; backfill outside of rootball with imported topsoil material and then mulch ring at surface. Refer to spec landscape details provided in Appendix A.	The EMP will be prepared with measures and contingencies in place for any works that breach the geofabric marker layer.
Retailing Wall	
In summary, contaminated soil from mounds is to be cut to requirement and the vertical face lined with geofabric marker layer and the sandstone block wall installed. Works to be completed in accordance with the landscape details provided in Appendix A.	The EMP will be prepared with measures and contingencies in place for any works that breach the geofabric marker layer.
Shallow Planting (if present)	
Locations for shallow planting are to be excavated 200mm and install surveyed geofabric marker layer over site derived contaminated fill and cover with 200mm of topsoil and shallow tubestock plants. The area is then to be covered with 100mm native leaf litter mulch. Refer to spec landscape details provided in Appendix A.	The EMP will be prepared with measures and contingencies in place for any works that breach the geofabric marker layer.
Service Trenches and service pits installed beneath the geofabric marker layer	
If required, lined with geofabric marker layer and backfilled with clean imported certified materials.	To be included in EMP if relevant.

5.5. Remediation Procedure Summary

All works to be undertaken in strict accordance with the Council technical specifications appended to this RAP. Specific details relating to the upgrade works and remediation considerations are summarised in the following sections. Friable and bonded asbestos have been identified in fill material at the site.

Proposed Works: Various upgrade elements across the site include:

- Excavation of soils for expansion of paved area and laying of cycle path.
- Installation of a sandstone block retaining wall.
- Excavation of tree pits and installation of mature trees.
- Removal of turf, excavation to subgrade level and replacement of turf.

Remediation Requirements: The remediation approach is as follows:

- All works to be undertaken in strict accordance with the Council technical specifications appended to this RAP. If ambiguity exists between the RAP and the Council technical specification, then the Council technical specification should be followed for design specifications and this variance should be noted in the Validation Report.
- Where excavation works into the asbestos contaminated soils are required, then the various depths detailed per task in the Council technical specification must be followed.

- As required, soil is to be excavated under Class A asbestos removal conditions with asbestos air monitoring undertaken.
- Soil is to be stockpiled in a designated area, a waste classification is to be completed and the soil is to be disposed of offsite. If easier, insitu soil sampling for waste classification is able to be undertaken as a time/space saving exercise.
- Once contaminated material is excavated to the required depth, the walls and floor of the excavation are to be emu-picked of visible ACM.
- The walls and floor of the excavation are then to be lined with geotextile fabric to serve as a physical barrier and warning layer between the contaminated material remaining insitu, and the capping materials.
- The lateral and vertical extents of the geofabric marker layer are to be surveyed.
- Following geotextile placement, a visual clearance will be given by a Licenced Asbestos Assessor (LAA) as defined by SafeWork NSW. Council should be notified at this stage and an inspection should be completed by Council and their representative.
- Proposed capping design and reinstatement process varies across each upgrade element and is shown in the Council technical specification and the capping thickness detailed in **Table 5**.
- All materials removed from site are to be appropriately classified as per the NSW EPA Waste Classification Guidelines (2014), with all disposal dockets provided to the appointed environmental consultant for inclusion in the validation report.
- Any material required to be imported to site to be comply with the imported materials requirements detailed in **Table 6** and suitable for the task required. Details of this are to be recorded by the environmental consultant and detailed within the Validation Report.
- Once all capping has been completed (hardstand pavements, topsoils etc) the area is to be surveyed to allow for confirmation of capping thicknesses.
- Following the completion of works, a Validation Report will be provided to the client. The capped materials will require long term management under an EMP, which must be legally enforced for the lifetime of the contained material.

5.5.1. Stockpile Management

In areas where stockpiles are generated (either for reuse on site or offsite disposal), then appropriate stockpile management is required:

- Stockpile area is to be established at the commencement of works – suggested area is a portion of the hardstand car park located at the end of Pike Street.
- Bunding and erosion control is the be in place before soil is received.
- A durable plastic layer is to be weighted in place prior to soil being received.
- A clear delineation between contaminated and potentially uncontaminated soil areas is to be established.
- Once soil is received to the area and stockpiled, it is to be assessed by environmental consultant.
- Once assessed, the stockpile is to be secured and wrapped – awaiting further movement.

If minor amounts of soil are expected, or works are to be spread over a longer period, then skip bins for contaminated soil may also be an acceptable option.

5.5.2. Blue Powder Management

If the blue powder is identified, then this material should be stored separately to other soil. Additional sampling and waste classification works should be undertaken on this material to determine composition with results noted in the Validation report.

6. Remediation Preliminaries

6.1. Overview and Scope

As outlined above, the preferred remediation option is to remove contaminated material that is excavated as part of works and then contain the remaining asbestos contamination onsite. This is the most ideal option as it reduces the amount of material required for offsite disposal and allows the site to remain suitable for the proposed upgrade works and the ongoing open space land use.

6.2. Regulatory Approvals and Notifications

Notification to start works will be required of SafeWork NSW due to the work proposed relating to the contamination of friable asbestos at the site. The notification is to be undertaken by the Principal Contractor (PC) or nominated Class A asbestos contractor. Where required, the client is responsible for notifying residents of the commencement (and completion) of the proposed remediation works, including scope and estimated program.

6.2.1. Asbestos Contractor

The asbestos contamination at the site is deemed as 'friable' asbestos due to findings of the previous investigation works undertaken on the site. Based on this the removal must be undertaken by a Class A licenced removal contractor.

6.3. Planning and Site Establishment

The following sections will act as a basic checklist to ensure all elements have been addressed prior to remedial works commencing.

6.3.1. Project Safety and Environmental Management Plan

Prior to the commencement of site works, the PC shall prepare a Project Safety and Environmental Management Plan (PSEMP). This plan will include specific details and work method statements describing all environmental and work health and safety (WH&S) controls to be implemented and followed during the remediation works. The PSEMP will include contact details of appropriate personnel associated with the remediation works.

The PSEMP is to specify requirements for all site personnel and procedures to minimise disturbance and impacts to surrounding areas.

The following critical elements are required to be included in the PSEMP:

- Measures and procedures to minimise impacts to any sensitive ecological communities to ensure the works do not negatively impact on potential environmental receptors and comply with applicable environmental legislation.
- Measures and procedures to minimise the potential for site personnel and workers to be exposed to contamination during the works.
- Material tracking and imported material protocols.

All site staff, contractors and sub-contractors are to complete all relevant contractor inductions and site-specific safety inductions and made aware of the contamination type expected through the remediation. The key environmental and WHS considerations (related to remedial works) that are required to be included in the Plan and some control measures to manage hazards, are detailed later in this RAP.

6.3.2. Asbestos Removal Control Plan

The nominated Class A asbestos removal contractor is to prepare an Asbestos Removal Control Plan (ARCP) for the remediation works prior to commencement.

An ARCP is prepared to ensure workers and other persons are not at risk of inhalation of asbestos fibres during the asbestos removal or soil disturbance/excavation (if required) and capping process.

The ARCP must include details of how the asbestos removal will be carried out including method, tools, equipment and PPE and details of the asbestos to be consolidated and capped, location, type, and condition of the asbestos.

6.3.3. Site Establishment

Site establishment tasks shall include, but may not be limited to:

- Mobilisation of plant and equipment, and installation of health and safety, and environmental controls outlined in the PSEMP.
- Erect temporary fencing to demarcate the remediation work area. The remediation work area should be delineated with physical barriers and warning signs. The following risk assessment factors should be taken into consideration when establishing the remediation area: proximity to workers or the public outside the removal work area, the method of asbestos removal and controls in place, any existing barriers (walls, site constraints) and the type of physical barrier to be used (i.e., ATF, hoarding).
- Asbestos decontamination facilities for personnel and plant should be implemented within the remediation work area being worked on, which should include a mobile personal decontamination unit and the establishment of a geofabric lined pad for the washing of plant and trucks (as a minimum).
- Preparation and establishment of stormwater diversions and sedimentation controls.
- Installation of air monitoring equipment by an LAA or suitably experienced person during all asbestos works.
- Preparation/provision of waste classification documentation for any offsite disposal of asbestos-impacted material if required.
- Provision of dust suppression equipment, as necessary.

The contractor shall endeavour to protect property and infrastructure at the site and mitigate impacts to the surrounding environment to the extent practicable during works.

6.4. Asbestos Air Monitoring

Due to the identified the asbestos contamination as being “friable”, as well as the proximity of the asbestos contamination to the public, asbestos fibre air monitoring (AAM) is considered necessary for all works undertaken where disturbance / removal of asbestos is undertaken. All AAM must be undertaken by a NSW LAA.

The results of the asbestos air monitoring should be provided to the PC each workday to confirm that control measures are adequate prior to works commencing the next day.

The results of air monitoring will also be included within the Validation Report.

6.4.1. Exposure Trigger Levels

Air monitoring results should be obtained within 24 hours of sample collection. While this precludes “real time” monitoring, inspections will be made during excavation, loading works and if there are any visible dusts, light water sprays will be used to wet the work areas and prevent the release of airborne asbestos fibres.

The Code of Practice – How to Safely Remove Asbestos in the Workplace, contains trigger levels for airborne asbestos fibres which have been adopted and air summarised below.

Table 6: Airborne Fibre Trigger Levels

Action Level	Control	Action
<0.01 fibres/mL	No new control measures are necessary.	Continue with current control measures.
≥0.01 fibres/mL but ≤0.02 fibres/mL	1. Review	Review control measures.
	2. Investigate	Investigate the cause.
	3. Implement	Implement controls to eliminate or minimise exposure and prevent further release.
>0.02 fibres/mL	1. Stop removal work.	Stop removal work.
	2. Notify regulator (SafeWork NSW)	Notify the relevant regulator by phone followed by email or written statement that work has ceased and the result of the air monitoring.
	3. Investigate the cause.	Conduct a thorough visual inspection of the isolated/barricaded area and associated equipment in consultation with all workers involved with the removal work.
	4. Implement controls to eliminate or minimise exposure and prevent further release.	Extend the isolated/barricaded area around the removal area/enclosure as far as reasonably practicable (until fibre levels are at or below 0.01 fibres/mL), wet wipe and vacuum the surrounding area, seal any identified leads (e.g., with expandable foam or tape) and smoke test the enclosure until it is satisfactorily sealed.
	5. Suspend removal works until further air monitoring is conducted.	Do not recommence until fibre levels are at or below 0.01 fibres/mL.

6.5. Contingency Plan

Potential events that may arise during the remediation and actions that will be undertaken if such unexpected conditions occur are summarised in the following table.

Table 7: Contingency Items

Event	Application
Acid sulfate soils are identified	Although assessment has indicated that ASS is not expected in the depth of works, if it is identified, then consideration should be given the preparation of an ASS Management Plan for implementation and management of the ASS.
Land use plans changed	Review the applicability of this RAP to the revised site use.
Contamination is found laterally outside of the identified areas.	Review of the remediation strategy will be undertaken. Possible responses could include: • Further excavation • Risk assessment • Further delineation sampling/monitoring • Onsite containment of a portion of the soil etc.

Table 7: Contingency Items

Event	Application
Soil classified as hazardous waste is identified	For soil that is required to be disposed of offsite, a waste classification will need to be undertaken. If the material returns as hazardous soil, it will need to be treated prior to being disposed to landfill. Such pre-treatment could either occur onsite or could occur at a suitably licensed offsite treatment facility. In the event hazardous waste was encountered and onsite pre-treatment was proposed then an addendum to this RAP would be prepared.
Contamination is found to have migrated offsite	In the event that contamination was encountered extending beyond the site boundary initially the extent and significance would be assessed along with the need for further remediation / management through monitoring and potentially fate and transport assessment / risk assessment.
Unearthing of significant quantities of "blue powder"	In the event that significant amounts of the blue powder known to be present at the site is unearthed, then this soil is to be segregated and classified separately.

6.6. Unexpected Finds Protocol

If during remediation works, material is encountered which appears to be potentially contaminated or appears to be different from the contamination described in this RAP, or known areas of contamination appear to extend beyond their defined boundary, the following procedures should apply:

- Any suspicious material/soil which has been excavated should be stockpiled on bunded, strong, impermeable plastic sheeting, covered and protected from erosion and all seepage retained.
- Excavation works at that part of the site where the suspicious material (soil) was encountered should cease until inspection is carried out and documented by the environmental consultant.
- If it appears the known contamination area extends beyond the defined boundary, the consultant shall inform Council and determine a procedure to delineate the contaminated area.
- Based on visual inspection, the consultant should provide interim advice on construction health and safety, soil storage and soil disposal to allow works to proceed if possible.
- Based on sampling and analysis of the material, the consultant should provide final advice, based on comparison of the laboratory test results to suitable criteria relating to human health, potential environmental impacts and waste disposal.

"Suspicious" material may include stained soil, odorous material, fibrous material, brightly coloured material, tarry or ashy material, or chemical containers etc.

Any unexpected events which may affect the outcome of the remediation should be notified to the consultant. The consultant shall then contact Council to report the finding. At that time potential actions to address the unexpected event will be assessed and presented in consultation with Council.

7. Validation Program

A validation program will be undertaken following the completion of the remediation works to demonstrate that the remediation works have met the nominated remediation goals.

7.1. Validation Strategy

The validation strategy to be adopted includes:

- Visual inspection and clearance by an LAA or competent person following excavation of impacted fill material and following placement/installation of geotextile marker layer to ensure no ACM remain above the marker layer.
- Collect field measurements or review data to ensure required capping thicknesses as per Council technical specification has been met.
- Review of imported material certificates and inspection upon delivery to ensure compliance regulatory guidance for imported material.
- Final inspection of the site at the completion of all works.

7.2. Data Quality Objectives

A Data Quality Objectives (DQOs) process is used to define the type, quantity and quality of data needed to support decisions relating to the environmental condition of a site.

The consultant, with inputs as required from the PC, shall implement the validation program in accordance with the DQO process. In the validation report the consultant shall demonstrate how the validation program was guided by the DQOs to evaluate the success of the works in achieving the remediation goals.

Table 8: Data Quality Objectives
Step 1: State the Problem
Previous assessment works identified friable ACM associated with uncontrolled fill material present within Area B as well as potentially capped contaminated material in Area C.
Step 2: Identify the Decision of the Study
The following specific decisions will be made, as required: • Were all necessary approvals gained prior to remediation works commencing? • Was asbestos air monitoring undertaken during the works, as required? • Was asbestos material handled as per appropriate SafeWork procedures? • Where required, were remediated areas validated (visual inspection) once the asbestos impacted fill material had been removed? • Are there any unacceptable risks remaining to onsite or offsite receptors from the asbestos material? • If offsite disposal occurred, were relevant materials excavated and disposed of appropriately to facilities licensed to accept the material? • Is any further management of the identified areas required?
Step 3: Identify Information Input
The primary inputs required are: • Existing environmental data. • Physical observations during site activities. • Results of clearance inspections and air monitoring. • Results of the survey data. • Material removal and disposal documentation (if required). • Assessment of the suitability of that data for the purpose if environmental assessment through application of data quality indicators (DQI), namely precision, accuracy, representativeness, completeness, and comparability (PARCC) parameters.

Table 8: Data Quality Objectives
Step 4: Define the Study Boundary
The extent of the study boundary is as follows: • Lateral: the soils across the site in all areas of works. • Vertical: the extent of asbestos contaminated material (depth not known – but limited to the depth of proposed works) and capping material. • Temporal: the outcomes of inspections throughout the course of the remediation works.
Step 5: Develop an Analytical Approach/Decision Rule
The area can be confirmed remediated if the LAA deems the remediation works to have been completed in accordance with this RAP (and any addendum). A decision on the acceptance of the analytical data will be made based on the DQI in the context of the PARCC parameters as follows: • Precision: a quantitative measure of the variability (reproducibility) of data. • Accuracy: a quantitative measure of the closeness of reported data to the "true" value. • Representativeness: the confidence (expressed qualitatively) that data may be equivalent for each media present onsite. • Completeness: a measure of the amount of useable data from a data collection activity. • Comparability: the confidence (expressed qualitatively) that data may be equivalent for each sampling and analytical event. The quantitative and qualitative measures/criteria employed to enable application of these parameters are described in Steps 6 and 7.
Step 6: Specify the Performance/Acceptable Criteria
Specific limits for this project are in accordance with the appropriate guidance made or endorsed by the NSW EPA and SafeWork NSW, appropriate indicators of data quality, and standard procedures for field sampling and handling.
Step 7: Optimise the Design for Obtaining Data
This remediation program presented is aimed at obtaining the necessary data to allow the identified decisions in Step 2 to be made.

7.3. Validation Methodology

To confirm that remediation works have been completed in accordance with this RAP, the following will be undertaken:

- Visual inspection by the LAA following the installation of the marker layer.
- AAM during asbestos removal/disturbance.
- An ACC will be prepared by the LAA following the emu-pick and placement of the marker layer
- Field measurements or survey data reviewed by the consultant to denote the exact depth of the capping and ensure that capping thickness has been achieved.
- Confirmation that all imported material is free of asbestos and meets relevant site criteria (Section 5.4).
- Material tracking information will be reviewed to ensure compliance with this RAP, including landfill disposal dockets for asbestos materials and miscellaneous waste items, import dockets and waste classification certificates.
- Inspection of the site at the completion of all works.
- Validation reporting.

7.4. QA/QC Plan - Field

All field and laboratory procedures are to be assessed for SQIs in accordance with the NSW EPA (2017) *Contaminated Site: Guidelines for the NSW Site Auditor Scheme*. The QA/QC protocols to be adopted during remediation and validation are summarised below.

Table 9: Field QA/QC Procedures

Field Procedure	QA Procedure Description
Sampling Team	Environmental consultant must be professionally qualified environmental scientists, engineers trained in conducting site contamination projects. All AAM, clearance inspections and ACCs are to be completed by NSW LAA.
Equipment Calibrations	All equipment will be calibrated as specified within the relevant operator manuals.

As no soil sampling is to be undertaken as part of the validation for the site, no QA/QC procedures have been included.

7.5. Validation Criteria

The validation criteria have been selected based on ongoing open space land use and are summarised below.

Table 10: Validation Criteria

Asbestos impacted soils beneath geofabric marker layer:

Site derived soils could contain asbestos above the following will be managed under the long-term EMP and are assumed to be impacted with the following exceedances:

- Bonded ACM – >0.02 %w/w.
- Friable Asbestos (FA) and Asbestos Fines (AF): >0.001 %w/w.

Aesthetics:

Assessment of the site aesthetics includes discolouration (staining), a malodorous nature (odours) and abnormal consistency (anthropogenic inclusions).

Imported Capping Topsoil Materials:

Imported topsoils to be used as the capping layer:

- Virgin Excavated Natural Materials (VENM) as defined under PoEO Act 1997.
- Materials that meet the Excavated Natural Material Exemption and Order 2014 (ENM Order).
- Imported materials unable to be classified as VENM or ENM (such as blended landscaping/topsoils) must meet the following:
- Human health criteria taken from NEPM 2013 criteria HSL/HIL C.
- Asbestos taken from NEPM 2013 and WA DoH: No asbestos in surface soils.
- Ecological criteria EIL /ESL adopted from NEPM 2013 with the exception of 'low reliability' BaP.
- Ecological BaP ESL adopted from CRC Care Technical Report No. 39 where CRC 'high reliability' BaP ESC have been presented in Table 11 from CRC Care and CCME (2010).

Offsite Disposal:

- NSW Protection of the Environment Operations Act (POEO Act) 1997.
- NSW Protection of the Environment Operations (Waste) Regulations 2014.
- NSW EPA – Waste Classification Guidelines, Part 1 Classifying Waste, 2014.

7.6. Reporting

The following reports will be required to be prepared by a suitably qualified environmental consultant in accordance with relevant guidelines made or approved by NSW EPA under s105 of the Contaminated Land Management Act 1997:

7.6.1. Validation Report

The Validation Report and will contain at the minimum:

- Details of the remediation works conducted, including detailed photographic log.
- Information demonstrating that the objectives of the RAP have been achieved, including the review of survey data.
- Information demonstrating compliance with appropriate regulations and guidelines, including AAM reports, ACCs, etc.
- Information detailing material tracking undertaken during works, including material disposed of offsite (if required).
- Any variations to the strategy noted during the implementation of the remediation.

7.6.2. Environmental Management Plan

An Environmental Management Plan (EMP) prepared in accordance with NSW EPA guidelines will include the following at a minimum:

- Roles and responsibilities for the managing the capped area.
- Dimensions of the capping based on a survey of the site conducted at the completion of remediation works.
- Legal enforceability and public notification requirements.
- Requirements for breaches of the capping.
- Management/inspection for ensuring that the capping remains appropriate to manage the ACM impacted soils.
- Ensuring that any contractors are aware of the requirements of the EMP.
- Ensuring that the EMP is periodically reviewed to be in line with current regulatory approaches.

8. Site Management

8.1. Responsibilities

The implementation of the controls outlined in this RAP is the responsibility of the PC engaged to undertake the works. Onsite works should only be conducted by contractors / individuals who have read and acknowledged their understanding of this RAP.

The roles and responsibilities for the implementation and management of this RAP is provided below. These responsibilities do not replace any other regulatory responsibilities of the parties in relation to works within the works area.

Table 11: Role Definition
Principal Contractor
• Comply with the RAP for all site works including relevant legislation and guidance (including the WHS Act 2011 and Regulation 2017 or relevant legislation current at the time of works). • Hold at a minimum, a Class A Asbestos Licence or engage a Class A licenced supervisor to direct the works. • Prepare and follow ARCP. • To ensure that all licences, clearances, permits, and approvals are in place in the appropriate manner. • Inform the consultant if conditions change significantly from those documented in the RAP. • Onsite implementation of the RAP. • Day to day management of the requirements of the RAP and ensuring that the checking, monitoring and inspection of appropriate mitigation measures for contract and sub-contract personnel is undertaken. • Preparations and implementation of the PSEMP and associated WHS documentation and controls. • Notification to client and the consultant and the appropriate external bodies (such as emergency services, regulatory authorities etc.) in the event of an environmental incident. • Temporary suspension of site work if the environment or WHS of personnel or the community is at risk. • Suspension of individuals from the site where disregard for the RAP has been identified. • Material tracking including detailed reconciliation ('cradle to grave') of imported materials and materials disposed of offsite if required.
Site Supervisor (as appointed by client)
• Ensure nearby residents are notified as required. • Evaluate site conditions and complete a Site Hazard Assessment at the commencement of works. • Ensure all workers have undertaken any appropriate site inductions and induct all personnel onto site specific WHS before any site works commence. • Inform all contractors of identified hazards/risks that have the potential to affect their health and safety. • Maintain site security for the duration of the project and ensure communications are maintained. • Comply with the RAP for all site works including relevant legislation and guidance (including WHS Act 2011 and Regulation 2017 or relevant legislation current at the time of works). • Conduct daily Toolbox Talk with all workers at the commencement of each day. • Monitor the works to ensure compliance with this RAP and stop works if work practices deviate from the approved RAP or conditions are considered unsafe.
Environmental Consultant / LAA (as appointed by the client)
• Provide the RAP to any worker or contractor (who is under the control of the PC). • Ensure all parties clearly understand the RAP requirements and ensure that compliance with the RAP is a condition of any works undertaken by any contractor/site worker contracted by the PC. • Provide remediation supervision to ensure that works are being completed in accordance with all statutory requirements, best practice guidelines and the requirements of the RAP. • Document the stages of the validation works. • Undertake AAM during asbestos works. • Undertake clearance inspections following removal of asbestos impacted areas and following placement of geotextile fabric marker layer. • Undertake waste classification of material if required. • Update the RAP if they become aware that the site conditions have changed and inform any other parties (contractors/site workers etc.) of the changes. • Preparation of the Validation Report.

8.2. Hours of Operation

The PC shall be responsible for ensuring all works are conducted during the hours prescribed by Council. Generally, the prescribed hours permitted are:

Monday-Friday:	07:00 – 17:00
Saturday, Sunday, and Public Holidays:	Determined by PC in consultation with the client

If emergency works are required, these works are permitted to be completed outside of these hours.

8.3. Contact Details

The PC shall be responsible for the posting of contact details for key personnel associated with the remediation. As a minimum the following contact details should be noted:

Table 12: Contact Details

Role	Company	Name	Number
Client Project Manager	City of Parramatta Council	TBC	-
Site Supervisor	TBD	TBD	-
Environmental Consultant / LAA	TBD	TBD	-

Note: The above table should be displayed on site and updated as contractor appointments are finalised and/or if site personnel are replaced.

8.4. Site Security

No person shall enter the site or works area without expressed permission of the PC. Contractors and visitors must be inducted onto the site prior to the start of any planned works. During remediation works. Signage at the site entrances and, where appropriate, safety fencing will be maintained to restrict access to the works area. Only authorised persons will be able to enter the works area.

8.5. Exclusion Zone and Traffic / Pedestrian Control

An exclusion zone and an alternative route for pedestrians is required as there is unlikely to be the space to enable the public a safe walking path around the works area where contaminated soil is to be excavated.

Given the location and accessibility of the site, traffic control is not required.

The PC shall assess how goods and materials are delivered to site.

8.6. Protection of Services

The PC shall be responsible for any damage caused to existing services and shall notify owners of utility services that are damaged by work activities.

8.7. Environmental Management

The environmental management strategy consists of the requirements outlines in this RAP as well as those specified in a series of environmental management sub-plans developed specifically for the proposed works. The PC is responsible for preparing the environmental management sub-plans in accordance with relevant standards and guidelines.

The environmental management sub-plans provided by the PC must comprise (as a minimum):

- Materials management sub-plan.
- Erosion, sediment, and surface water management sub-plan.
- Dust, noise, and emissions management sub-plan.
- Traffic management sub-plan.

8.7.1. Erosion, Sediment and Surface Water Management

An important part of the remediation works will be the management of erosion, sediment, and surface water particularly when wetting down asbestos contaminated equipment, plant, PPE and soil. The strategy to be adopted would aim to:

- Reduce land degradation.
- Reduce pollution to downstream areas and receiving waters.
- Facilitate the implementation of the remediation works program.

The strategy would involve the installation and operation of several environmental control measures that will be progressively implemented as work proceeds across the site. The design approach adopted will satisfy the following principles:

- Minimise the area of disturbed soil exposure wherever possible by staging the works.
- Control water flow through the works, bunding areas if required to reduce run off.

All works must comply with the requirements of the 'Blue Book' Managing Urban Stormwater: Soils and Construction, Landcom 2004, including the development of an Erosion and Sediment Control Plan (ESCP) by the Principal Contractor. The ESCP should contain a drawing clearly showing the:

- Site layout with the approximate grades and indicators of fall.
- Location of the trees and other vegetation to be retained.
- Location of site access.
- Proposed roads and parking facilities.
- Proposed and existing drainage patterns.

The PC is to undertake regular maintenance of all erosion, sedimentation, and pollution control devices to ensure their continuing effective and efficient operation.

9. Work Health and Safety

9.1. Site Induction

The PC must ensure all personnel working on the remediation project attend a site induction undertaken prior to entering the site for the first time. The site induction should include a brief outline of the remediation project, details on general site hazards (e.g., vehicle movements, heavy machinery, contamination etc.) and details on the specific hazards associated with the remediation works including but not limited to:

- Nature of the materials being handled (i.e., asbestos).
- Personal protective equipment to be utilised onsite.
- Necessary decontamination procedures to be undertaken whilst onsite.

9.2. Protection of Services

The PC shall identify and mark out all services at the site and shall obtain utility plans from relevant authorities and Before You Dig (BYD) service and any relevant information as to the presence of services at the site. It is the PC's responsibility to gain accurate information as to the depth, size and alignment of services. These may include overhead power cables, underground power, telecommunications, drains, sewers and water mains.

The PC shall:

- Take special care to ensure that services are protected in accordance with the conditions specified by the controlling authority.
- Arrange for a representative from the controlling authority to be present, unless the authority directs otherwise, when the remediation contractor is:
    - Proving the locations of services.
    - Excavating within 1 m of the service.
    - Arrange with the appropriate authority for the closure and subsequent restoration of any service that must be shut down while the works are in progress.
    - Adopt a method for uncovering and protecting the service from damage if the service must be uncovered and left exposed, to the satisfaction of the controlling Authority.
    - Immediately inform the owner or controlling authority of any damage or interference to any service, structure or property.
    - Carry out any temporary bypass and restoration of the services to the satisfaction of the respective authorities and owners.

9.3. Site Safety Signage

The below signs are representative of some Work Health Safety signs which should be utilised on site boundaries:

9.4. Personal Protective Equipment

The following table outlines the general PPE requirements onsite, which should be readily available for ALL personnel including contractors and visitors:

Table 13: Job Specific PPE Requirements

Type	Description	Required Yes/No	Required Activities
Head Protection	Hard Hat	Y	All site activities
Eye Protection	Safety glasses with side shields	Y	All site activities
	Goggles	-	-
	Face shield	-	-
Hand Protection	Disposable latex gloves	-	-
	Disposable nitrile gloves	Y	Soil sampling activities
	Cut resistant gloves	Y	Manual handling activities
	Rubber gloves	-	-
	Gauntlets	-	-
Respiratory Protection	Respirator (nominate type and cartridge) Respiratory Protective Equipment (RPE) compliant to AS/NZS 1716:2009.	Y	When asbestos works are undertaken utilised at least a half face mask fitted with P3 filters or a P2 fitted respirator mask.
Body Protection	Disposable coverall Type 5, Category 3 (prEN ISO 13982-1) or equivalent.	Y	During asbestos works.
	Sunhat, sunscreen, repellent	Y	If working in sun
Environmental Protection	Cold weather gear	Y	Where required
	Wet weather gear	Y	Where required

9.5. Decontamination Procedures

9.5.1. Personal Hygiene and Decontamination

For personal decontamination this involves the removal of all visible asbestos dust/residue from PPE and RPE. Personal decontamination must be undertaken each time a worker leaves a designated asbestos works area. Personal decontamination should be done via a portable decontamination unit within the asbestos works area.

Asbestos contaminated PPE must not be transported outside the asbestos works area except for disposal purposes. Before work clothes and footwear worn during asbestos removal work are removed from the asbestos removal work area, they should be thoroughly wet wiped to remove any potential asbestos fibres. Disposable coveralls should always be worn over the top of any clothing worn whilst inside the remediation work area.

RPE must remain on until all contaminated disposable coveralls and clothing have been cleaned and/or removed and bagged for disposal and personal decontamination has been completed. Any PPE used while carrying out asbestos removal work must not be taken home by a worker. Personal hygiene and careful washing are essential. Particular attention should be paid to the hands, fingernails, face, and head. The following hygiene requirements are to be followed by all site personnel:

- No eating, smoking, or drinking to be conducted in the remediation area.
- Staff to wash hands and face prior to eating, smoking, or drinking.

9.5.2. Equipment Decontamination

Equipment (tools, non-disposable PPE etc.) should be washed or otherwise cleaned to ensure that contaminated soil, water, or dust is removed before it leaves the designated asbestos works area.

9.5.3. Plant Decontamination

A decontamination area must be established within the asbestos works area. All plant should be thoroughly cleaned of soil and sediment before moving out of the designated asbestos works area. The specific plant decontamination arrangements are to be determined by the PC in consultation with the environmental consultant.

Following decontamination, an equipment clearance certificate should be completed by the appointed LAA or suitably qualified person.

9.6. Environment Work Health & Safety

An Environment and Works Health & Safety (EWHS) Management Plan must be prepared by the PC prior to commencement of remediation works. The objectives of the Plan will be to:

- Protect the health of workers and the general public during the remediation works and comply with applicable health and safety legislation; and
- Ensure the works do not negatively impact on potential environmental receptors and comply with applicable environmental legislation.

The following table lists key environmental and WHS considerations (related to remedial works) that are required to be included in the Plan and some control measures to manage hazards. It is noted that the information is a guide only. The PC is required to undertake their own EWHS hazard identification risk assessment as part of preparing the Plan.

Table 14: Key Environmental and Health & Safety Hazards

Hazard	Control Measure
Air quality: Odours generated from excavation	If odours are detected the site is to be inspected the consultant and recommended control measures are to be implemented throughout the remediation process.
Air quality: Dust	If required, dust management measures may include: • Erection of dust screens around the perimeter of the site excavation areas. • Securely covering all loads entering and exiting the site. • Use of water sprays carts on exposed soil. • Cessation of operations that may generate dust during periods of high winds. • Covering of stockpiles of contaminated soil when not in use and minimising periods of stockpiling. • Keeping excavation surfaces moist; and dust monitoring.
Air quality: Emissions from vehicles and plant	Plant and vehicles involved in the remediation will be properly maintained to ensure their emissions comply with applicable guidelines. Vehicles and plant will be turned off when not in use.
Stockpiles	Stockpiles must be tracked from the point of excavation to their final containment or their disposal at a suitably licenced landfill (this includes any onsite handling).
Transport of soils	When material is disposed of offsite, it must be classified prior to disposal in accordance with NSW EPA (2014) Waste Classification Guidelines. Disposal of contaminated soil must meet the following requirements: • Contaminated soil is be trucked in accordance with NSW EPA requirements. Trucks used to transport contaminated fill shall meet the NSW EPA licensing requirements for the waste transported. • Trucks used to transport contaminated fill must have a suitable load covering. • The wheels/exterior of the vehicle must been cleaned down prior to leaving site.

Table 14: Key Environmental and Health & Safety Hazards	
Hazard	**Control Measure**
	- Truck movements shall be along designated transport corridors. - A copy of every landfill weigh-bridge docket for each load delivered will be forwarded to the consultant to reconcile volume. - A register of truck licence plates entering/leaving the site must be maintained. - Driver's code of conduct to be developed and signed by all truck drivers.
Designation, delineation and control of access to various work zones	The asbestos works area is to be adequately delineated with temporary fencing and signage, with the only entry/exit point into the asbestos works area through the decontamination unit/ area. The requirements for the asbestos works area are to be outlined in the ARCP. The site should be adequately fenced with appropriate signage to ensure the public does not have access to the site during remedial works.
Hazardous materials (including fuel and chemical management)	Any hazardous materials should be stored in accordance with appropriate environmental and health and safety regulations. Refuel plant and equipment using mobile tanker in a designated area with appropriate controls / bunding. Make available "spill kits" onsite and clean up spillage quickly using spill kits.
Waste management	Waste disposal bins will be established as part of site mobilisation, which shall be maintained onsite for the duration of the remedial works. The waste disposal bins shall be emptied as necessary to avoid overflowing, and the contents disposed of to a waste disposal facility approved for the relevant waste type. Recycling will be undertaken where possible. All materials removed from site must be appropriately disposed of at a licenced landfill facility in accordance with the POEO Act and NSW EPA (2014) Waste Classification Guidelines.
Monitoring requirements	Monitoring requirements at the site are likely to include: - Regular visual monitoring to check environmental and safety controls are in place and effective. - Visual monitoring for dust generation. - Observations of odours during the works.
Work health and safety	A project specific Job Hazard Analysis (JHA) shall be prepared prior to the commencement of works in accordance with the relevant legislation. This will outline the controls, exposure, hazards, job hazard analysis, and the tasks assigned to all employees.

9.7. Emergency Procedures and Response

In the event of an emergency, the safety of people shall always be the FIRST priority. Provided no other risks to human life are present, attend to any injured personnel in so far as is required to prevent further injury. ALL personnel within the works area shall be alerted to emergencies by verbal command and directed to a designated muster or assembly point.

For other potential emergencies, advice is provided below.

Table 15: Summary of Potential Emergencies	
Emergency	**Action**
Medical Emergencies	Prior to arrival on-site: - Ensure First Aid kits are up to date and contain First Aid supplies relevant to the nature of the work done on site. - Ensure appropriate first aid equipment is carried at all times. - Ensure at least one field person has a Senior First Aid Certificate. In the event of an Injury: - Apply First Aid, provided you do not place yourself or others at risk. For serious injuries including hit by vehicle / accident, bitten by a snake or spider etc. - Call 000 for an Ambulance.

Table 15: Summary of Potential Emergencies

Emergency	Action
Fire or Explosion	Call the fire brigade on 000. Evacuate the area and assemble at assembly point. Warn third parties that may be impacted by the event. Ensure fire brigade is met at the site.
Loss of Contaminant	Stop work. Use temporary bunding material to limit the extent of the spill and block storm water drains.
Utility Strike	Stop work. Assess if the area needs to be evacuated. Inform the relevant utility company.
Meteorological Event	• Check Bureau of Meteorology website before travel to site. • Listen to local radio stations for any weather alerts. • Regularly check the local weather forecast. • Drive with due care in adverse weather conditions. • Pull over and stop if road conditions are unsafe. • Cancel field work if necessary.
Vehicle Collision	Prior to arrival on-site: • Ensure driver is appropriately licensed and that Pre-Start Checklist has been completed. In the event of a Vehicle Accident: • Assess self for injuries. • If uninjured, and it is safe to do so, drive vehicle to side of road and turn on hazard lights. • If uninjured, and safe to do so, assess injuries of other occupants. • If necessary, apply first aid to self or others' injuries. • Call the emergency services on 000 if anyone is injured.
Biological (snake, spider, bee etc.)	• Ensure at least one field person has a Senior First Aid Certificate. • Ensure first aid kit has set press bandages. • Appropriate PPE. • Ensure all staff know how to administer EpiPen if relevant.
Heat or Cold Stress	• Check the local weather forecast. • Increase hot/cold fluid intake. • Appropriate PPE. • Ensure First Aid Kit has emergency space blanket/ice-packs. • Stop and rest as necessary in extreme conditions.

9.8. Emergency Muster Point

In the event of an incident or emergency, all personnel shall stop all works, shut down all equipment (where practical and safe to do so) and relocate to the muster point/s.

Table 16: Emergency Muster Point

Emergency	Action
Location of muster point.	To be confirmed by Principal Contractor
Fire, Ambulance or Police	000 (Australia)
Closest Hospital	Westmead Hospital (02) 8890 5555

10. Conclusions

Based on the previously identified contamination and the successful implementation of the measures described in this RAP, it is concluded that the site can be made suitable for the proposed ongoing open space land use, and that the risks associated with the identified contamination can be managed to ensure there is no risk to human health or the environment (from a contamination perspective).

These conclusions are made within the following limitations.

10.1. Limitations

This report is confidential and has been prepared by Progressive Risk Management (PRM) for the client detailed above. This report may only be used and relied upon by the client and must not be copied to, used by or relied upon by any person other than the client.

All results, conclusions and recommendations presented should be reviewed by a competent person before being used for any other purpose. PRM accepts no liability for use of, interpretation of or reliance upon this report by any person or body other than the client. Third parties must make their own independent inquiries.

This report should not be altered amended or abbreviated, issued in part or issued incomplete without prior checking and approval by PRM. PRM accepts no liability that may arise from the alteration, amendment, abbreviation or part-issue or incomplete issue of this report. To the maximum extent permitted by law, all implied warranties and conditions in relation to the services provided by PRM and this report are expressly excluded (save as agreed otherwise with the client).

PRM shall bear no liability in relation to any change to site conditions after the date of this report. This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope and limitations defined herein (Scope of Works). Should information become available regarding conditions at the site including previously unknown sources of contamination, PRM reserves the right to review the report in the context of the additional information.

Figures

Project Reference	P37419.012
Report Name	RAP
Client	CoP

Reid Park,
Rydalmere NSW

Site Location
Figure 1

PROGRESSIVE RISK MANAGEMENT

Scale: 1:8,300

Coor. Sys: GDA 1994 MGA Zone56

Legend

🟥 Site Boundary

N

100 0 100 m

Image Source: Google Maps, Google Satellite (2025)

Project Reference	P37419.012
Report Name	RAP
Client	CoP

Reid Park,
Rydalmere NSW

Site Layout
Figure 2

PROGRESSIVE RISK MANAGEMENT

Scale: 1:2000

Coor. Sys: GDA 1994 MGA Zone56

Legend

🟥 Site Boundary

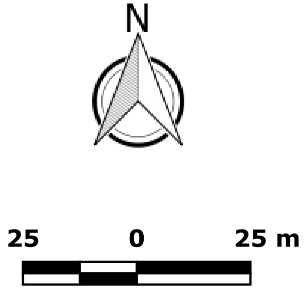

Image Source: Google Satellite (2025)

Appendix A: Council Technical Specifications

TO BE INCLUDED ONCE COMPLETED

GROUNDED
EXPERTISE

Report on Geotechnical Investigation

Proposed Pedestrian and Cycleway Upgrades

Reid Park, Rydalmere NSW

Prepared for City of Parramatta Council

Douglas Project 231248.00

28 January 2025

Douglas PARTNERS | GROUNDED EXPERTISE

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Document History

Details

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The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

Signature		Date
Author	Peter Valenti (for Matthew Bobby)	28 January 2025
Reviewer	SDF Jackson	28 January 2025

bsi ISO 9001 Quality Management Systems CERTIFIED

Douglas Partners acknowledges Australia's First Peoples as the Traditional Owners of the Land and Sea on which we operate. We pay our respects to Elders past and present and to all Aboriginal and Torres Strait Islander peoples across the many communities in which we live, visit and work. We recognise and respect their ongoing cultural and spiritual connection to Country.

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Report on Geotechnical Investigation
Proposed Pedestrian and Cycleway Upgrades
Reid Park, Rydalmere NSW

1. Introduction

This report prepared by Douglas Partners Pty Ltd (Douglas) presents the results of a geotechnical investigation undertaken for proposed pedestrian and cycleway upgrades at Reid Park, Rydalmere NSW (the site). The investigation was commissioned by City of Parramatta Council (CoPC or Council) and was undertaken in accordance with Douglas' proposal 231248.00.P.001.Rev0 dated 22 August 2024.

The broader project is set to deliver 2.8 km of upgraded multi-use shared pathways along the Parramatta River at five locations across the suburbs of Parramatta, Rydalmere and Ermington. This current report specifically addresses the 380 m pathway section in Reid Park Reserve, Rydalmere. Reports are provided separately for the other pathway sections.

It is understood that the proposed development within the Reid Park includes the upgrade of the existing shared path to a 5 m wide dedicated cycle way and pedestrian footpath, construction of multiple low height sandstone block retaining walls and new 6 m high lighting poles. Refer to Section 6 of this report for further details on the scope of the proposed upgrades.

The aim of the investigation was to assess the subsurface soil and groundwater conditions at selected locations of the site to provide comments and recommendations on the following:

- Site preparation and earthworks;
- Excavation conditions;
- Geotechnical design parameters for retaining structures;
- Appropriate footing types for the new light poles, including relevant design geotechnical parameters for foundation design (by others);
- Acid sulfate soil risk; and,
- Soil aggressivity.

The investigation included the drilling of 11 boreholes and laboratory testing of selected samples. The details of the field work are presented in this report, together with comments and recommendations on the items listed above. This report must be read in conjunction with all appendices including the notes provided in Appendix A.

2. Site description

The site is located about 3.1 km east of the Parramatta CBD on the northern terraced bank of the Parramatta River. Topography within Reid Park is generally flat to mildly undulating, forming part of the lateral floodplain zone of the river. The site runs parallel to the river roughly east to west.

The Reid Park site is bounded by industrial / commercial warehouses to the north, the Parramatta River channel to the south and public reserve to the east and west.

The existing shared pathway is 3 m wide, of concrete construction and set back typically more than 10 m from the crest of the river bank. The concrete pavement appears to be in reasonable and sound condition with no clear cracking or major defects observed. The verges are vegetated with well-established trees and landscaping on both sides of the path.

The location of the site and nearby features are also shown on Drawing 1C in Appendix B. Figure 1 shows a typical view of the existing pathway at the time of the investigation.

Figure 1: View of existing pathway adjacent to Pike Street accessway, view looking west.

3. Published data

3.1 Geology

Reference to the NSW seamless geology mapping (Colquhoun, et al., 2021) indicates the site is generally underlain by Anthropogenic deposits (Q_h, shown as brown area in Figure 2), with Estuarine channel deposits (QH_ecw, brown-yellow mapped area) in the river to the south and Ashfield Shale (Twia, shown in green) to the north. The Anthropogenic deposits are described to varying from large man-made clasts (concrete blocks to building demolition rubble) to quarried natural boulders, with interstitial matrix of sand and clay. The shale unit, and possible the estuarine soils, are expected to underlie the anthropogenic deposit.

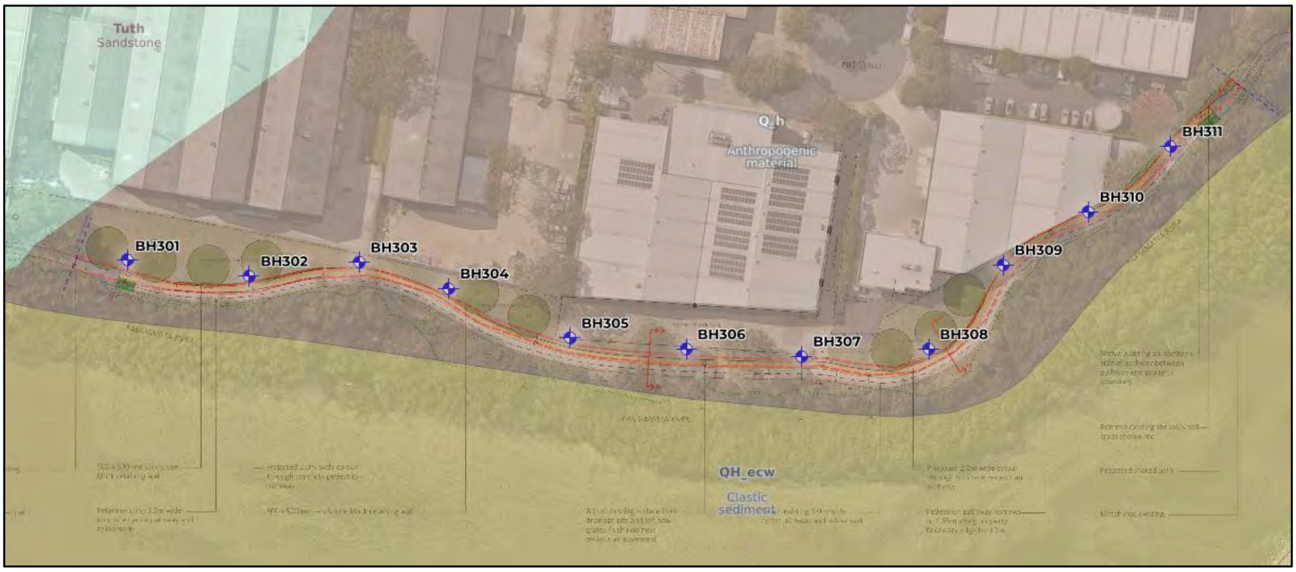

Figure 2: Geological mapping at the proposed development site. Sourced from NSW seamless geology mapping (Colquhoun, et al., 2021).

3.2 Acid sulfate soil risk

Acid Sulfate Soil (ASS) Risk Mapping published by NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW, 1998) indicate a high risk of ASS typically being present across the site at or near to the ground surface, as is shown in Figure 3 (in red).

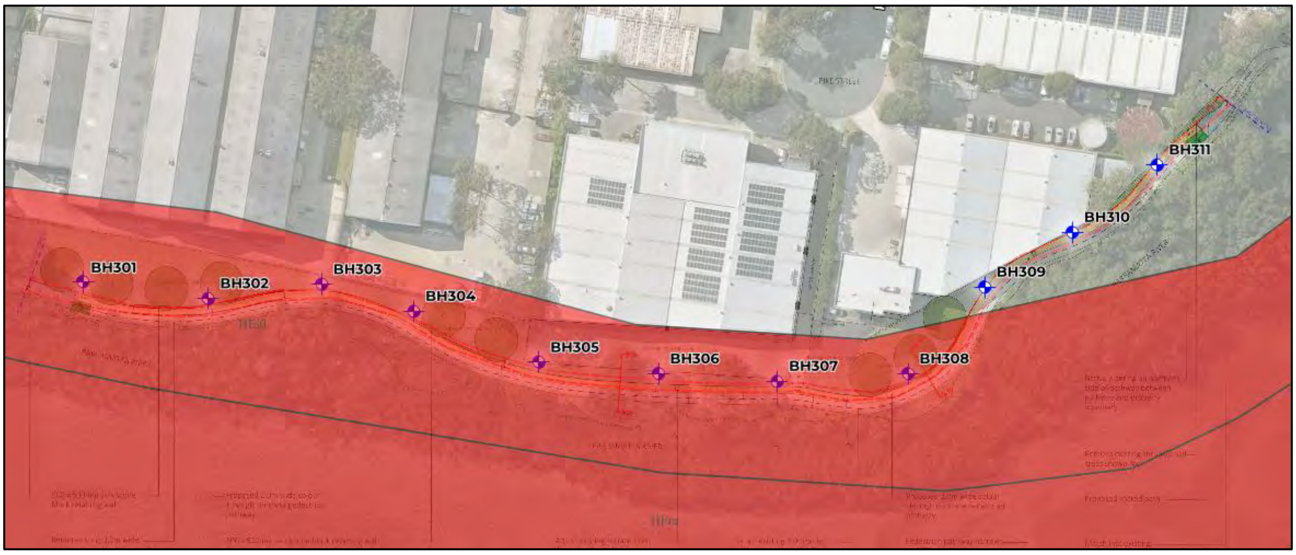

Figure 3: Acid sulfate soil mapping of site area, source from NSW DCCEEW (1998).

3.3 Salinity potential

Reference to the Salinity Potential in Western Sydney mapping published by NSW DCCEEW (2002), the site is located within a zone of moderate salinity potential. Further assessment would be required to quantify the site risks, as this was outside the scope of the current geotechnical investigation.

4. Field work

4.1 Field work methods

The field work was carried out on 25 November 2024 and included:

- Scanning for buried services at proposed borehole locations using both an electromagnetic scanner and ground penetrating radar (GPR);
- Drilling of 11 boreholes (identified as BH301 to BH311) using either a 2.5 tonne excavator or small truck-mounted drill rig fitted with solid flight augers to maximum depths of approximately 2 m. Five of the boreholes were terminated at shallow depths ranging between 0.2 m and 1.4 m due to refusal on a concrete obstruction or where potential asbestos containing material was identified.
- Disturbed and bulk sampling from the boreholes for logging (to AS1726:2017) and laboratory testing; and
- Dynamic cone penetrometer (DCP) testing, in accordance with the test method AS 1289.6.3.2 (1997), at each borehole location to assess the relative in situ consistency / density of the soils.

