

#### LEGEND

- Approximate site boundary
- Approximate basement boundary
- Approximate location of borehole not being tested
- Approximate enviro borehole location
- Approximate enviro monitoring well location
- Approximate Geo-tech borehole location
- Approximate combined borehole location
- Approximate combined monitoring well location
- Approximate borehole location (Aargus, 2014)
- Approximate monitoring well location (Aargus, 2014)
- Human Health Criteria
- Ecological Criteria

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Drawn: L.C.  
Approved: -  
Date: 04-02-19

**TOGA Wicks Park Developments Pty Ltd**  
Additional Site Investigation  
182 - 198 Victoria Road, & 28-30 Faversham Street,  
Marrickville, NSW  
**Groundwater & Soil Exceedances**

Figure:  
**4**  
Project: E24098 E03\_Rev0

Map Source: True North Surveys Pty Ltd, Drawing No.: 8333DU Dated: 01-09-2016

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## Appendix B – Tables

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E24098 - Marrickville

	All results are recorded in ng/L unless otherwise stated
	Highly toxic volatiles indicate concentration exceeds Human Health Based Soil Criteria (H.B. / H.S. / S)
	Highly toxic volatiles ND/PAHs criteria exceeded and/or ND/ EPA 2014 waste classification and/or cadmium /Zn/Pb analysis
	Highly toxic volatiles indicate concentration exceeds Ecological Health/Contaminant Levels (E.H./C.L.)
HEC	NEPC 1996 Amendment 2013 148, W. Health based Screening Levels / open space soil settings
USC	Ecological Investigation Screening Level 2 used - based on NEPC 2013 criteria
ECRA	Not Listed - The soil sample had exceeds the soil concentration at which the pure water phase proved more dire of the individual metals.
	Not detected i.e. all concentrations of the compounds were at the sample given, which had to be below the laboratory limit of detection.
NA	Not Analyzed i.e. the sample was not analyzed
ND	Not Detected - In the case of Contaminant PAHs, results were not obtained as Total PAHs were below the NEPC 2013 limits of a single for Contaminant PAHs.
	Crates Screened and values were applied, being the most conservative of the material types.
1	ND/ EPA 2014 - General Solid Waste - In Waste Classification Guidelines, Table 1 (C7C) and Table 2 (C7C/P1 / C7C/P2)
2	ND/ EPA 2014 - Recycled Solid Waste - In Waste Classification Guidelines, Table 1 (C7C) and Table 2 (C7C/P1 / C7C/P2)
3	HEPA 2014
F1	To assess F1, submit the sum of BTEX concentrations from the C16-C10 fraction.
F2	To assess F2, submit Naphthalene from the <C10-C16 fraction
PA	C14-C16
CA	C14-C16
+	CSC Class 2 (D7)



