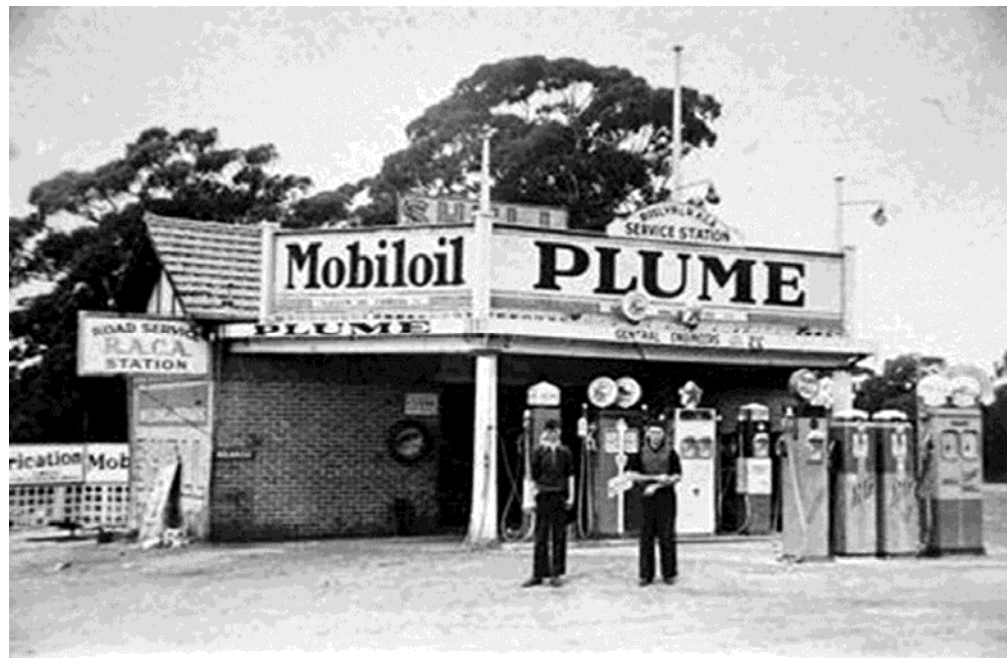


Management of Underground Petroleum Storage Systems

Its all about prevention



David A Johnson

A/Unit Head, Hydrocarbon Management & Regulation

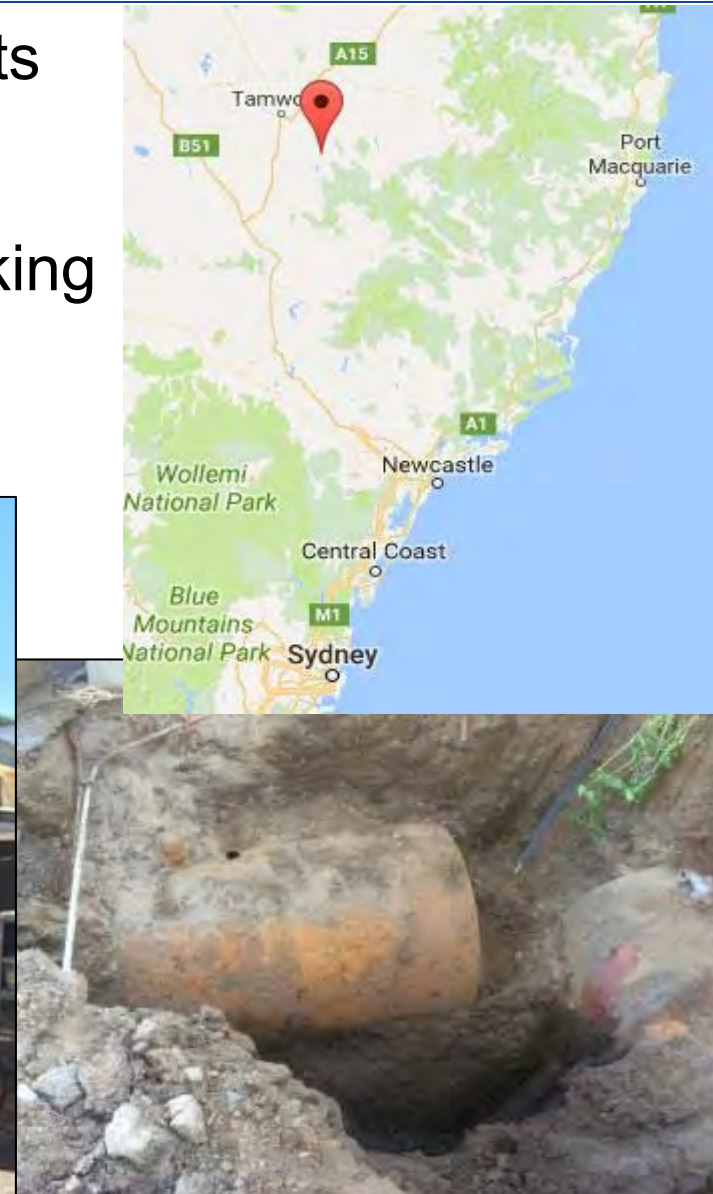
EIANZ forum, Ballina 21 June 2017

“It’s not their fault. Local farmer Ross Greenwood said the leak was “bloody unlucky”.”
How do you know if something is leaking if it’s underground?”

“Mr Greenwood said the town was more concerned about where it would get petrol from, with the store’s petrol tanks out of action.”

Woolomin General Store

- ~ 30KM SE Tamworth – ~200 residents
