

# **FLINDERS POWER PARTNERSHIP**

## **ENVIRONMENTAL CLOSURE AND POST CLOSURE PLAN**

### **AUGUSTA POWER STATIONS**

**September 2017**



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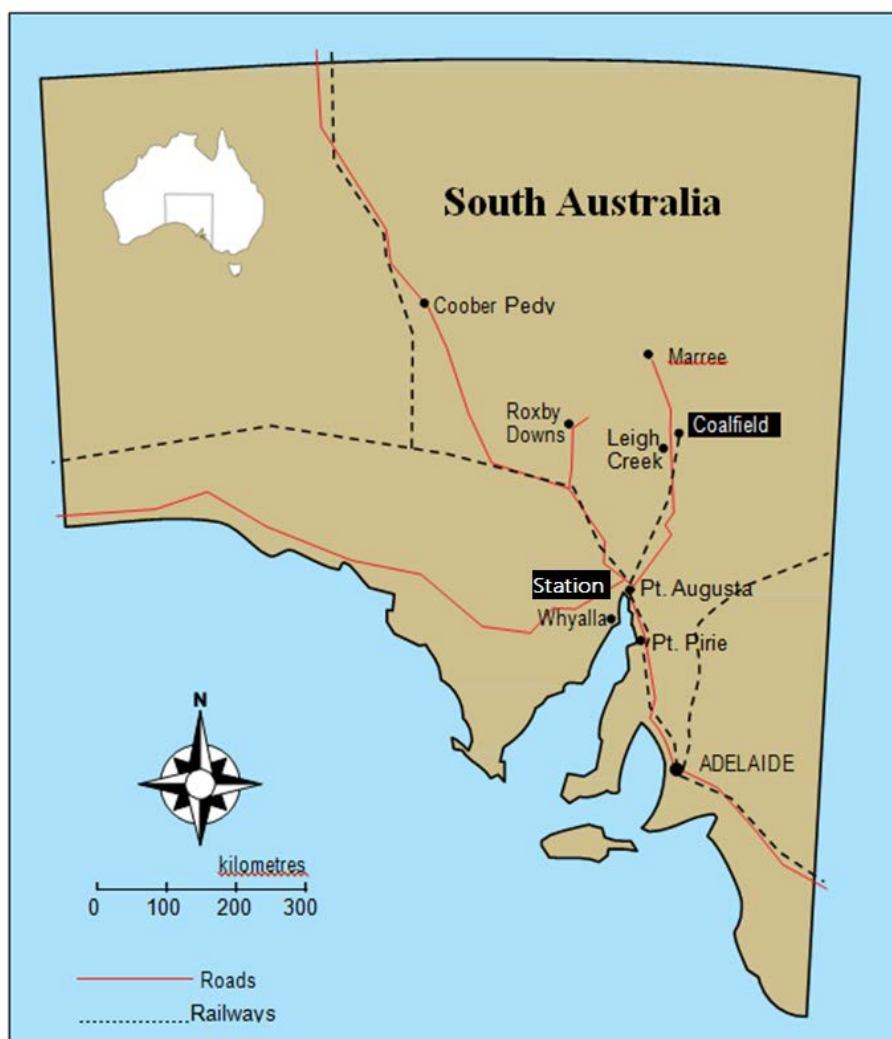
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# 1 Introduction

## 1.1 Site Description

Name of Site:	<b>Augusta Power Stations</b>
Location/Address:	E251201 N6625482
Postal Address:	PO Box 15 Port Augusta SA 5700
Name of Operator:	<b>Flinders Power Partnership</b> (FPP) comprising Flinders Power Holdings GmbH, Labuan (No.1) Ltd. and Flinders Labuan (No.2) Ltd.
ABN:	16 954 006 886
Agent for FPP:	<b>Flinders Operating Services Pty. Ltd.</b>

The Port Augusta Power Stations (APS) are on the eastern coast of Northern Spencer Gulf, south of the township of Port Augusta, approximately 300km north of Adelaide. The area of the City of Port Augusta surrounds the northern tip of Spencer Gulf and extends in an easterly direction to the foothills of the Flinders Ranges and in a westerly direction to the Whyalla Council and the Lincoln Gap.



**Figure 1 – Port Augusta Power Station Location**

APS consists of two coal-fired power stations, which historically provided more than 30 per cent of South Australia's base-load energy.

The power stations were commissioned, Playford in 1954 and Northern in 1985, to burn coal exclusively from the Leigh Creek Mine (also owned and operated by FPP). A 260km railway line transports the coal from Leigh Creek to Port Augusta.

Seawater from the Upper Spencer Gulf is used to cool the station and mixed with ash from the boilers to allow for the ash to be pumped as slurry to the Ash Storage Area. Seawater leaves the Ash Storage Area via a secondary polishing pond, through the Hospital Creek approximately 3km north of the station.

The Upper Spencer Gulf has a number of Marine Parks to protect some of the most important fish nurseries in South Australia which include significant mangrove forests, seagrass meadows and areas where whiting, squid and snapper gather to spawn.

FPP recognises that its operations have the potential to affect the local environment and community and is committed to continuously improving environmental performance.

In June 2015 it was publicly announced that the closure of the Flinders business would occur, with subsequent confirmation that the mine would cease operations on the 17th November 2015, and the power stations would cease operations on 9th May 2016.

This plan outlines the environmental management commitments and activities during:

- Closure, being the period immediately following the cessation of generation at Northern Power Station, 9<sup>th</sup> of May 2016. This is otherwise known as the 'make-safe' period.
- Post closure, being the period from the cessation of the 'make-safe' period to the surrender of the EPA Licence 13006

## 1.2 Land Tenure

The Closure Plan applies to the following allotments within the Augusta Power Stations Site (refer Figure 2 following)

- Northern Power Station (CT6134/241, Allotment 1) – Leased land
- Playford Power Station (CT6134/240, Allotment 8) – Leased land
- Exclusion Zone (CT5843/691, Allotment 4) – FPP Freehold land
- Laydown area (CT5843/692, Allotment 2) – FPP Freehold land
- Hospital Creek (CR5838/788, Allotment 7) – FPP Freehold land

It is also noted that under the Port Augusta City Development Plan (consolidated 15/11/12), areas of the site are demarcated 'Industry Zone', while other portions are demarcated 'Coastal Conservation Zone'. This is shown in Figure 3 following.







 Coastal Conservation Zone  Industry Zone  
(per Port Augusta (City) Development Plan - Consolidated 15/11/12)

**Figure 3. Map of the site showing the Port Augusta City Development Plan areas of the site demarcated 'Industry Zone' and 'Coastal Conservation Zone'.**

### 1.3. Document Structure

The following document map outlines the central role of the Environmental Closure and Post Closure Plan in meeting compliance obligations.

Governing Legislation	EPA Authorisations	Plans	Appendices & Supporting Documents
<b>Environmental Protection Act 1993</b>	<b>EPA Licence 13006</b>		
	Condition 1.1 Dust Prevention	APS Dust Management Plan	Appendix A: Ash Dam Interim Sealing – Proposal 7 <sup>th</sup> November 2016  Appendix B: Ash Dam Interim Sealing – Risk Assessment 2 <sup>nd</sup> January 2017  Appendix C: Complaint Handling Procedure  Appendix D: Fugitive Dust Trigger Action Response Plan (Rev4 29 <sup>th</sup> May 2017)  Appendix E: Ash Storage Area – Extreme Weather Monitoring & Response Plan (3 March 2017)
	Condition 2.2 Complaints Register	FPP Incident Management System	
	Condition 2.3 Develop and Implement Closure and Post-Closure Plan	<b>Environmental Closure and Post Closure Plan – Augusta Power Stations (this document)</b>	App A – Detailed Risk Assessments  App B – NPS Make Safe Manual  App C – PPS Closure Manual  App D – Closure & Care Project Plan  App E – Chemical & Oil Management Plan AppE1 – Chemical Manifest & Removal Scope

App F – Demolition Alliance Supporting Plans

App G - APS Dust Management Plan

App H – Project Risk Assessment Register

Condition 2.6 Generic Contingency Plan      Augusta Power Station Emergency Response Plan

Condition 2.7 Pollution Control Equipment Register      Refer Ellipse Maintenance Management System

**Environmental Compliance Agreement (2000)**

Section 1 Definitions and Interpretations      Flinders Power APS Ash Storage Area End of Life Plan Draft Cost Estimate (14<sup>th</sup> February 2000)

## 1.4 History

The Augusta Power Stations have a long and valued history providing reliable generation to the South Australian and National Electricity Market. The 90MW Playford A Power Station was commissioned on reclaimed land at the northern tip of Spencer Gulf in 1954. The site was subsequently expanded to accommodate the 240MW Playford B Power Station, which was commissioned in 1963. Generation was secured through the utilisation of the Leigh Creek Coalfields, and the construction of a 260km dedicated rail line connection. In the early 1980's an adjacent site was prepared at Port Augusta, culminating in the construction of the 544MW Northern Power Station in 1985.

In 1999 the assets were privatised, with the formation of Flinders Power Partnership (FPP) as the asset owner, and Flinders Operating Services as the agent for FPP in conducting operations and maintenance. Jointly, the operations are known as the `Flinders Operations`. SA Government control was retained under the Electricity Disposal and Restructuring Act (1999) and the Flinders Power Generation Business Sale Agreement (2000), with the subsequent formation of subordinate leases, including:

- Northern Land Lease;
- Playford Land Lease;
- Northern Generating Plant Lease;
- Playford B Generating Plant Lease;
- Leigh Creek Township Lease; and
- Leigh Creek Railways Sub-Lease.

Since 2000 Flinders has undergone a series of ownership changes, and is currently wholly owned by FPP.

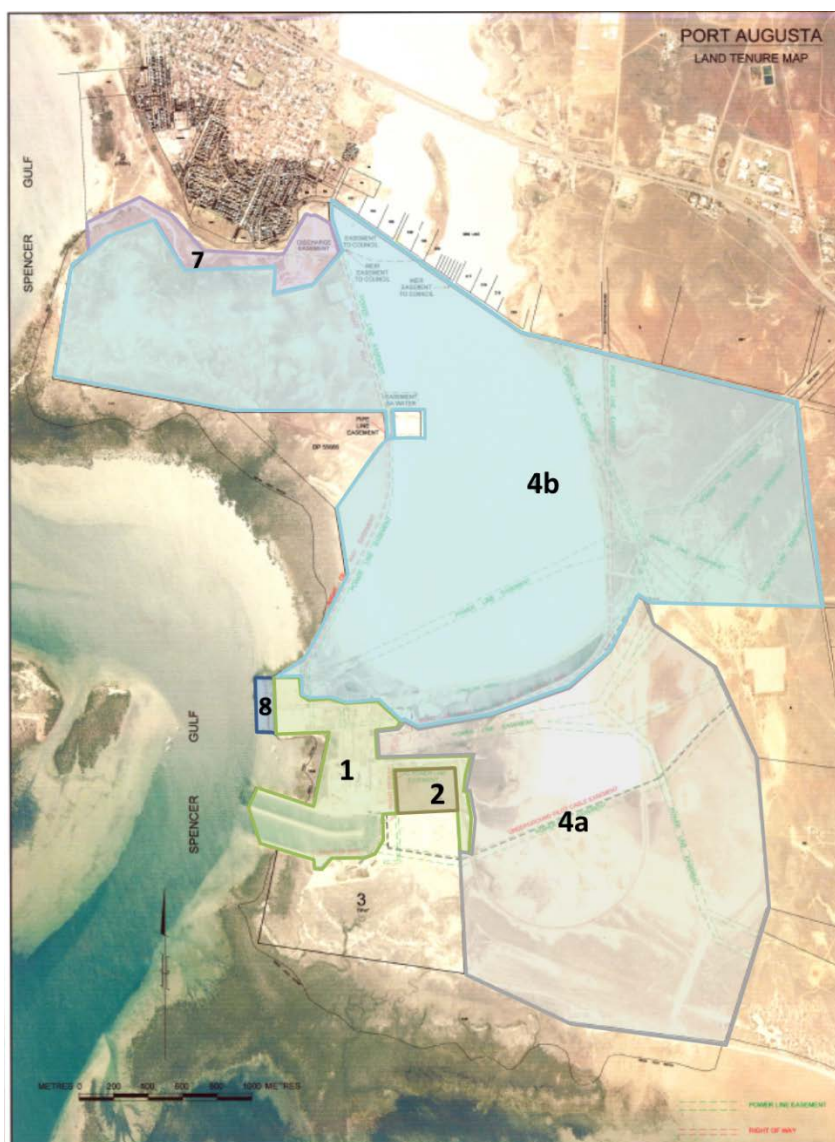
The Flinders sites were major employers in the Far North region of South Australia. ACIL Allen in a 2015 report estimated an annual contribution by the business to the regional economy in the vicinity of \$180M, and direct employment of over 450 staff. The Closure Program will have a direct social and economic impact on the region, and the project plans are mindful of maintaining a strong valued legacy, while assisting workers and the broader community to prepare for a future without the Flinders Operations.

## 1.5 Power Station Areas

To allow for specific management of certain areas of the Augusta Power Stations, clearly delineated areas have been defined and referenced in the Plan.

The following 'Areas' have been defined and are illustrated in Figure 4 below:

- Area 1 – Northern Power Station, CW channels, Playford workshops & environs
- Area 2 – Unit 3 Area
- Area 3 – Area south of Northern Power Station (Leased by PIRSA and therefore not included in this Plan)
- Area 4a – Coal Stockpile & Rail Loop Area
- Area 4b – Ash Storage Area, ABC Lake & Polishing Pond
- Area 7 – Hospital Creek
- Area 8 – Playford Power Stations



**Figure 4. Map of Closure Specific Areas – Augusta Power Stations.**

## 2 Environmental and Social Objectives of Augusta Power Station Closure

The APS Environmental Closure Plan addresses the requirements set out under Condition U-251 of EPA Licence 13006, which states:

- 'Prepare and submit to the EPA by 22 April 2016 a Closure and Post-Closure Plan (the Plan) to the satisfaction of the EPA, for the cessation of the activities undertaken pursuant to the Licence'.

Consistent with email correspondence to the EPA on 3th October 2015, Flinders Power Partnership (FPP) considers the term 'closure' to represent the period immediately following the cessation of power generation (FPP refers to this phase as the 'make safe' phase'). FPP considers the term 'post-closure' to represent the phase of activity following 'make safe' whereby saleable assets are recovered, demolition activities commence and the site is restored to a condition suitable as a future industrial/commercial site.

The Plan addresses environmental and social risks to neighbouring ecosystems, landholders and communities. The environmental and social values that have been considered in relation to closure include:

- The health and safety of people;
- The sensitivity of associated ecosystems;
- Maintaining water quality and flows in surface waterways;
- Maintaining water quality in groundwater;
- Maintaining air quality;
- The creation of safe, stable, non-polluting and sustainable landforms.

The ultimate program objective for the entire site is to dismantle the Northern and Playford Power Stations in a safe manner and return the site in a safe and stable condition suitable for future industrial/commercial use. Specifically, the Closure Objective for leased land (Lot 1 and 8) is to dismantle Generating Plant, demolish infrastructure and conduct any necessary site remediation. Once the program is completed to the satisfaction of both the State and Flinders, as per the requirements of the Generating and Land Leases, the leased land will ultimately transfer from the Generator Lessor Corporation to FPP. Specifically, the Closure Objective for FPP-freehold land, including the Ash Storage Area, is the creation of a safe, stable, self-sustaining landform that is in an appropriate state for on-sale. Monitoring and ongoing maintenance of the Ash Storage Area will occur as outlined in the Post-Completion Monitoring & Maintenance Plan (Flinders Power Alliance, March 2017).

The principles of risk management and ecologically sustainable development, as per Part 2 of the SA Environmental Protection Act are fundamental pillars of the Closure Plan. More specifically, FPP will use best endeavours to ensure:

- Identified risks will be reduced to as low as is reasonably practicable; and
- An increased focus will be applied to those issues of high residual risk.

Specifically the objectives of this Closure Plan are:

1. To ensure current and future actual and potential environmental and social impacts are identified, risk assessed and prioritised for control action.
2. To define roles and responsibilities for the closure program.
3. To document the actions, timeframes and milestones to address the environmental and social risks.
4. To document the approach to be taken for community engagement.
5. To ensure current available information regarding the site is centrally documented and available to future parties.
6. To meet compliance obligations.

During closure and post-closure activities, the site will remain under the control of FPP, and the core organisational values will be strongly reinforced, as outlined in Figure 5 below:



## OUR VALUES

- **Safety – Zero Harm**
  - ✓ Our highest priority
- **Unified Team**
  - ✓ Despite very different operational programs across sites we will always work as one team to deliver the best outcome for closure overall
- **Respect**
  - ✓ We will have regard for every stakeholder and always consider their views. We will manage our relationships with sensitivity and always respond appropriately
- **Leadership**
  - ✓ We will always set the best example; adopt a consultative and constructive approach and ensure we set a clear direction



**Figure 5 The Flinders Power Values**



### 3 Legal & Other Obligations

#### 3.1 Background

An Environmental Compliance Agreement (ECA) under Clause 5 of the Electricity Disposal and Restructuring Act (1999) was formed to stipulate environmental operating conditions specific to the Playford and Northern Power Stations. The ECA contains specific conditions relating to closure.

EPA Licence 13006 has historically governed Playford and EPA 13007 has historically governed Northern Power Station. In early 2016 these licences were combined into EPA 13006 in preparation for closure.

#### 3.2 Key Statutes & Regulations

Activities are governed by the following statutes and legislation;

- Environment Protection Act 1993
- Environment Protection Regulations 2009
- Natural Resources Management Act 2004
- Natural Resources Management (General) Regulations 2005
- National Environment Protection Council Act, 1994
- Environment Protection and Biodiversity Conservation Act 1999
- Work Health and Safety Act 2012
- Work Health and Safety Regulations 2012
- Electricity Corporations Act 1994
- Aboriginal Heritage Act 1988

### 3.3 Responsible Authority and Regulatory Instruments

The following table (Table 1.) contains the key authorities and instruments applicable to the closure plan:

**Table 1. Key authorities and instruments applicable to the Closure Plan**

Authority	Key Activities	Instrument
Environmental Protection Authority (SA)	Environmental compliance and monitoring conditions for closure	Environment Protection Act and Regulations inclusive of Policies, Codes of Practice, National Environment Protection Measures (NEPMs) & EPA Licence Conditions
SA Generator Lessor Corporation	Compliance with Lease conditions	Electricity Corporations (Restructuring and Disposal) Act – Schedule 1 Clause 5 Environmental Compliance Agreement
Safework SA	Compliance with asbestos, hazardous substances and high risk work requirements	Work Health and Safety Act and Regulations inclusive of Policies, Codes of Practice,
Port Augusta City Council	Development Consent conditions for Demolition (Complying development)	Development Act 1993

## 4 Description of Existing Environment

### 4.1 Climate

Port Augusta has a warm desert climate with hot dry summers and mild winters. The average maximum temperature ranges from 32°C in January down to 17 °C in the cooler winter months of June and July. The minimum temperatures are around 19°C and 7 °C respectively. Port Augusta’s average annual rainfall is 242 mm and the annual evaporation rate is circa 2500mm.

The distance between Playford Power Station and the closest residents in Port Augusta to the north is approximately 2.8km. The distance from the polishing pond outlet to Hospital Creek to nearest residents is approximately 400m.

Figure 5 (Aurecon, 2010) demonstrates the seasonal wind patterns, including wind direction and wind speed. The charts show that strong regular southerlies are dominant during the summer season. Port Augusta Township, especially the suburb of Willsden, is potentially affected by southerlies for most of the year, except during winter when the dominant wind direction changes from southerlies to northerlies.

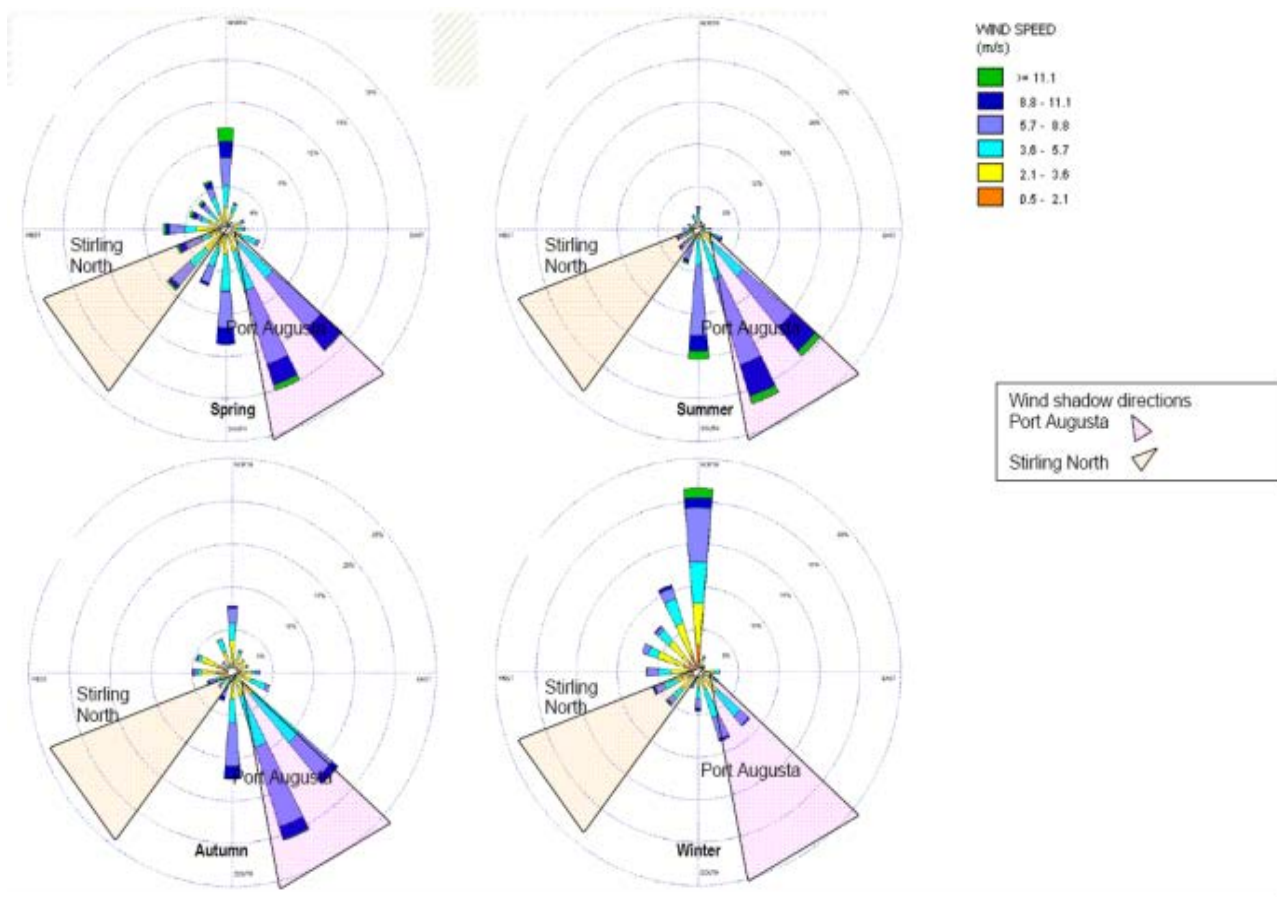


Figure 5. Seasonal Wind Profile

## 4.2 Flora

In 2001 a major site vegetation survey was undertaken (Neumann R, 2001). The major vegetation communities across the site are classified as undisturbed, disturbed or revegetated. The undisturbed regions are further divided into terrestrial and marine. The terrestrial regions are further divided into shrub land, sand dune or samphire communities. The shrub land communities represent typical high quality arid chenopod shrub land. There are various associations occurring within this region that could be broadly identified as Maireana or Atriplex dominant. The lush trees of the sand dune community provide a striking contrast to the surrounding low shrub land. The diversity of plant species in this zone, outside of the scope of this document, is high. The samphire zone is dominated by species of Sarcocornia and Halosarcia; the former forming monospecific stands along the high tide mark.

Figure 6, shows a 2001 vegetation map of the then NRG-Flinders landholding.

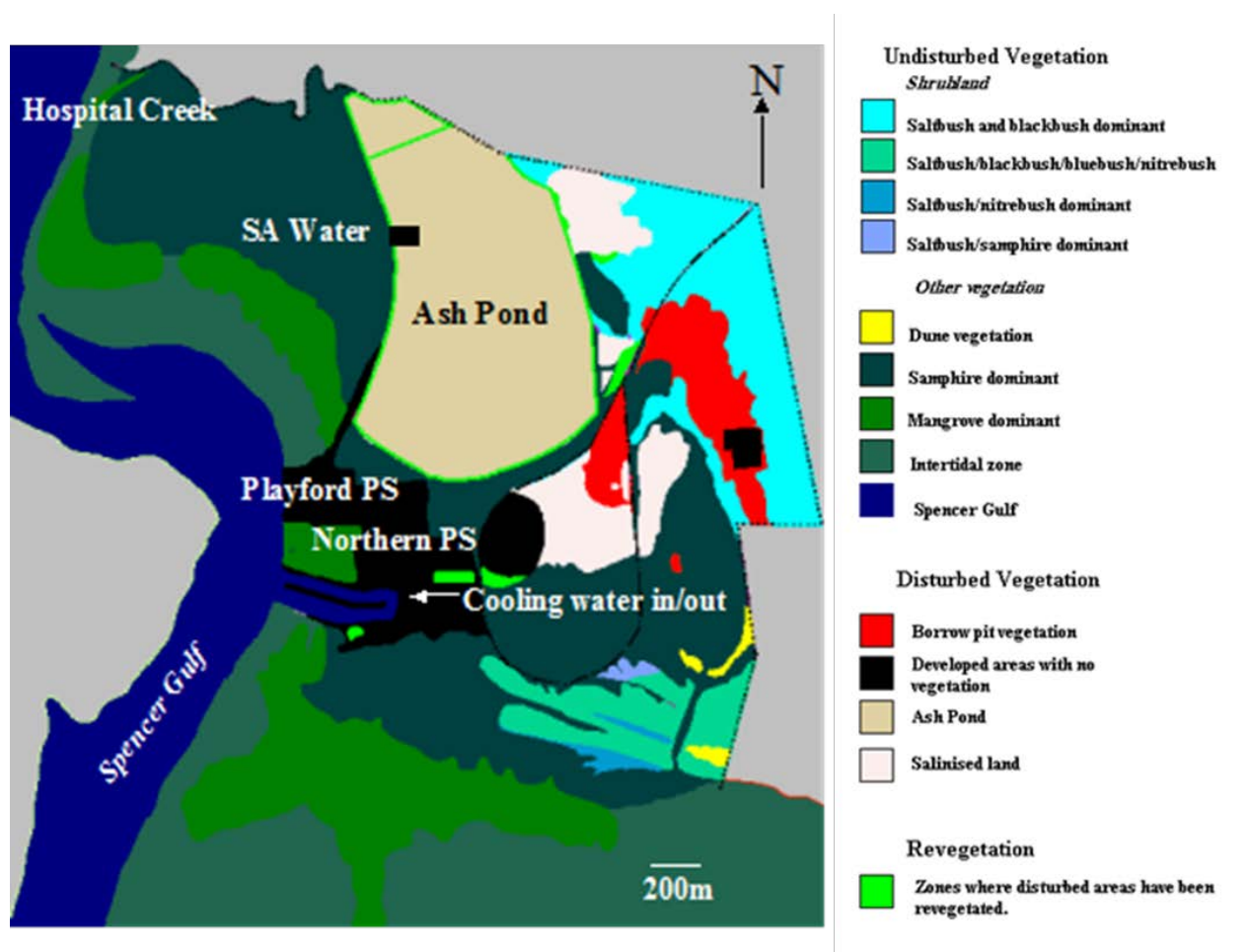


Figure 6. 2001 Vegetation map of NRG-Flinders landholding.

Figure 7, shows a 1976 Vegetation map of the Port Augusta Power Stations from the then Department of Mines.

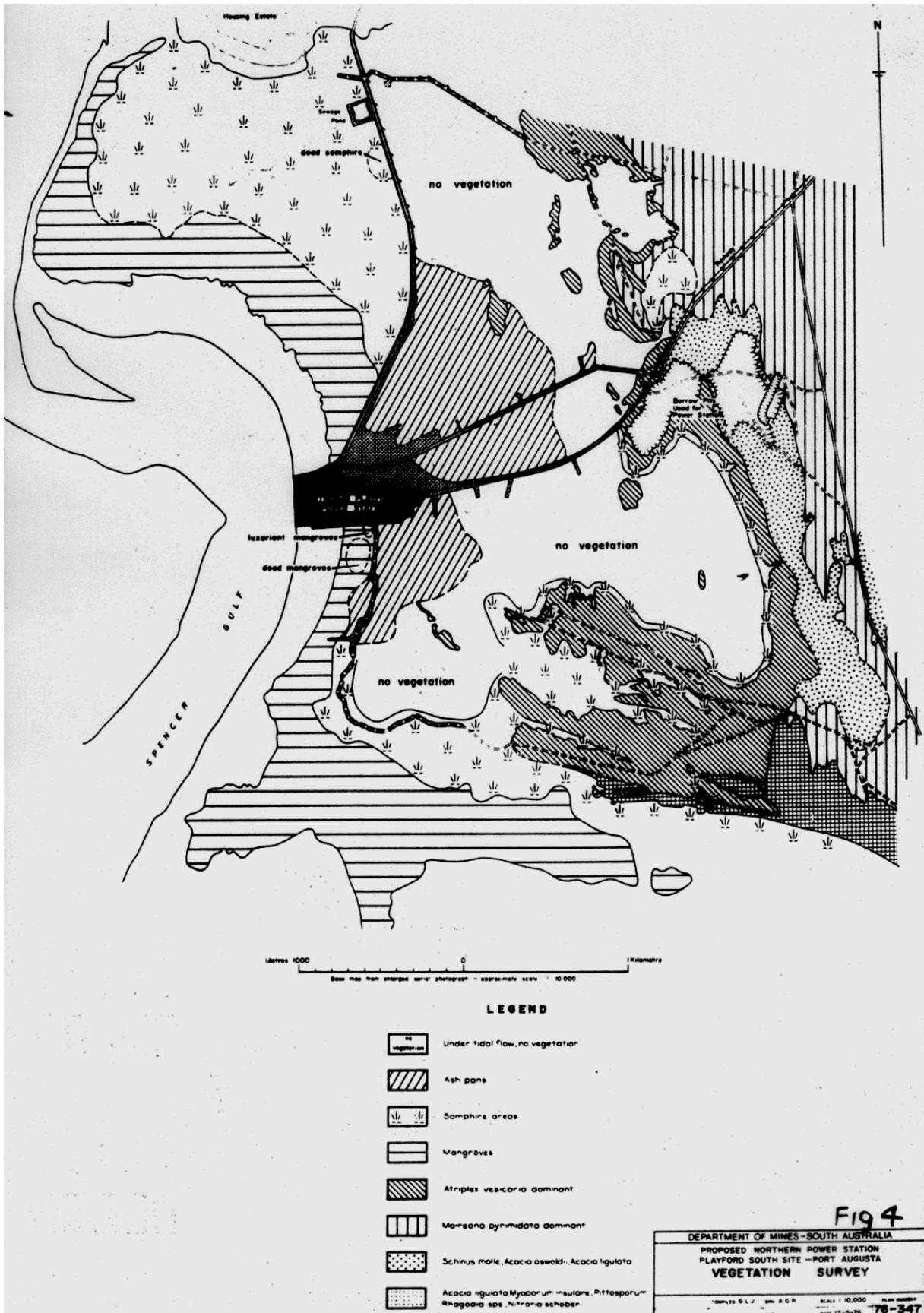


Figure 7. 1976 Vegetation map of the Port Augusta Power Stations (Ainslie and Jones 1976)

The 1976 vegetation survey map shows that there were large areas of 'no vegetation' to the north, east and south of the site as this was pre-existing salt pan. It is also noted that the area immediately to the south of Playford, where Northern is sited, was part of the Playford 'Ash pans'.

The marine regions are divided into mangroves and seagrasses. The mangrove forests are composed entirely of *Avicennia marina* (the only species of mangrove to occur in South Australia). The seagrass community is dominated by *Posidonia sinuosa* in shallow waters and *Posidonia australis* in deeper waters.

### 4.3 Fauna

Large endemic fauna found in the area include the Western Grey and Red Kangaroos and Euros (intermittently found outside the Station fence line), and Emu's are sometimes seen on the far southern side near the coast or the far eastern side in the old grazing areas.

There are a number of endemic reptiles often found onsite, including Shingleback and Blue Tongue Skinks, Sand Goannas, Brown Snakes and numerous other small reptiles.

There is a large amount of avian fauna found onsite, with the Ash Storage Area and the Polishing Pond being a layover site for a significant number of migratory birds. The Banded Stilt, *Cladorhynchus leucocephalus*, has been observed in very large numbers on the Polishing pond and the associated Bird Lake system.

A large number of raptors are found onsite, mostly small falcons and kestrels, though a pair of Peregrine Falcons are often seen preying on ducks in the SA Water Treatment Plant ponds. Black Kites, Wedge Tailed Eagles and Sea Eagles are also seen feeding in the Ash Storage Area.

Medium pest mammal species area also found onsite, including cats, rabbits and foxes. Trapping takes place on site for these pest species when deemed necessary.

### 4.4 Soils

According to the Geological Survey of South Australia, Port Augusta Mapsheet (1968), the geological profile beneath the area of investigation is generally characterised by the St Kilda Formation: Sands, shelly silts and clays of the littoral lagoons and mangrove swamps.

In 1994 a number of bore holes were drilled across the site to assess groundwater salinity (AGC 1996). Ground water bore hole logs from across the site at this time show the soil structure in predominantly fine to medium grain orange sand from half a metre to one and a half metres thick over a light grey, low plasticity silty clay approximately one metre thick over red high plasticity clay. Some areas have dark grey silty sand or light grey clayey sand in place of the red high plasticity clay, ranging from half a metre to eight metres thick across the site.

Playford and Northern are constructed on reclaimed land incorporating imported fill and ash. Northern also includes dredge spoil from the construction of the cooling water channels.

## 4.5 Water

### a. Surface water

#### Stormwater/Site drains & ABC Lake

Stormwater onsite is collected through two drainage systems, the combined Stormwater/Site Drains system and the Ash Disposal Pit.

For both Playford and Northern Stations, water falling inside the main boiler structure area on concrete self-contained hard stand is directed to the Ash Disposal Pit where it is mixed with bottom ash and seawater, this is then pumped to the Ash Storage Area. Boiler water discharge at Northern is directed to a dump tank and then to the ash pits for disposal to the Ash Storage Area. Likewise, the Water Treatment Plant resin flush water is also directed to the dump tank and subsequently to the Ash Storage Area.

The stormwater system at Playford includes a SPEL Oil interceptor where the clean discharge is directed to the Playford Ash Disposal Pit.

Water falling outside of this area on improved sections of the Northern Station is directed to the stormwater drains which include an oil interceptor and a number of pits with sediment separators and incorporated pump stations. This water is directed to an onsite long term sedimentation pit where the supernatant is pumped into ABC Lake. ABC Lake also collects seepage water from the Ash Storage Area and surface water from the immediate vicinity. Groundwater interaction with this lake is suspected but has not been defined.

Due to the greater than naturally occurring inflows, the water in ABC Lake is then pumped into the Ash Storage Area via a submersible pump at the eastern corner, which is supplemented at times by a second pump (predominantly during boiler shutdowns where excessive process water may be drained to the system).

#### Playford Stockpile area

The old Playford Stockpile area collects surface and seepage water from the south-eastern side of the Ash Storage area. Due to the low lying nature of this area seepage water collects in a number of depressions in the area. Surface water is directed to the ABC Lake system at the eastern side of the interconnected ponds though the deeper ponds are also influenced by the high groundwater in the area.

#### Demolition Process Wash Water

Water generated by dust mitigation actions during the demolition of plant and equipment will be managed by the demolition contractor according to the appropriate Demolition Plan.

An integrated Surface Water Management Plan will be developed for the Post-Closure program.

### b. Groundwater

The latest Groundwater Assessment of the Port Augusta Power Stations by Parsons Brinkerhoff was undertaken in June 2015. The site specific hydrogeology at that time is summarised below in Table 2.

**Table 2 Site Specific Hydrogeology**

<b>Groundwater flow direction</b>	Groundwater beneath the site was inferred to flow west towards the Spencer Gulf, located immediately adjacent to the site.
<b>Groundwater occurrence</b>	Groundwater was encountered in all wells within the first regional unconfined aquifer
<b>Groundwater elevation range (mBTC)</b>	Groundwater beneath the site was gauged on 15 June 2015 and identified depths ranging from 1.867 m (GW19) to 3.765 (GW4) meter below top of casing (mBTC). Groundwater elevations ranged between 0.01 (GW4) and 2.78 (GW19) meters Australian Height Datum (mAHD).
<b>LNAPL occurrence</b>	LNAPL was detected in monitoring wells WC (253 mm), GW4 (167 mm) and GW5 (3 mm) during the gauging event, while approximately 1 mm of LNAPL was observed to enter GW2 at the commencement of bailing.
<b>Groundwater Gradient</b>	The general groundwater gradient across the site was found to be 0.002 m/m in a westerly direction. This was calculated between GW14 and GW19 during this GME.
<b>Assumed effective porosity</b>	The effective porosity of 0.27 for a medium porosity sandy aquifer was applied (McWorter, D. and Sunada, D, 1977).
<b>Hydraulic conductivity</b>	Based on a medium grained sandy aquifer, the hydraulic conductivity was estimated to range between 0.078 m/day and 49 m/day, with a likely 12.3 m/day (McWorter, D. and Sunada, D, 1977).
<b>Groundwater seepage velocity</b>	Assuming an effective porosity of 0.27, the seepage velocity was calculated to range between 0.12 and 210 m/year with a mean value of 27 m/year.
<b>Potential beneficial uses</b>	Maintenance of marine ecosystems, recreational use of the Spencer Gulf (primary contact and aesthetics), human health in non-use scenarios and building and structures
<b>Groundwater Salinity</b>	Electrical conductivity (EC) readings measured during the 2015 GME ranged from 2.55 to 125.92 $\mu\text{S}/\text{cm}$ approximating 1,658 to 81,848 mg/L TDS. Thereby indicating variable salinity of groundwater underlying the site, consistent with historical data and typical of a coastal environment.



## 5 Stakeholder & Community Engagement

FPP acknowledges that the Flinders Operation closure will have a significant impact on the Upper Spencer Gulf region of South Australia.

The Stakeholder and Community Engagement Plan complements key project stages and timeframes and uses a risk-based model to inform community engagement activities and tools. This empowers FPP to provide the right information to the right people at the right time.

