

# Australia Report

**Andrew Pruszinski**

**Director Operations/Chief Operating Officer**

**October 2022**

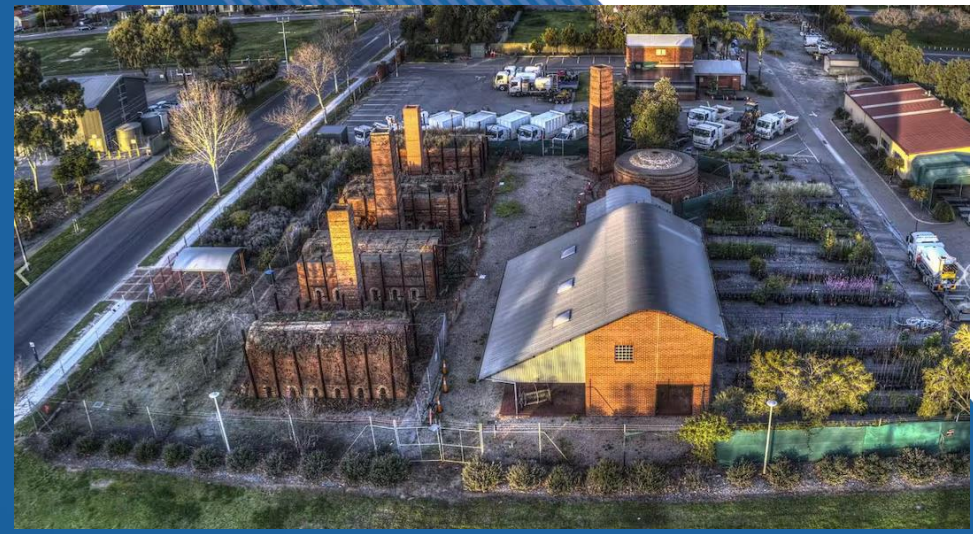




# Adelaide, South Australia



# Proud industrial past...





# Regulatory framework

- Non - statutory agreements
- Voluntary proposals/undertaking: no penalties for non compliance
- EPA Orders/Notices/Directions:
  - May be appealed to a Court
  - Offence for non-compliance
  - EPA can undertake the work and recover costs if non-compliant
  - Costs can be registered against all of the owner's land
- Court orders
- Prosecution (criminal and civil)

Regulatory  
effort/cost

Prosecution  
Court orders  
EPA orders  
Licence conditions  
Environment improvement programmes  
Statutory voluntary agreements  
Non-statutory agreements

# Petroleum hydrocarbons - licencing

In South Australia, since 1 January 2020 all petrol (service) stations must hold an EPA licence, which requires:

- all tanks and product piping to have an appropriate leak detection system capable of detecting a leak rate of  $0.76 \text{ L.hr}^{-1}$  with greater than 95% confidence and less than 5% false positive;
- equipment integrity testing as soon as reasonably practicable after suspecting a leak;
- EPA notification as soon as reasonably practicable, but in any case within 24 hours if confirmed loss of integrity