- Village reliant on rain & bore water
- Fuel concentrations exceeded drinking water guidelines in domestic water bores





The cost (so far)

- \$75,000 – Emergency clean up funding (EPA)
- \$130,000 – Water supplies for the town (council)
- \$40,000 – Tank removal tanks and clean up (owner)
- \$360,000 – Long term remediation & monitoring (NSW govt)
- \$200,000 – Water tanks for town (NSW govt & council)

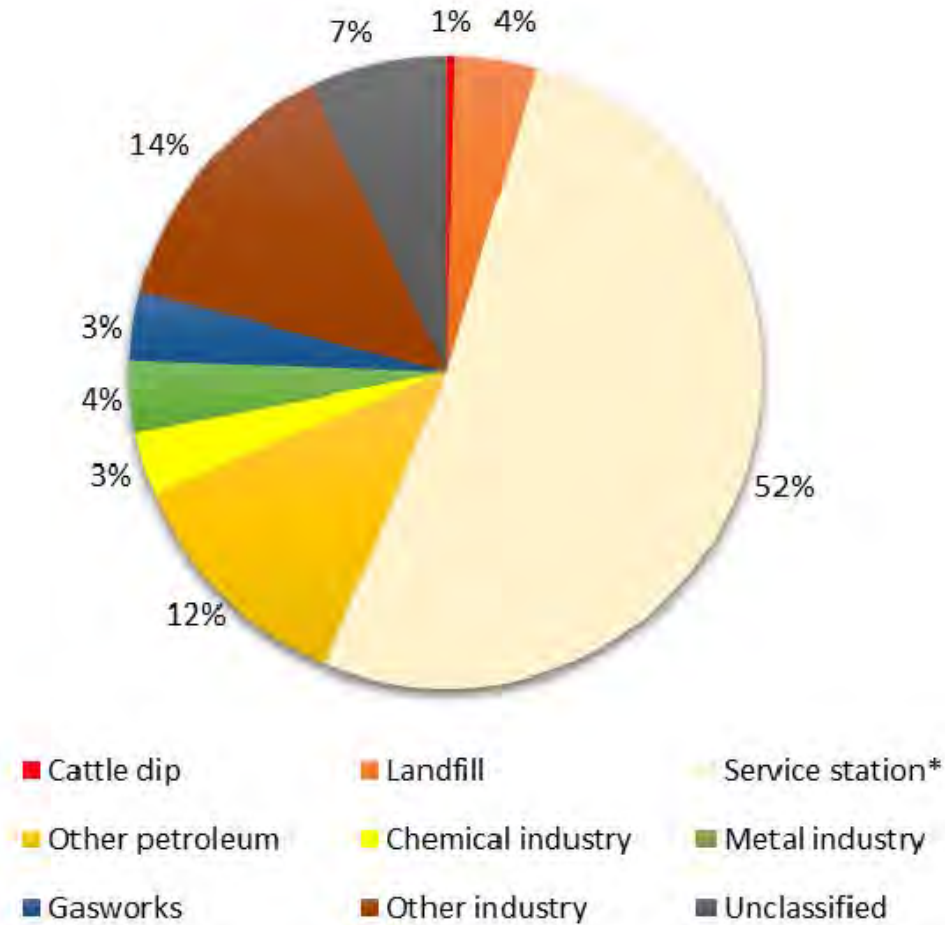


400 litres



\$800,000

Sites notified to EPA



Source: List of notified sites based on primary activity resulting in contamination on EPA website (June 2016).