### Objectives

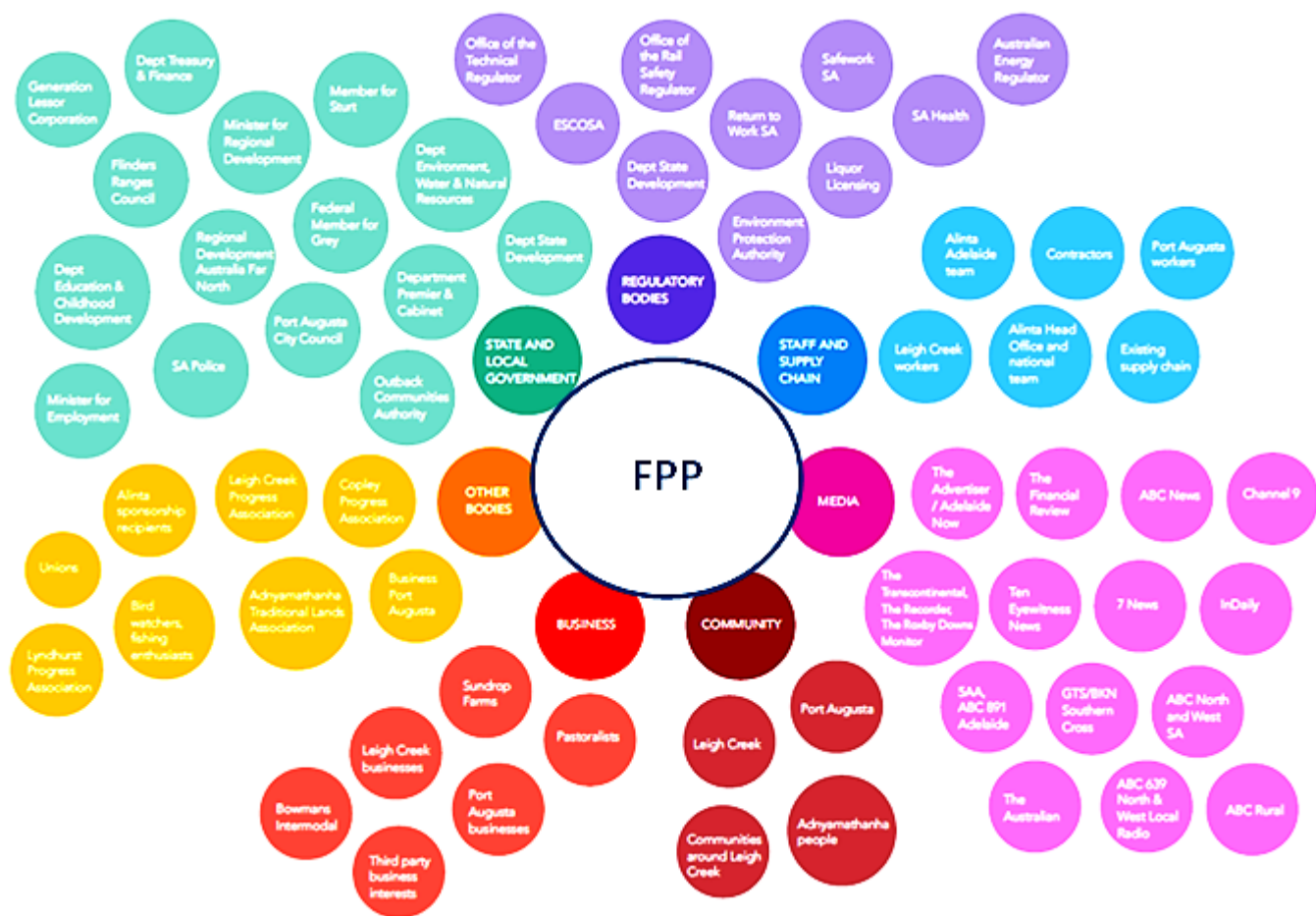
This Stakeholder and Community Engagement Plan sets out a framework for FPP to maintain effective relationships, mitigate communication risks, ensure good corporate citizenship and minimise reputational damage over the course of the Flinders Operations closure project.

The following core objectives will govern the overall engagement activities:

- Ensure employees are treated with respect and are provided with the resources to best enable them to obtain future employment.
- Use effective, proactive communications to minimise risk of project failure and support project delivery on time and in budget.
- To manage and mitigate misinformation, incidents and negative media and to ensure transparency.
- Maintain a productive and positive working relationship with all stakeholders and the State Government.
- Protect and maintain FPP's reputation within South Australia and nationally.
- Do the right thing and leave a positive legacy.
- Meet obligations whilst ensuring cost and resource efficiency.
- Successfully meet legislative and regulatory requirements for community engagement.

## Key Stakeholder Identification

The following key stakeholders have been identified for the full Flinders Operations closure program.



## Our Guiding Principles

FPP will endeavour to:

- Proactively communicate with the community, stakeholders and media regarding closure program elements;
- Listen to stakeholder issues and concerns and understand what is important to them;
- Ensure stakeholder communications are regular, transparent and inclusive;
- Support informed decision-making across all stakeholder groups;
- Protect FPP's reputation to the greatest extent possible;
- Focus attentions on key stakeholders;

- Endeavour to be as open as possible with media and community, providing comment on the multiple closure issues and tasks, while remaining cognisant of the company’s commercial obligations;
- Identify key milestones that can be used to proactively engage with the community, stakeholders and the media; and
- Where possible, use terminology and language that is simple, without jargon and avoiding complex terms. Use of visuals in place of text where possible to explain information and concepts.

### Communication Tools

A suite of communication tools are progressively being developed and implemented to support the Closure Program, including:

Staff communications	<ul style="list-style-type: none"> <li>- Regular face-to-face project updates</li> <li>- Fortnightly project update</li> <li>- Dedicated intranet site, with fact sheets, Q&amp;A etc.</li> <li>- Dedicated careers transition centre at Port Augusta and Leigh Creek</li> </ul>
Website, information Line & email	<ul style="list-style-type: none"> <li>- Development of a dedicated information channels for provision of information and community enquiries</li> </ul>
Email project updates	<ul style="list-style-type: none"> <li>- Regular project updates to key stakeholders, particularly in relation to key milestone events</li> </ul>
Key stakeholder briefings	<ul style="list-style-type: none"> <li>- 1:1 briefings with key stakeholders</li> </ul>
Social media	<ul style="list-style-type: none"> <li>- Development of appropriate social media channels</li> </ul>
Project updates	<ul style="list-style-type: none"> <li>- Regular project updates provided to key stakeholders</li> </ul>
Fact Sheets & FAQ	<ul style="list-style-type: none"> <li>- Development of fact sheets relating to specific topics of stakeholder interest</li> </ul>
Community briefings	<ul style="list-style-type: none"> <li>- 1:1 briefings with community members, Port August City Council and community groups</li> </ul>
Media release & briefs	<ul style="list-style-type: none"> <li>- Releases to coordinate with key milestone events</li> </ul>

A summary of community engagement mechanisms are outlined in Table 3 below.

**Table 3 Community and Stakeholder Engagement Mechanisms**

Mechanism	Target Group							Posted on FP website?	Frequency	Notes
	Residents	PACC	MP	Media	EPA	NRM Board	Special-interest groups			
<b>Weekly progress report</b>		X	X		X			No	Weekly	A summary of activities at the site, including demolition and ash dam rehabilitation
<b>Face-to-Face meetings / site visits</b>		X						N/A	Monthly	Monthly meetings with PACC CEO and Mayor, when available.
<b>Annual environmental presentation</b>		X						Yes	Annual	Annual presentation to PACC – open public forum.
<b>Media release/ Infomercials</b>	X			X				Yes	Ad-hoc	Strategic media release e.g. felling of PPS A station stack
<b>Works Progress Fact Sheet</b>	X	X	X	X				Yes	Monthly / Quarterly	A monthly progress update. Letter drop
<b>Focus topic fact sheet</b>	X	X	X	X	X	X	X	Yes	Ad-hoc	A brochure on a particular topic (e.g. ash dam, Playford A building demolition). Letter drop.
<b>Flinders Power website</b>	X	X	X	X	X	X	X	Yes	Regular updates	Information portal. Links to FP YouTube account. FP contact details.
<b>Flinders Power hotline &amp; email</b>	X			X			X	Yes	N/A	All community complaints are logged.
<b>Special-interest presentations</b>							X	N/A	On request	Presentations or site visits on request (eg Rotary, schools).
<b>Community site visits</b>	X							N/A	On request	Actively invite community members
<b>Community forum/ reference group</b>	X	X						Yes	Monthly	Group now established
<b>Community information days</b>	X							Yes	TBA	May include site tours
<b>SMS distribution list</b>	X	X	X	X	X	X	X	Yes	Ad-hoc	Rapid notification of dust incidents.

**NOTE: A key priority of the Community Reference Group is to discuss and decide the preferred approach for information dissemination with the local community. This includes an ongoing review of the communication methods outlined in Table 3.**

### Events of Significance

There are several events of significance that will require special attention and planning due to high historical significance and strong community interest. Thorough event safety planning, communications and media management will be required.

Particular events of note include:

- The last day of coal mining at Leigh Creek (complete)
- The last coal train to Port Augusta (complete)
- The last day of generation at Port Augusta (complete)
- The day of charge felling activities, particularly the 200m Northern stack
- Days of public auction of plant & equipment at Port Augusta (complete)
- Key milestones associated with Ash Storage Area rehabilitation works, including:
  - o Approval of the rehabilitation plans; (complete)
  - o Commencement of the spreading of soil; (complete)
  - o Commencement of sowing of seed; and (complete)
  - o Completion of works.

The EPA will be notified of the events of key significance in advance.

### Resourcing

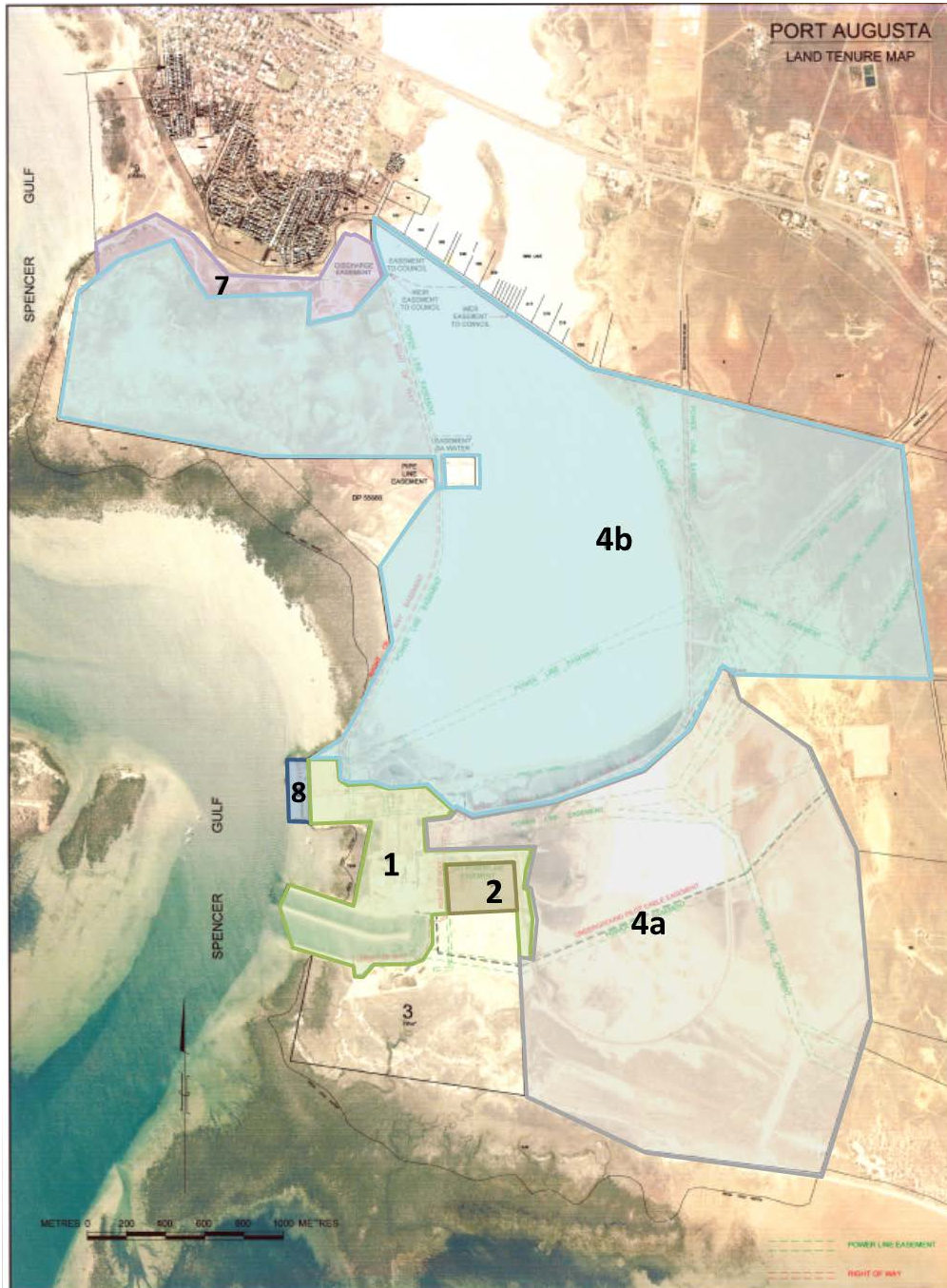
FPP have engaged specialist external support for the implementation of the Stakeholder & Community Engagement Strategy, namely:

- Rann Communications will provide specialist media management and support; and
- Kommunikate et al have been engaged to provide specialist community engagement advice and implementation support.



## 6 Description of closure areas

Specific areas of the Augusta Power Stations have been clearly delineated and referenced in the Plan. The following areas have been identified as containing key risks being the responsibility of FPP and are illustrated in the following Figures 8 to 14:



**Figure 8. Map of Closure Specific Areas – Augusta Power Stations.**

## Area 1 – Northern Power Station, Cooling Water Channels, Playford workshops, environs & Electranet Switchyards

The Northern Power Station and its associated fixed infrastructure are located in Area 1, shown in Figure 9. The subsurface consists of reclaimed swamp/tidal mudflats covered with ash from Playford, fill from borrow pits and spoil from the dredging of the cooling water channels.

The generation assets have three main parts - the boiler structures, generators and the ash collection plant. The boilers structures stand side by side in the middle of the process, with the generators at the southern end in a large silver building and the fly ash collection plant at the northern end.

This Area also includes the cooling water inlet channels, the cooling water infrastructure to the south of the Station, the water treatment plant area, the coal train unloading infrastructure along with the coal conveyor system and coal storage bins, the bottom ash disposal system, the fly ash capture system incorporating electrostatic precipitators, fly ash collection hoppers and distribution system to ancillary unloading infrastructure, gas flue duct system and the 200m tall stack.

Other structures in the area include a number of workshops, an administration office, potable and fire water storage and distribution system, electrical switchyards, fuel oil storage and the Playford coal conveyor system and storage bins.



**Figure 9. Location of Closure Area 1 – Augusta Power Stations**



## Area 2 – Unit 3 Area

This area is termed the 'Unit 3 Area' due to a planned third Northern Unit being proposed for this site in the late 1980's, lies east of the Northern Power Station. The subsurface of this area consists of reclaimed swamp/tidal mudflats covered with ash from Playford, fill from borrow pits and spoil from the dredging of the cooling water channels.

Most of this area is undeveloped and revegetation of the surface was undertaken in the mid 1990's. The only improvement to the area is a helicopter landing pad on the south east corner. See Figure 10 following.



**Figure 10. Location of Closure Area 2 – Augusta Power Stations**

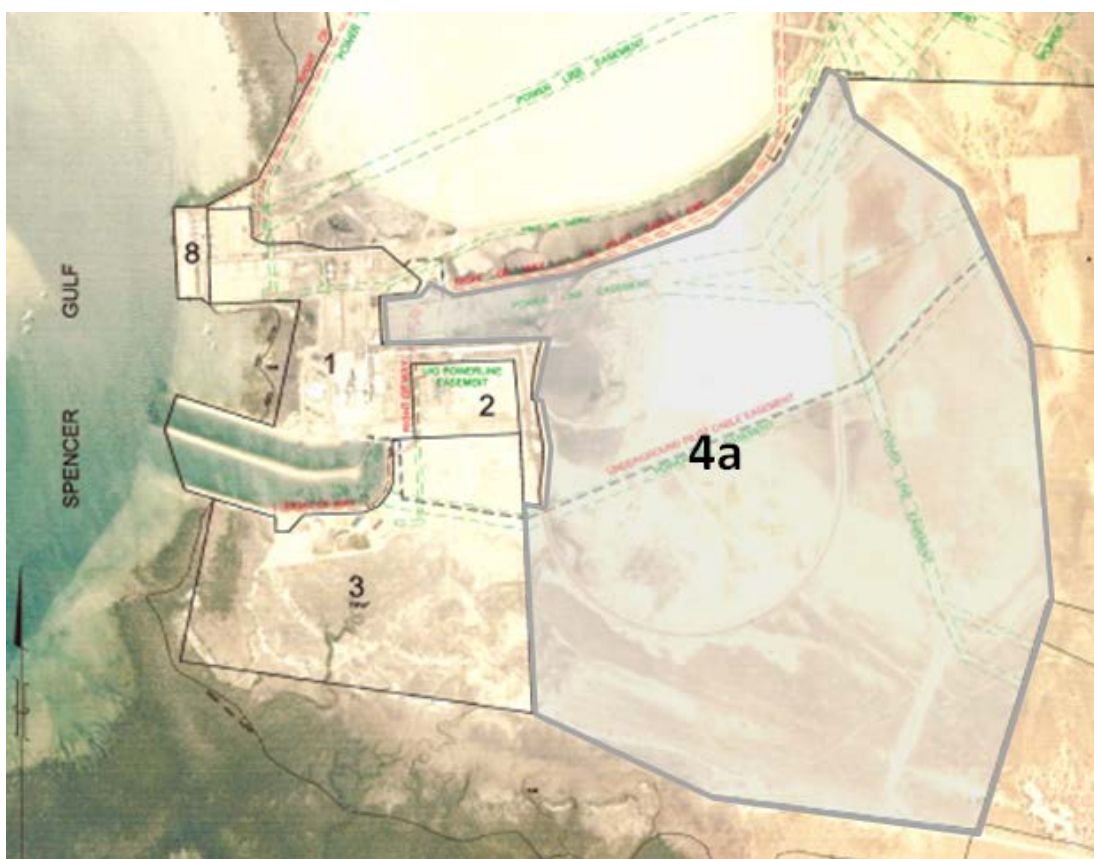
### Area 4a. – Coal Stockpile & Rail Loop Area

The coal stockpile and rail loop area, east of the Northern Power Station, has a subsurface consisting of reclaimed swamp/tidal mudflats covered with ash from Playford, fill from borrow pits and spoil from the dredging of the cooling water channels. See Figure 11 following.

The majority of this area was previously low lying and tidally influenced. A channel was dug through the sand hills in the south to allow Saltia Creek to reach the coast as the rail loop blocked the original exit. The spoil from this channel was used to build the coal stockpile pad.

The area inside the rail loop is clay pan with very little vegetation, mostly samphire flats with sparse saltbush. Outside the rail loop to the east consists clay pans with samphire and saltbush on the high ground. Towards the southern boundary is the coastal sand dune system with reasonable vegetation, although the presence of the public using motorcycles and 4WD vehicles has damaged some of this area. Towards the eastern boundary, samphire flats and sand dunes with saltbush and sparse coastal trees are mostly present.

The area to the north west of the stockpile, the Tower Pad, is built up with a coal/ash/sediment mixture and contains the surface water runoff holding area for this part of the Station.



**Figure 11. Location of Closure Area 4a – Augusta Power Stations**

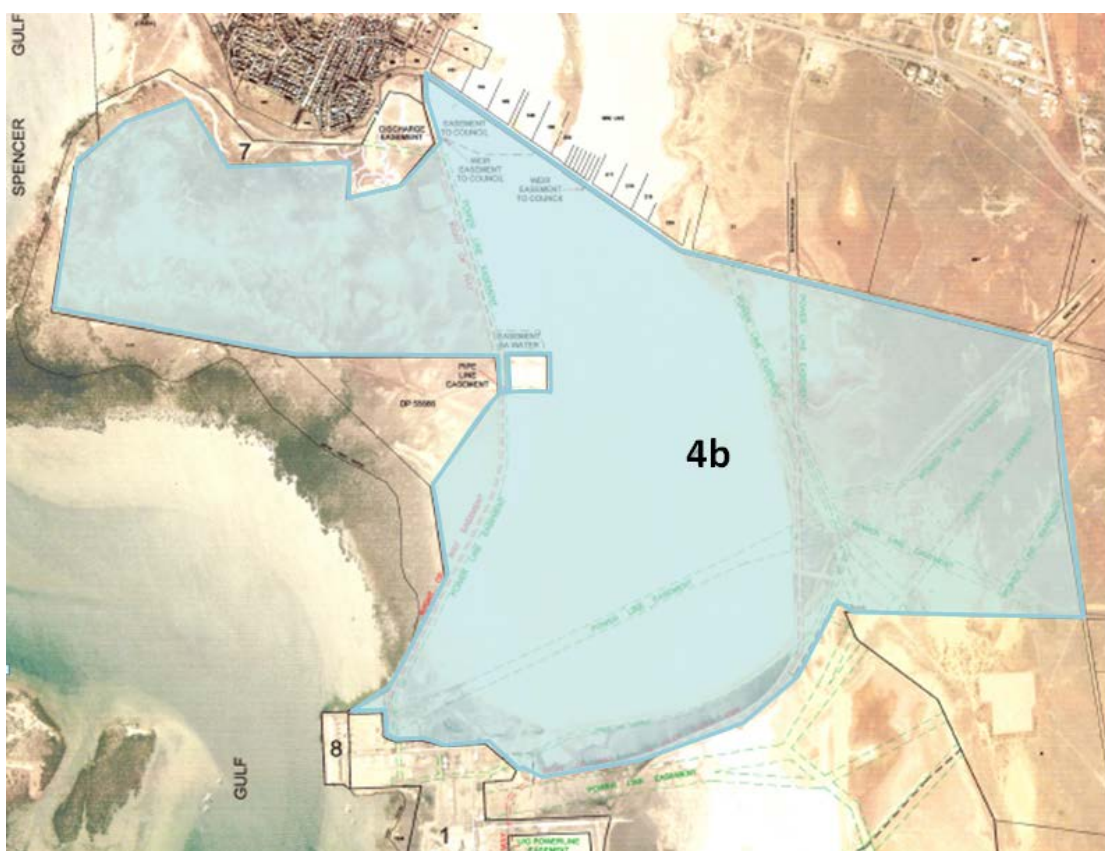
**Area 4b. –Ash Storage Area, ABC Lake & Polishing Pond**

The Ash Storage Area is the main feature of this area. See Figure 12 following.

The north western area close to Hospital Creek and a section to the south west of the SA Water Treatment Plant is mainly tidally influenced clay pan/mud flat with mostly samphire present. There is also a clay pan/mud flat outside the north eastern corner of the Ash Storage Area.

On the eastern side of the station access road a number of vegetated and irrigated sand dunes are present, east of this are samphire flats and extensive sand dunes with saltbush and coastal trees mostly present. Old grazing areas are along the eastern boundary with saltbush being dominant in these areas.

To the south is ABC Lake, so named for the presence of an Adelaide Brighton Cement Ash Silo on the western end. This is the main surface water detention area where water from this area, along with seepage water from the southern and eastern sides of the Ash Storage Area is discharged back into the Ash Storage Area.



**Figure 12. Location of Closure Area 4b – Augusta Power Stations**

**Area 7. – Hospital Creek**

Hospital Creek is a mainly natural tidally influenced creek system. The clarified sea water supernatant from the ash disposal system is directed to this creek. The final part of this system is a polishing pond with a levee constructed in 1987 to allow water to be directed into the Port Augusta Council owned and managed Bird Lake.

Mangroves dominate the outlet at the Gulf and samphire is mainly present the inland areas. A small number of mangroves are present on the southern side of the creek in the area. The far eastern side is mainly clay pan/ mud flat.

The public has access to these areas and many walking paths are present in the eastern part and there is evidence of vehicle usage at the outlet to the gulf. See Figure 13 following.



**Figure 13. Location of Closure Area 7 – Augusta Power Stations**

## Area 8. – Playford Power Stations

Playford A Power Station was decommissioned in 1985 and is now an empty building shell with remnant 80m Stack. The Playford A office building is still located to the east of the empty shell.

The Playford B Power Station and its associated fixed infrastructure are located in Area 8, shown in Figure 14. The generation assets have three main parts - the boilers, generators and the ash collection plant. Boiler structures are on a north south axis central to the process, with the generators on the western side in a large building and the fly ash collection plant on the eastern side.

This Area also includes the cooling water inlet coffer dams, the cooling water infrastructure to the west of the Station, part of the coal conveyor system, the bottom ash disposal system, and a fly ash capture system incorporating bag houses, gas flue duct system and the stack. Playford B also has an administration building housing a redundant water treatment plant.

Playford B ceased operation in Feb 2012.



**Figure 14. Location of Closure Area 8 – Augusta Power Stations**

## 7 Risk Management

### 7.1 Risk Assessment Process

The FPP Risk Management Framework was used and adapted to suit the timeframe and focus on “Safety” and “Environment and Community”. The Likelihood scale, Consequence scale and the Risk Matrix applied are provided below.

When conducting the risk assessments, it was noted that:

- Due to the nature of the risk matrix, despite some risks having a very low probability, where the consequence remains high, the overall risk rating will remain high and should therefore be treated with caution.
- Risks are subjective and seen in the eye of the beholder. Risk scores are intended to drive a focus towards high priority corrective/preventative actions.
- Risk assessments are intended to be dynamic and modified through time as risks, and the effectiveness of controls, are better understood

### RISK LIKELIHOOD SCALE

	Likelihood (50-100yrs)	Description	Likelihood as %	Typical Value
<b>A</b>	<b>Almost Certain</b>	The risk event is almost certainly expected to occur at some point during the period	90-100%	95%
<b>B</b>	<b>Probable</b>	The risk event will probably occur at some point during the period	70-90%	80%
<b>C</b>	<b>Likely</b>	The risk event could occur during the period	40-70%	55%
<b>D</b>	<b>Possible</b>	The risk event may occur but only in certain circumstances during the period	10-40%	35%
<b>E</b>	<b>Unlikely</b>	The risk event will only occur in exceptional circumstances during the period	0-10%	5%

### CONSEQUENCE SCALE

	Level	Typical Impact (\$)	Safety	Environment & Community	Project Objectives	Reputation
<b>1</b>	<b>Catastrophic</b>	\$75M or more  (>6 months interruption terms of)	Could result in fatality to member of public or authorised personnel	Critical environmental exposure with significant detrimental effects	Achievement of project objectives is endangered.	Company name irrevocably damaged. Extensive extremely negative nationwide or international media coverage
<b>2</b>	<b>Major</b>	\$20-75M  (1-6 months)	Could result in extensive permanent injuries to member of public or authorised personnel	Significant environmental exposure contained with active management and outside assistance over an extended period of time	Achievement of project objectives is threatened for a substantial period.	Extensive negative nationwide media coverage National political comment
<b>3</b>	<b>Moderate</b>	\$3-20M  (5 days -1 month)	Could result in potential for serious injury	Environmental exposure contained with active management and outside assistance over short period of time	Some threat to project objectives. Project is exposed to unacceptable cost, schedule, scope or quality consequences.	Extended negative local / state media coverage State political comment
<b>4</b>	<b>Minor</b>	\$0.1-3M  (1 - 5 days)	First aid or minor injury	Environmental exposure contained with active management over a short period of time	No significant impact on project objectives. Issues are dealt with within the project team.	Series of articles in local / state press Local political comment
<b>5</b>	<b>Insignificant</b>	Less than \$0.1M  (Partial loss or < 1 day interruption)	No concern	Environmental exposure immediately contained	No significant impact on project objectives. Issues are dealt with by the project team member.	Letters to local / state press Direct or indirect complaints of a reasonable standing

**RISK MATRIX WITH PRIORITY RATING (Not Risk Assessment Score)**

		Likelihood				
		E. Unlikely	D. Possible	C. Likely	B. Probable	A. Almost Certain
Consequence	1. Catastrophic	High 14	High 9	Extreme 5	Extreme 2	Extreme 1
	2. Major	Medium 18	High 12	High 7	Extreme 4	Extreme 3
	3. Moderate	Low 21	Medium 16	High 11	High 8	Extreme 6
	4. Minor	Low 23	Low 20	Medium 17	High 13	High 10
	5. Insignificant	Low 25	Low 24	Low 22	Medium 19	Medium 15

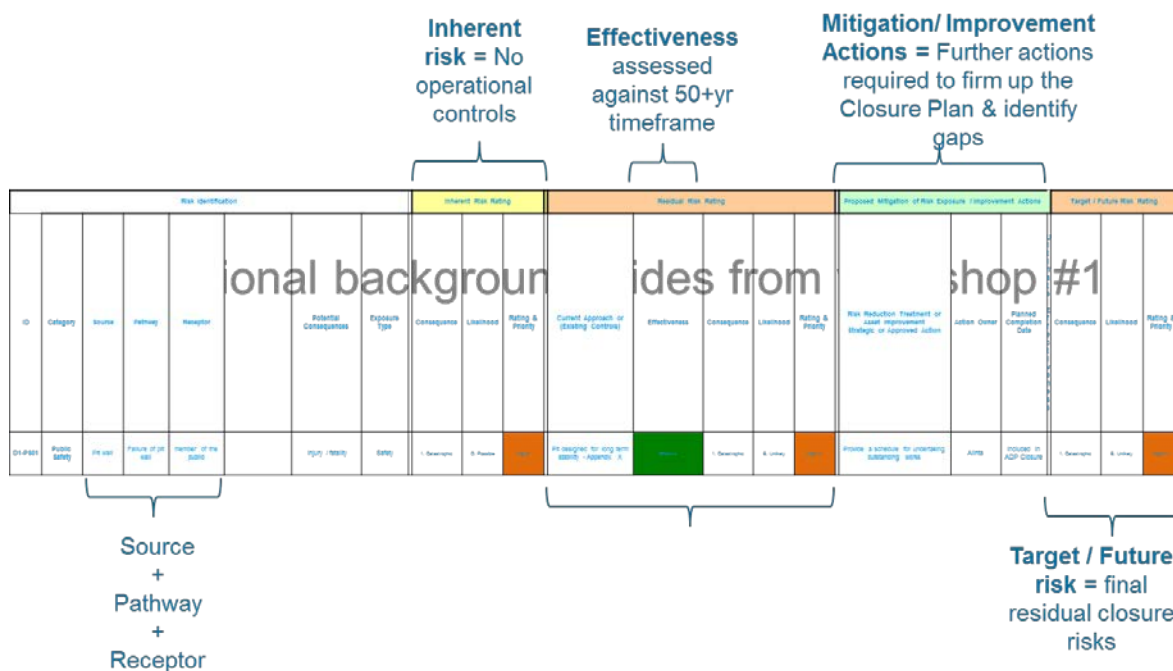
**Control Effectiveness Criteria**

Effectiveness	Description
<b>Ineffective</b>	<ul style="list-style-type: none"> <li>Controls do not meet an acceptable standard, as many weaknesses/inefficiencies exist.</li> <li>Management strategies or controls do not provide reasonable assurance that objectives will be achieved.</li> <li>Control culture and awareness not strong, control practices not embedded in business process.</li> </ul>
<b>Marginally effective</b>	<ul style="list-style-type: none"> <li>Some management strategies or control weaknesses/inefficiencies have been identified.</li> <li>Although these are not considered to present a serious risk exposure, improvements are required to provide reasonable assurance that objectives will be achieved.</li> <li>Control awareness exists but there is room for improvement.</li> </ul>
<b>Effective</b>	<ul style="list-style-type: none"> <li>Management strategies or controls are strong and operating effectively, providing a reasonable level of assurance that objectives are being achieved.</li> <li>Policies and procedures are in place and continuous improvement programs exist to improve efficiency and effectiveness.</li> </ul>

When considering effectiveness, Hierarchy of controls to be applied



A sample of the Risk Register Format adopted follows.



A detailed risk assessment for the APS site is provided in Appendix A, and summarised in relative risk matrixes in Sect 8.3.

## 7.2 Risk Events Summary

A review of the APS Impacts and Aspects Register was undertaken by environmental consultants EnviroManagement Pty Ltd in 2015, in conjunction with site resources. Existing operational aspects and impacts have been previously risk assessed with systems and management strategies developed and implemented to mitigate harm.

A number of these aspects will no longer be present during the closure and post closure process, though others similar in nature will be present during the process. To ensure FPP minimises the potential for harm the existing environmental management systems and management strategies will remain in place to manage these.

A formal risk assessment process identified a number of items as requiring specific attention during the closure and post closure process. Whilst the existing systems and management strategies will remain in place to manage these, further actions have been identified and will be undertaken.

The full site specific Environmental Aspects and Impacts assessment, with the current risk management strategies and proposed actions to further mitigate environmental risk during closure and post closure, are included in Appendix A. The proposed actions for key risks are considered in the following section.



### 7.3 Risk Management Strategies

The risk assessment process has identified eight key risks that present a medium to high residual risk rating. The Risk Management Strategies (RMS) to mitigate the key risk events, as specified in the Detailed Risk Assessments (Appendix A), have been defined and action plans for these are in the following Tables RMS i. to viii.

These strategies are specific to the current and proposed activities during closure and post closure. The items specified in Condition U-251 of the sites Environmental Authorisation, EPA Licence 13006 are considered in Section 10.3.

#### Closure

The existing FPP Policies, Management Plans, Station Instructions, Operating Instruction Statements, Safe Work Method Statements and Procedures are all being utilised during the closure phase. Where activities undertaken are outside of normal business activities they will be either outsourced to specialist contractors or a specific Safe Work Method Statement, including an evaluation of environmental risks, will be undertaken for the task.

#### Post Closure

FPP and McMahon Services Australia formed an Alliance Agreement to facilitate the successful delivery of an Early Works program.

The `Alliance` is a unified team to jointly manage the planning, asset salvage and decommissioning works of the Augusta Power Stations. The successful delivery of this project relies on the combined efforts of both FPP and McMahon Services, and the pooling of knowledge, experience and expertise under the Alliance is the best contractual means to deliver the complex closure program. The Alliance will see the partnership of both the Owner Party (FPP) and Non-Owner Party (McMahon Services) to create a single team working unanimously, collaboratively, and cooperatively and acting in good faith to make best-for-project decisions.

FPP have invaluable knowledge and expertise about the Augusta Power Stations. This knowledge will be integral to the safety of all personnel and managing environmental risks to ensure the successful outcome of the project. McMahon Services has over 25 years of decommissioning experience conducting high risk demolition and hazardous materials removal works at sites across Australia. McMahon Services expert knowledge in high risk works ensure the safest approach to the decommissioning works at Augusta Power Station will be used. McMahon Services are a licenced entity by the SA EPA and are accredited to ISO 14001.

The relationship will continue into the delivery phase under a Project Alliance Agreement (PAA). Each module of works within the delivery phase is defined by a unique scope of work with Flinders reserving the right to let independent work scopes.

FPP has also contracted McMahon Services under the terms of the PAA to implement the rehabilitation works program for the Ash Storage Area.

As FPP hold the EPA licence for the site, FPP will maintain responsibility for the reporting of any notifiable incidents to the SA EPA. McMahon Services are responsible and accountable for bringing any environmental or safety incidents to the attention of FPP immediately.



7.3.1 RMS i.

i.  Closure     Post Closure	Risk ID 13.			
	Implement an environmental contingency plan for closure and post closure.			
	FPP and demolition contractor Closure Environmental Management Plans to be developed, incorporating specific measures for activities with potential to cause environmental harm			
	Actions	Timeframe	Milestones	Target date or Complete
	FPP Closure & Post-Closure Plan for the Augusta Power Stations to be developed	12 weeks	Creation of Draft Plans	Complete
			EPA Endorsement of Plans	Complete
			Communication of Plan to all 'make safe' staff	Complete
	Review and update the site Emergency Response Plan	4 weeks	Completion of review & awareness training provided to the closure team	Complete
	Development and implementation of McMahon Environmental, Hazardous Material, Transport, Site Management, Waste Management Plans and Emergency Response Plans	16 weeks	Receive draft Plans	Complete
			Finalise Plans	Complete
		Communication of Plan to all post closure staff	Complete	
Review and update the site Emergency Response Plan	4 weeks	Completion of review & awareness training provided to the closure team	Complete	



7.3.2 RMS ii.

ii.	Risk ID 14 & 71.			
	Prevent contaminated fire water discharge into the Spencer Gulf from a fire on site.			
Closure	Fire management procedure to be referenced in Closure Environmental Management Plans and included in contractors Emergency Plan and Emergency Response Procedures.			
	Actions	Timeframe	Milestones	Target completion date
	FPP Closure & Post-Closure Plan for the Augusta Power Stations to be developed	12 weeks	Creation of Draft Plans	Complete
			EPA Endorsement of Plans	Complete
			Review and update the site Emergency Response Plan	Complete
			Communication of Plan to all staff	Complete
	Post Closure	Development and implementation of McMahon Environmental, Hazardous Material, Transport, Site Management, Waste Management Plans and Emergency Response Plans	16 weeks	Receive draft Plans
			Finalise Plans	Complete
			Communication of Plan to all post closure staff	Complete



7.3.3 RMS iii.

iii.	Risk ID 23.				
	Ensure awareness of environment compliance requirements during closure and post closure				
	General Environmental Awareness training for all onsite staff. Specific reference to compliance requirements and regulatory in requirements in the FPP Closure & Post-Closure Plan for the Augusta Power Stations.				
	Closure	Actions	Timeframe	Milestones	Target completion date
		Site Environmental Awareness package to be reviewed and modified for presentation to all staff involved with closure.	3 weeks	Review of existing Environmental awareness package into site induction	Complete
				Presentation to staff involved with closure	Ongoing
				Record management of training	Ongoing
				Update current site induction	Complete
	Post Closure	Site Environmental Awareness package to be reviewed and modified for presentation to all staff involved with post closure.	3 weeks	Ensure McMahons Site Induction includes site environmental conditions	Complete
			Develop and deliver site Environmental Awareness Package to the Alliance Management Team	Ongoing	
			Record management of training	Ongoing	



7.3.4 RMS iv.

iv.	Risk ID 27.			
	Ensure environmental compliance (monitoring and reporting) obligations for the EPA Licence are maintained. Specific reference to compliance and regulatory requirements in the FPP Closure & Post-Closure Plan for the Augusta Power Stations, including reporting timetable.			
Closure	Actions	Timeframe	Milestones	Target completion date
	Maintain current monitoring and reporting regime for relevant activities	6 Weeks	Review and update the APS Environmental Monitoring Plan to identify the appropriate requirements	Complete
			Meet monthly and quarterly reporting requirements	Ongoing
	Ensure appropriate environmental resources are retained through the closure period.	2 Weeks	Allocation of appropriate roles in the 'make-safe' organisational structure	Complete
Post Closure	Identify key reporting requirements and develop/utilise a data collection system to comply with EPA Licence Condition U-251(4)	8 weeks	Develop Regulatory Reporting schedule	Complete
		8 weeks	Develop/modify existing data collection methods	Complete
	Ensure appropriate environmental and community engagement resources are retained through the post closure period.	2 Weeks	Allocation of appropriate roles in the post closure organisational structure	Complete, however ongoing review throughout the closure program



7.3.5 RMS v.

v.	Risk ID 32, 53 & 68			
	Prevent contaminated water discharge into the Spencer Gulf from closure and post closure activities. Contaminated water handling & management procedure to be referenced in the FPP Closure & Post-Closure Plan for the Augusta Power Stations and included in contractors Emergency Plan and Emergency Response Procedures.			
Closure	Actions	Timeframe	Milestones	Target completion date
	FPP Closure & Post-Closure Plan for the Augusta Power Stations to be developed	12 weeks	Creation of Draft Plans	Complete
			EPA Endorsement of Plans	Complete
	Review and update the site Emergency Response Plan	4 weeks	Completion of review & awareness training provided to the closure team	Complete
Post Closure	Environmental review of 'make-safe' project plans		(See note below)	
	Development and implementation of McMahon Demolition, Environmental, Hazardous Material, Transport, Site Management, Waste Management Plans and Emergency Response Plans	16 weeks	Receive draft Plans	Complete
			Finalise Plans	Complete
			Communication of Plan to all post closure staff	Complete
	Review and update the site Emergency Response Plan	4 weeks	Completion of review & awareness training provided to the closure team	Complete

Note: Key environmental risks communicated during Awareness Training are to be considered during the development or review of SWMS. Environmental risk mitigation strategies must be included in SWMS where an environmental risk is present. Review of SWMS with environmental risks must be reviewed by environment section personnel. Monitoring of compliance with risk management strategies will be undertaken during closure and post closure.