# Groundwater sampling (passive and active)

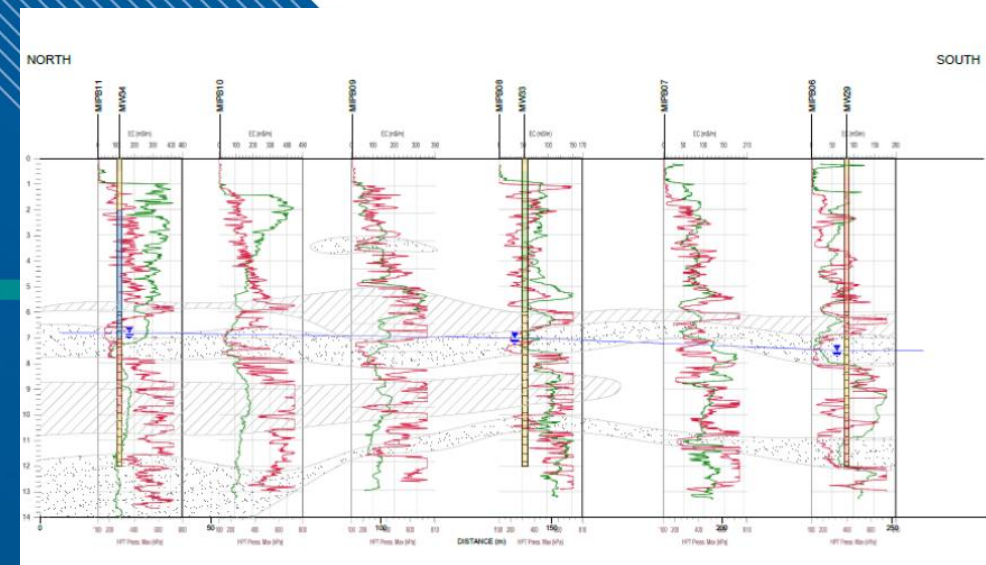


# Indigenous groundwater values & connections

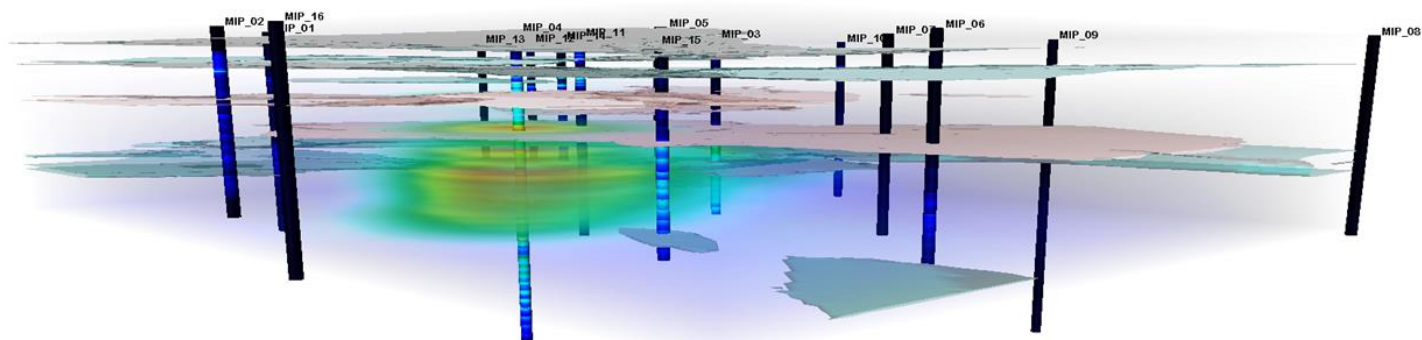
- In 200 years Australian rivers, waterways, wetlands and aquifers have deteriorated.
- *Terra nullius* “land belonging to no one” includes *aqua nullius*, traditional owners were displaced and dispossessed by both.



# High resolution characterisation



# Three dimension contaminant layers



Isosurface HPT 550kPa - clay layers  
Isosurface HPT 250kPa - permeable layers

XSD (uV) Volume Render

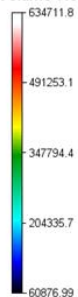


Image credit:

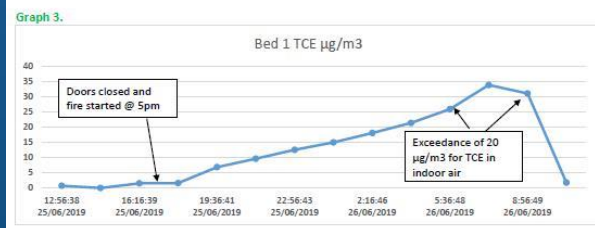
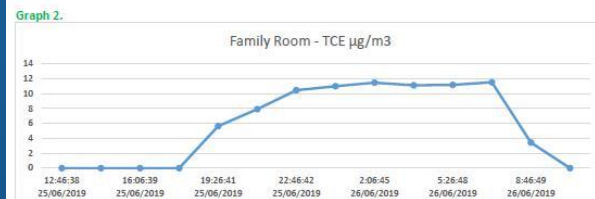
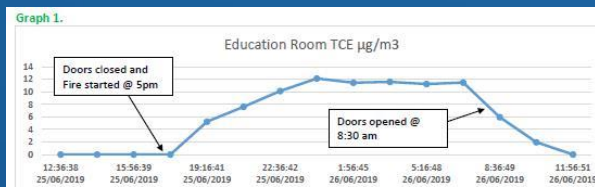
# Soil vapour assessment (passive and active)



