Waste/ Contaminate Sites

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Structure

- Myself – Who am I, what I have done and why am I here?
- Waste – What is waste, waste classification, waste in contaminated land?
- Contaminated sites – What is a contaminated site? How are they remediated?
- Case studies

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USTs, Contaminated Soil Encapsulation and Water

Completed works

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Servos

Asbestos/Demolition

USTs / Bioremedition

Completed works

WASTE:

- Something becomes waste when it is “left over, surplus or unwanted by product”
- Waste is classified in NSW, dependent on what it is, where it’s come from, what is in it and where it is going:
  - VENM/ENM – Waste Regulation Exemption – Resource Recovery - if it is not going to landfill and has contaminates less than criteria set by the EPA.
  - General Solid – landfill
  - Restricted Solid – landfill
  - Special Waste – landfill (includes asbestos and waste tyres)
- The waste must be characterised by the waste generator.
- The construction of the lining of our landfills controls what we can put into them.

Forbes Recycling and Waste Depot can receive General Solid Waste and asbestos and meet the needs of the community.

VENM/ENM and Section 143:

ORIGINAL: TO BE COMPLETED BY LANDOWNER AND GIVEN TO WASTE TRANSPORTER OR DISPLAYED AT WASTE FACILITY

APPROVED NOTICE UNDER SECTION 143

PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997

WARNING: If you sign this notice it could be used as a defence by a transporter if they deposit waste on your land. It does not give you a defence. It is an offence to provide false or misleading information about waste (section 144AA)

I (*full name*) .....

am the owner and/or occupier (*delete if not applicable*) of (*insert street address and/or folio identification number of place*):

.....

.....

certify that this place can lawfully be used as a waste facility for the **waste(s) specified** in the following table.

(Note: you must clearly state the exact type. Do not use terms like 'fill' or 'clean fill'.)

Table of specified wastes

Type of waste	Classification of waste	Amount of waste
e.g. virgin excavated natural material	e.g. general solid waste	e.g. 50 tonnes
.....	.....	.....

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Waste Classification:

Previous Use	Service station and rest area.
Current Use	Vacant site pending development.
Future Use	New service station and truck stop.
Trigger for Assessment	To assess excavation areas where spoil resulting from bulk earthworks is intended to be reused offsite.

The objective of this ENM assessment is to characterise the spoil intended to be reused off-site in accordance with the Protection of the Environment Operations Act 1997 (POEO Act), POEO (Waste) Regulation 2014 and the NSW EPA Excavated Natural Material Order 2014 (the ENM Order).

7. RESULTS

The results of the analytical testing of the soil samples were compared to the criteria listed within Table 4 of the ENM Order, an analytical results table is provided below and in **Appendix C**. A summary of results in comparison of the ENM assessment criteria and are summarised in **Table 3**.

Table 3 *Analytical Results*

COLUMN 1	COLUMN 2	COLUM 3	RESULTS[3]	RESULTS[3]
CHEMICALS AND OTHER ATTRIBUTES	MAXIMUM AVERAGE CONCENTRATION (MG/KG)[1]	ABSOLUTE MAXIMUM CONCENTRATION	AVERAGE CONCENTRATION	MAXIMUM CONCENTRATION
1. Mercury	0.5			
2. Cadmium	0.5			
3. Lead	50	100	15	46

8. CONCLUSION AND RECOMMENDATIONS

Based on the review of the site history, soil sampling and analytical results; the soil within the area assessed from a depth of 0.1 m to 1.0 m is classified as **Excavated Natural Material**.