Pollution at hydrocarbon sites occurs in slow motion

Contamination is what's left over after the pollution event

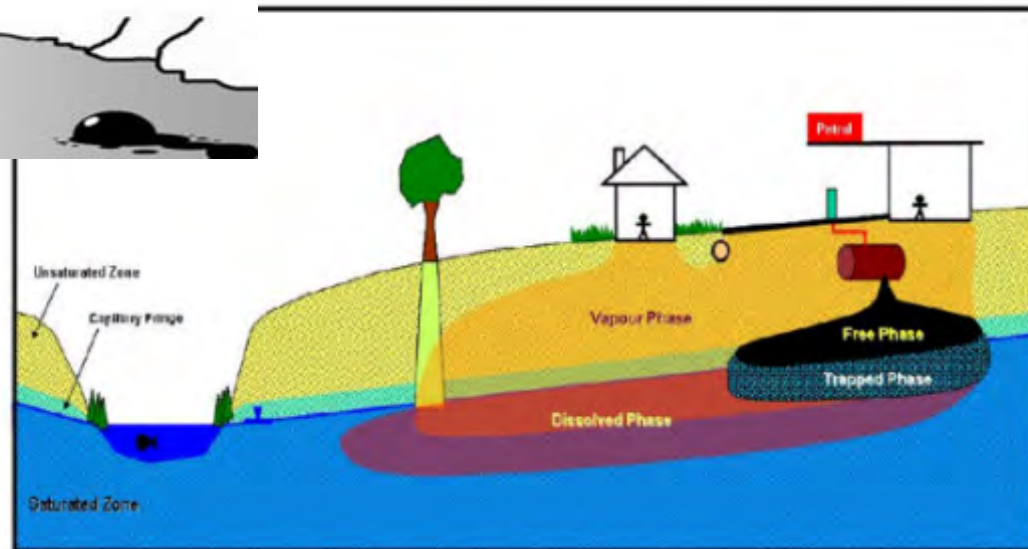


Figure 1. Basic conceptual site model for petroleum hydrocarbon-impacted site.

EPA Responses to incidents

Intervention not required

Regulatory intervention required

Managed through planning process by ARA

specific methods of intervention

POEO – Proactive
UPSS Regulation
(operating UPSS only)
monitoring
Preventative measures

CLM
(Legacy sites)
Declare – PIO,
VMP or Order

Planning
Consent Conditions

POEO – Reactive
Notices: Clean-up,
prevention
Improvement,
Penalties:

Process – it's slow

Priority:

- Urgency / Safety (scale, location, receptors, sensitivity)
- Complexity (contaminants, pathways)
- Contaminant migration (triggers for some regulatory actions),

Response:

Short term: POEO: remove risk, source removal, Clean-up Notice

Long term: CLM: S 60, Remediation, site management, validation

Preliminary Investigation Order,

Voluntary Management Plan,

Management Order,

Planning: EP&A: Development consents, Environmental Management Plans, Covenants

- **diagram/plans of the site?**
- **site history ?**
- **local geology, depth to groundwater?**
- **actions to investigate contamination source?**
- **actions to prevent further contamination?**
- **integrity test, loss monitoring review?**
- **measures to stop incident reoccurrence?**
- **advice to adjacent properties/ council?**

See EPA Technical Note: *LNAPL Assessment and Remediation*

3 levels of management:

1. Good equipment: infrastructure fit-for-purpose
2. Good Management: managed, maintained & monitored with procedures to show how
3. System Backup: if all else fails: early detection of leaks, report incidents and clean up

Based on AS 4897-2008: *The design installation and operation of underground petroleum storage systems*

EPA will remain ARA until Sept 2019

System Design and Installation

Mandatory pollution protection equipment (MPPE):

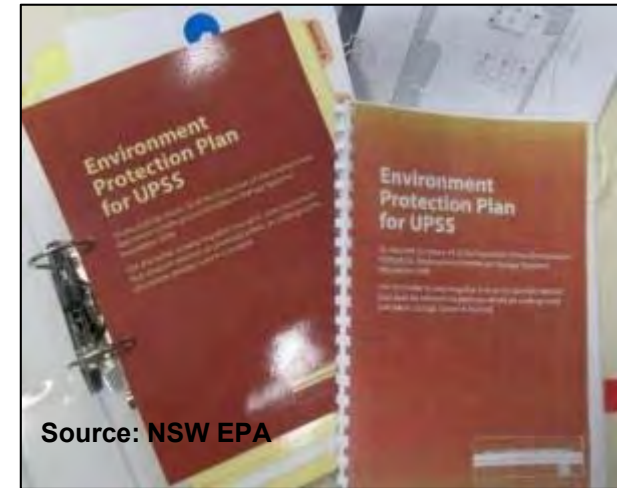
- Non-corrodible tanks and piping with secondary containment.
- Overfill protection devices.