# Sub-floor sampling (active and passive)



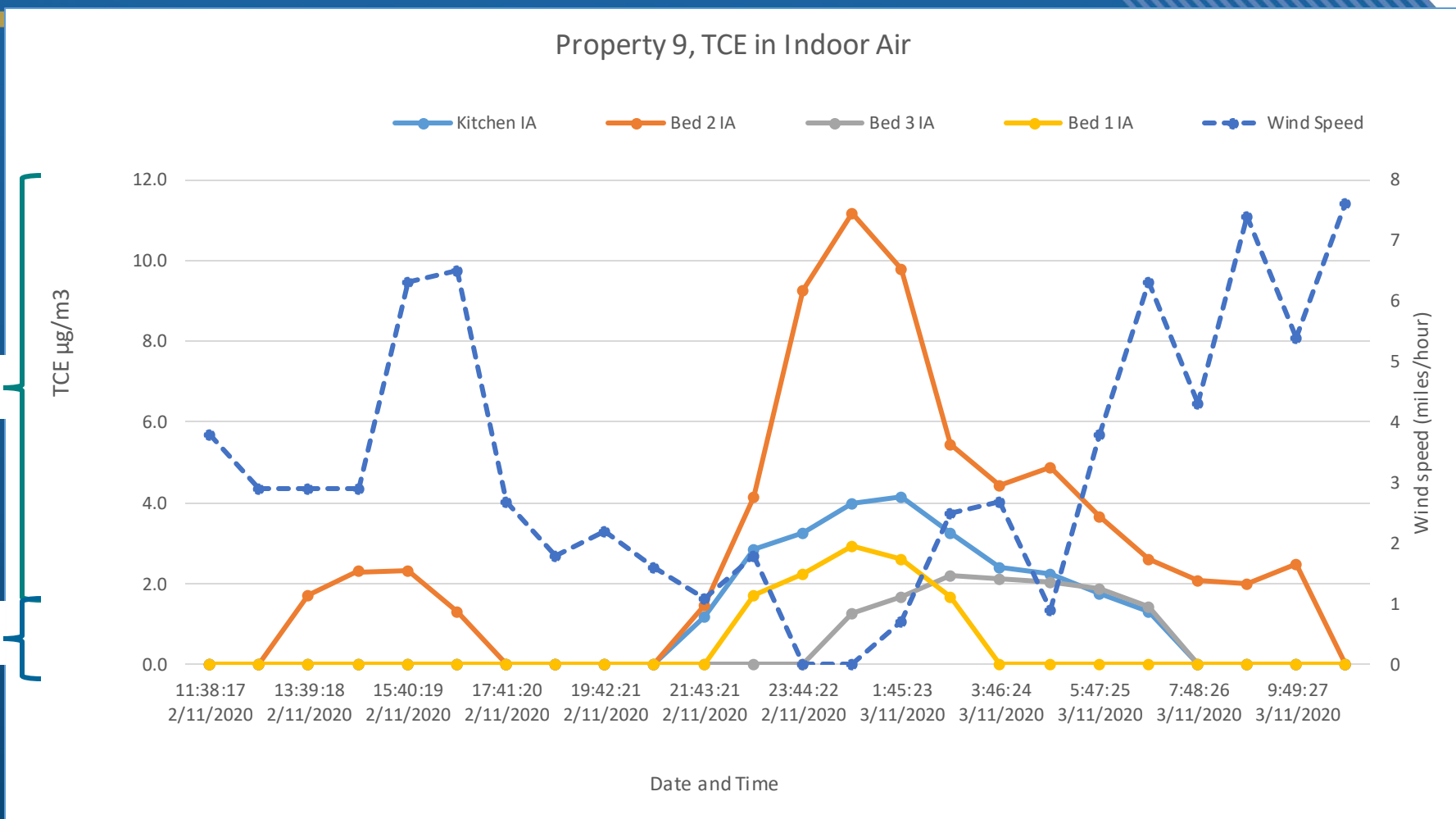
# Continuous monitoring



Photos: CSI Australia



# TCE data: by room, time, wind speed



investigation

safe

# PFAS soil remediation



Photo credit: Ventia Pty Ltd

# PFAS groundwater remediation



# PFAS: Landfill disposal

- Treatment is not required prior to landfill disposal provided that both dry weight and leachate disposal criteria are not exceeded
- single composite lining system:

Parameter	Dry conc (mg.kg <sup>-1</sup> )	Leachate (µg.L <sup>-1</sup> )
PFOS + PFHxS	50	0.7
PFOA	50	5.6

- double composite lining system:

Parameter	Dry conc (mg.kg <sup>-1</sup> )	Leachate (µg.L <sup>-1</sup> )
PFOS + PFHxS	50	7
PFOA	50	56

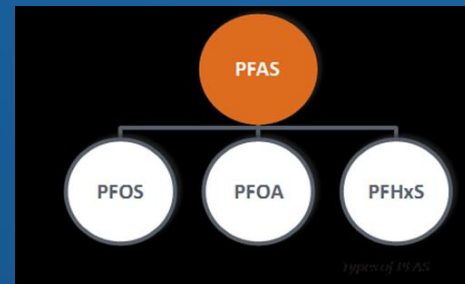


Photo: Southern Waste ResourceCo

# NEMP 3.0 Themes

- **Theme 1:** PFAS definition, family examples, International approaches to grouping
- **Theme 2:** Environmental data and monitoring - Ambient monitoring data collection and land use classifications
- **Theme 3:** Water- Risk-based criteria & guidance for beneficial reuse of biosolids
- **Theme 4:** Soil - Behaviour in soil, including leaching, and guideline values
- **Theme 5:** Resource recovery and waste - Management of risks associated with PFAS in resource recovery products
- **Theme 6:** Site specific guidance - Guidance on principles and approaches to remediation and management; construction water; and estuarine, coastal and marine sediment



# Biosolids risk-based criteria

- Provides criteria for PFOS+PFHxS & PFOA
  - ❖ Restricted use (similar to Class B)
  - ❖ Unrestricted use up to 50 T/ha (where relevant)
  
- Maximum allowable soil concentration criteria (MASCC)
  - ❖ Calculate CLBAR
  
- Margins of safety
  - ❖ Precursors
  - ❖ Multiple exposure pathways
  - ❖ Site specific risks

**Table 1 Criteria for PFOS+PFHxS and PFOA in biosolids and maximum allowable soil contaminant concentrations (MASCCs) based on a 1, 2 and 5-fold margin of safety**

Criteria type	Margin of safety	PFOS+PFHxS (µg/kg)	PFOA (µg/kg)
Restricted use biosolids	5	6.2	25
	2	15	65
	1	31	130
Unrestricted use biosolids <sup>a</sup>	5	0.22	1.0
	2	0.55	2.5
	1	1.1	5
MASCCs	5	0.22	1.0
	2	0.55	2.5
	1	1.1	5

<sup>a</sup> Unrestricted use threshold may not be applicable in all jurisdictions. Where is it applicable, it should be applied to the final biosolids product for land application.