7.3.6 RMS vi.

vi.	Risk ID 36			
	Ensure an incident reporting and recording system is in place for environmental incidents			
Closure	FPP and demolition contractor Closure and Post Closure Environmental Management Plans to be developed, incorporating specific measures for activities with potential to cause environmental harm. Site incident reporting mechanism to be used (IMS).			
	Actions	Timeframe	Milestones	Target completion date
	Site Emergency and Incident Management plans to be reviewed, and modified if required, for use during decommissioning.	8 weeks	Review of Emergency and Incident Management plans	Complete
			Communicate incident reporting requirements in Awareness Training	Complete
	Post Closure	Implement incident management and reporting protocol to be used during post closure		Inclusion in the Site Interface Plan



7.3.7 RMS vii.

vii.	Risk ID 66, 69, 70 & 87				
	Prevent oil spills during closure and post closure activities.				
	Oil handling & spill management procedure to be referenced in the FPP Closure & Post-Closure Plan for the Augusta Power Stations and included in contractors Emergency Plan and Emergency Response Procedures. Ensure ready availability of oil spill kits on site and segregated waste storage/transfer area.				
	Closure	Actions	Timeframe	Milestones	Target completion date
		Oil handling & spill management procedures reviewed, and modified if required, for use during closure.	8 weeks	Complete review of oil handling & spill management procedures	Complete
		Review of Emergency and Incident Management plans	6 weeks	Updated Emergency and Incident Management Plan submitted to EPA	31/3/2017
				Updated Emergency and Incident Management Plan endorsed by EPA	30/4/2017
		Use of competent and licenced contractors for oil removal and disposal activities	12 weeks	Application of FPP Contractor Management HSSE procedure for each task	Ongoing
		Keep existing spill kits available during closure		Demarcation and separation of spill kits, including floating booms for use on the Ash Storage Area, for use during closure	Complete
				Maintain spares for spill kits	Ongoing
Post Closure	Development and implementation of McMahon Demolition, Environmental, Hazardous Material, Transport, Site Management, Waste Management Plans and Emergency Response Plans	16 weeks	Receive draft Plans	Complete	
			Finalise Plans	Complete	
			Communication of Plan to all post closure staff	Complete	





7.3.8 RMS viii.

viii.	Risk ID 91			
	Prevent chemical spills during closure and post closure activities.			
Closure	Chemical handling & spill management procedure to be referenced in FPP Closure & Post-Closure Plan for the Augusta Power Stations and included in contractors Emergency Plan and Emergency Response Procedures. Ensure ready availability of chemical spill kits on site and segregated waste storage/transfer area.			
	Actions	Timeframe	Milestones	Target completion date
	Chemical handling & spill management procedure and site Emergency and Incident Management plans to be reviewed, and modified if required, for use during closure.	8 weeks	Review of Emergency and Incident Management plans	Complete
	Use of competent and licenced contractors for chemical removal and disposal activities	12 weeks	Application of FPP Contractor Management HSSE procedure for each task	Complete
	Source appropriate spill kits for use during closure		Allocation of spill kits across site for use during closure	Complete
Post Closure	Development and implementation of McMahon Demolition, Environmental, Hazardous Material, Transport, Site Management, Waste Management Plans and Emergency Response Plans	16 weeks	Receive draft Plans	Complete
			Finalise Plans	Complete
			Communication of Plan to all post closure staff	Complete



7.3.9 RMS viii.

viii.	Risk ID 6			
	Ash Storage Area management – risk of fugitive dust emissions following closure and during rehabilitation activities			
Development of specific dust management strategies as outlined in the Dust Management Plan and Fugitive Dust TARP.				
	Actions	Timeframe	Milestones	Target completion date
Closure	Continue to manage the Ash Storage area in accordance with the approved Dust Management Plan (ie seawater flooding)	6 months	Continued review and update of the Dust Management Plan in response to changing conditions/requirements.	Complete
Post Closure	Continue to manage the Ash Storage area in accordance with the approved Dust Management Plan	Ongoing	Continued review of the effectiveness of strategies in managing fugitive dust emissions arising from the Ash Storage Area	Ongoing action
			Update of the Dust Management Plan in response to changing conditions/strategies/requirements.	Ongoing action
			Development and implementation of a Fugitive Dust TARP for the Ash Storage Area rehabilitation works program	Complete. Document review and improvement is ongoing
			Consideration of dust control as a key guiding principle for the rehabilitation of the Ash Storage Area	Complete

## 7.4 Records Management

Records retained during closure and post closure activities include:

- Environmental monitoring data (Air, surface and ground water)
- Site contamination assessment reports
- Waste Tracking Forms
- SWMS
- Contractor Management Plans
- HazMat Manifests
- Complaints register
- Site environmental incident investigations.

Hard copies will be kept in file on site and digital copies on the FPP file network as per existing policies and procedures.

## 8 Closure Action Plan

### 8.1 Human Resources/Responsibilities

#### 8.1.1 Closure Phase

A workforce of approximately 50 FPP employees will be being retained for the 'make safe' phase. The workforce will prepare the station for demolition and be engaged from circa 9th May to 30th June.

#### 8.1.2 Post-Closure Phase

Beyond 'make safe', the workforce will be reduced to a core team of approximately 12 individuals who will continue to manage the site, oversee asset reclamation and on-sell, and be integral to the demolition process with McMahon Services Australia. The FPP Management Team continually reviews and revisits resourcing needs and tailors the organisational structure to meet organisational needs. FPP also routinely engages additional external specialist support and advice as/when required. An example is the external assistance sought for the development and implementation of the Stakeholder and Community Engagement Plan.

## 8.2 Collaboration

FPP will continue to meet statutory obligations for the operations throughout the closure period, including notification of any significant changes to operations and incident notifications.

FPP welcomes ongoing site inspections and engagement from the SA EPA.

Milestones for possible SA EPA site visits include:

- The end of generation;
- The end of “make safe” (June 2016);
- Establishment of the PPS Active Demolition Zone;
- Charge felling of -
  - NPS Stack,
  - PPS A stack,
  - PPS B stack;
- Ash Storage Area progressive works;
- Ash Storage Area interim dust management;
- Ash Storage Area works completion; and
- Final site inspection.

## 8.3 EPA Licence Closure Obligations (ELCO)

As part of the closure process the EPA has amended the Environmental Authorisation (EPA Licence 13006) to include specific closure and post closure conditions.

The Augusta Power Stations EPA Licence No. 13006 now contains Condition U-251:

### DEVELOP AND IMPLEMENT CLOSURE AND POST CLOSURE PLAN (U-251)

The Licence must:

1. Prepare and submit by the 22 April 2016 a Closure and Post-Closure Plan (the Plan) to the satisfaction of the EPA, for the cessation of the activities undertaken pursuant to the Licence;
2. Ensure the Plan outlines the actions, timeframes and milestones for all closure and post-closure activities in order to prevent or minimise environmental harm, including, but not limited to, the following specified requirements: **(See ELCO (a)-(h) following pages)**
3. Ensure the Plan outlines actions to prevent or minimise off-site environmental impacts during the closure and post closure phase, including when daily reclamation from the coal stockpile and decommissioning works are occurring.
4. Ensure the Plan includes a schedule for progress assessment and reporting to the EPA, including as a minimum, quarterly reporting of the status of all requirements listed in 2(a)-(h).
5. Comply with the Plan (or any revised Plan approved in writing by the EPA) forthwith upon approval in writing by the EPA until all actions and milestones specified in 2(a)-(h) have occurred.

8.3.1 ELCO (a.)

a.	Decommissioning of coal burning plant and equipment/prescribed electricity assets. (Coal burning plant being the boiler structures of the 2 stations.)			
				Target completion date
Closure	Actions	Timeframe	Milestones	
	Closure & Care Manuals developed, outlining the tasks and responsibilities for decommissioning activities.	12 weeks	Completion of Closure & Care manuals	Complete
			A 2016 Closure & Care Project Plan developed (using MS Project), describing specific activities, timeframes and target dates.	Complete
			Existing Station Instructions and Procedures will be reviewed and used, or new ones developed - along with new Safe Work Method Statements which including environmental risk management principles specific for each task. (Refer to Note on RMS v.)	Complete
Post Closure	Cleaning of boiler structure, internally and externally, to remove residual coal.	6 weeks	Boiler structure cleaned (Refer to Appendix D 2016 Closure & Care Project Plan)	Complete
	Development of Dismantling Plan for prescribed electricity assets	8 weeks	Development of Draft Plan	31/3/2017
			Approval of Plan by GLC	30/6/2017
	Development and implementation of McMahon Demolition, Environmental, Hazardous Material, Transport, Site Management, Waste Management Plans and Emergency Response Plans	16 weeks	Receive draft Plans	Complete
			Finalise Plans	Complete
			Communication of Plan to all post closure staff	Complete

8.3.2 ELCO (b.)

b. Decommissioning and decontamination of fuel and chemical storage areas.				
Actions		Timeframe	Milestones	Target completion date
Closure	Closure & Care Manuals developed, outlining the tasks and responsibilities for decommissioning activities.	12 weeks	Completion of Closure & Care manuals	Complete
			A 2016 Closure & Care Project Plan developed (using MS Project), describing specific activities, timeframes and target dates.	Complete
			Existing Station Instructions and Procedures will be reviewed and used, or new ones developed - along with new Safe Work Method Statements which including environmental risk management principles specific for each task. (Refer to Note on RMS v.)	Ongoing
	Empty, drain and clean chemical storage and distribution systems	12 Weeks	Drain and flush chemical storage system (Refer Appendix E – Draft Closure Chemical Disposal Plan and E1 Chemical Manifest and Removal Scope)	Complete
			Suitable competent contractors to remove residues	Complete
Post Closure	Empty and drain fuel oil storage and distribution systems	12 Weeks	Drain fuel oil system (Refer Distribution system – Make Safe Plan - Appendix B)	31/12/2017
	Decommission NPS Store Petroleum Fuel Underground Storage Tank (UST)	36 Weeks	Empty UST and remove above and below ground infrastructure	Complete
			Refer to Site Contamination Assessment (PSI and DSI)	31/12/2017
	Decommission NPS Diesel Storage Tanks	18 Months	Empty Storage Tanks and remove infrastructure (Refer to the Closure Manual)	31/12/2017
			Refer to Site Contamination Assessment (PSI and DSI)	31/12/2017

	Decommission fuel oil storage areas (including Playford)	6 Months	Clean and remove residual oil storage areas. Remove above ground infrastructure	31/12/2017
			Refer to Site Contamination Assessment (PSI and DSI)	31/12/2017



8.3.3 ELCO (c.)

c.  Closure	Removal of fuels, oils, lubricants, chemical substances and waste from the site, including but not limited to materials within above and below ground storage tanks, storage areas, pipe lines, sumps, refuelling points, transfer points and other equipment.			
	Actions	Timeframe	Milestones	Target completion date
	Closure & Care manuals developed, outlining the tasks and responsibilities for decommissioning activities.	12 weeks	Completion of Closure & Care manuals	Complete
			A 2016 Closure & Care Project Plan developed (using MS Project), describing specific activities, timeframes and target dates.	Complete
			Develop concise oil & chemical removal timetable to enable monitoring and reporting to the EPA. Provide this to the EPA.	Complete
			Existing Station Instructions and Procedures will be reviewed and used, or new ones developed - along with new Safe Work Method Statements which including environmental risk management principles specific for each task. (Refer to Note on RMS v.)	Ongoing
	Removal from site of all fuels, oils, lubricants chemical substances and waste derived from the substances.	24 months	Refer to following actions and milestones	30/6/2018
	Commence emptying and draining oil from plant lubrication systems (Fans, Turbines and Air Heaters)	6 months	Removal of oil from plant (Refer Appendix B & C– Closure Manual and Make Safe Plan and refer Appendix E – Draft Closure Chemical Disposal Plan and E1 Chemical Manifest and Removal Scope)	31/12/2017
			Suitable competent contractors to remove residues – refer Appendix E – Draft Closure Chemical Disposal Plan and E1 Chemical Manifest and Removal Scope	31/12/2017

Post Closure	Collection and disposal of redundant small volume oils, greases and chemical substances from across site	12 Weeks	Removal of containers from across plant (Refer Appendix B & C– Closure Manual and Make Safe Plan)	31/12/2017
			Suitable competent contractors to remove substances	31/12/2017
	Complete emptying and draining oil from plant lubrication systems (Fans, turbines and Air Heaters – including Playford)	6 months	Removal of oil from plant (Refer Appendix B,C,D & F– Closure Manual and McMahons Waste Management Plan and refer Appendix E – Draft Closure Chemical Disposal Plan and E1 Chemical Manifest and Removal Scope)	31/12/2017
	Reclamation and removal of refrigeration gases from plant	6 months	Removal of refrigerant gases from plant (Refer Appendix B,C,D & F – Closure Manual and McMahons Waste Management Plan)	31/12/2017

8.3.4 ELCO (d.)

d.  Closure	Removal of coal from the coal stockpile area and other coal handling areas, silos, bins, conveyors, mills and burners.			
	Actions	Timeframe	Milestones	Target completion date
	Utilisation of all possible coal reserves on site including stockpile in readiness for cessation of generation	20 Weeks	Modify train schedule to allow for maximum coal reclamation on site during favourable weather conditions	Complete
			Reclaim coal on stockpile to ground level	Complete
			Successive unit shutdowns to allow for residual coal from first unit to be burnt in second unit	Complete
			Residual coal at cessation of generation to be incorporated into coal stockpile for the rehabilitation program	Complete
	Closure & Care manuals developed, outlining the tasks and responsibilities for decommissioning activities.	12 weeks	Completion of Closure & Care manuals	Complete
			A 2016 Closure & Care Project Plan developed (using MS Project), describing specific activities, timeframes and target dates.	Complete
			Existing Station Instructions and Procedures will be reviewed and used, or new ones developed - along with new Safe Work Method Statements which including environmental risk management principles specific for each task. (Refer to Note on RMS v.)	Ongoing
	Coal stockpile – development of coal management and handling plan to reduce the residual coal levels on site at closure		Develop and implement a concept closure and post closure plan.	Complete
		Dust Management Plan (Appendix G) implemented to mitigate dust from coal stockpile activities.	Complete	
		Develop designs for rehabilitation and	Complete	

		revegetation of the coal stockpile	
		Provide the designs for rehabilitation and revegetation of the coal stockpile to the EPA	Complete
		Implement rehabilitation and revegetation of the coal stockpile	In progress
Remove coal from generations system (conveyors, coal bunkers, mills and feeders)	12 Weeks	Empty and wash conveyors bunkers, mills and feeders	Complete
		Conduct supplementary re-seeding of the coal stockpile as per the Succession Ecology report/proposal	30/09/2017
		Conduct monthly monitoring of revegetation outcomes of the coal stockpile and document in a report, including recommendations for any further works that may be required.	October 2017 – June 2018
Empty NPS Coal Storage Bins	12 Weeks	Develop coal removal process for the bins, incorporating dust and water management requirements.	Complete
		Empty and wash bins.	Complete

8.3.5 ELCO (e.)

e.				
Decommissioning and rehabilitation of the Ash Storage Areas.				
	Actions	Timeframe	Milestones	Target completion date
Closure	Continue to manage the Ash Storage Area according to existing procedures	8 weeks	Refer to Site Dust Management Plan (Appendix G)	Complete
	Provide alternative water supply for post closure	12 Weeks	Commissioning of alternative water supply for Ash Dam (New pipeline from Cooling Water Pump area bypassing the Ash Pit)	Complete
	Review Site Dust Management Plan (Appendix G) to redefine roles and responsibilities	6 weeks	Review Site Dust Management Plan (Appendix G) and provide this to the EPA	Complete
			Approval of Site Dust Management Plan (Appendix G) by the EPA	Complete
Post Closure	Implement actions in Site Dust Management Plan (Appendix G)	Ongoing	As per Site Dust Management Plan (Appendix G)	Complete
	Independent environmental engineering contractors have been engaged to provide specialist advice for the future management of the Ash Storage Area and the Polishing Pond.	6 months	Develop a Concept Plan for Ash Storage Area	Complete
			Submission of Concept Plan for the Ash Storage Area to the EPA	Complete
			Approval of Concept Plan for the Ash Storage Area by FPP and the EPA.	Complete
			Implement rehabilitation works plan	30/6/2018
			Implement Post-Completion Monitoring & Maintenance Plan	Ongoing
	Review Site Dust Management Plan (Appendix G) to redefine roles and responsibilities, in response to ECO obligations, and to address the specific needs of the rehabilitation strategy.	6 weeks	Update plan for post closure	Complete
			Approval of Site Dust Management Plan (Appendix G) by the EPA	Complete
			Implement and complete plan	30/6/2018

8.3.6 ELCO (f.)

f.  Closure    Post Closure	Decommissioning and rehabilitation of the polishing pond including removal of cenospheres.			
	Actions	Timeframe	Milestones	Target completion date
	Continue to manage the Ash Storage Area & Polishing Pond according to existing procedures	30 months	Refer to Site Dust Management Plan (Appendix G) & ELCO (e.)	Ongoing
	Provide alternative water supply for post closure	12 Weeks	Commissioning of alternative water supply for Ash Dam (New pipeline from Cooling Water Pump area bypassing the Ash Pit)	Complete
	Monitor cenosphere build up in Polishing Pond	30 months	Weekly monitoring until visible cenosphere build-up on the northern shore of the polishing Pond has ceased.	31/12/2018
	Continue cenosphere removal from Polishing Pond as required	Ongoing	Removal by appropriate contractors until no longer required as part of Closure/Post Closure	Completion of Project
Develop a plan for the future management of the Ash Storage Area and the Polishing Pond.	6 months	Refer to ELCO (e.)	Complete	

8.3.7 ELCO (g.)

g.	Surface water management, including minimisation of ponded stormwater, prevention of contamination of stormwater and discharge of waters offsite.			
	Actions	Timeframe	Milestones	Target completion date
Closure	Continue existing water management strategies across site (Retain existing stormwater management infrastructure across site)	30 Months	Playford dewatering system in place until demolition	31/1/2018
			Northern dewatering system in place until demolition	30/6/2018
Post Closure	Development of a Surface Water Management Plan, or inclusion of water management into existing plans	12 weeks	Development of a Surface Water Management Plan	Complete
			Agreed Surface Water Management plan between FPP and EPA	30/4/2017
			Implementation of The Surface Water Management Plan	30/6/2018
	Development and implementation of McMahon Demolition, Environmental, Hazardous Material, Transport, Site Management, Waste Management Plans and Emergency Response Plans	16 weeks	Receive draft Plans	Complete
			Finalise Plans	Complete
		Communication of Plan to all post closure staff	Complete	

8.3.8 ELCO (h.)

h.	Removal of waste (including asbestos and scrap metal) from site generated by decommissioning activities.			
	Actions	Timeframe	Milestones	Target completion date
Closure	Existing waste management strategies in place during closure	20 Weeks	Removal of existing scrap steel	Complete
			General waste to landfill by contractors as per existing practices	Complete
			Listed wastes disposed to EPA licenced waste facility by EPA licenced Waste transporter	Complete
			Recyclables to various facilities according to existing practices	Complete
Post Closure	Waste generated on site will be managed according to the Demolition Contractors Waste , Hazardous Material and Environmental Management Plans	16 weeks	Receive draft Plans	Complete
			Finalise Plans	Complete
			Communication of Plan to all post closure staff	Complete
		Ongoing	Implement Plans and monitor ongoing compliance	30/6/2018
			General waste to landfill by contractors as per existing practices	30/6/2018
			Listed wastes disposed to EPA licenced waste facility by EPA licenced Waste transporter	30/6/2018
			Recyclables to various facilities according to existing practices	30/6/2018



## 8.4 Ash Dam

Operation of the Ash Storage Area was undertaken on a “Business as Usual” basis during the generation period with the Ash Disposal Pump System providing seawater flow into the Ash Storage Area, providing seawater flow through to the Polishing Pond and into Bird Lake.

Modified plans have been developed for the closure period including periodical flooding, use of dust suppression chemical on levees, temporary internal levee building and other solutions deemed appropriate - refer to the Dust Management Plan.

For post closure dust management, an alternate pump and water supply system was developed to provide water from the LP Sluice Pumps for sea water flooding of the surface of the Ash Storage Area according to the Dust Management Plan (Appendix G).

A final Ash Storage Area Rehabilitation Plan is being researched and developed to optimise the designs presented in the 2000 Clause 5 Environmental Compliance Agreement.

Post-generation & pre-rehabilitation dust mitigation activities on the Ash Storage Area will be undertaken according to the Dust Management Plan (Appendix G).

FPP acknowledges that ceasing water supply to the Ash Storage Area will have adverse effects on the environmental and social quality of Bird Lake. While it is noted that Bird Lake is not on FPP land, FPP is committed to working with all stakeholders to develop and implement a practical solution for the Ash Storage Area/Polishing Pond/Bird Lake system going forward.

## 8.5 Coal Stockpile

Operation of the Coal Stockpile Area was undertaken on a “Business as Usual” basis during the generation period. Closure & Post Closure dust mitigation activities on the Coal Stockpile Area were undertaken according to the Dust Management Plan (Appendix G).

Coal was reclaimed to ground level during the final days of generation. This left a stable flat pad ready for rehabilitation and revegetation.

A Rehabilitation Program has been developed and is being implemented. The objective of the program is to create a rehabilitated land area which does not present a risk of dust migration. The area was ripped to work through subsurface material with surface residual coal which to create a suitable growing substrate. Windrows were formed to allow for the formation of plant windbreaks along an east/west axis, reducing future dust migration from site when plantings are mature. Limited mulch, including recycled timber and pine bark has been strategically used across the area to reduce dust migration during the pre-planting stage. Seeds and tube stock will be irrigated for the first two years to allow for rapid growth and surface coverage across the area, and plants will be hardened off towards the end of the rehabilitation period.

The Rehabilitation Program, currently underway, includes the following stages:

- Stage 1 - Prepare scope of works including native plant suitability (100% complete)

- Stage 2 – Plant procurement & seed procurement, including seed propagation (100% complete)
- Stage 3 – Ground preparation, level surface, deep ripping and contour the ground, Shallow ripping between contours (100% complete)
- Stage 4 – Irrigation design, supply & installation (100% complete)
- Stage 5 – Mulch off timber pallets (APS), identify supply of additional mulch and spread mulch across stockpile surface (75% complete)
- Stage 6 – Spread seed and plant tube stock (100% complete)
- Stage 7 – Irrigate & monitor the site (Ongoing)
- Stage 8 – Conduct supplementary seeding

The current management strategy is to rehabilitate and revegetate the surface of the stockpile pad from the southern side as the stockpile is reclaimed. Planned completion date for the Stockpile Rehabilitation Program is 31<sup>st</sup> December 2016. This will enable ongoing monitoring and management throughout 2017 and 2018 as the vegetation establishes.

Some tubestock was not ready to be planted in 2016, and the seed was spread late in the year.

Plan revision note: In August 2017 Flinders Power engaged revegetation specialist Succession Ecology to undertake a site inspection of the coal stockpile. Succession Ecology noted in their report that revegetation efforts had been 'moderately successful, however there remained bare patches with limited coverage. A series of management options were recommended to Flinders.

In late August 2017 Flinders opted to undertake supplementary re-seeding of the coal stockpile using endemic native chenopod species. The approach is to be supplemented with the use of available mulch, and the use of irrigation from the established network. The work is scheduled to occur in mid-September 2017.

Monitoring of the area will occur through the use of a monthly drone photo, and site inspections to be conducted by Succession Ecology to provide independent assessment of revegetation progress.

## **8.6 FPP & McMahon's Project Risk Assessment Register (PRAR)**

Risks to the environment and community have been identified within the Project Risk Assessment Register (PRAR – refer to Appendix H). Key Risks and Management Plans are outlined in the Early Works documentation including the Environmental Management Plan, Demolition Plan, Site Management Plan, Hazardous Material Management Plan, Waste Management Plan, Health and Safety Management Plan and Communication Plan (included as Appendix F).

## **8.7 Backfill of voids**

When a site is the subject of a site contamination audit, any materials being reused within the site require some form of review and endorsement from the Site Contamination (SC) auditor. The SC auditor signs off on the condition of the site taking into account what materials have been left within

the site. In the Closure Plan the term “site won materials” is used to include any of the following categories of materials being considered for reuse within the project site:-

- Soils.
- Ash.
- Construction and demolition waste.

Within this Closure Plan the definition of each of these sub categories of site won materials and the process for around assessing and permitting their reuse are as follows.

#### REUSE OF “SITE WON MATERIALS” – SOILS

According to the SC auditor the reuse of any soils from within the site would not fit the category of waste soils. The reuse of any such material would be subject to appropriate characterisation and assessment of suitability for reuse in particular areas on a case by case basis with approval / endorsement of the SC auditor prior to the actual reuse. Proposals for reuse within the site will include:-

- Material characterization – noting the SC auditor only needs to consider this from a contamination viewpoint, but the material would also need to be considered in terms of its suitability from a geotechnical viewpoint based on the future land use scenario. Summary information will be provided for the specific material and area of the source.
- Proposed location of the receiving area, and an assessment of the potential risks from an environmental or human health viewpoint. The primary references and screening values will be based on the applicable health and ecological investigation levels from the National Environment Protection (Assessment of Site Contamination) Measure 1999 (ASC NEPM), with provision for appropriate site specific assessment if necessary.
- Proposed management measures during the transport and placement of the materials (e.g. cover material, separation distance from coastal areas).
- Proposed future management measures.

#### REUSE OF “SITE WON MATERIALS” – ASH MATERIALS

In March 2016 Golder Associates provided FPP with a Technical Memorandum describing the assessment of ash as a Waste Derived Fill according to the Department of Planning, Transport and Infrastructure (DPTI) and South Australian EPA specifications and standards. A screening assessment, incorporating geotechnical and chemical analysis, found that according to these specifications and standards the ash from the ash storage area may be classified as Intermediate Waste Soil and could be used as a WDF to backfill the basements of the Playford Stations. According to Section 5.2 of the SA EPA Standard for the Production and Use of Waste Derived Fill (October 2013), a proposal for the reuse of industrial residues which exceeds waste fill criteria, supported by Interim Audit Advice prepared by a site contamination auditor\*, must be submitted to the EPA prior to ash being moved to the concrete basements. The proposal will be reviewed and approved by the EPA. A site contamination audit report is to be completed following the re-use.

\*Site contamination auditors are persons accredited under Division 4 of Part 10A of the Environment Protection Act as a Site Contamination Auditor.

In accordance with Section 6.1.3 of the Standard for Production and Use of Waste Derived Fill (EPA, Jan 2010) (referred to hereafter as the WDF Standard), the proposal for reuse of the industrial residues will include:-

- An assessment and characterisation of the wastes.
- An outline of the proposed reuse including the site specific details of the reuse location/s, and proposed end use/s
- An assessment of the waste, site specific risks, and suitability of the proposal for the reuse, and any audit criteria and conditions / restrictions relating to the reuse.
- A site management plan that addresses all operational and environmental management issues for the project.
- Interim audit advice. The interim audit advice requires the auditor to confirm the waste derived fill proposal has been prepared in accordance with relevant EPA guidelines, and that the SC auditor is of the opinion that based on the knowledge available at this time as documented in the proposal the waste derived materials should be suitable for the proposed use(s) and are not likely to cause harm.

#### REUSE OF "SITE WON MATERIALS" – CONSTRUCTION AND DEMOLITION WASTE

An important aspect of demolition is the use of site-won material (e.g. masonry – including concrete and brick crushed and screened to 100mm - from buildings and stack) for backfilling a number of buildings basements around the site. The basements are enclosed concrete cell type structures. Following demolition these site-won materials will be subject to SC auditor review according to the SA Standard for the Production and Use of Waste Derived Fill (Oct 2013) and the National Environment Protection (Assessment of Site Contamination) Measure (WDF NEPM) for suitability as backfill. It is anticipated that the amount of material from these will be insufficient and ash will be required to supplement fill for these areas. It is noted that Northern and Playford B Stations are constructed on reclaimed land which includes bottom ash from the Playford A & B Stations, laid down in the 1950's-1980's.

The reuse of materials in this category will follow the process in Section 5.3 of the WDF Standard, with the exception that a Recovered Products Plan is not required. As there is no specific guidance in Section 5.3 in the WDF Standard, materials will be stockpiled after processing. The materials will be assessed and approved in batches as and when required. There will then be proposals prepared for reuse of C&D wastes on a case by case basis which include the following items:-

- Material characterization, including evidence confirming the absence of foreign materials and prohibited wastes such as asbestos where these potentially be present.
- Proposed location of the receiving area, and an assessment of the potential risks from an environmental or human health viewpoint. The primary references and screening values should be based on the applicable health and ecological investigation levels from the ASC NEPM, with provision for appropriate site specific assessment if necessary.
- Proposed management measures during the transport and placement of the materials (e.g. cover material, separation distance from coastal areas).
- Proposed future management measures.

It would be similar to reviews for other “site won materials” categories, but would not require the extra level of permitting and EPA approval. The auditor would confirm the waste derived fill proposal has been prepared in accordance with relevant EPA guidelines, and that the SC auditor is of the opinion the waste derived materials should be suitable for the proposed use(s) and are not likely to cause harm.

### 8.8 Gerb Springs under Northern Station Mills

The Mill Gerb springs under the NPS mill framework is concreted into the foundation block, which is then supported by 10 Gerb springs and Visco dampers. The Visco dampers contain a thick bituminous damping fluid. The concrete block is approximately 9 m x 6 m x 2.3m thick, weighs over 300 tonnes and is set down into a pit. About a third of the block was poured after the mill foundation steelwork was put in place.

To remove the Gerb spring/damper packs would require one of two options;

- a. Jack up the concrete block and remove the spring packs. The hazards include working under a suspended load, in a confined space (both legislatively and physically) and manual handling/ergonomic issues presented by physically lifting them out (mechanical assistance would be near impossible).
- b. Remove the mill and jack hammer the block into pieces and remove the concrete allowing the spring packs to be lifted out. This process would involve significant safety and environmental risks including generation of noise, vibration and concrete dust.

Both of these options are deemed to have extreme safety risks which make the removable untenable.

Flinders Power is liaising with the Contaminated Site Auditor to explore the feasibility of leaving the Gerb Springs in place and entombing them in concrete slurry. If this is feasible FPP will create a proposal for this purpose and for Auditor sign off under the remit of the VSCAP.

## 8.9 Site Contamination Assessment Process

FPP has entered into a voluntary site contamination process as outlined in the VSCAP (dated 2<sup>nd</sup> September 2016). Coffey Environments Australia have been appointed as the Site Contamination Assessment Consultant and Kirsas Environmental have been appointed as the EPA Accredited Site Contamination Auditor. At the time of preparing this document a preliminary site investigation had been completed and a detailed site investigation has commenced following approval of the Sampling and Analysis Quality Plan.

### 8.9.1 Normally occurring radioactive material (NORM) Assessment

Previous elemental and radiological analysis of Leigh Creek coal and ash from the Station indicate levels of natural radiation that are extremely low, and analogous with the background natural environment. The Resources and Energy Branch of the SAEPA has directed Flinders Power to assess if naturally occurring radioactive materials (NORMs) present in coal and ash continue to be present on site during closure and demolition.

During the closure process:

- Available test data will be assembled and form the basis of an environmental and safety risk assessment;
- A NORM screening assessment will be undertaken by competent FP personnel, utilising a radiation survey meter to the satisfaction of the SAEPA Resources and Energy Branch, particularly focussing on the ash storage dam, along with heat exchangers and locations within the boiler structures of Northern and Playford where NORMs may be present.
- Test data will be presented to the EPA.

Further actions regarding NORMs, if present at levels exceeding screening limits provided by the SAEPA Resources and Energy Branch, will be taken in consultation with the SAEPA Resources and Energy Branch.

### **8.11 Variation Process**

To support the implementation of a continual learning process, and to allow flexibility in for the best interests of key stakeholders, a process for authorising variances to the plan has been incorporated.

The variation process utilised is based on the existing Change Notification (CN) process for the Leigh Creek Mine.

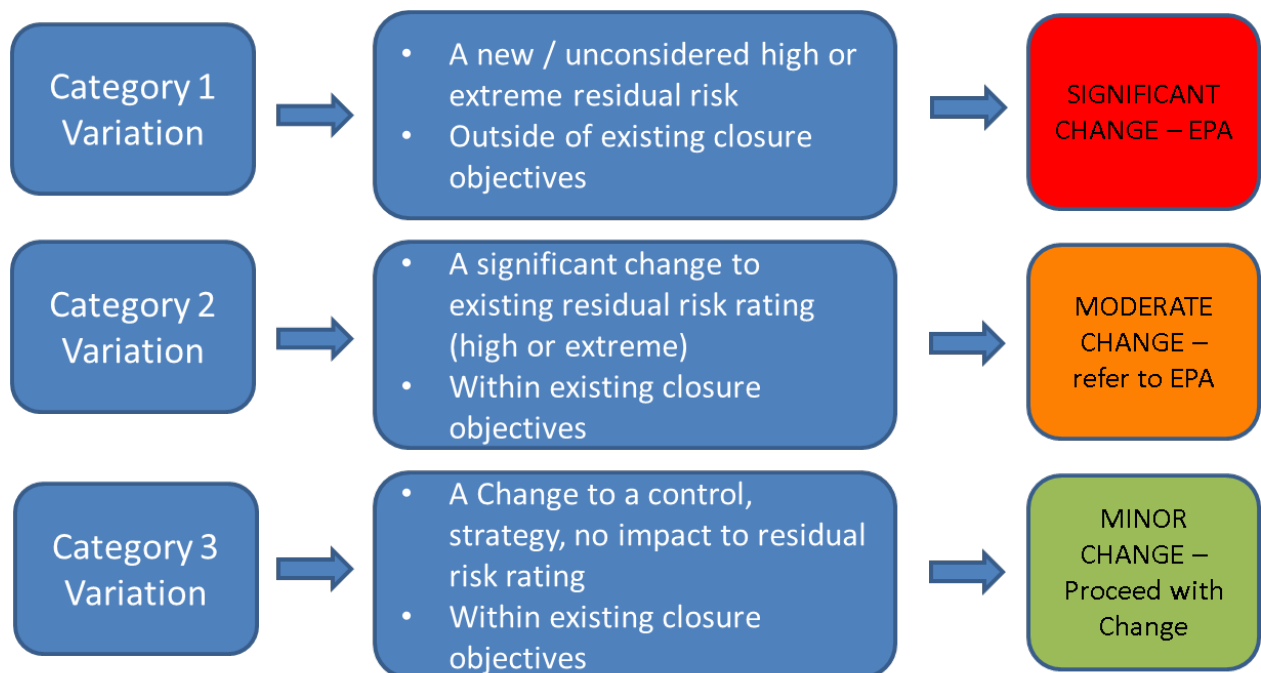
This change notification process, as outlined below, will be adopted.

**Notification of Significant Changes to Operations – Change Notification Process**

The following steps are to be used for Plan variations and the notification of a significant change in Augusta Power Stations closure, post closure and rehabilitation activities;

1. A self-assessment process is undertaken by FPP, including
  - a description of the proposed change, and
  - a risk assessment of relevant social or environmental impacts and those criteria associated with the proposed change to demonstrate that control strategies are adequate and residual risks (& liability) are acceptable;
2. A Change Notification letter from FPP providing sufficient information and details of the proposed change to operations will be submitted to EPA – email and pdf letter;
3. EPA letter confirmation as to whether the CN is sufficient and within the scope of the current Environmental Closure and Post Closure Plan or that a review is required – email and pdf letter.

The following variation categories and levels of significance will be utilised (Figure 16.):



**Figure 16. Change Notification Categories and decision making matrix.**



## 8.12 Progress Assessment and Reporting

Routine environmental monitoring data will be collected, analysed and reported as per normal. Information for specific environmental activities associated with closure or post closure will be collected, analysed and reported as per EPA Licence Condition U-251. The structure for this is described in Table 3 Closure/Post Closure Progress Assessment and Reporting Schedule.

### 8.12.1 Internal Assessment

Routine internal assessment of progress against plan will be conducted by the FPP Closure Team and collated by the Specialist Environmental Services. The internal assessment will be formally documented quarterly and form part of the internal audit schedule.

### 8.12.2 Progress Reporting

A monthly progress report will be prepared for FPP internal purposes and a quarterly progress report for ELCO's will be prepared and submitted to the EPA, as per EPA Licence Condition U-251.

The quarterly progress report will be supplemented by a progress review meeting to be held with all parties.

**Table 3. Closure/Post Closure Progress Assessment and Reporting Schedule**

Action	Role responsible	Schedule/Timeframe	Target audience
Routine operation environmental sampling	Environmental Coordinator Augusta	Routine Until 30/6/2018	EPA / NPI
Routine environmental performance report	Environmental Coordinator Augusta	Monthly Until 30/6/2018	<i>(Make –Safe)</i> FPP <i>(Post Closure)</i> FPP/McMahons EPA
Routine environmental auditing <i>(Facility Audit, Independent Verification of the Monitoring Program, etc.)</i>	Environmental Coordinator Augusta Environmental Auditor	Annually Until 30/6/2018	<i>(Make –Safe)</i> FPP <i>(Post Closure)</i> FPP/McMahons EPA
Closure and Post Closure Plan environmental performance data collection	Environmental Coordinator Augusta	Until 30/6/2018	

Closure and Post Closure Plan environmental performance auditing	FPP Post Closure Team	Until 30/6/2018	FPP/McMahons
Closure and Post Closure Plan environmental performance reporting	Environmental Coordinator Augusta Facility Manager	Monthly Until 30/6/2018	FPP/McMahons
		Quarterly Until surrender of EPA Licence	EPA
Progress Review meeting environmental performance presentation	Program Director & Facility Manager	Quarterly Until 30/6/2018	FPP

## 9 Surrender / Transfer of EPA Licences

As per Condition 2.3.4, FPP are committed to meeting with the EPA on a quarterly basis to review progress against the Environmental Closure & Post-Closure Plan for the Augusta Power Stations. FPP would support regular EPA site visits to monitor progress.