Table T2 - Summary of Groundwater Analytical Results

E24098 - Marrickville

Sample ID		Heavy Metals								PAHs			BTEX			TRH				TPH		VOCs		PFAS			Phenols			
		Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Benzodipyrrene	Total PAHs	Naphthalene	Benzene	Toluene	Ethylbenzene	Total Xylenes	F1*	F2*	F3**	F4***	C6-C9	C10-C16	Trichloroethene (TCE)	2-Propenol (Acetone)	PFDA	PFOS	PFOS + PFHxS	2-Methylphenol (o-Cresol)	Total	
Argus 2014 (ES5611/2 - Detailed Site Assessment)																														
GW1		<5	<1	<1	2	<1	<0.1	2	7	<0.2	<0.2	<0.2	<1	<1	<1	<2	<10	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA
GW2		<5	<1	<1	<1	<1	<0.1	5	10	<0.2	<0.2	<0.2	<1	<1	<1	<2	<10	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA
EI 2019 - Current Investigation (24098.E03.Rev0 - Additional Site Investigation)																														
BH1M-1		<1	<0.2	<1	<1	<1	<0.1	58	35	<1	<1	<1	<1	<1	<1	<3	<20	<50	<100	<100	<20	<100	3	ND	0.08	0.01	0.01	ND	<3	
BH3M-1		1	<0.2	<1	<1	<1	<0.1	64	45	<1	<1	<1	<1	<1	<1	<3	<20	<50	<100	<100	<20	<100	ND	ND	<0.01	<0.01	<0.01	ND	<3	
BH6M-1		<1	<0.2	1	3	<1	<0.1	50	220	<1	<1	2	<1	1	5	7	<20	<50	<100	<100	<20	<100	ND	11	0.04	0.08	0.08	ND	<3	
BH9M-1		<1	<0.2	<1	<1	<1	<0.1	82	26	<1	<1	<1	<1	<1	<1	<3	<20	<50	<100	<100	<20	<100	ND	ND	<0.01	<0.01	<0.01	ND	<3	
BH14M-1		2	<0.2	1	<1	<1	<0.1	71	150	<1	<1	<1	<1	<1	<1	<3	<20	<50	<100	<100	<20	<100	ND	18	0.02	<0.01	<0.01	7	4	
GWOOD1 (Duplicate of BH6M-1)		<1	<0.2	2	3	<1	<0.1	52	23	NA	NA	NA	<1	<1	6	9	<20	<50	<100	<100	20	<100	ND	ND	NA	NA	NA	ND	<3	
GILs																														
ANZG (2018) GIL	Marine Water	NR	0.06 <sup>2</sup>	27.4 (Cr III) 4.4 (Cr VII)*	1.3*	4.4*	0.1 <sup>2</sup>	7 <sup>2</sup>	15 <sup>2*</sup>	0.1 <sup>3</sup>	NR	50 <sup>3</sup>	500 <sup>3*</sup>	180 <sup>3</sup>	5 <sup>3</sup>	75	6000	NL	100 <sup>3</sup>	100 <sup>3</sup>										
	Freshwater	NR	0.7 <sup>2</sup>	3.3 (Cr III)* 0.4 (Cr VI)* <sup>2*</sup>	1.4*	3.4*	0.06 <sup>2</sup>	8 <sup>2</sup>	8*	0.1 <sup>3</sup>	NR	16*	950 <sup>3*</sup>	180 <sup>3</sup>	80*	75	6000	NL	100 <sup>3</sup>	100 <sup>3</sup>										
HEPA (2018) PFAS National Environmental Management Plan Guidelines	Recreational																							5.6		0.7				
	Drinking Water																							0.56		0.07				
	Marine Water																							19	0.00023*	NR				
	Freshwater																							19	0.00023*	NR				
NEPM HSL D (Commercial / Industrial)	2 m to < 4 m											5,000	NL	NL	NL	1000	1000													
	4 m to < 8 m											5,000	NL	NL	NL	1000	1000													
GIL (Drinking Waters)		10	2	0.05 (Cr VI)	200	10	1	20		0.01			1	800	300	600														

Notes: All results and criteria are in µg/L, unless otherwise noted.

Highlighted values indicate concentrations exceed the adopted GIL.

GIL (Marine Waters) NEPM 2013 Schedule B1 - Groundwater investigation level for marine waters ecosystem

HSL D Health screening level for commercial / Industrial sites, as per Table 1A(4) of NEPM 2013 Schedule B1. HSL for Sand was adopted to ensure most conservative values were used. HSL are applied based on the estimated source depth of groundwater at each monitoring well.

NL Not Limited (Ref. NEPM 2013, Schedule B1, Table 1A(4))

NR No recommended assessment criteria are currently available for the indicated parameter(s).

POL (Laboratory's) Practical Quantitation Limit

NT Not tested.

\* F1 = TRH C6-C10 less BTEX

\*\* F2 = TRH C10-C16 less Naphthalene

\*\*\* F3 = TRH C16-C34

\*\*\*\* F4 = TRH C34 - C40

1 ANZECC (2000) provides 7 µg/L as an assessment guideline for total petroleum hydrocarbons. Since the laboratory practical quantitation limits (POL) is higher than the ANZECC guideline, the POL has been adopted as the interim GIL, as prescribed in DEC (2007).

2 The 99% Trigger Values were adopted for this assessment due to bioaccumulation potential of associated analytes. Ref. ANZG (2018) and HEPA (2018)

