Practice Note

Managing run-off from service station forecourts

NSW EPA

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NSW Environment Protection Authority
59 Goulburn Street, Sydney NSW 2000
PO Box A290, Sydney South NSW 1232
Phone: +61 2 9995 5000 (switchboard)
Phone: 131 555 (NSW only – environment information and publications requests)
Fax: +61 2 9995 5999
TTY users: phone 133 677, then ask for 131 555
Speak and listen users: phone 1300 555 727, then ask for 131 555
Email: info@epa.nsw.gov.au
Website: www.epa.nsw.gov.au

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Report pollution and environmental incidents
Environment Line: 131 555 (NSW only) or info@epa.nsw.gov.au
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This Practice Note is to assist service station operators and consent authorities to plan for and manage run-off from service station forecourts.

It aims to prevent or minimise harm to human health and the environment.

1. About this Practice Note

This Practice Note provides practical options for managing run-off from service station forecourts. It requires **new and modified** petrol stations seeking to treat forecourt run-off prior to discharging to stormwater to be engineered to comply with industry best practice and having sound operational procedures.

It is consistent with Australian Standard AS1940-2017 – *The storage and handling of flammable and combustible liquids*, AS4897 -2008 – *The design, installation and operation of underground petroleum storage systems,* British/European standards BS EN 858-1:2002 – *Separator systems for light liquids*, and Australian Industry Best Practice Guidelines – *Management of hydrocarbons in stormwater at retail fuel outlets* (Australasian Convenience and Petroleum Marketers Association - ACAPMA). It also reflects current acceptable practice at many metropolitan and non-metropolitan sites across Victoria, Queensland, Australian Capital Territory, South Australia and New South Wales.

While this Practice Note encourages the use of best practice technologies, simply using best practice technology alone does not remove an obligation to comply with relevant environmental laws and planning requirements. This Practice Note should therefore be read in conjunction with relevant NSW legislation, and state and local government planning policies.

All terms used within this Practice Note are consistent with the definitions and/or meanings provided under the *Protection of Environment Operations Act 1997* and its Regulations, unless otherwise stated in section 8 - Glossary.

2. Applying this Practice Note

The aim of this Practice Note is to provide guidance to both service station **operators** and **planning authorities** (usually councils) when they are considering options for managing run-off from new and modified service station forecourts.

The service station operator should;

- consider industry best practice design requirements (sections 3 and 4) during the planning phase of a new and modified service station
- incorporate the most appropriate forecourt run-off management option/s that will prevent **harm** to the environment
- ensure the design and operation of the service station complies with all legal obligations and requirements and meets environmental standards and conditions required by the planning authority (section 6).

The consent authority should:

- assess development applications for new and modified service stations on a case-by-case basis (section 5) commensurate with the potential risk of harm to the environment
- determine if the proposed forecourt run-off management option is the best option to prevent harm to the environment from occurring (sections 3 and 4)
- apply any necessary controls as part of consent conditions (e.g. treatment, maintenance and monitoring requirements) (section 5).

Good forecourt design can significantly improve the 'quality and quantity' of run-off generated on, and disposed of, from service station forecourts.

3. Best management practice in forecourt design

The forecourts of service stations are generally hard stand surfaces consisting of tank fill points, vehicle refilling areas, parking bays, trafficable and pedestrian access areas. The potential for contamination across a typical service station forecourt will therefore vary greatly depending on its main use.

As water flows across hard stand surfaces, for example during a rain event, it can collect litter, residues of petrol and/or diesel (which contain petroleum hydrocarbons), heavy metals, oil and grease, lubricants, coolants as well as suspended solids. These pollutants can be washed into the stormwater system resulting in contaminated run-off and potential harm to the environment.

Reducing the volume of surface water which needs to be collected and/or treated prior to disposal is key to effective forecourt run-off management.

This can be achieved by physically dividing the service station forecourt into distinct zones:

- **high contamination risk zone(s)** - run-off within a zone presenting the greatest risk of harm to the environment, such as tank fill points and where vehicle refilling occurs, and
- **low contamination risk zone(s)** - run-off from those areas of lower risk, such as parking areas, trafficable and pedestrian areas.