It is FPP's preference that, as licenced activities becomes no longer relevant for the site, that the conditions are progressively removed from Licence 13006.

On completion of the Environmental Closure & Post-Closure Plan for the Augusta Power Stations, it is anticipated that Licence 13006 will be rescinded.

Any future users of the site will be required to apply for EPA licence in accordance with the Environmental Protection Act.

## 10 Resourcing for Closure

In June 2015 when the closure of the Flinders Operations was announced, Alinta Energy CEO Jeff Dimery committed to a closure budget that would enable all closure obligations to be met. This remains the ongoing commitment of FPP.

### Resourcing for Closure – Human Resources

#### Closure Phase

A workforce of approximately 50 FPP employees are being retained for the 'make safe' phase. The workforce will prepare the station for demolition and be engaged from circa 9th May to 30th June.

#### Post-Closure Phase

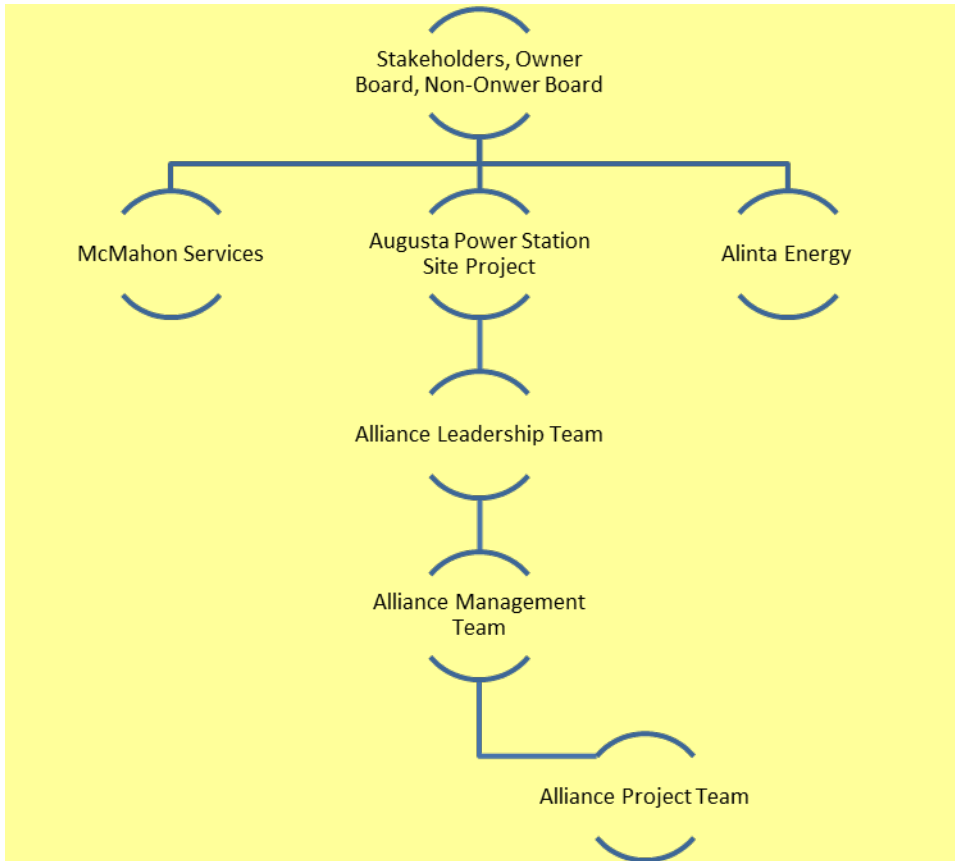
Beyond 'make safe', the workforce will be reduced to a core team of approximately 12 individuals who will continue to manage the site, oversee asset reclamation and on-sell, and be integral to the demolition process with McMahon Services Australia.

The APS team will be led by the APS Facility Manager. This role oversees all activities across the site, including ongoing compliance.

Asbestos removal and infrastructure demolition will be conducted as an alliance arrangement with McMahons Services Australia. The `Alliance` is a unified team to jointly manage the planning, asset salvage and decommissioning works of the Augusta Power Stations. The successful delivery of this project relies on the combined efforts of both FPP and McMahon Services, and the pooling of knowledge, experience and expertise under the Alliance is the best contractual means to deliver the complex closure program. The Alliance will see the partnership of both the Owner Party (FPP) and Non-Owner Party (McMahon Services) to create a single team working unanimously, collaboratively, and cooperatively and acting in good faith to make best-for-project decisions.

To create and promote an integrated project team approach to the delivery of the project, FPP and McMahon Services have nominated two teams, the Alliance Leadership Team (ALT) and the Alliance Management Team (AMT). These teams will focus on safety first and foremost but also methodology, schedule, cost and variations, satisfaction and quality. The integrated team approach allows for open discussion with the people most suited to the tasks. It allows the principal and the contractor to gain the best understanding of each situation and work together to overcome all challenges.

The Alliance will have clear lines of communication and delegation of responsibility to allow for the effective and open sharing of information and objectives. The communication and governance structures are presented below in Figure 17.



**Figure 17. FPP APS Closure Communication and Governance Structure**

## 11 References

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Neumann, R. 2001, Augusta Power Stations Vegetation Survey November 2001, Internal Report.

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## 12 Appendices

### Appendix A – Detailed Risk Assessments

Flinders Power - Augusta Power Stations Closure: RISK REGISTER



Area 1: Northern Power Station, CW channels, Playford workshops & environs

as at

3-Mar-17

Risk Identification							Inherent Risk Rating			Residual Risk Rating					Proposed Mitigation of Risk Exposure / Improvement Actions			Target / Future Risk Rating		
ID	Category	Source	Pathway	Receptor	Potential Consequences	Exposure Type	Consequence	Likelihood	Rating & Priority	Current Approach or (Existing Controls)	Effectiveness	Consequence	Likelihood	Rating & Priority	Risk Reduction Treatment or Asset Improvement Strategic or Approved Action	Action Owner	Planned Completion Date	Consequence	Likelihood	Rating & Priority
1	General	Office activities	Energy use	Resource use	Energy overuse	Resource	5. Insignificant	C. Likely	Low 22	waste disposal costs and recycling/salvage revenue	Effective	5. Insignificant	C. Likely	Low 22						
2	General	General waste management	General waste	Resource use	Excessive waste generation	Resource	4. Minor	C. Likely	Medium 17	Waste segregation JSP 320 Unloading and Handling of Rubbish Skips monitor re: contamination	Effective	5. Insignificant	E. Unlikely	Low 25						
3	General: equipment decommissioning	Industrial waste management (ex-asbestos) (Waste oil considered separately)	Industrial waste (local) storage and transport to site storage area	Waste disposal/recycling, soil/groundwater contamination	Improper waste disposal, contamination of waste destination, enforcement action	Waste	3. Moderate	C. Likely	High 11	Waste Management at APS, S3.8 Disposal Procedure for Aerosol cans etc., S3.11 Storage, Handling and Disposal of solvents etc. & S3.15 Storage, Handling and Disposal of waste oil JSP 320 Unloading and Handling of Rubbish Skips monitor to ensure clear identification, sampling/analysis, if required. Maintain waste disposal records (eg WTCs or WTFs)	Effective	3. Moderate	E. Unlikely	Low 21						
4	APS post production	Asbestos management	Asbestos removal, storage and disposal	Air quality	Airborne asbestos, enforcement action	Human Health	2. Major	D. Possible	High 12	S3.2 Asbestos Management System & site procedures, qualified contractor S3.7 Guidelines for the safe use of insulation of materials containing SMF's, Asbestos Register air monitoring, waste disposal records (WTCs/WTFs)	Effective	3. Moderate	E. Unlikely	Low 21						
5	General: decommissioning	Industrial Waste water (contaminated drains and ash)	Overflows	Marine pollution	Contaminated water entering the Gulf, damage to Gulf waters, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	JSP117 Drain cleaning & JSP228 Ash Pit cleaning, block drains, within work areas, that discharge directly to marine environment, if practicable. Emergency Response Plan, Spill response, IMS water monitoring programme, disposal records (WTCs/WTFs)	Effective	3. Moderate	E. Unlikely	Low 21						
13	Heath, Safety & Security	Implement contingency plan: decommissioning/demolition	environmental contingencies	Environmental harm	Nil /Improper process in place	Procedural	2. Major	E. Unlikely	Medium 18	Emergency response plans (reviewed annually): review for decommissioning /demolition activities (after project plan has been developed), Crisis Management Plan, Review response equipment and training Support procedures e.g. Incident Management System, Station Instruction S1.7 (Spill Response), S3.16 (Spill Reporting), S1.8 (Fire Reporting), S4/G29 Hazard inspections & JSP385 Use of emergency boat, IMS IMS	Effective	2. Major	E. Unlikely	Medium 18	Flinders Power and demolition contractor Closure Environmental Management Plans to be developed, incorporating specific measures for activities with potential to cause environmental harm	Flinders Power	Early/mid 2016			
14	Heath, Safety & Security	Fire on site: decommissioning/demolition	Contaminated fire water discharge	Water quality	Contaminated water entering the Gulf, damage to Gulf waters, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	Contaminated drains system, Emergency Response Plan, Crisis Management Plan, review options re: containment of fire water eg within ABC Lake in preference to discharge to ash pond storage Maintenance routines, Station Instruction S1.7 (Spill Response), IMS Plant monitoring	Effective	2. Major	E. Unlikely	Medium 18	Fire management procedure to be referenced in Closure Environmental Management Plans and included in contractors Emergency Plan and Emergency Response Procedures.	Flinders Power/ demolition contractor	Early/mid 2016			
15	Heath, Safety & Security	Site security: decommissioning/demolition	vandalism	Site amenity	Site damage, injury to persons	Security	3. Moderate	D. Possible	Medium 16	Site security systems, Emergency Response Plan	Effective	3. Moderate	E. Unlikely	Low 21						
16	Heath, Safety & Security	Land management: herbicide use	Overspray of herbicide	Impact on flora	Damage to local flora, enforcement action	Environmental	4. Minor	D. Possible	Low 20	Restricted spraying to low wind speed wind speed estimates, records	Effective	4. Minor	E. Unlikely	Low 23						
18	Heath, Safety & Security	Land management: landscaping (post decommissioning/demolition)	Maintaining & improving landscaping	Improved site amenity	Poor visual amenity, soil erosion, dust	Environmental				"Final" landforms and potential landscaping plan.	Effective									
19	Heath, Safety & Security	Land management: pest plants and animals	Weed infestation, feral animals	Ecological impact, impact on non-target species	"Wasteland" effect, disease reservoirs,	Environmental	4. Minor	D. Possible	Low 20	Site inspections	Effective	4. Minor	E. Unlikely	Low 23						
20	Heath, Safety & Security	Waste recycling area(s): decommissioning/demolition	Waste management	Resource use	Improper waste disposal, contamination of waste destination, enforcement action	Resource	3. Moderate	E. Unlikely	Low 21	Waste segregation (to improve recycling, re-use), Waste management Process Site Map, S3.11 Storage, Handling and Disposal of solvents etc. Determine if the area is adequate for decommissioning/demolition. Establish additional areas for staging of material prior to re-use on site and/or disposal. Control runoff (via containment pond(s)). Site inspections, routine visits by external recycling contractor, S3.7 Guidelines for the safe use of insulation materials containing SMF waste recycling records. Waste disposal records (WTCs and WTFs)	Effective	4. Minor	E. Unlikely	Low 23						
21	Heath, Safety & Security	Disposal of mercury-containing lighting (eg fluoro's): decommissioning	Landfill	Soil/groundwater contamination	Improper waste disposal, contamination of waste destination, enforcement action	Resource	4. Minor	E. Unlikely	Low 23	Waste segregation, managed by appropriate waste management company, Waste management Process Site Map, S3.8 Disposal Procedure for Aerosol cans, empty fluid drums, small batteries, permalubes and mercury globes. Provide labelled containers (eg 200L drums) for storage prior to removal. Waste disposal records (WTCs and WTFs)	Effective	5. Insignificant	E. Unlikely	Low 25						
22	Heath, Safety & Security	Road traffic: decommissioning/demolition	Dust emissions	Air quality	Limit exceedence, public nuisance, complaints, enforcement action	Environmental	4. Minor	D. Possible	Low 20	Routine road washing. Dust control for unmade roads (use of dust suppressant, if required) Hi Vol/DustTrak dust monitoring on site boundary	Effective	4. Minor	E. Unlikely	Low 23						



Risk Identification							Inherent Risk Rating			Residual Risk Rating					Proposed Mitigation of Risk Exposure / Improvement Actions			Target / Future Risk Rating		
ID	Category	Source	Pathway	Receptor	Potential Consequences	Exposure Type	Consequence	Likelihood	Rating & Priority	Current Approach or (Existing Controls)	Effectiveness	Consequence	Likelihood	Rating & Priority	Risk Reduction Treatment or Asset Improvement Strategic or Approved Action	Action Owner	Planned Completion Date	Consequence	Likelihood	Rating & Priority
23	Environmental Services	Environmental Compliance: decommissioning/demolition	Ensure awareness of environmental compliance	Environmental non compliance	Nil /Improper process in place	Procedural	2. Major	E. Unlikely	Medium 18	Annual compliance audit, daily APS reporting, monthly EPA reporting, environmental checklist for decommissioning/demolition, Surrender of EPA Licence Site Environmental Awareness Induction, S4/G29 Hazard Inspections, update induction material for decommissioning/demolition Water Sampling Program, stack and ambient monitoring, reporting on EMP and reporting to EPA	Effective	2. Major	E. Unlikely	Medium 18	General Environmental Awareness training for all onsite staff. Specific reference to compliance requirements and regulatory in Flinders Power Closure Environmental Management Plan, including reporting timetable.	Flinders Power/demolition contractor	Through to demolition completion			
25	Environmental Services	Site environmental performance monitoring: decommissioning/demolition	Air emissions, ambient air and water, biennial assessment of seagrasses, ash pond leachate and groundwater conditions	Non compliance	Nil /Improper process in place	Procedural	3. Moderate	C. Likely	High 11	JSP400 APS Environmental water sampling at APS, JSP403 APS Environmental water sampling for SS, pH and salinity. Additional site/boundary monitoring required during decommissioning/demolition (eg HI_Vol and noise) IMS, regular monitoring reports (eg weekly) Monitoring programmes and regular reporting	Effective	3. Moderate	E. Unlikely	Low 21						
26	Environmental Services	Ambient environmental monitoring: instrumentation calibration (decommissioning/demolition)	Environmental monitoring	Non compliance	Nil /Improper process in place	Procedural	3. Moderate	D. Possible	Medium 16	JSP400 APS Environmental water sampling at APS, Calibration program and records Maintenance routines	Effective	3. Moderate	E. Unlikely	Low 21						
27	Environmental Services	Performance Reporting: decommissioning/demolition	Compliance	Non compliance (EPA reporting monthly (required by ECA, Schedule 1, 1.1))	Nil /Improper process in place	Procedural	2. Major	E. Unlikely	Medium 18	Sample Management JSP's, Reporting calendar ambient monitoring	Effective	2. Major	E. Unlikely	Medium 18	Specific reference to compliance and regulatory requirements in Flinders Power Closure Environmental Management Plan, including reporting timetable.	Flinders Power	Through to demolition completion			
28	Environmental Services	Decommissioning/demolition		Non compliance (EPA reporting (annual))	Nil /Improper process in place	Procedural	3. Moderate	E. Unlikely	Low 21	Reporting calendar, Internal management reporting ambient monitoring	Effective	3. Moderate	E. Unlikely	Low 21						
29	Environmental Services	Pre-decommissioning (last operational year)		Non compliance (Annual Independent Verification of Monitoring Program)	Nil /Improper process in place	Procedural	3. Moderate	E. Unlikely	Low 21	Reporting calendar water quality monitoring program	Effective	3. Moderate	E. Unlikely	Low 21						
30	Environmental Services	Pre-decommissioning (last operational year)		Annual NPI reporting	Nil /Improper process in place	Procedural	3. Moderate	E. Unlikely	Low 21	Reporting calendar Usage of reportable substances, data	Effective	3. Moderate	E. Unlikely	Low 21						
31	Environmental Services	Implement and monitor program in response to environmental concerns (decommissioning/demolition)	Environmental Improvement Program implementation	Environmental improvements	Nil /Improper process in place	Procedural				IMS regular updating of actions	Effective									
32	Environmental Services	Discharges into the marine environment: decommissioning/demolition (including use or removal of bulk chemicals)	Contaminated drains, SPELS	Water quality	Contaminated water entering the Gulf, damage to Gulf waters, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	Chemical, oil and fuel bunding, oil separation, stormwater segregation, monitoring of stormwater control systems, S3.10 (Ferrous sulphate), S3.11 (Solvents), S3.13 (Sodium hypochlorite), S3.15 (Waste oil), Pump outs, Decommissioning and demolition within containment (minimise direct discharges to marine environment) Emergency Response Plan, IMS water monitoring programme, site inspections	Effective	2. Major	E. Unlikely	Medium 18	Contaminated water handling & management procedure to be referenced in Closure Environmental Management Plans and included in contractors Emergency Plan and Emergency Response Procedures.	Flinders Power/demolition contractor	Early/mid 2016			
33	Environmental Services	Site operations: decommissioning/demolition	Noise	Nuisance	Public nuisance, complaints, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	Noisy activities (eg demolition) within set hours (7am-6pm weekdays, 8am-6pm weekends) boundary noise monitoring	Effective	3. Moderate	E. Unlikely	Low 21						
34	Environmental Services	Site operations: decommissioning/demolition	Spillage of stored materials and wastes	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	IMS regular updating of actions, site inspections (required by ECA), S3.1 Chemwatch, S3.11 Storage, Handling and Disposal of solvents etc. Emergency Response Plan, Crisis Management Plan, IMS inspection records	Effective	3. Moderate	E. Unlikely	Low 21						
35	Environmental Services	Historical operations: post decommissioning/demolition	Discharges to soil/groundwater, landfills	Soil/groundwater contamination	Soil/groundwater contamination, clean up actions, enforcement actions	Environmental	2. Major	D. Possible	High 12	"closure" remediation plan and implementation regular monitoring of known groundwater contamination	Effective	3. Moderate	E. Unlikely	Low 21						
36	Environmental Services	Environmental incidents: decommissioning/demolition	Various	Environmental harm	Nil /Improper process in place	Procedural	2. Major	E. Unlikely	Medium 18	Emergency Response Plan (review for decommissioning/demolition activities) IMS Incident Management System	Effective	2. Major	E. Unlikely	Medium 18	Flinders Power and demolition contractor Closure Environmental Management Plans to be developed, incorporating specific measures for activities with potential to cause environmental harm. Site incident reporting mechanism to be used (IMS).	Flinders Power	Early/mid 2016			
37	Environmental Services	Environmental awareness: decommissioning/demolition	Awareness of aspects and general environmental duty	Non compliance	Nil /Improper process in place	Procedural	4. Minor	E. Unlikely	Low 23	Site Environmental Awareness Induction (reviewed for decommissioning/demolition activities) training and induction records (for decommissioning/ demolition induction)	Effective	4. Minor	E. Unlikely	Low 23						
38	Environmental Services	Environmental auditing (and forwarding summary to EPA): review requirement post operational phase	Various	Non compliance	Nil /Improper process in place	Procedural	3. Moderate	E. Unlikely	Low 21	Compliance calendar: to include decommissioning/demolition requirements (eg demolition approval conditions)	Effective	3. Moderate	E. Unlikely	Low 21						
39	Environmental Services	Community complaints: decommissioning/demolition	Amenity, community perception of organisation	Nuisance	Complaints, local action, media attention, regulatory involvement	Community	3. Moderate	C. Likely	High 11	Incident Management System, Site investigation, Directed response to complainant Complaints Register, Internal media advisor Reporting to management	Effective	3. Moderate	E. Unlikely	Low 21						

Risk Identification							Inherent Risk Rating			Residual Risk Rating					Proposed Mitigation of Risk Exposure / Improvement Actions			Target / Future Risk Rating		
ID	Category	Source	Pathway	Receptor	Potential Consequences	Exposure Type	Consequence	Likelihood	Rating & Priority	Current Approach or (Existing Controls)	Effectiveness	Consequence	Likelihood	Rating & Priority	Risk Reduction Treatment or Asset Improvement Strategic or Approved Action	Action Owner	Planned Completion Date	Consequence	Likelihood	Rating & Priority
40	Environmental Services	Annual community consultation: post operation	Community perception of organisation	Non compliance	Nil /Improper process in place	Procedural	3. Moderate	E. Unlikely	Low 21	Compliance calendar	Effective	3. Moderate	E. Unlikely	Low 21						
41	Environmental Services	Potable water use: decommissioning/demolition	Excessive potable water use	Resource waste	Water overuse, financial cost, increased risk of Gulf contamination	Resource	3. Moderate	E. Unlikely	Low 21	Re-location of services prior to demolition	Effective	4. Minor	E. Unlikely	Low 23						
42	Operations Tech Support	Environmental monitoring: instrumentation calibration (decommissioning/demolition)	Environmental monitoring	Non compliance	Nil /Improper process in place	Procedural	3. Moderate	D. Possible	Medium 16	Calibration program and records Maintenance routines (applied to ambient monitoring)	Effective	3. Moderate	E. Unlikely	Low 21						
46	Post production: coal conveyors	Coal conveyors	Coal dust (conveyors/transfers)	Air quality	Personnel exposure, limit exceedence, public nuisance, complaints, enforcement action	Environmental	3. Moderate	C. Likely	High 11	wash down of built up dust	Effective	5. Insignificant	E. Unlikely	Low 25						
47	Post production : coal bins	Coal bin storage	Coal dust	Air quality	Personnel exposure, limit exceedence, public nuisance, complaints, enforcement action	Environmental	3. Moderate	D. Possible	Medium 16	Wash down of built up dust ambient monitoring, maintenance records	Effective	3. Moderate	E. Unlikely	Low 21						
48			Fire/explosion	Air quality	Coal dust explosion	Fire	2. Major	D. Possible	High 12	Review risk assessments for decommissioning/demolition Emergency Response Plan, IMS	Effective	3. Moderate	E. Unlikely	Low 21						
49	APS: post production	Coal plant washdown	Marine discharge	Water quality	Contaminated water entering the Gulf, damage to Gulf waters, enforcement action	Environmental	4. Minor	D. Possible	Low 20	Containment of washwater JSP 107 Bunker Washing water monitoring programme	Effective	4. Minor	E. Unlikely	Low 23						
50	APS: post production	Decommissioning/demolition	Oil spillage	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	3. Moderate	E. Unlikely	Low 21	Contaminated drain system, S1.7 Oil Spill Procedure, review and enhance containment options Emergency Response Plan, IMS Maintenance records	Effective	4. Minor	E. Unlikely	Low 23						
51	APS: post production	Decommissioning/demolition	Fuel oil spillage (eg gun malfunction)	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	3. Moderate	D. Possible	Medium 16	Operating controls, S1.7 Oil Spill procedure, contaminated drains Emergency Response Plan, IMS	Effective	3. Moderate	E. Unlikely	Low 21						
52	APS post production	Decommissioning/demolition	Seawater flow	Ecological impact (eg fauna loss)	Reduction/Increase in number & abundance of local marine species	Environmental	3. Moderate	E. Unlikely	Low 21	Review options for cooling water channels (eg breach wall?)	Effective	3. Moderate	E. Unlikely	Low 21						
53	APS post production	Decommissioning/demolition	Contamination of condenser cooling water	Ecological impact	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	Review options for condensers (post production) visual	Effective	2. Major	E. Unlikely	Medium 18	Contaminated water handling & management procedure to be referenced in Closure Environmental Management Plans and included in contractors Emergency Plan and Emergency Response Procedures.	Flinders Power/demolition contractor	Early/mid 2016			
54	APS post production	Boiler water drainage	Treated water discharge	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	4. Minor	D. Possible	Low 20	drainage into Ash pit?, Operating controls ambient water monitoring programme	Effective	4. Minor	E. Unlikely	Low 23						
55	APS post production	Decommissioning/demolition	Hydrogen gas leakage	Air quality, fire hazard	Explosion, personnel exposure.	Fire	2. Major	E. Unlikely	Medium 18	Evacuation of hydrogen? Maintenance routines, Emergency Response Plan, Crisis Management Plan, IMS hydrogen monitoring	Effective	2. Major	E. Unlikely	Medium 18						
56	APS post production	Auxiliary boiler operation: decommissioning/demolition	Spillage of dosed water	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	3. Moderate	E. Unlikely	Low 21	Operating controls, containment Maintenance routines	Effective	3. Moderate	E. Unlikely	Low 21						
57	APS post production	Fuel oil removal	Fuel oil spillage	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	3. Moderate	E. Unlikely	Low 21	Contaminated drains, Operating controls, S1.7 Oil Spill procedure Emergency Response Plan, IMS	Effective	3. Moderate	E. Unlikely	Low 21						
58	APS post production	Emergency diesel generators: decommissioning/demolition	Diesel spillage (loading and operational)	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	3. Moderate	E. Unlikely	Low 21	Bunding, Operating controls, S1.7 Oil Spill procedure, tested transfer hoses Maintenance routines, Emergency Response Plan, IMS	Effective	3. Moderate	E. Unlikely	Low 21						
59	APS post production	Fly ash/bottom ash handling systems: decommissioning/demolition	Spillage	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	Flush ash systems to ash storage area water monitoring programme	Effective	4. Minor	E. Unlikely	Low 23						
60	APS post production	Fly ash re-use storage and handling area	Spillage	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	4. Minor	D. Possible	Low 20	Empty and washdown plant Discharge to containment area	Effective	4. Minor	E. Unlikely	Low 23						
61	APS post production	Decommissioning/demolition	Contamination of flow to ash storage pond (eg oil)	Water quality	Spill entering ash disposal system, discharge to Gulf waters, enforcement action	Environmental	3. Moderate	D. Possible	Medium 16	Contaminated drains oil containment, oil handling, ash pond controls Ash storage dam inspections, Emergency Response Plan, IMS inspection records	Effective	4. Minor	E. Unlikely	Low 23						
62	APS post production	Machine degreasing/washdown	Wastewater discharge	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	3. Moderate	C. Likely	High 11	Bunded washbays, JSP104 Degreasing, JSP102 Steam Cleaner Operation contaminated drain system, contained degreasers Quick break degreaser, oil separator, S3.11 Storage, Handling and Disposal of solvents etc. water monitoring programme	Effective	4. Minor	E. Unlikely	Low 23						
63	APS post production		Air emissions (volatile)	Air quality, fire hazard	Fire, personnel exposure.	Fire	3. Moderate	E. Unlikely	Low 21	Procedures, extraction systems	Effective	4. Minor	E. Unlikely	Low 23						

Risk Identification							Inherent Risk Rating			Residual Risk Rating					Proposed Mitigation of Risk Exposure / Improvement Actions			Target / Future Risk Rating		
ID	Category	Source	Pathway	Receptor	Potential Consequences	Exposure Type	Consequence	Likelihood	Rating & Priority	Current Approach or (Existing Controls)	Effectiveness	Consequence	Likelihood	Rating & Priority	Risk Reduction Treatment or Asset Improvement Strategic or Approved Action	Action Owner	Planned Completion Date	Consequence	Likelihood	Rating & Priority
64	APS post production	Oil removal	Oil spillage	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	3. Moderate	C. Likely	High 11	Station Instructions S1.7 Oil Spill procedure, S3.15 Storage, Handling and Disposal of waste oil, JSP051 Handling of full 200L oil drums & oil treatment plant, Contaminated drain system Emergency Response Plan, IMS water monitoring programme	Effective	4. Minor	E. Unlikely	Low 23						
65	APS post production	Waste oil storage	Oil spillage	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	3. Moderate	C. Likely	High 11	Bunded storage, S1.7 Oil Spill procedure, S3.15 Storage, Handling and Disposal of waste oil, JSP051 Handling of full 200L oil drums & oil treatment plant, Emergency Response Plan, IMS water monitoring programme	Effective	3. Moderate	E. Unlikely	Low 21						
66	APS post production			Soil/groundwater contamination	Soil/groundwater contamination, clean up actions, enforcement actions	Environmental	2. Major	E. Unlikely	Medium 18	Bunded storage Emergency Response Plan, Spill response, IMS	Effective	2. Major	E. Unlikely	Medium 18	Oil handling & spill management procedure to be referenced in Closure Environmental Management Plans and included in contractors Emergency Plan and Emergency Response Procedures. Ensure ready availability of oil spill kits on site and segregated waste storage/transfer area.	Flinders Power/demolition contractor	Early/mid 2016			
67	APS post production		Fire	Air quality	Fire, personnel exposure.	Fire	3. Moderate	E. Unlikely	Low 21	Storage controls (minimise ignition sources) Emergency Response Plan, Crisis Management Plan, IMS	Effective	3. Moderate	E. Unlikely	Low 21						
68	APS post production	Discharges into the marine environment	Contaminated drains, SPELS	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	2. Major	D. Possible	High 12	Chemical, oil and fuel bunding, oil separation, maintenance of SPEL tanks, stormwater segregation, review of routine to inspect SPEL tanks Emergency Response Plan, IMS water monitoring programme, site inspections, SPEL cleanout routines	Effective	2. Major	E. Unlikely	Medium 18	Contaminated water handling & management procedure to be referenced in Closure Environmental Management Plans and included in contractors Emergency Plan and Emergency Response Procedures.	Flinders Power/demolition contractor	Early/mid 2016			
69	APS post production	Oil-filled electrical equipment: decommissioning and removal	Leakage	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	Bunding, S1.7 Oil Spill procedure JSP271 NPS Step-up, Unit transformer & line isolator maintenance, Emergency Response Plan, Crisis Management Plan, IMS monitoring of oil properties (eg PCB content)	Effective	2. Major	E. Unlikely	Medium 18	Oil handling & spill management procedure to be referenced in Closure Environmental Management Plans and included in contractors Emergency Plan and Emergency Response Procedures. Ensure ready availability of oil spill kits on site and segregated waste storage/transfer area.	Flinders Power/demolition contractor	Early/mid 2016			
70	APS post production			Soil/groundwater contamination	Soil/groundwater contamination, clean up actions, enforcement actions	Environmental	2. Major	E. Unlikely	Medium 18	Containment of oil-filled equipment Emergency Response Plan	Effective	2. Major	E. Unlikely	Medium 18	Oil handling & spill management procedure to be referenced in Closure Environmental Management Plans and included in contractors Emergency Plan and Emergency Response Procedures. Ensure ready availability of oil spill kits on site and segregated waste storage/transfer area.	Flinders Power/demolition contractor	Early/mid 2016			
71	APS post production		Fire, explosion	Air quality	Fire, personnel exposure.	Fire	2. Major	E. Unlikely	Medium 18	Permits, containment	Effective	2. Major	E. Unlikely	Medium 18	Fire management procedure to be referenced in Closure Environmental Management Plans and included in contractors Emergency Plan and Emergency Response Procedures.	Flinders Power/demolition contractor	Early/mid 2016			
72	APS post production	Battery Rooms: decommissioning and removal	Acid spillage	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	4. Minor	D. Possible	Low 20	Bunded, JSP052 Battery maintenance, JSP315 Battery Bank Replacement, S3.1 Chemwatch Maintenance routines, Emergency Response Plan, IMS	Effective	4. Minor	E. Unlikely	Low 23						
73	APS post production		Fire/explosion (gas generation)	Air quality	Fire, personnel exposure.	Fire	3. Moderate	E. Unlikely	Low 21	Extraction system Maintenance routines, Emergency Response Plan, IMS	Effective	4. Minor	E. Unlikely	Low 23						
74	APS post production	Fire pumps: decommissioning	Fuel/oil spillage	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	4. Minor	E. Unlikely	Low 23	S1.7 Oil Spill procedure Emergency Response Plan, IMS	Effective	4. Minor	E. Unlikely	Low 23						
75	APS post production	Workshops/Garage: decommissioning and demolition	Removal and disposal of dangerous substances: spills	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	3. Moderate	E. Unlikely	Low 21	Bunded storage, S3.1 Chemwatch Emergency Response Plan, IMS Waste disposal documentation (WTCs/WTFs)	Effective	4. Minor	E. Unlikely	Low 23						
76	APS post production		Removal of dangerous substances, incompatible storage: fire	Air quality	Personnel exposure, limit exceedence, public nuisance, complaints, enforcement action	Environmental	3. Moderate	E. Unlikely	Low 21	Segregation of dangerous substances, S3.1 Chemwatch, S3.11 Storage, Handling and Disposal of solvents etc. Emergency Response Plan, IMS	Effective	3. Moderate	E. Unlikely	Low 21						
77	APS post production		Disposal of oily/contaminated rags	Contaminated soil	Soil/groundwater contamination, clean up actions, enforcement actions	Environmental	4. Minor	E. Unlikely	Low 23	Segregation for disposal	Effective	5. Insignificant	E. Unlikely	Low 25						
78	APS post production	Grit blasting: decommissioning and demolition	particulate emissions	Air quality, water quality	Air, soil & groundwater contamination, clean up actions, enforcement actions	Environmental	3. Moderate	D. Possible	Medium 16	Removal and disposal of grit, washdown prior to demolition Containment of washdown water	Effective	4. Minor	E. Unlikely	Low 23						
79	APS post production	Demolition: general		Lead emissions (from lead-based paints)	Personnel exposure, limit exceedence, public nuisance, complaints, enforcement action	Environmental	3. Moderate	E. Unlikely	Low 21	lead paint testing, dust control processes Maintenance routines lead in paint testing (as required) and recorded	Effective	4. Minor	E. Unlikely	Low 23						
80	APS post production	Refrigeration/air conditioning servicing: decommissioning (as required)	Release of ozone depleting substances	Depletion of Ozone layer	Environmental harm, regulatory enforcement.	Environmental	3. Moderate	D. Possible	Medium 16	ARC licensed operators, ozone-depleting gas reclaim for decommissioned equipment Audits based on ARC requirements, JSP372 Air Conditioner Maintenance Records of ozone-depleting substances reclaim, etc	Effective	3. Moderate	E. Unlikely	Low 21						

Risk Identification							Inherent Risk Rating			Residual Risk Rating					Proposed Mitigation of Risk Exposure / Improvement Actions			Target / Future Risk Rating		
ID	Category	Source	Pathway	Receptor	Potential Consequences	Exposure Type	Consequence	Likelihood	Rating & Priority	Current Approach or (Existing Controls)	Effectiveness	Consequence	Likelihood	Rating & Priority	Risk Reduction Treatment or Asset Improvement Strategic or Approved Action	Action Owner	Planned Completion Date	Consequence	Likelihood	Rating & Priority
81	APS post production	Sewerage system: relocation of services (caused by decommissioning and demolition)	Sewage overflow	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	4. Minor	D. Possible	Low 20	Response to sewer chokes, JSP028 Sewage Pit pump and control repairs Emergency Response Plan, IMS	Effective	4. Minor	E. Unlikely	Low 23						

Area 2: Unit 3 Area

as at 3-Mar-17

Risk Identification							Inherent Risk Rating			Residual Risk Rating					Proposed Mitigation or Risk Exposure Improvement Actions			Target / Future Risk Rating		
ID	Category	Source	Pathway	Receptor	Potential Consequences	Exposure Type	Consequence	Likelihood	Rating & Priority	Current Approach or (Existing Controls)	Effectiveness	Consequence	Likelihood	Rating & Priority	Risk Reduction Treatment or Asset Improvement Strategic or Approved Action	Action Owner	Planned Completion Date	Consequence	Likelihood	Rating & Priority
16	Heath, Safety & Security	Land management: herbicide use	Overspray of herbicide	Impact on flora	Damage to local flora, enforcement action	Environmental	4. Minor	D. Possible	Low 20	Restricted spraying to low wind speed wind speed estimates, records	Effective	4. Minor	E. Unlikely	Low 23						
18	Heath, Safety & Security	Land management: landscaping (post decommissioning/demolition)	Maintaining & improving landscaping	Improved site amenity	Poor visual amenity, soil erosion, dust	Environmental				"Final" landforms and potential landscaping plan.	Effective									
19	Heath, Safety & Security	Land management: pest plants and animals	Weed infestation, feral animals	Ecological impact, impact on non-target species	"Wasteland" effect, disease reservoirs,	Environmental	4. Minor	D. Possible	Low 20	Site inspections	Effective	4. Minor	E. Unlikely	Low 23						
22	Heath, Safety & Security	Road traffic: decommissioning/demolition	Dust emissions	Air quality	Limit exceedence, public nuisance, complaints, enforcement action	Environmental	4. Minor	D. Possible	Low 20	Routine road washing. Dust control for unmade roads (use of dust suppressant, if required) Hi Vol/DustTrak dust monitoring on site boundary	Effective	4. Minor	E. Unlikely	Low 23						
23	Environmental Services	Environmental Compliance: decommissioning/demolition	Ensure awareness of environmental compliance	Environmental non compliance	Nil /Improper process in place	Procedural	2. Major	E. Unlikely	Medium 18	Annual compliance audit, daily APS reporting, monthly EPA reporting, environmental checklist for decommissioning/demolition. Surrender of EPA Licence Site Environmental Awareness Induction, S4/G29 Hazard Inspections, update induction material for decommissioning/demolition Water Sampling Program, stack and ambient monitoring, reporting on EMP and reporting to EPA	Effective	2. Major	E. Unlikely	Medium 18	General Environmental Awareness training for all onsite staff. Specific reference to compliance and regulatory in Flinders Power Closure Environmental Management Plan, including reporting timetable.	Flinders Power/ demolition contractor	Through to demolition completion			
25	Environmental Services	Site environmental performance monitoring: decommissioning/demolition	Air emissions, ambient air and water, biennial assessment of seagrasses, ash pond leachate and groundwater conditions	Non compliance	Nil /Improper process in place	Procedural	3. Moderate	C. Likely	High 11	JSP400 APS Environmental water sampling at APS, JSP403 APS Environmental water sampling for SS, pH and salinity. Additional site/boundary monitoring required during decommissioning/demolition (eg HL_Vol and noise) IMS, regular monitoring reports (eg weekly) Monitoring programmes and regular reporting	Effective	3. Moderate	E. Unlikely	Low 21						
33	Environmental Services	Site operations: decommissioning/demolition	Noise	Nuisance	Public nuisance, complaints, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	Noisy activities (eg demolition) within set hours (7am-6pm weekdays, 8am-6pm weekends) boundary noise monitoring	Effective	3. Moderate	E. Unlikely	Low 21						
35	Environmental Services	Historical operations: post decommissioning/demolition	Discharges to soil/groundwater, landfills	Soil/groundwater contamination	Soil/groundwater contamination, clean up actions, enforcement actions	Environmental	2. Major	D. Possible	High 12	"closure" remediation plan and implementation regular monitoring of known groundwater contamination	Effective	3. Moderate	E. Unlikely	Low 21						
36	Environmental Services	Environmental incidents: decommissioning/demolition	Various	Environmental harm	Nil /Improper process in place	Procedural	2. Major	E. Unlikely	Medium 18	Emergency Response Plan (review for decommissioning/demolition activities) IMS Incident Management System	Effective	2. Major	E. Unlikely	Medium 18	Flinders Power and demolition contractor Closure Environmental Management Plans to be developed, incorporating specific measures for activities with potential to cause environmental harm. Site incident reporting mechanism to be used (IMS).	Flinders Power	Early/mid 2016			
37	Environmental Services	Environmental awareness: decommissioning/demolition	Awareness of aspects and general environmental duty	Non compliance	Nil /Improper process in place	Procedural	4. Minor	E. Unlikely	Low 23	Site Environmental Awareness Induction (reviewed for decommissioning/demolition activities) training and induction records (for decommissioning/ demolition induction)	Effective	4. Minor	E. Unlikely	Low 23						
38	Environmental Services	Environmental auditing (and forwarding summary to EPA): review requirement post operational phase	Various	Non compliance	Nil /Improper process in place	Procedural	3. Moderate	E. Unlikely	Low 21	Compliance calendar: to include decommissioning/demolition requirements (eg demolition approval conditions)	Effective	3. Moderate	E. Unlikely	Low 21						
39	Environmental Services	Community complaints: decommissioning/demolition	Amenity, community perception of organisation	Nuisance	Complaints, local action, media attention, regulatory involvement	Community	3. Moderate	C. Likely	High 11	Incident Management System, Site investigation, Directed response to complainant Complaints Register, Internal media advisor Reporting to management	Effective	3. Moderate	E. Unlikely	Low 21						
40	Environmental Services	Annual community consultation: post operation	Community perception of organisation	Non compliance	Nil /Improper process in place	Procedural	3. Moderate	E. Unlikely	Low 21	Compliance calendar	Effective	3. Moderate	E. Unlikely	Low 21						
41	Environmental Services	Potable water use: decommissioning/demolition	Excessive potable water use	Resource waste	Water overuse, financial cost, increased risk of Gulf contamination	Resource	3. Moderate	E. Unlikely	Low 21	Re-location of services prior to demolition	Effective	4. Minor	E. Unlikely	Low 23						

