

BlueSphere Environmental Pty Ltd
113 Ferrars Street
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Frances Zrimsek
Environment Manager
AusNet Services
Wurundjeri Country
2 Southbank Boulevard
Southbank, VIC, 3006

Dear Frances,

Re: Transmission Rates Review – Provision of Updated PRA

1 Introduction and Background

BlueSphere Environmental Pty Ltd (BlueSphere) was requested by AusNet Services Pty Ltd (AusNet) to provide input for the upcoming Transmission Rates Review (TRR). The Environment Team at AusNet has an opportunity to request funding for new projects; or uplift funding for existing projects to improve environmental outcomes and meet its legislative requirements.

These projects relate to the upgrade of infrastructure; or improvement of maintenance programs at Terminal Stations; and several other sub stations, switchyards, comms sites and power stations within AusNet's portfolio. The full list of these sites is presented in the Portfolio Risk Assessment (PRA) as contained within **Attachment 1**.

1.1 Purpose and Objective

The purpose of this exercise is to provide AusNet with:

- Input to allow for reduction in environmental risk posed by the current infrastructure or management practices at the selected sites.
- Suggested upgrades or improvements for inclusion into the TRR that may reduce ongoing risk to the environment.
- Cost estimates associated with suggested upgrades or improvements.

1.2 Inputs and Data Sources

The inputs and data sources BlueSphere used in this exercise are presented in **Table 1**.

Table 1 Inputs and Data Sources

Inputs and Data Sources	Description
Portfolio Risk Assessment (PRA)	The updated PRA was issued by BlueSphere to AusNet on 23 July 2024. It is an excel based register of known AusNet sites and includes information on site assessments, infrastructure, potentially contaminating activities, degree of known contaminating activities (such as oil leaks) and possible consequences of contamination. The information is used to calculate a risk rating. At the instruction of the AusNet Environment Manager, the PRA was initially filtered to select for Terminal Stations only. The PRA is included as Attachment 1.

Inputs and Data Sources	Description
List of Environmental Systems at selected AusNet sites	This list is an excel sheet presenting a Condition Assessment of Environmental Systems at selected AusNet sites. It was provided to BlueSphere by AusNet on 21 November 2024. These include 10 sites that are not Terminal Stations. At the instruction of the AusNet Environment Manager, non-Terminal Station sites were included as part of this exercise.
Environment Register	The Environment Register on the AusNet Sharepoint was checked to confirm and find further context on information presented in the PRA. This primarily included completed site inspection forms, and available environmental reports.
Stormwater Discharge Review document	The information contained within the document titled <i>Stormwater Discharge Review, Terminal and Zone Substation Sites (BlueSphere, 23 July 2024)</i> was used to inform this task.
Consultation with key AusNet's team members.	BlueSphere consulted with Joey Costantino regarding proposed technologies and improvements. Other members of the AusNet engineering teams were approached for advice.
Subcontractors	BlueSphere consulted with subcontractors to obtain quotes on selected technologies and improvements.

2 Scope of Work and Methodology

BlueSphere completed the below scope of work to address the objectives. The scope was informed by the proposal issued to AusNet on 25 November 2024; with the addition of 10 sites provided by AusNet within the Condition Assessment of Environmental Systems spreadsheet on 21 November 2024.

2.1 Step 1

- Filter the PRA for Transmission sites, as denoted 'Terminal Stations'. There are 49 Terminal Stations presented within the PRA in **Attachment 1**.
- Filter the PRA for 10 additional sites per the Condition Assessment of Environmental Systems spreadsheet. These sites include:
 - Hazelwood Power Station (HWPS); a switchyard
 - Loy Yang Power Station (LYPS); a switchyard
 - Loy Yang Zone Sub Station (LY); a sub station
 - Moorabool Terminal Station Comms Site (MLTS-Comms); a comms site
 - Morwell Power Station (MPS); a sub station
 - Newport Power Station (NPSD); a switchyard
 - Northern Reactor Compensator Station (NRCS); a sub station
 - Rowville Terminal Station 500 kV Switchyard (RTFZ); a switchyard
 - Southern Reactor Compensator Station (SRCS); a sub station
 - Yallourn Sub Station (YPS); a substation
- Validate the risk ratings presented within column BU of the PRA for each of the 59 sites.
 - This exercise included reviewing inputs to the risk ranking to ascertain if an elevated risk rating was the result of missing or incomplete data. Inputs included fields contributing to the

'Confidence Factor', 'Likelihood of Contamination' and 'Inherent Consequence of Contamination' fields as presented in columns Z, AR and BT of the PRA.