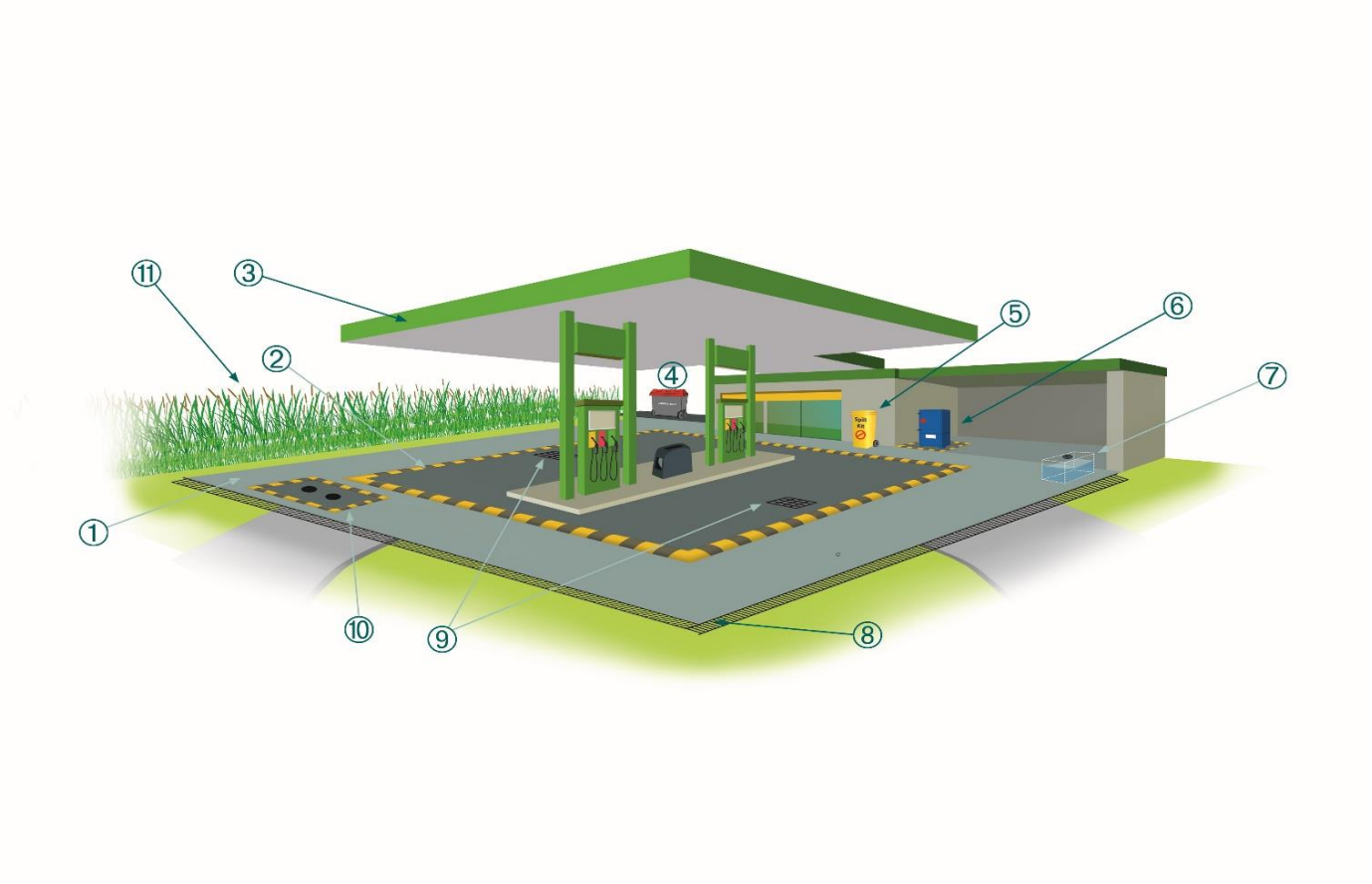
Run-off from these zones can be separated using bunds or forecourt gradients where it can then be collected at different points and managed/treated accordingly (see section 4).

