BIOSECURITY OBLIGATIONS - A RISK BASED APPROACH TO IDENTIFYING AND PRIORITISING MANAGEMENT.

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Background

APA owns or has interests in more than 15,000 kilometres of gas transmission pipelines and other related energy infrastructure assets, such as gas storage facilities, gas processing facilities and gas compression facilities. We operate electricity transmission lines and our portfolio also includes wind and solar generation.

Biosecurity refers to weeds, pest animals and diseases that, if introduced or allowed to spread, could cause significant economic, environmental and social impacts. Examples include invasive weeds such as Parthenium, which costs Australia's beef industry $16.5 million per year, Phytophthora (dieback), and fire ants, which cause significant environmental damage.
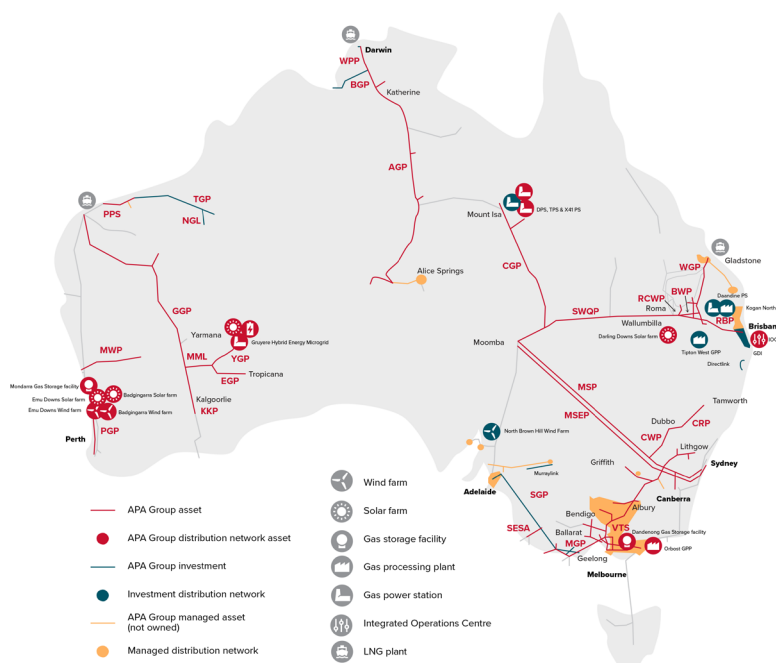

Figure 1 APA Asset Map

The potential for spread of biosecurity matters, particularly weeds, via vehicles and machinery during easement maintenance is well established (Ansong & Pickering, 2013). APA's environmental risk assessment processes consistently identify the spread of biosecurity matters on vehicles and machinery as a significant hazard. This is supported by a 2009 University of Queensland study that found an average of 209 viable seeds on utility vehicles, following one week of routine easement maintenance in South East Queensland (Khan et al, 2011).

Each state and territory has legislation that requires biosecurity to be managed. This legislative framework has changed over the last 10-15 years from a prescriptive framework listing individual species and control requirements, to a predominantly risk based framework. Terms such as undertaking reasonable and practical steps or meeting a general biosecurity obligations or duty are now commonly used in most jurisdictions.

Whilst a risk based approach provides more flexibility in how biosecurity risk is assessed and managed, requirements may not be as readily apparent or understood. The risk based legislative framework creates an obligation on organisations such as APA to have systems and processes in place to identify and implement reasonable and practical measures to identify and manage relevant risks.

With this in mind, APA completed a review the company's approach to biosecurity management, utilising a risk based approach modelled on HB 294:2006 National Post-Border Weed Risk Management Protocol (Standards Australia, 2006).

Risk Assessment and Prioritisation criteria

The National Pest Border Weed Risk Management Protocol is used by many state and local government authorities to determine management priorities and strategies for their area of interest. The protocol establishes the key criteria that should be considered in assessing and comparing individual weed risks with the feasibility of controlling these species (Standards Australia, 2006). APA adapted this protocol to reflect the hazards and risks associated with biosecurity resulting from APA's activities, whilst incorporating the existing prioritisation completed by government authorities.