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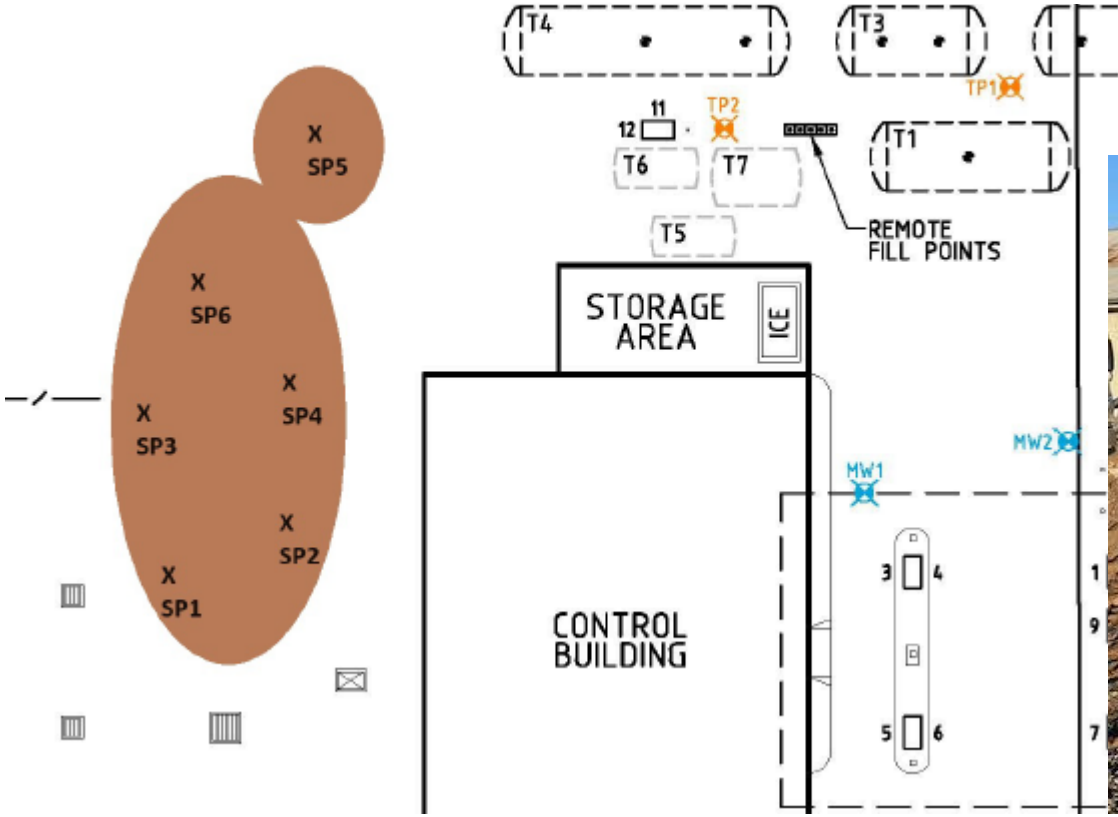
6. Waste Classification

Waste Classification	**General Solid Waste (non-putrescible)**
Does 'Special Waste' apply?	**No**
Is the Material Classified as 'Hazardous Waste'?	**No**
	The classification applies to all the material identifi… classification is in accordance with the NSW EPA (2…

	% Moisture Content	Absence/Presence	Carbophenothion	Arsenic (Total)	Cadmium	Chromium (Total)	Copper	Lead
	%		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	1		0.05	5	1	2	5	5
NSW EPA 2014 General Solid Waste (No Leaching)				100	20	100		100
NSW EPA 2014 General Solid Waste (with leached)				500	100	1900		1500
NSW EPA 2014 Restricted Solid Waste (No Leaching)				400	80	400		400
NSW EPA 2014 Restricted Solid Waste (with leached)				2000	400	7600		6000

Field ID	Sampled Date-Time	Lab Report Number	Soil Type	PID (ppm)								
SP1	26/03/2024	ES2409934	Natural: Silty Clay	4.2	9	No	<0.05	8	<1	19	28	44
SP2	26/03/2024	ES2409934	Natural: Silty Clay	0.9	13.6	No	<0.05	20	<1	26	33	87
SP3	26/03/2024	ES2409934	Natural: Silty Clay	12.4	6.5	No	<0.05	9	<1	12	14	30
SP4	26/03/2024	ES2409934	Natural: Silty Clay	1.1	5.2	No	<0.05	8	<1	16	24	53
SP5	26/03/2024	ES2409934	Natural: Silty Sand	2.1	8.6	No	<0.05	<5	<1	12	10	10
SP6	26/03/2024	ES2409934	Natural: Silty Clay	18.9	7.9	No	<0.05	11	<1	22	25	43
QC01 (SP5)	26/03/2024	ES2409934	Natural: Silty Clay	1.1	5.7	No	<0.05	<5	<1	14	14	23



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Completed works

CONTAMINATED SITES:

- A site is deemed contaminated when contaminate levels in the soil or groundwater exceed guideline levels for the site use or pose a risk to the environment.
- EPA regulate significantly contaminated (notified) sites, those are sites that pose unacceptable risk to human health or the environment. These are regulated under the CLM Act.
- Councils are the regulator for all other sites through the planning and development process – SEPP55 – Remediation of Contaminated Land (due for replacement, watch DPE space).