All boreholes were backfilled with spoil and reinstated to match adjacent conditions. Coordinates and surface levels for all test locations were determined using a differential Global Positioning System (dGPS) receiver, which has an approximate accuracy of 0.1 m (subject to satellite coverage of the area). Coordinates have been measured in GDA20 / MGA Zone 56 format (Geocentric Datum of Australia 2020 base with Map Grid of Australia projection) and levels are relative to AHD, as shown on the logs in Appendix C.

4.2 Field work results

The detailed borehole logs are included in Appendix C, together with notes defining classification methods and terms used to describe the soils. Based on the results of the site investigation, the general subsurface profile encountered in the borehole are summarised as follows:

- **Topsoil (Fill)** – Sand and silty clay containing roots, layers were generally equal to or less than 50 mm thick;
- **Fill** – Encountered in all boreholes comprising, variable materials including grey-brown sand, clayey and silty sand, brown and black clay, pale grey sandy silt and orange-yellow gravelly sand (apparent ripped sandstone). The depth of fill ranged from 0.6 m to 2.0 m (limit of the investigation). Anthropogenic inclusions of bricks, pipes and concrete (typical building rubble) were generally encountered within the fill. Due to the small size of the auger used for drilling, the size and extent of the fragments were difficult to accurately determine. Metal waste and rope were also observed in BH311. The DCP results indicate the fill was variably compacted across site but typically, in an apparent moderately to well compacted state near the surface, becoming poorly compacted with depth. The fill is assessed to be 'uncontrolled' in nature due to the absence of documentation indicating otherwise and;
- **Alluvial Sediments** – Comprising low plasticity grey, dark grey and black clay, silty clay and sandy silt. Dark grey silty sand was encountered in BH306 only. It should be noted that natural alluvial soils were only encountered below the fill in five of the 11 test locations. A slight sulfur odour was noted in BH 302. The clay and silt soils were generally of a firm to stiff consistency while the silty sand (BH306 only) was of a medium dense becoming very loose with increasing depth.

Potential asbestos containing materials were noted in the fill at BH305, BH310 and BH311. Refer to Douglas' contamination report (231248.00.R.001.Rev0) for further comments.

Free groundwater was not observed during the investigation. Groundwater levels at the are likely influenced by tidal variation and other seasonal / climatic factors and may be present within 2 m of surface at some locations.

5. Laboratory testing

5.1 Geotechnical laboratory testing

Geotechnical testing was undertaken in accordance with relevant Australian Standard test methods at a NATA accredited laboratory on selected soil samples as follows:

- Atterberg limits and linear shrinkage testing on two disturbed fill samples to assess the plasticity classification of cohesive materials;

- Two bulk samples of the anticipated subgrade material were tested for measurement of California bearing ratio (CBR). The samples were compacted to approximately 100% Standard maximum dry density (SMDD) ratio at the estimated optimum moisture content (SOMC), and then soaked for ten days under a surcharge loading of 4.5 kg;
- Aggressivity testing (pH, chloride, sulfate, electrical resistivity) on six disturbed samples to determine the exposure classification for concrete and steel, in accordance with the Australian standard for piling (AS 2159, 2009).

Detailed results are attached in Appendix D and are summarised in Tables 1 to 3 below.

Table 1: Summary of plasticity classification test results

Sample ID	Sample Type	PL (%)	LL (%)	PI (%)	LS (%)	Plasticity Classification
BH304 / 1.7-1.8	Silty CLAY	17	27	10	6.0	Low
BH307 / 0.7-0.8	Silty Clay / Clayey Silt	16	23	7	4.5	Low

Notes: PL – Plasticity limit, LL – Liquid limit, PI – Plasticity index (difference between Plastic and Liquid Limits)

LS – Linear shrinkage

Table 2: Summary of california bearing ratio test results

Sample ID	Soil Type	FMC (%)	SOMC (%)	SMDD (t/m^3)	CBR (%)	Swell during soaking (mm)
BH303 / 0.2-0.4	FILL / Clayey SAND	5.2	10.5	2.05	13	0.0
BH310 / 0.5-1.8	FILL / Sandy SILT	44.1	23.5	1.45	5	0.0

Note: FMC – Field Moisture Content, SOMC = Standard Optimum moisture content,

SMDD – Standard Maximum dry density CBR = California bearing ratio at 100% SMDD,

FMC = field moisture content

Table 3: Summary of aggressivity test results

Sample ID	Sample Type	Soil Type	Exposure Classification				
			Concrete		Steel		
			pH	SO_4 (ppm)	pH	Cl (ppm)	Resistivity. (Ωcm)
BH303 / 0.4-0.5	FILL / Clayey SAND	B	8.6	37	8.6	<10	7,690
BH306 / 0.4-0.5	FILL / Silty SAND	B	8.9	4,200	8.9	20	715
BH306 / 0.9-1.0	Silty SAND	B	7.8	370	7.8	77	3,225
BH310 / 0.4-0.5	FILL / Silty SAND	B	7.9	7,500	7.9	<10	454

Notes: Soil Type based on guideline presented in AS 2159-2009 and summarise below:
Soil Type A – High permeability soils (eg sands and gravels) which are in groundwater.
Soil Type B – Low permeability soils (eg silts and clays) or all soils above groundwater.
Scale of aggressivity based on threshold values given in AS 2159-2019

Non-aggressive	Mild	Moderate	Severe	Very Severe

5.2 Acid sulfate soil testing

To assess for the presence of acid sulfate soil, 15 soil samples were screen tested at an external NATA accredited laboratory using a calibrated pH meter for measurement of the field pH in water (pH$_{F}$) and pH following oxidation in hydrogen peroxide (pH$_{FOX}$). This testing was undertaken to screen samples and provide indicative results of the potential or actual presence of ASS to inform further selection of samples for verification testing. Based on the results of the screening tests, Chromium Reducible Sulfur (Scr) testing was carried out on four soil samples for which showed positive indicators for ASS. Results of the ASS screening testing are provided in the laboratory report included in Appendix D and are summarised in Table 4. Table 5 presents the results of the Scr testing. Further discussion on the interpretation of the results and sample selection is provided in Section 7.1.

Table 4: Summary of ASS screening results

Borehole	Depth (m)	Material Description	Screening Test Results			
			Field pH (pH$_{F}$)	Oxidised pH (pH$_{FOX}$)	Change in pH	Reaction Rate
BH301	0-0.2	FILL / SAND	7.6	5.9	1.7	Medium reaction
BH301	0.4-0.5	FILL / SAND	8.2	7.1	1.1	High reaction
BH301	0.9-1.0	FILL / CLAY	4.7	3.7	1	Low reaction
BH301	1.5-1.6	FILL / CLAY	6.4	4	2.4	Medium reaction
BH301	1.9-2.0	Sandy CLAY	6.4	3.2	3.2	Medium reaction
BH303	0-0.1	FILL / Silty CLAY	6.5	4.6	1.9	Medium reaction
BH303	0.4-0.5	FILL / Clayey SAND	8.7	6.5	2.2	Low reaction
BH307	0-0.1	FILL / Silty CLAY	8.3	6.5	1.8	Low reaction
BH307	0.4-0.5	FILL / Clayey SAND	7.9	7.7	0.2	Extreme reaction
BH307	0.9-1.0	Silty CLAY / Clayey SILT	8.7	5.9	2.8	Extreme reaction
BH307	1.4-1.5	Sandy SILT	7.7	3.8	3.9	Low reaction
BH307	1.9-2	Sandy SILT	7.2	2.2	5	Low reaction
BH311	0-0.1	FILL / SAND	7.4	5.8	1.6	Low reaction
BH311	0.4-0.5	FILL / SAND	7.1	5.7	1.4	Medium reaction
BH311	0.9-1.0	FILL / SAND	7.0	5.9	1.1	Medium reaction

Notes: Results interpreted against National guidelines (Sullivan, et al., 2018) with indicators highlighted accordingly.

Positive indicator for Potential Acid Sulfate Soil (PASS)	Positive indicator for Actual Acid Sulfate Soil (AASS)

Table 5: Laboratory acid sulphate soil test results (Chromium Reducible Sulphur)

Borehole	Depth (m)	Material Description	pH_{KCl}	TAA (%w/w)	Scr (%w/w)	ANC (%w/w)	Net Acidity (%w/w)
BH301	0.9-1.0	Fill / CLAY	4.1	0.07	<0.005	NT	**0.075**
BH301	1.9-2.0	Sandy CLAY	4.8	0.02	0.006	NT	0.026
BH307	1.4-1.5	Sandy SILT	7.6	<0.01	0.07	0.42	**0.066**
BH307	1.9-2.0	Sandy SILT	7.1	<0.01	0.12	0.40	**0.12**

Notes: NT – Not Tested

pH_{KCl} = pH in a potassium chloride suspension.

TAA – Titratable Actual Acidity, measure of the readily available and dischargeable acidity.

ANC – Acid Neutralising Capacity, soils ability to buffer / resist reduction in pH.

Net Acidity – the net results of the TAA and Scr measurements, without ANC reduction.

Results above the action criteria are in **BOLD**

6. Proposed development

Based on the client supplied Concept Design Drawings (Rev D, dated October 2024), it is understood the proposed development at Reid Park will include the following:

- 2 m widening of the at-grade concrete pathway to match and tie into the existing path along the full length of the existing pathway;
- Three new low height sandstone block retaining walls (single course expected to be about 0.5m in height) along some northern sections of the widened pathway;
- New 6 m high lighting poles spaced at about 20 m centres along the length of the pathway, expected to be supported on shallow bored piers or mass pad footings, and;
- Removal of existing vegetation where required and planting of new trees.

A typical cross section of the proposed works with retaining wall is shown in Figure 4.

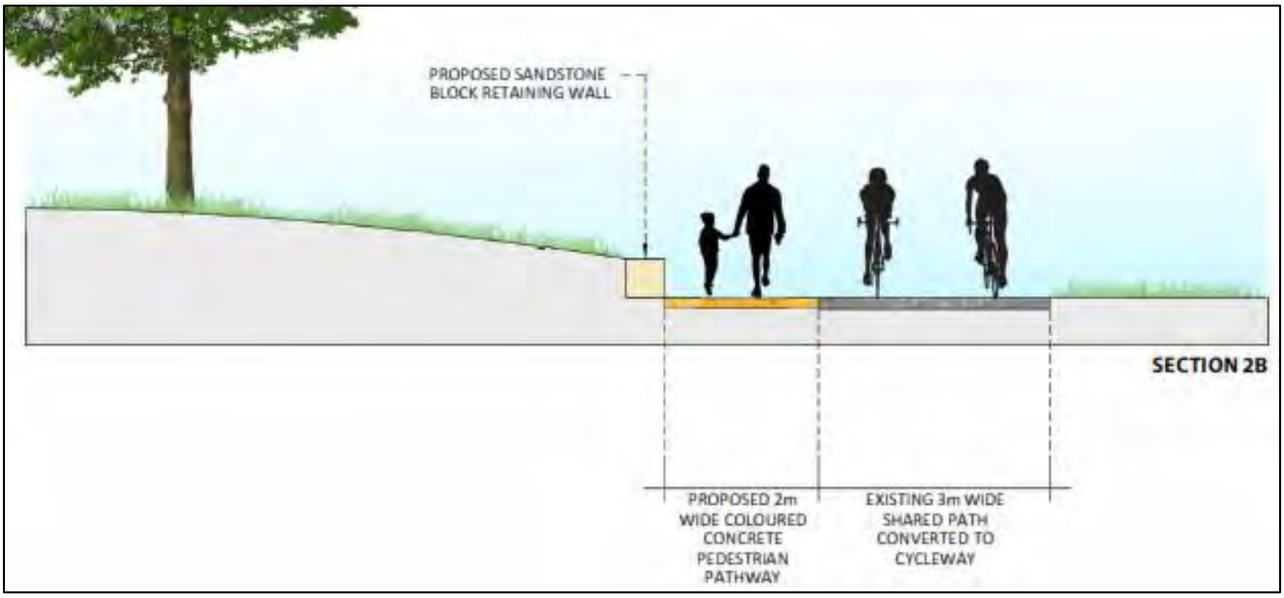

Figure 4: Cross section showing proposed works.

7. Comments

7.1 Acid sulfate soil (ASS) assessment

The ASS assessment has been prepared in general accordance with the National guidelines.

The results of the screening tests showed field pH (pH_F) were in the range of 4.7 to 8.7 pH units and peroxide pH test (pH_{FOX}) were in the range of 2.2 to 7.7 pH units. The reduction in pH following addition of hydrogen peroxide (i.e. pH_F - pH_{FOX}) where typically between 1 and 5 pH units, with a single result less than pH 1.

The National guidelines (Sullivan, et al., 2018) suggest that actual acid sulfate soil (AASS) may be present where pH_f values are less than ≤ 4 pH units. This did not occur in any of the samples tested. The peroxide test was undertaken to assess the presence of potential acid sulfate soil (PASS). The National guidelines (Sullivan, et al., 2018) suggest a positive PASS test result may include one or more of the following indicators:

- pH_{fox} values of ≤ 3.0;
- Reduction in pH between the field and peroxide test of at least 1 pH unit, and;
- Effervescence (i.e., medium or stronger reaction rate)

The screening results indicated that 14 samples showed positive indicators for PASS however, only nine samples tested showed strong indicators (two or more positive indicators).

To assess the presence of PASS, additional Chromium Reducible Sulfur (Scr) testing was carried out on four soil samples. The action criteria to determine the presence or absence of PASS at the site is based on the textural classification of the soil material, net acidity and the volume of material expected to be disturbed. The adopted action criteria for interpreting the Scr testing is provided in Table 7. It is expected that large volumes of the fill (>1000t) would be disturbed during site stripping and general earthworks when preparing the subgrade of the path widening. It is also anticipated that minor volume of soils (<1000t) would be disturbed during the excavation of footings for the lighting poles.

Table 6: Adopted action criteria for assessing Scr testing results.

Soil Material	Texture	Volume Disturbed	Action criteria
FILL / CLAY	Medium	> 1000 t	≥ 0.03
Sand SILT	Coarse	< 1000 t	≥ 0.03

The Scr testing indicate three (of four) samples tested exceeded the adopted action criteria within both the fill and natural samples tested. The fill sample BH301 / 0.9-1.0 tested positive for AASS while the natural samples tested positive for PASS therefore, an ASS management plan is required for all soil disturbance. A single sample from within the fill (BH301 / 0.9-1.0m) has shown a positive result for AASS and therefore, all fill must be assumed to contain some form of ASS, despite being above the groundwater table. It would be prudent to undertake further testing of samples within 1 m of ground surface to assess whether ASS is / isn't present within the influence of the proposed earthworks to potentially minimise or eliminate the need for additional treatment works of ASS during earthworks. Where lesser volumes of fill are to be disturbed (i.e., <1000 t), a higher action criteria of 0.06 could be adopted for the Fill / Clay material however, the test results still exceed the higher action criteria and would considered ASS regardless.

7.2 Site preparation and earthworks

Due to the inverted strength profile at the site (i.e., moderately to well compacted uncontrolled fill forming an 'upper mantle' overlying the variable strength alluvial soil), complete removal and replacement of the existing 'uncontrolled' fill is not considered necessary based on the results of the investigation (at discrete locations) and the performance of the existing pavement. Regardless, there is still a risk of differential (and possibly excessive) settlement and poor performance of the subgrade should the 'uncontrolled' fill remain in place. To further assess the suitability of the 'uncontrolled' fill as a subgrade for the pathways and retaining wall, and reduce the risks of poor performance, the following earthworks methodology is recommended:

- Excavate and remove all materials to design subgrade or foundation level, including stripping any organic-rich topsoil and other deleterious materials. Topsoil materials may be retained for re-use in landscaping, pending environmental suitability and approval.
    - Note: It is recommended that design subgrade level be at least 0.3 m below the base of the structure (pathway or retaining wall) so material recompaction and / or replacement can be undertaken to prepare a suitable subbase layer for supporting the structures, and;
    - Excavations for earthworks are expected to be within fill and therefore readily excavated using conventional excavator larger than 9 tonne.

- Compact the existing 'uncontrolled' fill exposed at the design subgrade level to a minimum 95% density ratio relative to Standard compaction (or to a minimum 70% density index for granular soils) using non-vibratory compaction. The use of vibrations may cause over compaction and settlement of surrounding areas (impacting existing pathways) and may induce some potential liquefaction where shallow groundwater is present.
- Test roll the prepared subgrade surface using a smooth drum roller of minimum 12 tonne deadweight in non-vibratory mode (for reasons described in the previous point) in the presence of a geotechnical engineer. Any areas exhibiting unacceptable movements (e.g., excessive heave or depression) during the test-roll may require further treatment (e.g., via removal and replacement or the use of bridging layers).
- Fill can be placed in maximum 250 mm thick (loose) layers and compacted to achieve a dry density ratio of greater than 98% relative to Standard compaction (or to a minimum 70% density index for granular soils). Compaction conformance testing should be undertaken in accordance with Council requirements or at least to minimum requirements of the Australian earthworks standard (AS 3798, 2007).
    - From a geotechnical perspective, the existing fill (excluding topsoils) may be suitable for reuse onsite as 'general fill' providing they remain free of organics and other deleterious materials.
    - A layer of granular product (e.g., roadbase, recycled crushed concrete etc.) should be considered as a supporting subbase layer for the pathway and retaining walls. Such a layer may also improve trafficability on site during construction, particularly during and following periods of wet weather, if clayey soils / fill material are present.

7.3 Sandstone block retaining wall

The sandstone block retaining wall should be designed to resist sliding and bearing failure using either an 'At Rest' earth pressure coefficient (K_0), to minimise lateral ground (and wall) movements, or an 'active' (K_a) earth pressure coefficient, if some small movements of the wall are acceptable. A triangular passive earth pressure distribution (increasing linearly with depth) may be assumed for the design of the wall. Surcharge loads from adjacent sloping ground surfaces, structures (not expected to be present), hydrostatic build-up (if any) and construction machinery should also be included in the earth pressure loading. Design parameters for the retaining wall are provided in the Table 7 below.

Table 7: Suggested design parameters for retaining structures.

Material	Bulk Density (kN/m^3)	Coefficient of Active Earth Pressure (K_a)	Coefficient of Earth Pressure 'at Rest' (K_o)
New engineered compacted Fill	19	0.3	0.5
'Uncontrolled' Fill	18	0.4	0.6

Minimum bearing pressures to support the sandstone blocks are anticipated to be in the order of 20 kPa. The existing fill should be sufficient for supporting such low loads however, there is a risk of differential settlement. Where a suitable subbase is prepared, as detailed in Section 7.3, it is anticipated that allowable bearing pressures of 75 kPa could be achieved and that there would be a lower risk of ground movements.

7.4 Piled footings

Footings for the lighting poles are anticipated to be constructed as small diameter cased-bored piles (0.4 m diameter for example). These structures are expected to be light-weight and therefore would have low founding loads.

Cased-bored piles using either a temporary or permanent casing are the conventional pile type adopted for such lightweight structures. Due to the presence of uncontrolled fill, it is recommended that all pile footings be constructed to at least 1.5 m depth and be founded upon loose (or better) alluvial sand or firm (or better) clay. Such piles could be designed for an allowable end bearing of 100 kPa, where applying a factor of safety of 3.

Lateral and moment loading are also expected for the lighting poles and would be resisted by the uncontrolled fill. A design check on the ultimate lateral capacity of short piles using the Broms method (1964, refer Appendix E for details) with an assigned undrained shear strength of 40 kPa for the fill materials is recommended during the detailed design phase of the project.

It should be noted that excavations for bored piles at the site may be difficult should anthropogenic inclusions (bricks, tiles and concrete) or boulders (if present) be encountered. Allowance for potential obstructions should be considered by the contractor.

The construction of all piled footings should be inspected by a suitably qualified geotechnical engineer to ensure suitable founding conditions are achieved for the design loads (to be provided at time of construction) prior to placement of reinforcement and concrete.

7.5 Soil aggressivity

The laboratory test results for the aggressivity of soils indicate that the soil samples are generally ‘non-aggressive’ however, some results indicate ‘mild’ aggressivity to concrete structures and ‘moderate’ aggressivity to steel structures, in accordance with the provisions of Australian Piling Standard (AS 2159, 2009). The Standard also provides classifications where buried structures may be exposed to waste (either domestic or industrial) and / or groundwater (fresh or sea water). It is anticipated that the proposed lighting pole footings would be founded within fill, containing some waste (assume domestically sourced), and potentially with some exposure to a fluctuating groundwater table which could be considered as ‘sea water’. As such, it may be prudent for the pile designer to adopt a ‘severe’ classification to account for potentially worse conditions.

The pile designer will need to allow for sufficient coverage for embedded concrete elements and corrosion allowance for steel elements. Additional testing of ground water samples may be beneficial to provide further data to inform the durability pile design however, this would be determined by the designing engineer. The pile designer should also consider, and allow for, the presence for ASS, and the potential generation of sulfuric acids should an oxidation event occur.

7.6 Pavements

The pavement for the proposed pathway widening is expected to be founded on the existing uncontrolled fill. To provide a relatively uniform subgrade to support the new pavement, it is recommended that the subgrade be prepared in accordance with Section 7.1 of this report.

Laboratory testing of two samples of fill material, one clayey sand and one sandy silt, indicated CBR values of 13% and 5%, respectively, when compacted to 100% SMDD with a ten day soak. In situ DCP testing of the upper 1.5 m subgrade zone indicates in situ subgrade CBR values ranging from about 3% to greater than 10%, based on the Austroads (2024) correlation for cohesive materials. Based on these test results and Douglas' experience in similar conditions, it is suggested that a design CBR value of 4% be adopted sitewide for pavement design purposes.

The CBR testing of the sandy silt material also recorded a field moisture of 44.1%, which is far higher than the optimum moisture (SOMC) of 23.5%. It is therefore expected that any sandy silt subgrade material would need to be moisture conditioned (i.e., dried back) prior to any compaction otherwise there is a risk of liquefaction and poor performance. Moisture conditioning can involve excavating and stockpiling the material in windrows to naturally dry the material however, this process can be slow where the weather during the works is cold, humid and / or wet. An alternative method that could be considered would be to add a stabilising agent (i.e., 1% to 2% cement) but, this would require further testing and assessment to confirm the suitability.

Suitable cross-fall drainage and subsoil drains along the high side of all pavement or path areas should be provided to reduce the risk of the subgrade becoming saturated during the life of the pavement.

8. References

AS 1289.6.3.2. (1997). *Methods for testing soils for engineering purposes - Soil strength and consolidation tests - Determination of the penetration resistance of a soil - 9kg dynamic cone penetrometer test.* Reconfirmed 2013: Standards Australia.

AS 1726. (2017). *Geotechnical Site Investigations.* Standards Australia.

AS 2159. (2009). *Piling - Design and Installation.* Standards Australia.

AS 3798. (2007). *Guidelines on Earthworks for Commercial and Residential Developments.* Standards Australia.

Colquhoun, G. P., Hughes, K. S., Deyssing, L., Ballard, J. C., Folkes, C. B., Phillips, G., . . . Fitzherbert, J. A. (2021). New South Wales Seamless Geology dataset, version 2.1 [Digital Dataset]. *Geological Survey of New South Wales, Department of Regional NSW.* Maitland: Department of Regional NSW.

NSW DCCEEW. (1998). *Acid Sulfate Soils Risk Map Series.* State Government of NSW and NSW Department of Climate Change, Energy, the Environment and Water 1998.

NSW DCCEEW. (2002). *Western Sydney Salinity Potential.* State Government of NSW and NSW Department of Climate Change, Energy, the Environment and Water.

Sullivan, L., Ward, N., Toppler, N., & Lancaster, G. (2018). *National Acid Sulfate Soils guidance: National acid sulfate soils sampling and identification methods manual.* Department of Agriculture and Water Resources, Canberra ACT. CC BY 4.0.

9. Limitations

Douglas Partners Pty Ltd (Douglas) has prepared this report for this project at Reid Park, Rydalmere NSW in line with Douglas' proposal dated 22 August 2024 and acceptance received from Shane Lauger of City of Parramatta Council. The work was carried out under Short Form Contract for Services (1.13). This report is provided for the exclusive use of City of Parramatta Council for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of Douglas, does so entirely at its own risk and without recourse to Douglas for any loss or damage. In preparing this report Douglas has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after Douglas' field testing has been completed.

Douglas' advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by Douglas in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

The assessment of atypical safety hazards arising from this advice is restricted to the geotechnical components set out in this report and based on known project conditions and stated design advice and assumptions. While some recommendations for safe controls may be provided, detailed ‘safety in design’ assessment is outside the current scope of this report and requires additional project data and assessment.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. Douglas cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by Douglas. This is because this report has been written as advice and opinion rather than instructions for construction.

The scope of work for this investigation/report did not include the assessment of surface or sub-surface materials or groundwater for contaminants, within or adjacent to the site. Should evidence of fill of unknown origin be noted in the report, and in particular the presence of building demolition materials, it should be recognised that there may be some risk that such fill may contain contaminants and hazardous building materials.

Appendix A

About This Report

About this Report

October 2024

Introduction

These notes have been provided to amplify Douglas' report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

Douglas' reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Engagement Terms for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, Douglas will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, Douglas cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, Douglas will be pleased to assist with investigations or advice to resolve the matter.

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, Douglas requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. Douglas would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

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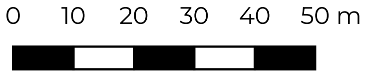
Appendix B

Drawings

SITE LOCATION

LEGEND

⌖ Borehole Location



NOTE:
1. Drawing projection in GDA2020 / MGA zone 56
2. Basemap from Metromap (dated 02.09.2024), and base plan from client supplied drawing.
3. Test locations were located using differential GPS typically accurate to ± 0.1 m depending on satellite coverage

Douglas
PARTNERS

CLIENT: Parramatta Council
OFFICE: Sydney
DRAWN BY: JV
SCALE: 1:1250 @A3
DATE: 20.12.2024

TITLE: **Site Location and Test Plan**
Eastern Parramatta River & CBD Precinct Cycleway
Reid Park, Rydalmere, NSW

N

PROJECT: 231248.00
DRAWING No: 1C
REVISION: 0

DP.QGIS.A3LandscapeDrawingLayout.Rev3 - P:\231248.00 - ERMINGTON, Parramatta River Cycleway\7.0 Drawings\7.2 Out\7.2.1 QGIS\QGIS.qgz

Appendix C

Fieldwork Results

About this Report

Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

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Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

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Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

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About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

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The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

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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.

Soil Descriptions

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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Rock Descriptions

Terminology
Symbols
Abbreviations

March 2024

Rock Strength

Rock strength is defined by the unconfined compressive strength, and it refers to the strength of the rock substance and not the strength of the overall rock mass, which may be considerably weaker due to defects.

The Point Load Strength Index $I_{s(50)}$ is commonly used to provide an estimate of the rock strength and site specific correlations should be developed to allow UCS values to be determined. The point load strength test procedure is described by Australian Standard AS4133.4.1-2007. The terms used to describe rock strength are as follows:

Strength Term	Unconfined Compressive Strength (MPa)	Point Load Index[1] $I_{s(50)}$ MPa	Abbreviation Code
Very low	0.6 - 2	0.03 - 0.1	VL
Low	2 - 6	0.1 - 0.3	L
Medium	6 - 20	0.3 - 1.0	M
High	20 - 60	1 - 3	H
Very high	60 - 200	3 - 10	VH
Extremely high	>200	>10	EH

[1] Rock strength classification is based on UCS. The UCS to $I_{s(50)}$ ratio varies significantly for different rock types and specific ratios may be required for each site. The point load Index ranges shown above are as suggested in AS1726 and should not be relied upon without supporting evidence.

The following abbreviation codes are used for soil layers or seams of material "within rock" but for which the equivalent UCS strength is less than 0.6 MPa.

Scenario	Abbreviation Code
The material encountered has an equivalent UCS strength of less than 0.6 MPa, and therefore is considered to be soil (as per Note 1 of Table 20 of AS 1726-2017). The properties of the material encountered over this interval are described in the "Description of Strata" and soil properties columns.	SOIL
The material encountered has an equivalent UCS strength of less than 0.6 MPa, and therefore is considered to be soil (as per Note 1 of Table 20 of AS 1726-2017). The prominence of the material is such that it can be considered to be a seam (as defined in Table 22 of AS1726-2017) and the properties of the material are described in the defect column.	SEAM

Degree of Weathering

The degree of weathering of rock is classified as follows:

Weathering Term	Description	Abbreviation Code
Residual Soil[1]	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.	RS
Extremely weathered[1]	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible	XW
Highly weathered	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching or may be decreased due to deposition of weathering products in pores.	HW
Moderately weathered	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable but shows little or no change of strength from fresh rock.	MW
Slightly weathered	Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.	SW
Fresh	No signs of decomposition or staining.	FR
Note: If HW and MW cannot be differentiated use DW (see below)		
Distinctly weathered	Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching or may be decreased due to deposition of weathered products in pores.	DW

[1] The parent rock type, of which the residual/extremely weathered material is a derivative, will be stated in the description (where discernible).

Rock Descriptions

Degree of Alteration

The degree of alteration of the rock material (physical or chemical changes caused by hot gasses or liquids at depth) is classified as follows:

Term	Description	Abbreviation Code
Extremely altered	Material is altered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible.	XA
Highly altered	The whole of the rock material is discoloured, usually by staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is changed by alteration. Some primary minerals are altered to clay minerals. Porosity may be increased by leaching or may be decreased due to precipitation of secondary materials in pores.	HA
Moderately altered	The whole of the rock material is discoloured, usually by staining or bleaching to the extent that the colour of the original rock is not recognisable but shows little or no change of strength from fresh rock.	MA
Slightly altered	Rock is slightly discoloured but shows little or no change of strength from fresh rock	SA
Note: If HA and MA cannot be differentiated use DA (see below)		
Distinctly altered	Rock strength usually changed by alteration. The rock may be highly discoloured, usually by staining or bleaching. Porosity may be increased by leaching or may be decreased due to precipitation of secondary minerals in pores.	DA

Degree of Fracturing

The following descriptive classification apply to the spacing of natural occurring fractures in the rock mass. It includes bedding plane partings, joints and other defects, but excludes drilling breaks. These terms are generally not required on investigation logs where fracture spacing is presented as a histogram, and where used are presented in an unabbreviated format.

Term	Description
Fragmented	Fragments of <20 mm
Highly Fractured	Core lengths of 20-40 mm with occasional fragments
Fractured	Core lengths of 30-100 mm with occasional shorter and longer sections
Slightly Fractured	Core lengths of 300 mm or longer with occasional sections of 100-300 mm
Unbroken	Core contains very few fractures

Rock Quality Designation

The quality of the cored rock can be measured using the Rock Quality Designation (RQD) index, defined as:

$$\text{RQD \%} = \frac{\text{cumulative length of 'sound' core sections} > 100\text{ mm long}}{\text{total drilled length of section being assessed}}$$

where 'sound' rock is assessed to be rock of low strength or stronger. The RQD applies only to natural fractures. If the core is broken by drilling or handling (i.e., drilling breaks) then the broken pieces are fitted back together and are not included in the calculation of RQD.

Stratification Spacing

These terms may be used to describe the spacing of bedding partings in sedimentary rocks. Where used, these terms are generally presented in an unabbreviated format

Term	Separation of Stratification Planes
Thinly laminated	< 6 mm
Laminated	6 mm to 20 mm
Very thinly bedded	20 mm to 60 mm
Thinly bedded	60 mm to 0.2 m
Medium bedded	0.2 m to 0.6 m
Thickly bedded	0.6 m to 2 m
Very thickly bedded	> 2 m

Rock Descriptions

Defect Descriptions

Defect Type

Term	Abbreviation Code
Bedding plane	B
Cleavage	CL
Crushed seam	CS
Crushed zone	CZ
Drilling break	DB
Decomposed seam	DS
Drill lift	DL
Extremely Weathered seam	EW
Fault	F
Fracture	FC
Fragmented	FG
Handling break	HB
Infilled seam	IS
Joint	JT
Lamination	LAM
Shear seam	SS
Shear zone	SZ
Vein	VN
Mechanical break	MB
Parting	P
Sheared Surface	S

Rock Defect Orientation

Term	Abbreviation Code
Horizontal	H
Vertical	V
Sub-horizontal	SH
Sub-vertical	SV

Rock Defect Coating

Term	Abbreviation Code
Clean	CN
Coating	CT
Healed	HE
Infilled	INF
Stained	SN
Tight	TI
Veneer	VNR

Rock Defect Infill

Term	Abbreviation Code
Calcite	CA
Carbonaceous	CBS
Clay	CLAY
Iron oxide	FE
Manganese	MN
Pyrite	Py
Secondary material	MS
Silt	M
Quartz	Qz
Unidentified material	MU

Rock Defect Shape/Planarity

Term	Abbreviation Code
Curved	CU
Discontinuous	DIS
Irregular	IR
Planar	PR
Stepped	ST
Undulating	UN

Rock Defect Roughness

Term	Abbreviation Code
Polished	PO
Rough	RF
Smooth	SM
Slickensided	SL
Very rough	VR

Defect Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

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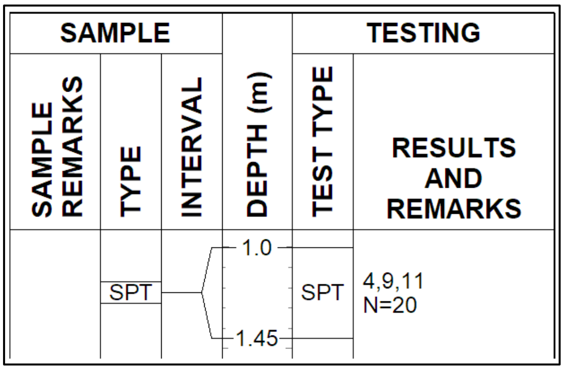
Sampling, Testing and Excavation Methodology

Terminology
Symbols
Abbreviations

March 2024

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
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

Field and laboratory testing (continued)

Test Type	Code
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)	DCP/150
Perth sand penetrometer, followed by blow count penetration increment in mm (flat tip, generally in accordance with AS1289.6.3.3)	PSP/150

Groundwater Observations

▷	seepage/inflow
▽	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

BOREHOLE LOG

CLIENT: City of Parramatta Council
PROJECT: Proposed Pedestrian and Cycleway
LOCATION: Reid Park, Rydalmere, NSW

SURFACE LEVEL: 2.4 AHD
COORDINATE: E:318090.1, N:6256270.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

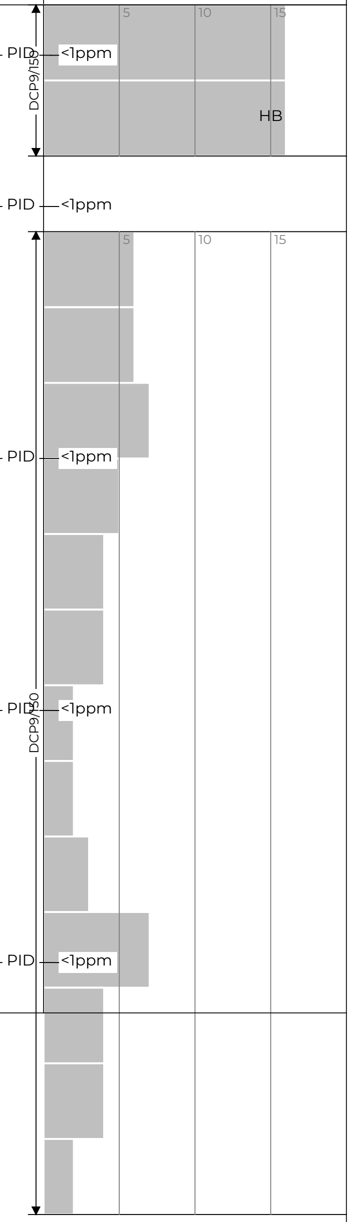
LOCATION ID: BH301
PROJECT No: 231248.00
DATE: 25/11/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) ■ DENSITY.(*) ▨	MOISTURE
25/11/24 No free groundwater observed whilst augering			FILL / TOPSOIL / SAND: brown; trace rootlets.	▨	FILL		
		0.05	FILL / SAND, with gravel: grey-brown; fine to coarse; fine to coarse, sub-angular, sandstone gravel; brick fragments and clay pipe fragments.	▨	FILL	MC to WC	D
	2						
		0.80	FILL / CLAY, trace sand, trace gravel: brown; medium to high plasticity; fine to medium, sandstone, brick fragments gravel.	▨	FILL	MC	w=PL
		1					
		1.30	FILL / CLAY, with sand, trace gravel: black; medium to high plasticity; fine sand; medium, brick fragments gravel.	▨	FILL	PC	
	1						
		1.80	Sandy CLAY (CL-CI): dark grey; low to medium plasticity; fine sand.	▨	ALV	F to St	
		2	Borehole discontinued at 2.00m depth. Target depth reached.				
	-0						

SAMPLE / TESTING AND REMARKS

REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
ASS	A/ES	0.00–0.10	0.10	PID	<1ppm
*ASS	A/ES	0.40–0.50	0.40	PID	<1ppm
			0.50		
ASS	A/ES	0.90–1.00	0.90	PID	<1ppm
			1.00		
ASS	A/ES	1.40–1.50	1.40	PID	<1ppm
			1.50		
ASS	A/ES	1.90–2.00	1.90	PID	<1ppm
			2.00		



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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: 2.5t Excavator
METHOD: AD (150mmØ) to 2.0m
REMARKS: *Blind replicate BD1/20241125 sampled at 0.4-0.5m

OPERATOR: Cirillo (LD)

LOGGED: J. Sullivan
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: City of Parramatta Council
PROJECT: Proposed Pedestrian and Cycleway
LOCATION: Reid Park, Rydalmere, NSW

SURFACE LEVEL: 2.8 AHD
COORDINATE: E:318125.1, N:6256265.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH302
PROJECT No: 231248.00
DATE: 25/11/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED

GROUNDWATER: 27/11/24 No free groundwater observed whilst augering

DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE
0.00–0.05	FILL / TOPSOIL / SAND, with gravel: brown.	▨	FILL		
0.05–1.30	FILL / SAND, with gravel: brown; fine to coarse; fine to coarse, sandstone, brick fragments gravel. 1.00m: cobble/boulder inclusions, igneous	▨	FILL	WC	D
1.30–1.80	FILL / CLAY, trace sand, trace gravel: brown mottled red; medium to high plasticity; fine to medium sand; fine to medium, sandstone and igneous gravel; trace brick fragments and charcoal.	▨	FILL	VC	w=PL
1.80–2.00	CLAY (CL): black; low plasticity. Slight sulphur odour.	▨	ALV	F to St	w=PL
2.00	Borehole discontinued at 2.00m depth. Target depth reached.				

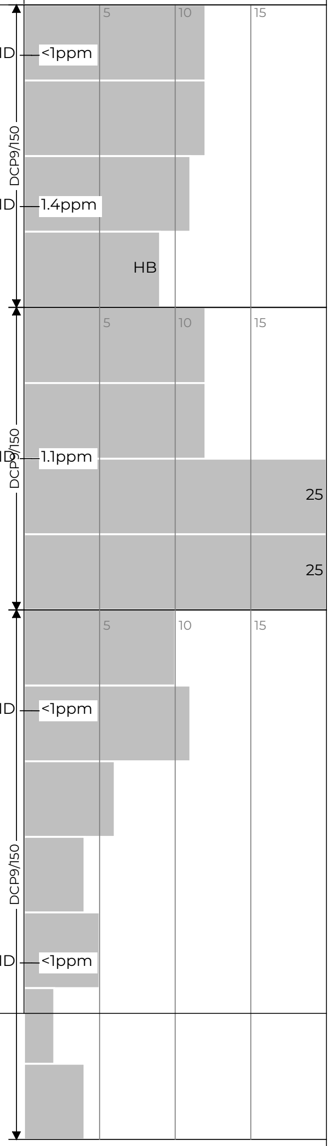
RL (m): 2, 1, 0

SAMPLE

TYPE	INTERVAL DEPTH (m)
D/ES	0.00–0.10
D/ES	0.40–0.50
* D/ES	0.90–1.00
D/ES	1.40–1.50
D/ES	1.90–2.00

TESTING AND REMARKS

DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
0.10	PID	<1ppm
0.40	PID	1.4ppm
0.90	PID	1.1ppm
1.40	PID	<1ppm
1.90	PID	<1ppm



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: 2.5t Excavator
METHOD: AD (150mmØ) to 2.0m
REMARKS: * Blind replicate BD2/20241125 sampled at 0.9-1.0m

OPERATOR: Cirillo (LD)

LOGGED: J. Sullivan
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: City of Parramatta Council
PROJECT: Proposed Pedestrian and Cycleway
LOCATION: Reid Park, Rydalmere, NSW

SURFACE LEVEL: 2.3 AHD
COORDINATE: E:318156.6, N:6256269.3
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH303
PROJECT No: 231248.00
DATE: 25/11/24
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
25/11/24 No Free Groundwater Observed Whilst Augering		0.05	FILL / TOPSOIL / SILTY CLAY: dark brown; with rootlets.	▩	FILL	NA	w=PL					DCP 9/150	5 10 15 HB 17/50mm
	2		FILL / Clayey SAND, with gravel; fine; low to medium plasticity clay; fine to medium gravel; concrete rubble, bricks.	▩	FILL	ND	D	ASS, *	A/ES	0.10–0.20	0.10	PID	<1ppm
									B	0.20–0.40	0.20		
								ASS	A/ES	0.40–0.50	0.40	PID	<1ppm
											0.50		
			Borehole discontinued at 0.50m depth. Refusal at 0.5m on inferred concrete.										
		1											
	1												
		2											
	-0												

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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: GT10 Truck Rig
METHOD: AD(300mmØ) to 0.4m AD(100mmØ) to 0.5m
REMARKS: *Blind replicate BD2/20241125 sampled at 0.1-0.2m

OPERATOR: Ground Test (TK)

LOGGED: I.Howsam/D.Pham
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Douglas
PARTNERS

BOREHOLE LOG

CLIENT: City of Parramatta Council
PROJECT: Proposed Pedestrian and Cycleway
LOCATION: Reid Park, Rydalmere, NSW

SURFACE LEVEL: 1.8 AHD
COORDINATE: E:318182.3, N:6256261.8
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH304
PROJECT No: 231248.00
DATE: 25/11/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED

GROUNDWATER: 25/11/24 No Free Groundwater Observed Whilst Augering

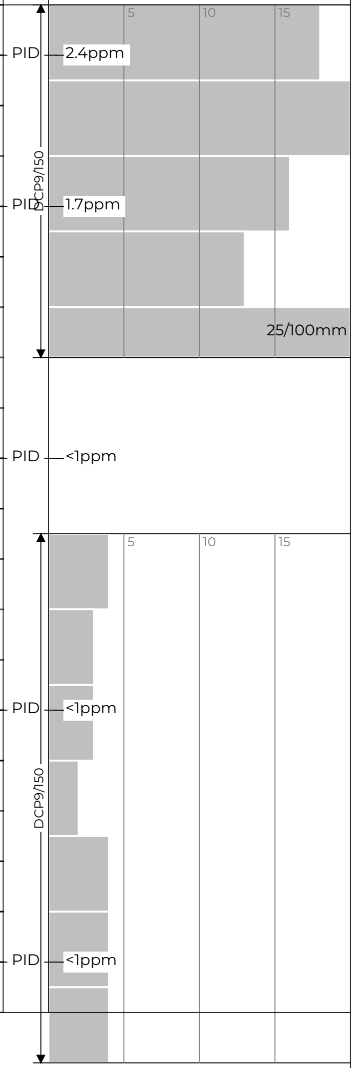
RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	ORIGIN(#)	CONSIS.(*) DENSITY.(*)	MOISTURE
	0.05	FILL / TOPSOIL / SILTY CLAY: dark brown; with rootlets.	FILL	NA	w=PL
	0.60	FILL / SAND, with gravel, trace silt: brown; fine; fine to medium gravel; non plastic silt.	FILL	WC	D
1	0.90	FILL / Gravelly SAND, trace clay: orange-yellow; medium; fine to medium gravel; non plastic clay; ripped sandstone.	FILL	(WC)	M
0	1 2	Silty CLAY (CL), with sand: dark grey, mottled brown; low to medium plasticity; fine sand.	ALV	F to St	w<PL w=PL
-1		Borehole discontinued at 2.00m depth. Target depth reached.			

SAMPLE

TYPE	INTERVAL DEPTH (m)
A/ES	0.10 – 0.20
A/ES	0.40 – 0.50
A/ES	0.90 – 1.00
A/ES	1.40 – 1.50
D	1.70 – 1.80
A/ES	1.90 – 2.00

TESTING AND REMARKS

DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
0.10	PID	2.4ppm
0.40	PID	1.7ppm
0.90	PID	<1ppm
1.40	PID	<1ppm
1.90	PID	<1ppm



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: GT10 Truck Rig
METHOD: AD(100mmØ) to 2.0m
REMARKS:

OPERATOR: Ground Test (TK)

LOGGED: I.Howsam/D.Pham
CASING: Uncased

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Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: City of Parramatta Council
PROJECT: Proposed Pedestrian and Cycleway
LOCATION: Reid Park, Rydalmere, NSW

SURFACE LEVEL: 1.7 AHD
COORDINATE: E:318217.1, N:6256247.8
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH305
PROJECT No: 231248.00
DATE: 25/11/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED

GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) ▩ DENSITY.(*) ▨	MOISTURE
25/11/24 No Free Groundwater Observed Whilst Augering	0.05	FILL / TOPSOIL / SILTY CLAY: dark brown; with rootlets.	▨	FILL	NA	w=PL
		FILL / Gravelly SAND, with clay, with silt; fine; fine to medium gravel; low plasticity clay; building rubble, potential asbestos containing materials.	▨	FILL	WC	w<PL
	0.40	Borehole discontinued at 0.40m depth. Due to potential asbestos containing materials.				

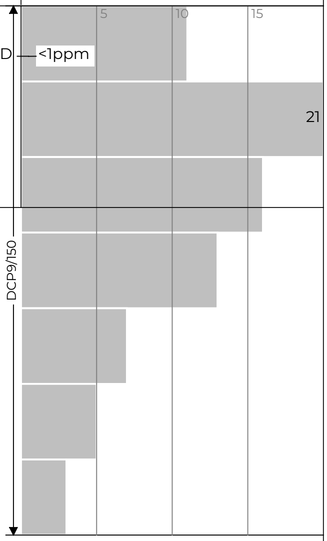
RL (m): 1, -0, -1
DEPTH (m): 1, 2

SAMPLE

REMARKS	TYPE	INTERVAL	DEPTH (m)
PACM	A/ES	0.10 – 0.20	0.10 0.20
PACM	ES		0.40

TESTING AND REMARKS

TEST TYPE	RESULTS AND REMARKS
PID	<1ppm
DCP9/150	



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: GT10 Truck Rig
METHOD: AD(100mmØ) to 0.4m
REMARKS: PACM = Potential Asbestos Containing Material

OPERATOR: Ground Test (TK)

LOGGED: I.Howsam/D.Pham
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

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BOREHOLE LOG

CLIENT: City of Parramatta Council
PROJECT: Proposed Pedestrian and Cycleway
LOCATION: Reid Park, Rydalmere, NSW

SURFACE LEVEL: 1.8 AHD
COORDINATE: E:318250.4, N:6256244.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH306
PROJECT No: 231248.00
DATE: 25/11/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED

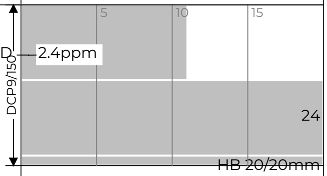
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) ▨ DENSITY.(*) ▒	MOISTURE
25/11/24 No Free Groundwater Observed Whilst Augering		0.05	FILL / TOPSOIL / SILTY CLAY: dark brown; with rootlets.		FILL	NA	w=PL
		0.60	FILL / Silty SAND, with gravel, trace clay; fine; non plastic silt; fine to medium gravel. 0.50m: concrete rubble		FILL	(WC)	D
	1	1	Silty SAND (SM), trace clay: dark grey mottled brown; low plasticity silt. From 1.60m: sulphur odour		ALV	L to MD VL to L	M
	-0	2	Borehole discontinued at 2.00m depth. Target depth reached.				
	-1						

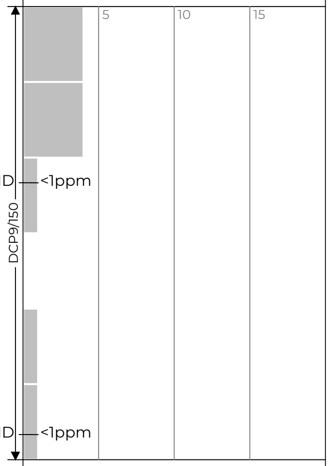
SAMPLE

REMARKS	TYPE	INTERVAL	DEPTH (m)
*	A/ES	0.10–0.20	0.10 0.20
	A/ES	0.40–0.50	0.40 0.50
jar only	A/ES	0.50–0.60	0.60
	A/ES	0.90–1.00	0.90 1.00
	A/ES	1.40–1.50	1.40 1.50
	D	1.70–1.80	1.70 1.80
	A/ES	1.90–2.00	1.90 2.00

TESTING AND REMARKS

TEST TYPE	RESULTS AND REMARKS
PID (0.10)	2.4ppm
PID (0.40)	<1ppm
PID (0.90)	1.1ppm
PID (1.40)	<1ppm
PID (1.90)	<1ppm





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: GT10 Truck Rig
METHOD: AD(100mmØ) to 2.0m
REMARKS: *Blind replicate BD5/20241125 sampled at 0.1-0.2m

OPERATOR: Ground Test (TK)

LOGGED: I.Howsam/D.Pham
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: City of Parramatta Council
PROJECT: Proposed Pedestrian and Cycleway
LOCATION: Reid Park, Rydalmere, NSW

SURFACE LEVEL: 1.8 AHD
COORDINATE: E:318283.5, N:6256242.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH307
PROJECT No: 231248.00
DATE: 25/11/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED

GROUNDWATER: 25/11/24 No Free Groundwater Observed Whilst Augering

RL (m): 1 (at approx. 0.80), 0 (at approx. 1.80), -1 (at approx. 2.80)

DEPTH (m)	DESCRIPTION OF STRATA	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE
0.05	FILL / TOPSOIL / SILTY CLAY: dark brown; with rootlets.	FILL	NA	w=PL
0.70	FILL / Clayey SAND, trace gravel: brown; medium; low plasticity clay; fine to medium gravel.	FILL	ND	D
1.10	Silty CLAY / Clayey SILT (CL-ML): Silty clay, with sand: grey, mottled orange/yellow; low plasticity; fine to medium sand. Clayey silt.	ALV	F to St	w=PL
2	Sandy SILT (ML), trace clay: dark grey, mottled brown; low plasticity.	ALV	S	M

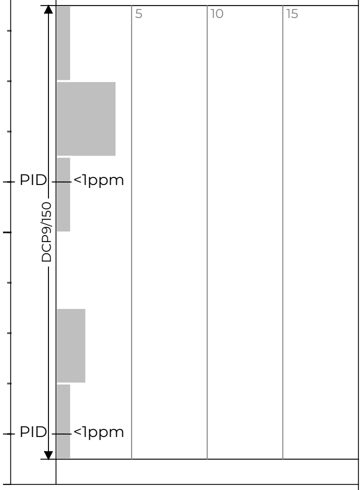
Borehole discontinued at 2.00m depth.
Target depth reached.