Flinders Power - Augusta Power Stations Closure: RISK REGISTER



Area 4a: Coal Stockpile & Rail Loop Area

as at 3-Mar-17

Risk Identification							Inherent Risk Rating			Residual Risk Rating					Proposed Mitigation of Risk Exposure / Improvement Actions			Target / Future Risk Rating		
ID	Category	Source	Pathway	Receptor	Potential Consequences	Exposure Type	Consequence	Likelihood	Rating & Priority	Current Approach or (Existing Controls)	Effectiveness	Consequence	Likelihood	Rating & Priority	Risk Reduction Treatment or Asset Improvement Strategic or Approved Action	Action Owner	Planned Completion Date	Consequence	Likelihood	Rating & Priority
16	Health, Safety & Security	Land management: herbicide use	Overspray of herbicide	Impact on flora	Damage to local flora, enforcement action	Environmental	4. Minor	D. Possible	Low 20	Restricted spraying to low wind speed wind speed estimates, records	Effective	4. Minor	E. Unlikely	Low 23						
17	Health, Safety & Security	Land management: heritage (decommissioning/demolition)	Damage to aboriginal and/or post settlement heritage items	Damage to heritage items	Damage to or loss of Native & Heritage items, sites	Heritage	3. Moderate	E. Unlikely	Low 21	Site Environmental Awareness Induction, confirmation of any potential heritage sites within impacted area	Effective	3. Moderate	E. Unlikely	Low 21						
18	Health, Safety & Security	Land management: landscaping (post decommissioning/demolition)	Maintaining & improving landscaping	Improved site amenity	Poor visual amenity, soil erosion, dust	Environmental				"Final" landforms and potential landscaping plan.	Effective									
19	Health, Safety & Security	Land management: pest plants and animals	Weed infestation, feral animals	Ecological impact, impact on non-target species	"Wasteland" effect, disease reservoirs,	Environmental	4. Minor	D. Possible	Low 20	Site inspections	Effective	4. Minor	E. Unlikely	Low 23						
22	Health, Safety & Security	Road traffic: decommissioning/demolition	Dust emissions	Air quality	Limit exceedence, public nuisance, complaints, enforcement action	Environmental	4. Minor	D. Possible	Low 20	Routine road washing. Dust control for unmade roads (use of dust suppressant, if required) Hi Vol/DustTrak dust monitoring on site boundary	Effective	4. Minor	E. Unlikely	Low 23						
23	Environmental Services	Environmental Compliance: decommissioning/demolition	Ensure awareness of environmental compliance	Environmental non compliance	Nil /Improper process in place	Procedural	2. Major	E. Unlikely	Medium 18	Annual compliance audit, daily APS reporting, monthly EPA reporting, environmental checklist for decommissioning/demolition, Surrender of EPA Licence Site Environmental Awareness Induction, S4/G29 Hazard Inspections, update induction material for decommissioning/demolition Water Sampling Program, stack and ambient monitoring, reporting on EMP and reporting to EPA	Effective	2. Major	E. Unlikely	Medium 18	General Environmental Awareness training for all onsite staff. Specific reference to compliance and regulatory in Flinders Power Closure Environmental Management Plan, including reporting timetable.	Flinders Power/demolition contractor	Through to demolition completion			
24	Environmental Services	Coal stockpile management: pre-decommissioning (utilisation of stockpile)	Coal dust	Air quality	Limit exceedence, public nuisance, complaints, enforcement action	Environmental	2. Major	C. Likely	High 7	Dust Management Plan, Sprays, Water truck, JSP 322 -paper mulch Project Group, IMS, daily checks and records wind speed/direction, ambient monitoring	Effective	4. Minor	E. Unlikely	Low 23						
25	Environmental Services	Site environmental performance monitoring: decommissioning/demolition	Air emissions, ambient air and water, biennial assessment of seagrasses, ash pond leachate and groundwater conditions	Non compliance	Nil /Improper process in place	Procedural	3. Moderate	C. Likely	High 11	JSP400 APS Environmental water sampling at APS, JSP403 APS Environmental water sampling for SS, pH and salinity. Additional site/boundary monitoring required during decommissioning/demolition (eg HI_Vol and noise) IMS, regular monitoring reports (eg weekly) Monitoring programmes and regular reporting	Effective	3. Moderate	E. Unlikely	Low 21						
26	Environmental Services	Ambient environmental monitoring: instrumentation calibration (decommissioning/demolition)	Environmental monitoring	Non compliance	Nil /Improper process in place	Procedural	3. Moderate	D. Possible	Medium 16	JSP400 APS Environmental water sampling at APS, Calibration program and records Maintenance routines	Effective	3. Moderate	E. Unlikely	Low 21						
33	Environmental Services	Site operations: decommissioning/demolition	Noise	Nuisance	Public nuisance, complaints, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	Noisy activities (eg demolition) within set hours (7am-6pm weekdays, 8am-6pm weekends) boundary noise monitoring	Effective	3. Moderate	E. Unlikely	Low 21						
34	Environmental Services	Site operations: decommissioning/demolition	Spillage of stored materials and wastes	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	IMS regular updating of actions, site inspections (required by ECA), S3.1 Chemwatch, S3.11 Storage, Handling and Disposal of solvents etc. Emergency Response Plan, Crisis Management Plan, IMS inspection records	Effective	3. Moderate	E. Unlikely	Low 21						

Risk Identification							Inherent Risk Rating			Residual Risk Rating					Proposed Mitigation of Risk Exposure / Improvement Actions			Target / Future Risk Rating		
ID	Category	Source	Pathway	Receptor	Potential Consequences	Exposure Type	Consequence	Likelihood	Rating & Priority	Current Approach or (Existing Controls)	Effectiveness	Consequence	Likelihood	Rating & Priority	Risk Reduction Treatment or Asset Improvement Strategic or Approved Action	Action Owner	Planned Completion Date	Consequence	Likelihood	Rating & Priority
35	Environmental Services	Historical operations: post decommissioning/demolition	Discharges to soil/groundwater, landfills	Soil/groundwater contamination	Soil/groundwater contamination, clean up actions, enforcement actions	Environmental	2. Major	D. Possible	High 12	"closure" remediation plan and implementation regular monitoring of known groundwater contamination	Effective	3. Moderate	E. Unlikely	Low 21						
36	Environmental Services	Environmental incidents: decommissioning/demolition	Various	Environmental harm	Nil /Improper process in place	Procedural	2. Major	E. Unlikely	Medium 18	Emergency Response Plan (review for decommissioning/demolition activities) IMS Incident Management System	Effective	2. Major	E. Unlikely	Medium 18	Flinders Power and demolition contractor Closure Environmental Management Plans to be developed, incorporating specific measures for activities with potential to cause environmental harm. Site incident reporting mechanism to be used (IMS).	Flinders Power	Early/mid 2016			
37	Environmental Services	Environmental awareness: decommissioning/demolition	Awareness of aspects and general environmental duty	Non compliance	Nil /Improper process in place	Procedural	4. Minor	E. Unlikely	Low 23	Site Environmental Awareness Induction (reviewed for decommissioning/demolition activities) training and induction records (for decommissioning/ demolition induction)	Effective	4. Minor	E. Unlikely	Low 23						
38	Environmental Services	Environmental auditing (and forwarding summary to EPA): review requirement post operational phase	Various	Non compliance	Nil /Improper process in place	Procedural	3. Moderate	E. Unlikely	Low 21	Compliance calendar: to include decommissioning/demolition requirements (eg demolition approval conditions)	Effective	3. Moderate	E. Unlikely	Low 21						
39	Environmental Services	Community complaints: decommissioning/demolition	Amenity, community perception of organisation	Nuisance	Complaints, local action, media attention, regulatory involvement	Community	3. Moderate	C. Likely	High 11	Incident Management System, Site investigation, Directed response to complainant Complaints Register, Internal media advisor Reporting to management	Effective	3. Moderate	E. Unlikely	Low 21						
40	Environmental Services	Annual community consultation: post operation	Community perception of organisation	Non compliance	Nil /Improper process in place	Procedural	3. Moderate	E. Unlikely	Low 21	Compliance calendar	Effective	3. Moderate	E. Unlikely	Low 21						
41	Environmental Services	Potable water use: decommissioning/demolition	Excessive potable water use	Resource waste	Water overuse, financial cost, increased risk of Gulf contamination	Resource	3. Moderate	E. Unlikely	Low 21	Re-location of services prior to demolition	Effective	4. Minor	E. Unlikely	Low 23						
43	Loco refueling area	Loco refueling area (decommissioning/demolition)	Historical oil/fuel spillage	Soil/groundwater contamination	Soil/groundwater contamination, clean up actions, enforcement actions	Environmental	3. Moderate	C. Likely	High 11	Review for any potential contamination	Effective	3. Moderate	E. Unlikely	Low 21						
44	Post production coal stockpile area	Runoff from coal stockpile area (post operation)	Water quality (runoff)	Water quality	Soil/groundwater contamination, clean up actions, enforcement actions	Environmental	3. Moderate	C. Likely	High 11	Collection: no direct marine discharges water monitoring programme	Effective	4. Minor	E. Unlikely	Low 23						
45	Post production coal stockpile area	Post operation: coal stockpile area	Fire (spontaneous combustion)	Air quality	Fire, smoke/particulate emissions public & personnel exposure.	Fire	3. Moderate	E. Unlikely	Low 21	Develop strategy to reduce risks of spon. com. In post operational coal stockpile area Monitoring by Flinders Power staff, IMS	Effective	4. Minor	E. Unlikely	Low 23						

Flinders Power - Augusta Power Stations Closure: RISK REGISTER



Area 4b: Ash Dam, ABC Lake & Polishing Pond

as at

3-Mar-17

Risk Identification							Inherent Risk Rating			Residual Risk Rating					Proposed Mitigation of Risk Exposure / Improvement Actions			Target / Future Risk Rating		
ID	Category	Source	Pathway	Receptor	Potential Consequences	Exposure Type	Consequence	Likelihood	Rating & Priority	Current Approach or (Existing Controls)	Effectiveness	Consequence	Likelihood	Rating & Priority	Risk Reduction Treatment or Asset Improvement Strategic or Approved Action	Action Owner	Planned Completion Date	Consequence	Likelihood	Rating & Priority
6	Heath, Safety & Security	Ash storage dam management: decommissioning/demolition	Dust emissions	Air quality	Adverse health impacts caused by particulate exposure General nuisance Adverse media / PR / Political Breach of licence conditions	Environmental	2. Major	B. Probable	Extreme 4	Maintenance work with dust suppression chemical coating of ASA surface levees, ASA long-term rehabilitation plan. Contractor/FPP daily inspections, real time ASA and ambient PM10 monitoring.	Marginal	2. Major	D. Possible	High 12	Ash Dam Rehabilitation Plan.	Flinders Power/ demolition contractor	Mid to late 2017			
7	Heath, Safety & Security		Water emissions (including seepage)	Water quality (carryover of ash, trace elements, nutrients, pH)	Contaminated water entering the Gulf, damage to Gulf waters, enforcement action	Environmental	2. Major	D. Possible	High 12	Refer to #6, seepage interception and ABC Lake pump-out, Surface Water Management Plan, routine inspections & water quality monitoring programme.	Effective	3. Moderate	E. Unlikely	Low 21	APS Dust Management Plan					
8	Heath, Safety & Security			Groundwater contamination	Contaminated water entering the Gulf, damage to Gulf waters, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	Refer to #7 & groundwater monitoring programme	Effective	4. Minor	D. Possible	Low 20						
9	Heath, Safety & Security		Visual impact	Amenity	Complaints, local action, media attention, regulatory involvement	Community	3. Moderate	C. Likely	High 11	Screening planting inspection records	Effective	4. Minor	D. Possible	Low 20						
10	Heath, Safety & Security		Breeding of midges	Amenity	Public health, nuisance, complaints, local action, media attention, regulatory involvement	Community	3. Moderate	C. Likely	High 11	Control of salinity Site inspections, long-term plan for ash storage area Weekly water sampling	Effective	4. Minor	E. Unlikely	Low 23						
11	Heath, Safety & Security	Ash storage dam leakage (eg levee breach): post decommissioning/demolition	Water quality	Marine contamination, mangrove destruction	Marine contamination, clean up actions, enforcement actions	Environmental	2. Major	E. Unlikely	Medium 18	Refer to #5, perimeter dam wall design, inspections Emergency Response Plan, Crisis Management Plan, IMS, Ash Storage Pond Closure Plan (need to consider long-term stability of levees) daily inspections, 3 monthly inspections, inspection records	Effective	2. Major	E. Unlikely	Medium 18						
12	Heath, Safety & Security			Land contamination	Soil/groundwater contamination, clean up actions, enforcement actions	Environmental	2. Major	E. Unlikely	Medium 18	Refer to #6, daily inspections, access controls, review risks from decommissioning processes (eg oil/hazardous materials removal from equipment): contain on site Emergency Response Plan, Crisis Management Plan, IMS daily inspections	Effective	2. Major	E. Unlikely	Medium 18						
14	Heath, Safety & Security	Fire on site: decommissioning/demolition	Contaminated fire water discharge	Water quality	Contaminated water entering the Gulf, damage to Gulf waters, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	Contaminated drains system, Emergency Response Plan, Crisis Management Plan, review options re: containment of fire water eg within ABC Lake in preference to discharge to ash pond storage. Maintenance routines, Station Instruction S1.7 (Spill Response), IMS Plant monitoring	Effective	2. Major	E. Unlikely	Medium 18	Fire management procedure to be referenced in Closure Environmental Management Plans and included in contractors Emergency Plan and Emergency Response Procedures.	Flinders Power/ demolition contractor	Early/mid 2016			
15	Heath, Safety & Security	Site security: decommissioning/demolition	vandalism	Site amenity	Site damage, injury to persons	Security	3. Moderate	D. Possible	Medium 16	Site security systems, Emergency Response Plan	Effective	3. Moderate	E. Unlikely	Low 21						
16	Heath, Safety & Security	Land management: herbicide use	Overspray of herbicide	Impact on flora	Damage to local flora, enforcement action	Environmental	4. Minor	D. Possible	Low 20	Restricted spraying to low wind speed wind speed estimates, records	Effective	4. Minor	E. Unlikely	Low 23						
18	Heath, Safety & Security	Land management: landscaping (post decommissioning/demolition)	Maintaining & improving landscaping	Improved site amenity	Poor visual amenity, soil erosion, dust	Environmental				"Final" landforms and potential landscaping plan.	Effective									
19	Heath, Safety & Security	Land management: pest plants and animals	Weed infestation, feral animals	Ecological impact, impact on non-target species	"Wasteland" effect, disease reservoirs,	Environmental	4. Minor	D. Possible	Low 20	Site inspections	Effective	4. Minor	E. Unlikely	Low 23						
22	Heath, Safety & Security	Road traffic: decommissioning/demolition	Dust emissions	Air quality	Limit exceedence, public nuisance, complaints, enforcement action	Environmental	4. Minor	D. Possible	Low 20	Routine road washing. Dust control for unmade roads (use of dust suppressant, if required) Hi Vol/Real Time dust monitoring on site boundary	Effective	4. Minor	E. Unlikely	Low 23						
23	Environmental Services	Environmental Compliance: decommissioning/demolition	Ensure awareness of environmental compliance	Environmental non compliance	Nil /Improper process in place	Procedural	2. Major	E. Unlikely	Medium 18	Annual compliance audit, daily APS reporting, monthly EPA reporting, environmental checklist for decommissioning/demolition. Surrender of EPA Licence Site Environmental Awareness Induction, S4/G29 Hazard Inspections, update induction material for decommissioning/demolition Water Sampling Program, stack and ambient monitoring, reporting on EMP and reporting to EPA	Effective	2. Major	E. Unlikely	Medium 18	General Environmental Awareness training for all onsite staff. Specific reference to compliance and regulatory in Flinders Power Closure Environmental Management Plan, including reporting timetable.	Flinders Power/ demolition contractor	Through to demolition completion			
25	Environmental Services	Site environmental performance monitoring: decommissioning/demolition	Air emissions, ambient air and water, biennial assessment of seagrasses, ash pond leachate and groundwater conditions	Non compliance	Nil /Improper process in place	Procedural	3. Moderate	C. Likely	High 11	JSP400 APS Environmental water sampling at APS, JSP403 APS Environmental water sampling for SS, pH and salinity. Additional site/boundary monitoring required during decommissioning/demolition (eg HI_Vol and noise) IMS, regular monitoring reports (eg weekly) Monitoring programmes and regular reporting	Effective	3. Moderate	E. Unlikely	Low 21						
26	Environmental Services	Ambient environmental monitoring: instrumentation calibration (decommissioning/demolition)	Environmental monitoring	Non compliance	Nil /Improper process in place	Procedural	3. Moderate	D. Possible	Medium 16	JSP400 APS Environmental water sampling at APS, Calibration program and records Maintenance routines	Effective	3. Moderate	E. Unlikely	Low 21						



Risk Identification							Inherent Risk Rating			Residual Risk Rating					Proposed Mitigation of Risk Exposure / Improvement Actions			Target / Future Risk Rating		
ID	Category	Source	Pathway	Receptor	Potential Consequences	Exposure Type	Consequence	Likelihood	Rating & Priority	Current Approach or (Existing Controls)	Effectiveness	Consequence	Likelihood	Rating & Priority	Risk Reduction Treatment or Asset Improvement Strategic or Approved Action	Action Owner	Planned Completion Date	Consequence	Likelihood	Rating & Priority
32	Environmental Services	Discharges into the marine environment: decommissioning/demolition (including use or removal of bulk chemicals)	Contaminated drains, SPELS	Water quality	Contaminated water entering the Gulf, damage to Gulf waters, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	Chemical, oil and fuel bunding, oil separation, stormwater segregation, monitoring of stormwater control systems, S3.10 (Ferrous sulphate), S3.11 (Solvents), S3.13 (Sodium hypochlorite), S3.15 (Waste oil), Pump outs, Decommissioning and demolition within containment (minimise direct discharges to marine environment) Emergency Response Plan, IMS water monitoring programme, site inspections	Effective	2. Major	E. Unlikely	Medium 18	Contaminated water handling & management procedure to be referenced in Closure Environmental Management Plans and included in contractors Emergency Plan and Emergency Response Procedures.	Flinders Power/demolition contractor	Early/mid 2016			
33	Environmental Services	Site operations: decommissioning/demolition	Noise	Nuisance	Public nuisance, complaints, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	Noisy activities (eg demolition) within set hours (7am-6pm weekdays, 8am-6pm weekends) boundary noise monitoring	Effective	3. Moderate	E. Unlikely	Low 21						
34	Environmental Services	Site operations: decommissioning/demolition	Spillage of stored materials and wastes	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	IMS regular updating of actions, site inspections (required by ECA), S3.1 Chemwatch, S3.11 Storage, Handling and Disposal of solvents etc. Emergency Response Plan, Crisis Management Plan, IMS inspection records	Effective	3. Moderate	E. Unlikely	Low 21						
35	Environmental Services	Historical operations: post decommissioning/demolition	Discharges to soil/groundwater, landfills	Soil/groundwater contamination	Soil/groundwater contamination, clean up actions, enforcement actions	Environmental	2. Major	D. Possible	High 12	"closure" remediation plan and implementation regular monitoring of known groundwater contamination	Effective	3. Moderate	E. Unlikely	Low 21						
36	Environmental Services	Environmental incidents: decommissioning/demolition	Various	Environmental harm	Nil /Improper process in place	Procedural	2. Major	E. Unlikely	Medium 18	Emergency Response Plan (review for decommissioning/demolition activities) IMS Incident Management System	Effective	2. Major	E. Unlikely	Medium 18	Flinders Power and demolition contractor Closure Environmental Management Plans to be developed, incorporating specific measures for activities with potential to cause environmental harm. Site incident reporting mechanism to be used (IMS).	Flinders Power	Early/mid 2016			
37	Environmental Services	Environmental awareness: decommissioning/demolition	Awareness of aspects and general environmental duty	Non compliance	Nil /Improper process in place	Procedural	4. Minor	E. Unlikely	Low 23	Site Environmental Awareness Induction (reviewed for decommissioning/demolition activities) training and induction records (for decommissioning/ demolition induction)	Effective	4. Minor	E. Unlikely	Low 23						
38	Environmental Services	Environmental auditing (and forwarding summary to EPA): review requirement post operational phase	Various	Non compliance	Nil /Improper process in place	Procedural	3. Moderate	E. Unlikely	Low 21	Compliance calendar: to include decommissioning/demolition requirements (eg demolition approval conditions)	Effective	3. Moderate	E. Unlikely	Low 21						
39	Environmental Services	Community complaints: decommissioning/demolition	Amenity, community perception of organisation	Nuisance	Complaints, local action, media attention, regulatory involvement	Community	3. Moderate	C. Likely	High 11	Incident Management System, Site investigation, Directed response to complainant Complaints Register, Internal media advisor Reporting to management	Effective	3. Moderate	E. Unlikely	Low 21						
40	Environmental Services	Annual community consultation: post operation	Community perception of organisation	Non compliance	Nil /Improper process in place	Procedural	3. Moderate	E. Unlikely	Low 21	Compliance calendar	Effective	3. Moderate	E. Unlikely	Low 21						
41	Environmental Services	Potable water use: decommissioning/demolition	Excessive potable water use	Resource waste	Water overuse, financial cost, increased risk of Gulf contamination	Resource	3. Moderate	E. Unlikely	Low 21	Re-location of services prior to demolition	Effective	4. Minor	E. Unlikely	Low 23						

Area 7: Hospital Creek

as at 3-Mar-17

Risk Identification							Inherent Risk Rating			Residual Risk Rating					Proposed Mitigation of Risk Exposure / Improvement Actions			Target / Future Risk Rating		
ID	Category	Source	Pathway	Receptor	Potential Consequences	Exposure Type	Consequence	Likelihood	Rating & Priority	Current Approach or (Existing Controls)	Effectiveness	Consequence	Likelihood	Rating & Priority	Risk Reduction Treatment or Asset Improvement Strategic or Approved Action	Action Owner	Planned Completion Date	Consequence	Likelihood	Rating & Priority
16	Heath, Safety & Security	Land management: herbicide use	Overspray of herbicide	Impact on flora	Damage to local flora, enforcement action	Environmental	4. Minor	D. Possible	Low 20	Restricted spraying to low wind speed wind speed estimates, records	Effective	4. Minor	E. Unlikely	Low 23						
18	Heath, Safety & Security	Land management: landscaping (post decommissioning/demolition)	Maintaining & improving landscaping	Improved site amenity	Poor visual amenity, soil erosion, dust	Environmental				"Final" landforms and potential landscaping plan.	Effective									
19	Heath, Safety & Security	Land management: pest plants and animals	Weed infestation, feral animals	Ecological impact, impact on non-target species	"Wasteland" effect, disease reservoirs,	Environmental	4. Minor	D. Possible	Low 20	Site inspections	Effective	4. Minor	E. Unlikely	Low 23						
22	Heath, Safety & Security	Road traffic: decommissioning/demolition	Dust emissions	Air quality	Limit exceedence, public nuisance, complaints, enforcement action	Environmental	4. Minor	D. Possible	Low 20	Routine road washing. Dust control for unmade roads (use of dust suppressant, if required) Hi Vol/DustTrak dust monitoring on site boundary	Effective	4. Minor	E. Unlikely	Low 23						
23	Environmental Services	Environmental Compliance: decommissioning/demolition	Ensure awareness of environmental compliance	Environmental non compliance	Nil /improper process in place	Procedural	2. Major	E. Unlikely	Medium 18	Annual compliance audit, daily APS reporting, monthly EPA reporting, environmental checklist for decommissioning/demolition, Surrender of EPA Licence Site Environmental Awareness Induction, S4/G29 Hazard Inspections, update induction material for decommissioning/demolition Water Sampling Program, stack and ambient monitoring, reporting on EMP and reporting to EPA	Effective	2. Major	E. Unlikely	Medium 18	General Environmental Awareness training for all onsite staff. Specific reference to compliance and regulatory in Flinders Power Closure Environmental Management Plan, including reporting timetable.	Flinders Power/demolition contractor	Through to demolition completion			
25	Environmental Services	Site environmental performance monitoring: decommissioning/demolition	Air emissions, ambient air and water, biennial assessment of seagrasses, ash pond leachate and groundwater conditions	Non compliance	Nil /improper process in place	Procedural	3. Moderate	C. Likely	High 11	JSP400 APS Environmental water sampling at APS, JSP403 APS Environmental water sampling for SS, pH and salinity. Additional site/boundary monitoring required during decommissioning/demolition (eg HL_Vol and noise) IMS, regular monitoring reports (eg weekly) Monitoring programmes and regular reporting	Effective	3. Moderate	E. Unlikely	Low 21						
32	Environmental Services	Discharges into the marine environment: decommissioning/demolition (including use or removal of bulk chemicals)	Contaminated drains, SPELS	Water quality	Contaminated water entering the Gulf, damage to Gulf waters, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	Chemical, oil and fuel bunding, oil separation, stormwater segregation, monitoring of stormwater control systems, S3.10 (Ferrous sulphate), S3.11 (Solvents), S3.13 (Sodium hypochlorite), S3.15 (Waste oil), Pump outs, Decommissioning and demolition within containment (minimise direct discharges to marine environment) Emergency Response Plan, IMS water monitoring programme, site inspections	Effective	2. Major	E. Unlikely	Medium 18	Contaminated water handling & management procedure to be referenced in Closure Environmental Management Plans and included in contractors Emergency Plan and Emergency Response Procedures.	Flinders Power/demolition contractor	Early/mid 2016			
33	Environmental Services	Site operations: decommissioning/demolition	Noise	Nuisance	Public nuisance, complaints, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	Noisy activities (eg demolition) within set hours (7am-6pm weekdays, 8am-6pm weekends) boundary noise monitoring	Effective	3. Moderate	E. Unlikely	Low 21						
35	Environmental Services	Historical operations: post decommissioning/demolition	Discharges to soil/groundwater, landfills	Soil/groundwater contamination	Soil/groundwater contamination, clean up actions, enforcement actions	Environmental	2. Major	D. Possible	High 12	"closure" remediation plan and implementation regular monitoring of known groundwater contamination	Effective	3. Moderate	E. Unlikely	Low 21						
36	Environmental Services	Environmental incidents: decommissioning/demolition	Various	Environmental harm	Nil /improper process in place	Procedural	2. Major	E. Unlikely	Medium 18	Emergency Response Plan (review for decommissioning/demolition activities) IMS Incident Management System	Effective	2. Major	E. Unlikely	Medium 18	Flinders Power and demolition contractor Closure Environmental Management Plans to be developed, incorporating specific measures for activities with potential to cause environmental harm. Site incident reporting mechanism to be used (IMS).	Flinders Power	Early/mid 2016			

Risk Identification						Inherent Risk Rating			Residual Risk Rating					Proposed Mitigation of Risk Exposure / Improvement Actions			Target / Future Risk Rating			
ID	Category	Source	Pathway	Receptor	Potential Consequences	Exposure Type	Consequence	Likelihood	Rating & Priority	Current Approach or (Existing Controls)	Effectiveness	Consequence	Likelihood	Rating & Priority	Risk Reduction Treatment or Asset Improvement Strategic or Approved Action	Action Owner	Planned Completion Date	Consequence	Likelihood	Rating & Priority
37	Environmental Services	Environmental awareness: decommissioning/demolition	Awareness of aspects and general environmental duty	Non compliance	Nil /Improper process in place	Procedural	4. Minor	E. Unlikely	Low 23	Site Environmental Awareness Induction (reviewed for decommissioning/demolition activities) training and induction records (for decommissioning/demolition induction)	Effective	4. Minor	E. Unlikely	Low 23						
38	Environmental Services	Environmental auditing (and forwarding summary to EPA): review requirement post operational phase	Various	Non compliance	Nil /Improper process in place	Procedural	3. Moderate	E. Unlikely	Low 21	Compliance calendar: to include decommissioning/demolition requirements (eg demolition approval conditions)	Effective	3. Moderate	E. Unlikely	Low 21						
39	Environmental Services	Community complaints: decommissioning/demolition	Amenity, community perception of organisation	Nuisance	Complaints, local action, media attention, regulatory involvement	Community	3. Moderate	C. Likely	High 11	Incident Management System, Site investigation, Directed response to complainant Complaints Register, Internal media advisor Reporting to management	Effective	3. Moderate	E. Unlikely	Low 21						
40	Environmental Services	Annual community consultation: post operation	Community perception of organisation	Non compliance	Nil /Improper process in place	Procedural	3. Moderate	E. Unlikely	Low 21	Compliance calendar	Effective	3. Moderate	E. Unlikely	Low 21						
41	Environmental Services	Potable water use: decommissioning/demolition	Excessive potable water use	Resource waste	Water overuse, financial cost, increased risk of Gulf contamination	Resource	3. Moderate	E. Unlikely	Low 21	Re-location of services prior to demolition	Effective	4. Minor	E. Unlikely	Low 23						

Area 8: Playford Power Stations

as at 3-Mar-17

Risk Identification							Inherent Risk Rating			Residual Risk Rating					Proposed Mitigation of Risk Exposure / Improvement Actions			Target / Future Risk Rating		
ID	Category	Source	Pathway	Receptor	Potential Consequences	Exposure Type	Consequence	Likelihood	Rating & Priority	Current Approach or (Existing Controls)	Effectiveness	Consequence	Likelihood	Rating & Priority	Risk Reduction Treatment or Asset Improvement Strategic or Approved Action	Action Owner	Planned Completion Date	Consequence	Likelihood	Rating & Priority
1	General	Office activities	Energy use	Resource use	Energy overuse	Resource	5. Insignificant	C. Likely	Low 22	waste disposal costs and recycling/salvage revenue	Effective	5. Insignificant	C. Likely	Low 22						
2	General	General waste management	General waste	Resource use	Excessive waste generation	Resource	4. Minor	C. Likely	Medium 17	Waste segregation JSP 320 Unloading and Handling of Rubbish Skips monitor re: contamination	Effective	5. Insignificant	E. Unlikely	Low 25						
3	General: equipment decommissioning	Industrial waste management (ex-asbestos) (Waste oil considered separately)	Industrial waste [local] storage and transport to site storage area	Waste disposal/recycling, soil/groundwater contamination	Improper waste disposal, contamination of waste destination, enforcement action	Waste	3. Moderate	C. Likely	High 11	Waste Management at APS, S3.8 Disposal Procedure for Aerosol cans etc., S3.11 Storage, Handling and Disposal of solvents etc. & S3.15 Storage, Handling and Disposal of waste oil JSP 320 Unloading and Handling of Rubbish Skips monitor to ensure clear identification, sampling/analysis, if required. Maintain waste disposal records (eg WTCs or WTFs)	Effective	3. Moderate	E. Unlikely	Low 21						
4	APS post production	Asbestos management	Asbestos removal, storage and disposal	Air quality	Airborne asbestos, enforcement action	Human Health	2. Major	D. Possible	High 12	S3.2 Asbestos Management System & site procedures, qualified contractor S3.7 Guidelines for the safe use of insulation of materials containing SMF's, Asbestos Register air monitoring, waste disposal records (WTCs/WTFs)	Effective	3. Moderate	E. Unlikely	Low 21						
5	General: decommissioning	Industrial Waste water (contaminated drains and ash)	Overflows	Marine pollution	Contaminated water entering the Gulf, damage to Gulf waters, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	JSP117 Drain cleaning & JSP228 Ash Pit cleaning, block drains, within work areas, that discharge directly to marine environment, if practicable. Emergency Response Plan, Spill response, IMS water monitoring programme, disposal records (WTCs/WTFs)	Effective	3. Moderate	E. Unlikely	Low 21						
13	Heath, Safety & Security	Implement contingency plan: decommissioning/de molition	environmental contingencies	Environmental harm	Nil /Improper process in place	Procedural	2. Major	E. Unlikely	Medium 18	Emergency response plans (reviewed annually): review for decommissioning /demolition activities (after project plan has been developed), Crisis Management Plan, Review response equipment and training Support procedures e.g. Incident Management System, Station Instruction S1.7 (Spill Response), S3.16 (Spill Reporting), S1.8 (Fire Reporting), S4/G29 Hazard inspections & JSP385 Use of emergency boat, IMS IMS	Effective	2. Major	E. Unlikely	Medium 18	Flinders Power and demolition contractor Closure Environmental Management Plans to be developed, incorporating specific measures for activities with potential to cause environmental harm	Flinders Power	Early/mid 2016			
14	Heath, Safety & Security	Fire on site: decommissioning/de molition	Contaminated fire water discharge	Water quality	Contaminated water entering the Gulf, damage to Gulf waters, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	Contaminated drains system, Emergency Response Plan, Crisis Management Plan, review options re: containment of fire water eg within ABC Lake in preference to discharge to ash pond storage. Maintenance routines, Station Instruction S1.7 (Spill Response), IMS Plant monitoring	Effective	2. Major	E. Unlikely	Medium 18	Fire management procedure to be referenced in Closure Environmental Management Plans and included in contractors Emergency Plan and Emergency Response Procedures	Flinders Power/ demolition contractor	Early/mid 2016			
15	Heath, Safety & Security	Site security: decommissioning/de molition	vandalism	Site amenity	Site damage, injury to persons	Security	3. Moderate	D. Possible	Medium 16	Site security systems, Emergency Response Plan	Effective	3. Moderate	E. Unlikely	Low 21						
16	Heath, Safety & Security	Land management: herbicide use	Overspray of herbicide	Impact on flora	Damage to local flora, enforcement action	Environmental	4. Minor	D. Possible	Low 20	Restricted spraying to low wind speed wind speed estimates, records	Effective	4. Minor	E. Unlikely	Low 23						
18	Heath, Safety & Security	Land management: landscaping (post decommissioning/de molition)	Maintaining & improving landscaping	Improved site amenity	Poor visual amenity, soil erosion, dust	Environmental				"Final" landforms and potential landscaping plan.	Effective									
19	Heath, Safety & Security	Land management: pest plants and animals	Weed infestation, feral animals	Ecological impact, impact on non-target species	"Wasteland" effect, disease reservoirs,	Environmental	4. Minor	D. Possible	Low 20	Site inspections	Effective	4. Minor	E. Unlikely	Low 23						
20	Heath, Safety & Security	Waste recycling area(s): decommissioning/de molition	Waste management	Resource use	Improper waste disposal, contamination of waste destination, enforcement action	Resource	3. Moderate	E. Unlikely	Low 21	Waste segregation (to improve recycling, re-use), Waste management Process Site Map, S3.11 Storage, Handling and Disposal of solvents etc. Determine if the area is adequate for decommissioning/demolition. Establish additional areas for staging of material prior to re-use on site and/or disposal. Control runoff (via containment pond(s)). Site inspections, routine visits by external recycling contractor, S3.7 Guidelines for the safe use of insulation materials containing SMF waste recycling records. Waste disposal records (WTCs and WTFs)	Effective	4. Minor	E. Unlikely	Low 23						
21	Heath, Safety & Security	Disposal of mercury-containing lighting (eg fluoro's): decommissioning	Landfill	Soil/groundwater contamination	Improper waste disposal, contamination of waste destination, enforcement action	Resource	4. Minor	E. Unlikely	Low 23	Waste segregation, managed by appropriate waste management company, Waste management Process Site Map, S3.8 Disposal Procedure for Aerosol cans, empty fluid drums, small batteries, permalubes and mercury globes. Provide labelled containers (eg 200L drums) for storage prior to removal. Waste disposal records (WTCs and WTFs)	Effective	5. Insignificant	E. Unlikely	Low 25						

