

South Australia's Environment Protection Authority

Beverley Community Working Group



Tuesday 17 May 2016



Agenda

1. Welcome and introductions
2. Review of past meeting notes
3. Summary of historical activities
4. Broader area report results
5. Update of validation works
6. SA Health presentation
7. Questions
8. Next meeting

Welcome and introductions

Rachel Hudson

Principal Adviser, Community Engagement

- Meeting duration and new question format
- Introduction to Dr Ian Delaere and Richard Evans from SA Health

3. Review of past meeting notes

- We have now sent out detailed responses to the questions raised at the last meeting
- SA Health are here tonight to present and answer questions



Summary of historical activities

A brief history of trichloroethene (TCE)

Five questions with overly simplified answers:

1. When was TCE first introduced to Australia?
A) likely some time around 1910
2. What was TCE used for and what industries were using it?
A) primarily as a metal degreaser/cleaner by a large variety of industries
3. How much TCE has historically been used?
A) a lot

A brief history of trichloroethene (TCE)

Five questions with overly simplified answers:

4. Is TCE still being used?

A) yes, but in significantly smaller quantities

5. How did the TCE contamination occur?

A) likely due to poor disposal practices (compared to today's standards)

A brief history of trichloroethene (TCE)

When was TCE first introduced to Australia?

- It is unclear when TCE was first imported into Australia
- Commercial production of TCE began in Europe in 1908
- Reasonable to expect TCE would have arrived in Australia by the 1910's
- The first record of TCE use in Australia that could be found was from 1918¹



<http://trove.nla.gov.au/newspaper/article/27466937?searchTerm=westrosol&searchLimits>

A brief history of trichloroethene (TCE)

What was TCE used for and what industries were using it?

- TCE has historically had a variety of uses, the predominant use however has been as a metal degreaser.
- A survey of industry using TCE was conducted by NICNAS in 2000.

Industry	Percentage of industry
Metal forming/machining	50%
Powder coating	10%
Automotive	10%
Aerospace	6%
Electrical	6%
Chemical processing	2%
Rubber products manufacture	2%
Telecommunications	1%
Paint	1%
Oil refining	1%
Gas production and manufacture	1%
Locomotive	1%
Lubricants manufacture	1%
Unspecified manufacturing	4%
Other	4%

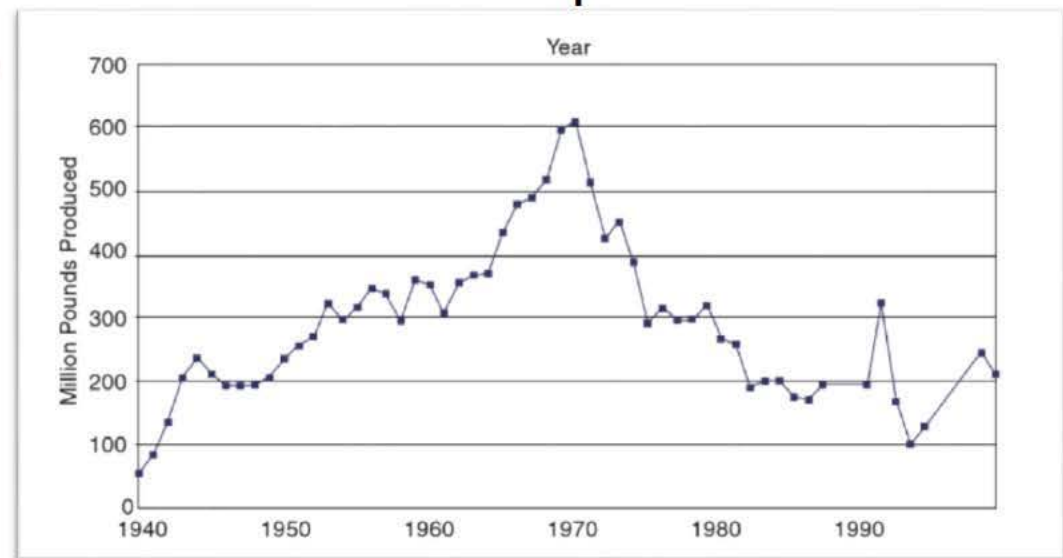
A brief history of trichloroethene (TCE)

How much TCE was historically and is currently being used?