- Brief review of the descriptions within the spreadsheet 'Condition Assessment of Environmental Systems'
- The results of Step 1 are presented in column EB of the PRA. This highlighted that several sites had risk ratings informed by lack of available information. These are further described in **Section 3.1**.

2.2 Step 2

BlueSphere completed a detailed review of the available inputs for each of the 59 filtered sites within the PRA (**Attachment 1**) to identify the risk drivers that are currently resulting in the risk ratings. These are described for each site in column EC of the PRA. Common inputs that are resulting in elevated risk ratings are:

- Low confidence of site status as described in **Section 3.1**.
- Proximity of a site to sensitive environmental receptors, for example, groundwater users within 500 m.
- Known previous environmental incidents; for example, holding tank overflow events at Cranbourne Terminal Station (CBTS).
- Presence of hazards at a site, for example, storage of oil that is known to contain polychlorinated biphenyl (PCB).
- Presence of oil filled equipment (such as transformers) or underground storage tanks (USTs).
- Ratings of oil leak condition, bunding and type of oil / water separator and shut off valve.
 - Sites reporting leaks from oil filled equipment with unsealed bunds and no oil / water separators or shut off valves will strongly contribute to an increased risk rating. A lower rating number corresponds to better controls or newer technologies. Two examples include:
 - Keilor Terminal Station (KTS), which has an oil leak condition of 3/5, and a bunding rating of 3/5 based on recent site inspections supported by photographs and environmental reports uploaded to the Environment Register.
 - Loy Yang Zone Sub Station (LY) contains oil filled equipment. There are no bunds on site, resulting in a bunding rating of 5/5; and no oil/ water separator or shut off valve, resulting in a score of 5/5. Additionally, the results of Step 1 showed that the risk rating is also driven by lack of recent information.

The risk drivers were used to inform the suggested improvements in Step 3.

2.3 Step 3

- BlueSphere considered the findings contained within Step 1 and Step 2 in order to inform actions that may reduce risk ratings. This was completed for each of the 59 sites within the PRA (**Attachment 1**). The actions in Step 3 included technology upgrades or improvements to management measures.
- The Stormwater Discharge Review (BlueSphere, 2024) was used primarily to inform the upgrades and improvements.
- Additionally, BlueSphere consulted with Joey Costantino from AusNet on 3 December 2024 to help inform practicalities and other possible costs associated with the upgrades and improvements in Step 3.
- An outline of the possible improvements for each site is presented in column ED of the PRA. These include:
 - Technology upgrades, such as:
 - Installation of infrastructure better suited to treating oily water containing degraded hydrocarbons;

- Replacement of brick bunds and earthen floors with concrete (hardstand) bunds;
- Improvements to management measures, such as:
 - Resolving status of stockpiles at selected sites;
 - Scheduling the emptying of holding tanks on a regular basis; and
 - Prioritising the servicing and repair of leaking oil filled equipment.
- Where possible, cost estimates to implement these technology upgrades has been included in column EV of the PRA.
- Several sites have very little available information within the PRA and the Environment Register. As such, an upgrade or technology improvement recommendation to reduce risk was considered premature at this stage. These sites are flagged in column ED of the PRA and in **Section 3.1**.
- Several sites have moderate environmental risk, which is largely driven by the 'Inherent Consequence of Contamination' field (column BT), such as proximity to sensitive receptors. Other inputs that contribute to the 'Confidence Factor' and 'Likelihood of Contamination' scores in columns Z and AR score favourably. These sites have not been assigned a technology upgrade as the infrastructure is already at an appropriate level relative to other sites within the portfolio.

