AMS – Victorian Electricity Transmission Network

Environmental Management

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1 Introduction

AusNet Services maintains a certified HSEQ Management System that applies to its electricity transmission assets. These assets form part of the Victorian electricity transmission network and the national electricity market (NEM). The HSEQ Management System drives the integration of policies, procedures and objectives pertinent to vegetation management, bushfire mitigation and environmental management to the AusNet Services HESQ policy and environmental objectives.
AusNet Services' HSEQ Management System is a tool used to identify environmental risks, develop and implement solutions and monitor our success in controlling such risks. The HSEQ Management System hierarchy is shown in Figure 1, below.

Figure 1 – Environmental Management System hierarchy[1]

AusNet Services is committed to being an innovative leader in the management of environmental issues with energy delivery infrastructure for gas and electricity networks in Victoria.

This strategy is implemented and supported by:

- The HSEQ Leadership Review Committee (with executive and general management);
- Line management for day-to-day environmental operations;
- The HSEQ Team.

The sections highlight the key aspects of the HSEQ Management System that apply to asset management.

[1] QMS 10-01 HSEQ Management System Manual.

2 Objectives

AusNet Services' primary environmental objective is to protect the environment by responsibly managing the effects of our activities, while taking into account community concerns and threats to the functionality of the transmission network. On environmental matters, AusNet Services will:

- Conduct all operations in accordance with legislation.
- Responsibly minimise adverse environmental effects and maximise favourable effects where possible.
- Inform and consult with the community on significant environmental matters and respond effectively to environmental concerns raised by the community.

3 Strategies

Due to the importance of responsible environmental management, AusNet Services has embraced an environmental strategy that:

- Is designed to achieve effective compliance with regulation.
- Minimises environmental risk to the business.
- Will be regularly audited (internally and externally) to assess compliance with the ISO 14001 standard, regulatory requirements and good environmental practices.

3.1 Wastes and Environmentally Hazardous Materials

3.1.1 Polychlorinated Biphenyls (PCBs)

The insulating fluid in a number of electrical plant items contains low-level concentrations of PCBs. PCBs are man-made organic chemicals that were previously used for their chemical stability and electrical insulating properties. However, the importation and manufacture of PCBs was banned in Australia in the 1970s because of the serious health concerns associated with these chemicals[2]. Additionally, PCBs do not readily breakdown in the environment and can bio-accumulate. AusNet Services maintains a PCB register. Prior to the maintenance of major plant, oil samples are taken and tested for PCB concentration.
For further information please refer to Health and Safety Management strategy (AMS 10-15) and the PCB Management procedure (HSP 05-32).

3.1.2 Oil Containment

AusNet Services has a large number of plant items in its terminal stations that contain significant quantities of insulating oil. While these items have a very low risk of failure, terminal stations are regularly inspected to ensure that oil containment arrangements are satisfactory and that interceptor traps are appropriately maintained. Oil spill kits are located at each terminal station.
In 2001, consultants were commissioned to re-examine all terminal stations for environmental risks associated with oil containment, water treatment and off-site drainage. As a result, a program of improvement works has been approved and is being progressively implemented. This includes EPA compliant oil containment/bunding upgrade works in order to reduce the risk of contamination in the event of a spill from power transformers and other plant items. This program also includes the installation of above ground oil treatment plant.
Four stages of the program have been completed successfully to cover 30 terminal stations. The fifth and the last stage of the program will cover all remaining terminal stations. Terminal stations which will be completed as part of stage 5 include Cranbourne, East Rowville, Frankston, Keilor, Loy Yang, Moorabool, Morwell, Rowville, Shepparton and Sydenham terminal stations. Additionally, stage 5 will address Eildon, Loy Yang and Morwell power stations. To date, approximately 80% of the works have been completed with the remaining works expected to be completed by the end of 2016.
In 2003, samples were taken of ground water and water at drainage discharge points at all terminal stations and field depots. No serious issues were discovered. It is expected that such sampling in the future will indicate lessening concentrations of contaminants as the program of environmental improvement works are progressively implemented.
In order to facilitate the ongoing sampling of groundwater, permanent sampling wells have been installed in a number of terminal stations. Testing is undertaken during environmental upgrade projects. Repeat of sample testing along with ongoing testing (once every two years) is also under consideration to ensure that oil & water separator systems are operating correctly to comply with required AusNet Services' Standards.

- Complete the final stage of the program of oil containment, treatment and drainage improvement works by December 2016.

[2] EPA Victoria - Polychlorinated biphenyls (PCB) management (Release Date: 30/9/2009).