How do we know its contaminated – Investigations:

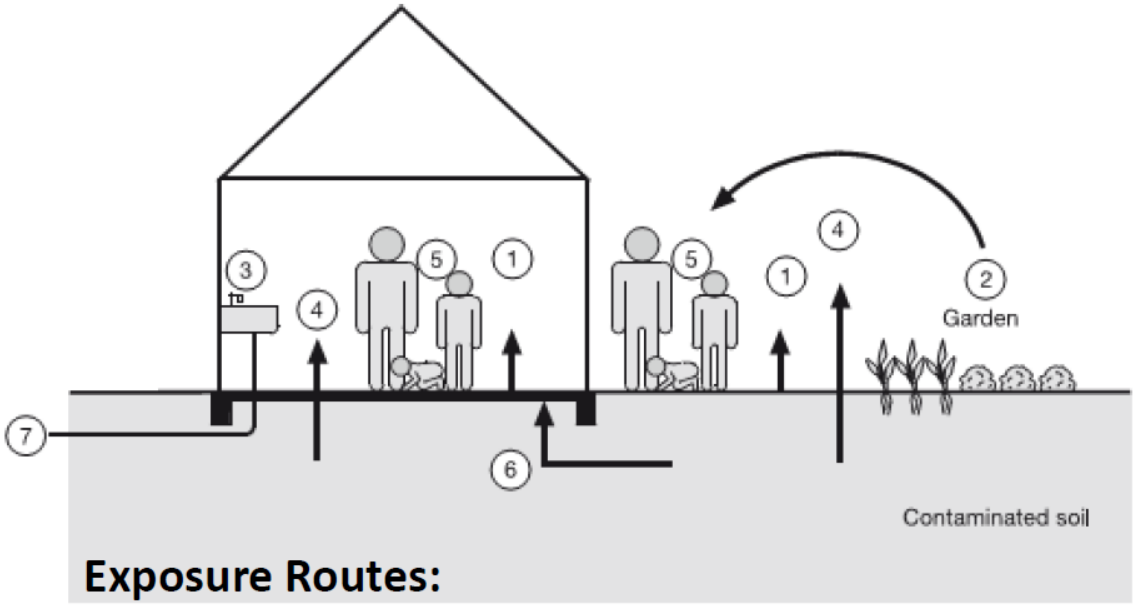
- Stage 1 – Preliminary Site Investigation / Non-Intrusive / Deskstop study – site history, adjacent sites, site inspection – could it be contaminated?

- Stage 2 – Detail Site Investigation / Intrusive investigation – contaminants identified, risk? Conceptual Site Model / Source Pathway Receptor

- Remediation Action Plan – How are we remediating the site, how can we confirm it is remediated?

- Validation Report – documenting remediation, if goals met, residual contamination, ongoing monitoring

Conceptual Site Model



Exposure Routes:

- Ingestion of contaminants in ① dust, ② food, ③ water
- Inhalation of contaminants ④ in soil particles, dust, vapours
- Direct contact with contaminants ⑤ in soil, dust or water
- Contamination attack on building structures, ⑥ services and infrastructure ⑦

Source – Pathway – Receptor

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Case Study – Pitstop Corner

Detailed SI

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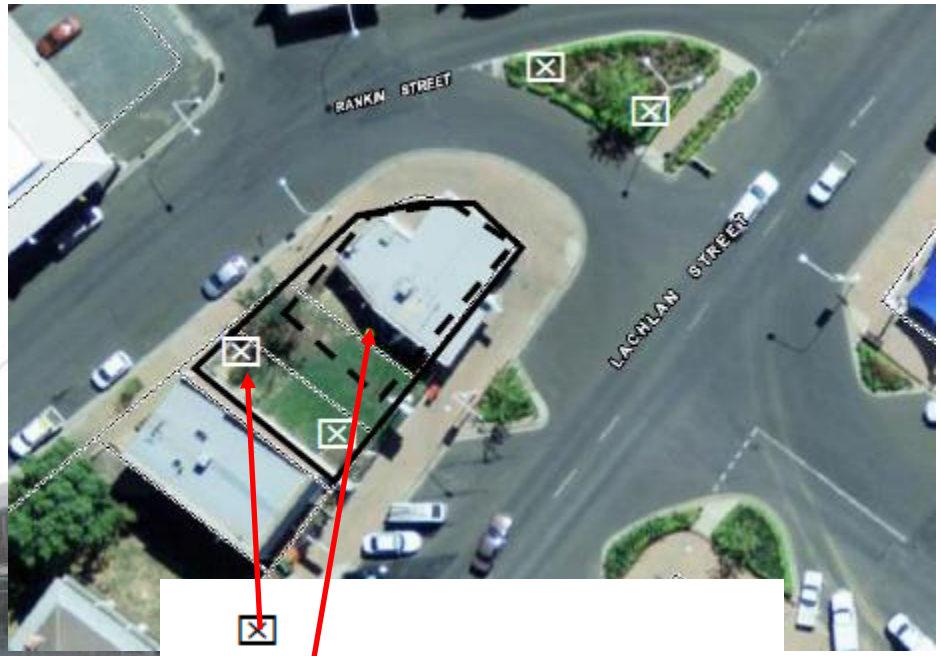
Case Study
Pitstop Corner