References to industry best practice include (but are not limited to):

- Australian Standard AS1940-2017: *The storage and handling of flammable and combustible liquids*
- AS4897 -2008 – *The design, installation and operation of underground petroleum storage systems,*
- ACAPMA Best Practice Guidelines: *Management of hydrocarbons in stormwater at retail fuel outlets - 2017.*
- The NSW EPA *Underground Petroleum Storage Systems – Best Practice Guide for environmental incident prevention and management.*

Figure 1 below is a conceptual diagram of a service station demonstrating good forecourt design. Implementing these best practices will greatly assist in effectively managing surface water run-off from the forecourt area. Note that the diagram is not to scale.

Figure 1: Service station conceptual diagram demonstrating best practice forecourt design



1. A clean and sealed surface for the service station forecourt.
2. A physical divide (preferably using forecourt gradient or **rollover bunding**) between zones presenting a higher risk of contamination to that presenting a lower risk of contamination.
3. A canopy that extends to the maximum reach of fuel dispensing nozzles and has a 10 degree-from-vertical overhang reducing rainwater entering high contamination zones. Rainwater that falls onto the canopy should be collected for re-use (if possible) or directed away from the forecourt area.
4. A designated storage area for waste bins.
5. Accessible and visible spill kits.
6. A covered and bunded area for hazardous chemicals stored away from fuel dispensers and trafficable areas.
7. A collection pit (including monitoring alarm and pump out well) for any contaminated run-off or spills occurring within the hazardous chemical storage area.
8. Stormwater drains collecting forecourt run-off from **low contamination risk zone/s** for appropriate management prescribed in section 4.
9. Drainage pits collecting forecourt run-off from **high contamination risk zone/s** for appropriate management prescribed in section 4.
10. Bunding that encloses the storage tank fill connection points and/or spill containment enclosures. This bunded area should have appropriate capacity to contain the largest compartment of any tanker delivering to the service station (or 9000 litres) and drain to the high- risk contamination zone disposal system.
11. A **water sensitive urban design** (WSUD) installation suitable for either a new or upgraded service station.

Where best management practice in forecourt design and operational practice can be demonstrated, run-off from service station forecourts should be managed using the most appropriate option to prevent harm to the environment.

4. Assessing the risk of forecourt run-off

Forecourt run-off from service stations will inevitably pose a level of environmental risk. The risk will vary depending on the nature and location of the service station, the maintenance and adherence to management procedures by the operator and the characteristics of the **receiving waters**.

The level of assessment should vary depending on site and case-specific circumstances. Operating controls competently, maintaining equipment in a good working condition and employing best management practices will reduce the potential impact of pollution on waterways.

An appropriate '**level of protection'** can then be afforded to the receiving waters commensurate with the potential risk posed by a service station activity e.g. where receiving waters present a **higher conservation** value or best management practices 'have or have not' been demonstrated.

a. Forecourt run-off to receiving waters that are slightly, moderately or highly disturbed.

Design of the service station is critical to minimising the potential to contaminate surface water run-off. The forecourt of a service station can be divided into two parts, which can then be managed differently:

High contamination risk zone(s) – vehicle refilling area and tank fill points

Where best management practices are implemented as identified in Figure 1 and forecourt run-off will flow to receiving waters that are **slightly**, **moderately or highly disturbed**, forecourt run-off can be directed to:

1. The stormwater system, with prior treatment to a maximum allowable discharge concentration of 5-parts per million (ppm) of **total petroleum hydrocarbons** (TPHs).

   Note: 5-ppm of TPHs is consistent with good environmental practice and the industry standard, BS EN 858-1:2002. If a discharge of treated forecourt run-off contains less than 5ppm of TPH regulatory action for an offence under section 120 of the *Protection of the Environment Operations Act 1997* is unlikely to be considered, unless the discharge causes harm to the environment.