3.1.3 Storage, Handling, Transport and Disposal

In order to protect the environment, AusNet Services' personnel and contractors involved in the storage, handling, transport and disposal of wastes and environmentally hazardous materials are required to meet the requirements of relevant regulations and be in compliance with internal HSEQ operating procedures.
All prescribed industrial waste is accompanied by an EPA Waste Transport Certificate and disposed of by an EPA approved waste disposal company.

3.1.4 Waste Management

AusNet Services ensures that any waste material generated during its operations is managed, stored and disposed of appropriately, in accordance with the relevant regulations and in compliance with internal HSEQ operating procedures[3]. This includes prescribed industrial waste and other wastes such as the following:

- Oil contaminated soil or absorbent;
- Oil / water mixtures;
- Asbestos containing material;
- Fluorescent tubes (contain mercury);
- Waste PCB or PCB-containing material;
- Sludges from separation pits and traps;
- Chemicals, solvents, herbicides and kerosene and vehicle oils;
- Waste vegetation from tree trimming;
- Used cable, electricity metering / monitoring equipment, scrap metal and porcelain;
- Vehicle exhaust emissions; and
- Office waste including paper, toner from photocopiers and printers and food wastes.

3.1.5 Site Contamination

When works are carried out involving the replacement of plant items that contain large quantities of insulating oil, samples of the soil in the bunded and/or adjacent areas of the plant items are taken. If required, any contaminated soil is removed and disposed of in accordance with EPA requirements and the site is remediated before the new plant is installed.
More than 30 years ago, towers three, four and five of the FBTS (Fishermans Bend Terminal Station) to WMTS (West Melbourne Terminal Station) numbers one and two 220 kV transmission lines were painted in orange and white bands using lead based paint in order to aid aircraft navigation. These towers, which are known as the 'Bolte' towers, are in proximity to waterways, including the Yarra River.
Tests prior to 2008, on the soil underneath and adjacent to these towers, have revealed a slightly elevated level of lead. At least in part, this may be due to the operation of a gasworks, and the addition of land-fill to the area. Both of these considerations predate the painting of the towers. However, AusNet Services has committed to continue to monitor the lead levels and manage the effects of the lead based paint from these towers as necessary.

- Continue to carry out soil testing in bunded and adjacent areas when replacing plant items containing large quantities of oil.
- Ensure any identified contaminated soil is disposed of appropriately and affected sites are remediated.

[3] For further information refer EMS 21-51-1, EMS 21-54, EMS 21-55, EMS 21-56, HSP 05-05.

3.2 Vegetation Management

Vegetation management near AusNet Services' transmission lines and within terminal stations and communication sites is an ongoing activity. It is essential that assets can be operated without creating a fire hazard or risking the security of supply. On the majority of line easements, trees and tall growing shrubs are removed to reduce future maintenance activities. However, there are a number of lines that traverse environmentally sensitive areas where the extent of clearing is kept to a minimum to satisfy the relevant land managers and community groups. Vegetation clearing is guided by the Code of Practice for Electric Line Clearance, which is a schedule to the Electricity Safety (Electric Line Clearance) Regulations 2010.

AusNet Services compiles and submits for approval an annual Vegetation Management Plan to Energy Safe Victoria (ESV). The plan is prepared in compliance with Electricity Safety (Electric Line Clearance) Regulations 2010. The Vegetation Management Plan is read in conjunction with the Bushfire Mitigation Plan (BFM), which is part of the mandated electricity safety management scheme for the electricity transmission network.

AusNet Services has a policy of encouraging sustainable vegetation along its transmission line easements. This policy is intended to reduce the costs associated with periodic vegetation reduction and to mitigate the spread of pest plants and disturbance to native faunal habitat. As the community becomes more concerned with not only the visual impact of our sites, there is concern being expressed to us regarding the pest plants and animals that may occupy these sites.

- Continue to support revegetation of transmission line easements with appropriate vegetation.
- Encourage the policy of sustainable vegetation on line easements.
- Control pest plants and animals that may be harboured in terminal station sites and on line easements.

3.3 Visual Impact

The community is becoming increasingly concerned with the visually intrusive nature of terminal stations, lines and towers. Complaints from the community have had a significant impact on the redevelopment of BTS (Brunswick Terminal Station) which has been acknowledged in the design of the RTS (Richmond Terminal Station) and WMTS (West Melbourne Terminal Station) rebuild projects.