3 Results

The results for Step 1, Step 2 and Step 3 are presented in the PRA (**Attachment 1**). This includes context and commentary for each of the 59 sites. The validation of risk ratings is presented in column EB of the PRA. A subset of sites in the PRA require additional information; or currently flagged for a number of recommendations in Step 3 are described in **Section 3.1** and **Section 3.2**.

3.1 Information Availability

Several sites had a risk rating that was largely weighted by a lack of available information. These sites were noted as having a low 'Confidence Factor' per column Z of the PRA. Risk drivers at these sites were either unknown; or were assumed to be 'worst case' based on conservative selection of risk driving factors. Step 3 recommendations were formulated to initially obtain further information, to allow for site specific implementation of technology upgrades or management improvements to be recommended.

The other sites in the PRA were considered to have sufficient information to inform the risk drivers in Step 2 and formulate recommendations in Step 3 technology upgrades or management improvements.

3.2 Priority Sites

A subset of sites was noted as having a higher risk per column BU of the PRA (**Attachment 1**) or required more immediate steps to reduce elevated risks and impacts to the environment. These are described in **Table 2** below.

The risks were then validated in Step 1, risk drivers collated and described in Step 2, and recommendations described in Step 3. These sites are flagged for AusNet's consideration to prioritise in the upcoming TRR.

All sites in the PRA have some recommendation included in Step 3. While this subset of sites in **Table 22** has been flagged, the recommendations in the PRA should also be reviewed by AusNet.

Additional measures have been included in the recommended management improvements column, to help inform the ultimate need for technology upgrades. For example; completion of site inspections or an environmental assessment.

Table 2 Elevated Risk Sites

Site	Context	Recommended Technology Upgrades	Recommended Management Improvements
Cranbourne Terminal Station (CBTS)	The site has had known holding tank overflow events in 2023 and 2024. There has been observable sheen in water within the holding tank. While this site has a risk rating of 3/5, the frequency of overflow events has justified its inclusion as an elevated risk site. The risk at the site is primarily driven by the presence of transformers containing oil. The oil leak rating is 3/5, with oil staining observed on internal and external bund walls. The site does not have a shut off valve recorded in the PRA.	- install a shut off valve; - reconfigure and update drainage pathways in the vicinity of the holding tank; - install a holding tank alarm.	- service and repair leaking transformers; - clean bund surfaces and check bund integrity; - drain and clean holding tank; - service and clean the puraceptor and filters;
Fishermans Bend Terminal Station (FBTS)	The site has known historical asbestos containing materials (ACM) in soil, underground services, buildings and structures. These include detection of ACM within a stockpile scheduled for disposal in 2018, with no disposal record on the PRA. ACM was noted in the PRA as present in underground services, buildings and transformers, switchyard/switchboard. ACM sheeting and pipes have also been found during excavation on site. Some of the ACM in above ground infrastructure is friable. Environmental testing conducted in 2024 did not report observations of potential ACM during soil sampling. The risk drivers at the site are also driven by the presence of an underground storage tank (UST), proximity to nearby environmental receptors, presence of oil containing equipment. Transformers at the site reported an oil leak rating of 3/5 on the PRA with oil staining observed on the transformer bunds.	-	- remove and validate UST; - implement management of buried ACM and ACM in buildings/ on site; - resolve status of ACM in soil; - service and repair leaking transformers; - clean bund surfaces; - check bund integrity.
Hazelwood Terminal Station (HWTS)	This site has known water overflow issues due to the drainage and connecting pipework of the puraceptor, holding tank and interceptor. The PRA noted that in 2020 there was an overflow of an oil separation pit where 100 L- 200 L oil had to be remediated at the site. The status of the remediation per the PRA is unclear.	- reconfigure and resolve drainage from transformer bunds and holding tank areas; - replace brick bunds still in use with concrete hardstand bunds.	- service and repair leaking transformers; - clean bund surfaces and check bund integrity.