Risk Identification							Inherent Risk Rating			Residual Risk Rating					Proposed Mitigation of Risk Exposure / Improvement Actions			Target / Future Risk Rating		
ID	Category	Source	Pathway	Receptor	Potential Consequences	Exposure Type	Consequence	Likelihood	Rating & Priority	Current Approach or (Existing Controls)	Effectiveness	Consequence	Likelihood	Rating & Priority	Risk Reduction Treatment or Asset Improvement Strategic or Approved Action	Action Owner	Planned Completion Date	Consequence	Likelihood	Rating & Priority
22	Health, Safety & Security	Road traffic: decommissioning/demolition	Dust emissions	Air quality	Limit exceedence, public nuisance, complaints, enforcement action	Environmental	4. Minor	D. Possible	Low 20	Routine road washing. Dust control for unmade roads (use of dust suppressant, if required) Hi Vol/DustTrak dust monitoring on site boundary	Effective	4. Minor	E. Unlikely	Low 23						
23	Environmental Services	Environmental Compliance: decommissioning/demolition	Ensure awareness of environmental compliance	Environmental non compliance	Nil /Improper process in place	Procedural	2. Major	E. Unlikely	Medium 18	Annual compliance audit, daily APS reporting, monthly EPA reporting, environmental checklist for decommissioning/demolition, Surrender of EPA Licence Site Environmental Awareness Induction, S4/G29 Hazard Inspections, update induction material for decommissioning/demolition Water Sampling Program, stack and ambient monitoring, reporting on EMP and reporting to EPA	Effective	2. Major	E. Unlikely	Medium 18	General Environmental Awareness training for all onsite staff. Specific reference to compliance and regulatory in Flinders Power Closure Environmental Management Plan, including reporting timetable.	Flinders Power/demolition contractor	Through to demolition completion			
25	Environmental Services	Site environmental performance monitoring: decommissioning/demolition	Air emissions, ambient air and water, biennial assessment of seagrasses, ash pond leachate and groundwater conditions	Non compliance	Nil /Improper process in place	Procedural	3. Moderate	C. Likely	High 11	JSP400 APS Environmental water sampling at APS, JSP403 APS Environmental water sampling for SS, pH and salinity. Additional site/boundary monitoring required during decommissioning/demolition (eg HI_Vol and noise) IMS, regular monitoring reports (eg weekly) Monitoring programmes and regular reporting	Effective	3. Moderate	E. Unlikely	Low 21						
32	Environmental Services	Discharges into the marine environment: decommissioning/demolition (including use or removal of bulk chemicals)	Contaminated drains, SPELS	Water quality	Contaminated water entering the Gulf, damage to Gulf waters, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	Chemical, oil and fuel bunding, oil separation, stormwater segregation, monitoring of stormwater control systems, S3.10 (Ferrous sulphate), S3.11 (Solvents), S3.13 (Sodium hypochlorite), S3.15 (Waste oil), Pump outs, Decommissioning and demolition within containment (minimise direct discharges to marine environment) Emergency Response Plan, IMS water monitoring programme, site inspections	Effective	2. Major	E. Unlikely	Medium 18	Contaminated water handling & management procedure to be referenced in Closure Environmental Management Plans and included in contractors Emergency Plan and Emergency Response Procedures.	Flinders Power/demolition contractor	Early/mid 2016			
33	Environmental Services	Site operations: decommissioning/demolition	Noise	Nuisance	Public nuisance, complaints, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	Noisy activities (eg demolition) within set hours (7am-6pm weekdays, 8am-6pm weekends) boundary noise monitoring	Effective	3. Moderate	E. Unlikely	Low 21						
35	Environmental Services	Historical operations: post decommissioning/demolition	Discharges to soil/groundwater, landfills	Soil/groundwater contamination	Soil/groundwater contamination, clean up actions, enforcement actions	Environmental	2. Major	D. Possible	High 12	"closure" remediation plan and implementation regular monitoring of known groundwater contamination	Effective	3. Moderate	E. Unlikely	Low 21						
36	Environmental Services	Environmental incidents: decommissioning/demolition	Various	Environmental harm	Nil /Improper process in place	Procedural	2. Major	E. Unlikely	Medium 18	Emergency Response Plan (review for decommissioning/demolition activities) IMS Incident Management System	Effective	2. Major	E. Unlikely	Medium 18	Flinders Power and demolition contractor Closure Environmental Management Plans to be developed, incorporating specific measures for activities with potential to cause environmental harm. Site incident reporting mechanism to be used (IMS).	Flinders Power	Early/mid 2016			
37	Environmental Services	Environmental awareness: decommissioning/demolition	Awareness of aspects and general environmental duty	Non compliance	Nil /Improper process in place	Procedural	4. Minor	E. Unlikely	Low 23	Site Environmental Awareness Induction (reviewed for decommissioning/demolition activities) training and induction records (for decommissioning/ demolition induction)	Effective	4. Minor	E. Unlikely	Low 23						
38	Environmental Services	Environmental auditing (and forwarding summary to EPA): review requirement post operational phase	Various	Non compliance	Nil /Improper process in place	Procedural	3. Moderate	E. Unlikely	Low 21	Compliance calendar; to include decommissioning/demolition requirements (eg demolition approval conditions)	Effective	3. Moderate	E. Unlikely	Low 21						
39	Environmental Services	Community complaints: decommissioning/demolition	Amenity, community perception of organisation	Nuisance	Complaints, local action, media attention, regulatory involvement	Community	3. Moderate	C. Likely	High 11	Incident Management System, Site investigation, Directed response to complainant Complaints Register, Internal media advisor Reporting to management	Effective	3. Moderate	E. Unlikely	Low 21						
40	Environmental Services	Annual community consultation: post operation	Community perception of organisation	Non compliance	Nil /Improper process in place	Procedural	3. Moderate	E. Unlikely	Low 21	Compliance calendar	Effective	3. Moderate	E. Unlikely	Low 21						
41	Environmental Services	Potable water use: decommissioning/demolition	Excessive potable water use	Resource waste	Water overuse, financial cost, increased risk of Gulf contamination	Resource	3. Moderate	E. Unlikely	Low 21	Re-location of services prior to demolition	Effective	4. Minor	E. Unlikely	Low 23						
44	Post production coal stockpile area	Runoff from coal stockpile area (post operation)	Water quality (runoff)	Water quality	Soil/groundwater contamination, clean up actions, enforcement actions	Environmental	3. Moderate	C. Likely	High 11	Collection: no direct marine discharges water monitoring programme	Effective	4. Minor	E. Unlikely	Low 23						
45	Post production coal stockpile area	Post operation: coal stockpile area	Fire (spontaneous combustion)	Air quality	Fire, smoke/particulate emissions public & personnel exposure.	Fire	3. Moderate	E. Unlikely	Low 21	Develop strategy to reduce risks of spon. com. In post operational coal stockpile area Monitoring by Flinders Power staff, IMS	Effective	4. Minor	E. Unlikely	Low 23						
46	Post production: coal conveyors	Coal conveyors	Coal dust (conveyors/transfers)	Air quality	Personnel exposure, limit exceedence, public nuisance, complaints, enforcement action	Environmental	3. Moderate	C. Likely	High 11	wash down of built up dust	Effective	5. Insignificant	E. Unlikely	Low 25						
47	Post production : coal bins	Coal bin storage	Coal dust	Air quality	Personnel exposure, limit exceedence, public nuisance, complaints, enforcement action	Environmental	3. Moderate	D. Possible	Medium 16	Wash down of built up dust ambient monitoring, maintenance records	Effective	3. Moderate	E. Unlikely	Low 21						
48			Fire/explosion	Air quality	Coal dust explosion	Fire	2. Major	D. Possible	High 12	Review risk assessments for decommissioning/demolition Emergency Response Plan, IMS	Effective	3. Moderate	E. Unlikely	Low 21						

Risk Identification							Inherent Risk Rating			Residual Risk Rating					Proposed Mitigation of Risk Exposure / Improvement Actions			Target / Future Risk Rating		
ID	Category	Source	Pathway	Receptor	Potential Consequences	Exposure Type	Consequence	Likelihood	Rating & Priority	Current Approach or (Existing Controls)	Effectiveness	Consequence	Likelihood	Rating & Priority	Risk Reduction Treatment or Asset Improvement Strategic or Approved Action	Action Owner	Planned Completion Date	Consequence	Likelihood	Rating & Priority
49	APS: post production	Coal plant washdown	Marine discharge	Water quality	Contaminated water entering the Gulf, damage to Gulf waters, enforcement action	Environmental	4. Minor	D. Possible	Low 20	Containment of washwater JSP 107 Bunker Washing water monitoring programme	Effective	4. Minor	E. Unlikely	Low 23						
50	APS: post production	Decommissioning/de molition	Oil spillage	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	3. Moderate	E. Unlikely	Low 21	Contaminated drain system, S1.7 Oil Spill Procedure, review and enhance containment options Emergency Response Plan, IMS Maintenance records	Effective	4. Minor	E. Unlikely	Low 23						
51	APS: post production	Decommissioning/de molition	Fuel oil spillage (eg gun malfunction)	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	3. Moderate	D. Possible	Medium 16	Operating controls, S1.7 Oil Spill procedure, contaminated drains Emergency Response Plan, IMS	Effective	3. Moderate	E. Unlikely	Low 21						
52	APS post production	Decommissioning/de molition	Seawater flow	Ecological impact (eg fauna loss)	Reduction/increase in number & abundance of local marine species	Environmental	3. Moderate	E. Unlikely	Low 21	Review options for cooling water channels (eg breach wall?)	Effective	3. Moderate	E. Unlikely	Low 21						
53	APS post production	Decommissioning/de molition	Contamination of condenser cooling water	Ecological impact	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	Review options for condensers (post production) visual	Effective	2. Major	E. Unlikely	Medium 18	Contaminated water handling & management procedure to be referenced in Closure Environmental Management Plans and included in contractors Emergency Plan and Emergency Response Procedures.	Flinders Power/ demolition contractor	Early/mid 2016			
54	APS post production	Boiler water drainage	Treated water discharge	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	4. Minor	D. Possible	Low 20	drainage into Ash pit?, Operating controls ambient water monitoring programme	Effective	4. Minor	E. Unlikely	Low 23						
59	APS post production	Fly ash/bottom ash handling systems: decommissioning/de molition	Spillage	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	2. Major	E. Unlikely		Flush ash systems to ash storage area water monitoring programme	Effective	4. Minor	E. Unlikely	Low 23						
60	APS post production	Fly ash re-use storage and handling area	Spillage	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	4. Minor	D. Possible		Empty and washdown plant Discharge to containment area	Effective	4. Minor	E. Unlikely	Low 23						
61	APS post production	Decommissioning/de molition	Contamination of flow to ash storage pond (eg oil)	Water quality	Spill entering ash disposal system, discharge to Gulf waters, enforcement action	Environmental	3. Moderate	D. Possible		Contaminated drains oil containment, oil handling, ash pond controls Ash storage dam inspections, Emergency Response Plan, IMS inspection records	Effective	4. Minor	E. Unlikely	Low 23						
64	APS post production	Oil removal	Oil spillage	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	3. Moderate	C. Likely	High 11	Station Instructions S1.7 Oil Spill procedure, S3.15 Storage, Handling and Disposal of waste oil, JSP051 Handling of full 200L oil drums & oil treatment plant, Contaminated drain system Emergency Response Plan, IMS water monitoring programme	Effective	4. Minor	E. Unlikely	Low 23						
65	APS post production	Waste oil storage	Oil spillage	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	3. Moderate	C. Likely	High 11	Bunded storage, S1.7 Oil Spill procedure, S3.15 Storage, Handling and Disposal of waste oil, JSP051 Handling of full 200L oil drums & oil treatment plant, Emergency Response Plan, IMS water monitoring programme	Effective	3. Moderate	E. Unlikely	Low 21						
66	APS post production			Soil/groundwater contamination	Soil/groundwater contamination, clean up actions, enforcement actions	Environmental	2. Major	E. Unlikely	Medium 18	Bunded storage Emergency Response Plan, Spill response, IMS	Effective	2. Major	E. Unlikely	Medium 18	Oil handling & spill management procedure to be referenced in Closure Environmental Management Plans and included in contractors Emergency Plan and Emergency Response Procedures. Ensure ready availability of oil spill kits on site and segregated waste storage/transfer area.	Flinders Power/ demolition contractor	Early/mid 2016			
67	APS post production		Fire	Air quality	Fire, personnel exposure.	Fire	3. Moderate	E. Unlikely	Low 21	Storage controls (minimise ignition sources) Emergency Response Plan, Crisis Management Plan, IMS	Effective	3. Moderate	E. Unlikely	Low 21						
68	APS post production	Discharges into the marine environment	Contaminated drains, SPELS	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	2. Major	D. Possible	High 12	Chemical, oil and fuel bunding, oil separation, maintenance of SPEL tanks, stormwater segregation, review of routine to inspect SPEL tanks Emergency Response Plan, IMS water monitoring programme, site inspections, SPEL cleanout routines	Effective	2. Major	E. Unlikely	Medium 18	Contaminated water handling & management procedure to be referenced in Closure Environmental Management Plans and included in contractors Emergency Plan and Emergency Response Procedures.	Flinders Power/ demolition contractor	Early/mid 2016			
69	APS post production	Oil -filled electrical equipment: decommissioning and removal	Leakage	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	Bunding, S1.7 Oil Spill procedure JSP271 NPS Step-up, Unit transformer & line isolator maintenance, Emergency Response Plan, Crisis Management Plan, IMS monitoring of oil properties (eg PCB content)	Effective	2. Major	E. Unlikely	Medium 18	Oil handling & spill management procedure to be referenced in Closure Environmental Management Plans and included in contractors Emergency Plan and Emergency Response Procedures. Ensure ready availability of oil spill kits on site and segregated waste storage/transfer area.	Flinders Power/ demolition contractor	Early/mid 2016			
70	APS post production			Soil/groundwater contamination	Soil/groundwater contamination, clean up actions, enforcement actions	Environmental	2. Major	E. Unlikely	Medium 18	Containment of oil-filled equipment Emergency Response Plan	Effective	2. Major	E. Unlikely	Medium 18	Oil handling & spill management procedure to be referenced in Closure Environmental Management Plans and included in contractors Emergency Plan and Emergency Response Procedures. Ensure ready availability of oil spill kits on site and segregated waste storage/transfer area.	Flinders Power/ demolition contractor	Early/mid 2016			
71	APS post production		Fire, explosion	Air quality	Fire, personnel exposure.	Fire	2. Major	E. Unlikely	Medium 18	Permits, containment	Effective	2. Major	E. Unlikely	Medium 18	Fire management procedure to be referenced in Closure Environmental Management Plans and included in contractors Emergency Plan and Emergency Response Procedures.	Flinders Power/ demolition contractor	Early/mid 2016			
79	APS post production	Demolition: general		Lead emissions (from lead-based paints)	Personnel exposure, limit exceedence, public nuisance, complaints, enforcement action	Environmental	3. Moderate	E. Unlikely	Low 21	lead paint testing, dust control processes Maintenance routines lead in paint testing (as required) and recorded	Effective	4. Minor	E. Unlikely	Low 23						
80	APS post production	Refrigeration/air conditioning servicing: decommissioning (as required)	Release of ozone depleting substances	Depletion of Ozone layer	Environmental harm, regulatory enforcement.	Environmental	3. Moderate	D. Possible	Medium 16	ARC licensed operators, ozone-depleting gas reclaim for decommissioned equipment Audits based on ARC requirements, JSP372 Air Conditioner Maintenance Records of ozone-depleting substances reclaim, etc	Effective	3. Moderate	E. Unlikely	Low 21						

Risk Identification							Inherent Risk Rating			Residual Risk Rating					Proposed Mitigation of Risk Exposure / Improvement Actions			Target / Future Risk Rating		
ID	Category	Source	Pathway	Receptor	Potential Consequences	Exposure Type	Consequence	Likelihood	Rating & Priority	Current Approach or (Existing Controls)	Effectiveness	Consequence	Likelihood	Rating & Priority	Risk Reduction Treatment or Asset Improvement Strategic or Approved Action	Action Owner	Planned Completion Date	Consequence	Likelihood	Rating & Priority
81	APS post production	Sewerage system: relocation of services (caused by decommissioning and demolition)	Sewage overflow	Water quality	Spill entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental	4. Minor	D. Possible	Low 20	Response to sewer chokes, JSP028 Sewage Pit pump and control repairs Emergency Response Plan, IMS	Effective	4. Minor	E. Unlikely	Low 23						
82	APS post production	PPS Seawall collapse/removal?	Loss of material into marine environment	Water Quality	Contaminated material entering the Gulf, damage to Gulf waters, enforcement action	Environmental	2. Major	E. Unlikely	Medium 18	Site inspections	Effective	2. Major	E. Unlikely	Medium 18						
83	APS post production	Earthworks	Project-specific: erosion and sedimentation	Project-specific: marine contamination	Soil/sediment/ash entering onsite drains system, discharge to Gulf waters, enforcement action	Environmental				Project-specific EMP (by contractor(s)). APS Change Request (Form C1-1), Change Management Procedure HSRP 330, erosion controls Project Management Manual Project-specific, water quality	Effective									
96	Playford Power Station demolition	Septic systems: decommissioning	Spillage	Water quality	HAZMAT scenario, water soil & groundwater contamination, clean up actions, enforcement actions	Environmental	4. Minor	D. Possible	Low 20	Arrange pump-outs	Effective	4. Minor	E. Unlikely	Low 23						
97	Playford Power Station demolition	Demolition: stacks	Contaminated brick work	Incorrect disposal	Improper waste disposal, contamination of waste destination, enforcement action	Waste	2. Major	E. Unlikely	Medium 18	Containment of waste material Sampling/analysis to determine disposal options Disposal records (eg WTCs/WTFs)	Effective	3. Moderate	E. Unlikely	Low 21						

**Appendix B – NPS Make Safe Manual**





everyone, every day, every job: Zero Harm

## Augusta Power Stations

### NPS Facility

### Make Safe Manual

Revision	Date	Description	Prepared by	Reviewed by	Approved by
0	29/1/16	Initial draft	J Moss	L Elies	
1	23/2/16	First revision	J Moss/L Elies	PMAPS	FM
2	29/2/16	Second revision – removed FM from activities	L Elies	PMAPS	FM
3	5/10/16	Corrections	K Smith		

#### Distribution List

TBA

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## 1 Introduction

The Northern Power Station has been operating in a flexible generating profile and has been able to respond to Market opportunities over the past few years. Since the application of Scenario 1 to NPS generation profiles and significant increase in Wind and Solar generation in the SA market, it has become increasingly difficult to maintain a commercial return on APS Electricity Production. This has resulted in a decision by the Alinta Board to close the Power Station in Q2 of 2016.

## 2 Closure Philosophy

The closures of the NPS site are outlined in the Lease Agreement and require Alinta to rehabilitate the APS site to its pre-developed condition. The Closure Plan seeks to facilitate the removal of the Power Station infrastructure to manage all of the Asset removal with no impact on the surrounding environs', meet all condition of the Lease Agreement and Legislative requirements.

Alinta acknowledges that the demolition and site rehabilitation works are deemed to be 'High Risk' work activities and will ensure appropriate management of this work in accordance with WHS Act 2012 and Regulations.

Alinta will ensure the key principle of 'Zero Harm' will be embedded in all activities associated with the Closure, Disposal and Remediation of the NPS site in accordance with the Lease Agreement.

## 3 Closure Strategy

The focus of this manual is to outline activities to be carried out to make the plant safe for disposal/demolition by third parties.

Key objectives are to remove all foreseeable hazards to the environment and salvage/demolition personnel during the remediation programme.

## 4 Responsibilities

The '**Plant manager**' will seek approval of Closure plans and allocate resources to implement the effective management and Make Safe activities of the NPS site prior to handover to the Facilities Manager and contractors for demolition/rehabilitation.

The '**Facilities Manager**' and the Project team will communicate the sequence and timing of activities in accordance with this plan to internal stakeholders and external parties and contractors as required. The FM will also lead a small team of experts to oversee the demolition and remediation activities.

## 5 Titles

Facilities Manager - FM  
Operations & Maintenance Manager – OMM  
Production Manager Augusta - PMA  
Scientific Services an Chemical Superintendent - SSCS

## 6 Boiler/Generator Unit

### 6.1 Turbine

#### 6.1.1 Turbine Oil System

**Asset Management Strategy:**

Remove hazards present to the environment and personnel from the Lube oil systems during decommissioning.

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Decommission operation.

Item	Plant Description	Proposed Actions	Responsibility
1	Lube Oil System	Drain all lube oil and seal oil to main tank	OMM
2	Lube Oil Tank	Monitor lube oil tank for potential leaks until handover to FM and contactors for final decommissioning	OMM
3	Oil pumps	Isolate electrical supplies to Oil Pumps	OMM
4	Seal oil tank	Drain the Seal Oil system.	OMM
5	Seal oil pumps	Isolate electrical supplies to Seal Oil Pumps	OMM

#### 6.1.2 Condenser Condensate side

**Asset Management Strategy:**

Eliminate the possibility of toxic gases and/or pressure build up in the system during decommissioning.

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Decommissioning operation.

Item	Plant Description	Proposed Actions	Responsibility
	Condenser and CEP's	Open all drain v/v's and open up condenser doors	OMM/OMM
	CEP Motor/Pump	Drain motor and Pump oil	OMM

6.1.3 **Condenser Seawater side**

**Asset Management Strategy:**

Minimise build-up of toxic gases from decomposed marine growth in the Condenser

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Decommissioning operation.

Item	Plant Description	Proposed Actions	Responsibility
1	Condenser Seawater side	Open all condenser drain valves once the condenser is isolated from the CW chamber	OMM
		Gas test for toxic gases	OMM

#### 6.1.4 Turbine Valves

**Asset Management Strategy:**

Minimise hazards to the environment and personnel in the Valve Control oil systems.

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Decommissioning operation.

ITEM	Plant Description	Proposed Actions	Responsibility
1	Major turbine v/v's	Isolate electrical supplies to Valves	OMM
1.1		Drain control oil actuators and pipework	OMM
2	HP and LP Bypass v/v's	Decommission and drain Control stations and accumulators	OMM

## 6.2 Generator

### 5.2.1 Generator Rotor

**Asset Management Strategy:**

Removing hazards to the environment and personnel from the Generators.

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Decommissioning operation.

Item	Plant Description	Proposed Actions	Responsibility
	Generator Casing	Isolate hydrogen from generator case and purge casing.	OMM

### 6.2.1 Hydrogen System

**Asset Management Strategy:**

Shutdown Hydrogen system to prevent any risk of hydrogen fuelled fire or explosion.

**Controls:**

The following Controls have been identified to prevent the deterioration of the Asset during the Care period.

Item	Plant Description	Proposed Actions	Responsibility
1	Hydrogen System	Shut down, isolate and purge Hydrogen system.	OMM/SSCS
2	Hydrogen System	Remove all Hydrogen supplies from site once second Unit is OOS	OMM

### 6.3 CW System

#### 6.3.1 Chambers

**Asset Management Strategy:**

Isolate the inlet/outlet channel water from the Condenser basements

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Decommissioning operation.

	Plant Description	Proposed Actions	Responsibility
	CW pumps	Fit blanks to the CW pump discharge pipe to isolate the chamber from the Condenser basement	OMM
	CW pump	Drain Oil from pump	OMM
	Taprogge recirc pumps	Drain oil from pumps	OMM
	Dosing pumps (hypo chlor/FE chlor)	Drain oil from pumps	OMM
	Chlorine Plant	Shut down and flush chemicals from lines.	SSCS



	Chlorine plant pipework	Drain and dry store.	SSCS
	Electrolysers	Drain and dry store.	SSCS
	Chlorine storage tank	Drain and dry store.	SSCS

### 6.3.2 CW pumps

**Asset Management Strategy:**

Remove environmental contaminants from CW pumps

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Decommissioning operation.

	Plant Description	Proposed Actions	Responsibility
5.3.2.1	CW pumps	Drain oil from CW p/p bearings.	OMM
	CW Pump Motors	Isolate motor heaters.	OMM
		Empty chamber, remove CW pumps and blank off CW pump discharge pipe	OMM

### 6.3.3 CW Screens

**Asset Management Strategy:**

Remove environmental contaminants from CW screens

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Decommissioning operation.

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
5.3.3.1	CW Screens	Drain oil from CW screen gearboxes not required by third party.	OMM

#### 6.3.4 CW Ducts

**Asset Management Strategy:**

Minimise build-up of toxic gases from decomposed marine growth in the Condenser

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Decommission operation.

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
5.3.3.1	CW Ducts	Isolate from CW chamber and pump dry	OMM

### 6.4 Feedwater System

#### 6.4.1 LP Feedwater

**Asset Management Strategy:**

Eliminate the possibility of gases and/or pressure build-up in the system.

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Decommissioning operation.

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	LP feedheaters	Open drains and doors	OMM
	GS Condenser	Open drains and doors	OMM

	LP Ejector	Open drains and doors	OMM
	Deaerator and DAFT	Open drains and doors	OMM
	DA off load circ pump	Drain oil from pump	OMM
	Ammonia dosing pump	Drain oil from pump	OMM

#### 6.4.2 Boiler feed Pumps

**Asset Management Strategy:**

Remove any hazards to the environment or personnel in the Boiler Feed pumps.

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Decommissioning operation.

	Plant Description	Proposed Actions	Responsibility
1	Boiler feed p/p & DAFT header	Isolate and drain system	OMM
		Drain oil from BFP's and GTD's	OMM

#### 6.4.3 HP Feedwater

**Asset Management Strategy:**

Minimise possibility of gases and/or pressure build up in the system.

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Decommissioning operation.

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	HP6 & 7	Drain HP Heater shell and store dry	OMM
		Drain Feedwater side and store dry	OMM

#### 6.4.1 Feed Make-up

**Asset Management Strategy:**

Drain systems to minimise internal corrosion.

**Controls:**

The following Controls have been identified to prevent the deterioration of the Asset during the Care period.

<b>Item</b>	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
1	Feedwater make up heater	Drain and store dry	OMM
2	Hot Condensate Storage tank	Drain and store dry	OMM
3	RFW Tanks	Drain and store dry	OMM

## 6.5 Boiler

### 6.5.1 Pressure parts

**Asset Management Strategy:**

Minimise possibility of gases and/or pressure build up in the system.

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Decommissioning operation.

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	Boiler Tubes & Superheaters	Boilers to be removed from service & drained hot.	OMM
		Open up all drains and vents.	OMM
	Valves - general	Drain oil from actuators	OMM
	Valves - Blr safety v/v's	Relieve spring tension	OMM
	Blowdown vessels	Ensure drain v/v's are open	OMM

#### 6.5.2 Furnace and Gas path

##### **Asset Management Strategy:**

To ensure furnace is clear of ash/slag deposits to minimise the potential for corrosion and environmental contamination during the Care period.

##### **Controls:**

The following Controls have been identified to prevent the deterioration of the Asset during the Care period.

<b>Item</b>	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
1	Furnace, super htr area and penthouse	Gas path to be washed including penthouse, All dead spaces including inside nose and either side of boiler throat, all ash hoppers to be cleaned & left dry	OMM
2	Water walls	Washed out after shut down and dry store	OMM
3	Economiser	Washed out after shut down and dry store	OMM

## 6.6 Draught Plant

### Asset Management Strategy:

Minimise any residual hazards remaining in the Draught Plant.

### Controls:

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Decommissioning operation.

	Plant Description	Proposed Actions	Responsibility
	Air heaters	Washed/Vaccuumed out after shut down and dry store	OMM
		Monitor lube oil system for potential leaks until handover to FM and contactors for final decommissioning	OMM
	ID fans	Washed/Vaccuumed out after shut down and dry store	OMM
		Monitor lube oil system for potential leaks until handover to FM and contactors for final decommissioning	OMM
	PA fans	Washed/Vaccuumed out after shut down and dry store	OMM
		Monitor lube oil system for potential leaks until handover to FM and contactors for final decommissioning	OMM
	SA fan	Washed/Vaccuumed out after shut down and dry store	OMM
		Monitor lube oil system for potential leaks until handover to FM and contactors for final decommissioning	OMM
	GR fans	Washed/Vaccuumed out after shut down and dry store	OMM
		Monitor lube oil system for potential leaks until handover to FM and contactors for final decommissioning	OMM

	ID, PA, SA GR Motors	Disconnect motor heater power supplies.	OMM
	Ducts/Dampers	Washed/Vaccuumed out	OMM
		Drain oil from damper/actuator gearboxes	OMM

## 6.7 Valves

### Asset Management Strategy:

Minimise any residual hazards or kinetic energy remaining in the valves on site.

### Controls:

The following controls have been identified to minimise the hazards to the environment and demolitions crews during remediation

	Plant Description	Proposed Actions	Responsibility
	Selected safety valves	Relieve all spring tensions based on individual risk assesments.	OMM

## 6.8 Main Pipework

### Asset Management Strategy:

Minimise any residual hazards remaining in the Pipework.

### Controls:

The following controls have been identified to minimise the hazards to the environment and demolitions crews during remediation

	Plant Description	Proposed Actions	Responsibility
	Main pipework from Boiler to Turbine	Open all vents and drains	OMM

## 6.9 ACW System

### 6.9.1 ACW Seawater Side

**Asset Management Strategy:**

Minimise build-up of toxic gases from decomposing marine growth in the ACW pipework and heat exchangers and remove environmental hazards.

**Controls:**

The following controls have been identified to eliminate the hazards to the environment and personnel during decommissioning.

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	Heat exchangers	Isolate and drain heaters of seawater	OMM
	ACW pumps	Drain oil from the bearings	OMM
	ACW system	Open all drains and vents	OMM
		Test for toxic gases	OMM/SSCS

### 6.9.2 ACW Fresh water Side

**Asset Management Strategy:**

Remove environmental hazards from the ACW system.

**Controls:**

The following controls have been identified to minimise the hazards to the environment and personnel during decommissioning.

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	Coolers	Drain all ACW coolers	OMM
	Pumps	Drain oil from pumps	OMM



## 6.10 Coal System

### 6.10.1 Train Unloading

**Asset Management Strategy:**

To minimise environmental hazards

**Controls:**

The following controls have been identified to minimise the hazards to the environment

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	Train unloader	Wash/Vacuum all hoppers, feeders and conveyor systems	OMM
	Unloader walls	Monitor water level in Unloader pit. Valve in wall to be opened periodically to relieve water pressure on walls. <b>Note: Needs to be condition included in transfer agreement.</b>	OMM
	Unloader sump	Unloader sump pump will need to be maintained. <b>Note: Once supply to Unloader is decommissioned, sump pump will not operate.</b>	OMM

### 6.10.2 Bins and Bunkers

**Asset Management Strategy:**

To minimise environmental hazards.

**Controls:**

The following controls have been identified to minimise the hazards to the environment and personnel during decommissioning.

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	Bins	Emptied and washed out	OMM
	Ploughs	Park ploughs in bypass position and wash down	OMM

		Drain gearbox oils	OMM
	Trippers	Wash down trippers	OMM
		Drain gearbox oils	OMM
	Bunkers	Empty and Wash out bunkers.	OMM

### 6.10.3 Conveyors

**Asset Management Strategy:**

Remove environmental, kinetic energy and fire hazards from the coal system.

**Controls:**

The following controls have been identified to minimise the hazards to the environment and personnel during decommissioning.

	Plant Description	Proposed Actions	Responsibility
	Conveyors	Shutdown Coal conveyor systems and wash down.	OMM
	Conveyors	Drain oil from gearboxes	OMM
		Release belt tensioners and lower weights to the ground and secure	OMM
	Coal line Fire System	Maintain fire detection and deluge systems, until Make safe is complete, in accordance with OEM.	OMM
	Coal line Fire System	Maintain fire detection and deluge systems in accordance with OEM.	OMM

### 6.10.4 Coal Feeders

**Asset Management Strategy:**

To minimise environmental hazards

**Controls:**

The following controls have been identified to minimise the hazards to the environment and personnel during decommissioning.

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	Mill feeders	Emptied out on shutdown and washed out for dry store.	OMM
	Mill feeders	Drain gearbox oils	OMM

### 6.10.5 Mills

**Asset Management Strategy:**

Remove environmental contaminants and kinetic energy from the coal Mills.

**Controls:**

The following controls have been identified to minimise the hazards to the environment and personnel during decommissioning.

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	Mills	Empty out Mills and wash out for dry store..	OMM
	Mills	Monitor lube oil system for potential leaks until handover to FM and contactors for final decommissioning	OMM
		Release mill roller spring tension	OMM

## 6.11 Fuel oil system

### 6.11.1 Fuel oil pumps

**Asset Management Strategy:**

Remove environmental contaminants from Fuel oil system

**Controls:**

The following controls have been identified to minimise the hazards to the environment and personnel during decommissioning.

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	Oil guns	Remove guns and store in Mills Workshop with supply lines capped and nozzles plugged.	OMM
	FO heaters	Drain fuel oil heaters	OMM
	FO pipework	Drain fuel oil pipework	OMM
	FO transfer p/p's	Drain bearing oil	OMM

#### 6.11.2 Fuel Oil Storage

##### **Asset Management Strategy:**

Remove environmental contaminants from Fuel oil system

##### **Controls:**

The following controls have been identified to minimise the hazards to the environment and personnel during decommissioning.

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	FO storage	Run stocks of FO to minimum level	PMA
		Monitor FO storage tanks and distribution system for potential leaks prior to handover to FM for contactor final decommissioning.	OMM
	FO Service Tank	Run stocks of FO to minimum level	PMA
		Clean storage tanks of residual oil to eliminate potential leak's to the environment during storage and de-commissioning. Inspect internally prior to removal.	FM

## 6.12 Ash System

### 6.12.1 Sluice Pumps

#### Asset Management Strategy:

Drain systems to minimise internal corrosion and marine growth.

#### Controls:

The following Controls have been identified to prevent the deterioration of the Asset during the Care period.

Item	Plant Description	Proposed Actions	Responsibility
1	HP & LP Sluice pump pipework	Drain all pipework and dry store.	OMM
2	LP Sluice Pumps	Isolate pumps	OMM
3	HP Sluice pumps	Drain pump bodies and dry store	OMM

### 6.12.2 Hoppers

#### Asset Management Strategy:

Reduce the risk of ash hang ups and internal hopper corrosion during an Care period

#### Controls:

The following Controls have been identified to prevent the deterioration of the Asset during the Care period.

Item	Plant Description	Proposed Actions	Responsibility
1	Third pass	Wash out hoppers after shutdown and dry store. Remove E v/v's	OMM
2	Primary Air Heater Hoppers	Wash out hoppers after shutdown and dry store. Remove E v/v's	OMM
3	Secondary Air Heater Hoppers	Wash out hoppers after shutdown and dry store. Remove e v/v's	OMM

4	Precip Hoppers	Remove E Valves, Wash down Precip and Hoppers, dry out with hopper heater for 24 hours, and isolate heaters and dry store.	OMM
5	Ash Transfer Plant	Empty and wash out vessels, dry store. Isolate all Electrical and Air Supplies to Ash Transfer plant.	OMM
6	Ash Silo	Empty and wash out vessels, dry store. Isolate all electrical supplies to Silo.	OMM

### 6.12.3 Precips

**Asset Management Strategy:**

Remove environmental contaminants from Precipitators

**Controls:**

The following controls have been identified to minimise the hazards to the environment and personnel during decommissioning.

	Plant Description	Proposed Actions	Responsibility
	Internals	Full wash of Precip internals. Open doors and allow to dry	OMM
	Rappers	Drain oil from rapper gearboxes	OMM

### 6.12.4 Deasher

**Asset Management Strategy:**

Remove environmental contaminants from Deashers

**Controls:**

The following controls have been identified to minimise the hazards to the environment and personnel during decommissioning.

	Plant Description	Proposed Actions	Responsibility
	De-asher	Remove the de-asher to the maintenance position and wash out for dry store. Barricade bottom of boiler to restrict access while de-asher removed.	OMM

	Crusher	Wash out ash crusher	OMM
	De-asher	Drain oil from hydraulic units	OMM
	Crusher	Drain oil from crusher gearbox	OMM

### 6.12.5 Ash Pit

**Asset Management Strategy:**

Maintain storm water control for the duration of decommissioning.

**Controls:**

The following controls have been identified to minimise the hazards to the environment and personnel during decommissioning.

	Plant Description	Proposed Actions	Responsibility
	Ash pit	Install a suitably sized submersible pump connected to one of the Ash Pond discharge pipes to cater for rain events prior to handover to FM and contractors for final decommissioning.	OMM

## 7 Electrical Systems

### 7.1 Control Systems

**Asset Management Strategy:**

Minimise the risk of residual power sources associated with the control systems.

**Controls:**

The following controls have been identified to minimise the hazards to the environment and personnel during decommissioning.

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	FCS Battery systems	Remove low voltage DC battery packs	OMM
	Fire Safety System	Remove DC inverter	OMM

## 7.2 Instrumentation

### **Asset Management Strategy:**

Eliminate the risk of electric shock from residual power sources

### **Controls:**

The following controls have been identified to minimise the hazards to the environment and personnel during decommissioning.

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	Instruments o2, press, temp, hydrogen analysers, cameras, oil flows, water quality, level,	Remove tag with KKS & Physical location and store in Instrument Workshop.	OMM
	AC Supply to FCS stations	Isolate AC supply to FCS stations	OMM
	Inverter Supply	Isolate and decommission Inverter supplies to Control System	OMM

## 7.3 DC System

### 7.3.1 220 V System

### **Asset Management Strategy:**

Minimise the risk of DC Arc flash and Lead/Acid hazards.

### **Controls:**



The following controls have been identified to minimise the hazards to the environment and personnel during decommissioning.

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	220V Batt Charger and bank	Decommission battery charger and remove batteries. Wash down battery stands and floors to remove residual sulphuric hazards.	OMM

### 7.3.2 110 V System

**Asset Management Strategy:**

Minimise the risk of DC Arc flash and– Lead/Acid hazards.

**Controls:**

The following controls have been identified to minimise the hazards to the environment and demolitions crews during remediation

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	110V Batt Charger and bank	Monitor 220v & 110v battery systems until handover to FM and contactors for final decommissioning. <i>To be included in contractor agreement; (Decommission battery charger and remove batteries once 275kV lines are decommissioned (line protection). Wash down battery stands and floors to remove residual sulphuric hazards.)</i>	OMM

### 7.3.3 24 V System

**Asset Management Strategy:**

Minimise the risk of DC Arc flash and– Lead/Acid hazards.

**Controls:**

The following controls have been identified to minimise the hazards to the environment and demolitions crews during remediation

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	24V Batt charger and bank	Decommission battery charger and remove batteries. Wash down battery stands and floors to	OMM

		remove residual sulphuric hazards.	
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## 7.4 HV

### 7.4.1 High Voltage Disconnections

**Asset Management Strategy:**

Apply a perimeter isolation to the 275/132kV switchyards to Eliminate risk of Electric Shock by disconnecting all HV supplies at major terminal points in switchyards.  
Eliminate the possibility of a transformer oil spill to the surrounding environment.

**Controls:**

The following controls have been identified to minimise the hazards to the environment and personnel during decommissioning.

	Plant Description	Proposed Actions	Responsibility
	275kV supply	Maintain protection systems for 275kV system until handover to FM to arrange disconnection agreement with Electrenet	OMM
	132kV	Disconnect from House transformer	OMM

## 7.5 Switchboards

### 7.5.1 6.6 kv

**Asset Management Strategy:**

To remove any kinetic energy stored in the 6.6kV switchgear

**Controls:**

The following controls have been identified to minimise the hazards to the environment and personnel during decommissioning.

	Plant Description	Proposed Actions	Responsibility
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	6.6 Breakers	Rack out breakers and discharge spring tension.	OMM
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## 7.6 Transformers

### Asset Management Strategy:

Eliminate the possibility of a transformer oil spill to the surrounding environment.

### Controls:

The following controls have been identified to minimise the hazards to the environment and personnel during decommissioning.