   Monitoring for the concentration of TPHs must be done in accordance with the most current version of the publication: *Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales.*

   Or

2. The sewer system with prior written approval from the local water/sewerage authority.

   As treatment of the run-off may be necessary to meet trade waste-water limits set by the local water/sewerage authority, it is recommended that proponents contact the local water/sewerage authority to discuss these requirements.

   Note: Requirements for premises with refuelling points located in **non-metropolitan NSW**.

   Discharging from service stations and other fuel handling facilities to the sewerage system for both new and refurbished service station businesses **is prohibited** (NSW Department of Industry (DPI) 2012 – Circular Local Water Utility (LWU 13)).

   Existing service stations and refuelling points may continue to discharge to LWU sewerage systems in accordance with their trade waste approval.

Or

3. A containment tank for later disposal. A minimum capture volume is required, being the greater of either; the capacity of the largest compartment of a delivery tanker using the service station or 9000 litres. The pit, tank or sump must have a high level audible and visual alarm fitted.

   Note: Contaminated water, sludge and oily residues collected in a blind pit, tank or sump is classified as liquid waste and must only be removed off site by a licenced waste transporter and disposed of at a facility lawfully able to accept liquid waste.

   A person who wilfully or negligently disposes of waste in a manner that harms or is likely to harm the environment is guilty of an offence under s 115 of the *Protection of the Environment Operations (POEO) Act 1997*.

Management of the forecourt run-off from the high contamination zone must have appropriate capacity to contain the maximum spillage likely to occur within the catchment area. Site factors such as surface area, canopy coverage, average rainfall, tanker delivery volumes and gradients should be considered when determining the appropriate retention capacity. This assessment should be undertaken by a **duly qualified person** to ensure all standards, local planning and legislative requirements are met.

Low contamination risk zone(s) – parking, footpath and trafficable areas

If properly managed and maintained, low contamination zones identified across the service station forecourt area have far less potential to generate contaminated run-off. Even so, stormwater falling on these lower risk areas may still become contaminated from diffuse pollution sources.

Management options may include but not be limited to:

1. Directing forecourt run-off to a **water sensitive urban design (WSUD)** installation suitable for either a new or upgraded service station (see Water Sensitive Urban Design at Sydney Water).

   Or

2. Diverting run-off to the treatment system that is already servicing the high contamination zone, ensuring that it has adequate treatment and retention capacity for both high and low contamination areas.

   Or

3. Directing run-off to the off site stormwater system or WSUD via a gross pollution trap (GPT) with an oil alert probe. GPTs should be regularly cleaned out and maintained to minimise flooding and backwater effects.

An assessment should be undertaken by a duly qualified person to ensure all standards, local planning and legislative requirements are met.

b. Forecourt run-off to receiving waters of high conservation or ecological value.

Where a higher level of risk to the environment is likely, a higher level of assessment will be required. Alternative and/or additional management options to those prescribed in this Practice Note may need to be considered to ensure a level of protection consistent with the ANZG (2018) framework.

It is the responsibility of the service station operator to ensure that run-off from service station forecourts does not cause harm to the environment.

5. Due diligence

The operator of a service station is responsible for environmental compliance and ensuring regular and appropriate maintenance and testing is undertaken on a water treatment system. Records of required testing and/or maintenance of the water treatment system should be kept and made available to council or EPA officers upon request. Further, all staff should be skilled in the operation of the treatment system and well trained in spill response procedures.

The EPA supports good environmental practice which meets the industry standard, BS EN 858-1:2002. However, if it is determined that a discharge of treated forecourt run-off has caused harm to the environment, regulatory action for an offence under s 120 of the *Protection of the Environment Operations Act 1997* may still be considered.

Merely following best practice does not remove the operator's obligation to comply with relevant legislation to prevent harm to the environment.

Any pollution incident that causes or threatens harm to the environment in accordance with the *Protection of Environment Operations Act 1997* should be investigated by the Appropriate Regulatory Authority as an offence under that Act.

It is therefore essential that the service station operator exercises due diligence in order to minimise the environmental risk of the day-to-day operation, maintenance and management activities causing harm to the environment.