SAMPLE

TESTING AND REMARKS

REMARKS	TYPE	INTERVAL / DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
ASS, *	A/ES	0.10 – 0.20	PID	<1ppm
ASS	A/ES	0.40 – 0.50	PID	1.6ppm
	D	0.70 – 0.80		
ASS	A/ES	0.90 – 1.00	PID	<1ppm
ASS	A/ES	1.40 – 1.50	PID	<1ppm
ASS	A/ES	1.90 – 2.00	PID	<1ppm

Refusal 25/90mm



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: GT10 Truck Rig
METHOD: AD(100mmØ) to 2.0m
REMARKS: *Blind replicate *BD7/20241125 sampled at 0.1-0.2m

OPERATOR: Ground Test (TK)

LOGGED: I.Howsam/D.Pham
CASING: Uncased

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Refer to explanatory notes for symbol and abbreviation definitions

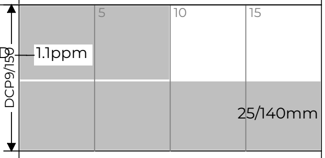
Douglas PARTNERS

BOREHOLE LOG

CLIENT: City of Parramatta Council
PROJECT: Proposed Pedestrian and Cycleway
LOCATION: Reid Park, Rydalmere, NSW

SURFACE LEVEL: 2.5 AHD
COORDINATE: E:318320.0, N:6256244.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH308
PROJECT No: 231248.00
DATE: 25/11/24
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
25/11/24 No Free Groundwater Observed Whilst Augering		0.05	FILL / TOPSOIL / SILTY CLAY: dark brown; with rootlets.		FILL	NA	w=PL						
		0.20	FILL / Clayey SAND, trace gravel: brown; medium; low plasticity clay; fine to medium gravel.		FILL	WC	D		A/ES		0.10 0.20	PID DCP9/150	1.1ppm  25/140mm
	2		FILL / CLAY, with sand, trace silt: brown; medium plasticity; medium sand; medium gravel. 0.20m: geofabric layer		FILL	ND	w<PL		A/ES		0.40 0.50	PID	1.9ppm
	1 1 -0	1 2	Borehole discontinued at 0.90m depth. Refusal on inferred concrete.										

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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: GT10 Truck Rig
METHOD: AD(100mmØ) to 0.9m
REMARKS:

OPERATOR: Ground Test (TK)

LOGGED: I. Howsam
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: City of Parramatta Council
PROJECT: Proposed Pedestrian and Cycleway
LOCATION: Reid Park, Rydalmere, NSW

SURFACE LEVEL: 2.9 AHD
COORDINATE: E:318341.2, N:6256268.6
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH309
PROJECT No: 231248.00
DATE: 25/11/24
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
25/11/24 No Free Groundwater Observed Whilst Augering		0.05	FILL / TOPSOIL / SILTY CLAY: dark brown; with rootlets.		FILL	NA	w=PL					DCP9/150	5 10 25/30mm
			FILL / Clayey SAND, trace gravel: brown; medium; low plasticity clay; fine to medium gravel.		FILL	ND	D		A/ES		0.10 0.20		
			Borehole discontinued at 0.20m depth. Refusal on inferred concrete.										
	2												
		1											
	1												
		2											
	-0												

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: GT10 Truck Rig
METHOD: AD(100mmØ) to 0.2m
REMARKS:

OPERATOR: Ground Test (TK)

LOGGED: I. Howsam
CASING: Uncased

Generated with CORE-GS by Geroc - Soil Log

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

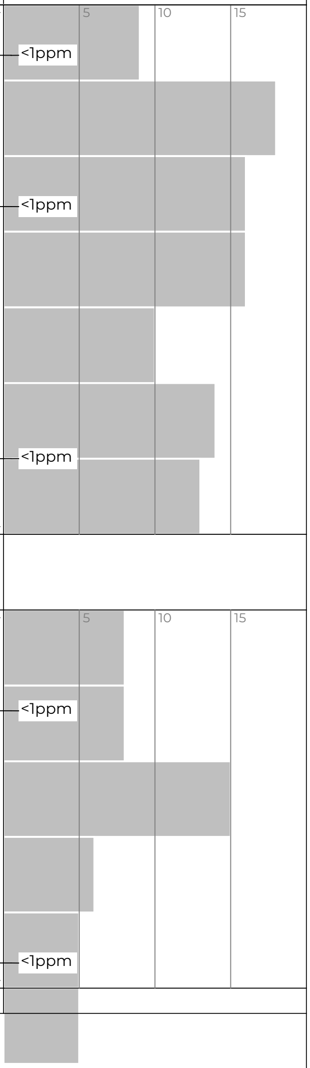
BOREHOLE LOG

CLIENT: City of Parramatta Council
PROJECT: Proposed Pedestrian and Cycleway
LOCATION: Reid Park, Rydalmere, NSW

SURFACE LEVEL: 3.1 AHD
COORDINATE: E:318365.6, N:6256283.8
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH310
PROJECT No: 231248.00
DATE: 25/11/24
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
25/11/24 No free groundwater observed whilst augering	3		FILL / SAND, with silt, with gravel: grey-brown; fine to coarse; fine, sub-angular, sandstone, brick fragments gravel.		FILL		D		A/ES		0.10	PID <1ppm
		0.30	FILL / Sandy SILT: pale grey; non plastic; fine sand. From 0.75m: blue-grey		FILL	WC	w=PL	0.5-1.8m: B Sample	A/ES B		0.40 0.50	PID <1ppm
									A/ES		0.90 1.00	PID <1ppm
	2	1				MC to WC			A/ES		1.40 1.50	PID <1ppm
		1.80	FILL / CLAY, with gravel: pale grey; low to medium plasticity; fine to coarse, sub-angular, sandstone and concrete gravel; with fragment of possible asbestos containing material.		FILL	MC			A/ES		1.90 2.00	PID <1ppm
	1	2	Borehole discontinued at 2.00m depth. Target depth reached.									



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: 2.5t Excavator
METHOD: AD (150mmØ) to 2.0m
REMARKS:

OPERATOR: Cirillo (LD)

LOGGED: J. Sullivan
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

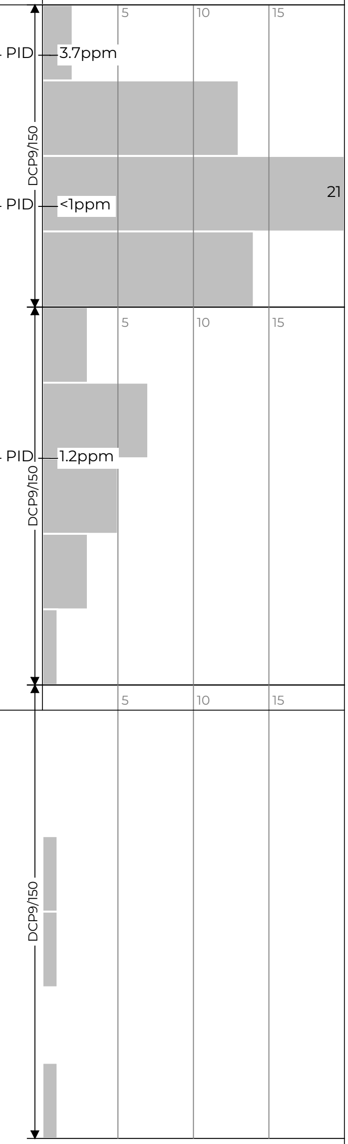
BOREHOLE LOG

CLIENT: City of Parramatta Council
PROJECT: Proposed Pedestrian and Cycleway
LOCATION: Reid Park, Rydalmere, NSW

SURFACE LEVEL: 3.2 AHD
COORDINATE: E:318389.2, N:6256302.6
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH311
PROJECT No: 231248.00
DATE: 25/11/24
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
25/11/24 No free groundwater observed whilst augering	3		FILL / SAND, with gravel, trace silt: brown; fine to coarse; fine to coarse, sandstone, brick fragments gravel.		FILL	WC	D	ASS	A/ES		0.10	PID	3.7ppm
								ASS	A/ES		0.40 0.50	PID	<1ppm
						VC							
		1	0.90m: with metal waste and rope					ASS	A/ES		0.90 1.00	PID	1.2ppm
	2		From 1.30m: potential asbestos containing material encountered										
	1	2	Borehole discontinued at 1.40m depth. Potential asbestos encountered.										



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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: 2.5t Excavator
METHOD: AD (150mmØ) to 1.4m
REMARKS:

OPERATOR: Cirillo (LD)

LOGGED: J. Sullivan
CASING: Uncased

Refer to explanatory notes for symbol and abbreviation definitions

Appendix D

Laboratory Test Certificates

Material Test Report

Douglas Partners Pty Ltd
Sydney Laboratory
96 Hermitage Road West Ryde NSW 2114
Phone: (02) 9809 0666
Email: lujia.wu@douglaspartners.com.au

Report Number:	**231248.00-1**
Issue Number:	1
Date Issued:	16/12/2024
Client:	City of Parramatta Council CITY OF PARRAMATTA COUNCIL, Parramatta NSW
Contact:	Shane Lauger
Project Number:	231248.00
Project Name:	Proposed Pedestrian and Cycleway
Project Location:	Multiple Locations, Parramatta NSW
Work Request:	12005
Sample Number:	SY-12005A
Date Sampled:	25/11/2024
Dates Tested:	29/11/2024 - 09/12/2024
Sampling Method:	Sampled by Engineering Department *The results apply to the sample as received*
Preparation Method:	AS 1289.1.1 - Sampling and Preparation of Soils
Sample Location:	**BH304 (1.7-1.8m)**
Material:	Clayey SILT, with sand: dark grey, mottled brown, low to medium plasticity.

Accredited for compliance with ISO/IEC 17025 - Testing

Lujia Wu

Approved Signatory: Lujia Wu
Soil Technician
Laboratory Accreditation Number: 828

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	27		
Plastic Limit (%)	17		
Plasticity Index (%)	**10**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	**6.0**		
Cracking Crumbling Curling	None		

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Results relate only to the items tested/sampled.

Material Test Report

Report Number: **231248.00-1**
Issue Number: 1
Date Issued: 16/12/2024
Client: City of Parramatta Council
CITY OF PARRAMATTA COUNCIL, Parramatta NSW
Contact: Shane Lauger
Project Number: 231248.00
Project Name: Proposed Pedestrian and Cycleway
Project Location: Multiple Locations, Parramatta NSW
Work Request: 12005
Sample Number: SY-12005B
Date Sampled: 25/11/2024
Dates Tested: 29/11/2024 - 10/12/2024
Sampling Method: Sampled by Engineering Department
The results apply to the sample as received
Preparation Method: AS 1289.1.1 - Sampling and Preparation of Soils
Sample Location: **BH307 (0.7-0.8m)**
Material: Clayey SILT, with sand: grey, mottled orange/yellow, low to medium plasticity.

Douglas Partners Pty Ltd
Sydney Laboratory
96 Hermitage Road West Ryde NSW 2114
Phone: (02) 9809 0666
Email: lujia.wu@douglaspartners.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Lujia Wu

Approved Signatory: Lujia Wu
Soil Technician
Laboratory Accreditation Number: 828

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	23		
Plastic Limit (%)	16		
Plasticity Index (%)	**7**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	**4.5**		
Cracking Crumbling Curling	None		

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Material Test Report

Report Number: **231248.00-4**
Issue Number: 1
Date Issued: 21/01/2025
Client: City of Parramatta Council
CITY OF PARRAMATTA COUNCIL, Parramatta NSW
Project Number: 231248.00
Project Name: Proposed Pedestrian and Cycleway
Project Location: Multiple Locations, Parramatta NSW
Work Request: 12466
Sample Number: NC-12466A
Date Sampled: 25/11/2024
Dates Tested: 09/12/2024 - 17/01/2025
Sampling Method: Sampled by Douglas Partners
The results apply to the sample as received
Sample Location: **BH303, Depth: 0.2 - 0.4**

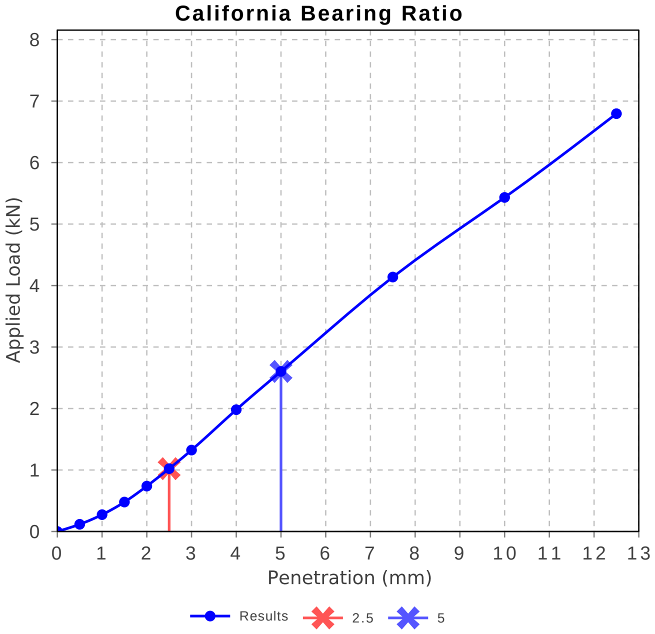
Douglas PARTNERS
Douglas Partners Pty Ltd
Newcastle Laboratory
15 Callistemon Close Warabrook Newcastle NSW 2310
Phone: (02) 4960 9600
Email: newcastle@douglaspartners.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

L Roberts

Approved Signatory: Lucas Roberts
Technician
Laboratory Accreditation Number: 828

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	5 mm		
CBR %	**13**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Visual Assessment		
Maximum Dry Density (t/m^3)	2.05		
Optimum Moisture Content (%)	10.5		
Laboratory Density Ratio (%)	100.0		
Laboratory Moisture Ratio (%)	100.0		
Dry Density after Soaking (t/m^3)	2.04		
Field Moisture Content (%)	5.2		
Moisture Content at Placement (%)	10.3		
Moisture Content Top 30mm (%)	11.4		
Moisture Content Rest of Sample (%)	10.7		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	10		
Curing Hours (h)	147.2		
Swell (%)	0.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0		



Material Test Report

Report Number: **231248.00-4**
Issue Number: 1
Date Issued: 21/01/2025
Client: City of Parramatta Council
CITY OF PARRAMATTA COUNCIL, Parramatta NSW
Project Number: 231248.00
Project Name: Proposed Pedestrian and Cycleway
Project Location: Multiple Locations, Parramatta NSW
Work Request: 12466
Sample Number: NC-12466B
Date Sampled: 25/11/2024
Dates Tested: 09/12/2024 - 17/01/2025
Sampling Method: Sampled by Douglas Partners
The results apply to the sample as received
Sample Location: **BH310, Depth: 0.5 - 1.8**

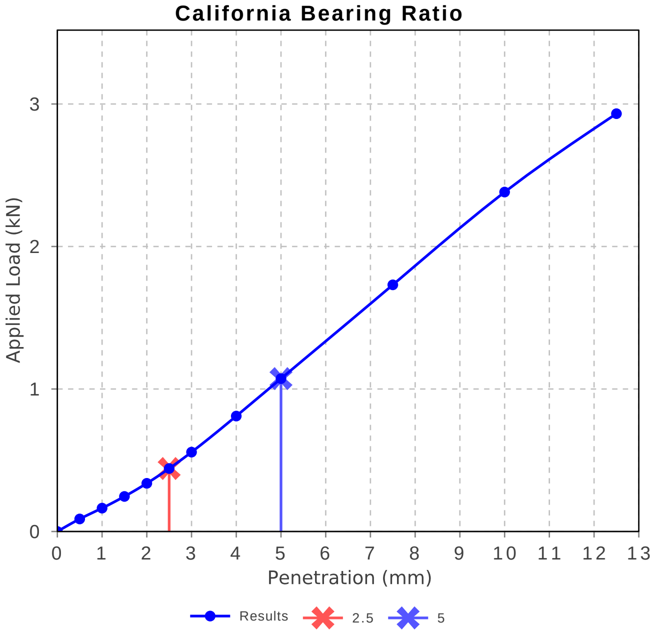
Douglas Partners Pty Ltd
Newcastle Laboratory
15 Callistemon Close Warabrook Newcastle NSW 2310
Phone: (02) 4960 9600
Email: newcastle@douglaspartners.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

L Roberts

Approved Signatory: Lucas Roberts
Technician
Laboratory Accreditation Number: 828

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	5 mm		
CBR %	**5**		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Visual Assessment		
Maximum Dry Density (t/m^3)	1.45		
Optimum Moisture Content (%)	23.5		
Laboratory Density Ratio (%)	99.5		
Laboratory Moisture Ratio (%)	101.0		
Dry Density after Soaking (t/m^3)	1.44		
Field Moisture Content (%)	44.1		
Moisture Content at Placement (%)	23.6		
Moisture Content Top 30mm (%)	45.4		
Moisture Content Rest of Sample (%)	43.9		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	10		
Curing Hours (h)	135.7		
Swell (%)	0.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0		



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Results relate only to the items tested/sampled.

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12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 367417-D

Client Details

Client	Douglas Partners Pty Ltd
Attention	Peter Valenti
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**231248.00 Various**
Number of Samples	71 Soil
Date samples received	26/11/2024
Date completed instructions received	27/11/2024

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	04/12/2024
Date of Issue	04/12/2024

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Results Approved By
Diego Bigolin, Inorganics Supervisor

Authorised By
Nancy Zhang, Laboratory Manager

sPOCAS field test						
Our Reference		367417-D-53	367417-D-54	367417-D-55	367417-D-56	367417-D-57
Your Reference	UNITS	BH301	BH301	BH301	BH301	BH301
Depth		0-0.2	0.4-0.5	0.9-1.0	1.5-1.6	1.9-2.0
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/11/2024	26/11/2024	26/11/2024	26/11/2024	26/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
pH$_{F}$ (field pH test)	pH Units	7.6	8.2	4.7	6.4	6.4
pH$_{FOX}$ (field peroxide test)	pH Units	5.9	7.1	3.7	4.0	3.2
Reaction Rate*	-	Medium reaction	High reaction	Low reaction	Medium reaction	Medium reaction

sPOCAS field test						
Our Reference		367417-D-58	367417-D-59	367417-D-60	367417-D-61	367417-D-62
Your Reference	UNITS	BH303	BH303	BH307	BH307	BH307
Depth		0-0.1	0.4-0.5	0-0.1	0.4-0.5	0.9-1.0
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/11/2024	26/11/2024	26/11/2024	26/11/2024	26/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
pH$_{F}$ (field pH test)	pH Units	6.5	8.7	8.3	7.9	8.7
pH$_{FOX}$ (field peroxide test)	pH Units	4.6	6.5	6.5	7.7	5.9
Reaction Rate*	-	Medium reaction	Low reaction	Low reaction	Extreme reaction	Extreme reaction

sPOCAS field test						
Our Reference		367417-D-63	367417-D-64	367417-D-65	367417-D-66	367417-D-67
Your Reference	UNITS	BH307	BH307	BH311	BH311	BH311
Depth		1.4-1.5	1.9-2	0-0.1	0.4-0.5	0.9-1.0
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/11/2024	26/11/2024	26/11/2024	26/11/2024	26/11/2024
Date analysed	-	29/11/2024	29/11/2024	29/11/2024	29/11/2024	29/11/2024
pH$_{F}$ (field pH test)	pH Units	7.7	7.2	7.4	7.1	7.0
pH$_{FOX}$ (field peroxide test)	pH Units	3.8	2.2	5.8	5.7	5.9
Reaction Rate*	-	Low reaction	Low reaction	Low reaction	Medium reaction	Medium reaction

Method ID	Methodology Summary
Inorg-063	pH- measured using pH meter and electrode. Soil is oxidised with Hydrogen Peroxide or extracted with water. To ensure accurate results these tests are recommended to be done in the field as pH may change with time thus these results may not be representative of true field conditions.

QUALITY CONTROL: sPOCAS field test					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			26/11/2024	[NT]	[NT]	[NT]	[NT]	26/11/2024	[NT]
Date analysed	-			29/11/2024	[NT]	[NT]	[NT]	[NT]	29/11/2024	[NT]
pH_F (field pH test)	pH Units		Inorg-063	[NT]	[NT]	[NT]	[NT]	[NT]	99	[NT]
pH_{FOX} (field peroxide test)	pH Units		Inorg-063	[NT]	[NT]	[NT]	[NT]	[NT]	99	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

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CERTIFICATE OF ANALYSIS 367417-G

Client Details

Client	Douglas Partners Pty Ltd
Attention	Joshua Valencic
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**231248.00 Various**
Number of Samples	Additional analysis
Date samples received	26/11/2024
Date completed instructions received	11/12/2024

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	18/12/2024
Date of Issue	18/12/2024

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

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

Results Approved By
Jenny He, Inorganic Team Leader

Authorised By
Nancy Zhang, Laboratory Manager

Client Reference: 231248.00 Various

Chromium Suite					
Our Reference		367417-G-55	367417-G-57	367417-G-63	367417-G-64
Your Reference	UNITS	BH301	BH301	BH307	BH307
Depth		0.9-1.0	1.9-2.0	1.4-1.5	1.9-2
Date Sampled		25/11/2024	25/11/2024	25/11/2024	25/11/2024
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	12/12/2024	12/12/2024	12/12/2024	12/12/2024
Date analysed	-	13/12/2024	13/12/2024	13/12/2024	13/12/2024
pH $_{kcl}$	pH units	4.1	4.8	7.6	7.1
s-TAA pH 6.5	%w/w S	0.07	0.02	<0.01	<0.01
TAA pH 6.5	moles H^+ /t	42	12	<5	<5
Chromium Reducible Sulfur	%w/w	<0.005	0.006	0.07	0.12
a-Chromium Reducible Sulfur	moles H^+ /t	<3	4	41	74
S_{HCl}	%w/w S	0.036	[NT]	[NT]	[NT]
S_{KCl}	%w/w S	0.032	[NT]	[NT]	[NT]
S_{NAS}	%w/w S	0.007	[NT]	[NT]	[NT]
ANC_{BT}	% $CaCO_3$	[NT]	[NT]	1.3	1.2
s-ANC_{BT}	%w/w S	[NT]	[NT]	0.42	0.40
s-Net Acidity	%w/w S	0.077	0.026	<0.005	<0.005
a-Net Acidity	moles H^+ /t	47	16	<5	<5
Liming rate	kg $CaCO_3$ /t	4	1	<0.75	<0.75
a-Net Acidity without ANCE	moles H^+ /t	47	16	41	74
Liming rate without ANCE	kg $CaCO_3$ /t	3.5	1.2	3.1	5.5
s-Net Acidity without ANCE	%w/w S	0.075	0.026	0.066	0.12

Method ID	Methodology Summary
Inorg-068	Chromium Reducible Sulfur - Hydrogen Sulfide is quantified by iodometric titration after distillation to determine potential acidity. Net acidity including ANC has a safety factor of 1.5 applied. Neutralising value (NV) of 100% is assumed for liming rate. The recommendation that the SHCL concentration be multiplied by a factor of 2 to ensure retained acidity is not underestimated, has not been applied in the SHCL result. However, it has been applied in the SNAS calculation: SNAS % = (SHCL-SKCL)x2

QUALITY CONTROL: Chromium Suite					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			12/12/2024	[NT]	[NT]	[NT]	[NT]	12/12/2024	[NT]
Date analysed	-			13/12/2024	[NT]	[NT]	[NT]	[NT]	13/12/2024	[NT]
pH $_{kcl}$	pH units		Inorg-068	[NT]	[NT]	[NT]	[NT]	[NT]	98	[NT]
s-TAA pH 6.5	%w/w S	0.01	Inorg-068	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
TAA pH 6.5	moles H^+/t	5	Inorg-068	<5	[NT]	[NT]	[NT]	[NT]	96	[NT]
Chromium Reducible Sulfur	%w/w	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	88	[NT]
a-Chromium Reducible Sulfur	moles H^+/t	3	Inorg-068	<3	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
S_{HCl}	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
S_{KCl}	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
S_{NAS}	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
ANC_{BT}	% $CaCO_3$	0.05	Inorg-068	<0.05	[NT]	[NT]	[NT]	[NT]	93	[NT]
s-ANC_{BT}	%w/w S	0.05	Inorg-068	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
s-Net Acidity	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-Net Acidity	moles H^+/t	5	Inorg-068	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Liming rate	kg $CaCO_3$/t	0.75	Inorg-068	<0.75	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-Net Acidity without ANCE	moles H^+/t	5	Inorg-068	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Liming rate without ANCE	kg $CaCO_3$/t	0.75	Inorg-068	<0.75	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
s-Net Acidity without ANCE	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Appendix E

Broms Design Method

Lateral Capacity and Deflection of Piles Using Broms

A. Background

The methods of Broms (Ref 1 and 2) can be used to calculate the resistance of soil to lateral loads on piles. Solutions are provided for both 'short' and 'long' piles, for 'free head' and 'fixed head' restraint, and for both cohesive soils (Ref 1) and cohesionless soils (Ref 2). If it is not clear whether a pile is 'short' or 'long', then the pile should be checked for both, and the lesser value adopted.

The Broms methods are relatively simplistic, compared to more complex finite element solutions, but can be applied without using complex software packages.

The methods are limited to homogeneous soils, adopting either undrained shear strength (c_u) for short term loading in cohesive soils (eg silts and clays), or friction angle (ø) for either short term or long term loading in cohesionless soils (eg sands and gravels). For long term sustained loading in cohesive soils, the cohesionless approach can be adopted using effective stress parameters (c', ø'), but with c' equal to zero.

For the cohesive soils model, ultimate lateral resistance is assumed as zero down to a depth of 1.5B (where B is the pile diameter) and $9c_uB$ below this depth. For the cohesionless soils model, the ultimate lateral resistance is estimated as three times the passive Rankine earth pressure, ie $3K_p\gamma BL$ (where K_p is the coefficient of passive earth pressure, γ is soil density, and L is pile depth below ground level).

Calculation of deflection is usually considered as indicative only (it may not be as accurate as other methods), and corresponds to application of working stress (ie where the ultimate lateral load is factored down by 2 or 3).

B. Calculation of Ultimate Lateral Load

To calculate the ultimate lateral load ,P_u, for a 'short' pile, use Figure 1 for the cohesive soil model and Figure 2 for the cohesionless soil model. Enter the x-axis by calculating the length to diameter, L/B, ratio. Select the appropriate line to use, based on ground restraint conditions, and, where 'free head', the load eccentricity to pile diameter, e/B, ratio. After obtaining the appropriate values on the y-axis, multiply this by c_uB^2 for cohesive soil or $K_pB^3\gamma$ for cohesionless soil to obtain the ultimate lateral load, P_u.

To calculate the ultimate lateral load ,P_u, for a 'long' pile, corresponding to the yield moment, M_{yield}, use Figure 3 for the cohesive soil model and Figure 4 for the cohesionless soil model. Enter the x-axis by calculating M_{yield}/c_uB^3. Select the appropriate line to use, based on ground restraint conditions, and, where 'free head', the load eccentricity to pile diameter, e/B, ratio. After obtaining the appropriate values on the y-axis, multiply this by c_uB^2 for cohesive soil or $K_pB^3\gamma$ for cohesionless soil to obtain the ultimate lateral load, P_u.

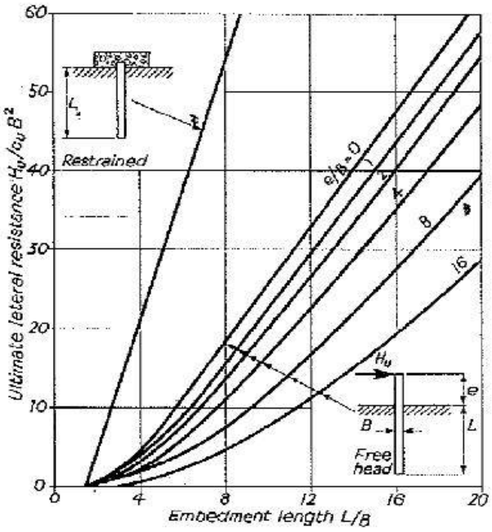

Fig 1: Ultimate lateral resistance for cohesive soil, short pile (Ref 1)

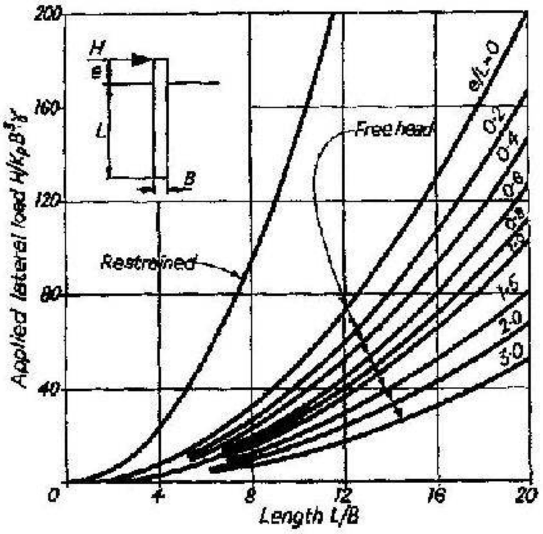

Fig 2: Ultimate lateral resistance for cohesionless soil, short pile (Ref 2)

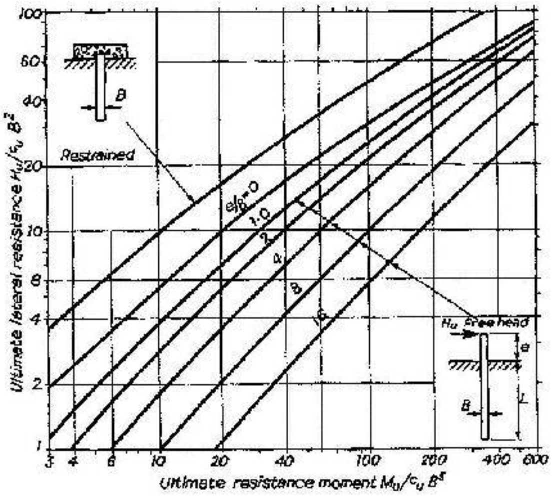

Fig 3: Ultimate lateral resistance for cohesive soil, long pile (Ref 1)

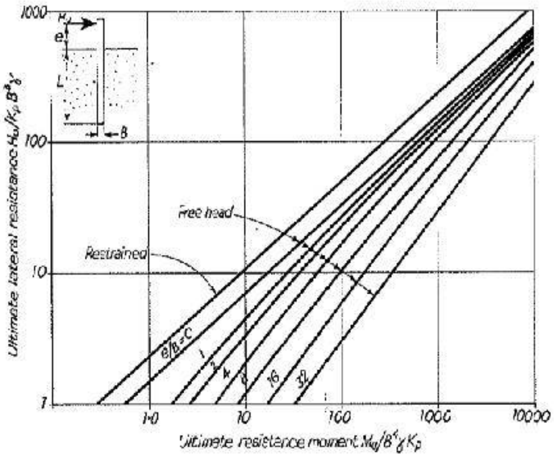

Fig 4: Ultimate lateral resistance for cohesionless soil, long pile (Ref 2)

C. Estimating Lateral Deflection

At working lateral load H (ie P_u divided by 2 to 3) the lateral deflection can be estimated by assuming that, at any particular pile depth, the unit soil reaction, p, increases linearly with increasing lateral deflection, as follows:

$p = k_h y$

where k_h = the modulus of horizontal subgrade reaction (kN/m^3);
p = unit soil reaction (kN/m^2);
y = lateral deflection (m)

Cohesive Soil ('stiff' or better): For 'stiff' and overconsolidated clay soils, k_h is assumed to be constant with depth, resulting in the dimensionless lateral deflections being plotted in Figure 5 as a function of dimensionless length βL in which:

$\beta = (k_h B/4EI)^{1/4}$

where E = the elastic modulus of the pile material;
I = the moment of inertia of the pile;
B = pile diameter

After entering the x-axis on Figure 5 with the βL value, select the line appropriate to the restraint condition, and, in the case of a 'free-head' pile, the load eccentricity to pile depth, e/D, ratio. The lateral deflection at ground surface due to the applied working load, H, is then calculated by dividing the y-axis value by k_hBL/H.

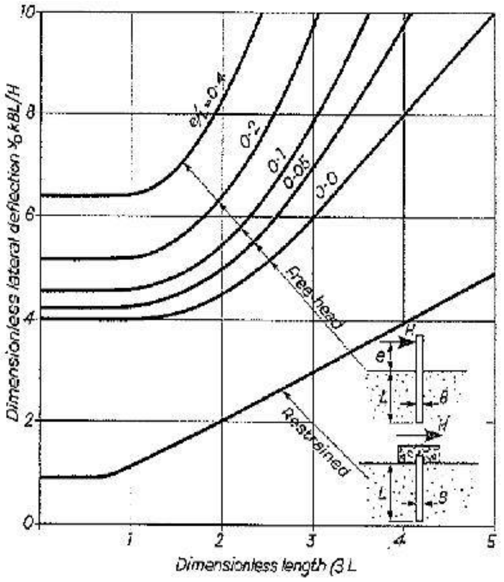

Fig 5: Lateral deflection at ground surface for cohesive soil

Cohesionless Soil (and 'soft' clays): For sands and gravels and 'soft' clays, k_h is assumed to increase linearly with depth as follows:

$k_h = \eta_h z/B$

where k_h = the modulus of horizontal subgrade reaction (kN/m^3);
z = depth below ground level (m);
η_h = coefficient of modulus variation with depth;
B = pile diameter

This results in the dimensionless lateral deflections being plotted in Figure 6 as a function of dimensionless length ηL in which:

$$\eta = (\eta_h/EI)^{1/5}$$

After entering the x-axis on Figure 6 with the ηL value, select the line appropriate to the restraint condition, and, in the case of a 'free-head' pile, the load eccentricity to pile depth, e/D, ratio. The lateral deflection at ground surface due to the applied working load, H, is then calculated by dividing the y-axis value by $(EI)^{3/5}.(\eta_h)^{2/5}/(HL)$.

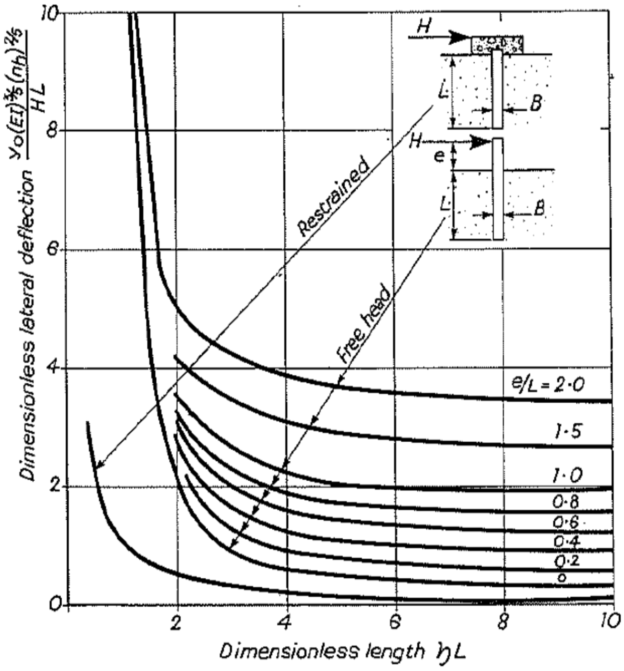

Fig 6: Lateral deflection at ground surface for cohesionless soil

D. References

1. Broms, Bengt B, "Lateral Resistance of Piles in Cohesive Soils", Proceedings of the American Society of Civil Engineers, Journal of the Soil Mechanics and Foundations Division, Vol 90, SM2, 1964.

2. Broms, Bengt B, "Lateral Resistance of Piles in Cohesionless Soils", Proceedings of the American Society of Civil Engineers, Journal of the Soil Mechanics and Foundations Division, Vol 90, SM3, 1964.

CITY OF PARRAMATTA

Major Construction Management Plan

Major Construction Management Plan (1) – Site Setout and Construction Protection Measures

Project Name: Construction Management Plan - WICR322-Eastern Parramatta River & CBD Precinct Cycleway

Date and Revision:

The following have been identified as significant environmental aspects for the site:
These aspects shall be managed with the environmental protection measures outlined on this plan.

Management

1. Responsibilities:

Emergency Contact 1: Name – Mobile – Email
Emergency Contact 2: Name – Mobile – Email

5. Staging of Works:
Approximate Months of Construction

2. Communication of CMP Requirements:
A Copy of the CMP to be kept onsite at all times & made available to all contractors. Site inspections will be undertaken weekly & after rain event/s to ensure adherence to all items in the CMP.

6. Informing Residents and Businesses:
Nearby residents shall be informed at least two days prior to any construction works via letter drop and door knock.

3. Inspections and Maintenance:

7. Associated Documents:

4. Traffic Management
The Principal Contractor is to define control measures in a Construction Traffic Management Plan prepared in accordance with Councils and TfNSW requirements. This shall appropriately manage internal site traffic, including pedestrian and cycle movements to ensure the safety of workers and public as well as outline required signage and fencing to assist with ensuring safety for all. Signs advising of the proposed works and changes to traffic conditions, as well as areas under construction, should be visibly placed around the area of works. The Construction Traffic Management Plan is to be approved by the CoP before works commence.

Noise **Risk: Significant / Med / Low**

Requirement: EPA NSW and Council requirements must be adhered to in relation to the level of noise and working h ours, to ensure that residents and other applicable neighbours to the site are not disturbed unreasonably. The generation of noise must be minimized.

7. Working Hours:
7 am to 6pm Monday - Friday
8 am to 5pm Saturday |24-hour contact details of site manager:
Council's superintendent: Peter Kazanzidis (0477 760 228)
Community consultation and complaints handling;
Council's project managers Hans Smit (8839 4014)
Arusha Bhowmik (8839 3379)

8. Noise Minimization Methods:

9. Other:

Dust **Risk: Significant / Med / Low**

Requirement: Dust generation must be minimized to ensure there is no health risk or loss of amenity and prevented on dry, windy days.

10. Minimizing Dust Generation:
Works on hot, dry, windy days to be minimized to prevent dust. Restrict vehicle movements onsite.

12. Contingencies:

11. Dust Suppression: Dust suppression will be controlled by means of water, using sprinkler/s or handheld hose/s with a trigger nozzle.

13. Other: Any debris deposited by vehicles on roads is to be minimized when vehicles are leaving the site and council roads/footpaths are to be kept clean and maintained to the satisfaction of council officers.

Erosion and Sediment **Risk: Significant / Med / Low**

Requirement: Erosion and sediment control plans are to be established by the Principal Contractor and approved by the CoP prior to commencement of works. The controls must be maintained in place until the works are complete and all exposed erodible materials are stabilised. All sediment control measures must be checked regularly and repaired or re-installed (if required) if heavy rainfall is forecast. Erosion and sediment must be managed in accordance with current best practice environmental management practices, to prevent sediment-laden water from entering any drainage system or natural waterway. Mud must not be transported on to nearby roads.

Drainage Management:
Debris deposited by vehicles on the road is to be minimized when vehicles are leaving the site and kept clean and maintained to the satisfaction of Council Officers.

17. Sediment Traps:
Sediment traps to be placed on All Internal Drainage Pit/s & Council Pit/s

18. Dewatering:

Approved Drainage Plan Here

Legend: Ex Fence —— Temp Fence —— Gate Waste 🟧 Toilet ●
Site Shed 🟪 Sediment Trap ☐ TPZ Area ☁ Contractor Parking

15. Soil Stabilization:
During Construction:

Post Works:

16. Stockpile Protection:

19. Vehicle and Road Management.

Roads - must be kept clean, to satisfaction of Council, at all times. Use only nominated access points.

Site Access - Vehicle movements to & from the site & deliveries will only occur during the approved working hours.

Cleaning - Vehicles are to be inspected & cleaned of debris by scraping with a shovel & broom before leaving the site.

Cleaning - Streets any material deposited on roadway to be swept up by means of shovel & broom or use of a street sweeper. Or as directed by an Authorized Council Officer. Using Street Sweeper as required and as directed by Authorized officer, any urgent cleaning may be undertaken by Council's contractor and the cost of this will be subtracted from the bond.

20. Other:

Waste — Risk: Significant / Med / Low

21.Detail Construction Waste Management Plan (CWMP) - A detailed Construction Waste Management Plan (CWMP) is to be prepared by the Principal Contractor specifying the likely waste generation and how the waste generated will be disposed of. Waste material taken off site will be appropriately classified and managed in accordance with the Waste Classification Guidelines (EPA November 2014). The CWMP is to be approved by the CoP before works commence. Demolition work plans - to be provided along with final landscape drawings

Requirement: Litter and waste must be contained on site, before disposal in a responsible manner. Skip bins must have hinged lids and be kept closed each night and on wind affected days.

21. Movement of Soil: Of- site / On Site / N/A Contaminant Status:

22. Waste Minimization Methods:

. Waste Storage and Disposal: All rubbish bin/s and skip bin/s will have lids or be covered to contain airborne material/s.
All timber and metalworks to be recycled where possible.

24. Other:

☠ Chemicals — Risk: Significant / Med / Low

Requirement: Storage and spill management practices must be implemented to ensure that no environmental damage can result from the escape or spillage of chemicals or fuels.

25. Storage:

26: Spill Management:

27. Refueling Procedure:

28. Other:

Other Site-Specific Issues

Flora and Fauna — Risk: Significant / Med / Low

Requirement: All significant flora and fauna on and adjacent to the site must be protected in accordance with AS4970-2009

29. Yes / No. Details: Prior to the commencement of any building works appropriate tree protection fencing must be erected in accordance with Australian Standard AS47902009 & remain in place until completion of works.

Archaeological/Heritage Risk: Significant / Med / Low

Requirement: Places, sites and objects of archaeological or heritage significance must be protected.

30. Yes / No. Details:

Blank 1 Risk: Significant / Med / Low

31.

RISK ASSESSMENT CHECKLIST

Noise

Issues: • Nature of Noise Generating Works: • Potential Noise Receptors: • Proximity of Works to Noise Receptors:	Likelihood Consequence Overall Risk

Dust

Issues: • Dust Sources: • Potential Dust Receptors: • Proximity of Works to Dust Receptors: • Extent of Exposed Earth and Duration of Time Exposed: • Wind Conditions:	Likelihood Consequence Overall Risk

Erosion and Sediment

Issues: • Erosion and Sediment Sources: • Potential Erosion and Sediment Receptors: • Proximity of Works to Erosion and Sediment Receptors: • Extent of Exposed Earth and Duration of Time Exposed: • Soil Type and Erosivity: • Slope: • Site Drainage Regime: • Rainfall: • Vehicle Movements on and Off Site:	Likelihood Consequence Overall Risk

Waste

Issues: • Nature of Waste to be Generated: • Presence of Waste on Site Prior to Work Commencement: • Quantity of Waste Anticipated: • Potential Waste Receptors: • Proximity to Potential Waste Receptors:	Likelihood Consequence Overall Risk

Chemicals

Issues: • Types of Chemicals and Fuels Used and/or Stored on Site: • Quantities of Chemicals and Fuels Used and/or Stored on Site: • Potential Chemical Receptors: • Proximity to Potential Chemical Receptors:	Likelihood Consequence Overall Risk

Significant Flora/ Fauna

Issues: • Types of Flora/ Fauna: • Vulnerability of Flora / Fauna: • Proximity of Flora/Fauna to Works: • Work Activities Which May Threaten Flora / Fauna: • Potential Impacts on Flora / Fauna:	Likelihood Consequence Overall Risk

Major Construction Management Plan (2) - Risk Assessment and Designs of Environmental Protection Measures

Project Name: Construction Management Plan - WICR322-Eastern Parramatta River & CBD Precinct Cycleway

Date and Revision:

Environmental protection measures shall be constructed in accordance with the following designs.

△ **Archaeological/ Heritage**		†Blank 1		†Blank 2	
Issues: • Traditional Land Owners Consulted? Yes/ No • Survey or Assessment Conducted? Yes/ No / Not Required • Probability of Encountering Archaeological/ Heritage Items During Works: • Types of Archaeological/ Heritage Items on Site: • Proximity of Archaeological/ Heritage Items to Works on Site: • Work Activities Which May Threaten Archaeological/ Heritage Items: • Potential Impacts on Archaeological/ Heritage Items:	Likelihood Consequence Overall Risk	Issues: • • • •	Likelihood Consequence Overall Risk	Issues: • •	Likelihood Consequence Overall Risk

I have read this Construction Management Plan and agree to undertake works and ensure sub-contractors undertake works in accordance with this plan.

Developer: ____ Date: ____

Consultant: ____ Date: ____

Contractor: ____ Date: ____

planning consultants

Statement of Heritage Impact

Construction of Pedestrian and Cyclist Pathways

Reid Park, Parramatta

Prepared for: City of Parramatta
January 2025

PO Box 230 North Ryde BC NSW 1670 | P 02 9980 6933 | www.dfpplanning.com.au

Printed:	28 January 2025
File Name:	22169B SoHI. Reid Park
Project Manager:	Brian McDonald
Client:	City of Parramatta
Project Number:	22169B

Document Control

Version	Prepared By	Reviewed By	Issued To	Date
Rev_1, Draft	Brian McDonald	Tom West		30 November 2024
Rev_2, Final	Brian McDonald	Henry Burnett	Client	28 January 2025

Contents

Figures

1 Introduction

1.1 Commission

DFP has been commissioned by the City of Parramatta (Council) to prepare a Statement of Heritage Impact SoHI) for the proposed upgrade works to Reid Park, Rydalmere, located on the northern side of the Parramatta foreshore.

This SoHI report assesses the potential environmental impacts which could arise from the 'Proposal' which include:

- Construction of a 5m wide concreate shared path. Where possible, the existing path is proposed to be extended;
- Landscaping and tree removal;
- Construction of sandstone block retaining walls; and
- Associated ground contamination remediation works.

1.2 Methodology and Structure

The methodology used in the preparation of this Statement of Heritage Impact is in accordance with the principles and definitions as set out in the guidelines to *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance October 2013)* and the latest version of the Statement of Heritage Impact Guidelines (2002), produced by the Heritage NSW, Department of Premier and Cabinet (DPC), accessed October 2015.

This Statement of Heritage Impact (SOHI) reviews the relevant statutory heritage controls, assesses the impact of the proposal on the subject property and makes recommendations as to the level of impact. The proposed works have been assessed in relation to the relevant controls and provisions contained within the Parramatta (LEP) 2023 and the Parramatta (DCP) 2023.

1.3 Site Identification

1.3.1 Location and Legal Description

The site is located approximately 500m to the east of the Parramatta CBD and is within the City of Parramatta Local Government Area (LGA).

The site subject to the proposed works is Reid Park, Rydalmere and is located within the following property addresses:

- Lot 18 in DP 253646;
- Lot 19 in DP 253646;
- Lot 22 in DP 253646; and
- Lot 48 in DP 260535;

A Survey of the site is included at **Appendix 1** of this REF.

The site of the proposed works is irregularly shaped. The site adjoins industrial development to the north and is accessible via a pedestrian footpath that links to Pike Street. The southern side of Reid Park adjoins Parramatta River.

Figure 1 below is a locality plan showing the site outlined in red line.

1 Introduction

Figure 1 *Site Location*

Figure 2 is an aerial photograph of the site and its surrounds.

Figure 2 *Aerial Photograph*

1.4 Report Limitations

The proposed works are in the vicinity of heritage Item I011,Parramatta River Wetlands in *Parramatta Local Environmental Plan 2023*. This report is limited to assessment of the potential physical and visual impacts on the significance of the item. Due to the natural characteristics of the heritage item documentary and historical research is not warranted.

Archaeological assessment of the subject site is outside the scope of this report. The Review of Environmental Factors report does include recommendations in the event of archaeological evidence being encountered.

This report only addresses the relevant heritage planning provisions and does not address general planning or environmental management considerations.

1.5 Abbreviations and Definitions

SoHI	Statement of Heritage Impact

1 Introduction

ICOMOS	International Council on Monuments and Sites
Burra Charter	refers to '*The Burra Charter*' prepared by Australia ICOMOS October 2013

The conservation terms used throughout this report are based on the terms and definitions adopted by *The Burra Charter, The Australia ICOMOS Charter for places of cultural significance* (Australia ICOMOS October 2013). *The Burra Charter* forms the basis for cultural conservation within Australia and is acknowledged by government heritage agencies around Australia. Terms used in this plan are defined below:

Place, means site, area, land, landscape, building or other work, group of buildings or other works, and may include components, contents, spaces and views.

Cultural Significance, means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects.

Fabric means all the physical material of the place including fixtures, contents and objects.