New and significantly modified UPSS. No requirement to retrofit with MPPE unless significant modification is undertaken.

Documented Site Procedures

- Environment Protection Plan – EPP (or equivalent)
- must be site specific.



The site procedures must describe:

1. How the system at the site is managed and maintained.
2. How wetstock is accounted for and losses detected.
3. What steps are taken to rectify leaks and spills.
4. Contain plans & diagrams

Available to staff for operational reference and kept up to date

- System to detect fuel losses from UPSS & initiate action before pollution of the wider environment occurs.
- Must be able to detect discrepancies in petroleum present in a system .(AS 4897- 2008: a loss of at least 0.76 litres per hour). Default in Reg
- An investigation must be conducted in the event of any discrepancies (leak, water penetration, theft) and rectify the cause.

Wetstock reconciliation is not enough

All systems must be designed and installed by a “duly qualified person”

Secondary leak detection systems are to be used in conjunction with the loss monitoring system.

Either:

1. Groundwater monitoring wells - EPA default option, or
2. An alternative secondary leak detection system - where groundwater wells are not suitable.

Reporting & incident response procedures

The POEO Act and CLM Act impose penalties for failing to report contamination or pollution incidents.



Introduced in 2014 remake:

Operators may use:

- A loss monitoring procedure designed to take into account particular site characteristics and usage patterns of the storage system, and
- An alternative to groundwater monitoring wells as a secondary leak detection system.

Alternatives must meet certain criteria

EPA recognises that one size does not fit all

Under the *Work Health and Safety Regulation 2011*, an underground storage system must be abandoned if its no longer intended to be used or has not been used for 2 years.



UPSS Regulation requires:

- Report on the works to be provided to council
- Report must:
 - describe the processes used to decommission the storage system and assess contamination on site, and
 - be prepared by a duly qualified person

Regulation at Service Stations

Council – surface management, pollution, validation/decommissioning/removal reporting, AST, **Development Approvals**

Fuel handling:
Vapour Recovery



SafeWork Safety,
Dangerous goods, UST
abandonment &
removal

EPA
Pollution
Prevention

UST Infrastructure:
management, loss monitoring,
maintenance, leak detection,
reporting

14 NSW
agencies -
35 legislative
instruments

The Industry is not a single entity

COCO



CODO
DOCO



Leasehold

Sublease

Commission



DODO



Implementing the Regulation

- **Guidance documents**
- **Workshops & training (information sharing)**
- **Inspections**
 - systematic audit of all UPSS identified in an LGA
- **Spot inspections with council officers - incidents**
- **Targeted inspections - specific types eg marinas**
- **Advice / guidance – decommissioning, planning**

➤ **Inventory of risk sites**

Objectives:

- Measure compliance with the UPSS Regulation
- Exchange knowledge with councils
- Educate industry on operational & legislative requirements
- Learn about the industry