6. More information

Useful links

- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, August 2018)
- Local planning for healthy waterways using NSW Water Quality Objectives
- NSW Government water quality objectives website: NSW Water Quality and River Flow Objectives
- EPA website: Water Pollution Overview
- EPA website: About the Protection of the Environment Operations Act
- EPA website: Duty to notify pollution incidents
- SafeWork NSW website: Work Health and Safety Legislation

Contacting the appropriate regulatory authority

Councils are the appropriate regulatory authority in relation to surface water pollution from service stations.

Council is usually also the planning authority for assessing development applications for new and significantly modified service stations, including forecourt water management systems.

General enquiries:

- Your local council. To establish which council your site is in visit: My local council | Office of Local Government

- Environment Line: Phone 131 555
  (or from outside NSW phone (02) 9995 5555)
- Email info@environment.nsw.gov.au (please state the nature of your enquiry in the subject line)
- Email upssreg@environment.nsw.gov.au
- Visit or contact your local EPA office.

7. Glossary

All references used within this Practice Note are consistent with the definitions and/or meanings provided under the *Protection of Environment Operations Act 1997* and its Regulations, unless otherwise stated.

Containment tank

A collection point intended to retain spillage or leakage that is not connected to either the stormwater or sewer.

Duly qualified person

A person who has competence and experience in relation to that activity that is recognised in the relevant industry, or by the peak body in the relevant industry, as appropriate for that activity.

Forecourt

An open area, before the entrance to a building or group of buildings.

Harm to the environment

Harm includes any direct or indirect alteration of the environment that has the effect of degrading human health or the environment and that any such degradation is not trivial.

High conservation or ecological value systems

Effectively unmodified or other highly valued ecosystems. Typically (but not always) occurring in national parks and conservation reserves, or in remote and inaccessible locations.

The ecological integrity of high conservation or ecological value systems is regarded as 'intact'.

Highly disturbed systems

Measurably degraded ecosystems of lower ecological value. For example, shipping ports and sections of harbours serving coastal cities, urban streams receiving road and stormwater run-off, or rural streams receiving run-off from intensive horticulture.

Indicator

A measurable or quantifiable characteristic or feature that can be used to provide a measure of the quality of water or the condition of an ecosystem – for example dissolved oxygen, total suspended solids, total petroleum hydrocarbons.

Level of protection

The degree of protection afforded to a receiving water body based on its ecosystem condition (current or desired health status of an ecosystem relative to the degree of human disturbance).

New or modified service station

Requires development consent under the *Environmental Planning and Assessment Act 1979.*

Operator

In relation to a service station, means any of the following;

a. the person who has the day-to-day management and control of running the service station activity,
b. the person who owns the company or business which operates the service station activity, the person who owns the land on which the service station is located.

Planning authority

The council, government agency or person having the function to determine a development application for land use under the *Environmental Planning & Assessment Act 1979*.

Risk

A statistical concept defined as the expected likelihood or probability of undesirable effects resulting from a specified exposure to known or potential environmental concentrations of a material. A material is considered safe if the risks associated with its exposure are judged to be acceptable.

Receiving waters

Ambient waters that could be potentially affected by pollution.

Rollover bund

An impervious barrier in the shape of a ‘speed hump’ which forms part or all of the perimeter of a compound that provides a barrier to retain liquid.

Run-off

The draining away of water (or substances carried in it) from the surface of an area of land, a building or structure.

Slight to moderately disturbed systems

Ecosystems in which aquatic biological diversity may have been adversely affected to a relatively small but measurable degree by human activity. The biological communities remain in a healthy condition and ecosystem integrity is largely retained.

Total petroleum hydrocarbons (TPHs)

Chemical compounds that originally come from crude oil used to make petroleum products. Some chemicals that may be found in TPH are hexane, benzene, toluene, xylenes and naphthalene.

Water sensitive urban design (WSUD)

A land planning and engineering design approach which integrates the urban water cycle (including stormwater) into urban design to minimise environmental degradation and improve aesthetic and recreational appeal.