Conservation means all the processes of looking after a place so as to retain its cultural significance, as listed in the History Section of this report.

Maintenance means the continuous protective care of the fabric, and setting of a place, and is to be distinguished from repair. Repair involves restoration or reconstruction.

Integrity (not a Burra Charter definition) means the degree to which a place or component of a place retains the form and completeness of its physical fabric, historical associations, use or social attachments that give the place its cultural significance.

Preservation means maintaining the fabric of a place in its existing state and retarding deterioration.

Restoration means returning the existing fabric of a place to a known earlier state by removing accretions or by reassembling existing components without the introduction of new material.

Reconstruction means returning a place to a known earlier state and is distinguished from restoration by the introduction of new material into the fabric.

Adaptation means modifying a place to suit the existing use or a proposed use. [Article 7.2 states regarding use that: *a place will have a compatible use*]

Compatible use means a use, which respects the cultural significance of a place. Such a use involves no, or minimal impact on cultural significance.

Interpretation means all the ways of presenting the cultural significance of a place.

2 Physical Description

2.1.1 Physical Description

Reid Park consists of a shared path that runs from east to west, as well as turfed areas and existing trees and low-lying shrubs. Reid Park is located between the Ponds and Subiaco Creek boardwalk (to the west) and Eric Primrose Reserve (to the east).

Figures 3 to Figure 8 are photographs of the site.

Figure 3 Photograph of existing pedestrian footpath which links to Pike Street

Figure 4 Photograph of existing shared path, looking east

Figure 5 Photograph of existing shared path, looking west

2 Physical Description

Figure 6 Photograph of existing shared path, looking west

Figure 7 Photograph of landscaping within Reid Park

Figure 8 Photograph of existing industrial building adjacent to existing shared path

2.1.2 Vegetation

There are a variety of trees, shrubs and ground covers across the full extent of the Reid Park site.

2 Physical Description

The site is located within a proximity area to coastal wetlands that are along the foreshore of Parramatta River (to the south of the park).

2.2 Surrounding Development

To the north of the site is Pike Street. Also located to the north of the site are a mix of industrial buildings.

To the east of the site is Rydalmere Wharf. Also located to the east of the site is the Thackeray Street Bridge, which was constructed in 1936 as a means of carrying water supply over the Parramatta River.

To the south of the site is Parramatta River.

To the west of the site is Ponds and Subiaco Creek boardwalk. Further to the west (approximately 2.5km) is the Parramatta Central Business District (CBD).

3 Heritage Significance

3.1 Significance Assessment

The following statement of heritage significance is extracted from the NSW Heritage Inventory Sheet for the Parramatta River Wetlands.

> *The wetlands along Parramatta River are of significance for Parramatta area as remnant representative areas of mangroves and salt marshes which once extensively lined the foreshores and tidal water flats of the region*.

Heritage item I011 is depicted in the extract from *Parramatta Local Environmental Plan 2023* Heritage Maps in **Section 5.2** of this report.

Figure 9 below is a photograph of the wetlands that are located towards the south of Reid Park.

Figure 9 Photograph of wetlands to the south of Reid Park

4 Proposed Development

4.1 Summary of Proposed Development

In summary the proposed development comprises:

- Construction of a 5m wide concreate shared path. Where possible, the existing path is proposed to be extended;
- Landscaping and tree removal;
- Construction of sandstone block retaining walls; and
- Associated ground contamination remediation works.

The following subsections provide a more detailed description of the proposed works and should be read in conjunction with the accompanying consultant plans and reports.

4.2 Extension of Existing Shared Path

An existing shared path running east to west within Reid Park is proposed to be widened from 3m to 5m. The additional path width will be accommodated on the northern side of the existing path Once widened, 2m will be designated as a pedestrian pathway and the remaining 3m will become a cycleway.

The proposed pedestrian pathway narrows to 1.65m for a short extent towards the eastern side of the pathway, where it adjoins an industrial building.

Figure 9 is an extract of the proposed Landscape Plan.

Figure 10 Proposed Site Plan. Source: City of Parramatta

4.3 Retaining Walls

A sandstone block retaining wall is proposed towards the northern side of part of the extended shared path. Across the northern side of the path, there are three (3) sections where retaining walls are proposed.

These retaining walls will consist of 500mm x 500mm sandstone blocks located on the northern side of the existing path. .

4.4 Proposed Landscaping

The proposal includes the planting of nine (9) trees on the northern side of the shared path, including native planting towards the eastern side of the park.

Three (3) trees are proposed to be removed to facilitate the proposed works.

5 Assessment of Heritage Impact

5.1 Introduction

The subject site is part of a heritage item I011under any Parramatta Local Environmental Plan, which extends along the northern shoreline of the Parramatta River.

An extract of the heritage map for the site is provided at **Figure 11** below.

Figure 11 Heritage Map extract PLEP 2023.

The proposed scope of works has been assessed against the following impact assessment criteria:

- The New South Wales Heritage Council Guidelines and Statements of Heritage Impact

The accepted practice in assessing the levels of impact on items, places or fabric of heritage significance is to adopt the following grading[1]:

Impact Grading	*Built Heritage or Historic Landscape Attributes*
No Change	No change to Fabric or setting.
Negligible	Slight changes to historic building elements or setting that hardly affect it and have no impact upon significance.
Minor	Change to key historic building elements, such that the asset is slightly altered.
Moderate	Changes to many key historic building elements, such that the resource is moderately altered.
Major	Change to key historic building elements that contribute to the listing such that the resource is totally altered. Comprehensive changes to setting.

5.2 Statutory Controls

The provisions of *State Environmental Planning Policy (Transport and Infrastructure) 2021* (SEPP TI) allow the proposed works to be carried out as development without consent under Part 5 of the *Environmental Planning & Assessment Act 1979* (EP&A Act). The works are subject to a Review of Environmental Factors under section 171 of the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation). This assessment considers the relevant provisions of Section 171(2) of the EP&A Regulation, specifically the following environmental factor as it relates to heritage.

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[1] ICOMOS – Guidance on Heritage Impact Assessment for Cultural World Heritage Properties, A publication of the International Council on Monuments and Sites, January 2011, downloaded 23/2/2015.

5 Assessment of Heritage Impact

(e) the effects on any locality, place or building that has-

(i) aesthetic, anthropological, archaeological, cultural, historical, scientific or social significance, or

(ii) other special value for present and future generations.

Section 2.11 of SEPP TI addresses consultation with councils – development with impacts on local heritage. The relevant provisions of subclause (1) state:

> (1) *This section applies to development carried out by or on behalf of a public authority if the development—*
>
> *(a) is likely to affect the heritage significance of a local heritage item, or of a heritage conservation area, that is not also a State heritage item, in a way that is more than minor or inconsequential, and*
>
> *(b) is development that this Chapter provides may be carried out without consent.*
>
> *(2) A public authority, or a person acting on behalf of a public authority, must not carry out development to which this section applies unless the authority or the person has—*
>
> *(a) had an assessment of the impact prepared.*

This SoHI satisfies the requirements of Section 171(2) of the EP&A Regulation as set out in this SoHI.

Notwithstanding the above, Section 2.17 of SEPP TI sets out exceptions whereby Sections 2.10 – 2.15 do not apply. Subclause (c) provides that consultation in accordance with Section 2.10 – 2.15 is not required to be given to Council or a public authority that is carrying out the development. In this instance, Council is carrying out the proposed development.

Additionally, the proposed development is not likely to affect the heritage items in the vicinity. Being adjacent to and not within the items and augmenting works already in existence, physical impacts will be avoided, and visual impacts will be negligible and, in these circumstances, consultation is not required.

This assessment also takes into account the relevant environmental criteria at subsection 171(2)(e) of the EP&A Regulation:

(e) the effects on any locality, place or building that has—

(i) aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance, or

(ii) other special value for present or future generations,

These criteria are very broad and are capture suitably by the provisions of Clause 5.10 of LEP.

Table 1 Review against relevant clauses of Parramatta LEP 2023

LEP Clause	Discussion
5.10 Heritage conservation (1) **Objectives** The objectives of this clause are as follows: (a) to conserve the environmental heritage of the City of Parramatta; (b) to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views, (c) to conserve archaeological sites, (d) to conserve Aboriginal objects and Aboriginal places of heritage significance.	The pathway, landscaping and associated works for the existing pathway in George Reid Park are minor in scale and are located adjacent to the wetlands. The proposed works are consistent with the objectives of the Clause 5.10 LEP The works will cause negligible physical and visual impacts on the wetlands, vegetation, environment and ecology.

5 Assessment of Heritage Impact

Table 1 Review against relevant clauses of Parramatta LEP 2023

(2) **Requirement for consent** Development consent is required for any of the following: (a) demolishing or moving any of the following or altering the exterior of any of the following (including, in the case of a building, making changes to its detail, fabric, finish or appearance): (i) a heritage item, (ii) an Aboriginal object, (iii) a building, work, relic or tree within a heritage conservation area, (e) erecting a building on land: (i) on which a heritage item is located or that is within a heritage conservation area, or (ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance	Consent is not strictly required under sub clause (2) as the proposed activity is not located on or within a heritage item. The proposed activity will also not demolish, or alter the exterior of any of the detail, fabric, finish or appearance of any of the heritage items within the vicinity. An AHIMS Search (**Appendix 13**) was undertaken on 3 October 2024 which identified no known Aboriginal Sites or Places within a 200m radius of the site. Consequently, there are no known indigenous or cultural heritage items, objects or relics within the site and the proposed works are within the footprint of existing disturbed parts of the site. Notwithstanding, if during the construction works, Aboriginal objects are relics are uncovered, a Mitigation Measure has been included to cease works immediately and contact the relevant authority.
(4) **Effect of proposed development on heritage significance** The consent authority must, before granting consent under this clause in respect of a heritage item or heritage conservation area, consider the effect of the proposed development on the heritage significance of the item or area concerned. This subclause applies regardless of whether a heritage management document is prepared under subclause (5) or a heritage conservation management plan is submitted under subclause (6).	This Statement of Heritage Impact provides the necessary information to make an assessment under sub clause (4). This Statement of Heritage Impact is a heritage management document.
(5) **Heritage assessment** The consent authority may, before granting consent to any development: (a) on land on which a heritage item is located, or (b) on land that is within a heritage conservation area, or (c) on land that is within the vicinity of land referred to in paragraph (a) or (b), require a heritage management document to be prepared that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item or heritage conservation area concerned.	This Statement of Heritage Impact is a heritage management document
(6) **Heritage conservation management plans** T he consent authority may require, after considering the heritage significance of a heritage item and the extent of change proposed to it, the submission of a heritage conservation management plan before granting consent under this clause.	A Heritage Conservation Management plan is not warranted in these circumstances.

The assessment of heritage impacts is summarised below:

ITEM	IMPACT

Construction of a 5m wide concrete shared path. Where possible, the existing path is proposed to be extended;	Visual: Minor Physical: None
Landscaping and tree removal;	Visual: None Physical: None
Construction of sandstone block retaining walls	Visual: Minor Physical: None
Associated ground contamination remediation works	Visual: None Physical: None

5.2.1 Parramatta Development Control Plan 2023

Table 2 provides an assessment against the DCP. Part 7 of the DCP entitled ‘Heritage and Archaeology’ provides general objectives for development on and in the vicinity of heritage and archaeology. The proposed works are consistent with the general objectives of Part 7 insofar as potential impacts on the setting of the heritage items in the vicinity of the proposed activity:

> *O.01 Ensure the appropriate management of heritage in the City.*
>
> *O.02 Retention and reinforcement of the attributes that contribute to the heritage significance of items, areas and their settings.*
>
> *O.03 Ensure development is compatible with the significance and character of the area so that the new work does not detract from the historic buildings and their amenity to/or from the streetscape.*

Part 5.3.2 of Parramatta Development Control Plan 2023 addresses development associated with Waterways and The Riparian Zone. For an assessment of the impact on the values o0f the heritage item objective O.01 is relevant.

> *O.01 Ensure development contributes to the protection and rehabilitation of waterways in order to:*
>
> - *improve waterway health, and*
> - *develop and maintain ecologically sustainable waterways.*

In this regard the proposed provision of pathway widening, retaining walls and tree planting, being contained to the northern side of the route of the existing pathway, is consistent with the controls of Part 5.2.3 and will have no impact on the heritage listed wetlands.

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6 Conclusion

6.1 Conclusions

This Statement of Heritage Impacts has been prepared by DFP for the City of Parramatta Council, the proponent and determining authority for the proposed minor upgrade works to Reid Park.

This Statement of Heritage Impact describes the existing site context and provides details of the proposed works which should be read in conjunction with the Review of Environmental Factors prepared by DFP Planning for the proposed upgrade works to Reid Park, Rydalmere.

The proposed works will have a minor visual impact and cause no physical impacts to the natural significance of the remnant mangroves and Saltmarsh.

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1 July 2025

City of Parramatta Council
Attn: Shane Lauger

P37382.007 Version A | Acid Sulfate Soils Assessment CBD Cycleway Upgrade Project | Reid Park, Rydalmere

1. Introduction

Progressive Risk Management (PRM) was engaged by City of Parramatta Council (CoP – the client) to prepare an Acid Sulfate Soil (ASS) Assessment of insitu material to be disturbed for the upgrade works to the CBD Cycleway, at Reid Park, Rydalmere NSW (the site). The site locality is shown in **Figure 1** and site layout in **Figure 2**.

The site is currently a 3 m wide cycleway and adjoining land making up Reid Park, north of Parramatta River. The project will include widening of the existing cycleway, construction of sandstone retaining walls, tree planting and turfing. The depth of works for these upgrades includes up to 0.4 metres below ground level (mbgl) around the pathway, and up to 1 mbgl for tree planting. The concept plan for the site is shown in **Attachment A**.

2. Project Background

ASS has been assessed on the site previously as part of the Geotechnical Investigation (ref: *Report on Geotechnical Investigation, Proposed Pedestrian and Cycleway Upgrades, Reid Park* (Douglas Partners, 2025a)). This investigation concluded that Potential Acid Sulfate Soils (PASS) were present within natural soils and Actual Acid Sulfate Soils (AASS) were present in fill material and an Acid Sulfate Soil Management Plan (ASSMP) would be required. Given the determination was based off one sample of fill, it was recommended to undertake further testing of fill to confirm if AASS was present within material to be disturbed by the project.

PRM had been engaged to prepare an ASSMP based on the existing data. Upon review of the Geotechnical Investigation, it was identified that the samples from the previous ASS investigation was collected and analysed from depths beyond the project scope of disturbance and that fill material had erroneously been identified as AASS when no sulfidic acidity was detected. To confirm if material that will be disturbed as part of the project contains ASS and to address Douglas Partners recommendation of confirmation of AASS in fill, this assessment was completed.

2.1. Objectives

The purpose of this ASS investigation is to assess if material proposed to be disturbed as part of the project contains PASS or AASS and determine if an ASSMP is required for the proposed upgrade works.

2.2. Guidance and Regulations

The standards and methodologies that have been used to develop this report include:

- NSW Acid Sulfate Soils Management Committee (ASSMAC), Acid Sulfate Soils Assessment Guidelines (NSW ASSMAC 1998).
- Water Quality Australia, National Acid Sulfate Soils Guidance (NASSG, 2018)

3. Background on Acid Sulfate Soils

Acid sulfate soils (ASS) are naturally occurring sediments containing iron sulfides, most commonly pyrite. When undisturbed or waterlogged, they present a low environmental risk.

If ASS are exposed to air through disturbance such as excavation or dewatering, the iron sulfides react with oxygen to produce sulfuric acid which can result in significant environmental damage, particularly if acid is spread through water movement, and damage to infrastructure.

ASS can form in coastal areas such as low lying estuaries, mangroves, lakes, rivers, harbours and floodplains or in inland areas such as creeks, rivers and drought impacted areas. The ASS of most concern were formed after the last major sea level rise, in the Holocene period (last 10,000 years).

There are two categories of ASS:

- Actual Acid Sulfate Soils (AASS) have been exposed to oxygen and as a result contain high acidity from the oxidation of sulfides. Common features include a pH less than 4, yellow jarosite formations and occur overlying PASS.
- Potential Acid Sulfate Soils (PASS) contain iron sulfides that have not been oxidsed. In their undisturbed state the pH is commonly greater than 4, are associated with pyrite and are relatively stable. If disturbed they will generate sulfuric acid and become AASS.

4. Site Details

Table 1 provides a summary of the general site details

Table 1: Site Details

Address:	Reid Park, 27 Pike St, Rydalmere NSW 2116
Site Owner	City of Parramatta Council
Lot Parcel:	Lots 18, 19, and 22 of DP253646, and Part Lot 48 of DP260535
Local Council:	City of Parramatta Council
Zoning:	RE1 – Recreational, based on the Parramatta Local Environmental Plan (2023).
Surrounding Land Uses:	**North:** Industrial area and Pike Street. **South:** Vegetation, Parramatta River, and industrial area beyond. **East:** Cycleway and Parramatta River. **West:** Cycleway, industrial area, and Ponds and Subiaco Creek beyond.

4.1. Summary of Previous Investigations

The following previous report were provided to PRM for review. The summary below is relevant to ASS findings only.

Geotechnical Investigation (Douglas Partners, 2025a)

Douglas partners conducted a Geotechnical Investigation in January 2025. The scope included drilling of 11 boreholes to a maximum depth of 2 mbgl or refusal. A total of 15 samples from varying boreholes were field screened (in the laboratory) for indicators of PASS or AASS. Based on the field screening results, four samples which showed field indicators of ASS were further analysed for Chromium Reducible Sulfur (Scr) analysis.

Two samples were found to contain PASS from one sample location (BH307 1.4-1.5m and 1.9-2.0m) within natural alluvial sediment. One sample collected from the fill (BH301 0.9-1.0) had total actual acidity detected in the sample above action criteria but no chromium reducible sulfur detected meaning that the soil is acidic but this is not attributable to sulfidic acidity. The sample was erroneously identified as AASS but the results indicate it is acidic soil, not ASS. It was concluded that natural soils were to be considered PASS and fill material considered AASS and would require an ASSMP for proposed upgrade works.

DSI (Douglas Partners, 2025b)

Douglas Partners prepared a Detailed Site Investigation (DSI) concurrent to the Geotechnical Investigation (ref: *Report on Detailed Site (Contamination Investigation, Proposed Pedestrian and Cycleway, Reid Park* (Douglas Partners, 2025b)). The DSI identified friable and non-friable asbestos above the adopted land use criteria and will require remediation to be suitable for the project. The DSI summarised the findings of ASS Investigation completed in Douglas Partners, 2025a.

4.2. Site History

A review of site history was undertaken during the DSI (Douglas Partners, 2025b) and summarised as the site was historically used for commercial/heavy industrial purposes from at least the 1940s to the late 1970s, with the east portion of the site identified as formerly part of a James Hardie site by NSW EPA. Following the 1970s, the site was cleared and remained as a vacant grassed area until 2011 when a walking track was constructed along the site alignment.

4.3. Soils and Geology

The Department of Industry, Resources and Energy, 1983, 1:100,000 Geological Series Sheet 9130 (Edition 1) indicates that the site comprises of man-made fill, with unconsolidated sediments and Holocene alluvium with underlying Hawkesbury sandstone.

Review of eSPADE Sydney 1:100, 000 soil mapping (2025) identified the site to be within the Lucas Heights landscape, consisting of gently undulating crests and ridges on plateau surfaces of the Mittagong formation (interbedded shale, laminate and fine to medium grained quartz sandstone).

The geology encountered during Douglas Partners, 2025a comprised of mixed fill material from the surface to as shallow as 0.6mbgl and as deep as 2 mbgl (the maximum depth of the investigation). Alluvial sediments were encountered in five of 11 sampling locations below the depth of fill. Fill material was observed to consist predominantly of brown / grey / black sand, silty sand, and clay, with anthropogenic inclusions of building rubble.

The intrusive investigation conducted by PRM for this ASS Investigation was generally consistent with the above findings. Fill with anthropogenic inclusions was observed across all sampling locations.

4.4. ASS Soil Risk

The upgrade works are located in an area of Class 2 Acid Sulfate Soil Risk with the part of the site east of 25 Pike Street a Class 5 Acid Sulfate Soil Risk area as per Parramatta Local Environment Plan 2023. In a Class 2 Ass risk area, ASS is likely to be found below the natural ground surface. Class 5 ASS risk areas are located within 500m of adjacent Class 1-4 risk areas.

5. Sampling Plan

5.1. Sampling Rationale

PRM understands intrusive excavation works are occurring along approximately 400m of a cycleway to 0.4 mbgl for the widening of the cycleway and construction of retaining walls, generating up to ~350m^3 of material. A further ~10m^3 of material will be disturbed to a maximum depth of 1.0 mbgl, to allow for planting of nine trees across along the length of the cycleway (refer to Concept Plans in **Attachment A**).

Re-turfing across the area will be completed. A total disturbance volume >1,000 tonnes is expected. In accordance with Table 6.1 of the National Acid Sulfate Soil Guidance 2018, four boreholes are required for minor linear disturbance. However, to account for turf area disturbance, a higher density has been applied with a total of nine boreholes to be constructed. Boreholes along the cycleway will be conservatively advanced to 0.5 mbgl.

A further five boreholes will be advanced to 1.0 mbgl at tree planting locations. It is noted that the trees are located on earthen mounds and as such for these purposes have been considered as 'stockpiles'. As per Table 6.1 of the National Acid Sulfate Soil Guidance 2018, two boreholes are required for existing stockpiles with a total volume of less than 250m^3. However, given there are nine tree locations, five boreholes have been allowed for to achieve site coverage.

5.2. *Field Investigation*

The field investigation consisted of the following:

- Site walkover and assessment to determine appropriate borehole locations across the site area.
- Construction of nine boreholes along the cycleway, and five boreholes along earth mounds via spade and solid flight auger to target depth (0.5 and 1.0 mbgl, respectively).
- Field screening for ASS was conducted at each borehole in 0.5m increments starting at ground level.
- Concurrently, soil samples were collected at each borehole in 0.5m increments starting at ground level. All samples were collected directly into a zip lock bag with excess air removed. Following the examination of field screening results, 14 samples were selected for laboratory analysis for chromium reducible sulfur.
- All samples were labelled with unique identification, including project number, sample location, and depth. Samples were then placed into a cooled, insulated, and sealed container for transport to a NATA accredited laboratory (Envirolab Services Pty Ltd) for analysis.

Field Screening Methodology

Field screening to determine pH_F and pH_{FOX} was conducted on all of the collected samples with pH results and effervescence reactions recorded on field sheets. The field screening procedure was conducted as per the following:

- Collection of soil samples (approximately half a teaspoon) taken from each sampling depth and split between two sterile, heat resistant, sealable containers, and labelled with a unique ID.
- Calibration of the pH metre with at least two solutions (pH 4 and pH 7).
- Addition of deionised water (DI) to one of the split samples (pH_F), enough to make a paste, and stir/shake.
- Measurement of pH_F with the pH metre with the stabilised reading recorded on the field sheet.
- Rinse the pH probe with DI between individual samples.
- Add a pH 4.5-5.5 adjusted hydrogen peroxide (30%) to the other split sample container (enough to cover the soil) and stir/shake.
- Wait 10 minutes for reactions to occur before measuring pH.
- Record reactions on the field sheet.
- Measure pH_{FOX} with the pH metre and record a stabilised reading on the field sheet.

Field screening results and field observations to be considered when selecting the samples for further laboratory analysis. Generally, a pH_F less than 4 (with consideration of field observations) may be considered acidic. Significant pH drops between the pH_F and pH_{FOX} measurements were considered for further laboratory analysis to confirm is PASS.

5.3. *Sample Analysis*

A total of 14 primary soil samples were submitted for chromium reducible sulfur (S_{cr}) analysis at a NATA accredited laboratory. The S_{cr} method allows an Acid Base Accounting (ABA) process to be undertaken. The ABA formula has been adopted from the Water Quality

Australia, 2018 guidelines. The ABA formula considers the acid producing components of the soil such as actual acidity, potential acidity and retained acidity against the acid neutralising capacity (ANC) of the material to allow a net acidity to be calculated. The ANC can only be used in the net acidity calculation if its effectiveness has been corroborated by other data that demonstrate acidification of soils is not experienced in field conditions when completely oxidised. As incubation analysis (or similar) is not to be conducted the following equation will apply for this assessment:

$$\text{Net acidity} = S_{cr} + TAA + S_{NAS}$$

Where:

S_{cr} = chromium reducible sulfur potential sulfidic acidity

TAA = Titratable actual acidity

S_{NAS} = retained acidity, net acid soluble sulfur (determined when pH_{KCL} less than 4.5 or jarosite observed)

6. Assessment Criteria

Acid sulfate soil analytical results were compared to the action criteria listed in Table 5.4 of the National acid sulfate soils guidance: National acid sulfate soils sampling and identifications methods manual (Water Quality Australia, 2018). The adopted criteria are consistent with ASSMAC, 1998. See **Table 2** below. Blue cell/bold indicates chosen criteria.

Table 2: Action criteria based on texture and volume of material disturbed

Type of Material		**1–1000 T disturbed**	**> 1000 T disturbed**
Texture range	**Approximate clay content (%)**	**Sulfur trail % S**	**Sulfur trail % S**
Coarse Texture Sands to loamy sands	≤5	0.03	0.03
Medium Texture Clayey sand to light clays	5 - 40	0.06	**0.03**
Fine Texture Light medium to heavy clays	≥40	0.1	0.03

The soils investigated for PASS/AASS consisted of low to moderate plasticity sandy gravelly clays with approximate disturbance volume of >1,000 tonnes. The adopted site assessment criteria (SAC) is **0.03% S**.

To distinguish between PASS and AASS, the below criteria will be adopted:

- Actual Acid Sulfate Soil (AASS) = pH <4 and S_{cr} > action criteria
- Potential Acid Sulfate Soil (PASS) = pH >4 and S_{cr} > action criteria

The action criteria from NASSG 2018 and ASSMAC 1998 has been adopted to identify if any identified AASS or PASS would require management in accordance with the guidelines.

7. Results

7.1. Site Observations

PRM environmental consultants undertook intrusive works on 15 and 16 May 2025. Observations made during the material inspection are discussed below:

- Majority of the site surface was grass with 12 of the 14 locations grass covered. Two sample locations were located in a garden bed with leaf litter and low-lying vegetation.
- Parramatta Valley Cycleway runs the entire length of the site.
- Three mounds approximately 1-2m above the height of the cycleway were present in the grassed areas between the cycleway and the northern industrial area.
- General litter existed on the site surface at few sampling locations.

- ACM fragments were identified during field works at 11 of 14 sampling locations beneath the ground surface in friable and non-friable conditions.
- A blue powder was observed in three of the 14 sampling locations. A sample was analysed and identified to contain cyanide (total cyanide 17 mg/kg). The client indicated the powder was likely a paint pigment that had been identified on other sites in the area. This has not been considered further for the purposes of this ASS assessment.

Refer to **Attachment B** for the photolog. Borehole logs are included in **Table 3** below. Sample locations are shown on **Figure 2**.

Table 3: Borehole descriptions

Location	Description	Sample Analysed
BH401	0-0.08: silty sand (topsoil), dark brown, loose, slightly moist with rootlets. 0.08-0.45: FILL sandy gravelly clay, brown, moist, low plasticity, with combustion products, metal, concrete, sandstone, road base, porcelain, brick and ACM fragments (in friable condition) 0.45-0.5: FILL black slag gravel, porous, metallic.	Surface
BH402	0-0.15: silty sand (topsoil), brown, slightly moist, with rootlets. Layer of geofabric at 0.15. 0.15-0.35: FILL sandy gravelly clay, brown, moist, low plasticity, with combustion products (black, porous), roadbase, and ACM. Refusal on rock.	-
BH403	0-0.1: silty sand (topsoil), dark brown, loose, slightly moist, ballast/ironstone. 0.1-0.5: FILL gravelly sandy clay, brown, moist, low plasticity, with terracotta, sandstone, and concrete. Layer of geofabric material at 0.3	0.5
BH404	0-0.05: silty sand (topsoil), dark brown, loose, with rootlets. 0.05-0.5: FILL sandy gravelly clay, brown, moist, low plasticity, with ACM, terracotta, sandstone, and concrete.	0.5
BH405	0-0.05: silty sand (topsoil), dark brown, loose, with rootlets. 0.05-0.3: FILL sandy gravelly clay, red/brown, slightly moist, low plasticity, with charcoal, road base gravels, sandstone, granite and concrete. Refusal on rock.	0.3
BH406	0-0.05: silty sand (topsoil), dark brown, loose, with rootlets. 0.05-0.2: FILL sandy gravelly clay, red/brown, slightly moist, low plasticity, with ACM and brick. Refusal at 0.2 on impenetrable woven fabric and suspected service.	-
BH407	0-0.13: FILL clayey gravelly sand, with concrete, clay peds, granite, claystone, and rocks. Geofabric at 0.13. 0.13-0.5: FILL gravel/clay sand, red/brown, very moist, with rocks and ACM.	Surface
BH408	0-0.2: silty sand (topsoil), brown, with trace gravels and rootlets. Termination on suspected hazardous substance (blue powder).	-
BH409	0-0.3: silty sand (topsoil), brown, with friable ACM, road base, sandstone, fine gravels, general litter, lead flashing, and ceramic tile, dry. Termination on suspected hazardous substance (blue powder).	Surface

Table 3: Borehole descriptions

Location	Description	Sample Analysed
BH410	0-0.05: silty sand (topsoil), dark brown, moist with ACM, gravels, and rootlets. 0.05-0.8: FILL sandy gravelly clay, brown with orange mottle, with sandstone, ironstone, concrete, and terracotta, ACM fragments, friable and non-friable, combustion products. Refusal at 0.8 on concrete.	0.8
BH411	0-0.1: silty sand (topsoil), brown, with roots. 0.1-0.2: sandy clay, orange, with gravels and sandstone. Geofabric at 0.2m. 0.2-1.0: FILL sandy clay, with gravels, sandstone, concrete, ironstone, ACM, and plastic.	Surface 1.0
BH412	0-0.1: FILL sandy silty clay, brown, slightly moist, with roots. Layer of geofabric at 0.1m. 0.1-1.0: FILL clayey sand, brown/grey, slightly moist, with sandstone and general litter. Multiple ACM fragments, friable.	Surface 0.5 1.0
BH413	0-0.25: FILL sandy clay, brown, moist, low plasticity, with tile, ACM, firm. Layer of geofabric at 0.25m. 0.25-0.8: FILL clayey sand, brown, moist, with wood and concrete. Refusal on rock.	0.8
BH414	0-0.7: FILL sandy gravelly clay, brown, moist, with asphalt cobbles, ACM, sandstone, glass, and fine gravels. 0.7-0.85: FILL (reworked natural) sandy clay, light brown with yellow mottle, low plasticity, with sandstone and ironstone. 0.85-0.95: FILL (reworked natural) silty clay, light grey, moderate plasticity, with plastic and porcelain. Refusal on concrete block.	0.95

7.2. Acid Sulfate Field Screening Results

A summary of acid sulfate field screening results are included in **Table 4** below. Only those field screening results associated with samples submitted for laboratory analysis are shown below. A copy of all field screening results is attached in **Attachment C**.

Table 4: Acid Sulfate Field Screening Results

Sample ID	Screening Results			
	pH_F	pH_{Fox}	Change in pH	Reaction*
BH401_S	6.4	6.3	0.1	1
BH403_0.5	7.4	7.2	0.2	1
BH404_0.5	7.8	7.5	0.3	1
BH405_0.3	7.4	7.2	0.2	1
BH407_S	7.2	7.3	0.1	1
BH409_S	7.6	6.9	0.7	2
BH410_0.8	9.8	8.6	1.2	1
BH411_S	6.0	6.2	0.2	2
BH411_1.0	6.9	7.3	0.4	2
BH412_S	5.7	5.8	0.1	1

Table 4: Acid Sulfate Field Screening Results

Sample ID	Screening Results			
	pH_F	pH_{Fox}	Change in pH	Reaction*
BH412_0.5	4.1	3.8	0.3	1
BH412_1.0	5.2	5.0	0.2	1
BH413_0.8	7.8	7.8	0	1
BH414_0.95	8.0	8.1	0.1	1

*Reaction ratings
1 = slight or no effervescence
2 = moderate effervescence
3 = high effervescence
4 = vigorous effervescence

The material tested in each sampling location showed none to moderate reactions with the hydrogen peroxide. As per NASSG (2018), the field indicators of AASS can include:

- Field pH <4.
- Sulfureous ‘rotten egg’ smell.
- Jarosite horizons or substantial iron oxide mottling on surface encrustations.
- Presence of corroded mollusc shells.

Field indicators of PASS can include:

- pH post-oxidisation (pHFox) <3, with large unit change from field to oxidation pH together with a volcanic reaction.
- Water-logged soils.
- Soft, sticky, blue-green, greenish-grey mud; silty sands, mid-dark grey or dark grey-black bottom sediments.
- Peat or peaty soils.
- Coffee rock horizons.
- Sulfureous ‘rotten egg’ smell.

None of the field screening results or observations are congruent with PASS or AASS. No samples showed any field indication of sulfureous smells or suspicious horizons.

7.3. Laboratory Results

NATA laboratory certificates are presented in **Attachment D**. Results were compared to the relevant guidelines specified in **Section 5.** A summary of the chromium reducible laboratory results that have been issued for acid sulfate soil is presented in **Table 5**.

The chromium reducible laboratory results were compared to the action criteria listed in the *National Acid Sulphate Soils Guidance (NASS, 2018b)* for the disturbance of >1,000 t for medium density: clayey sand to light clays of 0.03% oxidisable sulfur.

The action criteria are trigger values for the need for further management of ASS during further excavation works.

Blue cell/bold indicates criteria exceedance.

Table 5: Chromium Reducible Laboratory Results Summary

Sample ID	pH_{KCL}	TAA pH 6.5 (%w/w S)	S_{NAS} (%w/w S)	ANC_{BT} (%w/w S)	S_{CR} (%w/w S)	Net acidity (without ANCE) (%w/w S)	ASS
Criteria (NASSG 2018)		**≥0.03**			**≥0.03**	**≥0.03**	
BH401_S	6.3	<0.01	-	-	0.008	0.008	-
BH403_0.5	8.3	<0.01	-	0.8	0.02	0.016	-
BH404_0.5	8.9	<0.01	-	0.56	<0.005	<0.005	-
BH405_0.3	8.4	<0.01	-	0.7	0.02	0.016	-
BH407_S	7.9	<0.01	-	0.64	0.01	0.012	-
BH409_S	8.2	<0.01	-	0.38	0.008	0.008	-
BH410_0.8	9.5	<0.01	-	1.8	0.02	0.024	-
BH411_S	6.2	<0.01	-	-	0.01	0.012	-
BH411_1.0	7.9	<0.01	-	0.35	0.02	0.016	-
BH412_S	6.1	<0.01	-	-	0.008	0.008	-
BH412_0.5	4.2	0.03	0.76	-	0.01	**0.8**	Acidic soil
BH412_1.0	4.2	0.02	0.61	-	<0.005	**0.63**	Acidic soil
BH413_0.8	8.5	<0.01	-	0.82	0.01	0.012	-
BH414_0.95	7.4	<0.01	-	0.58	0.008	0.008	-

A = Acid Soil
Net acidity = S_{CR} + TAA + S_{NAS}
S_{CR} = chromium reducible sulfur potential sulfidic acidity
TAA = titratable actual acidity
S_{NAS} = retained acidity
ANC = acid neutralising capacity. When pH_{KCL} TAA <6.5 ANC = 0.

Chromium reducible analysis was conducted on 14 samples. pH ranged from acidic (4.2) to alkaline (9.5). The net acidity of two samples (BH412 0.5m and 1.0m) exceeded the adopted action criteria. These samples however are not considered to be PASS or AASS, due to low concentrations of chromium reducible sulfur detected below the action criteria. As the pH of these soils is low (4.2) but with no to low sulfidic acidity, the samples are indicative of acidic soil.

8. Discussion

Laboratory analysis results indicated acidic soils between 0.5 and 1.0 mbgl at one sampling location (BH412 0.5m and 1.0m). Field screening results did not indicate presence of AASS or PASS. No field indicators of PASS or AASS were encountered.

All soils encountered were fill material.

The findings of this assessment are consistent with the findings of Douglas Partners, 2025a, where one sample from fill was identified as acidic soil. This report recommended to undertake further testing of fill to confirm if AASS was present within material to be disturbed by the project. A total of fifteen samples from the fill have now been analysed from the site across both the PRM and Douglas Partners investigation with three locations identified as containing acid soil. As no AASS or PASS as been identified in fill, an ASSMP will not be required for fill material.

In relation to natural soils, Douglas Partners, 2025a identified natural soils from depths of 0.6 to >2mbgl with PASS identified in two samples from one location (BH307 1.4-1.5m and 1.9-2.0m). As the maximum depth of excavation is to be 0.4m along the cycleway, natural soil is unlikely to be encountered. The maximum depth of the tree excavations is 1mbgl however based on the current concept plan (**Attachment A**) all trees are located in mounds raised 1-2m above the cycleway in which case excavations are likely to be within fill.

Based on the excavation depths and in consideration of the findings of this assessment and the Douglas Partners, 2025a, no ASSMP is required.

9. Conclusions and Recommendations

The findings of the ASS Investigation indicate there are no PASS or AASS in the material to be disturbed as part of the proposed cycleway project. Acidic fill is present in some locations. Based on the excavation depths provided by the client and in consideration of the findings of this assessment and Douglas Partners, 2025a, no ASSMP is required.

Should excavations encounter natural soil, it would need to be treated as PASS and handled under an Unexpected Finds Procedure. The findings of this investigation in relation to the observation of friable and non-friable asbestos and the blue powder should be considered when preparing the RAP.

10. Limitations

This report is confidential and has been prepared by Progressive Risk Management Pty Ltd for City of Parramatta Council (the Client). This report is limited to the Scope of Works as outlined within this report. All results, conclusions and recommendations presented should be reviewed by a competent person before being used for any other purpose.

PRM accepts no liability for use or interpretation by any person or body other than the client. This report should not be reproduced without prior approval by the client or amended in any way without prior approval by PRM.

This report should not be altered amended or abbreviated, issued in part or issued incomplete without prior checking and approval by PRM. PRM accepts no liability that may arise from the alteration, amendment, abbreviation or part-issue or incomplete issue of this report. To the maximum extent permitted by law, all implied warranties and conditions in relation to the services provided by PRM and this report are expressly excluded (save as agreed otherwise with the client).

Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the regulatory requirements and site history, not on sampling and analysis of all media at all locations for all potential contaminants.

Should information become available regarding conditions at the site including previously unknown sources of contamination, PRM reserves the right to review the report in the context of the additional information.

Ground conditions between sampling locations may vary, and this should be considered when extrapolating between sampling points.

Changes to the subsurface conditions may occur after the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigations.

Unless otherwise stated PRM were not present during excavation, stockpiling and load-out or disposal of this material. As such, PRM make no warranties that the material to be disposed is that material which PRM has classified within this report.

Document Control:

Project Details	
Report Name:	Acid Sulfate Soils Assessment
Site Details:	Reid Park, Rydalmere NSW
Client Name:	City of Parramatta Council
Project Reference:	P37382.007 | C0018

Report Version:					
Version: Date:	Review Process:			Issued to:	Summary of changes from previous version:
	Prepared:	Reviewed:	Approved:		
VerA: 1/07/2025	JPA	FKW	NPA	CoP	-

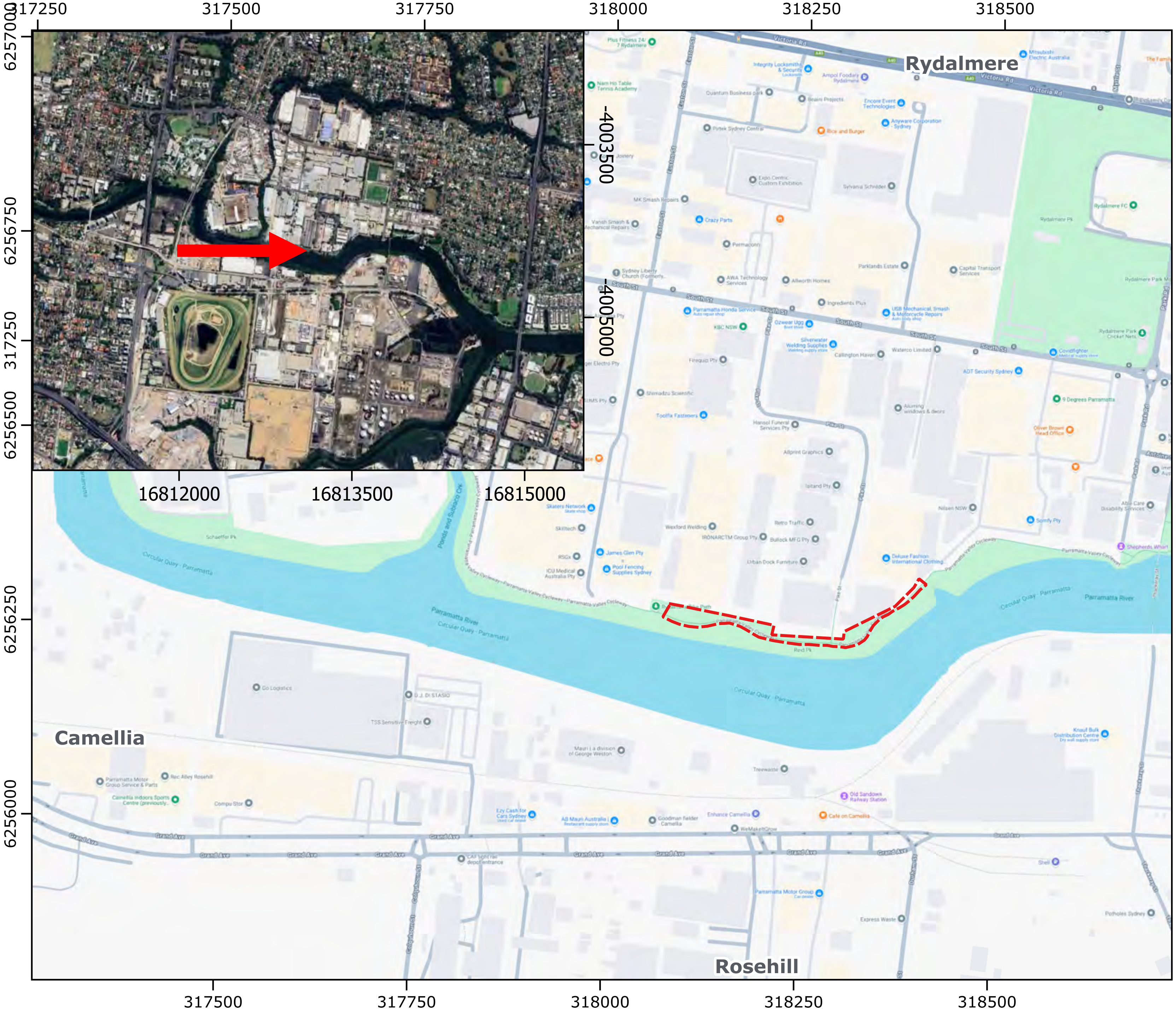
Report Review: Version A					
Prepared by:		Technical Review by:		Authorised for Issue by:	
Name:	Jessica Anderson	Name:	Fiona Warden	Name:	Nick Passlow
Position:	Consultant – Environmental Risk	Position:	Senior Consultant – Environmental Risk	Position:	Director
Date:	1/07/2025	Date:	1/07/2025	Date:	1/07/2025

CERTIFIED ENVIRONMENTAL PRACTITIONER
Financial Year 2024/2025
No. 1513

Attachments

Figures
Attachment A - CoP Concept Plan: Reid Park Rydalmere (September, 2024)
Attachment B –Photolog
Attachment C – ASS Field Screening Results
Attachment D – NATA laboratory Certificates

Figures



Project Reference	P37419.007
Report Name	Acid Sulfate Soils Assessment
Client	CoP

Reid Park,
Rydalmere NSW

Site Location
Figure 1

PROGRESSIVE RISK MANAGEMENT

Scale: 1:8,300

Coor. Sys: GDA 1994 MGA Zone56

Legend

🟥 Site Boundary

N

100 0 100 m

Image Source: Google Maps, Google Satellite (2025)

Project Reference	P37419.007
Report Name	Acid Sulfate Soils Assessment
Client	CoP

Reid Park,
Rydalmere NSW

Site Layout
Figure 2

PROGRESSIVE RISK MANAGEMENT

Scale: 1:2000

Coor. Sys: GDA 1994 MGA Zone56

Legend

▭ Site Boundary

◆ Sample Locations

N

25 0 25 m

Image Source: Google Satellite (2025)

Attchment A: CoP Concept Plan: Reid Park Rydalmere (September, 2024)

Native planting on northern side of pathway between pathway and property boundary.

Remove existing shrubs/small trees shown red

Match into existing.

500 x 500mm sandstone block retaining wall

Proposed 2.0m wide colour through concrete pedestrian pathway.

Proposed 2.0m wide colour through concrete pedestrian pathway.

Proposed shared path

Proposed shared path

Retain existing 3.0m wide concrete cyclist pathway and relinemark.

500 x 500mm sandstone block retaining wall

Adjust existing surface inlet drainage pits and set new grates flush into new pedestrian pavement.

Retain existing 3.0m wide cyclist pathway and relinemark

Pedestrian pathway narrows to 1.65m along property boundary edge for 10m.

Match into existing.

Date:

September 2024

Drawing Status:

REVISION C - CONCEPT

Subject to consultation & further investigative works

N

REID PARK RYDALMERE

PEDESTRIAN AND CYCLIST PATHWAYS

CITY OF PARRAMATTA

Attachment B: Photolog

Photolog

Report Name:	Acid Sulfate Soils Assessment
Site Details:	Reid Park - Pyke Street, Rydalmere NSW
PRM Reference:	P37419.007 / C0018

Photo 1: Overview of central portion of site, facing west.

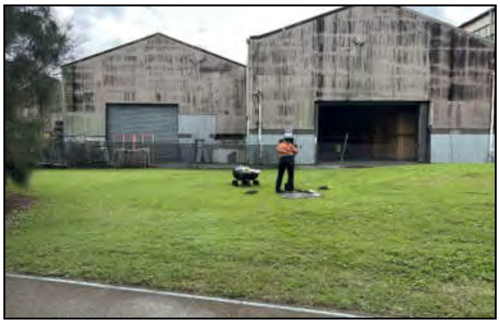


Photo 2: Overview of western portion of site, facing north.

Photo 3: Site surface in eastern portion of site covered with vegetation.

Photo 4: Material observed at sampling location for BH404.

Photo 5: Overview of material observed at sampling location for BH401, with road base.

Photo 6: Woven fabric identified at sampling location BH406.

Photo 7: Suspected hazardous substance (blue powder) identified at 0.3 mbgl at BH409.

Photo 8: Sampling location for BH413.

Photolog

Report Name:	Acid Sulfate Soils Assessment
Site Details:	Reid Park - Pyke Street, Rydalmere NSW
PRM Reference:	P37419.007 / C0018

Photo 9: Material observed at BH413.

Photo 10: Material identified at sampling location for BH414.