APA has 16 operating regions across Australia, each spanning multiple local government authorities. For each APA operating region, a Pest, Weed, Disease (PWD) risk register was developed. Given the nature of APA's activities weeds were the key focus with pest animals and plant and animal diseases assessed on a case by case basis where applicable.

Development of the risk register required an initial review of relevant authority biosecurity management plans and data, along with publicly available species records. Using this information a list of biosecurity matters likely to occur within each operating region was developed. Individual species were then evaluated to determine an overall score for Level of Risk (Impact) and Feasibility of Control within each operating region.

Table 1 describes the criteria used to prioritise weeds for each APA region.

Table 1 PWD Prioritisation Criteria

PWD Risk	Criterion Description
Criterion 1 • Government Priority	Ranked from High to Very Low based on the priority assigned to the weed species in the relevant local or regional management plans. Where species occur across multiple jurisdictions a conservative approach to adopt the highest rating was applied.
Criterion 2 • Potential for long distance spread during APA activities (invasiveness)	Ranked from High to Low based on the natural tendency of the weed to be spread and establish beyond its current range during the course of APA's activities. This criteria considered weed characteristics such as: • Quantity of seed produced • Seed characteristics that assist spread (eg hooks, burrs, present of stick coating) • Lifecycle / time frame for first seed production (weeks vs years); and • Roll of other vectors in long distance spread.
Feasibility of Control	
Criterion 3 • Current distribution	Available information on current distribution in the region was utilised to ranked species from High (Common) to Low (Uncommon).
Criterion 4 • Coordination requirements	This criteria was used to factor in the influence of other land users and vectors for weed spread. Defaulted to Medium at regional scale however ability to adjust at an individual level to reflect situations where, for example: • An individual landholder has established an active control program or quarantine zones; or • Multiple parties access shared corridors creating complex coordination requirements for effective control.

The final impact and feasibility of control scores were analysed using a prioritisation matrix (Table 2) to categorise individual weeds into management categories and develop regional Pest, Weed and Disease Risk Registers for each operating region.

Table 2 Weed Prioritisation Matrix

<table>
<tr><td rowspan="2" colspan="2"></td><td colspan="4" align="center">PWD Level of Risk</td></tr>
<tr><td><i>Very Low</i></td><td><i>Low</i></td><td><i>Med</i></td><td><i>High</i></td></tr>
<tr><td rowspan="3"><i>Feasibility of Control</i></td><td><i>High</i></td><td>Low - Monitor</td><td>Targeted management</td><td>High- Contain spread</td><td>Very High – Prevention & Eradication</td></tr>
<tr><td><i>Med</i></td><td>Low - Monitor</td><td>Med - Routine management</td><td>Targeted management</td><td>High - Contain spread</td></tr>
<tr><td><i>Low</i></td><td>Low - Monitor</td><td>Med - Routine management</td><td>Med - Routine management</td><td>Targeted management</td></tr>
</table>

General control strategies (Table 3) were developed for each management category to guide subsequent management within each operating region.

Table 3 Management Categories and Control Strategies

Priority	Management Objectives	Control Strategies
Very High	Prevention & Eradication	Prevent introduction via cleandown measures prior to entry. Treat to remove/ destroy all individuals. Limit access to infested area. Inspect and cleandown following access
High	Containment	Inspect / cleandown following access to infested areas. Limit access to infested area. Treat to reduce PWD population, particularly in areas adjacent to access tracks.
Targeted management	Containment or Routine Management	Management dependent upon location - assess on case-by-case basis. If in a sensitive area where significant impacts are likely manage as per "High" priority. If not in sensitive area, manage as per "Medium" priority.
Medium	Routine Management	Reduce PWD infestations as part of routine vegetation maintenance / management activities required for operation / construction of the asset. For example slashing and herbicide treatment of easements and access tracks.
Low	Monitor	Monitor infested areas as part of routine operational monitoring and reassess if resources or PWD risk status changes. Treat as part of ongoing routine maintenance activities. These PWD are generally well established with minor impacts. The low level of expected impacts and low feasibility of control level does not currently warrant any immediate action.