3 Indicated threshold value may not protect key species from chronic toxicity. Ref. ANZG (2018)

4 Low reliability 95% trigger values were adopted. Ref. Section 8.3.7, ANZG (2018)

5 Unknown species protection percentage. Ref. ANZG (2018)

6 As the laboratory POL is above the criterion, POL is used as a working level for assessment.

Table T3 - Soil Analytical Results: Acid Sulfate Soils

E24098 - Marrickville

Sample ID	Material	Analysis			
		pH (Field)	pHfox	Strength of Reaction	pH Difference (pH f - pH fox)
Previous Investigations (Aargus 2014)					
BH1_0.5-1.0	Fill	8.5	5.9	-	2.6
BH1_1.0-1.45	Silty CLAY	8.3	5.7	-	2.6
BH1_3.5-4.0	Sandy CLAY	7.5	5.4	-	2.1
BH2_0.5-1.0	Fill	8.4	5.9	-	2.5
BH2_2.0-2.5	Silty CLAY	8	5.7	-	2.3
BH2_4.0-4.5	Sandy CLAY	7.5	5.2	-	2.3
BH2_7.0-7.5	Gravelly Sandy CLAY	7.6	5.1	-	2.5
BH3_0.5-1.0	Reworked Silty CLAY	8.4	6.1	-	2.3
BH3_1.5-2.0	Silty CLAY	7.9	5.8	-	2.1
BH3_3.0-3.5	Sandy CLAY	7.6	5.4	-	2.2
Current Investigation (EI Australia)					
BH7_1.4-1.5	Silty CLAY	6.3	5.1	Extreme	1.2
BH7_2.4-2.5	Silty CLAY	6.5	4.9	Moderate	1.6
BH7_3.1-3.2	Silty CLAY	6.3	5.6	Moderate	0.7
BH7_4.0-4.1	Silty CLAY	6.4	6.1	Moderate	0.3
BH14M_1.2-1.3	Silty CLAY	6.9	5.4	Moderate	1.5
BH14M_1.8-1.9	Silty CLAY	6.8	5.2	Moderate	1.6
BH14M_2.9-3.0	Silty CLAY	7.4	7.4	Extreme	0
BH14M_3.8-3.9	Clayey SAND	6.8	6.4	Moderate	0.4
SILs					
ASSMAC (1998) Screening Criteria	Indicator of PASS	NR	<3.5	NR	NR
	Indicator of AASS	<4.0	NR	NR	NR

Notes:

	Criteria exceeding
	Exceeding ASSMAC, 1998 criteria

NR No reference criteria available in current regulatory tools.

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## Appendix C – Proposed Development Plans

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## Appendix D – Site Photographs

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Figure D-1 Entrance to 'Gorilla Constructions' Spray Painting Workshop showing concrete hardstand with patchwork.



Figure D-2 Sump Grate in Smash Repairs workshop (at time of inspection sump appeared near full with liquid and some sheen on the surface).





Figure D-3 Electrical Sub-Station no. 284 to the south west adjacent to the site at 200 Victoria Road, Marrickville.



Figure D-4 Chemicals (paints, solvents and varnishes associated with car repair) stored in the eastern storeroom within the smash repairs workshop.

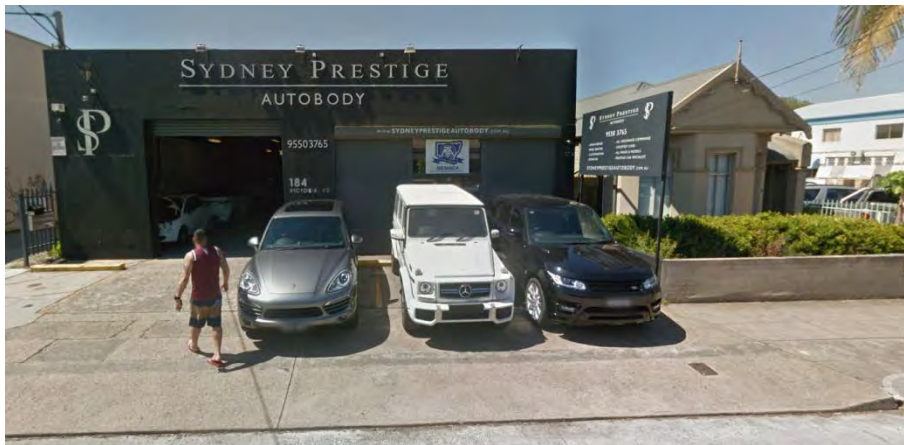


Figure D-5 View of smash repairs and adjacent brick cottage from Victoria Road.



Figure D-6 Gravel road-base in northern portion of site forming pathway from the smash repairs workshop towards the spray painting workshop.





**Figure D-7 Chemical storage in north eastern portion of stone cutting workshop (chemicals associated with stonecutting process and listed in Aargus (2014) DSI).**



**Figure D-8 Spray Painting booth within 'Gorilla Constructions' spray painting workshop, hot-works in process behind red partition.**



Figure D-9 Laundry / dry cleaner on adjacent lot to the north east of the site



Figure D-10 Spray Painting booth (behind orange doors) in north eastern corner of smash repairs workshop.





**Figure D-11** Exposed (poorly contained) soils along western side of carpark.



**Figure D-12** Internal southern portion of 'Harmony Stone' workshop.





**Figure D-13** Storage of stone slabs associated with 'Harmony Stone' workshop.



**Figure D-14** Waste stockpile in north eastern portion of carpark adjacent to smash repairs.

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## Appendix E – GPR Survey

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## Ground Penetrating Radar Report

**Date:** 14/12/2018  
**Client:** Environmental Investigations  
**Contact:** Brigitte Lovette  
**Site:** 182 – 198 Victoria Road, Marrickville  
**Equipment:** IDS Ouverture Dual Antenna Ground Penetrating Radar



A thorough underground search was carried out on Friday 14/12/2018 at 182 – 198 Victoria Road, Marrickville, to determine the possible whereabouts of any underground storage tanks across the site.



11 Scans in total were carried out (see attached PDF) However there is nothing to suggest that there are any existing UST's in the area.