End of Photolog

Attachment C: ASS Field Screening Results

Field Acid Sulfate Screening

Location	Depth	pH$_F$	pH$_{FOX}$	Reaction	Soil Type
BH401	0.45	7.2	7.1	—	Fill
x BH401	S	6.4	6.3	—	"
BH402	0.3	7.3	7.1	—	"
402	S	7.3	7.1	—	"
x 403	0.5	7.4	7.2	—	"
403	S	7.0	7.0	—	"
x 404	0.5	7.8	7.5	—	"
404	S	7.0	6.7	—	"
x 405	0.3	7.4	7.2	—	"
405	S	6.7	6.6	—	"
406	0.2	7.2	7.3	—	"
406	S	7.1	6.9	—	"
407	0.35	7.2	7.2	Slight	"
x 407	S	7.2	7.3	Slight	"
~~408~~					
408	S	6.9	7.1	mod	"
~~409~~					
x 409	S	7.6	6.9	mod	"
410	0.5	7.7	7.6	slight	"
410	S	6.3	6.3	mod	"
x 411	S	6.0	6.2	mod	"
411	0.5	7.0	7.1	mod	"
x 411	1.0	6.9	7.3	mod	"
x 412	S	5.7	5.8	Slight	"
x 412	0.5	4.1	3.8	—	"
x 412	1.0	5.2	5.0	Slight	"
413	S	7.4	7.4	mod	"
413	0.5	7.3	7.4	mod	"
x 413	0.8	7.8	7.8	slight	"
414	S	7.5	7.3	mod	"
414	0.5	7.7	7.5	slight	"
x 414	0.95	8.0	8.1	slight	"
x 410	0.8	9.8	8.6	Slight	"

Attachment D – NATA Laboratory Certificates

CHAIN OF CUSTODY - Client

ENVIROLAB GROUP - National phone number 1300 42 43 44

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Ph 02 9910 6200 / sydney@envirolab.com.au

Perth Lab - MPL Laboratories
16-18 Hayden Crt Myaree, WA 6154
Ph 08 9317 2505 / lab@mpl.com.au

Melbourne Lab - Envirolab Services
1A Dalmore Drive Scoresby VIC 3179
Ph 03 9763 2500 / melbourne@envirolab.com.au

Brisbane Office - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
Ph 07 3266 9532 / brisbane@envirolab.com.au

Adelaide Office - Envirolab Services
7a The Parade, Norwood, SA 5067

Client: Progressive Risk Management
Contact Person: Fiona Warden
Project Mgr: Fiona Warden
Sampler: ~~Fiona Warden~~ Jessica.anderson
Mobile: 0437567383
Email: Fiona.Warden@progressiverm.com
nick.passlow@progressiverm.com
Jessica.anderson@ 〃

Project Details: P37382
Envirolab Quote:
Date results required: \
or (circle)
Same day (100%) 1 day (50%) 2 day (25%)
3 day (12.5%) [✓ Standard]
Lab Comments:

Envirolab Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample	chromium reducible suite	Comments Provide as much information about the sample as you can
1	BH401_S	surface	16/5/25	soil	X	
2	BH403_0.5	0.5	〃	〃	X	
3	BH404_0.5	0.5	〃	〃	X	
4	BH405_0.3	0.3	〃	〃	X	
5	BH407_S	surface	〃	〃	X	
6	BH409_S	〃	〃	〃	X	
7	BH411_S	〃	〃	〃	X	
8	BH411_1.0	1.0	〃	〃	X	
9	BH412_S	surface	〃	〃	X	
10	BH412_0.5	0.5	〃	〃	X	
11	BH412_1.0	1.0	〃	〃	X	
12	BH413_0.8	0.8	〃	〃	X	
13	BH414_0.95	0.95	〃	〃	X	
14	BH410-0.8	0.8	〃	〃	X	

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 380928
Date Received: 16/05/25
Time Received: 1655
Received By: DLP
Temp: [✓ Cool]/Ambient
Cooling: [✓ Ice]/Icepack 6°C
Security: [✓ Intact]/Broken/None

Relinquished by (Company): PRM
Print Name: Fiona Warden
Date & Time: 16/5/25 4:55pm
Signature:

Received by (Company): ELS SYD
Print Name: Dani LP
Date & Time: 16/05/25 1655
Signature: DLP

Lab use only:
Samples Received: Cool or Ambient (circle one)
Temperature Received at: 6°C **(if applicable)**
Transported by: Hand delivered / courier

Form: 302 - Chain of Custody-Client, Issued 22/05/12, Version 5, Page 1 of 1.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200   fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 380928

Client Details

Client	Progressive Risk Management Pty Ltd
Attention	Fiona Warden
Address	14/76 Reserve Road, ARTARMON, NSW, 2064

Sample Details

Your Reference	**P37382**
Number of Samples	14 Soil
Date samples received	16/05/2025
Date completed instructions received	16/05/2025

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	23/05/2025
Date of Issue	03/06/2025
Reissue Details	This report replaces R00 created on 23/05/2025 due to: Sample ID Amended (Client Request)

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

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

Results Approved By
Jenny He, Inorganic Team Leader

Authorised By
Nancy Zhang, Laboratory Manager

Acid Sulphate Soil Suite						
Our Reference	UNITS	380928-1	380928-2	380928-3	380928-4	380928-5
Your Reference		BH401_S	BH403_0.5	BH404_0.5	BH405_0.3	BH407_S
Date Sampled		16/05/2025	16/05/2025	16/05/2025	16/05/2025	16/05/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	16/05/2025	16/05/2025	16/05/2025	16/05/2025	16/05/2025
Date analysed	-	19/05/2025	19/05/2025	19/05/2025	19/05/2025	19/05/2025
pH $_{kcl}$	pH units	6.3	8.3	8.9	8.4	7.9
s-TAA pH 6.5	%w/w S	<0.01	<0.01	<0.01	<0.01	<0.01
TAA pH 6.5	moles H^+ /t	<5	<5	<5	<5	<5
a-Chromium Reducible Sulfur	moles H^+ /t	5	10	<3	10	8
Chromium Reducible Sulfur	%w/w	0.008	0.02	<0.005	0.02	0.01
S_{KCl}	%w/w S	[NT]	[NT]	[NT]	[NT]	[NT]
S_{HCl}	%w/w S	[NT]	[NT]	[NT]	[NT]	[NT]
S_{NAS}	%w/w S	[NT]	[NT]	[NT]	[NT]	[NT]
ANC_{BT}	% $CaCO_3$	[NT]	2.5	1.8	2.2	2.0
s-ANC_{BT}	%w/w S	[NT]	0.80	0.56	0.70	0.64
s-Net Acidity excluding ANC	%w/w S	0.0080	0.016	<0.005	0.016	0.012
a-Net Acidity excluding ANC	moles H^+ /t	5.0	10	<5	10	7.5
Liming rate excluding ANC	kg $CaCO_3$ /t	<0.75	0.75	<0.75	0.75	<0.75
s-Net Acidity including ANC	%w/w S	0.0080	<0.005	<0.005	<0.005	<0.005
a-Net Acidity including ANC	moles H^+ /t	5.0	<5	<5	<5	<5
Liming rate including ANC	kg $CaCO_3$ /t	<0.75	<0.75	<0.75	<0.75	<0.75

Acid Sulphate Soil Suite						
Our Reference	UNITS	380928-6	380928-7	380928-8	380928-9	380928-10
Your Reference		BH409_S	BH411_S	BH411_1.0	BH412_S	BH412_0.5
Date Sampled		16/05/2025	16/05/2025	16/05/2025	16/05/2025	16/05/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	16/05/2025	16/05/2025	16/05/2025	16/05/2025	16/05/2025
Date analysed	-	19/05/2025	19/05/2025	19/05/2025	19/05/2025	19/05/2025
pH $_{kcl}$	pH units	8.2	6.2	7.9	6.1	4.2
s-TAA pH 6.5	%w/w S	<0.01	<0.01	<0.01	<0.01	0.03
TAA pH 6.5	moles H^+/t	<5	<5	<5	<5	17
a-Chromium Reducible Sulfur	moles H^+/t	5	8	10	5	8
Chromium Reducible Sulfur	%w/w	0.008	0.01	0.02	0.008	0.01
S_{KCl}	%w/w S	[NT]	[NT]	[NT]	[NT]	0.32
S_{HCl}	%w/w S	[NT]	[NT]	[NT]	[NT]	0.70
S_{NAS}	%w/w S	[NT]	[NT]	[NT]	[NT]	0.76
ANC_{BT}	% $CaCO_3$	1.2	[NT]	1.1	[NT]	[NT]
s-ANC_{BT}	%w/w S	0.38	[NT]	0.35	[NT]	[NT]
s-Net Acidity excluding ANC	%w/w S	0.0080	0.012	0.016	0.0080	0.80
a-Net Acidity excluding ANC	moles H^+/t	5.0	7.5	10	5.0	380
Liming rate excluding ANC	kg $CaCO_3$/t	<0.75	<0.75	0.75	<0.75	29
s-Net Acidity including ANC	%w/w S	<0.005	0.012	<0.005	0.0080	0.80
a-Net Acidity including ANC	moles H^+/t	<5	7.5	<5	5.0	380
Liming rate including ANC	kg $CaCO_3$/t	<0.75	<0.75	<0.75	<0.75	29

Acid Sulphate Soil Suite					
Our Reference		380928-11	380928-12	380928-13	380928-14
Your Reference	UNITS	BH412_1.0	BH413_0.8	BH414_0.95	BH410_0.8
Date Sampled		16/05/2025	16/05/2025	16/05/2025	16/05/2025
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	16/05/2025	16/05/2025	16/05/2025	16/05/2025
Date analysed	-	19/05/2025	19/05/2025	19/05/2025	19/05/2025
pH $_{kcl}$	pH units	4.2	8.5	7.4	9.5
s-TAA pH 6.5	%w/w S	0.02	<0.01	<0.01	<0.01
TAA pH 6.5	moles H^+ /t	10	<5	<5	<5
a-Chromium Reducible Sulfur	moles H^+ /t	<3	8	5	15
Chromium Reducible Sulfur	%w/w	<0.005	0.01	0.008	0.02
S_{KCl}	%w/w S	0.31	[NT]	[NT]	[NT]
S_{HCl}	%w/w S	0.62	[NT]	[NT]	[NT]
S_{NAS}	%w/w S	0.61	[NT]	[NT]	[NT]
ANC_{BT}	% $CaCO_3$	[NT]	2.6	1.8	5.6
s-ANC_{BT}	%w/w S	[NT]	0.82	0.58	1.8
s-Net Acidity excluding ANC	%w/w S	0.63	0.012	0.0080	0.024
a-Net Acidity excluding ANC	moles H^+ /t	300	7.5	5.0	15
Liming rate excluding ANC	kg $CaCO_3$ /t	22	<0.75	<0.75	1.1
s-Net Acidity including ANC	%w/w S	0.63	<0.005	<0.005	<0.005
a-Net Acidity including ANC	moles H^+ /t	300	<5	<5	<5
Liming rate including ANC	kg $CaCO_3$ /t	22	<0.75	<0.75	<0.75

Method ID	Methodology Summary
Inorg-068	Determination of Acid Sulphate Soil analysis - a sample is analysed by traditional titration method and ICP-OES analysis. Based on Acid Sulfate Soils Laboratory Methods Guidelines, latest edition. There is no documented official holding time, we have assigned an arbitrary 180 days to frozen samples. neutralising value (NV) of 100% is assumed for liming rate. Net Acidity with ANC calculation should only be used when corroborated by other data that demonstrates the soil material does not experience acidification during complete oxidation under field conditions. The recommendation that the SHCL concentration be multiplied by a factor of 2 to ensure retained acidity is not underestimated, has not been applied in the SHCL results reported.

QUALITY CONTROL: Acid Sulphate Soil Suite					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			16/05/2025	1	16/05/2025	16/05/2025		16/05/2025	[NT]
Date analysed	-			19/05/2025	1	19/05/2025	19/05/2025		19/05/2025	[NT]
pH $_{kcl}$	pH units		Inorg-068	[NT]	1	6.3	6.3	0	95.0	[NT]
s-TAA pH 6.5	%w/w S	0.01	Inorg-068	<0.01	1	<0.01	<0.01	0	[NT]	[NT]
TAA pH 6.5	moles H^+/t	5	Inorg-068	<5	1	<5	<5	0	92	[NT]
a-Chromium Reducible Sulfur	moles H^+/t	3	Inorg-068	<3	1	5	5	0	[NT]	[NT]
Chromium Reducible Sulfur	%w/w	0.005	Inorg-068	<0.005	1	0.008	0.008	0	106	[NT]
S_{KCl}	%w/w S	0.005	Inorg-068	<0.005	1	[NT]	[NT]		[NT]	[NT]
S_{HCl}	%w/w S	0.005	Inorg-068	<0.005	1	[NT]	[NT]		[NT]	[NT]
S_{NAS}	%w/w S	0.005	Inorg-068	<0.005	1	[NT]	[NT]		[NT]	[NT]
ANC_{BT}	% $CaCO_3$	0.05	Inorg-068	<0.05	1	[NT]	[NT]		91	[NT]
s-ANC_{BT}	%w/w S	0.05	Inorg-068	<0.05	1	[NT]	[NT]		[NT]	[NT]
s-Net Acidity excluding ANC	%w/w S	0.005	Inorg-068	<0.005	1	0.0080	0.0080	0	[NT]	[NT]
a-Net Acidity excluding ANC	moles H^+/t	5	Inorg-068	<5	1	5.0	5.0	0	[NT]	[NT]
Liming rate excluding ANC	kg $CaCO_3$/t	0.75	Inorg-068	<0.75	1	<0.75	<0.75	0	[NT]	[NT]
s-Net Acidity including ANC	%w/w S	0.005	Inorg-068	<0.005	1	0.0080	0.0080	0	[NT]	[NT]
a-Net Acidity including ANC	moles H^+/t	5	Inorg-068	<5	1	5.0	5.0	0	[NT]	[NT]
Liming rate including ANC	kg $CaCO_3$/t	0.75	Inorg-068	<0.75	1	<0.75	<0.75	0	[NT]	[NT]

QUALITY CONTROL: Acid Sulphate Soil Suite					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	16/05/2025	16/05/2025		[NT]	[NT]
Date analysed	-			[NT]	11	19/05/2025	19/05/2025		[NT]	[NT]
pH $_{kcl}$	pH units		Inorg-068	[NT]	11	4.2	4.2	0	[NT]	[NT]
s-TAA pH 6.5	%w/w S	0.01	Inorg-068	[NT]	11	0.02	0.02	0	[NT]	[NT]
TAA pH 6.5	moles H$^+$/t	5	Inorg-068	[NT]	11	10	9	11	[NT]	[NT]
a-Chromium Reducible Sulfur	moles H$^+$/t	3	Inorg-068	[NT]	11	<3	<3	0	[NT]	[NT]
Chromium Reducible Sulfur	%w/w	0.005	Inorg-068	[NT]	11	<0.005	<0.005	0	[NT]	[NT]
S$_{KCl}$	%w/w S	0.005	Inorg-068	[NT]	11	0.31	0.24	25	[NT]	[NT]
S$_{HCl}$	%w/w S	0.005	Inorg-068	[NT]	11	0.62	0.62	0	[NT]	[NT]
S$_{NAS}$	%w/w S	0.005	Inorg-068	[NT]	11	0.61	0.76	22	[NT]	[NT]
s-Net Acidity excluding ANC	%w/w S	0.005	Inorg-068	[NT]	11	0.63	0.78	21	[NT]	[NT]
a-Net Acidity excluding ANC	moles H$^+$/t	5	Inorg-068	[NT]	11	300	370	21	[NT]	[NT]
Liming rate excluding ANC	kg CaCO$_3$/t	0.75	Inorg-068	[NT]	11	22	28	24	[NT]	[NT]
s-Net Acidity including ANC	%w/w S	0.005	Inorg-068	[NT]	11	0.63	0.78	21	[NT]	[NT]
a-Net Acidity including ANC	moles H$^+$/t	5	Inorg-068	[NT]	11	300	370	21	[NT]	[NT]
Liming rate including ANC	kg CaCO$_3$/t	0.75	Inorg-068	[NT]	11	22	28	24	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Air volumes are typically provided by customers (often as flow rate(s) and sampling time(s) and/or simply volumes) sampled or exposure times (determines 'volume' passive badges are exposed to)). Hence in such circumstances the volume measurement is inevitably not covered by Envirolab's NATA accreditation. An exception may occur where Envirolab Newcastle does the sampling where accreditation exists for certain types of sampling and hence volume determination(s). Note air volumes are often used to determine concentrations for dust and/or analyses on filters, sorbents and in impingers. For canister sampling, the air volume is covered by Envirolab's NATA accreditation.

Urine Analysis - The BEI values listed are taken from the 2022 edition of "TLVs and BEIs Threshold Limits" by ACGIH.

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : 22169A
Client Service ID : 936693

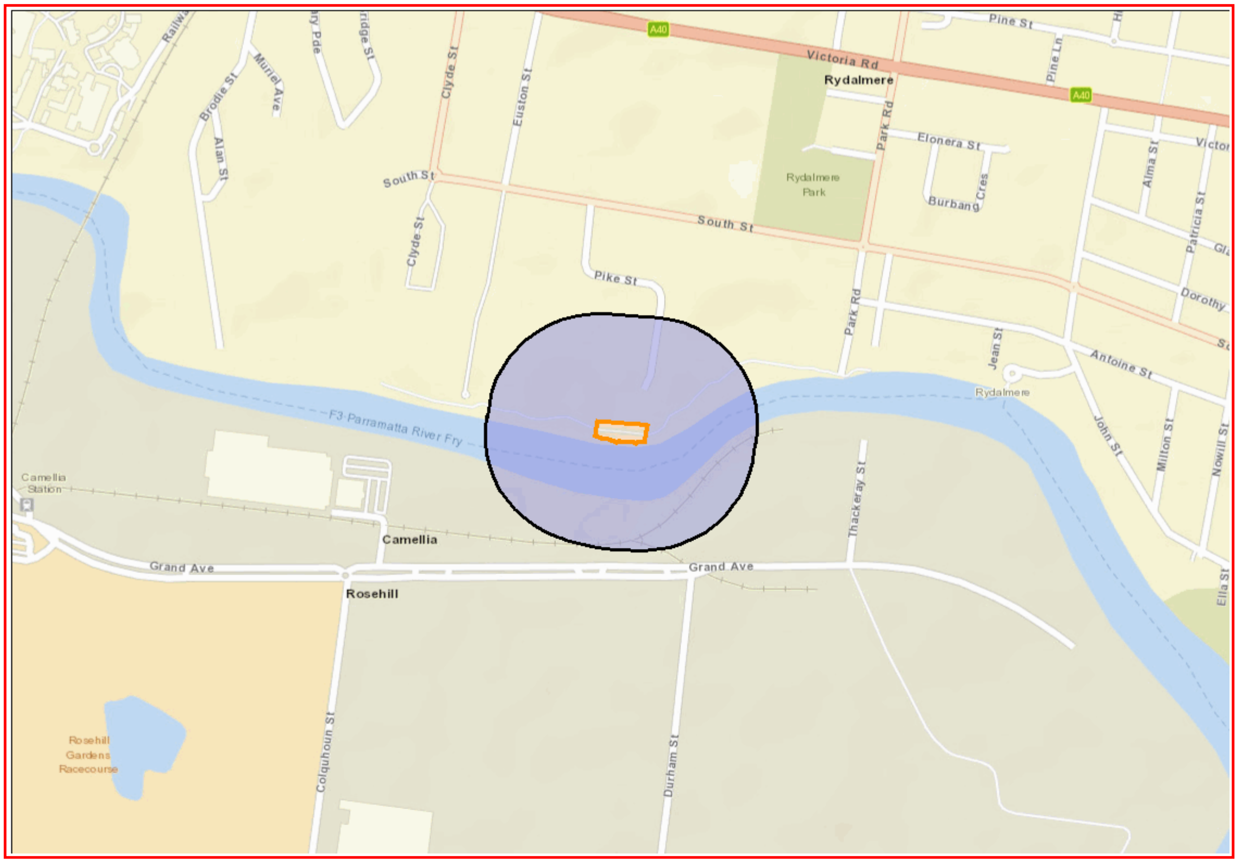
Thomas West
11 Dartford Road
Thornleigh New South Wales 2120
Attention: Thomas West
Email: twest@dfpplanning.com.au

Date: 03 October 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 48, DP:DP260535, Section : - with a Buffer of 200 meters, conducted by Thomas West on 03 October 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

FINAL

CITY OF
PARRAMATTA

Eastern Parramatta River

Communications & Engagement Evaluation
February 2025

CONTENTS

1. Background and summary

NSW Government funding flows to five foreshore park upgrades – *Eastern Parramatta River*

In 2022, City of Parramatta began to work on concept designs that looked to enhance amenity and active transport links across five (5) foreshore parks east of the Parramatta CBD. The project was designed to capitalise on the popularity of the ***Parramatta Valley Cycleway***, along the Parramatta River foreshore.

Supported by the ***NSW Government's Western Sydney Infrastructure Grants Program*** (WSIG), the $9M ***Eastern Parramatta River*** project proposed a program of pedestrian and cyclist amenity and safety improvements along Parramatta River foreshore paths in five (5) key locations:

1. Rangihou Reserve, Parramatta.
2. Baludarri Wetlands, Parramatta
3. Reid Park, Rydalmere
4. Royal Shores, Ermington
5. George Kendall Riverside Park, Ermington.

The ***Eastern Parramatta River*** project provides a total of **2.8km of improved paths** and more opportunities for the community to access and enjoy the natural beauty of the Parramatta River. In some locations, the project delivers separated pedestrian and cycling paths, native planting, additional lighting, and other upgrades requested by the community.

The ***Eastern Parramatta River*** project featured on the City's community engagement platform ***Participate Parramatta*** and was on public exhibition from **Monday 21 October to Thursday 21 November 2024.**

The community was asked to provide feedback on the concept designs via an interactive map and short survey.

In addition to engaging with ***Participate Parramatta***, residents could submit their feedback via social media posts, email, in writing, providing a verbal submission or contacting the project team.

A marketing campaign including advertising, park signage, web and social media content, along with eNewsletters and letterboxing, encouraged the community to have their say on the project.

2. Executive summary

Community engagement activities and evaluation

This report focuses on the reach and effectiveness of the communications and engagement strategy and channels used to promote the *Eastern Parramatta River* project. It considers the success of the level of engagement achieved through the *Participate Parramatta* portal, interactions with communication channels such as social media, audience reach, and the number of submissions received.

A high-level summary of community feedback and concerns is included in the Methodology and Response section page 5, along with recommendations on page 19.

Detailed reporting on community submissions is provided as attachments to the Council report.

Communications and engagement activities:

The ***Eastern Parramatta River*** campaign was live from **Monday 21 October to Thursday 21 November** with the community directed to find out more by visiting the City's ***Participate Parramatta*** engagement portal.

Numerous channels were activated to reach as many in the community within the footprint surrounding the five (5) parks associated with the project. The key objective was to notify residents of the scope and benefits of the proposed ***Eastern Parramatta River*** project (delivered in stages over three years) and the opportunity to have a say on the concept design for the five (5) parks:

1. Rangihou Reserve, Parramatta.
2. Baludarri Wetlands, Parramatta
3. Reid Park, Rydalmere
4. Royal Shores, Ermington
5. George Kendall Riverside Park, Ermington.

Residents could complete a short survey by following a weblink or the QR code provided on various pieces of collateral. Residents could also drop a pin and post a comment on the concept design, highlighting any items they did/did not support and adding additional comments.

Engagement reach

A community engagement campaign was designed to facilitate community feedback on the ***Eastern Parramatta River*** project over the four-week live period from **21 October to 21 November 2024**.

Council's engagement portal ***Participate Parramatta*** was the call to action for the campaign and showcased a range of educational materials as well as the concept designs for each of the five (5) parks.

Overall, information on the opportunity to provide feedback on the Eastern Parramatta River project was presented to around **156,370 people** (based on targeted letter box distributions, website traffic, social media reach, email database contacts, eNewsletters etc, where figures are available).

Participate Parramatta response

- The ***Eastern Parramatta River*** page on Participate Parramatta attracted **4,278 page views** and **2,443 unique visitors**
- **482 documents** were downloaded including **concept plans**
- The **image gallery** was viewed **189 times**
- **67 surveys were completed**
- Of residents who completed the survey:
    - **53 (79%) were supportive** of the overall project, and the improvements as presented, to the five (5) parks
    - **Twelve (12) people (18%) supported the project to an extent**
    - **One (1) was unsure, and one (1) did not support.**

During the exhibition period there were **1,083 views** of the **interactive map**:

- **80 pin and posts**
- **22 posts were in support** of the project and/or elements of the project design
- **six (6) posts did not support particular features** on the concept designs and provided comments
- **49 additional comments** were provided.

Note: 22 individuals provided multiple submissions along with 19 anonymous respondents.

For details on responses via the interactive map, please refer to Methodology and Response on page 5.

It should be noted that this public exhibition was held close to the cut-off date for community engagement (acknowledgement of the approaching festive season and its recognised impact on the community's willingness to participate in Council's community engagement programs).

There were also many significant events which affected community attention, media coverage and social media engagement during this time including: the visit of the King and Queen to Parramatta; the US elections and Donald Trump as a candidate; Local Government elections; a new Parramatta Council; and Diwali.

Major Council programs also competed for the community's attention, including: the Lanes festival; the roll out of FOGO; the opening of Lake Parramatta and public art at Charles Street Square; the closure and clean of the Parramatta River (more than 60,000 views on social media); Foundation Day; Remembrance Day; and large Citizenship events (the first for the Lord Mayor and a number of Councillors).

Due to these events, the volume of projects etc. Council channels are congested, and despite segmenting where possible, various campaigns compete for residents' attention and limit the serve rate on social media. The frequency of Council messaging (across numerous projects) also causes a proportion of the community to switch off.

The monitoring of when campaigns are sent live, and the number of campaigns in market at one time, is continually highlighted as a consideration for community engagement.

3. Methodology and response

The ***Eastern Parramatta River*** project was hosted on the City of Parramatta's engagement portal, ***Participate Parramatta***, from **Monday 21 October to Thursday 21 November 2024.**

There were two main paths to provide feedback on the project online - dropping a pin and posting comments on the concept design via the interactive map, or participating in the short survey which detailed the proposed concept designs for each of the five (5) parks.

Emails, submissions via post and verbal submissions (primarily for people with disabilities) and comments via social media were also accepted.

Direct mail provided to residents within the catchment of the project, CBD and east, (approximately 6,000 businesses and homes) offered a direct link/QR code to the ***Participate Parramatta*** project page.

Other marketing materials, including social media, Council's website and eNewsletters, and signs at each of the parks, also used ***Participate Parramatta*** as the call to action, promoted by web links and a QR code.

Social media materials were presented in community languages (Arabic, English, Hindi, Korean, Simplified Chinese). Translation and TTY services were promoted to for assistance if required in the direct mail piece.

Participate Parramatta

The ***Eastern Parramatta River*** project page on ***Participate Parramatta*** contained information about the planned pedestrian and cycling path upgrades to be delivered as part of the project, with information on the native planting, lighting and other improvements planned for each of the five (5) parks. It offered resources including interactive maps, concept designs, delivery timeline, and answers to frequently asked questions etc.

Community Response

- The ***Eastern Parramatta River*** page on ***Participate Parramatta*** attracted **4,278 page views** and **2,443 unique visitors.**

- Of the **2,443 unique visitors** to Participate Parramatta, **2,255 were aware** (those who viewed the page, but didn't take action), **251 were informed** (those who viewed and took action), **65 were engaged** (those who completed the survey). See below for more information on definitions.

4278
Total Page Views

2443
Total Unique Visitors in Portal

2608
Total Registered Users

2255
Total Aware Stakeholders

251
Total Informed Stakeholders

65
Total Engaged Stakeholders

- Aware: Number of unique visitors who have viewed the project page, minus any visitors who have undertaken any activity e.g.: downloaded a document, viewed a video, completed a survey etc.
- Informed: Any unique visitor who has viewed a latest news item, viewed a document, viewed a video, viewed a FAQ minus any user that has engaged e.g.: completed a poll or survey, engaged with an interactive document.
- Engaged: Any unique visitor who has completed a poll, survey, ideas wall or engaged with interactive mapping.

Demographic data

It should be noted the section of community engagement surveys which seeks information on sex, age, and other demographic markers - including speaking another language, identifying as being Aboriginal or Torres Strait Islander, or living with a disability - is commonly the section where a high percentage of respondents exit the survey.

Overall, of **67 respondents**, **Parramatta** residents led the way **(27 submissions)**. **Ermington** residents were the second largest cohort **(14)** followed by **North Parramatta (7)** and **Rydalmere (4).**

Out of **67 respondents**, **32 answered** specific demographic questions, except for 'what is your relationship to City of Parramatta' and 'Live Work Play' question, where all **67 responded**.

Social and cultural associations only attracted one (1) respondent for each question.

What is your relationship to the City of Parramatta?

Those who submitted a formal response via Participate Parramatta (67) identified as:

- City of Parramatta residents – 58
- Rate payers - 20
- Those who work or study in the area - 15
- Business owners - 2.

*More than one option could be selected.

Live - geographical location

All 67 respondents answered this question. However, **47 elected** to choose 'prefer not to say' or 'none of the above' – options for with-holding details about where they lived.

- **Parramatta** led the way with **14 responses**, followed by Wentworth Point five (5) and North Parramatta four (4).

- Almost every suburb in the LGA was represented, with the survey attracting one (1) or two (2) respondents from each suburb. Six (6) acknowledged they lived outside the Parramatta LGA but indicated they visited/worked or studied in Parramatta.

- One respondent shared that they recently purchased a new home to be closer to these parks and the more pleasant commute along with recreational opportunities offered by pedestrian/cycle paths and the Parramatta River.

Sex

Only **32 from 67 respondents** answered this question.

- Seventeen **(17) respondents** identified as **male, 13 as female.** Others responded as 'other' or 'prefer not to say'.

- For some respondents, first names indicated gender and where possible this was used to add context to some of the responses.

Age

Overall, out of **67 submissions, 32 respondents** provided information on **age.**

- **Ten (10) respondents, seven (7) males and two (2) females, indicated** they were in the **35 - 44** age group. This age group was the highest overall who provided their age.

- The second highest number of respondents who identified their age group were from the **55-64** age group**, seven (7) participants, five (5) female** and **one (1) male.**

- In the **65 - 70** age group there were **five (5) respondents overall, three (3) male** and **one (1) female.**

- The **18 - 25** age group had **three (3) respondents overall, all male.**

- **In the 26 - 29** age group there was **one (1) respondent** overall, unidentified sex.

- The **71- 75** age group had **one (1) respondent** overall**, male.**

Social and cultural markers

- **Seventeen (17) people** shared that they speak a **language** other than English.

- **One (1) person** identified as **Aboriginal or Torres Strait Islander.**

- **One (1) person** shared they lived with a **disability.** They made special note that while some pedestrian paths were becoming more accessible, they would like to see more areas within the Parramatta LGA become more accessible.

Participate Parramatta interactions

- More than **250 visitors** took an action including downloading information
- **482 documents were downloaded including concept plans**
- The image gallery was viewed **189 times**
- The interactive map attracted **1,083 views** with **80 pin and post submissions.**

Concept designs views and downloads

- The **foreshore elevations** diagrams were downloaded **37 times**
- **Rangihou Reserve**, Parramatta concept plan was downloaded **110 times**
- **Baludarri Wetlands**, Parramatta concept plan was **downloaded 82 times**
- **Reid Park,** Rydalmere, concept plan was **downloaded 60 times**
- **Royal Shores**, Ermington, concept plan was **downloaded 75 times**
- **George Kendall Riverside Park**, Ermington, concept plan was **downloaded 102 times.**

Once on the Participate Parramatta project page **(4,278 views)**, only a small percentage will engage further with the project.

It is more usual for residents who do not support the project to provide feedback, along with those who would like to raise some concerns or provide a suggestion for improvement.

A smaller percentage of highly-engaged people will provide detailed responses and express excitement/strong support/welcome the project.

Social media is a quick response tool and is also used to ask questions about the project and to raise other issues. Though always encouraged, a number of residents who respond on social media platforms will not make the required link click to the engagement portal.

Social media feedback generally comes from a younger demographic (Instagram) and those already engaged with Council.

Community feedback via Participate Parramatta – survey results

From 4**,278 page views** and **2,443 unique visitors**, **67 surveys** were submitted.

Respondents were identified by captured IP addresses, though more than one visit from each household is likely. All bar six (6) respondents were City of Parramatta residents.

Eastern Parramatta River - overall response

- Of **67 residents** who completed the survey, **53 respondents (79%) were supportive** of the overall Eastern Parramatta River project, and the improvements as presented, to five (5) parks.
- Twelve (12) people (18%) supported the project to an extent.
- One (1) was unsure, and one (1) did not support.
- Fifty-three (53) respondents chose to make additional comments as part of their survey submissions, either as comments detailing why they supported particular elements to an extent, taking the last question opportunity to provide any further comments and via email.
- Three (3) emails were received including one (1) attachment, a lengthier response, was also provided.

Individual parks

When asked about the concept designs and proposed upgrades for each of the five (5) parks, all 67 respondents continued to provide feedback on the concept design for each park:

Rangihou Reserve Parramatta

- More than 73% (49 respondents) supported the concept design
- More than 16% (11 respondents) supported to an extent
- Four (6%) were unsure and three (4%) did not support.

Baludarri Wetlands, Parramatta

- More than 79% (53 respondents) supported the concept design
- More than 12% (eight respondents) supported to an extent
- Five (7%) were unsure and one (1%) did not support.

Reid Park, Rydalmere

- More than 84% (56 respondents) supported the concept design and proposed improvements
- More than 12% (five (5) respondents) supported to an extent
- Six (9%) were unsure. No residents (0%) said they did not support the proposed upgrade.

Royal Shores, Ermington

- More than 75% (50 respondents) supported the concept design and proposed improvements
- More than 16% (11 respondents) supported to an extent
- Six (9%) were unsure. No residents (0%) said they did not support the proposed upgrade.

George Kendall Riverside Park, Ermington

- More than 79% (53 respondents) supported the concept design and proposed improvements
- Twelve per cent (eight respondents) supported to an extent
- Four respondents (6%) were unsure. Two (3%) said they did not support the proposed upgrade.

Other responses

Social media campaigns generated **1,380 interactions,** the relevant comments were generally positive, with others seeking clarification on shared and expanded paths. There was one negative comment and one negative sentiment (unhappy face).

The project team working closely with the social media team, **providing five (5) social media responses to residents.** Each post included the reminder to visit ***Participate Parramatta*** for more information and to seek further assistance from the project team.

The ***Participate Parramatta* inbox** received **three (3) emails.**

Community feedback – via interactive map

1,083 viewers engaged with the interactive map, providing 80 pin and posts.

The overall and five (5) park interactive maps which featured on the ***Participate Parramatta*** project page, were a quick way for stakeholders to pin a location and flag whether they supported the item identified on the draft concept design or did not support. Residents could also post a comment.

During the exhibition period there were **1,083 interactions** with the map:

- **80 pin and posts**
- **22 posts were in support** of the project or elements of the project
- **six posts did not support *particular features* on the concept designs**
- **49 comments were** provided. Note: 22 individuals provided multiple submissions along with 19 anonymous respondents.

Engagement with interactive maps

Many of the **80 pin and posts** indicated support for the project overall, particularly upgrades which were seen as addressing safety concerns e.g. paths that were "steep, narrow and dark" or where there were "near misses" between pedestrians and cyclists.

Residents were also very supportive of more planting being added to the parks and a significant number of comments were requesting more trees and native shrubs in various locations. Lighting plans were also supported with requests for more lighting extending to particular locations the resident nominated – such as Western Sydney University.

Via social media there was a request to make the parks and pathways more accessible, and for more of the LGA to be accessible. There was also support for the key elements within the concept designs.

However, there remains a strong preference within the community for separate pedestrian and cycle paths (with vegetation between the two). Key comments/themes included:

Cycle and pedestrian paths

- The removal of narrow paths and identified pinch points was strongly supported. Along with the project's intent to create opportunities for residents and visitors to enjoy the five (5) parks and the foreshore area and add additional lighting and trees and plants.

- A number of concerns were raised around cyclists and pedestrians interacting and the need for more signage and/or behavioural change campaigns. Signs where cyclists had to give way to pedestrians, and signs advising pedestrians to keep to the left on shared paths were requested.

- Further investigations of the proposed paths at George Kendall were requested. Three residents highlighted the steep bend in the paths could cause unintended visibility issues and other potential safety concerns when descending from Goerge Kendall to Royal Shores. Path widening at Royal Shores was also raised.

- Replacing the existing curved shared path from Morton Street to the foreshore path, with a direct path, was questioned by one resident who felt it would cause people to start to walk across the grass - the most direct route to nearby homes.

- A concern was raised about widening some paths with a request to ensure there was no seam which could act as a hazard to cyclists.

- Treatments to flood prone areas (elevated boardwalk or similar) were requested in areas where water currently pools at George Kendall Reserve and Royal Shores.

- Bike racks were requested by a number of residents including locations such as near the café, playgrounds, at points of interest, and near shelters at George Kendall Reserve.

LED Lighting

- Lighting installation was enthusiastically endorsed by a number of respondents including one who identified some areas as “dark and spooky”.

- Many residents requested that LEDs be installed the entire path to WSU and in other locations.

Planting

- Planting was unanimously supported with requests for more planting of trees and native shrubs and grasses in particular locations at various parks (and less turf).

- While there are few tree removals within the project, concerns were raised about the impact of tree removal (heat/shade, biodiversity, pollution) along with requests for more planting where possible.

- Specific mentions were made of the saltmarsh areas needing more care, rubbish removal and setting up a bushcare group for the area.

- Maintenance requests included cutting back or removing blackberry bushes on the old foreshore path in George Kendall which are overgrown, weeding and general upkeep.

- A note was made about a particular tree near Park Road which obscures views to the rest of the cycle path.

Other comments/requests:

- A new amenities block in Rangihou Reserve was requested. Other residents commented it would be nice but isn’t needed. However, a number of respondents mentioned the lack of public amenities in these parks and across the LGA.

- A footpath connection from Rangihou Crescent to Rangihou Reserve.

- A request to consider widening the paths on Silverwater Bridge was made for future upgrades.
- Bridge repairs at Royal Shores were also requested, with claims wooden sections are rotten.
- Additional bins and dog poo bins/bags
- More water/drinking fountains
- Bike repair stations
- Fixing bumps in existing cycle paths.

Participate Parramatta survey comments

Of **67 survey** submissions, some of those supported concept designs to an extent and made comments. In total, **52** respondents elected to make comments to clarify their responses or took the opportunity to make further comments on the project.

Comments in the survey followed similar themes as those made in the interactive map.

There was strong overall support for the upgrades, particularly the addition of more separated cycleways and elements of the concept designs addressing safety concerns identified in existing paths, and the lack of lighting.

There was also recognition of the City's recent work on cycleways near George Kendall, the upgrades near Rydalmere Wharf.

The Parramatta Light Rail (Stage 1) Active Transport Link from Carlingford to Parramatta also received positive comments as did Alfred Street Bridge.

Requests to minimise tree removals and for additional trees, shrubs and native grasses were strongly represented in responses and additional comments. One respondent suggested a little less turf and more plants.

There were a small number of comments questioning the timeline for completion of this project and seeking more information on when each park will be delivered (this information was included on ***Participate Parramatta***). There were also concerns around potential park closures.

Cycling comments:

- Concerns about pedestrians who encroach on cycle paths and general comments about pedestrian and cyclist interactions were the most common responses within the survey.

- Dedicated/separated lanes for pedestrians and cyclists are strongly preferred by the community or otherwise planting to act as a divider on wide shared paths. Wide paths such as the Carlingford to Rydalmere share path were praised.

- Concerns about cyclist behaviour (speeding and not ringing bell, riding two across or more in a pack) and pedestrians in cycle lanes were the most frequently raised issue. Requests for more Ranger patrols and behaviour change campaigns, potentially with occasional Council pop-ups promoting cycling paths and safety. CCTV was also requested.

- Requests for more signage to assist in mitigating conflicts between pedestrians and cyclists including pedestrians keep left and cyclists slow down. Requests were also made for Council to consider speed humps in certain areas where speeding cyclists are an issue. One respondent suggested these should be at 45 degrees and offset to make them easier for people in wheelchairs and those pushing prams to navigate.

- Requests to ban e-scooters and e-bikes due to safety concerns for both pedestrians and cyclists and sign appropriately were also high.
  One respondent who identified as a regular commuter using these Eastern Parramatta River paths daily, commented on dangerous e-unicycle riders. Issues with e-bikes etc. was also raised via social media.

- There were also comments recommending Council should prioritise pedestrians and cyclists over motorists and a request to review existing paths and improve connections between paths across the LGA creating a complete network.

- Requests to mitigate noise on metal boardwalks – cyclists in particular, disturb some members of the community.

- Request to make bike racks and bike maintenance stands as part of the designs.

- Suggestion that Council should invest in connecting the path in Rangihou Reserve to Alfred Street Bridge.

- Request to keep the curved path in Rangihou Reserve to the to the south end of Morton Street and to add more native plants where the designs indicate paths are being removed.

- A comment requested that Council keep the path which was marked for removal in Rangihou Reserve, though the respondent was not sure if this was part of the concept design. There were also concerns about that area being dark.

- In commenting on Royal Shores, one respondent stated that it was unclear why if there is a pedestrian path, the adjacent path is a shared path. Suggesting it would be better to have a cycleway with crossings to shelters or other points of interest to minimise interaction and potential conflict of pedestrians and cyclists.

Additional features requested:

- Adding more water fountains, seats, rubbish bins, pet waste bins and biodegradable bags to the concept designs was a common theme.

- Addition of signage in multiple languages or using icons to warn people to collect their dog's poo. Also, Ranger Patrols to help control/fine failure to collect poo and control risky dog behaviour were requested. Apparently, both are issues in some parks.

- Requests for more planting particularly native trees and shrubs within the parks for shade, biodiversity, and aesthetics.

- Request for a public toilet in Rangihou Reserve and in Royal Shores and for upgrades to amenities in George Kendall Reserve – and for toilets to be open. A few people raised that the lack of amenities is inconvenient and results in people making use of trees, shrubs and bushes.

- The addition of picnic tables and BBQs. On social media, there was a request for signs near picnic tables/seats to reduce litter left behind.

- A playground in or near Rangihou Reserve particularly for all the apartment buildings in the area.

- The addition of outdoor gym equipment where possible.

Trees and environment:

- Overall, more planting, and planting to create park areas was strongly supported.

- There was some concern around the removal of eight (8) trees in Rangihou Reserve citing impact on biodiversity and wildlife etc. Also comments about the need for environmental rehabilitation of Rangihou Reserve protecting the saltmarsh areas. There was one comment about the location of newly planted trees in George Kendall Reserve – in seemingly random places.

- Maintenance was raised numerous times as an issue which disturbs the community. Cutting back plants near and overhanging paths, cleaning up rubbish on land and in the river, in the mangroves etc. Dealing with dog poo on grassed areas and overflowing or unemptied bins were also raised by a few respondents.

- There was a request for attention to areas in Royal Shores which regularly flood.

- Landscape maintenance near the sea wall at Royal Shores was mentioned as being overgrown, blocking the pedestrian path and looking shabby.

- Concerns about the lack of environmental protection provided to Baludarri Wetlands, particularly the impact of lighting and other stressors to native animals.

- Mosquitos and rats were also raised as barriers to using paths especially at night.

Lighting:

- Requests to repair a light which has failed in George Kendall Reserve. Numerous respondents requested Council consider more lighting than is indicated on the concept designs. Specific requests were made for additional lighting at George Kendall, Reid Park, Rangihou Reserve and Royal Shores.

- There was a comment that the brightness of the lights on this project should be carefully considered.

Out of scope and service requests:

- Upgrades to the soccer ovals at George Kendall Reserve were requested.

- There was a request for streetlighting to be improved on Ermington Street.

- A request to remove the bin at the top of Broughton Street. This resident detailed that the Council rubbish bin, next to the Promenade units, attracted people dumping rubbish. They also reported that the bins were not emptied. They suggested CCTV to deter illegal dumping, including abandoned shopping trolleys. The also requested better lighting for the stairs.

- A lack of public toilets in the LGA and requests for more amenities in these parks and elsewhere were significant themes. Many respondents commented about inconvenience and having to use the bushes. Specific mentions of the need for a public amenity building somewhere between Charles Street Square and the Bigee Bigee Bridge (James Ruse Drive Bridge) and between Parramatta Quay and Rydalmere Wharf were made.

- A respondent commented on poor lighting from Rydalmere Wharf to Silverwater Bridge.

- Safety concerns along the Parramatta Valley Cycleway were raised with a request for review and to consider safety points where people could call for help. This resident also urged Council to consider these in other pedestrian/cycle paths in locations which didn't offer close access to help.

- Comments that the trees near Alfred Street Bridge were in need of more watering and maintenance/replacement, and that the area needed more planting where possible.

- Another resident commented that there is a large area which was used for building the Alfred Street Bridge which is now just an abandoned waste site. They stated that this area is meant for enjoyment of the community and Council should address this as a priority or as a part of this project.

- Request for a child safe play area in the Council land in/near MacArthur Street and to create public spaces with native trees and plants.

- A comment was made about the brightness of the lights from the ferry in the CBD to Powerhouse Parramatta (with a request to investigate reducing the brightness if possible).

- There was one suggestion for Council to consider small wharfs in appropriate locations – including Royal Shores at the bottom of Spurway Street was made - though the response doesn't make clear whether this is for private craft or ferries.

- Consider small dog parks to be introduced in larger parks.

- There was one unusual request to consider pedestrian paths being made of softfall, providing benefits for walkers and as a deterrent to cyclists.

Recommendations

On reviewing residents' input from both the interactive map and the survey, it is recommended that the project team:

- Review particular locations where residents have raised there may be potential safety concerns (visibility, steepness, cyclists travelling at highspeed, problematic intersections, the angle of the path, low lighting, concerns, the proposed configuration of paths at particular points, and other related issues) and adjust the concept designs where possible. See raw data sheets for extra details on the GPS location of identified locations and extended comments for more information. Advise respondents on outcomes regarding their particular concerns.

- Review and implement requests to see more planting across the parks and minimise tree removal as much as possible. Update respondents via ***Participate Parramatta.***

- Consider whether bike racks, bike repair stands, water fountains and bins can be added to the designs to enhance the proposed upgrades and/or identify these as a priority for future works. Update respondents via ***Participate Parramatta***.

- Review the LED lighting plan and note other areas where residents have requested lighting in these concept designs, adjust plans or include in later works advising those residents who expressed concerns about the lighting as a risk to the community. Update respondents via ***Participate Parramatta***.

- Ensure LED lighting is collared, warm, at appropriate brightness and otherwise managed (e.g. timers) so it improves safety for pedestrians and cyclists with minimal light spill affecting neighbouring residents and wildlife. Include measures in ***Participate Parramatta*** updates.

- Discuss maintenance issues raised by residents with appropriate **City of Parramatta teams**, and lodge **Service Requests** for trimming/removal of blackberry, rubbish removal and maintenance of saltmarsh areas and other issues such as the repair of wooden bridges and noise mitigation around metal boardwalks, as well as fixing some concrete panel displacement in George Kendall). Review public amenity requests, potentially identifying future works. The follow-up of request/ liaison with residents and the works to be completed by relevant teams.

- Requests for signage and Ranger patrols should also be considered along with behaviour management campaigns for pedestrians and cyclists. **Liaise with Rangers/Regulatory.** Advise outcomes via ***Participate Parramatta*** and consider signage and an enforcement blitz, pop-ups, along with social media to promote the campaigns.

Closing the loop – keeping the community informed

The project team is working through submissions made during the public exhibition period and will respond to residents and stakeholders who have raised specific location-based concerns.

A project update advising the close of the consultation has been published. An update highlighting some of the feedback received and further information on the delivery program will be uploaded to the City of Parramatta website (with a link from Participate Parramatta) as soon as possible.

Further updates will report on how the concept design has been fine-tuned to accommodate feedback/suggestions where possible.

Additional and ongoing project updates will be published on the City of Parramatta website when the Eastern Parramatta River project begins early works in preparation for construction.

A button on the Participate Parramatta page will link to the project page on the Council website.

Residents who have elected to follow the project (by clicking on the follow button on the Participate Parramatta project page) will receive updates.

Social media may be used at some points to promote the work being undertaken to deliver upgrades to the five (5) parks which are part of the Eastern Parramatta River project.

Project updates will also be provided for consideration for inclusion in various eNewsletters and Council publications.

Community/media events with stakeholders, funding partners and the community will be planned for each park over the staged completion of works with associated media releases and marketing materials.

4. Engagement activities

Numerous communication channels were activated to reach as many community members within the catchment area as possible and encourage them to engage with the ***Eastern Parramatta River*** project. Marketing materials, including advertising and letters, offered a link directly to ***Participate Parramatta*** or included a QR code linking to the project page on the platform.

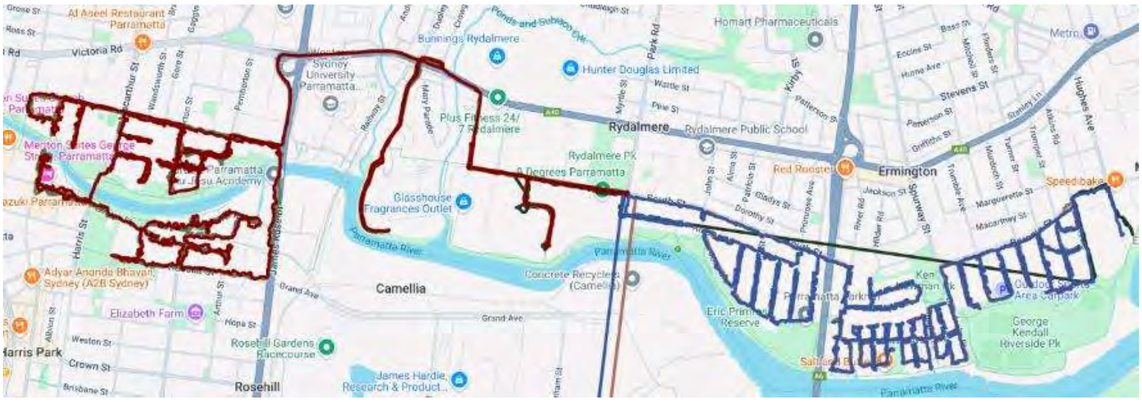
QR scans

Direct mail and signage featured a QR code – the code was scanned **397 times.** during the campaign.

Direct mail

Commencing with a letter in late-October, around **6,000 households** in the project area were targeted with materials promoting the proposed upgrades, and the opportunity to have a say on the ***Eastern Parramatta River*** project.

Specialised print and distribution was co-ordinated with a team of walkers hand-delivering project collateral. GPS live-tracking of the distribution was conducted. Additional stakeholders were also contacted including cycling affiliations and NSW Government agencies.



GPS tracking of letterboxing to approximately 6,000 homes and businesses.

Media release

A media release outlining the benefits of the Eastern Parramatta River project and encouraging the community to have a say, was produced and distributed to local media.

The media release was also uploaded to the City's website and attracted **43 views.**

The media release resulted in **three media articles**:

- Mirage News
- The National Tribune
- Inside Local Government.

Advertising

Parramatta News is a local community newspaper (digital and print) with reach across the LGA and beyond. The 29 October 2024 edition carried both a quarter page advertisement and a feature piece within the Lord Mayor's Column.

For media release, editorial and advertising, please see Appendix A on page 42.

City of Parramatta social media - Facebook and Instagram

Individual metrics for each social media platform (Facebook and Instagram) are contained below and in detailed reporting in Appendix A on page 42.

The campaign included organic posts (unpaid) on City of Parramatta channels and a paid advertising schedule for LGA and target suburbs ($500 budget in total).

Ads were provided in Arabic, English, Hindi, Korean and Simplified Chinese (targeting residents in the catchment area with those language settings).

While organic and paid posts were LGA-wide a portion of the budget for paid posts were geo-targeted focussed on the catchment area for the five (5) parks within the project.

City of Parramatta Facebook page **(45K+ followers)** and **Instagram (18.1K followers)** were used (along with other Council social media channels).

The figures below relate only to the City of Parramatta accounts.

- **Total impressions** for the entire campaign (including paid and organic on both channels) was **60,883**
- The campaign generated **1,380 post interactions** across organic and paid (including total interactions, link clicks, comments, likes, shares etc across all posts)

- ***Eastern Parramatta River*** attracted mostly positive sentiments - likes and loves, with only one sad face.
- The majority of relevant comments received were **generally positive**. Others sought clarification on shared or dedicated paths or made a suggestion for inclusion in the project scope. There was one negative comment which did not support the project, considering it a waste of resources due to the community's incorrect use of pedestrian and cycle paths.
- Five **social media responses** were provided to the community, each included the reminder to visit ***Participate Parramatta*** for more information and to provide formal feedback.