Remediation Action Plan



Proposed monitoring well locations

Excavation area

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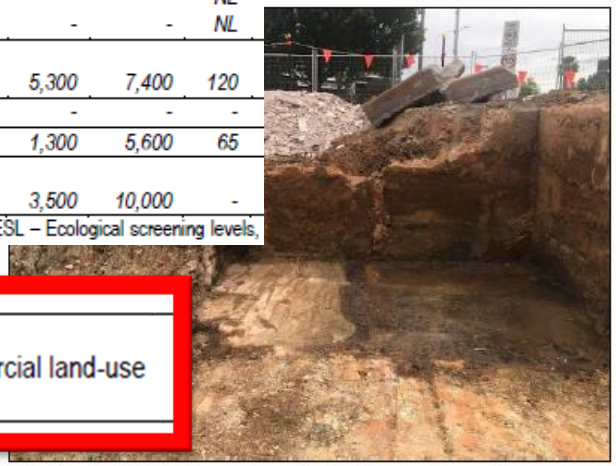
Remediation and Validation:

Table 9. Northern pit soil analysis results for hydrocarbons (mg/kg)

Sample ID	Depth (m)	Location (Figure 3)	TRH (C6-C10)	TRH (C10-C16)	TRH (C16-C34)	TRH (C34-C40)	Benzene
501	1.5	N UPSS pit N wall	36	65	<90	<120	<0.1
502	1.5	N UPSS pit N wall	100	**180**	<90	<120	<0.1
503	1.5	N UPSS pit W wall	**290**	**390**	160	<120	<0.1
504	1.5	N UPSS pit W wall	130	100	<90	<120	<0.1
505	1.5	N UPSS E wall	110	150	<90	<120	<0.1
HSL C – Recreational/open space (clay soil)							
	0m to <1m		*NL*	*NL*	-	-	*NL*
	1m to <2m		*NL*	*NL*	-	-	*NL*
	2m to <4m		*NL*	*NL*	-	-	*NL*
Direct contact HSL C - Recreational/open space			*5,100*	*3,800*	*5,300*	*7,400*	*120*
EIL – Public open space			-	-	-	-	-
ESL – Public open space (fine soil)			*180*	*120*	*1,300*	*5,600*	*65*
Management limits – Public open space (fine soil)			*800*	*1,000*	*3,500*	*10,000*	-

HSL – Health screening levels, EIL – Ecological investigation levels, ESL – Ecological screening levels,

Recommendations
The site is suitable for recreation and commercial land-use



Northern UPSS excavation pit north wall, showing water ingress

Northern UPSS excavation pit east wall

INFORMATION:

The following sites are a great source of information that relate to Councils' areas*:

- EPA including UPSS https://www.epa.nsw.gov.au/your-environment/contaminated-land
- RAMJO/REROC - https://www.ramjo.nsw.gov.au/contaminated-land/
- Hunter JO - https://www.hunterjo.com.au/projects/regional-contaminated-land-program/
- LG NSW - https://lgnsw.org.au/Public/Public/Policy/Contaminated-Land/Contaminated-Land-tabs.aspx?hkey=db6e45f1-55af-4a62-b447-5754104a9b5a

*and may or may not have been plagerised in the making of this presentation

Forbes -

- Developers wishing to send / receive material.
- Inland rail - managing waste volumes, waste classification
- EPA allowing us to stockpile material onsite for closure / capping of existing cell
- Asbestos Clearance Certificate – renovations/repairs following an Emergency Order

UK

Freshwharf Estates, UK. Keeping contaminated material onsite whilst remediating the site.

THANK YOU

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