- There is a very limited data relating to historic quantities of TCE in Australia.
- As of 2006, <1000 tonnes of TCE has been imported into or manufactured in Australia.

Year	Amounts (tonnes)
1988	3090
1989	2098
1990	1924
1991	2235
1992	2168
1993	1988
1994	2101
1995	2873
1996	3015
1997	2709

Australian imports of TCE (1988 – 1997)



US production of TCE (Doherty 2000, Lee *et al* 2003 and Leppart 1945)

A brief history of trichloroethene (TCE)

How did the TCE contamination occur?

- There a number of ways in which TCE contamination may have occurred
- The most likely cause of the contamination in Beverley is historical disposal



History of Beverley

The modern suburb of Beverley is the amalgamation of the suburbs of York and historical Beverley.

Beverley since its inception has been a mixture of residential and industrial land uses with a consistent but gradual shift towards industrial/commercial land uses.

Since the early 1900s Beverley has been dominated by two industries:

- Brick making to the South (pug-holes)
- Whitegoods and other manufacturing to the North

History of Beverley

Whitegoods manufacturing continued in Beverley until the closure of Electrolux in 2008.

It is worth noting that many factories in Beverley were used for munitions manufacturing during WWII.

Brick making and pug holes

The brick making and clay mining begun in Beverley in the late 1800s, however it was not until the housing boom after WWII that the industry grew substantially in size.

Although TCE is not directly associated with brick making it is documented that some pug holes in Beverley were used as disposal areas once useable clay was exhausted

Brick making and pug holes

The EPA has found no evidence to suggest that the two pug-holes within the current assessment area were used as land fills or disposal areas.

Pug-hole map

1949 Aerial

1979 Aerial

Industries of note



Company name	Reference number
Crompton and Son	Outside assessment area (South)
JA Lawton and Son	1
Jarrett and Son	(Portion) 1
Holden Motor Body Building Company	(Portion) 2
Clarkson Ltd	2
Coumbe and Son Engineers	(Portion) 1
Rowvans	3
Eglingtons	4
ESS-Goods	5
Waymouth Motor Company	6
Follett & Smith	7
Pope Products	8

Growth of industry



1949

1979



2009

Pictures of industry



Holden's
Beverley

Pope Products
Beverley (1958)



J A Lawton & Son
(actual picture may
not be Beverley but
another J A Lawton
& Son site)

Summary

TCE use peaked between the 1960 – 1980.

Although TCE is still available and used today it is unlikely that the contamination in Beverley is the result of current day use.

Beverley has a long industrial heritage especially in the north.

The areas highlighted are only potential areas where TCE may have been used and do not necessarily mean the sites are contaminated.

Summary cont.

This historical summary is limited to the records that are publically available.

The JBS&G report on the Broader Beverley Assment Area includes discussion around potential sources based on laboratory data.