Demographic data

- Men aged 35-44 were the overall top performing demographic, making up 14% of total results.
- Results were evenly distributed between age groups, with 65+ the top performer at 24%, 35-44 and 45-54 both with 21% and 55-64 with 20%.
- Men accounted for 58% of link clicks vs. 40% women.

The profile of social media responses appears to align with cycling demographics.

Organic campaign (unpaid)

The organic (unpaid) Facebook and Instagram campaign – two (2) Facebook and two (2) Instagram posts - resulted in **11,393 impressions**, a **reach of 10,576**, with **315 engagements,** an **engagement rate of (2.76%) – above benchmark levels** - and **74 link clicks**.

- Overall, Facebook **reactions were positive** attracting **39 likes** and **four (4) loves**
- Instagram attracted **75 likes**
- Three comments were left across organic posts, two were positive, with one person leaving a 😍 emoji, and the other mentioning that this area is part of the Greater Sydney Bike Trail
- One negative comment mentioned that separated bike/pedestrian paths are not used as intended and are a waste of resources.

Social media summary

Metric	Campaign Result	Benchmark
Number of Posts	4 (2x IG, 2x FB)	n/a
Engagements	315	n/a
Reach	10576	n/a
Impressions	11393	n/a
Link Clicks	64	n/a
Engagement Rate	2.76%	2-3%
Total Instagram Reactions	75 Likes	
Total Facebook Reactions	👍: 39 ❤: 4	

Instagram story

The one organic **Instagram story** deployed within the campaign generated **1,137 impressions** and a **reach of 1,137**. It achieved an **engagement rate of 1.6%** with **18 engagements** and **10 link clicks.**

Metric	Campaign Result	Benchmark
Number of Posts	1x IG Story	n/a
Engagements	18	n/a
Reach	1137	n/a
Impressions	1137	n/a
Link Clicks	10	n/a
Engagement Rate	1.6%	n/a

Paid campaign – overall

The paid ***Eastern Parramatta River*** campaign generated **48,353 impressions** (overall), **a reach of 23,950** and **1,047 post engagements, (2.2%) – above benchmarks.**

There were **908 link clicks** to the project page on ***Participate Parramatta*** **(1.88%) - above benchmarks.**

Reactions overall were **positive** with **112 likes, seven (7) loves and one (1) frown face** directed towards the project.

There were two main components to the paid campaign, LGA wide (excluding target suburbs), and target suburbs, with languages targeted within the two streams.

LGA wide (excluding target suburbs)

With an investment of approximately $350, the various posts as part of this LGA campaign generated **38,838 impressions**, a **reach of 19,006, 761 post engagements** and an **engagement rate of 1.96%** - closely approaching the 2% benchmark. The campaign delivered a **1.68% click through rate,** more than the 1% benchmark.

The **top performing ad** from the paid **LGA wide ad set** was the foreshore improvements ad **(275 link clicks)**. However, all ads delivered good click through (654 in total) and post engagements (761).

Meta Summary – LGA Wide (Excluding Relevant Suburbs) AdSet

Metric	**Campaign Result**	**Benchmark**
Spend	$349.36	n/a
Reach	19,006	n/a
Impressions	38,838	n/a
Frequency (no. times ad seen p/p)	2.04	2-3
Link clicks	654	n/a
CPC (cost per click)	$0.53	$0.50-$1
CTR (click through rate)	1.68%	More than 1%
Post engagements	761	n/a
Engagement rate (ER)	1.96%	More than 2%

Top performing ads - LGA Wide (Excluding Relevant Suburbs)

 City of Parramatta Sponsored · Paid for by City of Parramatta The Eastern Parramatta River Project will deliver a number of foreshore improvements that have been requested by our ...see more About this ad	 City of Parramatta Sponsored · Paid for by City of Parramatta Based on a vision of providing more public access to the Parramatta foreshore and offering a picturesque riverside ...see more About this ad	 City of Parramatta Sponsored · Paid for by City of Parramatta Have your say on new foreshore upgrades! The Eastern Parramatta River ...see more About this ad
275 link clicks, $0.48 CPC	**199 link clicks, $0.59 CPC**	**138 link clicks, $0.52 CPC**

Paid Advertising – Facebook targeted suburbs

A small percentage of the campaign spend (approximately $150) was targeted to key suburbs with closer proximity to the five (5) project areas.

The campaign focussed on targeted suburbs generated **9,515 impressions** and a **reach of 5,479**, achieving **286 post engagements**, an **engagement rate of 3.01%** (above 2% benchmark) and **254 link clicks.**

The **top performing ad** in the targeted suburb campaign attracted **226 link clicks.**

This was the strongest performing campaign. Future campaigns for ***Eastern Parramatta River*** will direct more budget to the targeted suburbs, with another ad set highlighting each park for the suburb in which the park is located.

Top performing targeted suburb Facebook ads

 City of Parramatta Sponsored · Paid for by City of Parramatta Have you had your say on the Eastern Parramatta River project? With 2.8km of pedestrian and cyclist path ...see more 	 City of Parramatta Sponsored · Paid for by City of Parramatta Have your say on new foreshore upgrades! The Eastern Parramatta River ...see more 	 City of Parramatta Sponsored · Paid for by City of Parramatta The Eastern Parramatta River Project will deliver a number of foreshore improvements that have been requested by our ...see more
226 link clicks, $0.56 CPC	**27 link clicks, $0.79 CPC**	**1 link clicks, $0.90 CPC**

Meta Summary – Relevant Surburb AdSet

Metric	**Campaign Result**	**Benchmark**
Spend	$148.88	n/a
Reach	5,479	n/a
Impressions	9,515	n/a
Frequency (no. times ad seen p/p)	1.74	2-3
Link clicks	254	n/a
CPC (cost per click)	$0.59	$0.50-$1
CTR (click through rate)	2.67%	More than 1%
Post engagements	286	n/a
Engagement rate (ER)	3.01%	More than 2%

Participate Parramatta social media - Facebook and Instagram

An organic (non-paid post) was shared on Council's ***Participate Parramatta Facebook*** page **(6,900+ followers)** and on its ***Instagram page*** **(620 following).**

The organic posts invited the community to learn about the ***Eastern Parramatta River*** project and have their say on the draft concept plans for the five (5) parks included in the project.

- The ***Participate Parramatta Facebook*** post **reached 111 people (192 views)** creating **seven (7) engagements** (likes, comments, clicks or shares) and **three link clicks**
- The ***Participate Parramatta Instagram*** **reached 34 people (62 views)** creating **seven (7) engagements.**

Active Parramatta Facebook

Active Parramatta is managed by Council's team who promote recreational activities and the Parramatta bus which travels to various locations across the LGA to conduct health classes and social inclusion activations.

- An organic (non-paid post) was shared on Council's ***Active Parramatta Facebook*** page **(4.6K followers)**
- The post **reached 657 people**, creating **eight (8) engagements, 1 like, 1 comment,** and **six (6) link-clicks**.

Participate Parramatta
22 October 2024 ·

Have your say on five foreshore parks!
Council is excited to present the Eastern Parramatta River project and invites you to review and comment on concept designs for five foreshore parks. Many of the proposed upgrades were requested by the community. The project features 2.8km of path upgrades in some parks, LED lighting, and native landscaping. Have your say before 5pm Thursday 21 November 2024.

For more information, please visit https://participate.cityofparramatta.nsw.go... **See more**

Participate Parramatta has 6,900 Facebook followers. The post reached 111 people (192 views) creating seven (7) engagements and three (3) three link clicks.

Active Parramatta
25 October 2024 · 🌐

There are planned improvements for five foreshore parks, to help provide our community with more opportunities to enjoy the natural beauty of the Parramatta River 💧🌱

1️⃣ Rangihou Reserve, Parramatta
2️⃣ Baludarri Wetlands, Parramatta
3️⃣ Reid Park, Rydalmere
4️⃣ Royal Shores, Ermington
5️⃣ George Kendall Riverside Park, Ermington

Learn more about this project, view the concept designs, and have your say before Thursday, 21 November at https://bit.ly/40alxf9

Craig Rodger
Needs to be a play ground in the Rangihou reserve, so many apartments in the area

Active Parramatta has 4.6K followers. The Eastern Parramatta River post reached 657 people, creating eight (8) engagements, 1 like, 1 comment, and six (6) link-clicks.

External Social Media

Parramatta News

Parramatta News Facebook page has 2.6K followers. This post on 29 October carried links to that week's digital publication which included information on the Eastern Parramatta River project. Note other data unavailable.

For detailed reporting on social media and comments, please see Appendix B on page 51.

City of Parramatta eNewsletters

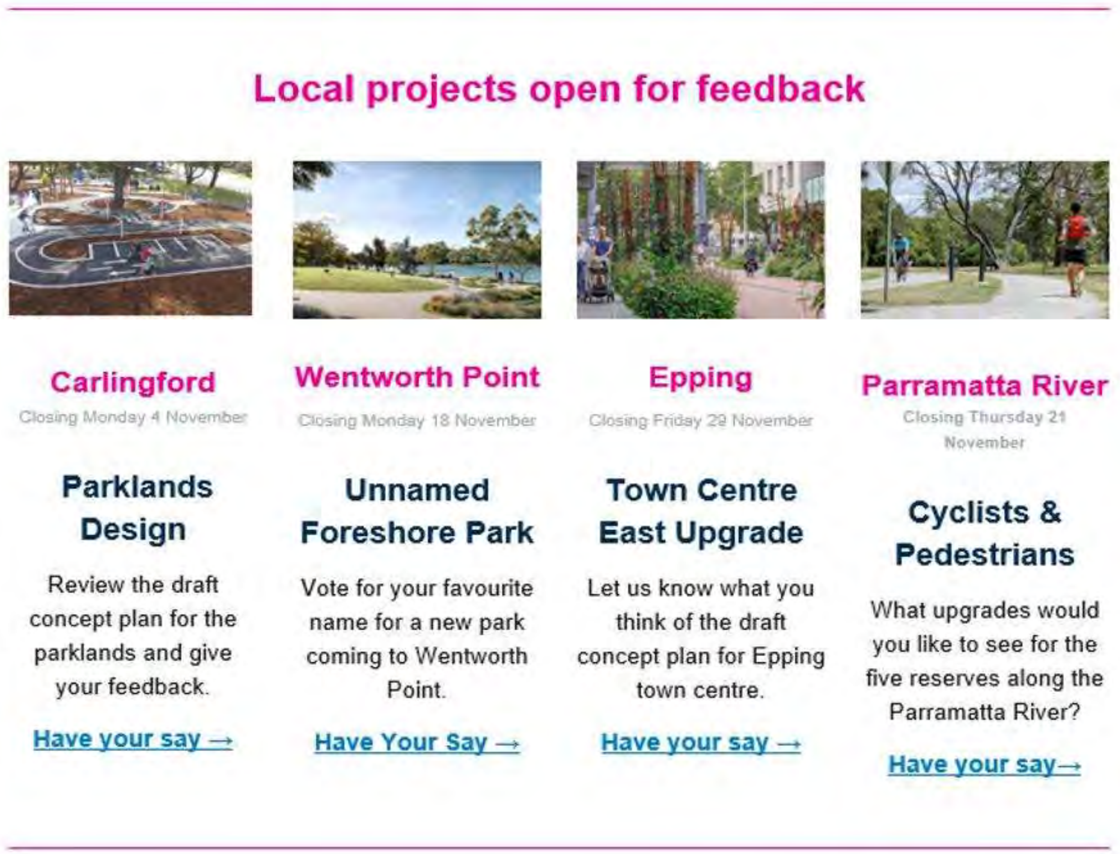
Participate Parramatta eNewsletter

An email was sent to Council's database of community members who have expressed interest in hearing about engagement opportunities. This email promotes the opportunity to share feedback on a range of Council projects.

The ***Eastern Parramatta River*** project featured in the October and November editions distributed on 31 October, 14 November 2024.

The monthly eNews is received by **18,000+ people.**

Links within the eNews take subscribers to the relevant ***Participate Parramatta*** project page, with **130 people clicking through** to the project page in October and **119 people clicking** on the story in the November edition.



Local projects open for feedback

Carlingford

Closing Monday 4 November

Parklands Design

Review the draft concept plan for the parklands and give your feedback.

Have your say →

Wentworth Point

Closing Monday 18 November

Unnamed Foreshore Park

Vote for your favourite name for a new park coming to Wentworth Point.

Have Your Say →

Epping

Closing Friday 29 November

Town Centre East Upgrade

Let us know what you think of the draft concept plan for Epping town centre.

Have your say →

Parramatta River

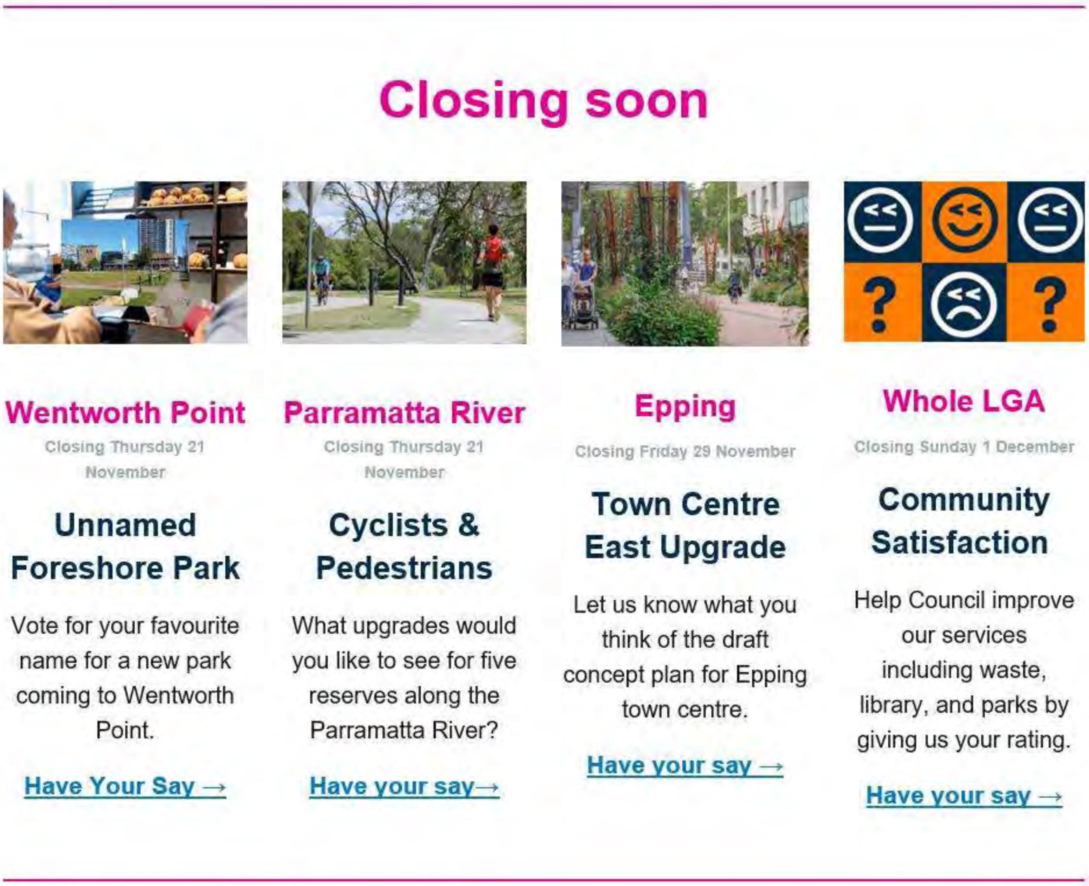
Closing Thursday 21 November

Cyclists & Pedestrians

What upgrades would you like to see for the five reserves along the Parramatta River?

Have your say→

Participate Parramatta eNews 31 October - 18,000+ subscribers, 130 clicks.



Closing soon

Wentworth Point

Closing Thursday 21 November

Unnamed Foreshore Park

Vote for your favourite name for a new park coming to Wentworth Point.

Have Your Say →

Parramatta River

Closing Thursday 21 November

Cyclists & Pedestrians

What upgrades would you like to see for five reserves along the Parramatta River?

Have your say→

Epping

Closing Friday 29 November

Town Centre East Upgrade

Let us know what you think of the draft concept plan for Epping town centre.

Have your say →

Whole LGA

Closing Sunday 1 December

Community Satisfaction

Help Council improve our services including waste, library, and parks by giving us your rating.

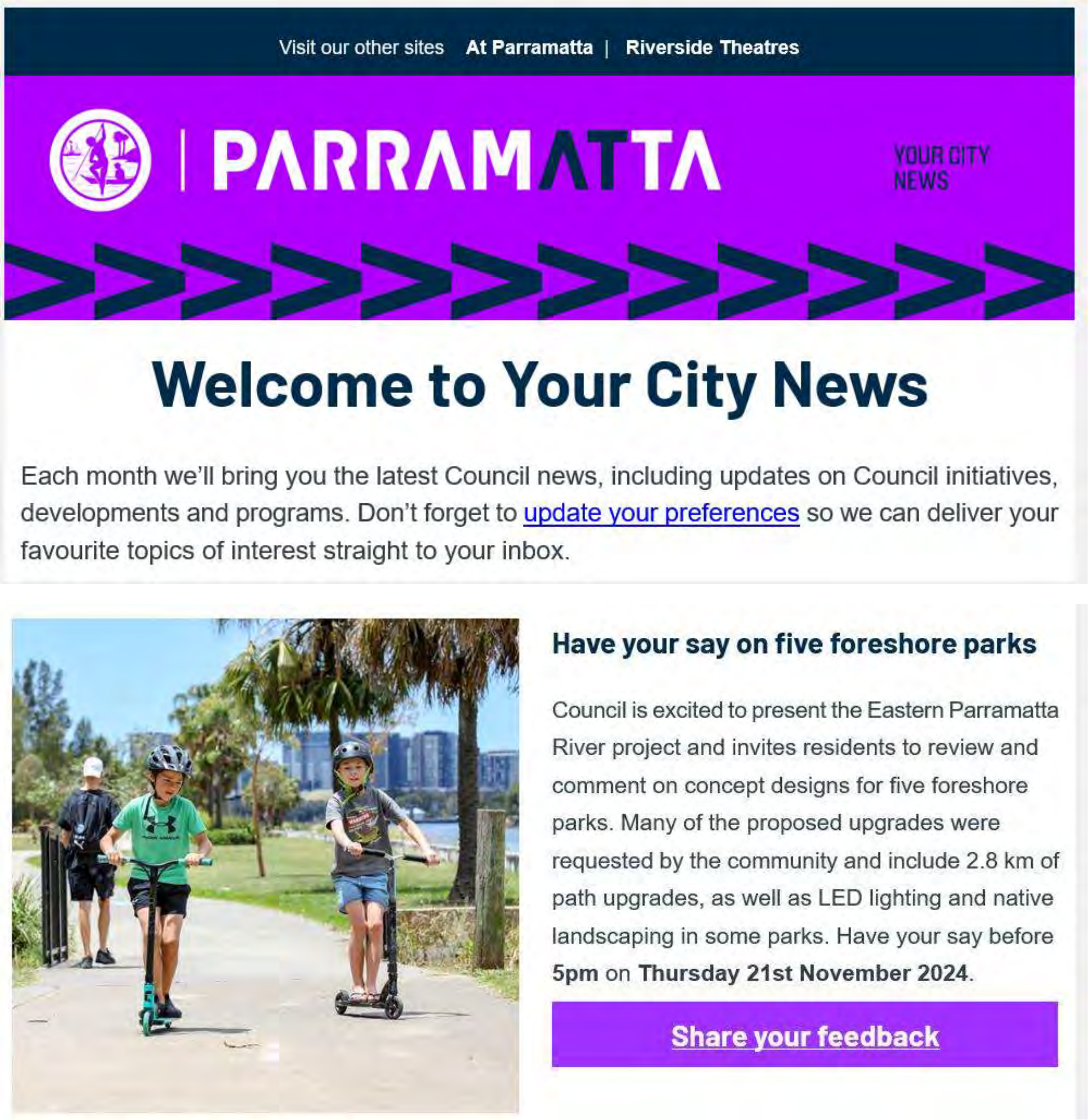
Have your say →

Participate Parramatta eNews 14 November - 18,000+ subscribers, 119 clicks.

City of Parramatta Your City News

The **Your City News** is distributed each month via email to subscribers.

The **November 2024** edition was received by **31,902 people** and **had a 38% open rate** with **141 people, (5%) of all clicks, leading to** the ***Eastern Parramatta River*** story.



Welcome to Your City News

Each month we'll bring you the latest Council news, including updates on Council initiatives, developments and programs. Don't forget to update your preferences so we can deliver your favourite topics of interest straight to your inbox.

Have your say on five foreshore parks

Council is excited to present the Eastern Parramatta River project and invites residents to review and comment on concept designs for five foreshore parks. Many of the proposed upgrades were requested by the community and include 2.8 km of path upgrades, as well as LED lighting and native landscaping in some parks. Have your say before **5pm** on **Thursday 21st November 2024**.

Your City News November – 31,902 subscribers, the Eastern Parramatta River story attracted 141 clicks – 5% of total clicks.

Council's corporate website

During the live period from **21 October to 21 November 2024**, there were **56,098 visits to the City of Parramatta homepage**, with a dwell time of **40seconds.**

With a web slider on the home page, inclusion on the River Transformation page (Vision) as well as Eastern Parramatta River project pages, a on exhibition page, mention on the Community Engagement page, and a media release, there were a number of avenues for people to find out about the Eastern Parramatta River project.

There were more around **14,800 views/visits** to various pages promoting the ***Eastern Parramatta River*** project (including the carousel slider).

Traffic to the pages largely came via organic searches, direct links to the pages e.g. QR code and social media.

Home page carousel slider

Eastern Parramatta River – have your say on five foreshore parklands

The Eastern Parramatta River project brings together a program of pedestrian and cyclist amenity and safety improvements along the Parramatta River foreshore paths east of the CBD.

Submissions close 5pm on Thursday 21 November 2024

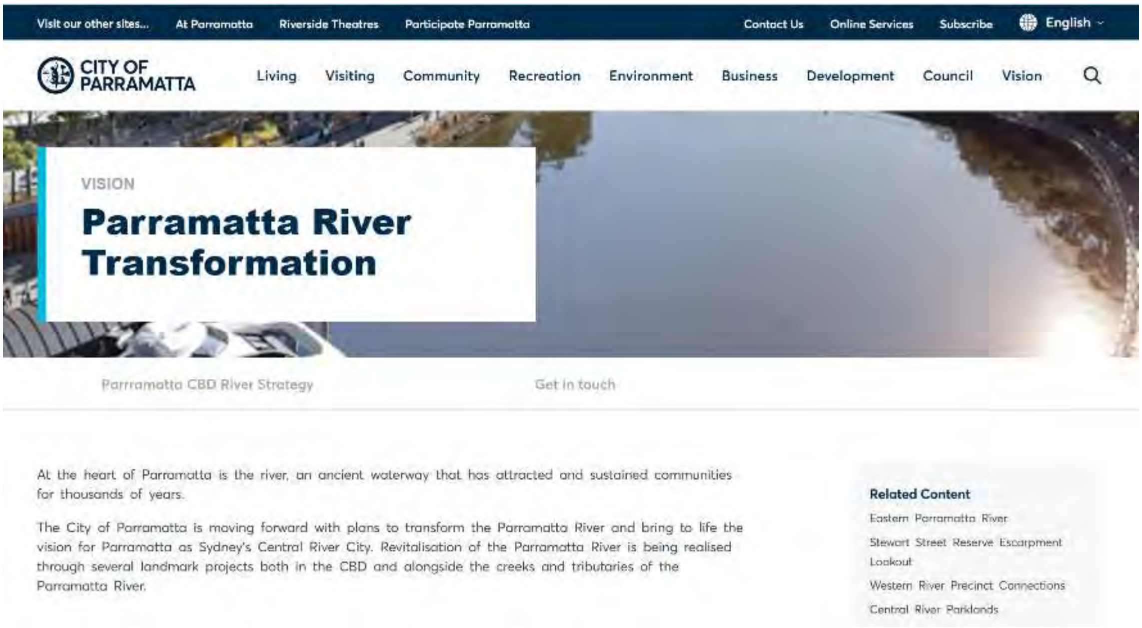
City of Parramatta homepage carousel slider attracted 14 clicks.

The homepage **carousel slider** is highly-visible prime real estate on the City of Parramatta website. The carousel usually cycles through four (4) high-profile initiatives/events.

The ***Eastern Parramatta River*** slider was live from **Tuesday 22 October to Monday 11 November 2024** and attracted **14 clicks** through to the project page.

City of Parramatta website - Eastern Parramatta River project pages

River Transformation page



VISION

Parramatta River Transformation

Parrramatta CBD River Strategy

Get in touch

At the heart of Parramatta is the river, an ancient waterway that has attracted and sustained communities for thousands of years.

The City of Parramatta is moving forward with plans to transform the Parramatta River and bring to life the vision for Parramatta as Sydney's Central River City. Revitalisation of the Parramatta River is being realised through several landmark projects both in the CBD and alongside the creeks and tributaries of the Parramatta River.

Related Content

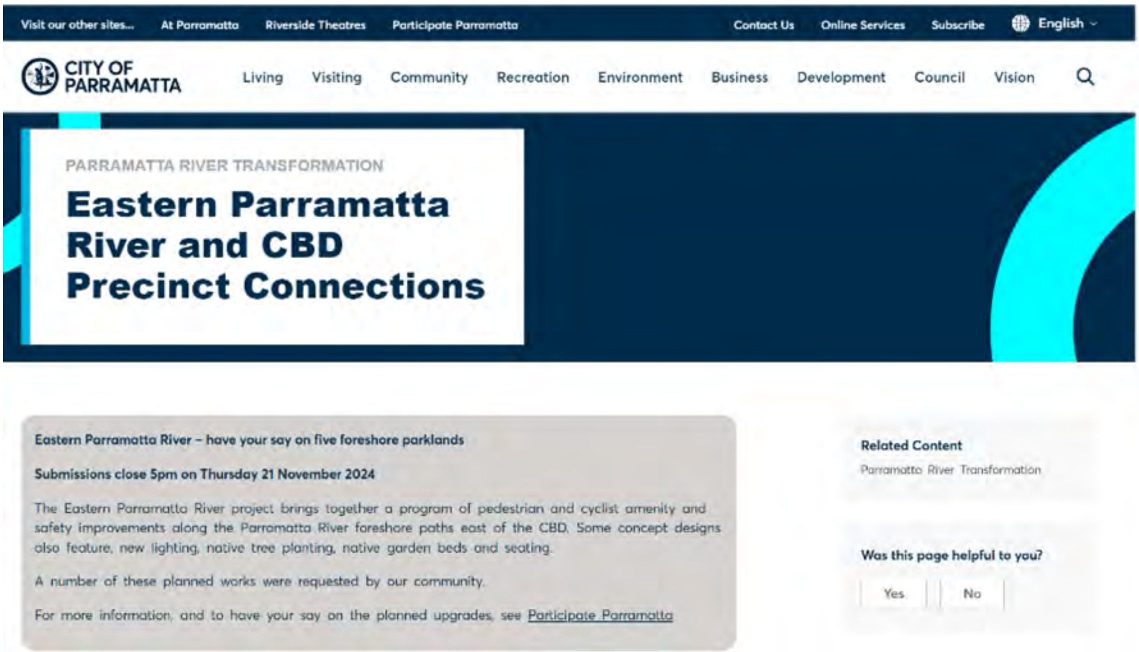
- Eastern Parramatta River
- Stewart Street Reserve Escarpment Lookout
- Western River Precinct Connections
- Central River Parklands

During the public exhibition period, the Parramatta River Transformation page attracted **240 views.**

https://www.cityofparramatta.nsw.gov.au/vision/parramatta-river-transformation

Users spent an average of **1m7sec** on the page finding the project they were interested in, reading a short paragraph describing the project, and clicking through to the project pages including Parramatta River CBD Connections and Eastern Parramatta River project page.

Eastern Parramatta River and CBD Connections page



PARRAMATTA RIVER TRANSFORMATION

Eastern Parramatta River and CBD Precinct Connections

Eastern Parramatta River – have your say on five foreshore parklands

Submissions close 5pm on Thursday 21 November 2024

The Eastern Parramatta River project brings together a program of pedestrian and cyclist amenity and safety improvements along the Parramatta River foreshore paths east of the CBD. Some concept designs also feature, new lighting, native tree planting, native garden beds and seating.

A number of these planned works were requested by our community.

For more information, and to have your say on the planned upgrades, see Participate Parramatta

Related Content

Parramatta River Transformation

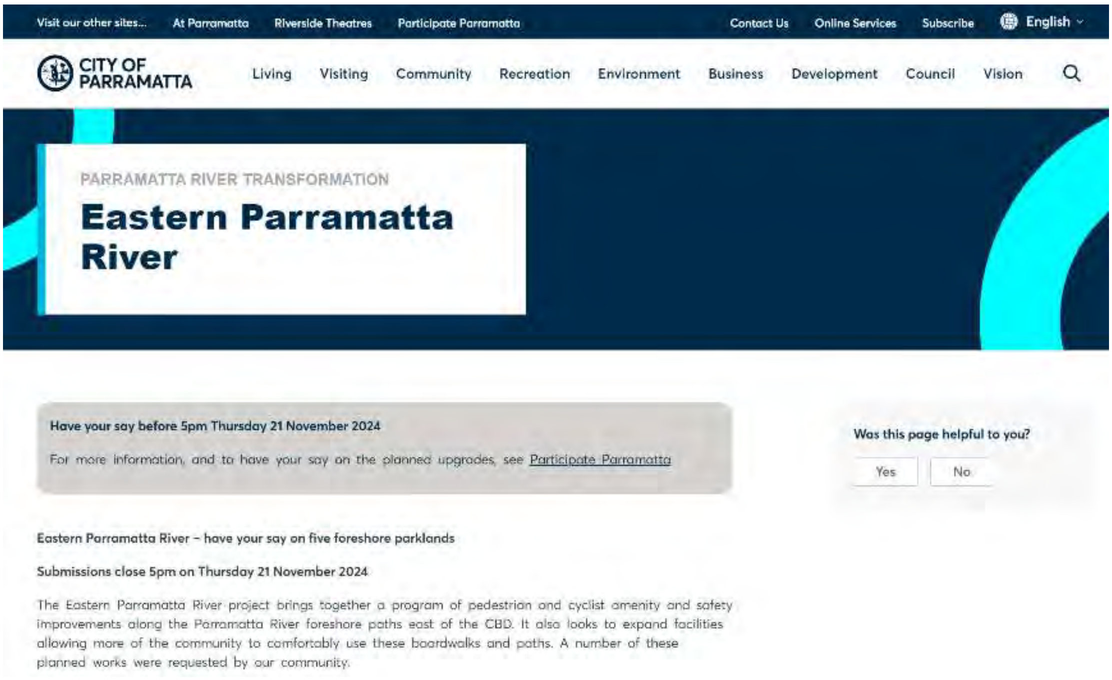
Was this page helpful to you?

The Eastern Parramatta River and CBD Precinct Connections page attracted **116 views** with a **dwell time of 28 seconds.**

https://www.cityofparramatta.nsw.gov.au/vision/parramatta-river-transformation/eastern-parramatta-river-and-cbd-precinct-connections

The page also carried a splash box highlighting the opportunity to have a say on the project. A live link took visitors to the ***Participate Parramatta*** project page.

The Eastern Parramatta River project page



Eastern Parramatta River

Have your say before 5pm Thursday 21 November 2024

For more information, and to have your say on the planned upgrades, see Participate Parramatta

Eastern Parramatta River – have your say on five foreshore parklands

Submissions close 5pm on Thursday 21 November 2024

The Eastern Parramatta River project brings together a program of pedestrian and cyclist amenity and safety improvements along the Parramatta River foreshore paths east of the CBD. It also looks to expand facilities allowing more of the community to comfortably use these boardwalks and paths. A number of these planned works were requested by our community.

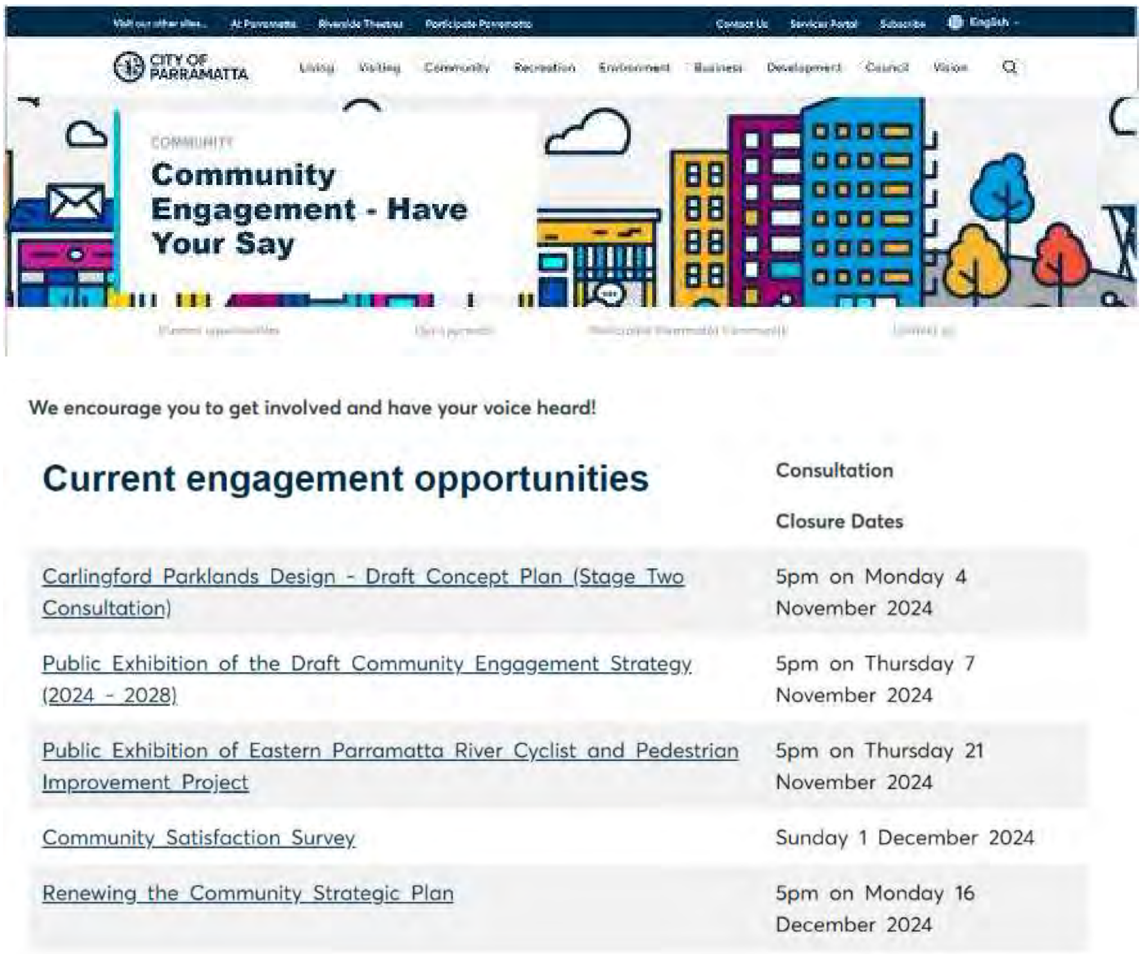
During the live consultation period, the ***Eastern Parramatta River*** project page attracted **83 views.**

https://www.cityofparramatta.nsw.gov.au/vision/parramatta-river-transformation/eastern-parramatta-river

The dwell time on this page was **more than 30 seconds (0:32s**) with clicks to the ***Participate Parramatta*** project page.

The page also carried a splash box highlighting the opportunity to have a say on the project. A live link took visitors to the ***Participate Parramatta*** project page.

Community Engagement page



COMMUNITY

Community Engagement - Have Your Say

We encourage you to get involved and have your voice heard!

Current engagement opportunities	**Consultation** **Closure Dates**
Carlingford Parklands Design - Draft Concept Plan (Stage Two Consultation)	5pm on Monday 4 November 2024
Public Exhibition of the Draft Community Engagement Strategy (2024 - 2028)	5pm on Thursday 7 November 2024
Public Exhibition of Eastern Parramatta River Cyclist and Pedestrian Improvement Project	5pm on Thursday 21 November 2024
Community Satisfaction Survey	Sunday 1 December 2024
Renewing the Community Strategic Plan	5pm on Monday 16 December 2024

The ***Eastern Parramatta River* project** was also included on the **'Community Engagement – Have your say'** page on Council's website.

Providing a short description of each project, this page directs people to current opportunities to have a say on Participate Parramatta.

https://www.cityofparramatta.nsw.gov.au/community/community-engagement-have-your-say

There were **342 page views** during the live period with a dwell time of **28 seconds.**

Nine (9) people clicked through to the ***Eastern Parramatta River*** project page on ***Participate Parramatta.***

On exhibition page

ON EXHIBITION / 21 OCTOBER 2024

Eastern Parramatta River

Have your say before 5pm Thursday 21 November 2024

For more information, and to have your say on the planned upgrades, see Participate Parramatta

Eastern Parramatta River – have your say on five foreshore parklands

Submissions close 5pm on Thursday 21 November 2024

The Eastern Parramatta River project brings together a program of pedestrian and cyclist amenity and safety improvements along the Parramatta River foreshore paths east of the CBD. It also looks to expand facilities allowing more of the community to comfortably use these boardwalks and paths. A number of these planned works were requested by our community.

Eastern Parramatta River also featured on the **On Exhibition page** of Council's website attracted **44 views** with an average **dwell time of 11 seconds.**

www.cityofparramatta.nsw.gov.au/about-parramatta/news/on-exhibition/eastern-parramatta-river

News page – media releases, media coverage and advertising

Media release and media coverage

The Eastern Parramatta River **media release** was loaded to Council's website and distributed to local media outlets.

www.cityofparramatta.nsw.gov.au/about-parramatta/news/media-release/help-shape-the-future-of-parramattas-river-foreshore

The release "Help shape the future of Parramatta's foreshore" attracted **43 views on Council's News page** with an **average dwell time of 17s**.

As a result of the media release, editorial coverage appeared in the following publications:

- Mirage News
- Inside Local Government
- National Tribune.

Advertising

Advertising promoting the project was taken out in ***Parramatta News***, with a quarter page ad and inclusion in the Lord Mayor's Column appearing in the digital and online editions for 29 October 2024.

For media release, editorial, and advertising, please see Appendix A on page 42.

Customer service and officer responses

Prior to the public exhibition period, the City's Customer Service Centre was provided with information on the ***Eastern Parramatta River*** project allowing them to answer questions and/or direct calls to the project team.

Customer Service report taking **zero calls** related to the project.

The ***Participate Parramatta*** inbox received **three emails** about the project including one submission.

Signage

A1 signs were installed in high traffic locations in each of the five (5) parks featuring within the ***Eastern Parramatta River project***.

Signs were installed on Friday 18 October and remained throughout the consultation period, removed on Friday 22 November 2024.

While it is difficult to estimate foot traffic and visits to the parks, anecdotally the parks are usually very busy, particularly on weekends, attracting recreational cyclists and pedestrians.

The QR code was **scanned by community members 397 times.**

HAVE YOUR SAY ON PLANNED UPGRADES TO THIS PARK

Submissions close 5pm Thursday 21 November 2024

The Eastern Parramatta River project brings together a program of pedestrian and cyclist amenity and safety improvements often requested by our community.

Across five key locations, including this park, 2.8km of path upgrades will provide residents and visitors with more opportunities to enjoy the natural beauty of the Parramatta River.

Lighting and landscaping improvements also feature in some of the proposed designs.

Have your say

To find out more, scan the QR code on the right, or visit Participate Parramatta:
participate.cityofparramatta.nsw.gov.au/eastern-parramatta-river

Have your say before 5pm Thursday 21 November 2024.

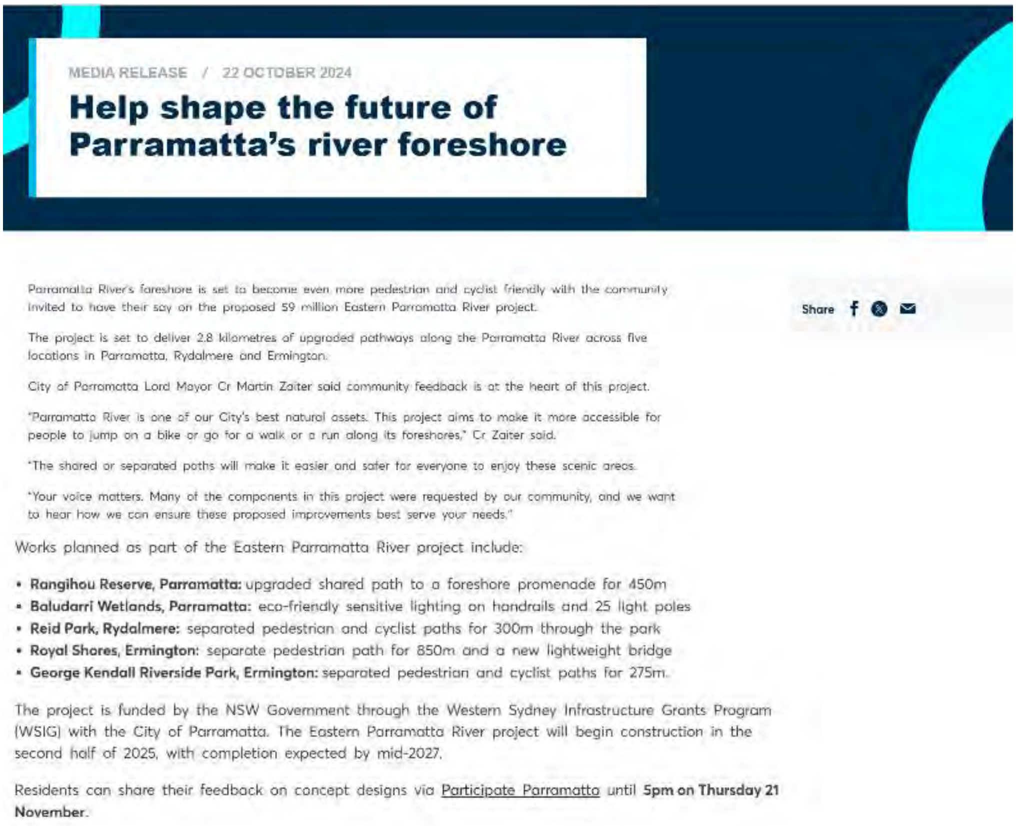
CITY OF PARRAMATTA

Contact us
Email: participate@cityofparramatta.nsw.gov.au
Phone: 1300 617 058

A1 signage was installed in various locations in the five (5) parks and removed following the closure of the community consultation period. All corflutes are recycled.

5. Appendix A

Media release, media articles and advertising



MEDIA RELEASE / 22 OCTOBER 2024

Help shape the future of Parramatta's river foreshore

Parramatta River's foreshore is set to become even more pedestrian and cyclist friendly with the community invited to have their say on the proposed 59 million Eastern Parramatta River project.

The project is set to deliver 2.8 kilometres of upgraded pathways along the Parramatta River across five locations in Parramatta, Rydalmere and Ermington.

City of Parramatta Lord Mayor Cr Martin Zaiter said community feedback is at the heart of this project.

"Parramatta River is one of our City's best natural assets. This project aims to make it more accessible for people to jump on a bike or go for a walk or a run along its foreshores," Cr Zaiter said.

"The shared or separated paths will make it easier and safer for everyone to enjoy these scenic areas.

"Your voice matters. Many of the components in this project were requested by our community, and we want to hear how we can ensure these proposed improvements best serve your needs."

Works planned as part of the Eastern Parramatta River project include:

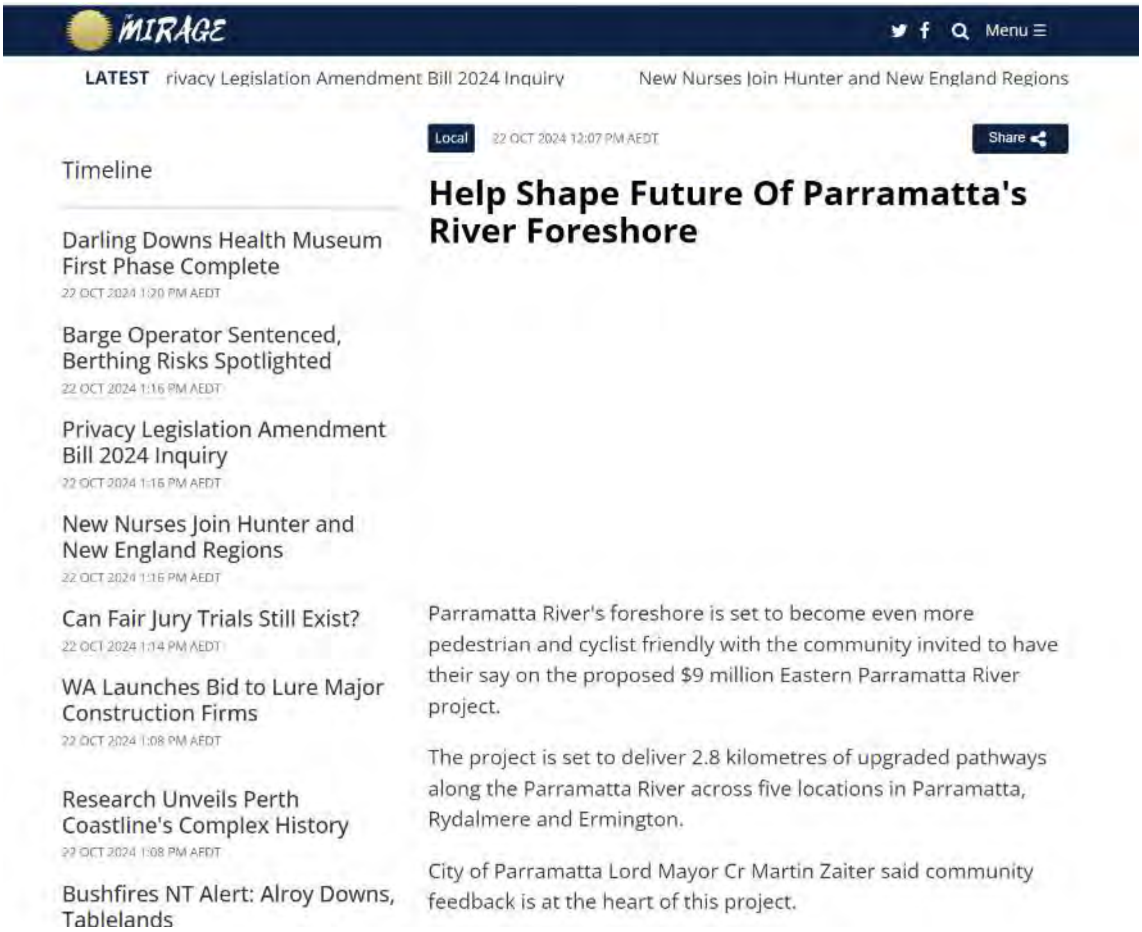
- **Rangihou Reserve, Parramatta:** upgraded shared path to a foreshore promenade for 450m
- **Baludarri Wetlands, Parramatta:** eco-friendly sensitive lighting on handrails and 25 light poles
- **Reid Park, Rydalmere:** separated pedestrian and cyclist paths for 300m through the park
- **Royal Shores, Ermington:** separate pedestrian path for 850m and a new lightweight bridge
- **George Kendall Riverside Park, Ermington:** separated pedestrian and cyclist paths for 275m.

The project is funded by the NSW Government through the Western Sydney Infrastructure Grants Program (WSIG) with the City of Parramatta. The Eastern Parramatta River project will begin construction in the second half of 2025, with completion expected by mid-2027.

Residents can share their feedback on concept designs via Participate Parramatta until **5pm on Thursday 21 November**.

Media articles

- Mirage
- Inside Local Government
- National Tribune



LATEST rivacy Legislation Amendment Bill 2024 Inquiry New Nurses Join Hunter and New England Regions

Local 22 OCT 2024 12:07 PM AEDT

Help Shape Future Of Parramatta's River Foreshore

Parramatta River's foreshore is set to become even more pedestrian and cyclist friendly with the community invited to have their say on the proposed $9 million Eastern Parramatta River project.

The project is set to deliver 2.8 kilometres of upgraded pathways along the Parramatta River across five locations in Parramatta, Rydalmere and Ermington.

City of Parramatta Lord Mayor Cr Martin Zaiter said community feedback is at the heart of this project.

Timeline

Darling Downs Health Museum First Phase Complete
22 OCT 2024 1:20 PM AEDT

Barge Operator Sentenced, Berthing Risks Spotlighted
22 OCT 2024 1:16 PM AEDT

Privacy Legislation Amendment Bill 2024 Inquiry
22 OCT 2024 1:16 PM AEDT

New Nurses Join Hunter and New England Regions
22 OCT 2024 1:16 PM AEDT

Can Fair Jury Trials Still Exist?
22 OCT 2024 1:14 PM AEDT

WA Launches Bid to Lure Major Construction Firms
22 OCT 2024 1:08 PM AEDT

Research Unveils Perth Coastline's Complex History
22 OCT 2024 1:08 PM AEDT

Bushfires NT Alert: Alroy Downs, Tablelands

$9m Parramatta River foreshore plan unveiled

22/10/2024

21 dogs euthanised after parvovirus outbreak

The project is set to deliver 2.8 kilometres of upgraded pathways along the Parramatta River across five locations in Parramatta, Rydalmere and Ermington.

City of Parramatta Lord Mayor, Martin Zaiter said community feedback was at the heart of the project.

Parramatta River's foreshore is set to become even more pedestrian and cyclist friendly with the community invited to have their say on the proposed $9 million Eastern Parramatta River project.

“Parramatta River is one of our City’s best natural assets. This project aims to make it more accessible for people to jump on a bike or go for a walk or a run along its foreshores,” Lord Mayor Zaiter said.

“The shared or separated paths will make it easier and safer for everyone to enjoy these scenic areas.