Conventional outdoor air insulated switchgear (AIS) designs were deemed to compromise environmental values, be too visually intrusive and not comply with government planning requirements. In order to get approval for BTS and RTS terminal station upgrades, AusNet Services has planned to reduce the visual impact of the redevelopments by primarily using indoor gas insulated switchgear (GIS). The indoor GIS design option is more expensive than the conventional outdoor AIS design.

Additionally, ground works have been undertaken at a number of existing terminal stations, such as South Morang, Templestowe and Cranbourne terminal stations. As existing stations are refurbished, resources will be used to alleviate visual intrusion and attempt to assimilate components of terminal stations with the local environment. This may include options such as undergrounding cables, building earth mounds and designing buildings to complement the local environs with sympathetic screening vegetation.

- In consultation with neighbours, planning authorities and other stakeholders minimise the visual impact of existing and new transmission assets, where practicable, as required to secure permission for the economic development of necessary infrastructure.

3.4 Noise

With urban and regional expansion, residential housing is encroaching upon a number of AusNet Services' terminal stations. In several instances this has resulted in noise complaints. This issue is exacerbated by the noise generated by equipment operating at high utilisation levels. At the same time, demands from the community to reduce the levels of noise emanating from stations are increasing. Noise surveys are conducted at sensitive sites and abatement measures undertaken as deemed necessary.

- Continue to monitor noise levels at terminal station sites and undertake abatement measures where noise exceeds legal limits.
- Address noise complaints to alleviate community concerns.

3.5 Greenhouse Gas Emissions

AusNet Services is obliged to provide information as required by the National Greenhouse and Energy Reporting scheme (NGER). The company reports annual direct (Scope 1) and indirect (Scope 2) greenhouse gas emissions and energy consumption to the Clean Energy Regulator.

3.5.1 Electrical Losses

For energy transactions of the National Electricity Market (NEM), energy meters are installed at network connecting points to measure and record (at 15-minute intervals) energy entering and energy leaving the connecting points. In general for a given system with known boundary and associated energy meters, the system losses are calculated as the difference between all energy entering (E-); and all energy leaving (E+) the network.
Subsequently, the summation of energy losses at all relevant Transmission Node Identities (TNI)/terminal stations of the Victorian electric transmission network over the 12 months is reported as the overall transmission system losses.

3.5.2 Fugitive Emissions of SF_6 Gas

The reduction of SF_6 leak rates from aging equipment continues to be a significant element of reducing greenhouse gas emissions. Leakage rates have declined significantly over the last 5 years through the repair of aging equipment, such as the SMTS 500kV GIS and Siemens 500kV 3AT5 refurbishment program and the fleet replacement of CGE SF6 current transformers. The average leakage rate is currently approximately 1.3% per annum. Further targeted asset works programs will continue to aim to bring leakage below 1% per annum. To manage the release of SF_6 gas, PGI 63-01-03 provides guide lines to the actions on SF_6 low pressure alarms, procedures for topping up, leak detection and assessment methods.

- Continue to monitor SF_6 leaks and trends from transmission assets.
- Locate and carry out repairs to SF_6 leaks from transmission assets.
- Ensure that any SF_6 losses are minimised during gas processing for maintenance.

3.6 Access to Sites

There is a need for workers to have reasonable, all-year-round, vehicular access to transmission line towers and communications sites. This access will require up-to-date contact details for landowners and directions that provide for the best access to these sites, minimising any environmental impact. This information is necessary so that workers can respond quickly in a contingency situation and because contractors need this information to work on the assets.
Currently, deficiencies in track, gate and bridge or culvert condition are recorded during line patrols. However, there is still much information that is either not recorded, out of date or not easily accessed by field staff. There is a need to record all of the required information in an electronic format, regularly update it and make it easily available to field staff and contractors.

- Continue to work with the Department of Environment, Water, Land and Planning (DEWLP) to resolve outstanding issues relating to easements on Crown Land.
- Continue to identify and repair / replace damaged bridges that provide AusNet Services with minimum time access to line assets, subject to agreement with the DEWLP.
- Continue to reinstate access tracks that have been affected by heavy rains and flood events to acceptable conditions.

For further information please refer to Line Easements strategy (AMS 10-65).

3.7 Cultural

AusNet Services recognises the importance of preserving heritage places, objects and vegetation of cultural importance and is committed to take every possible step to protect those whenever a new infrastructure development or augmentation is undertaken in a culturally sensitive area.
Refer to EMS 21-60 Protection of Cultural Heritage.