24 urban & regional LGAs to date

538 UPSS sites

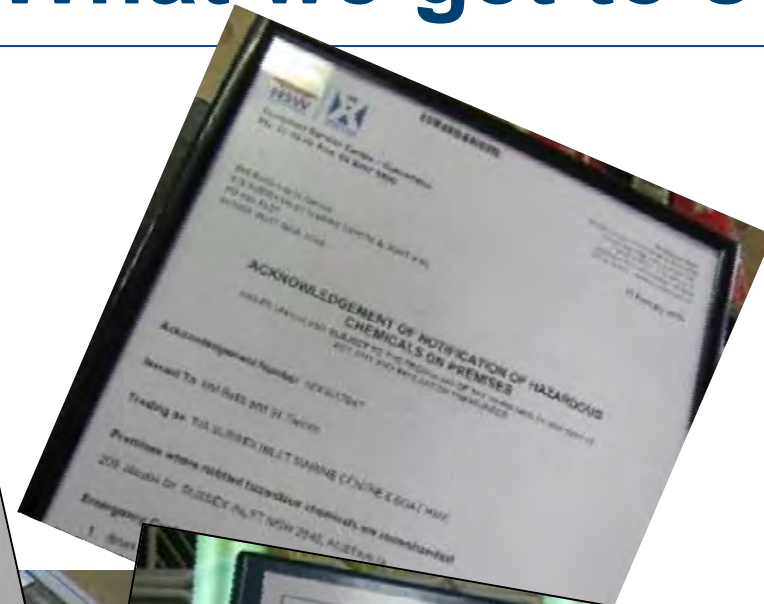
~3300 sites in NSW



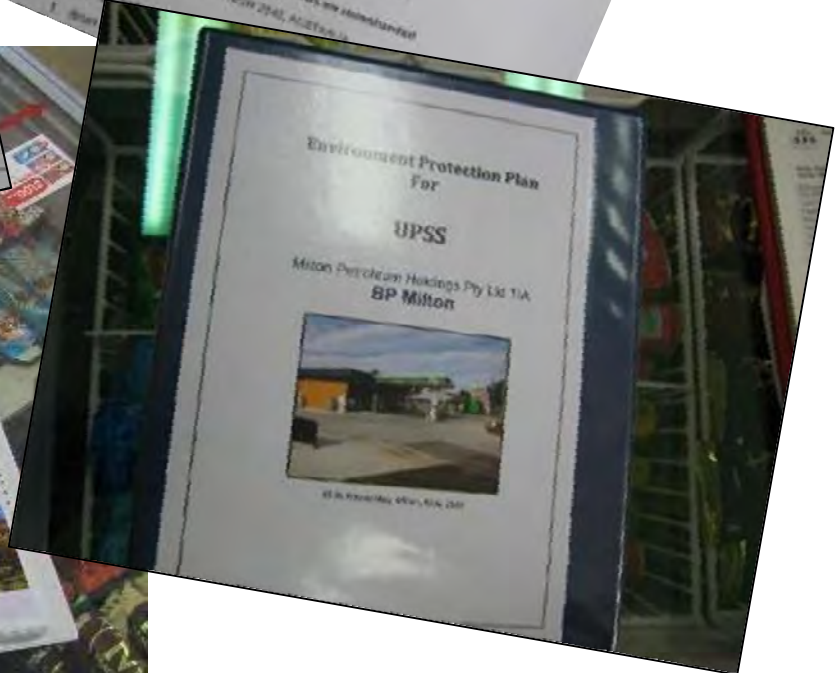
What we don't get to see



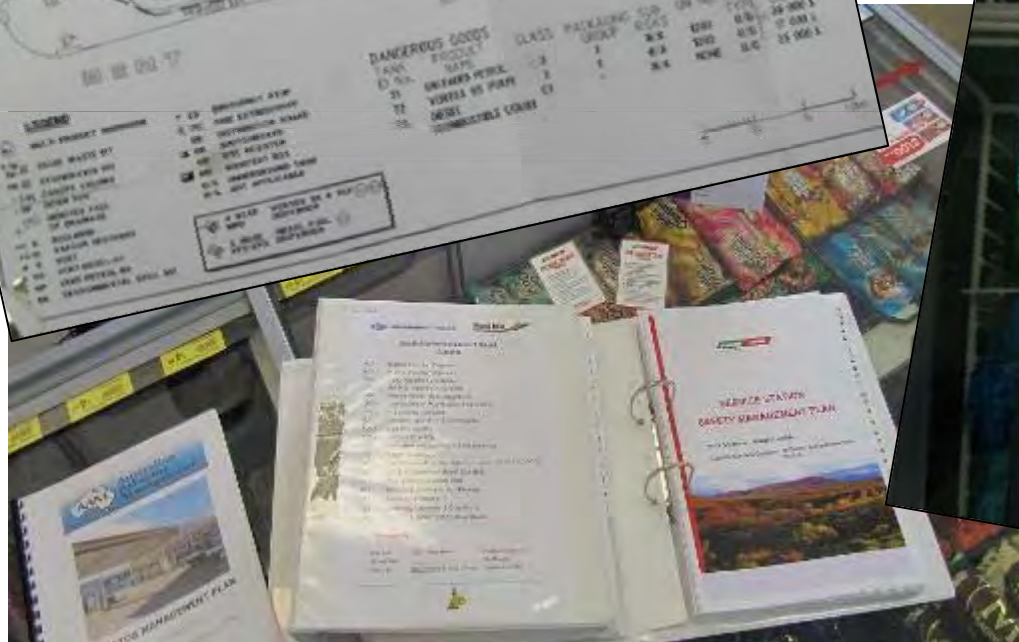
What we get to see



This is a form titled 'ACKNOWLEDGEMENT OF NOTIFICATION OF HAZARDOUS CHEMICALS ON PREMISES'. It includes fields for 'Acknowledgement Number', 'Date of Notification', and 'Name of the Person Notifying'. The form also contains a section for 'Details of the Hazardous Chemicals' and a signature line for the 'Responsible Person'.