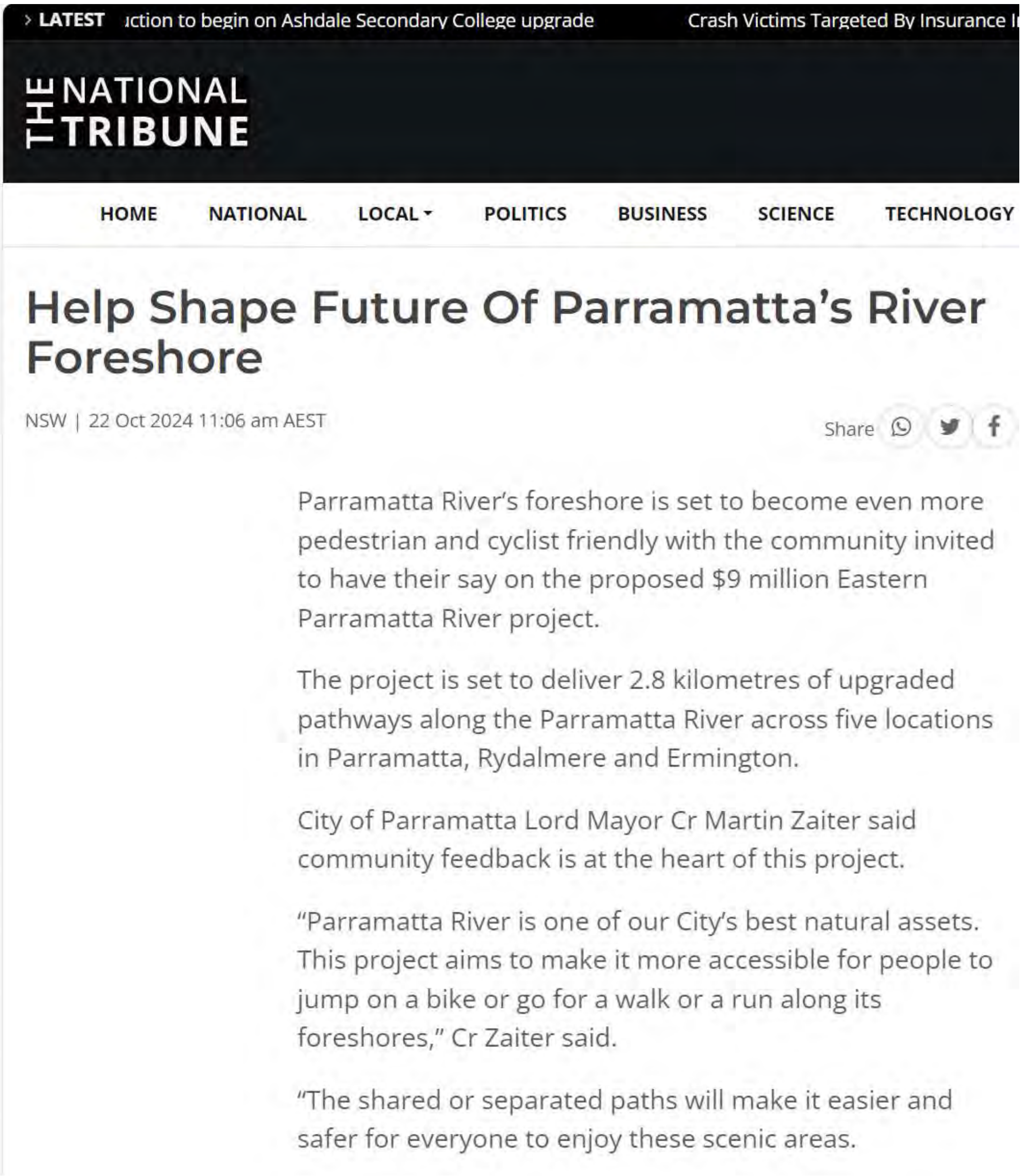
“Your voice matters. Many of the components in this project were requested by our community, and we want to hear how we can ensure these proposed improvements best serve your needs.”

Works planned as part of the Eastern Parramatta River project include:

- **Rangihou Reserve, Parramatta:** upgraded shared path to a foreshore promenade for 450m;
- **Baludarri Wetlands, Parramatta:** eco-friendly sensitive lighting on handrails and 25 light poles;
- **Reid Park, Rydalmere:** separated pedestrian and cyclist paths for 300m through the park;
- **Royal Shores, Ermington:** separate pedestrian path for 850m and a new lightweight bridge;
- **George Kendall Riverside Park, Ermington:** separated pedestrian and cyclist paths for 275m.

The project is funded by the NSW Government through the Western Sydney Infrastructure Grants Program (WSIG) with the City of Parramatta. The Eastern Parramatta River project will begin construction in the second half of 2025, with completion expected by mid-2027.

Residents can share their feedback on concept designs via Participate Parramatta until 5pm on Thursday 21 November.



ction to begin on Ashdale Secondary College upgrade   Crash Victims Targeted By Insurance

THE NATIONAL TRIBUNE

Help Shape Future Of Parramatta's River Foreshore

NSW | 22 Oct 2024 11:06 am AEST

Parramatta River's foreshore is set to become even more pedestrian and cyclist friendly with the community invited to have their say on the proposed $9 million Eastern Parramatta River project.

The project is set to deliver 2.8 kilometres of upgraded pathways along the Parramatta River across five locations in Parramatta, Rydalmere and Ermington.

City of Parramatta Lord Mayor Cr Martin Zaiter said community feedback is at the heart of this project.

"Parramatta River is one of our City's best natural assets. This project aims to make it more accessible for people to jump on a bike or go for a walk or a run along its foreshores," Cr Zaiter said.

"The shared or separated paths will make it easier and safer for everyone to enjoy these scenic areas.

"Your voice matters. Many of the components in this project were requested by our community, and we want to hear how we can ensure these proposed improvements best serve your needs."

Works planned as part of the Eastern Parramatta River project include:

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- Reid Park, Rydalmere: separated pedestrian and cyclist paths for 300m through the park
- Royal Shores, Ermington: separate pedestrian path for 850m and a new lightweight bridge
- George Kendall Riverside Park, Ermington: separated pedestrian and cyclist paths for 275m.

The project is funded by the NSW Government through the Western Sydney Infrastructure Grants Program (WSIG) with the City of Parramatta. The Eastern Parramatta River project will begin construction in the second half of 2025, with completion expected by mid-2027.

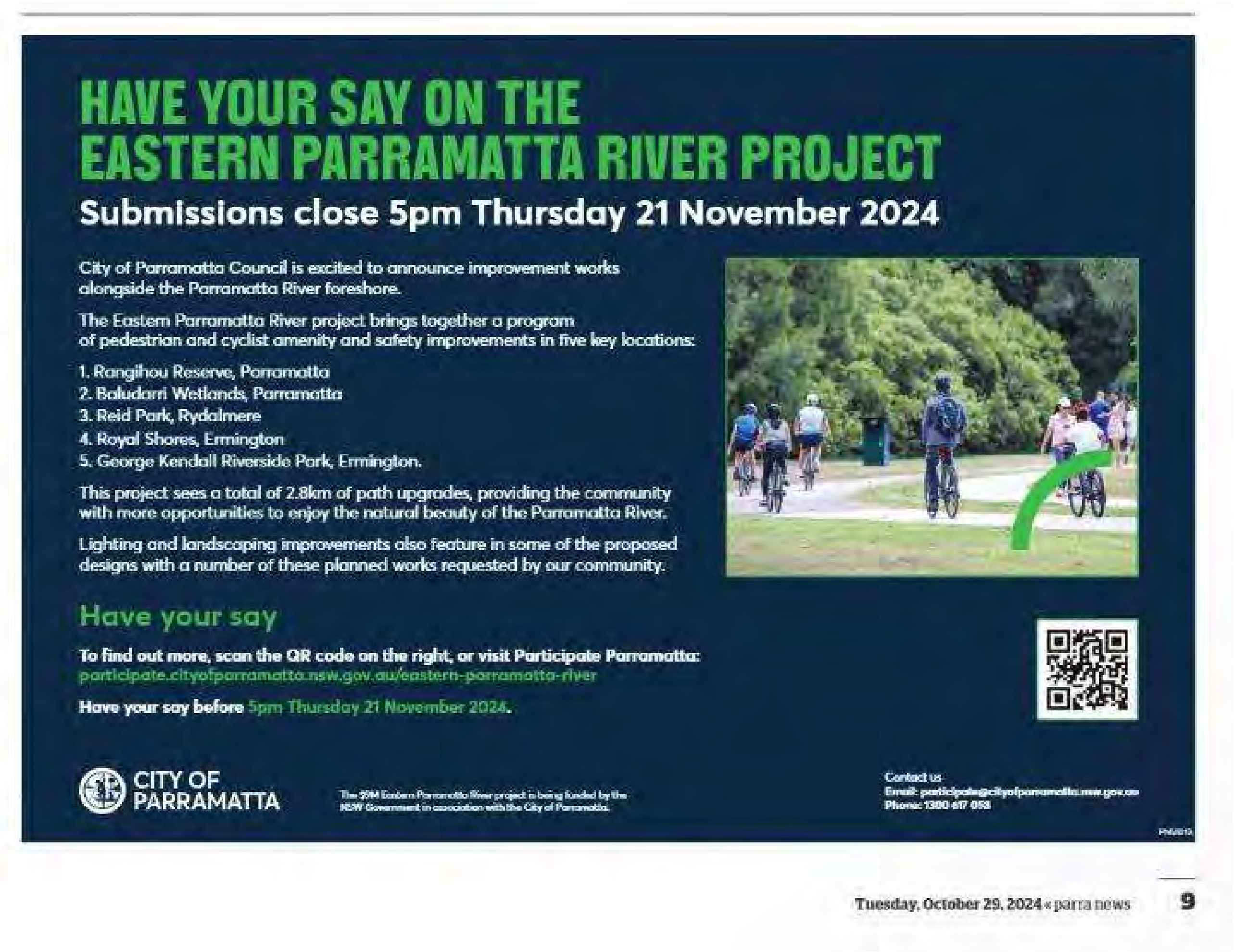
Residents can share their feedback on concept designs via *Participate Parramatta* until 5pm on Thursday 21 November.

Advertising – Parramatta News

With distribution across the Parramatta LGA and beyond, *Parramatta News* is a community-focused print and digital publication with strong readership.

In the 29 October 2024 editions, the *Eastern Parramatta River* project featured in a quarter page advertisement and within the Lord Mayor's Column.

Parramatta News also promotes its weekly papers on its **Facebook** page where people can read a digital version of the print edition. Parramatta News has 6.2K Facebook followers.



HAVE YOUR SAY ON THE EASTERN PARRAMATTA RIVER PROJECT

Submissions close 5pm Thursday 21 November 2024

City of Parramatta Council is excited to announce improvement works alongside the Parramatta River foreshore.

The Eastern Parramatta River project brings together a program of pedestrian and cyclist amenity and safety improvements in five key locations:

1. Rangihou Reserve, Parramatta
2. Baludarri Wetlands, Parramatta
3. Reid Park, Rydalmere
4. Royal Shores, Ermington
5. George Kendall Riverside Park, Ermington.

This project sees a total of 2.8km of path upgrades, providing the community with more opportunities to enjoy the natural beauty of the Parramatta River.

Lighting and landscaping improvements also feature in some of the proposed designs with a number of these planned works requested by our community.

Have your say

To find out more, scan the QR code on the right, or visit Participate Parramatta:
participate.cityofparramatta.nsw.gov.au/eastern-parramatta-river

Have your say before 5pm Thursday 21 November 2024.

CITY OF PARRAMATTA

The $9M Eastern Parramatta River project is being funded by the NSW Government in association with the City of Parramatta.

Contact us
Email: participate@cityofparramatta.nsw.gov.au
Phone: 1300 617 058

Tuesday, October 29, 2024 « parra news 9

Quarter page ad, Parramatta News 29 October 2024.

PARRAMATTA

29 OCTOBER 2024

YOUR CITY NEWS

LAKE PARRAMATTA SWIMMING AREA OPENS

Children enjoy their first swim at Lake Parramatta.

It's swim season and we've got the perfect place to cool off here in City of Parramatta. Last Friday I re-opened Lake Parramatta's swimming area, a true paradise where the bush meets the water only minutes from our CBD.

We have turned this swimming spot into a gently sloping sandy beach with more shade, a new lifeguard platform and more trees and native plants.

Safety is our priority with new signage, an onsite emergency response beacon, and lifeguards now on patrol from 10am to 7pm on weekends. From Saturday 30 November to Thursday 30 January 2025, lifeguards will be on duty seven days a week from 10am to 7pm.

You'll find more details here: **cityofparramatta.nsw.gov.au/recreation/swimming-at-lake-parramatta**

I know I'll check it out with my family this summer so I hope to see you there, making a splash!

Cr Martin Zaiter
Lord Mayor
City of Parramatta

DIVE INTO PARRAMATTA'S HISTORY ON FOUNDATION DAY

A free fun-filled day exploring Parramatta's fascinating past awaits on Saturday 2 November! From horse cart rides, heritage tours to live music, a petting zoo and traditional trade demos, there's something for everyone on Foundation Day from 9am to 2pm at the Parramatta North cultural precinct.

Plus Making It Australia winner, George Buchanan will be hosting a hands-on hobby horse making competition and race for everyone to enjoy.

Scan the QR code for more information.

HAVE YOUR SAY IN PARRAMATTA'S RIVER FORESHORE MAKEOVER

We want your input Parramatta! The Eastern Parramatta River project is set to transform our river foreshore into a vibrant, pedestrian and cyclist-friendly haven.

With $9 million in upgrades planned across Parramatta, Rydalmere and Ermington, this is your chance to share your thoughts on the designs.

Scan the QR code by 5pm on Thursday 21 November or visit **participate.cityofparramatta.nsw.gov.au/eastern-parramatta-river**

REDUCE TEXTILE WASTE AT OUR CLOTHES SWAP

Join us at our Clothes Swap on Saturday 9 November from 10am to 1pm to revamp your wardrobe sustainably!

Bring five pre-loved and gentle used clothing and accessories of all sizes and genders and swap them for new-to-you treasures at Parramatta Library. You'll receive five tokens to trade for new finds and no cash is needed!

For T&C's and to register, scan the QR code.

City of Parramatta 126 Church Street, Parramatta NSW 2150
PO Box 32, Parramatta NSW 2124 | **P** 9806 5050 **E** council@cityofparramatta.nsw.gov.au
@cityofparramatta > @atparramatta @parracity > @atparramatta @cityofparramatta > @atparramatta

SCAN ME FOR COUNCIL MEETING DETAILS

Lord Mayor's Column, 29 October 2024.

6. Appendix B

Social media reporting, Facebook, Instagram and comments

Reporting on Eastern Parramatta River campaign – Facebook and Instagram

1 **City of Parramatta** INSTAGRAM /cityofparramatta | Thursday Nov 14, 2024 10:40

This project will provide our community with more opportunities to enjoy the natural beauty of the Parramatta River at five foreshore parks. Have you had your say on the Eastern Parramatta River project?

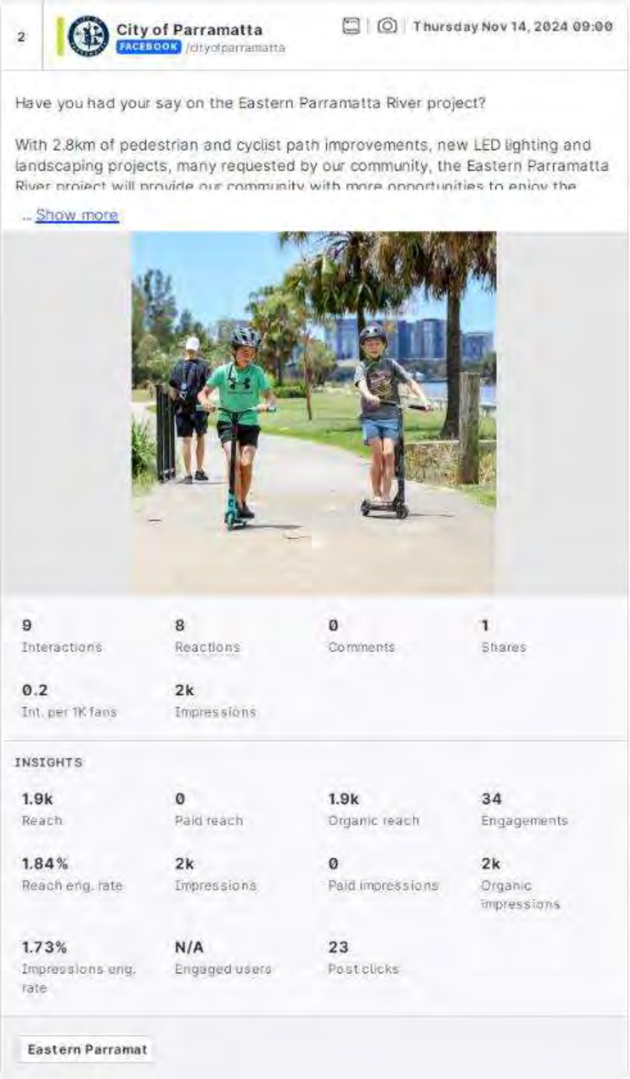
Have you had your say on the Eastern Parramatta River project?

This project will provide our community with more opportunities to enjoy the natural beauty of the Parramatta River at five foreshore parks.

INSIGHTS

1	220	703	14
Replies	Exits	Taps forward	Taps back
17.15%	1.1k	1.1k	0.09%
Completion rate	Reach	Impressions	Reach eng. rate
0.09%			
Impressions eng. rate			

Eastern Parramat



2 **City of Parramatta** FACEBOOK /cityofparramatta | Thursday Nov 14, 2024 09:00

Have you had your say on the Eastern Parramatta River project?

With 2.8km of pedestrian and cyclist path improvements, new LED lighting and landscaping projects, many requested by our community, the Eastern Parramatta River project will provide our community with more opportunities to enjoy the

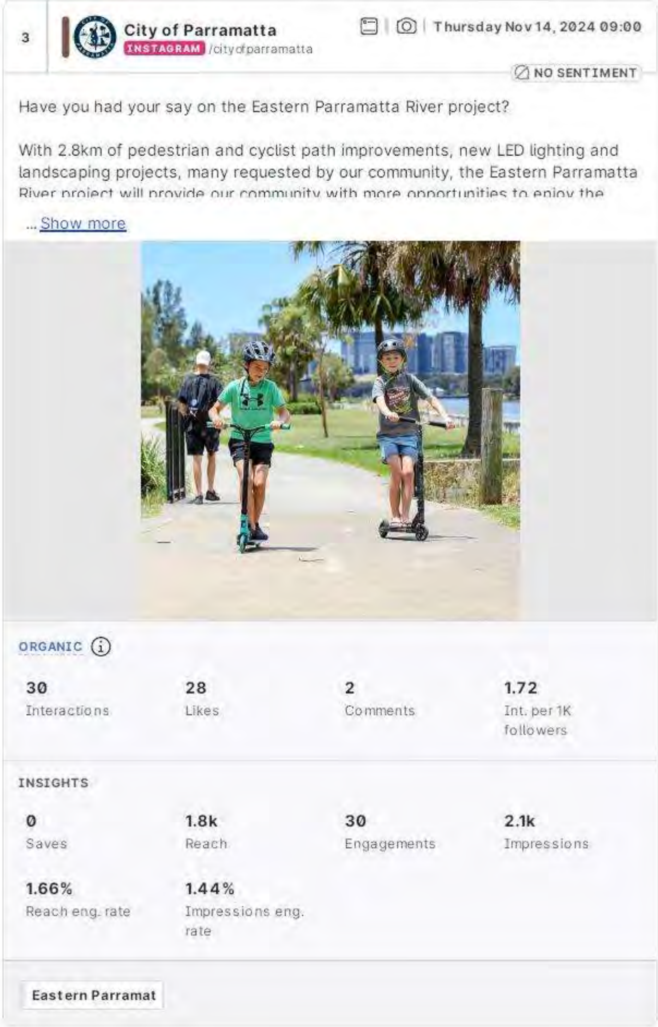
... Show more

9	8	0	1
Interactions	Reactions	Comments	Shares
0.2	2k		
Int. per 1K fans	Impressions		

INSIGHTS

1.9k	0	1.9k	34
Reach	Paid reach	Organic reach	Engagements
1.84%	2k	0	2k
Reach eng. rate	Impressions	Paid impressions	Organic impressions
1.73%	N/A	23	
Impressions eng. rate	Engaged users	Post clicks	

Eastern Parramat


3

City of Parramatta
INSTAGRAM /cityofparramatta
Thursday Nov 14, 2024 09:00
NO SENTIMENT

Have you had your say on the Eastern Parramatta River project?

With 2.8km of pedestrian and cyclist path improvements, new LED lighting and landscaping projects, many requested by our community, the Eastern Parramatta River project will provide our community with more opportunities to enjoy the

... Show more

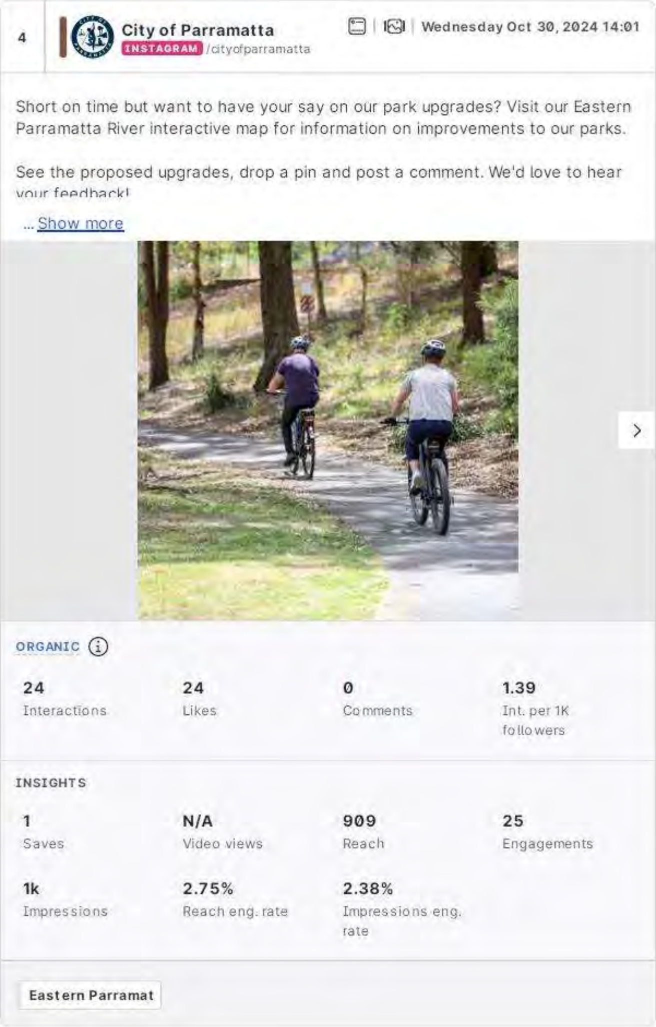
ORGANIC

30 Interactions
28 Likes
2 Comments
1.72 Int. per 1K followers

INSIGHTS

0 Saves
1.8k Reach
30 Engagements
2.1k Impressions
1.66% Reach eng. rate
1.44% Impressions eng. rate

Eastern Parramat


4

City of Parramatta
INSTAGRAM /cityofparramatta
Wednesday Oct 30, 2024 14:01

Short on time but want to have your say on our park upgrades? Visit our Eastern Parramatta River interactive map for information on improvements to our parks.

See the proposed upgrades, drop a pin and post a comment. We'd love to hear your feedback!

... Show more

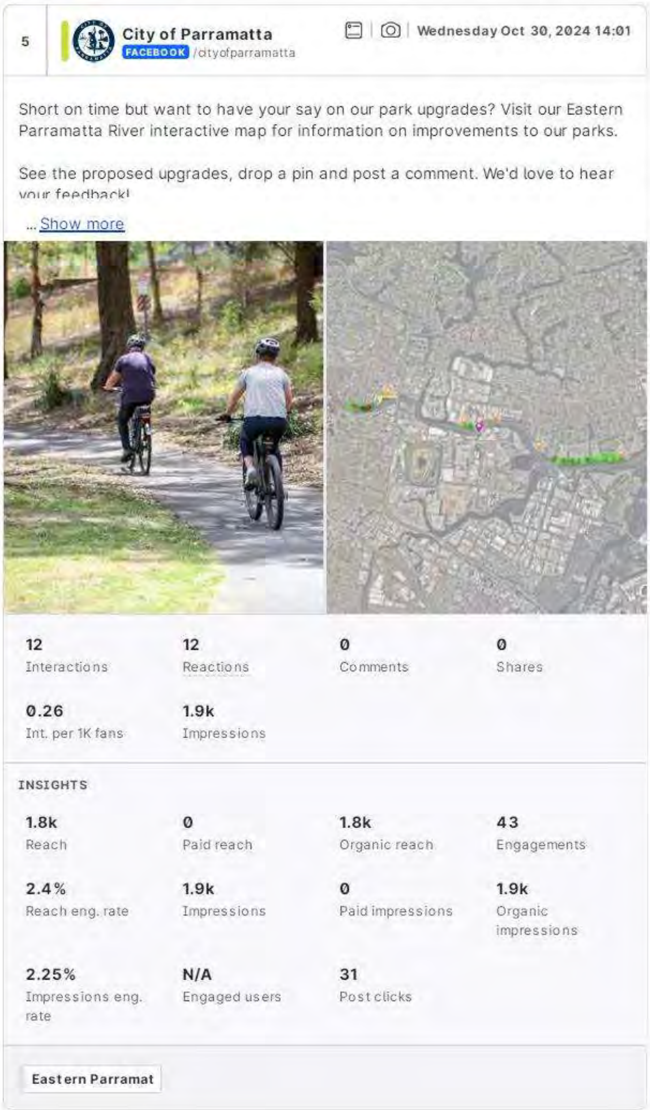
ORGANIC

24 Interactions
24 Likes
0 Comments
1.39 Int. per 1K followers

INSIGHTS

1 Saves
N/A Video views
909 Reach
25 Engagements
1k Impressions
2.75% Reach eng. rate
2.38% Impressions eng. rate

Eastern Parramat



5

City of Parramatta FACEBOOK /cityofparramatta

Wednesday Oct 30, 2024 14:01

Short on time but want to have your say on our park upgrades? Visit our Eastern Parramatta River interactive map for information on improvements to our parks.

See the proposed upgrades, drop a pin and post a comment. We'd love to hear your feedback!

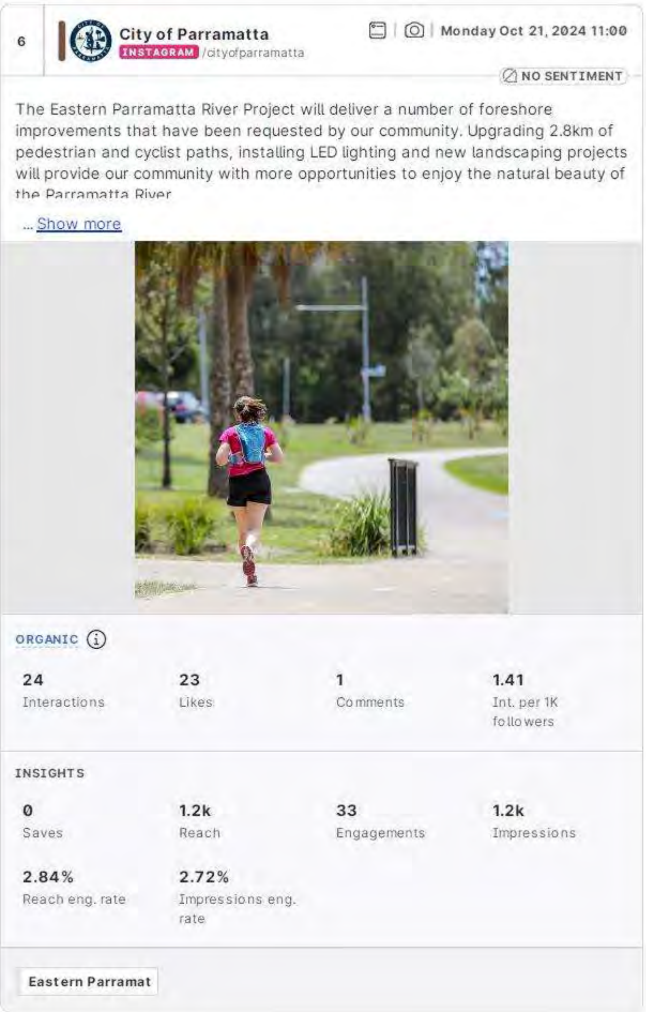
... Show more

12 Interactions	12 Reactions	0 Comments	0 Shares
0.26 Int. per 1K fans	1.9k Impressions		

INSIGHTS

1.8k Reach	0 Paid reach	1.8k Organic reach	43 Engagements
2.4% Reach eng. rate	1.9k Impressions	0 Paid impressions	1.9k Organic impressions
2.25% Impressions eng. rate	N/A Engaged users	31 Post clicks	

Eastern Parramat



6

City of Parramatta INSTAGRAM /cityofparramatta

Monday Oct 21, 2024 11:00

NO SENTIMENT

The Eastern Parramatta River Project will deliver a number of foreshore improvements that have been requested by our community. Upgrading 2.8km of pedestrian and cyclist paths, installing LED lighting and new landscaping projects will provide our community with more opportunities to enjoy the natural beauty of the Parramatta River.

... Show more

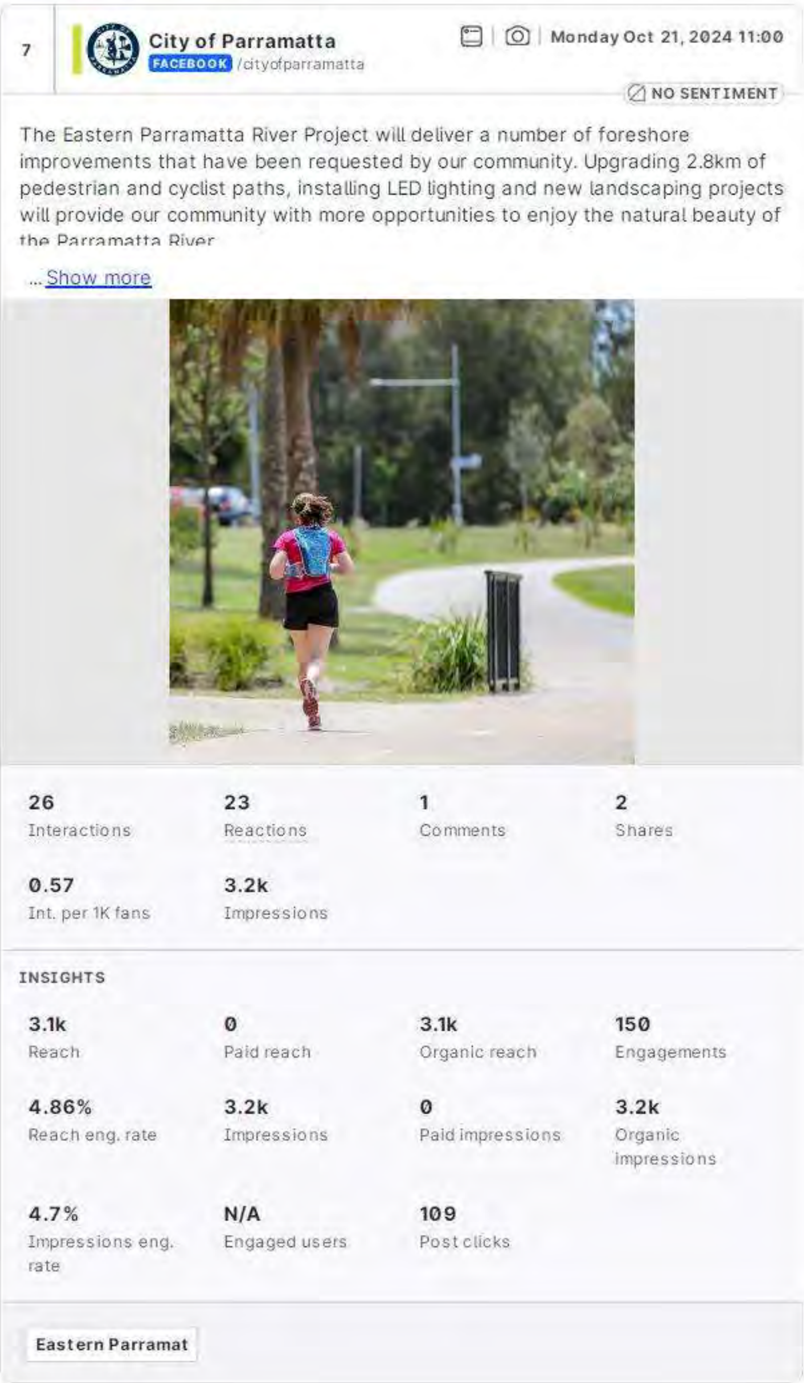
ORGANIC ⓘ

24 Interactions	23 Likes	1 Comments	1.41 Int. per 1K followers

INSIGHTS

0 Saves	1.2k Reach	33 Engagements	1.2k Impressions
2.84% Reach eng. rate	2.72% Impressions eng. rate		

Eastern Parramat



7

City of Parramatta
FACEBOOK /cityofparramatta

Monday Oct 21, 2024 11:00

NO SENTIMENT

The Eastern Parramatta River Project will deliver a number of foreshore improvements that have been requested by our community. Upgrading 2.8km of pedestrian and cyclist paths, installing LED lighting and new landscaping projects will provide our community with more opportunities to enjoy the natural beauty of the Parramatta River

... Show more

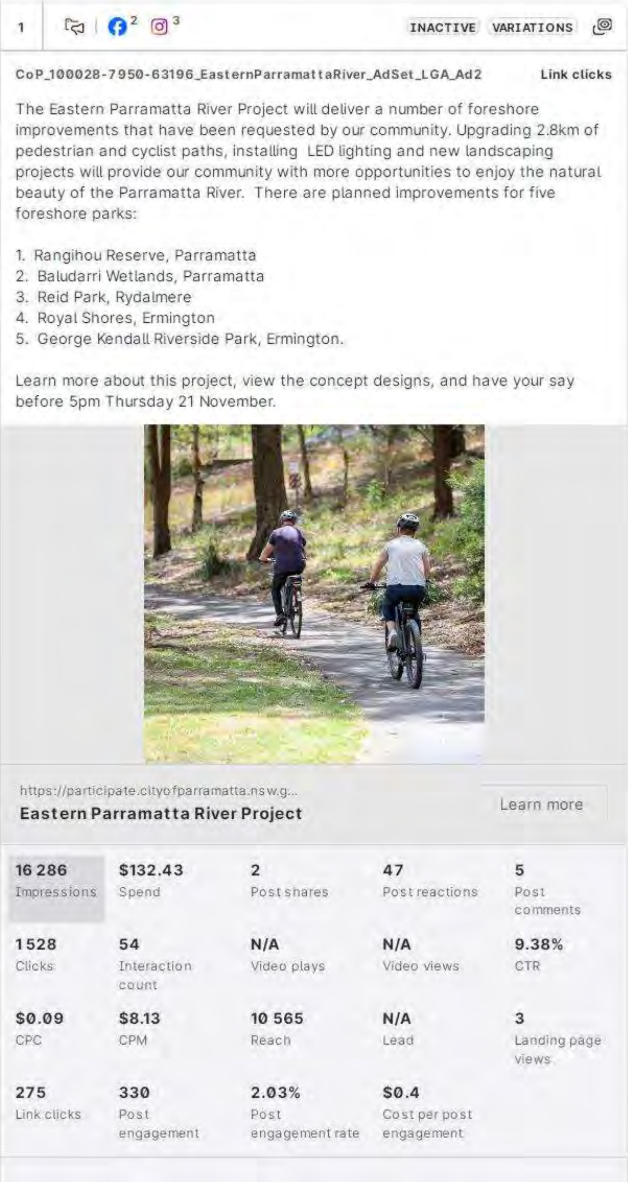
26 Interactions
23 Reactions
1 Comments
2 Shares
0.57 Int. per 1K fans
3.2k Impressions

INSIGHTS

3.1k Reach
0 Paid reach
3.1k Organic reach
150 Engagements
4.86% Reach eng. rate
3.2k Impressions
0 Paid impressions
3.2k Organic impressions
4.7% Impressions eng. rate
N/A Engaged users
109 Post clicks

Eastern Parramat

Reporting on Facebook and Instagram paid campaigns



CoP_100028-7950-63196_EasternParramattaRiver_AdSet_LGA_Ad2 **Link clicks**

The Eastern Parramatta River Project will deliver a number of foreshore improvements that have been requested by our community. Upgrading 2.8km of pedestrian and cyclist paths, installing LED lighting and new landscaping projects will provide our community with more opportunities to enjoy the natural beauty of the Parramatta River. There are planned improvements for five foreshore parks:

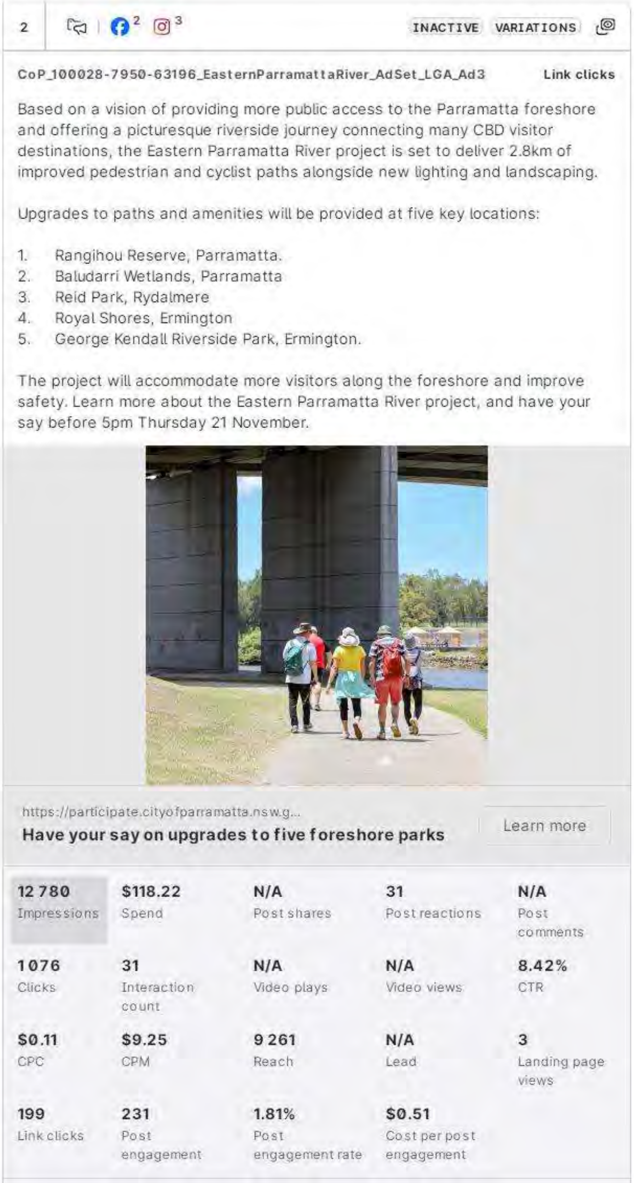
1. Rangihou Reserve, Parramatta
2. Baludarri Wetlands, Parramatta
3. Reid Park, Rydalmere
4. Royal Shores, Ermington
5. George Kendall Riverside Park, Ermington.

Learn more about this project, view the concept designs, and have your say before 5pm Thursday 21 November.

https://participate.cityofparramatta.nsw.g...

Eastern Parramatta River Project

16 286 Impressions	**$132.43** Spend	**2** Post shares	**47** Post reactions	**5** Post comments
1 528 Clicks	**54** Interaction count	**N/A** Video plays	**N/A** Video views	**9.38%** CTR
$0.09 CPC	**$8.13** CPM	**10 565** Reach	**N/A** Lead	**3** Landing page views
275 Link clicks	**330** Post engagement	**2.03%** Post engagement rate	**$0.4** Cost per post engagement	



CoP_100028-7950-63196_EasternParramattaRiver_AdSet_LGA_Ad3 **Link clicks**

Based on a vision of providing more public access to the Parramatta foreshore and offering a picturesque riverside journey connecting many CBD visitor destinations, the Eastern Parramatta River project is set to deliver 2.8km of improved pedestrian and cyclist paths alongside new lighting and landscaping.

Upgrades to paths and amenities will be provided at five key locations:

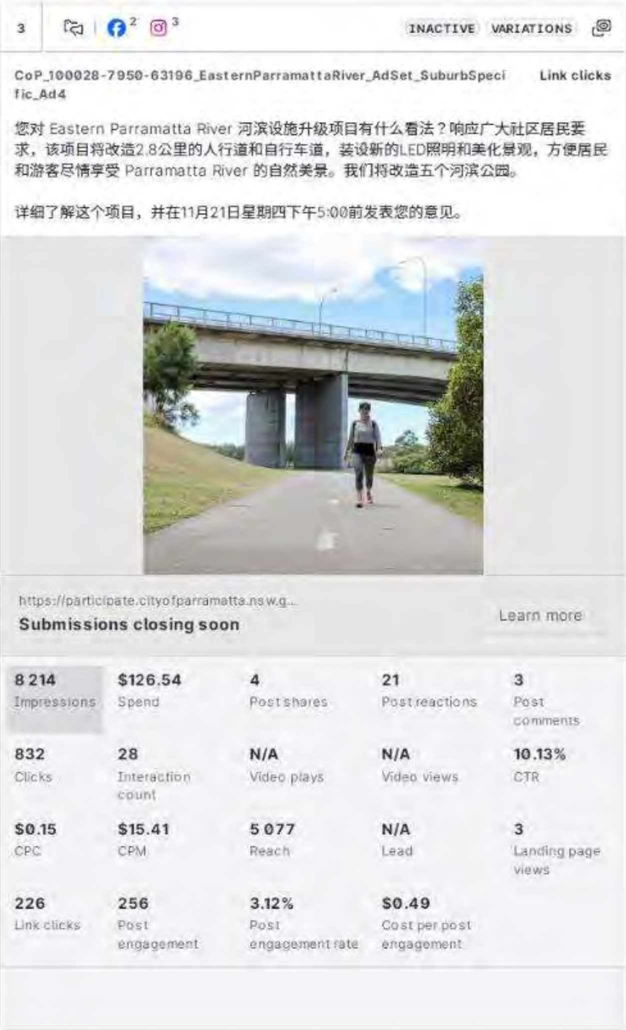
1. Rangihou Reserve, Parramatta.
2. Baludarri Wetlands, Parramatta
3. Reid Park, Rydalmere
4. Royal Shores, Ermington
5. George Kendall Riverside Park, Ermington.

The project will accommodate more visitors along the foreshore and improve safety. Learn more about the Eastern Parramatta River project, and have your say before 5pm Thursday 21 November.

https://participate.cityofparramatta.nsw.g...

Have your say on upgrades to five foreshore parks

12 780 Impressions	**$118.22** Spend	**N/A** Post shares	**31** Post reactions	**N/A** Post comments
1 076 Clicks	**31** Interaction count	**N/A** Video plays	**N/A** Video views	**8.42%** CTR
$0.11 CPC	**$9.25** CPM	**9 261** Reach	**N/A** Lead	**3** Landing page views
199 Link clicks	**231** Post engagement	**1.81%** Post engagement rate	**$0.51** Cost per post engagement	



3 INACTIVE VARIATIONS

CoP_100028-7950-63196_EasternParramattaRiver_AdSet_SuburbSpecific_Ad4 **Link clicks**

您对 Eastern Parramatta River 河滨设施升级项目有什么看法？响应广大社区居民要求，该项目将改造2.8公里的人行道和自行车道，装设新的LED照明和美化景观，方便居民和游客尽情享受 Parramatta River 的自然美景。我们将改造五个河滨公园。

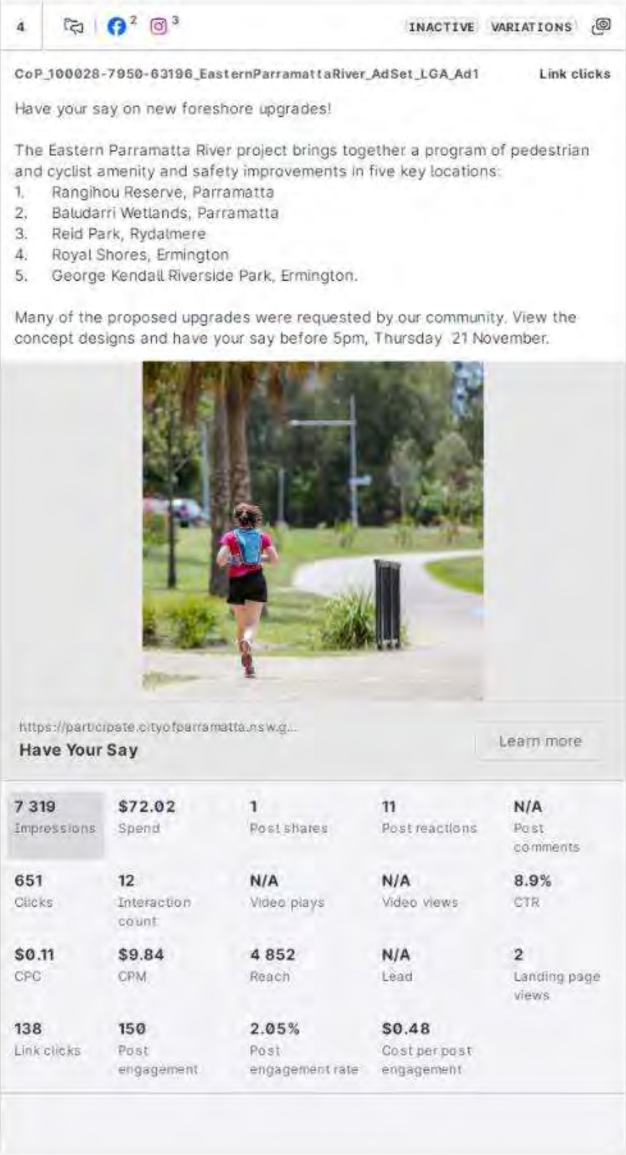
详细了解这个项目，并在11月21日星期四下午5:00前发表您的意见。

https://participate.cityofparramatta.nsw.g...

Submissions closing soon

Learn more

8 214 Impressions	**$126.54** Spend	**4** Post shares	**21** Post reactions	**3** Post comments
832 Clicks	**28** Interaction count	**N/A** Video plays	**N/A** Video views	**10.13%** CTR
$0.15 CPC	**$15.41** CPM	**5 077** Reach	**N/A** Lead	**3** Landing page views
226 Link clicks	**256** Post engagement	**3.12%** Post engagement rate	**$0.49** Cost per post engagement	



4 INACTIVE VARIATIONS

CoP_100028-7950-63196_EasternParramattaRiver_AdSet_LGA_Ad1 **Link clicks**

Have your say on new foreshore upgrades!

The Eastern Parramatta River project brings together a program of pedestrian and cyclist amenity and safety improvements in five key locations:

1. Rangihou Reserve, Parramatta
2. Baludarri Wetlands, Parramatta
3. Reid Park, Rydalmere
4. Royal Shores, Ermington
5. George Kendall Riverside Park, Ermington.

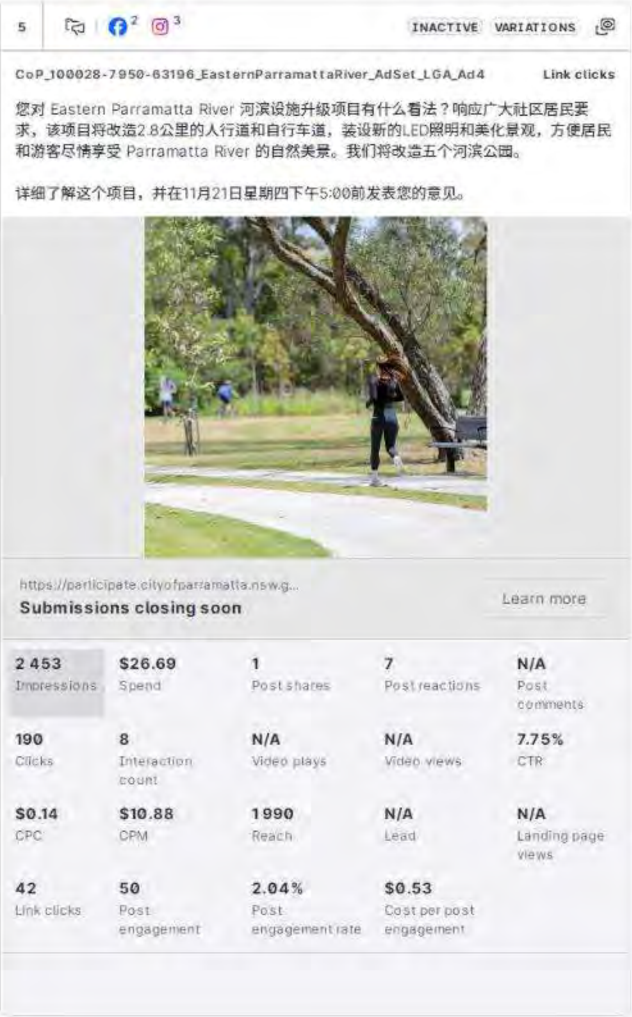
Many of the proposed upgrades were requested by our community. View the concept designs and have your say before 5pm, Thursday 21 November.

https://participate.cityofparramatta.nsw.g...