Site	Context	Recommended Technology Upgrades	Recommended Management Improvements
	Risk drivers at this site include the status of oil leaks, previous known environmental leaks and proximity to environmental receptors. Additionally, the transformer bunds potentially have one-way valves that may not be configured properly (AusNet, 2024). Brick bunding is noted around older transformers.	Install GAC scrubbing unit post puraceptor to further decrease hydrocarbon load.	
Horsham Terminal Station (HOTS)	Recent observations for this site taken from AusNet (November, 2024) noted that 'material of the yard contaminated the enviro system and gets into the stormwater drains'. The overall environmental status of this site is unclear, as the most recent environmental works were completed in 2005. Risk drivers at the site as noted in the PRA include proximity to environmental receptors, storage of fuels, presence of spoil or a stockpile. The site has a fully compliant sealed bund with basic oil/water separator + shut off valve or triple interceptor tank. Sheen was observed on the surface of the triple interceptor pit in 2005.	install granular activated carbon (GAC) scrubbing unit on the puraceptor, as sheen has been noted on surface of water in the triple interceptor pit (TIP).	- service and repair leaking transformers; - conduct site inspection to inform extent of contaminants leaking from the yard; - confirm the status of the stockpiles of soil; - clean bund surfaces and check bund integrity; - review drainage configuration at site to ascertain flow pathways from yards.
Keilor Terminal Station (KTS)	The transformers have a high oil leak rating and bunds are visibly stained with oil, primarily driving the risk at this site. Leaks from the transformers contribute to the high oil load in the holding tank. In 2023, the holding tank was drained of oily water and sludge and cleaned. Since this time, the fluid levels in the holding tank have been lower. Water with elevated hydrocarbon results continue to be released by the puraceptor into the swale drain. The site has oil containing equipment (including transformers), stockpiles, batteries, chemical & SF6/gas cylinders. AusNet (2024) have also commented that the holding tank capacity at the site will be reduced when transformer rectification works commence (possibly in 2025).	- Install GAC scrubbing unit on the puraceptor to reduce the hydrocarbon load into the swale drain. - Install a temporary holding tank per AusNet (2024) comments.	- service and repair leaking transformers, - clean bund surfaces and check bund integrity; - periodically inspect the existing holding tank to confirm that it remains functional.
Mount Beauty Terminal	The contamination and equipment status at this site is currently unclear. AusNet (2024) commented that there are unusual pipes coming from the transformer bunds. Overall, in the PRA, the	-	complete site inspection to confirm environmental status (including presence of shut off valves);

Site	Context	Recommended Technology Upgrades	Recommended Management Improvements
Station (MBTS)	risks are driven by low confidence however, it is noted that oil leaks have a rating of 5/5. Risks are also influenced by the proximity to environmental receptors.		• service and repair leaking transformers; • clean bund surfaces and check bund integrity; • review drainage configuration at the site; confirm the status of the stockpiles of soil as indicated in the PRA.
Springvale Terminal Station (SVTS)	The risk at this site is driven by the occurrence of environmental incidents. The PRA noted a minor oil spill with marginal PCB contamination (date unknown) and a second oil spill with less than 10 L in 2020. A third oil spill was recorded from exploded cap bank in 2021. The site has oil containing equipment with an oil leak condition 3/5 which is also driving risk. Soil remediation was described in 2020 site inspection notes. There were no records on the environment register to indicate if it was closed out. Further, the PRA noted the presence of stockpiles with an unknown resolution status. .	•	• complete site inspection to confirm environmental status of the site; • validate that environmental incidents from 2020/ 2021 were closed out, and that soil remediation was completed; • service and repair leaking transformers; • clean bunds and check bund integrity; • confirm the status of the stockpiles of soil on site as indicated in the PRA. Apply erosion controls, confirm origin of materials.
Templestowe Terminal Station (TSTS)	Risk at this site is driven by known environmental issues, including the presence of non-aqueous phase liquid (NAPL) in soil in the transformer area and to the north towards the retention dam. In 2022, oil was observed to be seeping out of concrete drainage pits in vicinity of transformers and into drains, which flowed into the holding tanks. This water was passed through a puraceptor, however it still contained high concentrations of hydrocarbons or presented with a sheen. Oily water flowed out of holding tank into swale drain and into retention dam. In 2024 AusNet commenced the remediation of the retention dam. It is also noted that in time, all existing transformers will be replaced.	• Install GAC scrubber post puraceptor treatment to further decrease hydrocarbon load	• confirm that swale drain rectification conducted in 2022 remains effective; • prioritise replacement of transformers as to help bring forward environmental investigations, decrease oil load and ongoing leaks. • completion of a detailed Conceptual Site Model (CSM) and detailed site investigation (DSI) including a soil and groundwater assessment at the site with focus around transformer area;