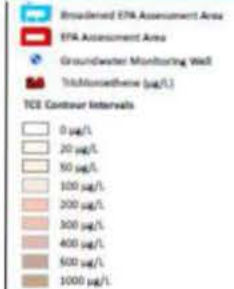
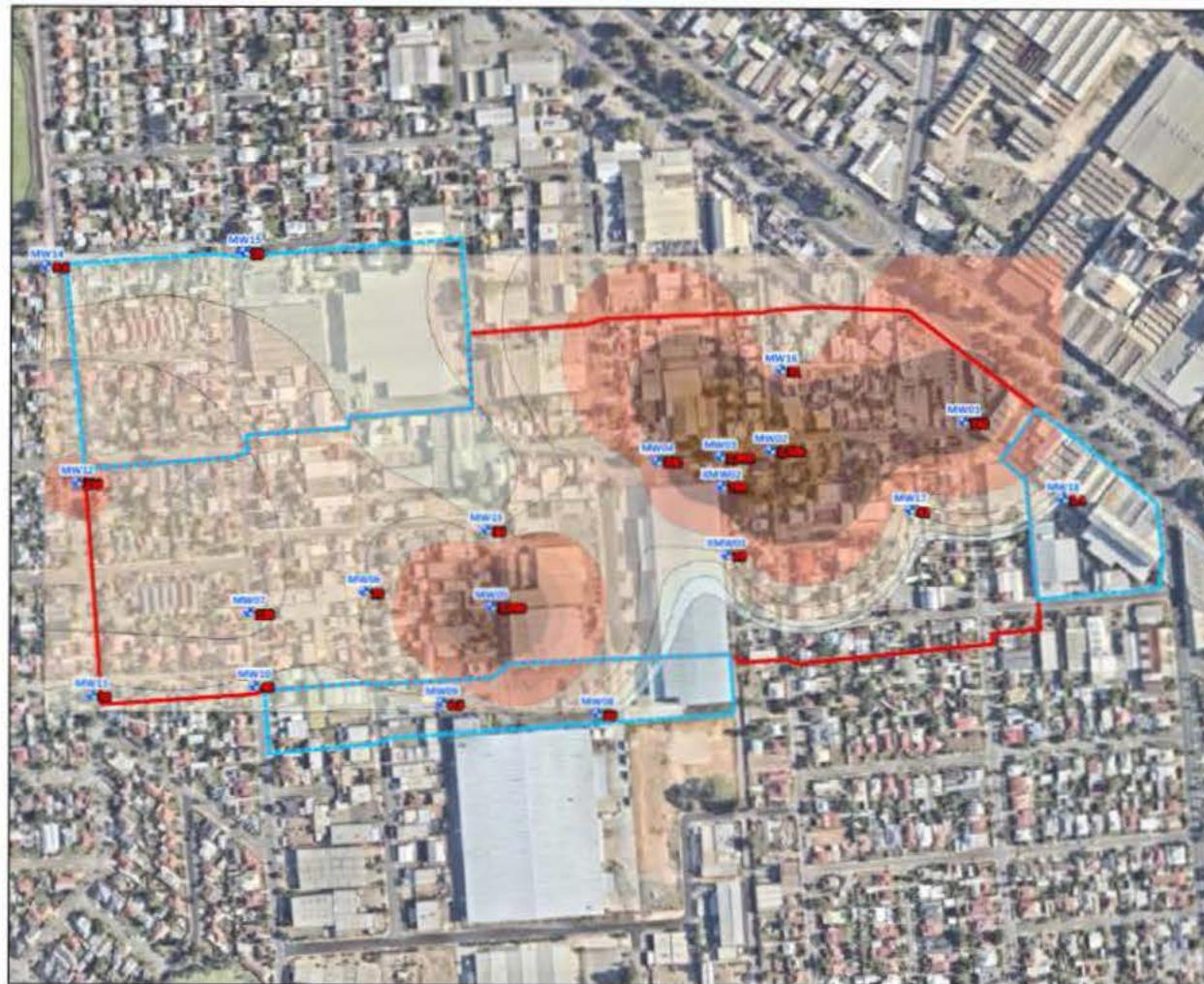
Broader Beverley area results



Broader area - objectives

- Extent of vapour contamination
- Extent of groundwater contamination
- Determination of potential source locations based on new data