Have Your Say

Learn more

7 319 Impressions	**$72.02** Spend	**1** Post shares	**11** Post reactions	**N/A** Post comments
651 Clicks	**12** Interaction count	**N/A** Video plays	**N/A** Video views	**8.9%** CTR
$0.11 CPC	**$9.84** CPM	**4 852** Reach	**N/A** Lead	**2** Landing page views
138 Link clicks	**150** Post engagement	**2.05%** Post engagement rate	**$0.48** Cost per post engagement	



CoP_100028-7950-63196_EasternParramattaRiver_AdSet_LGA_Ad4 **Link clicks**

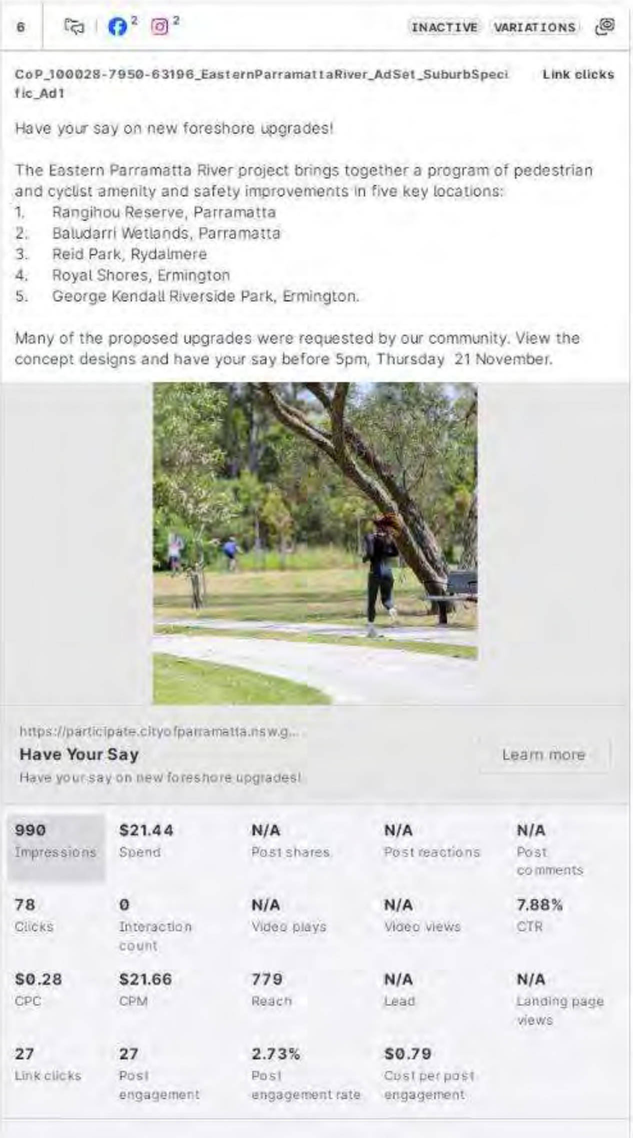
您对 Eastern Parramatta River 河滨设施升级项目有什么看法？响应广大社区居民要求，该项目将改造2.8公里的人行道和自行车道，装设新的LED照明和美化景观，方便居民和游客尽情享受 Parramatta River 的自然美景。我们将改造五个河滨公园。

详细了解这个项目，并在11月21日星期四下午5:00前发表您的意见。

https://participate.cityofparramatta.nsw.g...

Submissions closing soon

2 453 Impressions	**$26.69** Spend	**1** Post shares	**7** Post reactions	**N/A** Post comments
190 Clicks	**8** Interaction count	**N/A** Video plays	**N/A** Video views	**7.75%** CTR
$0.14 CPC	**$10.88** CPM	**1990** Reach	**N/A** Lead	**N/A** Landing page views
42 Link clicks	**50** Post engagement	**2.04%** Post engagement rate	**$0.53** Cost per post engagement	



CoP_100028-7950-63196_EasternParramattaRiver_AdSet_SuburbSpecific_Ad1 **Link clicks**

Have your say on new foreshore upgrades!

The Eastern Parramatta River project brings together a program of pedestrian and cyclist amenity and safety improvements in five key locations:

1. Rangihou Reserve, Parramatta
2. Baludarri Wetlands, Parramatta
3. Reid Park, Rydalmere
4. Royal Shores, Ermington
5. George Kendall Riverside Park, Ermington.

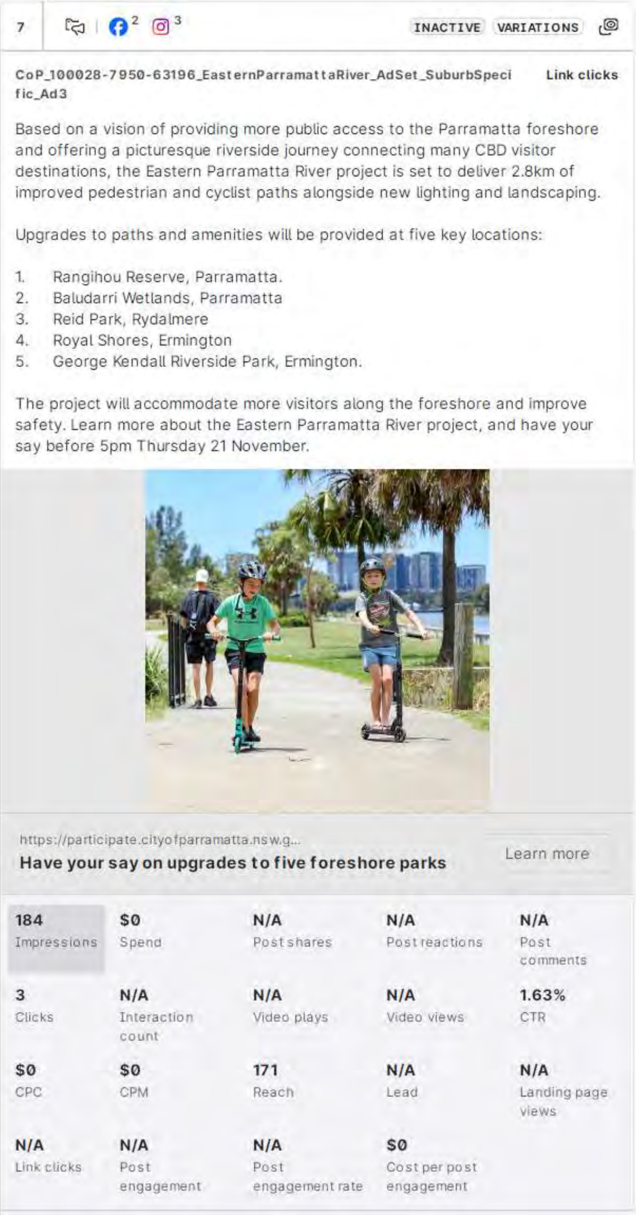
Many of the proposed upgrades were requested by our community. View the concept designs and have your say before 5pm, Thursday 21 November.

https://participate.cityofparramatta.nsw.g...

Have Your Say

Have your say on new foreshore upgrades!

990 Impressions	**$21.44** Spend	**N/A** Post shares	**N/A** Post reactions	**N/A** Post comments
78 Clicks	**0** Interaction count	**N/A** Video plays	**N/A** Video views	**7.88%** CTR
$0.28 CPC	**$21.66** CPM	**779** Reach	**N/A** Lead	**N/A** Landing page views
27 Link clicks	**27** Post engagement	**2.73%** Post engagement rate	**$0.79** Cost per post engagement	



CoP_100028-7950-63196_EasternParramattaRiver_AdSet_SuburbSpecific_Ad3

Based on a vision of providing more public access to the Parramatta foreshore and offering a picturesque riverside journey connecting many CBD visitor destinations, the Eastern Parramatta River project is set to deliver 2.8km of improved pedestrian and cyclist paths alongside new lighting and landscaping.

Upgrades to paths and amenities will be provided at five key locations:

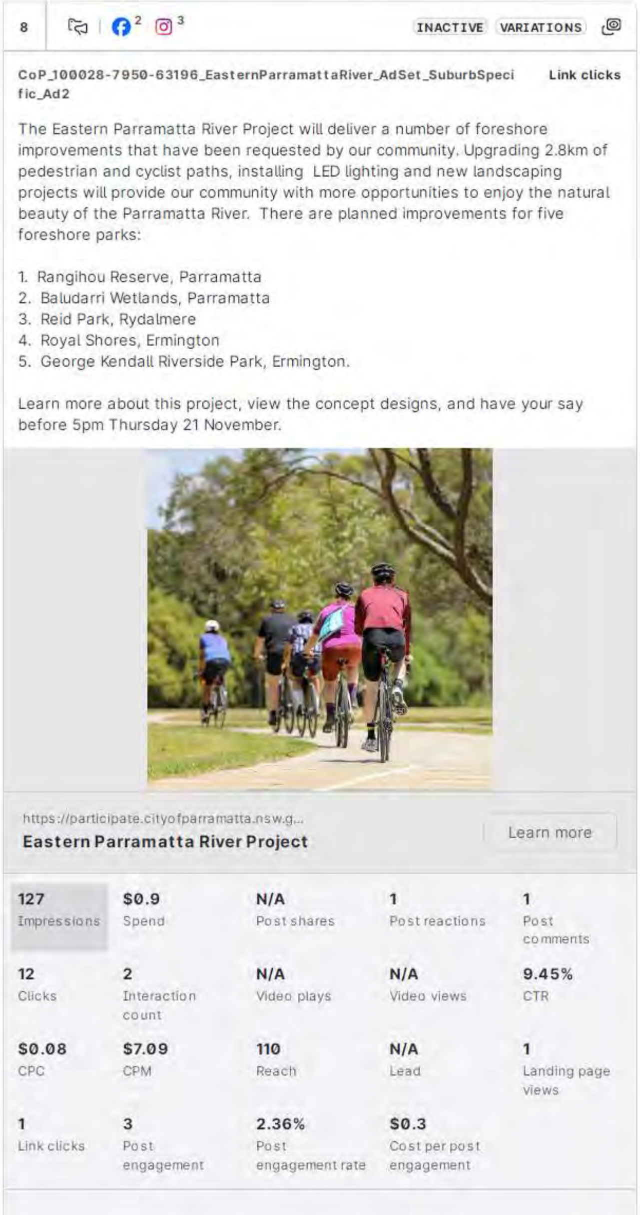
1. Rangihou Reserve, Parramatta.
2. Baludarri Wetlands, Parramatta
3. Reid Park, Rydalmere
4. Royal Shores, Ermington
5. George Kendall Riverside Park, Ermington.

The project will accommodate more visitors along the foreshore and improve safety. Learn more about the Eastern Parramatta River project, and have your say before 5pm Thursday 21 November.

https://participate.cityofparramatta.nsw.g...

Have your say on upgrades to five foreshore parks

184 Impressions	**$0** Spend	**N/A** Post shares	**N/A** Post reactions	**N/A** Post comments
3 Clicks	**N/A** Interaction count	**N/A** Video plays	**N/A** Video views	**1.63%** CTR
$0 CPC	**$0** CPM	**171** Reach	**N/A** Lead	**N/A** Landing page views
N/A Link clicks	**N/A** Post engagement	**N/A** Post engagement rate	**$0** Cost per post engagement	



CoP_100028-7950-63196_EasternParramattaRiver_AdSet_SuburbSpecific_Ad2

The Eastern Parramatta River Project will deliver a number of foreshore improvements that have been requested by our community. Upgrading 2.8km of pedestrian and cyclist paths, installing LED lighting and new landscaping projects will provide our community with more opportunities to enjoy the natural beauty of the Parramatta River. There are planned improvements for five foreshore parks:

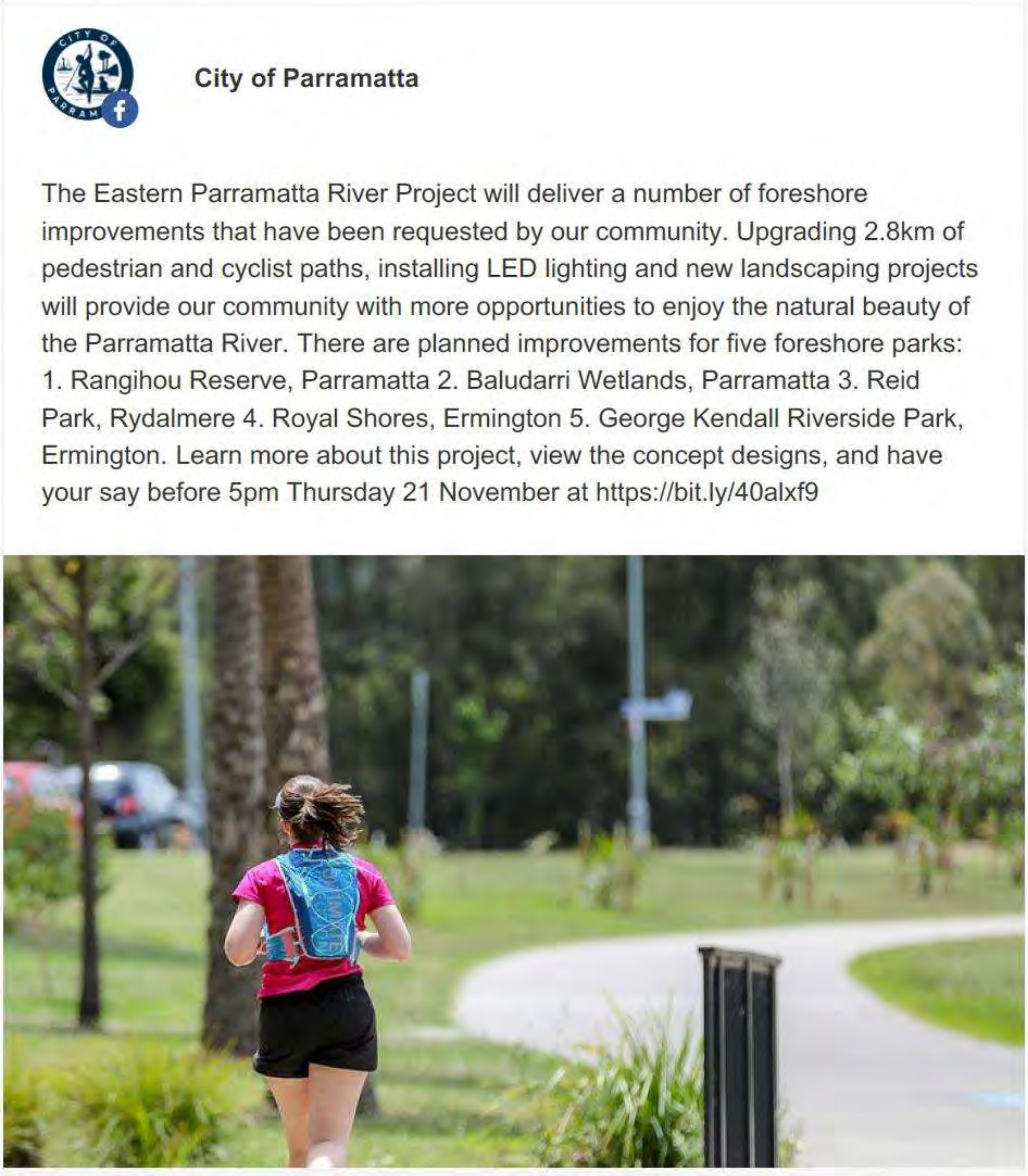
1. Rangihou Reserve, Parramatta
2. Baludarri Wetlands, Parramatta
3. Reid Park, Rydalmere
4. Royal Shores, Ermington
5. George Kendall Riverside Park, Ermington.

Learn more about this project, view the concept designs, and have your say before 5pm Thursday 21 November.

https://participate.cityofparramatta.nsw.g...

Eastern Parramatta River Project

127 Impressions	**$0.9** Spend	**N/A** Post shares	**1** Post reactions	**1** Post comments
12 Clicks	**2** Interaction count	**N/A** Video plays	**N/A** Video views	**9.45%** CTR
$0.08 CPC	**$7.09** CPM	**110** Reach	**N/A** Lead	**1** Landing page views
1 Link clicks	**3** Post engagement	**2.36%** Post engagement rate	**$0.3** Cost per post engagement	



City of Parramatta

The Eastern Parramatta River Project will deliver a number of foreshore improvements that have been requested by our community. Upgrading 2.8km of pedestrian and cyclist paths, installing LED lighting and new landscaping projects will provide our community with more opportunities to enjoy the natural beauty of the Parramatta River. There are planned improvements for five foreshore parks: 1. Rangihou Reserve, Parramatta 2. Baludarri Wetlands, Parramatta 3. Reid Park, Rydalmere 4. Royal Shores, Ermington 5. George Kendall Riverside Park, Ermington. Learn more about this project, view the concept designs, and have your say before 5pm Thursday 21 November at https://bit.ly/40alxf9

CycleSydney
11:06:18 PM 21 Oct 2024 Created

These are on the Greater Sydney Bike Trail

City of Parramatta

3h ·

Short on time but want to have your say on our park upgrades? Visit our Eastern Parramatta River interactive map for information on improvements to our parks.

See the proposed upgrades, drop a pin and post a comment. We'd love to hear your feedback!

The Eastern Parramatta River project is proposing improvements in five key locations along the river:

1. Rangihou Reserve, Parramatta
2. Baludarri Wetlands, Parramatta
3. Reid Park, Rydalmere
4. Royal Shores, Ermington
5. George Kendall Riverside Park, Ermington

📍 Find our interactive map at https://bit.ly/4fpqi96

🌱 Learn more about this project at https://bit.ly/40alxf9

Community social media comments

cityofparramatta

foreshore parks.

Learn more about this project, and have your say before 5pm Thursday 21 November at the link in our bio

Edited · 1 w

suzmwill Anyone else think the same? Please don't repeat the pedestrian/bicycle mistakes that are near the Rydalmere Ferry. The separated bicycle/pedestrian path is a complete waste of resources. Many walkers and riders (of which I am both), do not use their intended path. Why not have just one wider path? Less concrete. No confusion as the split paths are short anyway. Also the bike path crossing the entrance to the ferry carpark puts riders at risk. Drivers struggle to see past the plantings.

1 w Reply

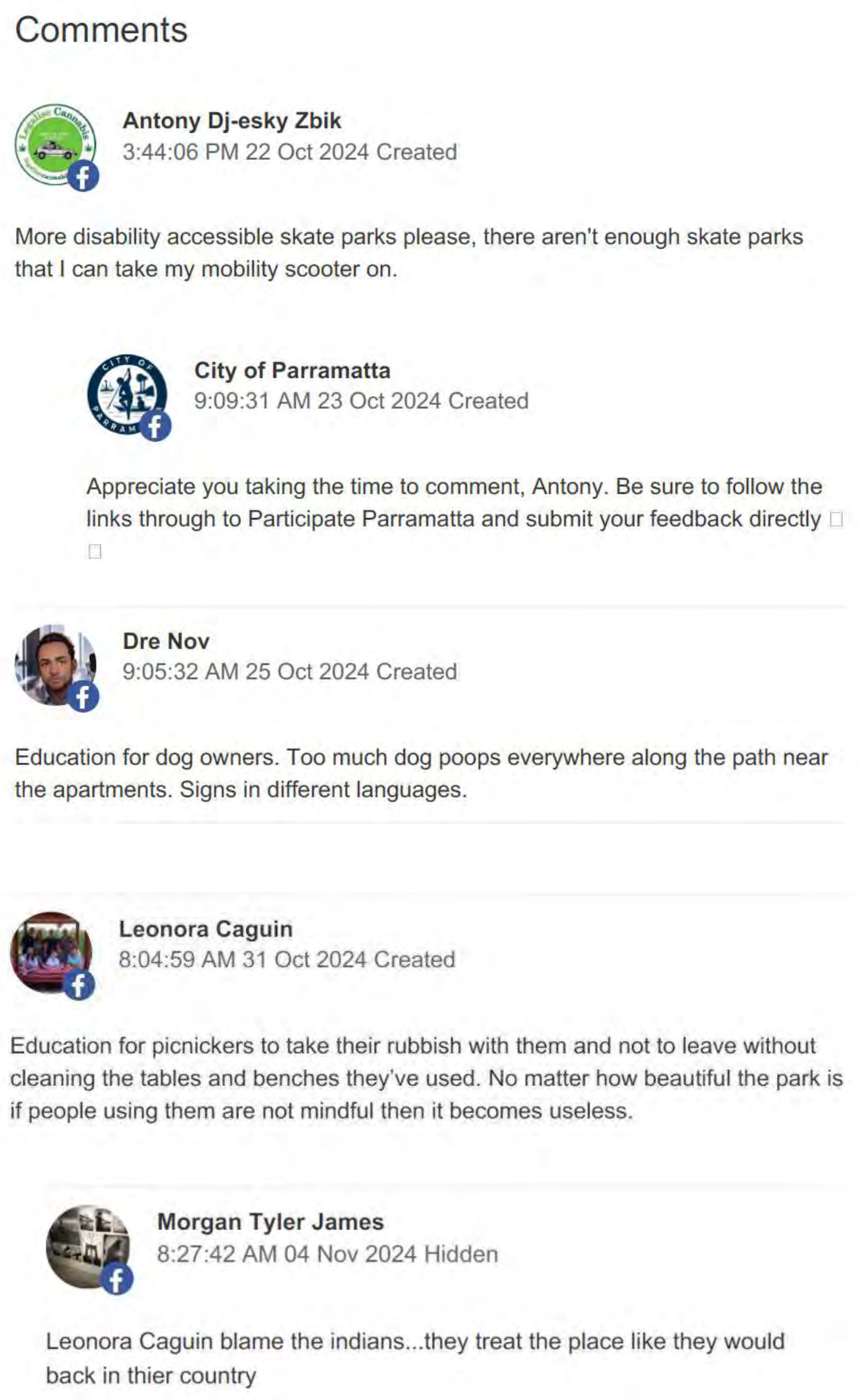
cityofparramatta @suzmwill Hi there Suzanne, really appreciate you taking the time to comment. If you haven't already done so, please be sure to follow the link in our bio through to the project page to submit your feedback.

1 w 1 like Reply

Liked by **liveableparramatta** and **26 others**

14 November

PARTICIPATE.CITYOFPARRAMATTA.NSW.GOV.AU (view link)



Comments

Antony Dj-esky Zbik
3:44:06 PM 22 Oct 2024 Created

More disability accessible skate parks please, there aren't enough skate parks that I can take my mobility scooter on.

City of Parramatta
9:09:31 AM 23 Oct 2024 Created

Appreciate you taking the time to comment, Antony. Be sure to follow the links through to Participate Parramatta and submit your feedback directly □ □

Dre Nov
9:05:32 AM 25 Oct 2024 Created

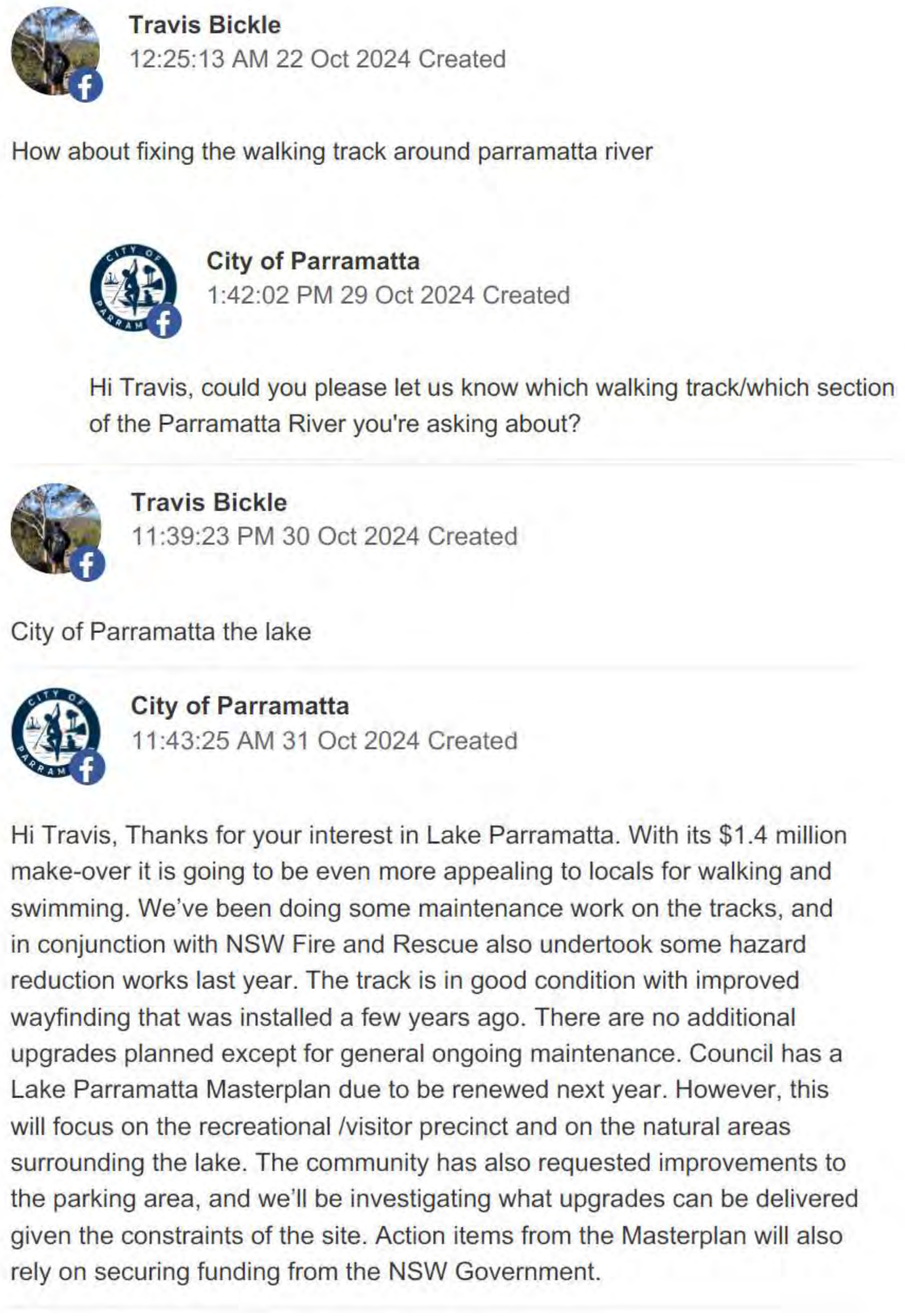
Education for dog owners. Too much dog poops everywhere along the path near the apartments. Signs in different languages.

Leonora Caguin
8:04:59 AM 31 Oct 2024 Created

Education for picnickers to take their rubbish with them and not to leave without cleaning the tables and benches they've used. No matter how beautiful the park is if people using them are not mindful then it becomes useless.

Morgan Tyler James
8:27:42 AM 04 Nov 2024 Hidden

Leonora Caguin blame the indians...they treat the place like they would back in thier country



Travis Bickle
12:25:13 AM 22 Oct 2024 Created

How about fixing the walking track around parramatta river

City of Parramatta
1:42:02 PM 29 Oct 2024 Created

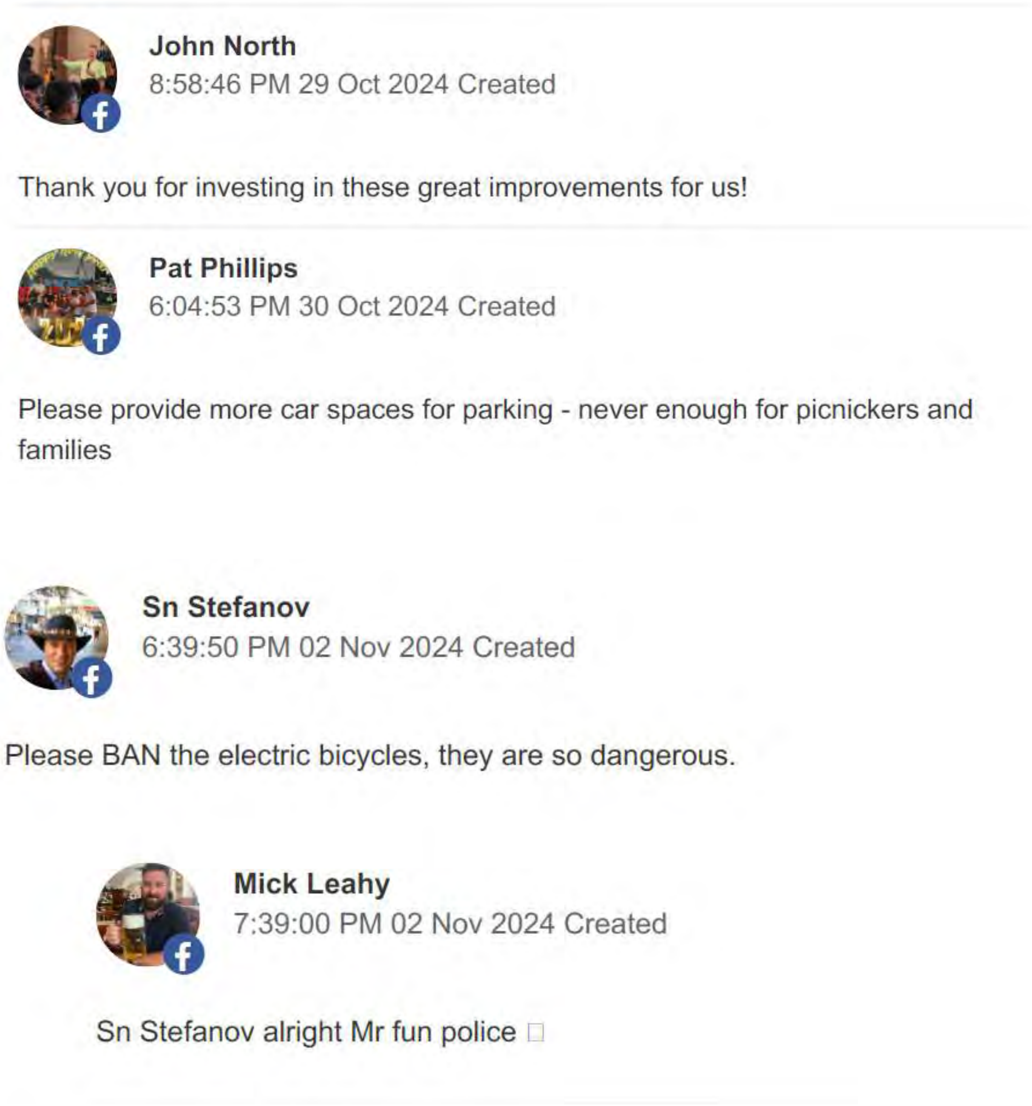
Hi Travis, could you please let us know which walking track/which section of the Parramatta River you're asking about?

Travis Bickle
11:39:23 PM 30 Oct 2024 Created

City of Parramatta the lake

City of Parramatta
11:43:25 AM 31 Oct 2024 Created

Hi Travis, Thanks for your interest in Lake Parramatta. With its $1.4 million make-over it is going to be even more appealing to locals for walking and swimming. We've been doing some maintenance work on the tracks, and in conjunction with NSW Fire and Rescue also undertook some hazard reduction works last year. The track is in good condition with improved wayfinding that was installed a few years ago. There are no additional upgrades planned except for general ongoing maintenance. Council has a Lake Parramatta Masterplan due to be renewed next year. However, this will focus on the recreational /visitor precinct and on the natural areas surrounding the lake. The community has also requested improvements to the parking area, and we'll be investigating what upgrades can be delivered given the constraints of the site. Action items from the Masterplan will also rely on securing funding from the NSW Government.



John North
8:58:46 PM 29 Oct 2024 Created

Thank you for investing in these great improvements for us!

Pat Phillips
6:04:53 PM 30 Oct 2024 Created

Please provide more car spaces for parking - never enough for picnickers and families

Sn Stefanov
6:39:50 PM 02 Nov 2024 Created

Please BAN the electric bicycles, they are so dangerous.

Mick Leahy
7:39:00 PM 02 Nov 2024 Created

Sn Stefanov alright Mr fun police □

City of Parramatta

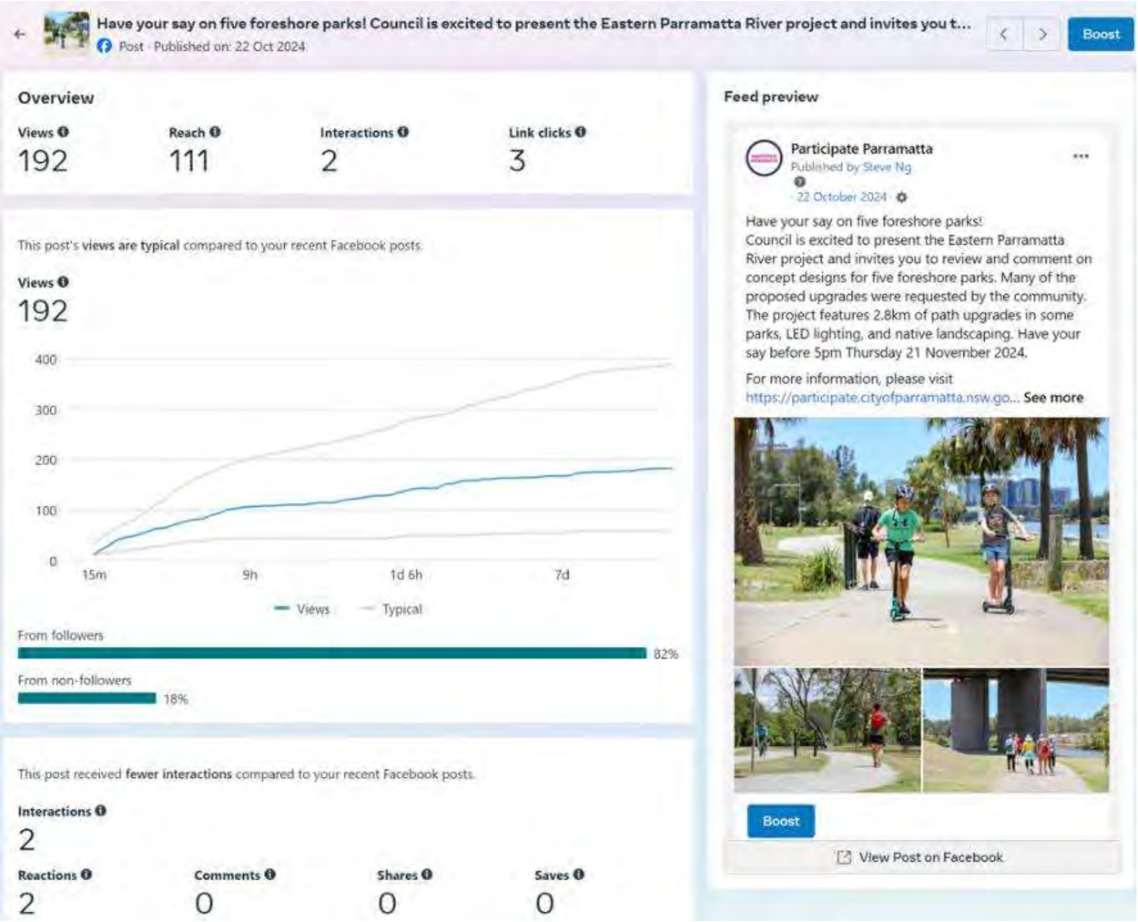
Have you had your say on the Eastern Parramatta River project? With 2.8km of pedestrian and cyclist path improvements, new LED lighting and landscaping projects, many requested by our community, the Eastern Parramatta River project will provide our community with more opportunities to enjoy the natural beauty of the Parramatta River. There are planned improvements for five foreshore parks. Learn more about this project, and have your say before 5pm Thursday 21 November at the link in our bio □

Kirrily Yates
9:06:47 AM 15 Nov 2024 Edited

Is there any way of getting someone out of the river if they fall in? I asked a few different workers during the recent cleaning near the ferry but it seemed to only concern me.

Participate Parramatta Facebook and Instagram reporting

Participate Parramatta Facebook



Have your say on five foreshore parks! Council is excited to present the Eastern Parramatta River project and invites you t...

Post · Published on: 22 Oct 2024

Overview

Views	Reach	Interactions	Link clicks
192	111	2	3

This post's **views are typical** compared to your recent Facebook posts.

Views

192

From followers 82%

From non-followers 18%

This post received **fewer interactions** compared to your recent Facebook posts.

Interactions

2

Reactions	Comments	Shares	Saves
2	0	0	0

Feed preview

Participate Parramatta

Published by Steve Ng

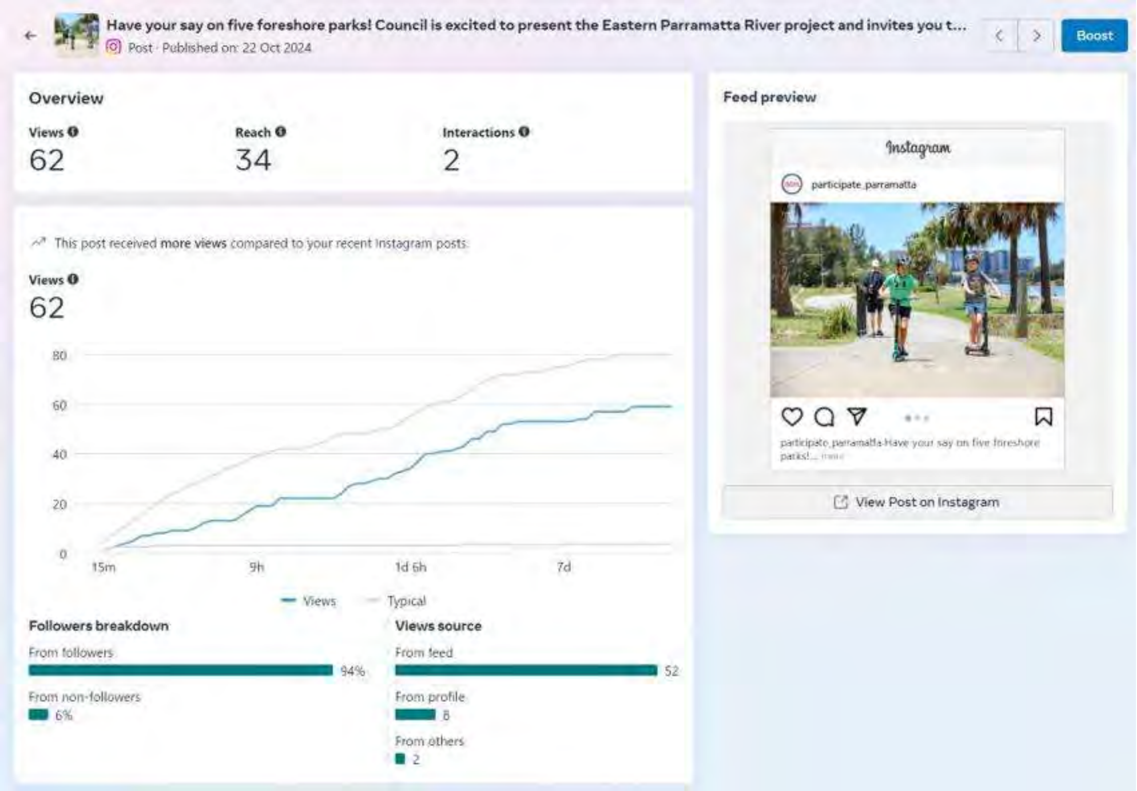
· 22 October 2024 ·

Have your say on five foreshore parks!
Council is excited to present the Eastern Parramatta River project and invites you to review and comment on concept designs for five foreshore parks. Many of the proposed upgrades were requested by the community. The project features 2.8km of path upgrades in some parks, LED lighting, and native landscaping. Have your say before 5pm Thursday 21 November 2024.

For more information, please visit https://participate.cityofparramatta.nsw.go... **See more**

Participate Parramatta has 6,900 Facebook followers. The post reached 111 people (192 views) creating seven (7) engagements and three (3) three link clicks.

Participate Parramatta Instagram



Have your say on five foreshore parks! Council is excited to present the Eastern Parramatta River project and invites you t...

Post · Published on: 22 Oct 2024

Overview

Views 62

Reach 34

Interactions 2

This post received **more views** compared to your recent Instagram posts

Views 62

Followers breakdown

From followers 94%

From non-followers 6%

Views source

From feed 52

From profile 8

From others 2

Feed preview

participate_parramatta

participate_parramatta Have your say on five foreshore parks!... more

The Participate Parramatta Instagram has 620 following. The post reached 34 people (62 views) creating seven (7) engagements.

Active Parramatta Facebook

Active Parramatta
25 October 2024 · 🌐

There are planned improvements for five foreshore parks, to help provide our community with more opportunities to enjoy the natural beauty of the Parramatta River 💧🌱

1️⃣ Rangihou Reserve, Parramatta
2️⃣ Baludarri Wetlands, Parramatta
3️⃣ Reid Park, Rydalmere
4️⃣ Royal Shores, Ermington
5️⃣ George Kendall Riverside Park, Ermington

Learn more about this project, view the concept designs, and have your say before Thursday, 21 November at https://bit.ly/40alxf9

👍 1

1 comment

Craig Rodger
Needs to be a play ground in the Rangihou reserve, so many apartments in the area

An organic post (non-paid) was shared on the Council's Active Parramatta Facebook page (4.6K followers). The post reached 657 people, creating eight (8) engagements, 1 like, 1 comment, and six (6) link-clicks.

Appendix 14: Mitigation Measures

1 Introduction

Part 5 of the *Environmental Planning & Assessment Act 1979* (EP&A Act) provides for certain works to be undertaken as development without consent.

To ensure that the development activity, being the upgrade works to Reid Park, forming part of the Parramatta Cycleway Upgrades project is carried out in accordance the provisions of Part 5 of the EP&A Act, **Section 2.1** of this document identifies the plans / documents (and any amendments approved under Part 5) which have been relied upon for the purposes of this assessment.

The remainder of this document sets out the mitigation measures that are to be implemented during the carrying out of the works to ensure impacts are avoided, mitigated or minimised to an acceptable level.

2 Mitigation Measures

2.1 Authorised Documents

The development activity must be implemented generally in accordance with the REF prepared by DFP Planning Pty Ltd dated 22 July 2025 and the documents listed in **Table 1,** which are authorised for the carrying out of works as development without consent.

Table 1 Authorised Documents

Survey Plan prepared by City of Parramatta			
Drawing Reference	**Revision**	**Name of Plan**	**Date**
-	-	Survey – Reid Park Rydalmere	October 2024

Other Supporting Documents		
Document	**Prepared By**	**Date**
Landscape Plans	City of Parramatta	July 2025
Civil Plans	City of Parramatta	30 June 2025
Arborist Report	Hugh The Arborist	23 December 2024
Flora and Fauna Assessment Report	East Coast Ecology	26 March 2025
Report on Geotechnical Investigation	Douglas Partners	28 January 2025
Detailed Site Investigation	Douglas Partners	16 January 2025
Remediation Action Plan	Progressive Risk Management	2 July 2025
Acid Sulfate Soils Assessment	Progressive Risk Management	1 July 2025
Construction Management Plan	City of Parramatta	28 January 2025
Drainage Investigation and Flood Impact Assessment Report	City of Parramatta	23 June 2025
Heritage Impact Statement	DFP Planning	28 January 2025

In the event of any inconsistency between the authorised documents and a mitigation measure hereunder, the mitigation measure shall prevail.

2.2 Amendment Tracking

Where there are any amendments to the authorised documents, an amendment register must be prepared which identifies the proposed amendment and demonstrates how the amendments will result in development that is substantially the same as the development to which the original REF applied.

Appendix 14: Mitigation Measures

2.3 Measures to be Implemented Prior to Works Commencing

2.3.1 Council Notification

The City of Parramatta (Council) shall be advised in writing of the date it is intended to commence work, including demolition. A minimum period of seven (7) days notification shall be given.

2.3.2 Notification to occupiers of adjoining land

Adjoining land owners shall be advised in writing of the date it is intended to commence work, including demolition. A minimum period of seven (7) days notification shall be given.

2.3.3 Final Construction Traffic Management Plan (CTMP)

A Final Construction Traffic Management Plan shall be prepared prior to the commencement of any works and approved by Council.

2.3.4 Final Construction Management Plan (CMP)

A Final Construction Management Plan (CMP) shall be prepared prior to commencement of any works and approved by Council.

2.3.5 Utilities and Services

Prior to commencement of any demolition activities, any services near the works site which may be impacted by the works are to be accurately located.

Dial Before You Dig should be contacted prior to the commencement of any works.

Prior to commencement of works, and if required, an application for a compliance certificate is to be made to Sydney Water or other evidence of Sydney Water's non-objection to the commencement of work on the basis of service availability is to be provided.

2.3.6 Tree Protection Measures

Tree protection measures are to be installed in accordance with the Tree Protection Specification provided as part of the authorised Arboricultural Impact Assessment prepared by Hugh The Arborist, dated 23 December 2024.

A Tree Protection Plan must be prepared which illustrates TPZ sensitive construction zones and exclusion zones prior to the commencement of works.

Tree protection fencing and signage must also be implemented to minimise any potential impacts upon retained trees prior to the commencement of works

2.3.7 Compliance with the Building Code of Australia and Australian Standards

Any works that are required to be undertaken in accordance with the National Construction Code (NCC) must be designed and constructed in accordance with the relevant provisions of the BCA and any relevant Australian Standards.

2.3.8 Remediation of Asbestos Impact Soils

Remediation of asbestos impacted soils must be carried out in accordance with the Remediation Action Plan prepared by Progressive Risk Management, dated 13 June 2025.

2.3.9 Acid Sulfate Soils

In accordance with the Acid Sulfate Soils Assessment prepared by Progressive Risk Management, dated 23 June 2025, if any works encounter natural soils (from depths 0.6 to > 2m below ground level), it will need to be treated as Potential Acid Sulfate Soils (PASS). This would need to be managed according to an Acid Sulfate Soils Management Plan (ASSMP).

Appendix 14: Mitigation Measures

2.4 Measures to be implemented During Demolition and Construction

2.4.1 Site Notice

A site notice must be prominently displayed in a prominent position at the site during construction to inform the public of project details, and must satisfy the following requirements:

1. The site notice(s) must be durable and weatherproof and must be displayed throughout the works period;
2. Include details of the approved hours of work, the name of the builder, Certifier, structural engineer, site/project manager, the responsible managing company (if any), its address and 24-hour contact phone number for any inquiries must be displayed on the site notice(s); and
3. The site notice(s) must be mounted at eye level on the perimeter hoardings/fencing and must state that unauthorised entry to the site is not permitted.

2.4.2 Complaints Management

A Complaints Register is to be established during construction works. Action taken or proposed to be taken must be documented on the register in response to complaints raised.

2.4.3 No Obstruction of Public Way

Building materials, machinery, vehicles, refuse, skip bins or the like must not be stored or placed in the public way (outside of any approved construction works zone). A secure site compound must be provided on site.

2.4.4 Implementation of Final CMP

All demolition and construction works are to be undertaken in accordance with the Final CMP.

The CMP must include measures for erosion and sediment control, which are to remain in place for the duration of the demolition and construction works.

Temporary site traffic management measures must also be implemented to provide for pedestrian, cyclist and vehicular safety.

2.4.5 Demolition

Demolition work must comply with the demolition work plans required by Australian Standard AS 2601-2001 The demolition of structures (Standards Australia, 2001) and endorsed by a suitably qualified person.

2.4.6 Work Hours

Unless otherwise agreed by the relevant statutory body, work hours shall be limited to:

(a) Monday to Friday: 7.00am to 6:00pm;

(b) Saturday: 8.00am to 05.00pm; and

(c) Sunday and Public holidays: No work unless prior approval from Council is granted.

2.4.7 Unexpected Finds Protocol – Aboriginal Heritage

In the event that unexpected Aboriginal objects, sites or places (or potential Aboriginal objects, site or places) are discovered during construction, all works in the vicinity should cease and the proponent should determine the subsequent course of action in consultation with a heritage professional and/or the relevant State government agency as appropriate.

If surviving A Horizon soils are identified during the construction earthworks, it is recommended that an observer with knowledge of Aboriginal cultural objects (e.g. registered Aboriginal stakeholder) is present.

If human skeletal material less than 100 years old is discovered, the *Coroners Act 2009* requires that all works should cease, and the NSW Police and the NSW Coroner's Office should be contacted. Should the skeletal material prove to be archaeological Aboriginal remains, notification shall be given to Heritage NSW, the Local Aboriginal Land Council and the Commonwealth Minister for the Environment.

2.4.8 Unexpected Finds Protocol – Historic Heritage

If any unexpected archaeological relics are uncovered during the work, then all works must cease immediately in that area and the NSW Heritage Division contacted. Depending on the possible significance of the relics, an archaeological assessment and management strategy may be required before further works can continue in that area. Works may only recommence with the written approval of the NSW Heritage Division.

2.4.9 Tree Removal and Protection

All works must be undertaken consistent with the Arboricultural Impact Assessment Report prepared by Truth About Trees.

The following measures are to be retained to minimise any potential impacts upon retained trees:

- Arborist supervision of ALL works within the TPZs of retained trees. Tree roots greater than 25mm in diameter are to be retained and protected;
- Existing footings within TPZs to be either removed using non-destructive excavation or be retained in situ with the structure cut off below ground level;
- Demolition of existing structures is to be carried out with 2-2.5t rubber-tracked excavator under Arborist supervision;
- Shared pathway within TPZs is to be installed at or above existing ground level with no excavation in TPZs of retained trees;
- Tree protection fencing and signage; and
- Regular site inspections by the project Arborist.

2.4.10 Ecology

Exclusion zones will be set up at the limit of clearing in accordance with Guide 2: Exclusion zones of the Biodiversity Guidelines: Protecting and managing biodiversity on Transport for NSW projects (TfNSW, 2024).

2.4.11 Erosion and Sediment Control

Appropriate erosion and sediment control should be erected and maintained at all times during construction in order to avoid the potential of incurring indirect impacts on biodiversity values. Erosion and sediment controls would be established in accordance with an erosion and sedimentation plan to be produced for the proposed works. As a minimum, such measures should comply with the relevant industry guidelines such as ‘the Blue Book’ (Landcom, 2004).

2.4.12 Storage and Stockpiling

Allocate all storage, stockpile, and laydown sites away from any vegetation that is planned to be retained. Avoid importing any soil from outside the site in order to avoid the potential of incurring indirect impacts on biodiversity values as this can introduce weeds and pathogens to the site. If materials are required to be imported for landscaping works, they are to be sterilised according to industry standards prior to importation to site.

2.5 Measures to be implemented – Prior to Occupation

2.5.1 Landscaping Certification

At the completion of the activity, a Landscape Completion Certificate for the proposed landscaping must be issued.

Appendix 14: Mitigation Measures

2.5.2 Arborist Certification

At the completion of the activity, a Level 5 qualified Arborist is to certify that the tree protection measures were undertaken in accordance with the Tree Protection Plan and the Tree Protection Specifications