	Plant Description	Proposed Actions	Responsibility
	275kV Transformer	Isolate 275kV at connection point at switchyard.	OMM
		<p>Monitor all transformers for potential leaks until handover to FM and contractors for final decommissioning.</p> <p><i>To be included in contractor agreement; (Drain all transformer oil and box up transformer case )</i></p>	OMM
	132kV Transformer (House)	<p>Monitor all transformers for potential leaks until handover to FM and contractors for final decommissioning.</p> <p><i>To be included in contractor agreement; (Drain all transformer oil and box up transformer case )</i></p>	OMM

## 7.7 Diesel Generators

### Asset Management Strategy:

Remove the Diesel Generators from service

### Controls:

The following Controls have been identified to prevent the deterioration of the Asset during the Care period.

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	Diesel Generators	<p>Monitor Diesel Gensets for potential leaks until handover to FM and contractors for final decommissioning.</p> <p><i>To be included in contractor agreement; (Remove Gensets from service)</i></p>	OMM

## 8 Station Auxilliaries

### 8.1 Aux blr

**Asset Management Strategy:**

Remove any remaining residual contaminants

**Controls:**

The following controls have been identified to minimise the hazards to the environment and personnel during decommissioning.

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	Aux Boiler Fuel Oil Tank	<p>Monitor Aux Boiler FO system for potential leaks until handover to FM and contractors for final decommissioning.</p> <p><i>To be included in contractor agreement; (Drain Aux Boiler FO tank)</i></p>	OMM

### 8.2 Compressed Air System

**Asset Management Strategy:**

Shut down assets and depressurise the system and remove environmental contaminants

**Controls:**

The following controls have been identified to minimise the hazards to the environment and personnel during decommissioning.

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	Air compressors	<p>Monitor Compressors for potential leaks until handover to FM and contractors for final decommissioning.</p> <p><i>To be included in contractor agreement; (Decommission compressors and separators)</i></p>	FM

### 8.3 Water treatment plant

**Asset Management Strategy:**

Remove any remaining residual contaminants

**Controls:**

The following controls have been identified to minimise the hazards to the environment and demolitions crews during remediation

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	Reverse Osmosis Plant	Decommission and store in accordance with OEM recommendation.	OMM/SSCS
	Water treatment Plant	<p>Drain all vessels, remove all resins, chemical and dispose of. Dry store all tanks and vessels.</p> <p>Remove all Resin and put to land fill.</p>	OMM/SSCS

### 8.4 Fire protection System

**Asset Management Strategy:**

Decommission fire protection system and remove environmental contaminants

**Controls:**

The following controls have been identified to minimise the hazards to the environment and demolitions crews during remediation

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	Fire feedwater	Isolate town water to fire pumps and drain all mainfolds	OMM
	Fire Deluge System	Drain fire system at fire pump discharge and at each deluge system.	OMM
	Diesel Fire Pump	Decommission, drain fuel, engine oil and coolant	OMM
	Electric fire pumps	Isolate and decommission	OMM
	Fire detection system	Isolate and decommission fire detection system including the removal of DCP lead acid batteries.	OMM
	Fire Halon systems	Decommission and remove Halon cylinders from control room under floor system.	OMM
	Vesda detection system	Decommission and remove backup batteries.	OMM
	Portable fire extinguishers	Monitor/maintain all fire extinguishers until handover to FM and contractors for final decommissioning.  <i>To be included in contractor agreement; (Remove all fire extinguishers for site and dispose of)</i>	OMM

## 8.5 Cranes and Lifts

### Asset Management Strategy:

Decommission and de-register lifts and cranes in preparation for demolition

### Controls:

The following controls have been identified to minimise the hazards to the environment and demolitions crews during remediation

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
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	All Lifts	Maintain operation of Turbine Hall and Boiler lifts until handover to FM and contactors for decommissioning.  <b>To be included in contractor agreement; All lifts to be decommissioned.</b>	OMM
	NPS Cranes	Monitor all cranes and hoists for potential oil leaks prior to handover to FM and contractors for decommissioning. <b>To be included in contractor agreement; (Drain oil from all cranes and hoist gearboxes and decommission)</b>	OMM

## 8.6 TW and Drains system

### Asset Management Strategy:

### Controls:

The following controls have been identified to minimise the hazards to the environment and demolitions crews during remediation

	Plant Description	Proposed Actions	Responsibility
	Contaminated Drains Pit and associated pumps	Maintain in normal operation. This ensures any run off from rain event do not carry any pollutants into the surrounding environment without being removed in the contaminated drains pits until handover to FM and contractors for decommissioning. Note: Once supply to CW switch room is decommissioned, the oil skimmer in the sump will no longer operate. <b>To be included in contractor agreement; (Decommission the contaminated drains system and settling pond)</b>	OMM
	Condenser Sumps	Installation of temporary submersibles needed to maintain sumps dry if required. Note: Once Turbine 415V boards are decommissioned, sump pumps will no longer operate.	OMM

## 8.7 Stack

### Asset Management Strategy:

Ensure we meet aviation standards of Stack lighting after Closure

### Controls:

The following controls have been identified to minimise the hazards to the environment and demolitions crews during remediation

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	Stack	Provide alternative lighting of the stack to comply with CASA minimum standard for Aviation requirements	OMM

## 9 Services

### 9.1 Workshops

**Asset Management Strategy:**

Minimise any hazards that may impact on demolition crews and chemical/gas hazards to surrounding environs.

**Controls:**

The following controls have been identified to minimise the hazards to the environment and demolitions crews during remediation

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	Tubemakers Storage shed	Inventory and remove all plant tools and equipment for disposal.  Salvage all materials held in store.  Review and approve contractor demolition plan including sewage system	OMM



		decommissioning and site rehabilitation.	
	Garage Workshop	Decommission all Electrical supplies, town water and black water systems to workshop.  Inventory and remove all plant tools and equipment for disposal.	OMM
	Mitsubishi Spares Shed	Decommission all Electrical supplies, town water systems to store.  Remove all stock and spares for disposal.	OMM
	Cylinder Store Compound	Remove all stock of gas cylinders and return to suppliers.	OMM
	Coal Line and Electrical Workshop	Maintain Electrical supplies, town water and black water systems to workshop for third party transfer.  Inventory and remove all plant tools and equipment for disposal.	OMM
	Mills Workshop	Decommission all Electrical supplies, town water and black water systems to workshop.  Inventory and remove all plant tools and equipment for disposal.	OMM
	Plant Workshop	Decommission all Electrical supplies, town water and black water systems to workshop.  Inventory and remove all plant tools and equipment for disposal.	OMM
	Plant Tools and equipment disposal	Commission an auction house to promote and conduct a plant tools and equipment disposal on site on behalf of Alinta.	OMM
	Residual plant tools and equipment	Non disposible item to be scrapped and removed from site by merchant.	OMM

## 9.2 Heavy machine and Mobile Plant

**Asset Management Strategy:**

Minimise any hazards that may impact on demolition crews

**Controls:**

The following controls have been identified to minimise the hazards to the environment and demolitions crews during remediation

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	Heavy Plant	Inventory heavy plant items and place on consignment with Heavy Machinery reseller. This to be done in parallel with Dozing operations on the residual coal stocks held on APS stockpile.	OMM
	Mobile Plant	Inventory mobile plant items and place on consignment with Heavy Machinery reseller.	OMM
	Light Vehicle	Develop a light vehicle return strategy as vehicle leases expire, sufficient vehicle to conduct Care to Closure activities, return all vehicles at the commencement of demolition phase.	OMM

### 9.3 Admin

**Asset Management Strategy:**

Minimise any hazards that may impact on demolition crews

**Controls:**

The following controls have been identified to minimise the hazards to the environment and demolitions crews during remediation

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	PA system throughout the workshop, offices, station and general site.	Required for site communications, emergency notices and evacuations by skeleton staff.	OMM

### 9.4 Document information and management

**Asset Management Strategy:**

**Controls:**

The following controls have been identified to minimise the hazards to the environment and demolitions crews during remediation

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	Documents	Determine what data is required to be stored	OMM
		Determine where the data will be stored	OMM
	Historical interest data	Determine who would be interested in taking this	PMAPS
	Pressure Vessel registration	Advise Worksafe SA when plant is decommissioned	OMM

**9.5 Security**

**Asset Management Strategy:**

To continue site security until such time as Third parties take control.

**Controls:**

The following controls have been identified to minimise the hazards to the environment and demolitions crews during remediation

	<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
	Security	Maintain Security contract	OMM

**10 Infrastructure of Interest**

The following infrastructure and plant has been identified as possibly of Interest to Third Party users after Closure.

## 10.1 CW System

### Asset Management Strategy:

To identify the system requirements of the CW plant for continued use by third party

### Assumptions

Third party will own, operate and maintain CW infrastructure including power supplies and EPA license requirements

	Plant Description	Consequential Plant	Responsibility
1	Sluice, ACW and Sundrop pumps	Power supply – 6.6kV/415v transformer will be decommissioned as part of the demolition process. Alternative power supply will need to be established to continue operation	OMM/Third Party
2	Contaminated drains system	To ensure any contaminant spillage is prevented from entering the surrounding environs. The transfer pump pit will remain connected to the 11kV ring feed however the transfer pumps at the Contaminated drains settling pond is currently fed from the town water switch room which will be decommissioned. Alternative power supply will need to be established at the settling pond for this system to remain operational	OMM/Third Party

## 10.2 Workshops

### Asset Management Strategy:

To identify the system requirements of the Workshops at NPS for continued use by third party

### Assumptions

Third party will own, operate and maintain Workshop buildings including power supplies, Town water and Black water system

	Plant Description	Consequential Plant	Responsibility
	Workshops	Town water reticulation will need to be dispersed between third parties with separation of metering points. Black water system backbone will need to be retained Existing Power supplies may be disconnected during demolition, 11kV /415v pad mount will	OMM/Third Party

		need to be installed at the WTP to supply the Mech workshop. Existing 11kV /415v pad mount power supply to Electrical workshop should remain if required	
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### 10.3 Water storage tanks

**Asset Management Strategy:**

To identify the functionality requirements of the Town Water storage tanks for continued use by third party

**Assumptions**

Third party will own, operate and maintain Town Water storage tanks including water connection and agreement with SA Water

	<b>Plant Description</b>	<b>Consequential Plant</b>	<b>Responsibility</b>
	Town water storage tanks	Town water supply from SA Water Alternative power supply for TW switchroom and associated pumps will be required to keep this plant operational	OMM/Third Party

### 10.4 PPS Diesel Fire pumps

**Asset Management Strategy:**

To identify the functionality requirements of the PPS Fire diesel pumps for continued use by third party

**Assumptions**

Third party will own, operate and maintain PPS Fire Diesel pumps including power supplies and EPA license requirements

	<b>Plant Description</b>	<b>Consequential Plant</b>	<b>Responsibility</b>
	PPS Fire Diesel pumps	Diesel pumps are a standalone system and can be plumbed to suit delivery where required	OMM/Third Party

## 11 Appendix

### 11.1 Legal and other Requirements

#### 11.1.1 Legislation and Strategies

**Management Strategy:**

Comply with all Legislation and Lease agreements during the Closure/remediation process

**Controls:**

Item	Proposed Actions	Responsibility
1	Northern/Playford Generating Plant Lease	PMAPS
2	Northern/Playford Land Lease	PMAPS
3	Environmental Compliance Agreement	PMAPS
4	SA Generation Licence	PMAPS
5	EPA Licences	PMAPS
6	AEMO Certification	PMAPS
7	Pressure Vessel Registrations	PMAPS
8	Crane Registrations	PMAPS
9	WHS Act & Regulations	PMAPS
10	Code of Practice – Demolition Work	PMAPS

**11.1.2 Alinta Policies**

**Management Strategy:**

**Controls:**

<b>Item</b>	<b>Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
1	Compliance Guideline: HSSE-019 Demolition and Decommissioning	Adhere to Alinta Policy	PMAPS

**11.2 References**

<b>Item</b>	<b>Document</b>	<b>Responsibility</b>
1	Care to Closure Risk Assessment	PMAPS
2	NPS Care to Closure Plan	PMAPS
3	PPS Hibernation Manual	PMAPS
4	PPS Closure Manual	PMAPS
5	NPS Lube schedules	PMAPS
6	Inspection and Audit sheet	PMAPS
7	APS Sewerage and Septic systems (Sharepoint)	PMAPS
8	APS Contaminated Drains system (Sharepoint)	PMAPS
9	APS Transmission line layout (Sharepoint)	PMAPS

### 11.3 Project Plan

### 11.4 NPS Administration

#### 11.4.1 NPS Isolations

**Asset Management Strategy:**

To wind back plant and system isolations to Perimeter isolations/disconnections

**Controls:**

The following controls have been identified to minimise the hazards to the environment and demolitions crews during remediation

Item	Proposed Actions	Responsibility
Resource plan	Track actions against plan	OMM

#### 11.4.2 NPS Closure Audit

**Asset Management Strategy:**

To provide an Auditable record of controls put in place to render the site as safe as reasonably practical for salvage/demolition

**Controls:**

The following Controls have been identified to

Item	Proposed Actions	Responsibility
1	Raise work orders for each control action	OMM



2	Complete Inspection & Audit sheets as each system is made safe.	OMM
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## 11.5 NPS Residual Risks

### Management Strategy:

To highlight to the salvage/demolition third parties any Residual risks remaining that are beyond the Alinta Energy Closure workscope

Item	Residual Risks	Responsibility
Stack	Aviation lighting requirements will need to be met until the stack is demolished	PMAPS
Boiler structure	Aviation lighting requirements will need to be met until the boiler is demolished	PMAPS
Boiler burners	Asbestos sheet gaskets exists between each burner and the boiler front (48 in total).	PMAPS
6.6 Breakers	Contain asbestos backing boards	PMAPS
Air Heaters	Bearing oil baths will contain oil	PMAPS
Mill Spring pits	The Gerb springs supporting the Mills contain a thick composite oil in the damper packs	PMAPS
Underground Fuel tanks	There is an underground petrol tank at the SE corner of the NPS Store	PMAPS
Transformers	Some of the 415V transformers contain Freon gas	PMAPS
Fire deluge system	There are some mercury switches used in the Fire deluge systems	PMAPS

Generator circuit breakers	The generator CB's contain SF6 gas	PMAPS
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DRAFT

**Appendix C – PPS Closure Manual**



everyone, every day, every job: Zero Harm

## Augusta Power Station

## Playford Facility

## Closure Manual

Revision	Date	Description	Prepared by	Reviewed by	Approved by
A	1/9/15	First Draft	J Moss	L Elies	K Maule
B	24/10/16	Updated	K Maule	K Maule	K Maule
C					

### Distribution List

Augusta Management Team

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## 1 Introduction

The Playford Power Station began operation in the early 1960's as a Base load Station through to the late 1980's. It then began operating as reserve generation for peak demand periods through to 2012. PPS was then placed into Hibernation on a 90 day recall. With the continuing market supply from Wind and Solar generation it was announced in 2015 that Playford, along with NPS, is no longer required and will be Shutdown and Decommissioned and the site Remediated in line with the Generating Lease Agreement.

## 2 Closure Philosophy

The Closure plan seeks to facilitate the removal of the Power Station infrastructure, to manage all of the Asset removal with no impact on the surrounding environs', meet all condition of the Lease Agreement and Legislative requirements.

Alinta acknowledges that the demolition and site rehabilitation works are deemed to be 'High Risk' work activities and will ensure appropriate management of this work in accordance with WHS Act 2012 and Regulations.

Alinta will ensure the key principle of 'Zero Harm' will be embedded in all activities associated with the Closure, Disposal and Remediation of the APS site in accordance with the Lease Agreement.

## 3 Closure Strategy

The Closure Strategy will be to remove all foreseeable hazards remaining at PPS to make the plant Safe to the environment and Salvage/Demolition personnel during the remediation programme, by completing the activities outlined in this document.

## 4 Responsibilities

The '**Facilities Manager**' will seek approval of Closure plans and allocate resources to implement the effective management and closure of the PPS site to meet the lease agreement. Communicate the sequence and timing of activities in accordance with this plan to internal stakeholders and external parties as required.

The '**Facilities Remediation Project Manager**' will consult and liaise with the Demolition and Remediation contractors on site and will be supported by a number of Technical Specialists and Contract Administrators.

The '**Facilities Safety and Environment Manager**' will develop the framework for 'High Risk' demolition works and ensure subcontractors comply with all legislative requirements associated with the remediation works

## 5 PPS Closure

### 5.1 Turbine / Generator

#### 5.1.1 Turbine

##### 5.1.1.1 Lube Oil Systems

**Asset Management Strategy:**

Minimise residual hazards remaining in the Lube oil systems.

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

#### TG Lube Oil systems

Plant Description	Proposed Actions	Responsibility
Main Oil tank	Inspect/Remove any residual oil from the main oil tanks	Plant Manager Augusta (PMA) - Complete
Lube oil pipework	Inspect/Remove any residual oil from the lube oil pipework system.	PMA - Complete
Oil centrifuges	Drain gearbox oil and empty oil from bowl	PMA - Complete

##### 5.1.1.2 Seal Oil Systems

**Asset Management Strategy:**

Minimise residual hazards remaining in the Seal oil systems.

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

#### Seal Oil system

Plant Description	Proposed Actions	Responsibility
Seal Oil tank	Inspect/Remove any residual oil from the Seal oil tanks	PMA - Complete

Seal oil pipework	Inspect/Remove any residual oil from the Seal oil pipework system.	PMA - Complete
Seal oil vac p/p's	Drain oil from p/p's	PMA - Complete

### 5.1.2 Condenser Sea Side

#### Asset Management Strategy:

Minimise build up of toxic gases from decomposed marine growth in the Condenser

#### Controls:

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

Plant Description	Proposed Actions	Responsibility
Condenser water boxes	Open doors and drains on condensers and air dry	PMA - Complete
	Check for gases in water boxes prior to demolition	McMahon Services Aust. (MSA)

### 5.1.3 Condenser Condensate Side

#### Asset Management Strategy:

Minimise the risk of build up of gases in this space

#### Controls:

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.



<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
EE Condensers	Open up condensate drains	PMA - Complete
Stal condensers	Open up drains	PMA - Complete
Condensate gases	Check for gases in condensate space prior to demolition	MSA

#### 5.1.4 Turbine Valves

**Asset Management Strategy:**

Minimise residual hazards remaining in the Valve Control oil systems.

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
Turbine Stop valves	Drain all control oil	PMA - Complete
Turbine Throttle valves	Drain all control oil	PMA - Complete

#### 5.1.5 Generator

**Asset Management Strategy:**

Prepare Generators for demolition

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
Generator	Remove all access doors and open to atmosphere	PMA - Complete
	Check for gases in generator space prior to demolition	MSA
Exciter breaker	Release kinetic energy in exciter breaker	PMA - Complete

**5.1.6 Turbine Auxiliaries****Asset Management Strategy:**

Eliminate the possibility of gases and/or pressure build up in the system during demolition

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
EE DC Htr and DC htr ext p/p's	Open all drains and vents	PMA - Complete
	Drain oil from p/p bearings	PMA - Complete
Shunt DA p/p's	Drain oil from bearings	PMA - Complete
EE LP1 htr	Open all drains and vents	PMA - Complete

Stal Gland leakage condensers, DC Htr and DC htr ext p/p's	Open all drains and vents	PMA - Complete
Stal Gland steam cooler	Open all drains and vents	PMA - Complete
Stal Ejector condensers	Open all drains and vents	PMA - Complete
Stal Gland leakage condensers and clean drains tank	Open all drains and vents	PMA - Complete
Stal Auxillary steam vessels	Open all drains and vents	PMA - Complete
All Vessels	Check for gases in all Auxiliary vessel spaces prior to demolition	MSA

## 5.2 Boiler

### 5.2.1 Boiler Systems

#### 5.2.1.1 Pressure Parts

**Asset Management Strategy:**

Minimise possibility of gases and/or pressure build up in the system during demolition

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
Boiler Tubes and Drums	Open top and bottom drum doors and open all vents and drains	PMA - Complete
	Check for gases in all spaces prior to demolition	MSA

Sootblowers	Drain sootblower gearbox oil	PMA - Complete
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## 5.2.2 Feedwater Systems

### 5.2.2.1 HP Heaters

**Asset Management Strategy:**

Minimise possibility of gases and/or pressure build up in the system during demolition

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

Plant Description	Proposed Actions	Responsibility
HP heaters	Remove loop pipes from heaters	PMA - Complete
	Open body drains and vents	PMA - Complete
	Check for gases in hp heater space prior to demolition	MSA
Boiler dosing p/p's	Drain oil from p/p's	PMA - Complete

### 5.2.3 Boiler Feed Pumps (BFP)

**Asset Management Strategy:**

Minimise any residual hazards remaining in the Boiler Feed pumps.

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
Boiler feed pumps - Mather & Platt	Drain bearing oil reservoirs	PMA - Complete
Boiler feed pumps - Sulzer	Drain bearing oil reservoirs	PMA - Complete
Feed pump headers – suction and discharge	Open all drains and vents and sectionalising valves	PMA - Complete
	Check for gases in all feed water header spaces prior to demolition	MSA
Steam driven feed p/p	Drain oil from bearings	PMA - Complete

## 5.2.4 Draught Plant

**Asset Management Strategy:**

Minimise any residual hazards remaining in the Draught Plant.

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
FD Fans	Drain oil from FD fan bearings on Blr 1,2 & 3. Note: 4,5 & 6 have greased bearings.	PMA - Complete

## 5.3 Station Auxiliaries

### 5.3.1 Electrical

#### 5.3.1.1 DC Systems

**Asset Management Strategy:**

Minimise the risk of DC – Lead/Acid hazards to demolition crew.

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
DC batteries A Station 110 volt	Remove all Lead/Acid batteries	PMA - Complete
DC batteries B Station 110 volt	Remove all Lead/Acid batteries	PMA - Complete
DC batteries B Station UPS	Remove all Lead/Acid batteries	PMA - Complete
Diesel generator 24 volt batteries, two banks.	Remove all Lead/Acid batteries	PMA - Complete
Diesel 24 volt Emergency Start Relay batteries	Remove all Lead/Acid batteries	PMA - Complete
Diesel Fire Pump Batteries	Remove all Lead/Acid batteries	PMA - Complete
DC batteries Station Fire System	Remove all Lead/Acid batteries	PMA - Complete
Terminal Room	Remove all Lead/Acid batteries	PMA - Complete

	Decommission and remove all 132kV line protection devices	Electranet
Diesel generator	Drain oil and coolant	PMA - Complete

### 5.3.1.2 Switchboards – 3.3kV & 415V

#### Asset Management Strategy:

To remove any kinetic energy stored in the 3.3kV switchgear and to supply an alternative power supply for limited emergency lighting and dewatering.

#### Controls:

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

Plant Description	Proposed Actions	Responsibility
3.3kV Breakers	Discharge all spring loaded devices. This will be done by operators when isolating the station.	PMA

### 5.3.1.3 Power Transformers

#### Asset Management Strategy:

Apply a perimeter isolation to the 275/132kV A&B station switchyards to Eliminate risk of Electric Shock by disconnecting all HV supplies at major terminal points in A & B station switchyards. Eliminate the possibility of a transformer oil spill to the surrounding environment.

#### Controls:

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

Plant Description	Proposed Actions	Responsibility
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275 kV step up t/f's	Disconnect step up transformer B1 at 275kV droppers	Complete
	Disconnect step up transformer B2 at 275kV droppers	Complete
	Disconnect step up transformer B3 at 275kV droppers	Complete
	Disconnect step up transformer at B4 275kV droppers	Complete
	275kV Nth tie transformer disconnect from 275kV droppers	Electranet
132kV System	Disconnect points at isolators of AS2, AS4 & disconnect cables at 11kV tertiary terminals at Nth tie transformer	De-energised
3.3 kV to 415 volt transformers	Drain all transformers and dispose of transformer oil.	MSA
275 kV step up t/f's	Drain all transformers and dispose of transformer oil.	MSA
132/11kV transformers	Drain transformers in A Stn switchyard (2 x 132/11kV and old spare near canteen)	MSA

#### 5.3.1.4 DCS/Control Systems/Alarms

##### Asset Management Strategy:

Minimise the risk of residual power sources

##### Controls:

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

Plant Description	Proposed Actions	Responsibility
Processors	Low voltage batteries to be removed	MSA



DC inverter batteries	Remove batteries	MSA
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### 5.3.1.5 Actuators

**Asset Management Strategy:**

Minimise risk of oil spill to environment during demolition

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

Plant Description	Proposed Actions	Responsibility
	Drain actuators of oil	MSA

### 5.3.1.6 BH1 & Compressor Equipment

**Asset Management Strategy:**

Minimise any pressure hazards in the compressor system.

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

Plant Description	Proposed Actions	Responsibility
BH1 Compressor	Shutdown compressor and drain Air receivers	MSA

Breaker	Unplug from breaker housing	Electranet
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### 5.3.1.7 11Kv Ring Main Equipment

**Asset Management Strategy:**

Remove environmental contaminants

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

Plant Description	Proposed Actions	Responsibility
Stator 11kV switchgear	Drain oil	MSA
11kV transformers	Drain oil	MSA

### 5.3.1.8 Lifts & Cranes

**Asset Management Strategy:**

Decommission and de-register lifts and cranes in preparation for demolition

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

Plant Description	Proposed Actions	Responsibility
B stn Nth and Sth lifts	Deregistration	FMAPS

	Degas air conditioners	FMAPS
	Drain gearbox oil	MSA
	Drain gearbox oil	MSA
PPS Cranes	Drain oil from gearboxes	MSA
	De-register cranes	MSA

#### 5.3.1.9 Public Address System

**Asset Management Strategy:**

Isolate from NPS system

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
PA system	Disconnect PA system	FMAPS

#### 5.3.1.10 BE09/BE10 3.3kV Switchgear

**Asset Management Strategy:**

Remove environmental contaminants

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
Stator 3.3kV switchgear	Drain oil	MSA
3.3kV transformers	Drain oil	MSA

#### 5.3.1.11 132Kv System

**Asset Management Strategy:**

To remove the DC power supplies to the 132kV protection equipment located in the A stn terminal room

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
132kV protection equipment	Relocated by Electranet to a suitable location	Electranet
132kV System	Disconnect points at isolators of AS2, AS4 & disconnect cables at 11kV tertiary terminals at Nth tie transformer	Electranet

### 5.3.2 Coal Systems

#### 5.3.2.1 Coal Feeders

**Asset Management Strategy:**

To minimise environmental hazards

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
Feeder gearbox	Drain gearbox oil	MSA

### 5.3.2.2 Coal Conveyors

**Asset Management Strategy:**

Remove environmental contaminants and kinetic energy from the coal system.

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
Conveyors	Drain gearbox oils (Note: detailed risk assessment for access required due to condition of towers)	MSA
	Wash down all conveyors	FMAPS
	Release take up assemblies	FMAPS
Trippers	Drain gearbox oils (Note: detailed risk assessment for Bin access required due to condition of towers)	MSA
Ploughs	Drain gearbox oils	MSA
Towers	Wash down all towers	FMAPS

### 5.3.2.3 Bins & Bunkers

**Asset Management Strategy:**

Minimise environmental hazards

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
Bins	Wash out bins	FMAPS

### 5.3.3 Fuel Oil

**Asset Management Strategy:**

Remove environmental contaminants from Fuel oil system

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
Oil guns	Remove and drain oil guns	MSA
FO Pipework	Drain FO pipework – pump degreaser through system	MSA
FO transfer p/p's	Drain strainers	MSA
FO storage	See NPS Closure Manual	FMAPS

### 5.3.4 Ash Systems

#### 5.3.4.1 Ash pumps & pit

**Asset Management Strategy:**

Maintain dewatering in B stn basement during salvage/demolition activities via an alternative power supply

**Controls:**

The following Controls have been identified to maintain site de-watering during Salvage/Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
Alternative power supply	Install temporary generator for ash pump/de-watering pumps and emergency lighting	<b>FMAPS</b>
Ash pump	Alternative power supply and/or pump required after site power system shut down.	FMAPS

#### 5.3.4.2 HP & LP Sluice pumps

**Asset Management Strategy:**

Remove environmental contaminants from sluice pumps

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
HP sluice pumps	Drain oil from bearing reservoirs	MSA
LP sluice pumps	Drain oil from bearing reservoirs	MSA

### 5.3.4.3 Ash Hoppers

**Asset Management Strategy:**

Remove environmental contaminants from hoppers

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
Screw conveyors	Drain gearbox oils	MSA

### 5.3.4.4 Deashers

**Asset Management Strategy:**

Remove environmental contaminants from Deashers

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
Deashers	Drain gearbox oils	MSA



### 5.3.5 Compressed Air

**Asset Management Strategy:**

Shut down assets and depressurise the system and remove environmental contaminants

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
No 1 & 2 Compressors	Drain oil from air ends and separators	MSA
Sth and SW compressors	Drain oil from air ends and separators	MSA
Air receivers	De-pressurise and Open drain/vent valves on GS air receivers	FMAPS
	De-pressurise and Open drain/vent valves on Blr FF air receivers and pulse tanks	FMAPS
	De-pressurise and Open drain/vent valves on T/G air receivers	FMAPS

### 5.3.6 CW Systems

#### 5.3.6.1 CW Pumps

**Asset Management Strategy:**

Remove environmental contaminants from CW pumps

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
CW pumps	Drain oil from bearings	MSA

### 5.3.6.2 CW Chambers

**Asset Management Strategy:**

Isolate the gulf waters from the basement

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
Chamber	Controls to manage isolation between gulf and basement to be developed. Currently spades inserted on CW pump outlets.	FMAPS

### 5.3.6.3 CW Screens

**Asset Management Strategy:**

Remove environmental contaminants from CW screens

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
CW Screens	Drain gearbox and fluid drive oils	MSA

### 5.3.7 Water Treatment Plant

**Asset Management Strategy:**

Remove any remaining residual contaminants

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
Anion tanks	Remove and dispose of resin	FMAPS
Mixed bed vessels	Remove and dispose of resin	FMAPS
Cation tanks	Remove and dispose of resin	FMAPS
Sand filters	Remove and dispose of sand	FMAPS
Carbon filters	Remove and dispose of Anthracite	FMAPS

### 5.3.8 Town Water and Drains

**Asset Management Strategy:**

To maintain basement de-watering during salvage/demolition operation

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
Sump pumps	Install temporary generator for sump pumps	FMAPS
De-watering pump	Install temporary generator for de-watering pump	FMAPS
Contaminated drain tank	Pump out Contaminated drain tank after all oils drained from station	MSA
Black water system	Disconnect connection from NPS feedline from A stn sewerage tank and Workshop/stores sewerage tank. Pump out existing tanks in preparation for demolition.	MSA
Town Water storage tanks	Drain water tank	FMAPS
TW supply	Isolate TW supply from NPS and SA Water	FMAPS
Hot Water services	Drain Workshop and office HWS's	MSA

### 5.3.9 Fire Protection system

**Asset Management Strategy:**

Decommission fire protection system and remove environmental contaminants

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Plant Description</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
Fire system	Advise FM Global of change in status from insured to uninsured facility	FMAPS
Diesel Fire Pumps	See NPS Closure Manual 'Infrastructure of Interest'	FMAPS
Water storage tank	Drain water tank	FMAPS
FM500 system	Decommission and remove cylinder	MSA
Accumulator	Decommission Accumulator at Fire Diesels	MSA
3.3kV room compressor	Drain oil from compressor	MSA
Fire extinguishers	Remove all fire extinguishers	MSA

### 5.3.10 Workshops and Offices

**Asset Management Strategy:**

Minimise any hazards that may impact on demolition crews

**Controls:**

The following Controls have been identified to minimise the hazards that would otherwise have been present during the Salvage or Demolition operation.

<b>Item</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
PPS Fitting Shop	Decommission all Electrical supplies air-conditioners, town water and black water systems to workshop.  Inventory and remove all plant tools and equipment for disposal.  Review and approve contractor demolition plan including asbestos removal/management, sewage system decommissioning and site rehabilitation.	<b>FMAPS</b>

PPS Boiler Shop and Spares Store	Decommission all Electrical supplies air-conditioners, town water and black water systems to workshop.  Inventory and remove all plant tools and equipment for disposal.  Review and approve contractor demolition plan including asbestos removal/management, sewage system decommissioning and site rehabilitation.	<b>FMAPS</b>
PPS Electrical Shop	Decommission all Electrical supplies, air-conditioners, town water and black water systems to workshop.  Inventory and remove all plant tools and equipment for disposal.  Review and approve contractor demolition plan including asbestos removal/management, sewage system decommissioning and site rehabilitation.	<b>FMAPS</b>
Kaefers Workshop	Decommission all Electrical supplies, air conditioners, town water and black water systems to workshop.  Inventory and remove all plant tools and equipment for disposal.  Review and approve contractor demolition plan including sewage system decommissioning and site rehabilitation.	<b>FMAPS</b>
Grit Blasters Facility	Decommission all Electrical supplies, town water systems to facility.  Inventory and remove all plant tools and equipment for disposal.	<b>FMAPS</b>
Offices	Decommission Air Conditioners	FMAPS/MSA
	Salvage and dispose of furniture and fittings	MSA
	Remove paperwork required to be kept to comply with Statutory obligations	FMAPS
Equipment rooms	Decommission Air conditioners	FMAPS/MSA

## 6 Appendix

## 6.1 Legal and other Requirements

### 6.1.1 Legislation and Licences

**Management Strategy:**

Comply with all Legislation and Lease agreements during the Closure/remediation process

<b>Item</b>	<b>Document</b>	<b>Responsibility</b>
1	Northern/Playford Generating Plant Lease	FMAPS
2	Northern/Playford Land Lease	FMAPS
3	Environmental Compliance Agreement	FMAPS
4	SA Generation Licence	FMAPS
5	EPA Licences	FMAPS
6	AEMO Certification	FMAPS
7	Pressure Vessel Registrations	FMAPS
8	Lifts Registrations	FMAPS
9	WHS Act & Regulations	FMAPS
10	Code of Practice – Demolition Work	FMAPS/MSA

## 6.1.2 Alinta Policies

Item	Policy	Responsibility
1	Compliance Guideline: HSSE-019 Demolition and Decommissioning	FMAPS/MSA

## 6.1.3 References

Item	Documents	Responsibility
1	Care to Closure Risk Assessment	FMAPS
2	NPS Care to Closure Plan	FMAPS
3	PPS Hibernation Manual	FMAPS
4	Inspection & Audit Sheet	FMAPS

## 6.2 Project Plan

## 6.3 PPS Administration

### 6.3.1 PPS Registered Plant



**Management Strategy:**

To De-commission and de-register registered Plant

**Controls:**

<b>Item</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
1	Advise, Safework SA, in writing of pressure vessels that have been decommissioned	FMAPS
2	Advise, Safework SA, in writing of Lifts that have been decommissioned	FMAPS

**6.3.2 PPS Isolations**

**Management Strategy:**

To wind back plant and system isolations to Perimeter disconnections

**Controls:**

<b>Item</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
Existing isolations	Clear isolations and remove isolation tags from plant	FMAPS

**6.3.3 Closure Audit**

**Management Strategy:**

To provide an Auditable record of controls put in place to render the site as safe as reasonably practical for salvage/demolition

**Controls:**

<b>Item</b>	<b>Proposed Actions</b>	<b>Responsibility</b>
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1	Raise work orders for each control action	FMAPS
2	Complete Inspection & Audit sheets as each system is made safe.	FMAPS

## 7 PPS Residual Risks

### Management Strategy:

To highlight to the salvage/demolition third parties any Residual risks remaining that are beyond the Alinta Energy Closure workscope

Item	Residual Risks	Responsibility
Boiler insulation	Contains Asbestos	FMAPS
Workshop/Admin building materials	Contains asbestos	FMAPS
Basement flooding	Seawater seepage into basement.	FMAPS
Tunnels	Cable tunnels exist between Turbine halls and switchyards	FMAPS
Bag Filters	Bags may still be impregnated with ash, potential dust problem on demolition. Residual Ash may be present in hoppers	FMAPS
PPS Seawall	Vehicle access to sea side of B Station has been closed due to condemned seawall pillings. Will present problems to make safe works in this area.	FMAPS

## Appendix D – Closure & Care Project Plan

ID	Wg	Manual Index No	System	Task Name	Duration
1					
2				**** Ensure all SWMS & Risk assessments are reviewed and All Personnel signed onto Isolation permits prior to commencing work ****	0 hrs
3				<b>NPS Care / Closure</b>	<b>240.38 hrs?</b>
4				<b>NPS Unit 1 Care - Project No:</b>	<b>170.5 hrs</b>
5		5	<b>Turbine/Boiler Unit</b>	<b>Turbine/Boiler Unit</b>	<b>170.5 hrs</b>
6		5.1	<b>Turbine</b>	<b>Turbine</b>	<b>7.25 hrs</b>
7				Turbine off	1 hr
8			<b>Turbine oil systems</b>	<b>Turbine oil systems</b>	<b>0 hrs</b>
9				Lube oil system to remain operational	0 hrs
10				Seal oil system to remain operational	0 hrs
11			<b>Condenser condensate side</b>	<b>Condenser condensate side</b>	<b>5.5 hrs</b>
12				Isolation	8 hrs
13				Open doors	1 hr
14			<b>Condenser seawater side</b>	<b>Condenser seawater side</b>	<b>2.75 hrs</b>
15				Drain seawater side of condenser	4 hrs
16			<b>Turbine valves</b>	<b>Turbine valves</b>	<b>0 hrs</b>
17				Isolation	3 hrs
18				Unit Care - Turbine complete	0 hrs
19		5.2	<b>Generator</b>	<b>Generator</b>	<b>37.52 hrs</b>
20			<b>Barring gear</b>	<b>Barring gear</b>	<b>37.52 hrs</b>
21				Run on Barring gear to prevent rotors sagging	120 hrs
22			<b>Hydrogen system</b>	<b>Hydrogen system</b>	<b>1 hr</b>
23				Decommission hydrogen system and purge generator	8 hrs
24				Unit Care - Generator complete	0 hrs
25		5.3	<b>CW system</b>	<b>CW system</b>	<b>0 hrs</b>
26			<b>CW Pumps</b>	<b>CW Pumps</b>	<b>0 hrs</b>
27				Isolation	1 hr
28			<b>CW Ducts</b>	<b>CW Ducts</b>	<b>0 hrs</b>
29				Ducts to be maintained empty and dry per culvert dewatering system.	8 hrs
30				Unit Care - CW System complete	0 hrs
31		5.4	<b>Feedwater system</b>	<b>Feedwater system</b>	<b>33 hrs</b>
32			<b>LP Feedwater</b>	<b>LP Feedwater</b>	<b>5 hrs</b>
33				Isolation - CEP's	1 hr
34				LP htrs, GS Condenser and LP Ejector, Drain and store dry	8 hrs
35				Deaerator and DAFT, Drain and store dry	8 hrs
36			<b>Condensate Polishing Plant</b>	<b>Condensate Polishing Plant</b>	<b>27 hrs</b>
37				Open vessels	2 hrs
38				Gas Clearance	1 hr
39				Remove resins	24 hrs
40			<b>Blr Feed Pumps</b>	<b>Blr Feed Pumps</b>	<b>6.25 hrs</b>
41				Isolate and drain Feed pumps	8 hrs
42			<b>HP heaters</b>	<b>HP heaters</b>	<b>7 hrs</b>
43				Isolation	6 hrs
44				Drain and store dry	8 hrs
45			<b>Feed make up system</b>	<b>Feed make up system</b>	<b>6 hrs</b>
46				Isolation	2 hrs
47				Drain Make up tanks	8 hrs
48				Unit Care - Feedwater System complete	0 hrs
49		5.5	<b>Boiler</b>	<b>Boiler</b>	<b>53.32 hrs</b>
50				Boiler off	2 hrs