Broader area - groundwater



Job No: 51250

Client: SA EPA

Version: FINAL

Date: 18-Apr-2016

Drawn By: TB

Checked By: KC

Scale of AA: 1:1,500

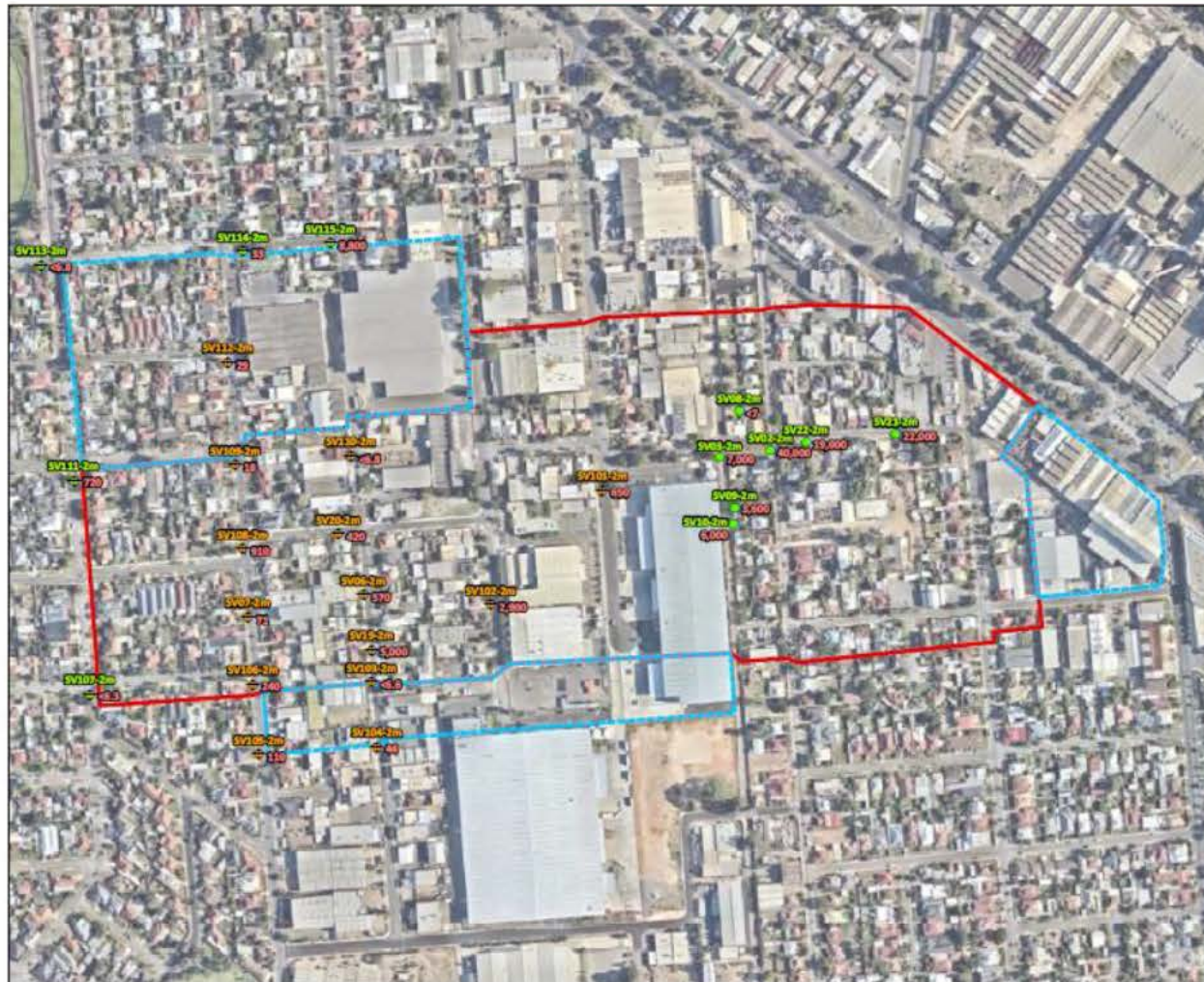


Coord. Sys: GDA 1994 MGA Zone 54

Stage 3 Beverley Broadened EPA Assessment Area, Beverley, South Australia

INFERRED DISSOLVED PHASE TCE GROUNDWATER PLUME: FEBRUARY 2016

Broader area – soil vapour (2m)