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3.3 Costs

At the time of writing, estimated costs were available for the following technology upgrades or management improvements.

- Drainage, cleaning and disposal of fluids and sludge within holding tanks;
- Removal of underground storage tanks (USTs), validation and reporting;
- Cleaning of transformer bunds;
- Integrity check of transformer bunds;
- Installation of granulated activated carbon (GAC) scrubbers to treat filtered water exiting a puraceptor.

Estimated costs for other technology upgrades or management improvements will be provided to AusNet as they are made available.

3.4 Cost Estimate Limitations and Assumptions

The cost estimates provided in the PRA (**Attachment 1**) are high level and are recommended to be refined closer to the expected dates of works.

- Costs are based on 2024 estimates. These should be adjusted for inflation and other aspects resulting in cost changes if being applied for future years.
- The cost estimates are high level only. Site specific quotes are required.
- The cost estimates do not differentiate between Melbourne metropolitan and regional sites.
- The cost estimates do not consider or factor in the broad range of risk events that can occur during a project which have consequences to costs such as approvals, planning and design delays, disputes, litigation, pandemics, storm events, floods, fire, strikes, wars etc.
- It is noted that works associated with subsurface environments (for example, bund replacement) are subject to uncertainty given the potentially complex nature of any subsurface environment. There remains a risk of unexpected finds at each site which may increase costs.
- The cost estimates for each task does not include electrical spotter costs. Based on 2024 estimates, these can range from \$1,800 to \$3,500 (ex GST) per day depending on the level of spotter required; and the location of the site.
- The cost estimates do not include sulfur hexafluoride (SF6) gas management or disposal.
- Notes on the sources of the cost estimates are presented in the PRA.
- We cannot predict future changes in regulatory framework which may result in changes to the cost estimates.
- Reasonable attempts were made to seek cost estimates for the specified items in the PRA. The overall current estimate should be viewed as an indicative planning estimate. The costs do not include related costs that may be incurred such as design, consultancy, geotechnical, waste management etc unless otherwise noted.

4 Closure

Please reach out to Carina or Caroline if you have any questions.

Yours sincerely,

BlueSphere Environmental Pty Ltd



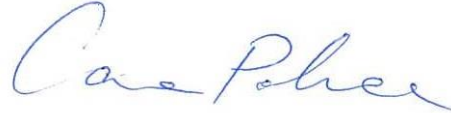
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The report has been prepared with the objectives and scope of work outlined in the proposal 25 November 2024. The work was carried out in accordance with the CW2243117.

The conclusions and recommendations provided in this report are based on available information and it is possible that different conclusions and recommendations could be made should new information become available, or with changing site conditions over time. These opinions, conclusions and recommendations are subject to uncertainty given the potentially complex nature of any subsurface environment. Variation in soil and groundwater conditions may vary significantly between the specific sampling and testing locations and other locations at the site.

The report will not be updated if anything occurs after the date of this report and BlueSphere Environmental Pty Ltd will not be obliged to inform any person of any matter arising or coming to its attention after that date.

Attachments:

Attachment 1 Portfolio Risk Assessment

References:

BlueSphere Environmental, 2024, Stormwater Discharge Review, Terminal and Zone Substation Sites, 23 July 2024.

Attachment 1

Portfolio Risk Assessment

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