## Theme 5 – Key data gaps

- What are the risks associated with PFAS in organic waste materials, and how can they be minimised, mitigated or managed ?
- Are standard sampling and analysis protocols for soils suitable for organic waste materials ?



# Other EPA work



- Climate change
- Hydrogen power
- Green manufacturing
- National container deposit scheme



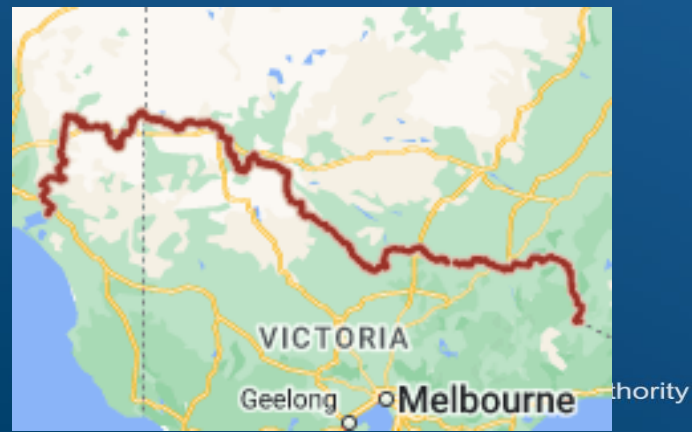
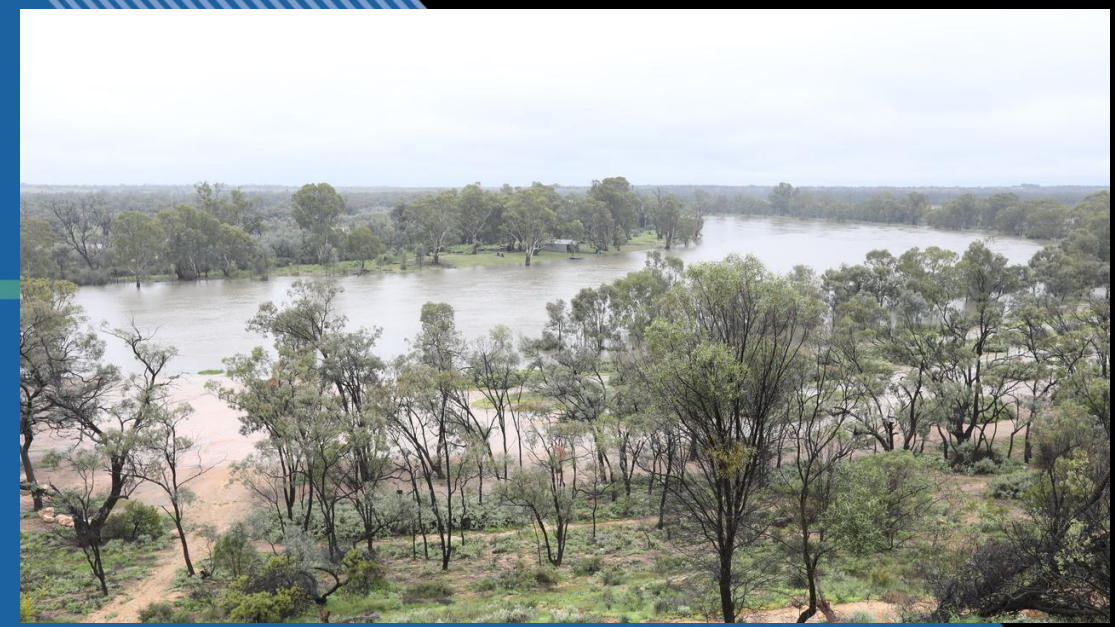


# High rainfall events

South Australia annual water usage: 100GL

River Murray:

- 1974: 110 GL per day
- December 2022: 130-160GL/day





Andrew Pruszinski

Mobile/WhatsApp: +61 411 652 807

E: [andrew.pruszinski@sa.gov.au](mailto:andrew.pruszinski@sa.gov.au)