

Gasworks Arts Park Environmental Audit



Report Summary

Soil Capping Investigation, soil tests results map and table

- Title:** Site Capping Investigation at Former South Melbourne Gasworks, Version 3, March 2014
- Prepared by:** Environmental Earth Sciences
- Objective:** To characterise the site cap and the extent of contamination in soil and to assess the potential risks posed to beneficial users of Gasworks Park and Southport Community Residential Home.

Findings

- Forty-one sample locations conducted: 26 test pits and 15 boreholes. 131 soil samples tested.
- Varying thickness and composition of the existing cap on the site. Up to 0.5m thick on approximately half of the site and thinner at the edges.
- Existing cap is contaminated with gasworks waste including contaminants polycyclic aromatic hydrocarbons (including benzo(a)pyrene and naphthalene), total recoverable hydrocarbons (C₁₆-C₃₆) and total recoverable hydrocarbons (C₃₄-C₄₀).
- Reported concentrations exceed the ecological and human health investigation levels (as defined by the National Environmental Protection (Assessment of Site Contamination) Measure) for a site used for public open space such as parks.
- Distribution of contamination is widespread and visually identifying and delineation of contamination is considered to be difficult.
- Several areas of concern with elevated concentrations have been identified.
- Refer to the map summarising the contamination levels between 0.0m to 0.5m depth and the table overleaf.

Table summarising the contamination levels at Gasworks Arts Park between 0.0m to 0.5m depth

Contaminant	Assessment Criteria on maximum Health Investigation level (Parks) [mg/kg] NEPM 1999	Assessment Criteria on maximum Health Investigation level (Parks) [mg/kg] NEPM 2013	Maximum reported concentration (within upper 0.5m at Gasworks) [mg/kg]
Lead	600	600	686
Total PAH	100	300	1,744
Benzo(a)pyrene - BaP	2	3	128

*National Environment Protection (Assessment of Soil Contamination) Measure, 1999, Health Investigation Level C public open space such as parks, playgrounds, playing fields
 # Using CRC Care Risk Based Criteria Model – modified SSTL (direct contact only)

The Gasworks Arts Park contamination is currently managed in the short term via the Interim Contamination Management Plan.

Given the wide distribution of contaminants on-site, variability of the historical soil capping layer thickness, presence of elevated concentrations of polycyclic aromatic hydrocarbons (PAH) and other Chemicals of Concern, and presence of gasworks waste within the top 0.5m of soil across the majority of the site, the Remediation Action Plan recommends the soil contaminants be capped.

The range of capping options in the RAP include:

- Capping contaminated soil with 500 mm of clean soil (mounding).
- Removing 500 mm of contaminated soil (stored on-site as mounds) and replacing it with 500mm layer of clean soil to maintain levels around buildings.
- Capping contaminated soil with hard paving/impervious surfaces.
- Other physical barriers – boardwalks, decking, barrier fencing and other interventions that cause a separation of the soil contamination from users.

NOTE: Whilst the test results in this report will remain unchanged, the analysis and recommendations of all technical documents concerning Gasworks Arts Park are still subject to the review of the Independent EPA appointed Environmental Auditor. The Independent Auditor's 'Environmental Audit Report' is then subject to review by the Environmental Protection Authority (EPA).

B(a)P & PAH levels.
Summary of soil test results exceeding NEPM 2013

Depths from 0.0m to 0.5m

Notes - added by Council

KEY:

- Test pits
- Borehole samples
- B(a)P/PAH concentrations in mg/kg
- WITHIN ACCEPTABLE LIMIT
- EXCEEDS NEPM 2013
- Tar
- Spent oxides
- Site boundary

Test pits are dug with an excavator up to 3.0m in depth

Borehole samples are dug with a drill rig up to 2.7m in depth

B(a)P/PAH concentrations in mg/kg

WITHIN ACCEPTABLE LIMIT

EXCEEDS NEPM 2013

> 3 mg/kg B(a)P
> 300 mg/kg PAH
> 600 mg/kg LEAD

Tar

Spent oxides

Site boundary

Based on borelogs

Spent oxides indicates the presence of gasworks waste within soil

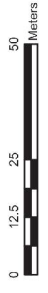
NEPM 2013 - National Environment Protection (Assessment of site contamination) Measure. Health investigation level C - for use as a park, recreational open space

- Polycyclic Aromatic Hydrocarbons (PAH) are a long chain hydrocarbon that can be produced by the burning/processing of organic material. At a gasworks coal was commonly burned to release gas and producing byproducts that contain PAHs
- Benzo(a)pyrene (BaP) is a PAH and with prolonged exposure can have carcinogenic effects

For full soil test results at varying levels between 0.0m to 2.0m see report:

Site Capping Investigation at Former South Melbourne Gasworks V3 March 2014, Environmental Earth Sciences Vic.

Go to www.portphilip.vic.gov.au/gasworks-arts-park-plan



Soil Results Summary - B(a)P & PAH levels. Depths from 0.0m to 0.5m
Sourced from Site Capping Investigation at Former South Melbourne Gasworks V3 March 2014, Environmental Earth Sciences Vic.