Trial Application in Southern Queensland

The risk assessment methodology was initially trialled on APA's southern Queensland transmission assets. A PWD register was developed based on the desktop methodology and targeted field survey covering approximately 1,000 km of pipeline easements was completed, utilising specialist environmental consultants supported by local field technicians. The survey covered a range of land uses and climate classes (subtropical, temperate & grassland). Metropolitan areas were excluded due to the higher intensity of land management in these areas.

During the trial, all species not considered to be native or localised in Queensland were surveyed, including species assessed during the development of the PWD register to be low priority. This approach was adopted to validate the accuracy of the desktop assessment, particularly to confirm the distribution of these low priority species and in doing so, to confirm that they are not likely to be spread further as a result of APA activities. Further, the field survey results verified that the desktop assessment accurately identified species warranting inclusion within the PWD register.

The survey results are summarised in Figure 2. The majority (98%) of records were classified as low or medium priority. Eight (8) priority species were detected, with some species only being of concern in particular regions or sensitive locations.

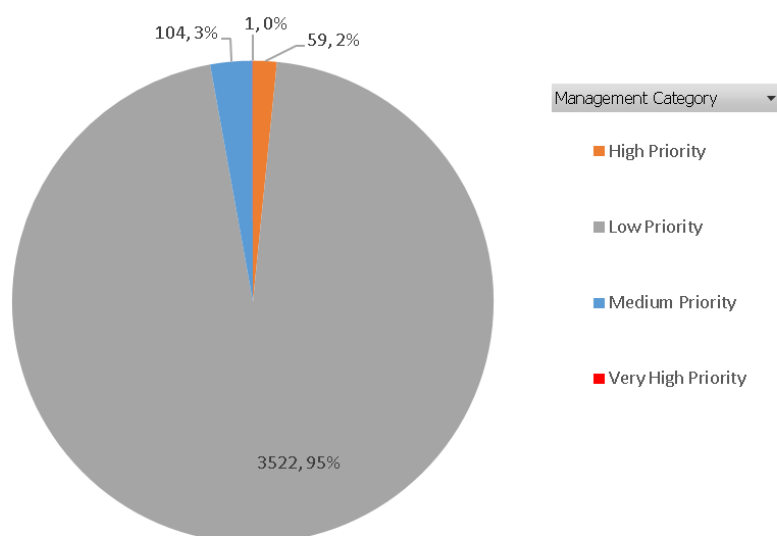*Figure 2 Southern Qld Weed Survey Results – Count of Records by management category.*

Table 4 Priority Weed Species Detected

Common Name	Scientific Name
Giant rat's tail grass	*Sporobolus pyramidalis / S. natalensis*
Parkinsonia	*Parkinsonia aculeata*
Prickly Acacia	*Vachellia nilotica*
Harrisia cactus	*Harrisia martinii et al*
Tiger pear	*Opuntia aurantiaca*
Parthenium weed	*Parthenium hysterophorus*
Coral Cactus	*Cylindropuntia fulgida*
Mother-of-millions	*Bryophyllum delagoense*

Implementation

Survey results were used to develop follow up weed management programs based on the management categories described in Table 3. Priority locations and associated access requirements were added to APA's GIS and land access systems to support future activities in these areas.

Following the successful trial, PWD registers were developed for all APA operating regions, based on desktop review. All PWD registers have been made available to APA operations employees and a data capture schema has been rolled out to allow for better integration of biosecurity observations and tracking of management actions. APA has since scheduled weed surveys to supplement these PWD registers to continue to improve identification and management of biosecurity risk.

Conclusion

The development of a risk based process for identifying and prioritising biosecurity risks allows APA to demonstrate how the organisation is meeting its general biosecurity obligations.

The approach directs management actions towards risks that have potential to have significant impacts but are not yet widely distributed. In doing so it allows reasonable, practical and effective measures to be put in place during the course of pipeline maintenance activities.

References

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