The cover of an 'Environment Protection Plan For UPSS' (Unleaded Premium Super Service) at 'Milton Petroleum Holdings Pty Ltd T/A BP Milton'. It features a photograph of a service station and the address '45 St. Vincent St, Milton, QLD, 4058'.



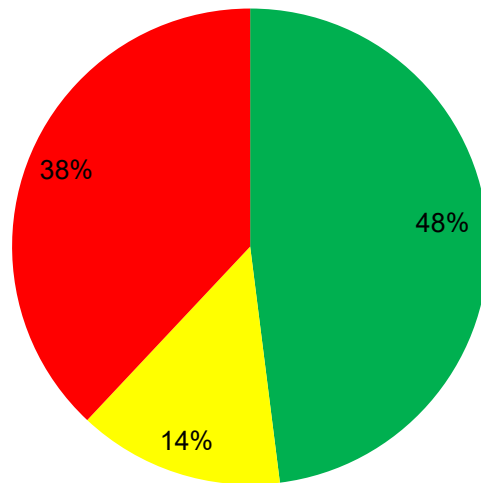
Procedures, documentation

- Surface infrastructure, site practices & management

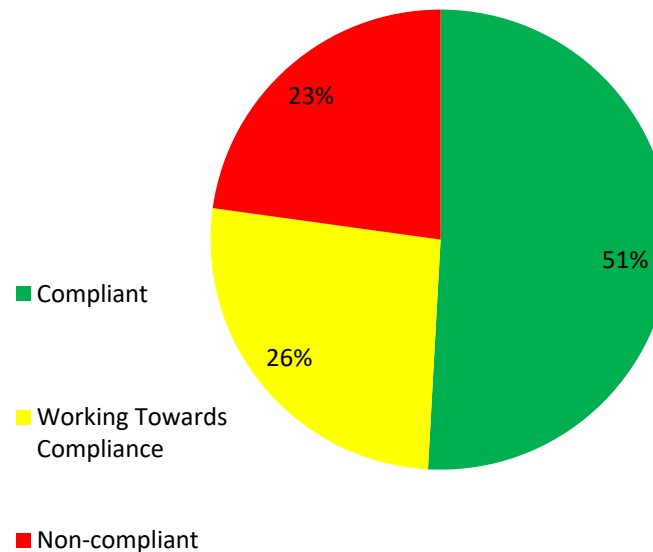


Program successes

Initial Inspection



Reinspection after 6 months



- Improved compliance following UPSS inspections
- Better awareness of risks by operators & regulators

EPA proposes:

- **To share a workable regulation with councils**
 - **Clear-cut administration – few overheads**
- **To provide a body of advice to manage UPSS**
 - **Improved industry & regulatory best practice guidance**
- **Continue co-operative regulatory management**
 - **advice and council capacity building**
 - **reduce hydrocarbon impact on the environment**
- **To be a single location in the EPA for advice on fuel storage & management**

Published:

- *Best practice guide for UPSS management*

In preparation:

- *Small tank management technical note*
- *Forecourt water disposal technical note*
- *Decommissioning technical note*

Scheduled:

- *UPSS guidelines*
- *Planning guidelines*
- *Best practice guide for service stations*

Consultation will be part of the publication process



- All-inclusive management of fuel storage and handling
 - USTs/ASTs storing other dangerous chemicals
- Extended producer liability scheme & insurance
 - fuel suppliers and franchisors to share some responsibility for compliance
- Ongoing relationship between EPA and councils
- Allowance for innovation
 - More flexible regulation - better tailored to needs and circumstances

- **UPSS in public lands:** address liability and impediments to future land uses
- **Decommissioning program:** encourage removal of orphan/redundant/old tanks
- **Assistance program:** support retention of a sustainable fuel supply network in rural areas
- **Support for councils**
- **Clean up funding**
- **Whole of government approach to fuel storage and handling**

- **Fuel management and storage is a widespread potentially hazardous industrial activity**
- **Failure to maintain underground fuel systems has implications for community health and social welfare**
- **EPA will work with stakeholders to improve regulatory oversight and industry performance**
- **2019 will not be the end of EPA involvement in the sector or in its support for councils**