- Broadened EPA Assessment Area
- EPA Assessment Area
- Soil Vapour Probe Sampled 2016
- Soil Vapour Probe Sampled 2015
- Nested Soil Vapour Probe Sampled 2016
- Trichloroethene (µg/m³)



Job No: 53350
 Client: SA EPA
 Version: FINAL
 Date: 18-Apr-2016
 Drawn By: TB
 Checked By: KC

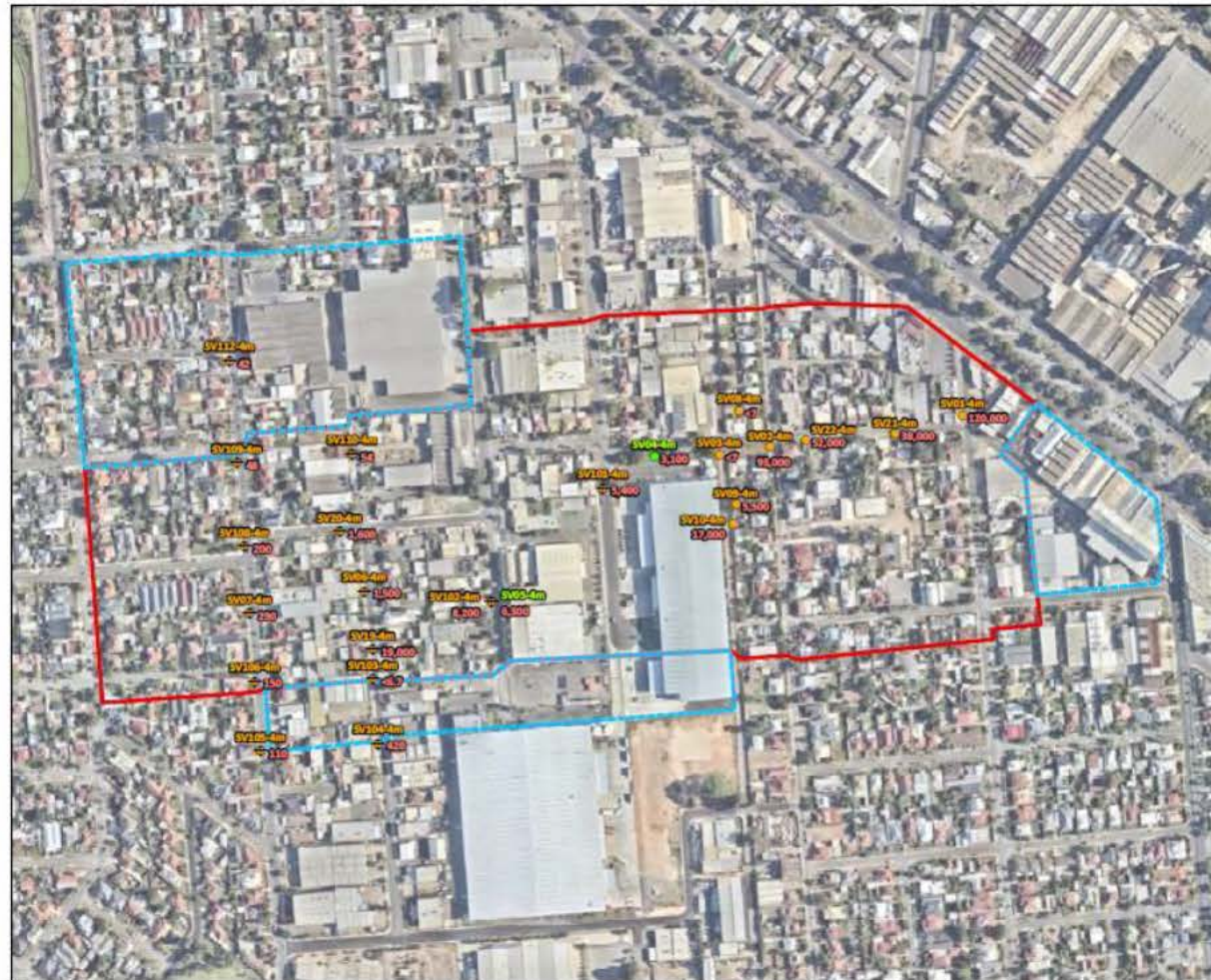
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Coor. Sys. GDA 1994 MGA Zone 54