Every precaution is taken by Hunter Smith to ensure the work has been carried out as safely and responsibly as possible.

**IMPORTANT DISCLAIMER** Due to the limitations of the equipment as described above and ground conditions, there will on occasion be no indication of the presence of underground objects, cavities or concealed services, including pipes or cables. The environment can also hinder or prevent accurate feedback or information. Trained staff will determine the location and position of concealed objects, cavities and services, to the best of their ability with the latest equipment. All results relayed to the Client will be the most accurate information possible, for the Client to then use at their discretion. *Hunter Smith* will not be liable for any actual or consequential costs incurred by the Client due to the existence of undetected objects, cavities or services.



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## Appendix F – Borehole Logs

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This borehole log should be read in conjunction with El Australia's accompanying standard notes.  
 ※RL values extrapolated from survey plan (True North surveys, Ref: 8333DU, Dated: 01/09/2016)



Project Additional Site Investigation  
 Location 182-198 Victoria Road, Marrickville, NSW  
 Position Refer to Figure 2  
 Job No. E24098.E03  
 Client Toga Constructions NSW Pty Ltd

Surface RL 2.56 m AHD  
 Contractor BG Drilling  
 Drill Rig Rig 7  
 Inclination -90°

Sheet 1 OF 2  
 Date Started 17/12/18  
 Date Completed 18/12/18  
 Logged FY  
 Checked MG Date: 23/1/19

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
DT			0	0.12				-	CONCRETE; 120 mm thick.	-		CONCRETE HARDSTAND
			2.44	BH2_0.2-0.3 ES PID = 1.9 ppm			-	FILL: Silty CLAY; high plasticity, dark grey to dark red-brown, with fine to medium grained, weathered sandstone gravel, no odour.		FILL		
			1		BH2_0.7-0.8 ES PID = 1.2 ppm					M		
				BH2_1.3-1.4 ES PID = 1.1 ppm								
			2	1.70			CH	Silty CLAY; high plasticity, pale grey, with fine to medium, sub-rounded ironstone gravel, no odour.				NATURAL
			0.86	BH2_1.8-1.9 ES PID = 0.9 ppm								
				2.40				From 2.4 m, no ironstone gravel.				
			0.16						M			
			5									
			6	5.62			-	SANDSTONE; fine to medium grained, pale grey, with iron staining, no odour.				BEDROCK
			-3.06									
			7									
			8									
			9									
			10									

This borehole log should be read in conjunction with El Australia's accompanying standard notes.  
 ※RL values extrapolated from survey plan (True North surveys, Ref: 8333DU, Dated: 01/09/2016)

Project Additional Site Investigation  
 Location 182-198 Victoria Road, Marrickville, NSW  
 Position Refer to Figure 2  
 Job No. E24098.E03  
 Client Toga Constructions NSW Pty Ltd

Surface RL 2.56 m AHD  
 Contractor BG Drilling  
 Drill Rig Rig 7  
 Inclination -90°

Sheet 2 OF 2  
 Date Started 17/12/18  
 Date Completed 18/12/18  
 Logged FY  
 Checked MG Date: 23/1/19

Drilling				Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
NMLC	-	GWNE	10	12.10			.....	-	SANDSTONE; fine to medium grained, pale grey, with iron staining, no odour.		-	BEDROCK
			11									
			12									
			13						Hole Terminated at 12.10 mBGL; Target depth reached.			
			14									
			15									
			16									
			17									
			18									
			19									
			20									

This borehole log should be read in conjunction with EI Australia's accompanying standard notes.  
 ※RL values extrapolated from survey plan (True North surveys, Ref: 8333DU, Dated: 01/09/2016)

This borehole log should be read in conjunction with EI Australia's accompanying standard notes.  
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Project Additional Site Investigation  
Location 182-198 Victoria Road, Marrickville, NSW  
Position Refer to Figure 2  
Job No. E24098.E03  
Client Toga Constructions NSW Pty Ltd

Surface RL 2.56 m AHD  
Contractor BG Drilling  
Drill Rig Rig 7  
Inclination -90°

## TEST: BH3M

Sheet 2 OF 2  
Date Started 17/12/18  
Date Completed 17/12/18  
Logged FY  
Checked MG Date: 23/1/19

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	PIEZOMETER DETAILS ID Static Water Level BH3M
NMLC	.	GWNE	10				-	SANDSTONE; fine to medium grained, with dark grey lamination, with iron staining, no odour.			
			11								
			12								
			13								
			13.39								
			14					Hole Terminated at 13.39 mBGL; Target depth reached.			
			15								
			16								
			17								
			18								
			19								
			20								

This borehole log should be read in conjunction with El Australia's accompanying standard notes.  
※RL values extrapolated from survey plan (True North surveys, Ref: 8333DU, Dated: 01/09/2016)