- Ensure Aboriginal cultural heritage is protected.[4]
- Conserve aesthetic, architectural or historical interests in maintaining buildings with historical importance.[5]
- Pay special consideration[6] when pruning or removal of "significant vegetation".[7]

[4] For further information refer EMS 21-60: Protection of Cultural Heritage.
[5] Section 4(1) of the Planning & Environment Act 1987.
[6] For further information refer BFM 10-06: Vegetation Management Plan (Transmission).
[7] The term "significant vegetation" is defined in BFM 10-06 as the location of areas containing trees that are native or listed in a planning scheme to be historical, aesthetic or ecological significance or trees of cultural or environmental significance, or contain threatened fauna that may need to be pruned or removed to ensure compliance with the Code of Practice.

4 Risk Management

AusNet Services has a procedure in place to identify the environmental aspects (risks) of its operations, evaluate the associated environmental impacts arising directly or indirectly from AusNet Services' activities and determine those aspects that have or can have a significant impact on the environment (refer to EMS 21-51 Environmental Aspects).
The environmental aspects for the transmission network have been determined and recorded in EMS 21-51-2 Environmental Aspects and Impacts Register. This register is regularly updated and is consulted when considering the mitigation of environmental risks for the transmission network. This register uses the AusNet Services Risk Rating Methodology shown in Figure 2.

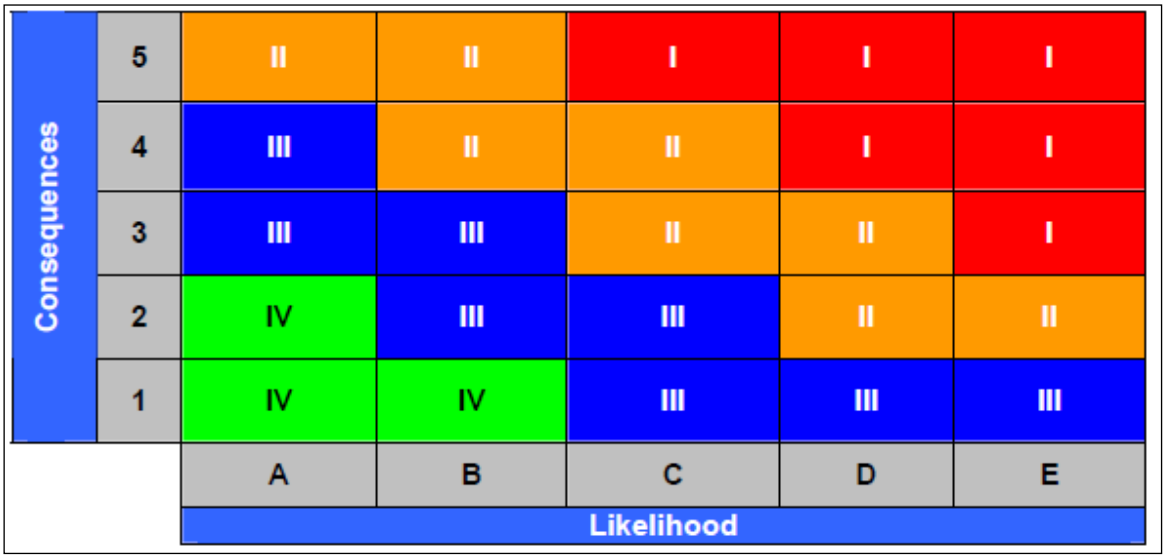

Figure 2 – AusNet Services' Risk Matrix

Certain standing environmental risks are recorded and managed using AusNet Services' Enterprise Risk Register. Environmental risks in this register are listed below in Table 1.

Risk Name	Residual Risk Rating	Target Risk Rating
AusNet Services' assets cause a bushfire	Level II	Level II
Electric or magnetic fields being found to be harmful	Level II	Level II
Easements become encroached	Level III	Level III
Workplace exposure to Asbestos Containing Materials (ACM)	Level III	Level III
Failure to adequately manage greenhouse gas output	Level III	Level III
Failure to implement the recommendations from the Victorian Bushfire Royal Commission	Level III	Level IV

Table 1 – Environmental Related Network Risks Registered in CURA as at October 2015[8]

At a minimum, a formal review is conducted on each risk annually. This includes assessing the causes, impacts and risk rating, as well as the status and effectiveness of treatment activities. This regular monitoring ensures changing conditions are quickly identified and assessed to aid in effective treatment and promote continuous improvement.[9]

[8] For further information, refer to AMS 10-22 Risk Management.
[9] Refer "Risk Management Policy", "Risk Management Framework" and "Regulatory Compliance and Framework" for further information.