Stage 3 Beverley Broadened EPA Assessment Area, Beverley, South Australia

SOIL VAPOUR TCE 2M CONCENTRATIONS

Broader area – soil vapour (4m)



- Legend:**
- EPA Assessment Area
 - Broader EPA Assessment Area
 - + Soil Vapour Probe Sampled 2016
 - Soil Vapour Probe Sampled 2015
 - + Nested Soil Vapour Probe Sampled 2016
 - Nested Soil Vapour Probe Sampled 2015
 - ☒ Trichloroethene (µg/m³)



Job No: S1350

Client: SA EPA

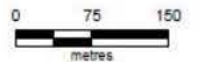
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Coor. Sys. GDA 1994 MGA Zone 54

Stage 3 Beverley Broader EPA Assessment Area, Beverley, South Australia

SOIL VAPOUR TCE 4M CONCENTRATIONS

FIGURE 6C

Broader area

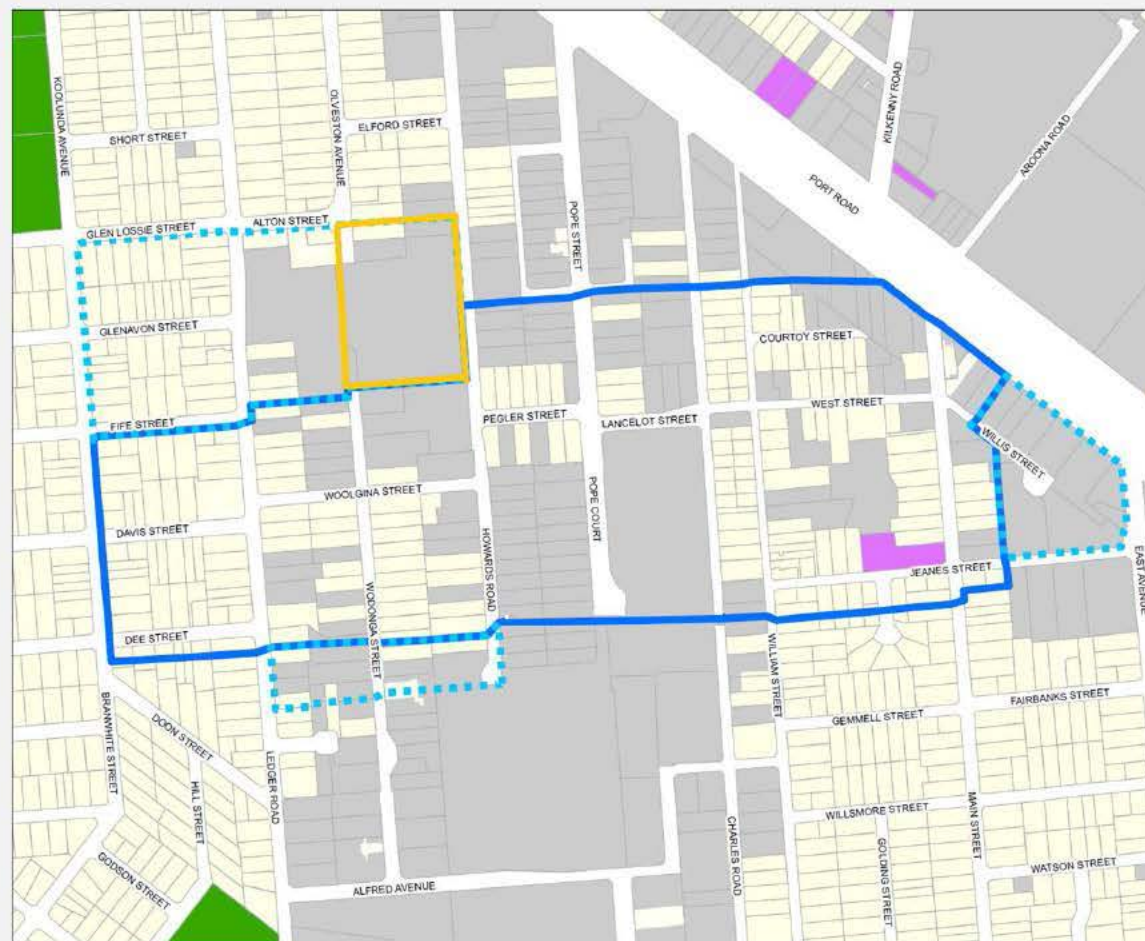


Table 11.2: Summary of Response Range Classification for the Broadened Assessment Area (From Soil Vapour Data)

Residential Zone	Estimated Number of Residential Properties Within Zone	Associated Soil Vapour Probes	Soil Vapour Data – 1 mbgl	Soil Vapour Data – 2 mbgl	Soil Vapour Data – 4 mbgl
2 (extended)	56	SV04-SV06, SV11, SV18, SV24, SV26, SV27, SV-34, SV103-SV106, SV11	No Action	Validation	Validation
6 (extended)	18	SV01-SV03, SV09, SV10, SV12, SV15, SV21, SV22, SV35, SV36	Intervention	Intervention	Intervention
12 (extended)	35	SV26	Validation	N/A	N/A
13	58	SV109, SV111, SV112, SV114	N/A	Validation	Validation
14	1	SV115	N/A	Investigation	N/A

These residential zones, along with all residential zones classified by Golder (2015f) previously, are shown in Figure 9. Calculation spreadsheets are included in Appendix P.

Broader area - zones



Beverly Assessment Area

- Residential
- Commercial, Industry or Vacant
- Parks and Reserves
- Education
- Public Institution
- Site specific works (results due Jun 2016)
- $< 2\mu\text{g}/\text{m}^3$ TCE predicted indoors
- $2-20\mu\text{g}/\text{m}^3$ TCE predicted indoors



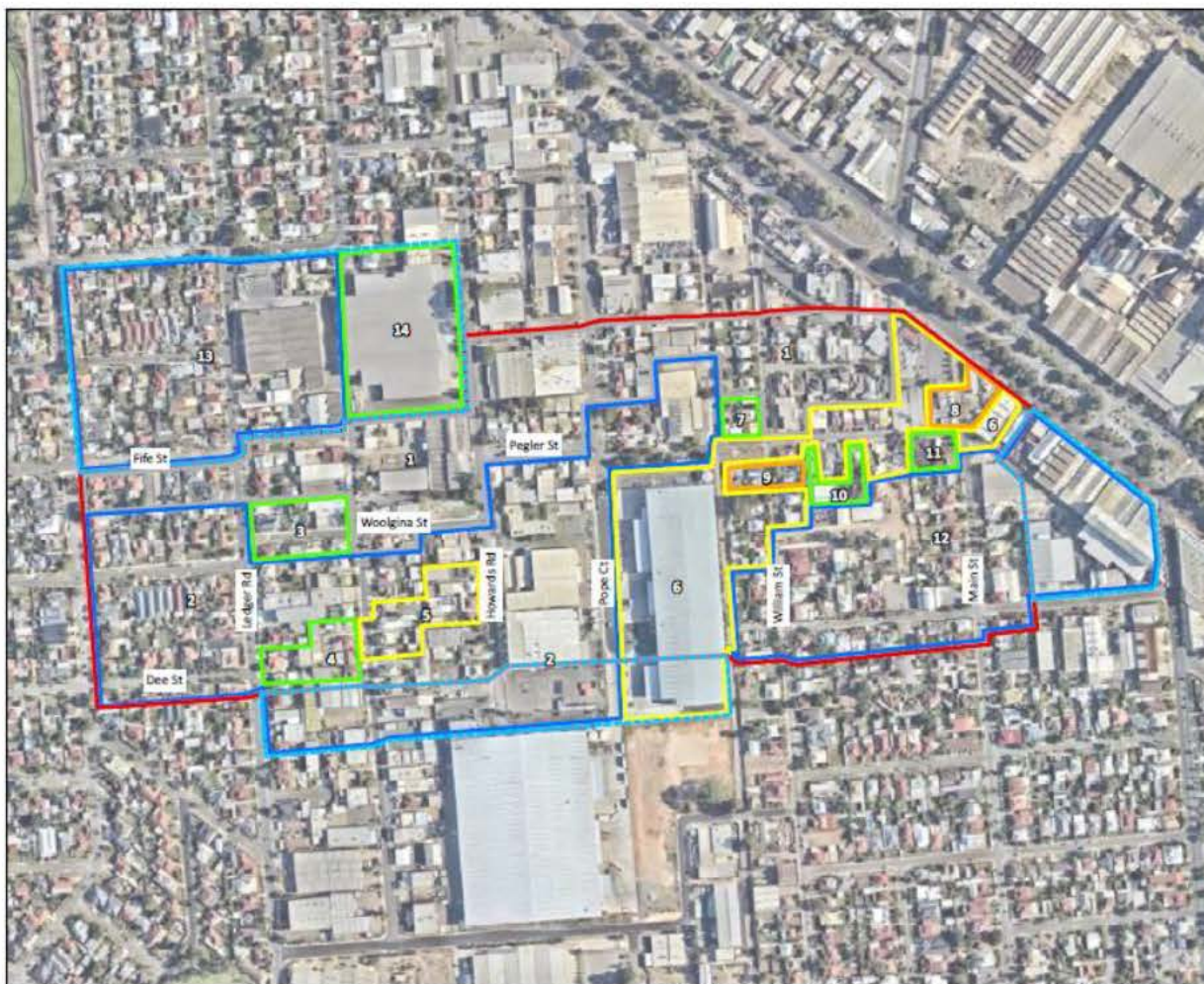
Produced by Environment Protection Authority
 GPO Box 2867 Adelaide SA 5001
www.epa.sa.gov.au

Data Source: EPA, DEWNR, DPTI
 Projection: Lambert Conformal Conic
 Datum: Geocentric Datum of Australia, 1984
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Broader area - zones



- Legend:**
- EPA Assessment Area
 - Broadened EPA Assessment Area
- Theoretical Indoor Air TCE Concentrations**
- Below Laboratory Limit of Reporting - No Action
 - <math>< 2 \mu\text{g}/\text{m}^3</math> - Validation
 - <math>< 20 \mu\text{g}/\text{m}^3</math> - Investigation
 - <math>< 200 \mu\text{g}/\text{m}^3</math> - Intervention
 - >math>> 200 \mu\text{g}/\text{m}^3</math> - Accelerated intervention



Job No: 51350

Client: SA EPA

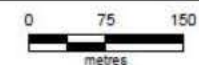
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Checked By: KC

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Coord. Sys: GDA 1994 MGA Zone 54

Stage 3 Beverly Broadened EPA Assessment Area, Beverly, South Australia

PRELIMINARY RESPONSE RANGE CLASSIFICATION FOR RESIDENTIAL ZONES WITHIN ASSESSMENT AREA AND BROADENED ASSESSMENT AREA

Site specific works - update

- EPA expecting draft report during week commencing 23 May 2016
- EPA will be contacting all individual property owners/tenants where work undertaken to provide a summary of the assessment results
- Formal correspondence with results will be provided when the report has been finalised
- Final report still on track to be received by the EPA in early June

5. Thank you and next meeting

Next meeting: 5th July 2016