ID	Wg	Manual Index No	System	Task Name	Duration
51			<b>Pressure parts Storage</b>	<b>Pressure parts Storage</b>	<b>19.32 hrs</b>
52				Control cool and drain boiler (in accordance with drainage schedule) Item 8	8 hrs
53				Isolation	4 hrs
54				Open boiler doors	6.82 hrs
55				Boiler gas clearances	2 hrs
56				Initiate sprays (pre wash) in Eco 1 & 2	6 hrs
57			<b>Furnace and Gas path</b>	<b>Furnace and Gas path</b>	<b>53.32 hrs</b>
58				Sootblow 8 hrs prior to shutdown	6 hrs
59				Keep deasher in service for duration of wash	0 hrs
60				Remove Economiser e-valves	4 hrs
61				Gas Clearances	1 hr
62				Furnace and economiser wash	24 hrs
63				<b>External</b>	<b>2.75 hrs</b>
64				Wash down structure	8 hrs
65				Unit Care - Boiler complete	0 hrs
66		<b>5.6</b>	<b>Draught Plant</b>	<b>Draught Plant</b>	<b>169.5 hrs</b>
67			<b>Air heaters</b>	<b>Air heaters</b>	<b>47.98 hrs</b>
68				Shut down once core temp < 100 degrees	2 hrs
69				Isolation	2 hrs
70				Remove dump v/v's & e-v/v's	4 hrs
71				Deluge wash	2 hrs
72				Open doors	4 hrs
73				Gas Clearance	1 hr
74				Manual internal wash	16 hrs
75			<b>ID Fans</b>	<b>ID Fans</b>	<b>16.5 hrs</b>
76				Shut down & Isolate once unit gas path is dry after precip wash - 48	4 hrs
77				Open doors	4 hrs
78				Gas Clearance	1 hr
79				Wash/vocuum windboxes	8 hrs
80			<b>GR Fan</b>	<b>GR Fan</b>	<b>10.5 hrs</b>
81				Isolation	2 hrs
82				Open doors	4 hrs
83				Gas Clearance	1 hr
84				Wash/vocuum windboxes	4 hrs
85			<b>PA fan</b>	<b>PA fan</b>	<b>11 hrs</b>
86				Isolation	2 hrs
87				Open doors	4 hrs
88				Gas Clearance	1 hr
89				Wash/vocuum windboxes	4 hrs
90			<b>SA fan</b>	<b>SA fan</b>	<b>11 hrs</b>
91				Isolation	2 hrs
92				Open doors	4 hrs
93				Gas Clearance	1 hr
94				Wash/vocuum windboxes	4 hrs
95			<b>Ducts and dampers</b>	<b>Ducts and dampers</b>	<b>169.5 hrs</b>
96				Isolation	2 hrs
97				Open doors	4 hrs
98				Gas clearances	2 hrs
99				Wash/Vacuum GR outlet and precipitator outlet duct.	80 hrs
100				Inspect all ducts and vacuum as required	80 hrs
101				Unit Care - Draught Plant complete	0 hrs
102		<b>5.9</b>	<b>ACW System</b>	<b>ACW System</b>	<b>0 hrs</b>
103			<b>Seawater side</b>	<b>Seawater side</b>	<b>0 hrs</b>
104				Isolate & drain and dry store (Unit)	2 hrs

ID	Wg	Manual Index No	System	Task Name	Duration
105				Unit Care - ACW System complete	0 hrs
106		<b>5.10</b>	<b>Coal System</b>	<b>Coal System</b>	<b>73.47 hrs</b>
107			<b>Bins &amp; Bunkers</b>	<b>Bunkers</b>	<b>54.87 hrs</b>
108				Run down bunker levels	4 hrs
109				Isolate Mill / Feeders	8 hrs
110				Fit bunker emptying chute to EN Feeder chute	2 hrs
111				Empty EN bunker	16 hrs
112				Wash EN Bunker	12 hrs
113				Remove bunker emptying chute from EN	2 hrs
114				Fit bunker emptying chute to WN Feeder chute	2 hrs
115				Empty WN bunker	16 hrs
116				Wash WN Bunker	12 hrs
117				Remove bunker emptying chute from WN	2 hrs
118				Fit bunker emptying chute to EC Feeder chute	2 hrs
119				Empty EC bunker	16 hrs
120				Wash EC Bunker	12 hrs
121				Remove bunker emptying chute from EC	2 hrs
122				Fit bunker emptying chute to WC Feeder chute	2 hrs
123				Empty WC bunker	16 hrs
124				Wash WC Bunker	12 hrs
125				Remove bunker emptying chute from WC	2 hrs
126				Fit bunker emptying chute to ES Feeder chute	2 hrs
127				Empty ES bunker	16 hrs
128				Wash ES Bunker	12 hrs
129				Remove bunker emptying chute from ES	2 hrs
130				Fit bunker emptying chute to WS Feeder chute	2 hrs
131				Empty WS bunker	16 hrs
132				Wash WS Bunker	12 hrs
133				Remove bunker emptying chute from WS	2 hrs
134			<b>Coal feeders</b>	<b>Coal feeders</b>	<b>48.27 hrs</b>
135				Open EN Feeder	1 hr
136				Gas clearance	1 hr
137				Vac and wash out	4.65 hrs
138				Open WN Feeder, vac and wash out	4 hrs
139				Gas clearance	1 hr
140				Vac and wash out	4 hrs
141				Open EC Feeder, vac and wash out	4 hrs
142				Gas clearance	1 hr
143				Vac and wash out	4.5 hrs
144				Open WC Feeder, vac and wash out	4 hrs
145				Gas clearance	1 hr
146				Vac and wash out	7.4 hrs
147				Open ES Feeder	4 hrs
148				Gas clearance	1 hr
149				Vac and wash out	4.5 hrs
150				Open WS Feeder	4 hrs
151				Gas clearance	1 hr
152				Vac and wash out	8.32 hrs
153			<b>Mills</b>	<b>Mills</b>	<b>56.55 hrs</b>
154				Open EN Mill	1 hr
155				Gas clearance	1 hr
156				Wash out EN Mill - leave open to dry out	8 hrs
157				Open WN Mill	1 hr
158				Gas clearance	1 hr
159				Wash out WN Mill - leave open to dry out	8 hrs
160				Open EC Mill	1 hr

ID	Wg	Manual Index No	System	Task Name	Duration
161				Gas clearance	1 hr
162				Wash out EC Mill - leave open to dry out	8 hrs
163				Open WC Mill	1 hr
164				Gas clearance	1 hr
165				Wash out WC Mill - leave open to dry out	8 hrs
166				Open ES Mill	1 hr
167				Gas clearance	1 hr
168				Wash out ES Mill - leave open to dry out	8 hrs
169				Open WS Mill	1 hr
170				Gas clearance	1 hr
171				Wash out WS Mill - leave open to dry out	8 hrs
172				Release roller spring tension	6 hrs
173				Unit Care - Coal System complete	0 hrs
174			<b>5.11 Fuel Oil</b>	<b>Fuel Oil</b>	<b>34.5 hrs</b>
175			<b>FO pumps</b>	<b>FO pumps</b>	<b>33.5 hrs</b>
176				Shut oil pumps down when unit OOS	1 hr
177				Isolate fuel oil system	1 hr
178				Clean filters and system	8 hrs
179				Drain FO system	24 hrs
180			<b>Storage tanks</b>	<b>Storage tanks</b>	<b>0 hrs</b>
181				Run down storage level (burn / sell if possible)	0 hrs
182				Isolate	1 hr
183				Unit Care - Fuel Oil complete	0 hrs
184			<b>5.12 Ash system</b>	<b>Ash system</b>	<b>62.9 hrs</b>
185			<b>Hoppers</b>	<b>Hoppers</b>	<b>62.9 hrs</b>
186				Run local manual dump	8 hrs
187				Open hopper doors	3 hrs
188			<b>Precips</b>	<b>Precips</b>	<b>52.5 hrs</b>
189				Isolate	4 hrs
190				Remove Precip e-valves	24 hrs
191				Gas clearance	1 hr
192				Full wash of internals - washing manifold?	24 hrs
193				Store with air doors open for natural air circulation.	0 hrs
194			<b>Deasher</b>	<b>Deasher</b>	<b>4.17 hrs</b>
195				Isolation	2 hrs
196				Gas clearance	1 hr
197				Full wash of all internals, store dry	2 hrs
198			<b>Ash pit/pumps</b>	<b>Ash pit/pumps</b>	<b>0 hrs</b>
199				Flush and pump down pit - leave available	0 hrs
200				Unit Care - Ash System complete	0 hrs
201			<b>6 Electrical Systems</b>	<b>Electrical Systems</b>	<b>14 hrs</b>
202			<b>6.2 Instrumentation</b>	<b>Instrumentation</b>	<b>14 hrs</b>
203				Build scaffold for furnace camera removal	4 hrs
204				Remove furnace camera	8 hrs
205				Dismantle scaffold after furnace camera removal	2 hrs
206				Unit Care - Electrical Systems complete	0 hrs
207				<b>Unit 1 Care Complete</b>	<b>0 hrs</b>
208				<b>NPS Unit 2 Care - Project No:</b>	<b>185.98 hrs?</b>
209			<b>5 Turbine/Boiler Unit</b>	<b>Turbine/Boiler Unit</b>	<b>185.98 hrs?</b>
210			<b>5.1 Turbine</b>	<b>Turbine</b>	<b>22.38 hrs</b>
211				Turbine off	1 hr
212			<b>Turbine oil systems</b>	<b>Turbine oil systems</b>	<b>0 hrs</b>
213				Lube oil system to remain operational	0 hrs
214				Seal oil system to remain operational	0 hrs

ID	Wg	Manual Index No	System	Task Name	Duration
215			<b>Condenser condensate side</b>	<b>Condenser condensate side</b>	<b>6.17 hrs</b>
216				Isolation	8 hrs
217				Open doors	1 hr
218			<b>Condenser seawater side</b>	<b>Condenser seawater side</b>	<b>2.4 hrs</b>
219				Drain seawater side of condenser	4 hrs
220			<b>Turbine valves</b>	<b>Turbine valves</b>	<b>0 hrs</b>
221				Isolation	3 hrs
222				Unit Care - Turbine complete	0 hrs
223			<b>5.2 Generator</b>	<b>Generator</b>	<b>22.7 hrs</b>
224			<b>Barring gear</b>	<b>Barring gear</b>	<b>22.7 hrs</b>
225				Run on Barring gear to prevent rotors sagging	120 hrs
226			<b>Hydrogen system</b>	<b>Hydrogen system</b>	<b>2 hrs</b>
227				Decommission hydrogen system and purge generator	8 hrs
228				Unit Care - Generator complete	0 hrs
229			<b>5.3 CW system</b>	<b>CW system</b>	<b>0 hrs</b>
230			<b>CW Pumps</b>	<b>CW Pumps</b>	<b>0 hrs</b>
231				Isolation	1 hr
232			<b>CW Ducts</b>	<b>CW Ducts</b>	<b>0 hrs</b>
233				Ducts to be maintained empty and dry per culvert dewatering system.	8 hrs
234				Unit Care - CW System complete	0 hrs
235			<b>5.4 Feedwater system</b>	<b>Feedwater system</b>	<b>33 hrs</b>
236			<b>LP Feedwater</b>	<b>LP Feedwater</b>	<b>6.17 hrs</b>
237				Isolation - CEP's	1 hr
238				LP hrs, GS Condenser and LP Ejector, Drain and store dry	8 hrs
239				Deaerator and DAFT, Drain and store dry	8 hrs
240			<b>Condensate Polishing Plant</b>	<b>Condensate Polishing Plant</b>	<b>27 hrs</b>
241				Open vessels	2 hrs
242				Gas Clearance	1 hr
243				Remove resins	24 hrs
244			<b>Blr Feed Pumps</b>	<b>Blr Feed Pumps</b>	<b>5.57 hrs</b>
245				Isolate and drain Feed pumps	8 hrs
246			<b>HP heaters</b>	<b>HP heaters</b>	<b>7.57 hrs</b>
247				Isolation	6 hrs
248				Drain and store dry	8 hrs
249			<b>Feed make up system</b>	<b>Feed make up system</b>	<b>7.17 hrs</b>
250				Isolation	2 hrs
251				Drain Make up tanks	8 hrs
252				Unit Care - Feedwater System complete	0 hrs
253			<b>5.5 Boiler</b>	<b>Boiler</b>	<b>54.3 hrs</b>
254				Boiler off	2 hrs
255			<b>Pressure parts Storage</b>	<b>Pressure parts Storage</b>	<b>20.3 hrs</b>
256				Control cool and drain boiler (in accordance with drainage schedule) Item 8	8 hrs
257				Isolation	4 hrs
258				Open boiler doors	7.13 hrs
259				Boiler gas clearances	2 hrs
260				Initiate sprays (pre wash) in Eco 1 & 2	6 hrs
261			<b>Furnace and Gas path</b>	<b>Furnace and Gas path</b>	<b>54.3 hrs</b>
262				Sootblow 8 hrs prior to shutdown	6 hrs
263				Keep deasher in service for duration of wash	0 hrs
264				Remove Economiser e-valves	4 hrs
265				Gas Clearances	1 hr
266				Furnace and economiser wash	24 hrs



ID	Wg	Manual Index No	System	Task Name	Duration
267				<b>External</b>	<b>2.4 hrs</b>
268				Wash down structure	8 hrs
269				Unit Care - Boiler complete	0 hrs
270			<b>5.6 Draught Plant</b>	<b>Draught Plant</b>	<b>169.17 hrs</b>
271			<b>Air heaters</b>	<b>Air heaters</b>	<b>47.48 hrs</b>
272				Shut down once core temp < 100 degrees	2 hrs
273				Isolation	2 hrs
274				Remove dump v/v's & e-v/v's	4 hrs
275				Deluge wash	2 hrs
276				Open doors	4 hrs
277				Gas Clearance	1 hr
278				Manual internal wash	16 hrs
279			<b>ID Fans</b>	<b>ID Fans</b>	<b>13 hrs</b>
280				Shut down & Isolate once unit gas path is dry after precip wash - 48	4 hrs
281				Open doors	4 hrs
282				Gas Clearance	1 hr
283				Wash/vocuum windboxes	8 hrs
284			<b>GR Fan</b>	<b>GR Fan</b>	<b>10.67 hrs</b>
285				Isolation	2 hrs
286				Open doors	4 hrs
287				Gas Clearance	1 hr
288				Wash/vocuum windboxes	4 hrs
289			<b>PA fan</b>	<b>PA fan</b>	<b>11 hrs</b>
290				Isolation	2 hrs
291				Open doors	4 hrs
292				Gas Clearance	1 hr
293				Wash/vocuum windboxes	4 hrs
294			<b>SA fan</b>	<b>SA fan</b>	<b>11 hrs</b>
295				Isolation	2 hrs
296				Open doors	4 hrs
297				Gas Clearance	1 hr
298				Wash/vocuum windboxes	4 hrs
299			<b>Ducts and dampers</b>	<b>Ducts and dampers</b>	<b>169.17 hrs</b>
300				Isolation	2 hrs
301				Open doors	4 hrs
302				Gas clearances	2 hrs
303				Wash/Vacuum GR outlet and precipitator outlet duct.	80 hrs
304				Inspect all ducts and vacuum as required	80 hrs
305				Unit Care - Draught Plant complete	0 hrs
306			<b>5.9 ACW System</b>	<b>ACW System</b>	<b>0 hrs</b>
307			<b>Seawater side</b>	<b>Seawater side</b>	<b>0 hrs</b>
308				Isolate & drain and dry store (Unit)	2 hrs
309				Unit Care - ACW System complete	0 hrs
310			<b>5.10 Coal System</b>	<b>Coal System</b>	<b>73.47 hrs?</b>
311			<b>Bins &amp; Bunkers</b>	<b>Bunkers</b>	<b>58.65 hrs</b>
312				Run down bunker levels	4 hrs
313				Isolate Mill / Feeders	8 hrs
314				Fit bunker emptying chute to EN Feeder chute	2 hrs
315				Empty EN bunker	16 hrs
316				Wash EN Bunker	12 hrs
317				Remove bunker emptying chute from EN	2 hrs
318				Fit bunker emptying chute to WN Feeder chute	2 hrs
319				Empty WN bunker	16 hrs
320				Wash WN Bunker	12 hrs
321				Remove bunker emptying chute from WN	2 hrs

**NPS Closure & Care (Draft)  
All Tasks  
2016 Closure & Care Draft Sacrificial removed Draft.mpp**

ID	Wg	Manual Index No	System	Task Name	Duration
322				Fit bunker emptying chute to EC Feeder chute	2 hrs
323				Empty EC bunker	16 hrs
324				Wash EC Bunker	12 hrs
325				Remove bunker emptying chute from EC	2 hrs
326				Fit bunker emptying chute to WC Feeder chute	2 hrs
327				Empty WC bunker	16 hrs
328				Wash WC Bunker	12 hrs
329				Remove bunker emptying chute from WC	2 hrs
330				Fit bunker emptying chute to ES Feeder chute	2 hrs
331				Empty ES bunker	16 hrs
332				Wash ES Bunker	12 hrs
333				Remove bunker emptying chute from ES	2 hrs
334				Fit bunker emptying chute to WS Feeder chute	2 hrs
335				Empty WS bunker	16 hrs
336				Wash WS Bunker	12 hrs
337				Remove bunker emptying chute from WS	2 hrs
338			<b>Coal feeders</b>	<b>Coal feeders</b>	<b>50.9 hrs</b>
339				Open EN Feeder	1 hr
340				Gas clearance	1 hr
341				Vac and wash out	4.65 hrs
342				Open WN Feeder, vac and wash out	4 hrs
343				Gas clearance	1 hr
344				Vac and wash out	4 hrs
345				Open EC Feeder, vac and wash out	4 hrs
346				Gas clearance	1 hr
347				Vac and wash out	4.5 hrs
348				Open WC Feeder, vac and wash out	4 hrs
349				Gas clearance	1 hr
350				Vac and wash out	7.5 hrs
351				Open ES Feeder	4 hrs
352				Gas clearance	1 hr
353				Vac and wash out	4.5 hrs
354				Open WS Feeder	4 hrs
355				Gas clearance	1 hr
356				Vac and wash out	8.32 hrs
357			<b>Mills</b>	<b>Mills</b>	<b>55.4 hrs?</b>
358				Open EN Mill	1 hr
359				Gas clearance	1 hr
360				Wash out EN Mill - leave open to dry out	8 hrs
361				Open WN Mill	1 hr
362				Gas clearance	1 hr
363				Wash out WN Mill - leave open to dry out	8 hrs
364				Open EC Mill	1 hr
365				Gas clearance	1 hr
366				Wash out EC Mill - leave open to dry out	8 hrs
367				Open WC Mill	1 hr
368				Gas clearance	1 hr
369				Wash out WC Mill - leave open to dry out	8 hrs
370				Open ES Mill	1 hr
371				<New Task>	8 hrs?
372				Wash out ES Mill - leave open to dry out	8 hrs
373				Open WS Mill	1 hr
374				Gas clearance	1 hr
375				Wash out WS Mill - leave open to dry out	8 hrs
376				Release roller spring tension	6 hrs
377				Unit Care - Coal System complete	0 hrs

ID	Wg	Manual Index No	System	Task Name	Duration
378		5.11	<b>Fuel Oil</b>	<b>Fuel Oil</b>	<b>50.48 hrs</b>
379			<b>FO pumps</b>	<b>FO pumps</b>	<b>33.67 hrs</b>
380				Shut oil pumps down when unit OOS	1 hr
381				Isolate fuel oil system	1 hr
382				Clean filters and system	8 hrs
383				Drain FO system	24 hrs
384			<b>Storage tanks</b>	<b>Storage tanks</b>	<b>0 hrs</b>
385				Run down storage level (burn / sell if possible)	0 hrs
386				Isolate	1 hr
387				Unit Care - Fuel Oil complete	0 hrs
388		5.12	<b>Ash system</b>	<b>Ash system</b>	<b>78.03 hrs</b>
389			<b>Hoppers</b>	<b>Hoppers</b>	<b>63.22 hrs</b>
390				Run local manual dump	8 hrs
391				Open hopper doors	3 hrs
392			<b>Precips</b>	<b>Precips</b>	<b>52.17 hrs</b>
393				Isolate	4 hrs
394				Remove Precip e-valves	24 hrs
395				Gas clearance	1 hr
396				Full wash of internals - washing manifold?	24 hrs
397				Store with air doors open for natural air circulation.	0 hrs
398			<b>Deasher</b>	<b>Deasher</b>	<b>4.17 hrs</b>
399				Isolation	2 hrs
400				Gas clearance	1 hr
401				Full wash of all internals, store dry	2 hrs
402			<b>Ash pit/pumps</b>	<b>Ash pit/pumps</b>	<b>0 hrs</b>
403				Flush and pump down pit - leave available	0 hrs
404				Unit Care - Ash System complete	0 hrs
405		6	<b>Electrical Systems</b>	<b>Electrical Systems</b>	<b>14 hrs</b>
406		6.2	<b>Instrumentation</b>	<b>Instrumentation</b>	<b>14 hrs</b>
407				Build scaffold for furnace camera removal	4 hrs
408				Remove furnace camera	8 hrs
409				Dismantle scaffold after furnace camera removal	2 hrs
410				Unit Care - Electrical Systems complete	0 hrs
411				<b>Unit 1 Care Complete</b>	0 hrs
412				<b>NPS Station Care - Project No:</b>	<b>101 hrs?</b>
413		5	<b>Turbine/Boiler Unit</b>	<b>Turbine/Boiler Unit</b>	<b>101 hrs</b>
414		5.10	<b>Coal System</b>	<b>Coal System</b>	<b>101 hrs</b>
415			<b>Train unloading</b>	<b>Train unloading</b>	<b>3 hrs</b>
416				Isolate unloader	1 hr
417				Wash/vacuum train unloader	2 hrs
418			<b>Bins</b>	<b>Bins</b>	<b>64 hrs</b>
419				Wash out coal bins	64 hrs
420			<b>Conveyors</b>	<b>Conveyors</b>	<b>100 hrs</b>
421				Isolate conveyors	4 hrs
422				Wash down conveyors	32 hrs
423			<b>Coal Towers</b>	<b>Coal Towers</b>	<b>32 hrs</b>
424				Wash down coal towers	32 hrs
425				Station Care - Coal System complete	0 hrs
426		5.11	<b>Fuel Oil</b>	<b>Fuel Oil</b>	<b>58.5 hrs</b>
427			<b>FO pumps</b>	<b>FO pumps</b>	<b>58.5 hrs</b>
428				Isolate fuel oil unloading / delivery pumps	2 hrs
429				Drain fuel oil pipework	24 hrs
430			<b>FO Storage tanks</b>	<b>FO Storage tanks</b>	<b>32 hrs</b>
431				Drain fuel oil storage tanks and vacuum out any residue	32 hrs
432			<b>FO Storage - PPS</b>	<b>FO Storage - PPS</b>	<b>10 hrs</b>
433				Run stocks to minimum levels	0 hrs

ID	Wg	Manual Index No	System	Task Name	Duration
434				Clean out remaining oil	8 hrs
435			<b>FO Storage - service tank</b>	<b>FO Storage - service tank</b>	<b>10 hrs</b>
436				Run stocks to minimum levels	0 hrs
437				Clean out remaining oil	8 hrs
438				Station Care - Fuel Oil complete	0 hrs
439		<b>7</b>	<b>Stn Aux</b>	<b>Stn Aux</b>	<b>71.5 hrs?</b>
440		<b>7.1</b>	<b>Aux Blr</b>	<b>Aux Blr</b>	<b>10 hrs</b>
441				Isolation	2 hrs
442				Drain and dry store Aux Blr	8 hrs
443				<b>DACP</b>	<b>18 hrs?</b>
444				Disconnect discharge pipework	2 hrs
445				Remove collection vessel filter bags	8 hrs?
446				Wash collection vessels	8 hrs
447				<b>NPS Station Care Complete</b>	0 hrs
448				<b>NPS Closure - Project No:</b>	<b>240.38 hrs?</b>
449		<b>5</b>	<b>Turbine/Boiler Unit</b>	<b>Turbine/Boiler Unit</b>	<b>240.38 hrs</b>
450		<b>5.1</b>	<b>Turbine</b>	<b>Turbine</b>	<b>168 hrs</b>
451			<b>Turbine Oil Systems</b>	<b>Turbine Oil Systems</b>	<b>168 hrs</b>
452				Isolation	4 hrs
453				Drain main oil tank and pipework	64 hrs
454				Drain seal oil defoaming tank and pipework	32 hrs
455				Drain seal oil drain regulator tanks	32 hrs
456				Drain Loop seal tanks	32 hrs
457				Isolate electrical supplies to pumps	4 hrs
458			<b>CEP's</b>	<b>CEP's</b>	<b>32 hrs</b>
459				Drain oil from CEP and motor	32 hrs
460			<b>Turbine valves</b>	<b>Turbine valves</b>	<b>98 hrs</b>
461				Isolate power supplies	2 hrs
462				Drain actuators and pipework	48 hrs
463				Drain control stations and acumulators	48 hrs
464				NPS Closure - Turbine complete	0 hrs
465		<b>5.3</b>	<b>CW system</b>	<b>CW system</b>	<b>240.38 hrs</b>
466			<b>Chambers</b>	<b>Chambers</b>	<b>218 hrs</b>
467				Stop log sealing faces to be cleaned, divers required	32 hrs
468				Install stop logs	32 hrs
469				CW chamber drained	16 hrs
470				dewatering pump installed	2 hrs
471				Remove CW pump	80 hrs
472				Fit blanks	32 hrs
473				Remove Dewatering p/p	8 hrs
474				Remove stop logs	16 hrs
475			<b>CW Pumps</b>	<b>CW Pumps</b>	<b>8 hrs</b>
476				Drain oil from pump bearings	8 hrs
477			<b>CW Dosing</b>	<b>Ferrous Chloride dosing</b>	<b>17 hrs</b>
478				Drain and flush tank & pipe work to condenser	16 hrs
479				Isolation	1 hr
480				<b>Chlorination Plant</b>	<b>5 hrs</b>
481				Flush acid pipe work with sea water	1 hr
482				Isolation	2 hrs
483				Drain acid tank	1 hr
484				Wash out acid tank	1 hr
485				NPS Closure - CW System complete	0 hrs
486		<b>5.4</b>	<b>Feedwater system</b>	<b>Feedwater system</b>	<b>35 hrs</b>

ID	Wg	Manual Index No	System	Task Name	Duration
487			Res Feed Water Tanks	Res Feed Water Tanks	2 hrs
488				Drain RFW tanks	2 hrs
489			LP Feedheaters	LP Feedheaters	8 hrs
490				Open drains and doors	8 hrs
491			GS condenser	GS condenser	8 hrs
492				Open drains and doors	8 hrs
493			LP ejector	LP ejector	8 hrs
494				Open drains and doors	8 hrs
495			Boiler feed Pumps	Boiler feed Pumps	32 hrs
496				Remove oil from BFP and GTD	32 hrs
497			HP 6 & 7	HP 6 & 7	4 hrs
498				Open drains	4 hrs
499			Ammonia dosing p/p	Ammonia dosing p/p	4 hrs
500				Drain oil from bearings	4 hrs
501			<b>5.5 Boiler</b>	<b>Boiler</b>	<b>8 hrs</b>
502			Pressure parts	Pressure parts	8 hrs
503				Open all drains and vents	8 hrs
504			Safety valves	Safety valves	8 hrs
505				Relieve safety valve spring tensions	8 hrs
506			Blowdown vessels	Blowdown vessels	8 hrs
507				Open all drains and vents	8 hrs
508			<b>5.6 Draught Plant</b>	<b>Draught Plant</b>	<b>16 hrs</b>
509			Air Heaters	Air Heaters	16 hrs
510				Drain oil from bearings and gearboxes	16 hrs
511			ID fans	ID fans	16 hrs
512				Drain oil from bearings and oil tanks	16 hrs
513			GR Fan	GR Fan	8 hrs
514				Drain oil from bearings and oil tanks	8 hrs
515			PA fan	PA fan	8 hrs
516				Drain oil from bearings and oil tanks	8 hrs
517			SA	SA	8 hrs
518				Drain oil from bearings and oil tanks	8 hrs
519			<b>5.7 Valves</b>	<b>Valves</b>	<b>40 hrs</b>
520			Station safety v/v's	Station safety v/v's	40 hrs
521				Relieve spring tensions	40 hrs
522			<b>5.10 Coal System</b>	<b>Coal System</b>	<b>125 hrs</b>
523			Ploughs	Ploughs	8 hrs
524				Drain gearbox oils	8 hrs
525			Trippers	Trippers	8 hrs
526				Drain gearbox oils	8 hrs
527			Conveyors	Conveyors	24 hrs
528				Drain oil from gearboxes	24 hrs
529			Coal feeders	Coal feeders	36 hrs
530				Drain oil from gearboxes	36 hrs
531			Mills	Mills	96 hrs
532				Drain oil from gearboxes	96 hrs
533				Drain oil from Rollers	48 hrs
534			<b>5.12 Ash system</b>	<b>Ash system</b>	<b>8 hrs</b>
535			Deasher	Deasher	8 hrs
536				Drain oil from hydraulic units	8 hrs
537			Crusher	Crusher	4 hrs
538				Drain oil from crusher drive	4 hrs
539			Ash pit/pumps	Ash pit/pumps	4 hrs
540				Isolate & install submersible p/p (discuss with contractor)	4 hrs
541			<b>6 Electrical Systems</b>	<b>Electrical Systems</b>	<b>240.38 hrs?</b>

ID	Wg	Manual Index No	System	Task Name	Duration
542		6.1	<b>Control Systems</b>	<b>Control Systems</b>	<b>6 hrs</b>
543			FCS battery systems	FCS battery systems	6 hrs
544				Remove low voltage dc batteries	6 hrs
545			Fire safety system	Fire safety system	2 hrs
546				Decommission and remove DC battery inverter	2 hrs
547		6.2	<b>Instrumentation</b>	<b>Instrumentation</b>	<b>3 hrs</b>
548			FCS stations	FCS stations	2 hrs
549				Isolate AC supply to FCS stations	2 hrs
550			FCS inverter output	FCS inverter output	3 hrs
551				Isolate inverter supply to FCS stations	3 hrs
552			FCS inverter input	FCS inverter input	1 hr
553				Decommission inverter DC supplies	1 hr
554		6.3	<b>DC systems</b>	<b>DC systems</b>	<b>240.38 hrs</b>
555			DC systems 220v	DC systems 220v	16 hrs
556				Decommission battery charger	1 hr
557				Remove batteries	16 hrs
558				Wash down battery storage area	2 hrs
559			110v	110v	12 hrs
560				Decommission battery charger	1 hr
561				Remove batteries	12 hrs
562				Wash down battery storage area	2 hrs
563			24v	24v	15 hrs
564				Isolate system	4 hrs
565				Decommission battery charger	1 hr
566				Remove batteries	8 hrs
567				Wash down battery storage area	2 hrs
568		6.4	<b>HV supply</b>	<b>HV supply</b>	<b>48 hrs</b>
569			High Voltage supply	High Voltage supply	48 hrs
570				Disconnect 275kV supply at Davenport - Electranet	0 hrs
571				Disconnect at the 18kV side of the transformer	24 hrs
572				Disconnect the 132kV line to the House transformer	24 hrs
573		6.5	<b>Switchboards</b>	<b>Switchboards</b>	<b>24 hrs?</b>
574			6.6	6.6	24 hrs?
575				Isolate 6.6 switchboards	22.38 hrs?
576				discharge breaker spring	24 hrs
577			415V	415V	24 hrs
578				discharge breaker spring	24 hrs
579		6.7	<b>Diesel Generators</b>	<b>Diesel Generators</b>	<b>36 hrs</b>
580				Isolate generators for removal	2 hrs
581				Electrical disconnection	16 hrs
582				Mechanical Disconnection	16 hrs
583				Drain fuel tank	2 hrs
584				Electrical Systems complete	0 hrs
585		7	<b>Stn Aux</b>	<b>Stn Aux</b>	<b>40 hrs?</b>
586		7.1	<b>Aux Blr</b>	<b>Aux Blr</b>	<b>8 hrs</b>
587				Drain Auxillary blr fuel oil tank	8 hrs
588				Drain dosing chemicals	2 hrs
589		7.2	<b>Compressed Air</b>	<b>Compressed Air</b>	<b>3 hrs</b>
590			Compressors	Compressors	3 hrs
591				Shut down and isolate compressors	3 hrs
592			Receivers	Receivers	1 hr
593				Open up Air receivers	1 hr
594		7.3	<b>WTP</b>	<b>WTP</b>	<b>40 hrs</b>
595			RO Plant	RO Plant	8 hrs

ID	Wg	Manual Index No	System	Task Name	Duration
596				Decommission plant	8 hrs
597			<b>WTP</b>	<b>WTP</b>	<b>40 hrs</b>
598				Drain all vessels	40 hrs
599				Dispose of resins and chemicals	40 hrs
600			<b>7.4 Fire Protection</b>	<b>Fire Protection</b>	<b>8 hrs?</b>
601			<b>Fire feedwater</b>	<b>Fire feedwater</b>	<b>4 hrs</b>
602				Isolate from supply and drain system	4 hrs
603			<b>Fire Deluge systems</b>	<b>Fire Deluge systems</b>	<b>8 hrs</b>
604				Drain at pump discharge and each deluge station	8 hrs
605			<b>Diesel Fire Pumps</b>	<b>Diesel Fire Pumps</b>	<b>8 hrs</b>
606				Drain fuel tank, engine oil and coolant	8 hrs
607			<b>Electric pmps</b>	<b>Electric pumps</b>	<b>2 hrs</b>
608				Isolate motors	2 hrs
609			<b>Fire detection DCP's</b>	<b>Fire detection DCP's</b>	<b>8 hrs</b>
610				Isolate and remove lead acid batteries	8 hrs
611			<b>Halon systems</b>	<b>Halon systems</b>	<b>8 hrs</b>
612				Decommission and Remove Halon cylinders	8 hrs
613			<b>Vesda system</b>	<b>Vesda system</b>	<b>4 hrs</b>
614				remove batteries from Vesda units	4 hrs
615			<b>Fire extinguishers</b>	<b>Fire extinguishers</b>	<b>8 hrs?</b>
616				Remove all portable fire extinguishers from site	8 hrs?
617			<b>8 Services</b>	<b>Services</b>	<b>40 hrs?</b>
618			<b>8.1 Workshops</b>	<b>Workshops</b>	<b>40 hrs</b>
619			<b>Mills</b>	<b>Mills</b>	<b>8 hrs</b>
620				Remove all chemicals and lubricants	2 hrs
621				Catalogue and remove equipment and tools for disposal	8 hrs
622			<b>Plant</b>	<b>Plant</b>	<b>8 hrs</b>
623				Remove all chemicals and lubricants	2 hrs
624				Catalogue and remove equipment and tools for disposal	8 hrs
625			<b>Electrical/Coal line</b>	<b>Electrical/Coal line</b>	<b>8 hrs</b>
626				Remove all chemicals and lubricants	2 hrs
627				Catalogue and remove equipment and tools for disposal	8 hrs
628			<b>Chem Lab</b>	<b>Chem Lab</b>	<b>40 hrs</b>
629				Remove all chemicals and lubricants	40 hrs
630				Catalogue and remove equipment and tools for disposal	24 hrs
631			<b>8.3 Admin</b>	<b>Admin</b>	<b>8 hrs?</b>
632				<New Task>	8 hrs?
633			<b>8.4 Document information and management</b>	<b>Document information and management</b>	<b>8 hrs?</b>
634				Pressure vessel de-registration	8 hrs?
635			<b>8.5 Security</b>		<b>8 hrs?</b>
636			<b>9 Appendix</b>		<b>8 hrs?</b>

**Appendix E –Chemical & Oil Management Plan**

**Appendix E1 –Chemical Manifest & Removal Scope**



# NPS Chemical plant that needs to be decommissioned

LPG ignition system	decommissioning	when	Confirmation & monitoring	amount to contend with	Removal date/Complete	Target removal date
2 x 200kg cylinders owned by origin.	Disconnect cylinders and connect nitrogen bank of cylinders to purge pipework Arrange for shift to open aux boiler and each burner separately. Get origin to remove cylinders from site	after units shutdown	Cylinders removed - no monitoring required monitor pipework for explosive gases.	1 and half cylinders	21/06/2016	COMPLETE
<b>Ammonia Dilution system</b>						
20 m3 tank and filling pipework	Use as much as possible in normal operation. Remnants in tank, while units still operating, dilute with copious amounts of sea water and drain to contaminated drains. Refill tank with demin water and drain to contaminated drains system and the refill to above pump "take off" level. Pump water through filling pipework to dosing tanks.	in week before units shut down.	Empty tank and monitor for ammonia and pH.	1 to 2 m3 2.5 to 5% NH3	21/06/2016	COMPLETE
2 x transfer pumps and transfer pipe to unit 1, unit 2 and boiler filling pump.	When dilution tank decontaminated and filled with fresh water pump water through dosing pumps and lines for 20 minutes.	in week before units shut down.	Empty tank and monitor for ammonia and pH.		21/06/2016	COMPLETE
3 x 2000 litre dosing tanks and associated pumps and dosing lines.	use as much during normal service and then drain with dilution water to the contaminated drains system. Refill with fresh water and drain to contaminated drains. Boiler dosing tank can be decommissioned in week before units come off.	one at a time as units come off	Empty tank and monitor for ammonia and pH.	3 x 200litres 0.25% NH3	21/06/2016	COMPLETE
<b>Hydrogen banks and pipework into station</b>						
8 banks of hydrogen	BOC to remove	after units off.	Cylinders removed - no monitoring required		21/06/2016	COMPLETE
stable flow controllers and hydrogen pipework	purged when generator is purged with carbon dioxide	after units off.	purged, monitor for explosive gases		21/06/2016	COMPLETE
<b>Water Treatment Plant including Reverse Osmosis plant</b>						
<b>98% sulphuric acid</b>						
2 x bulk chemical storage tanks (max vol 36m3)	Use as much as possible during normal service. Pump down from either drain or 1inch take off, until level below man hole. Take off man hole cover and pump out sulphuric acid until only remnants remain. Open drain to bund and wash tank out to decontaminate, and then release to effluent bulk tank with diluted sodium hydroxide remnants to neutralise the mixture before pumping to ash pit and ash pond.	one before units come off and the other shortly afterwards	empty tank - monitor effluent for pH	3 to 4 m3 98% H2SO4	8/06/2016	COMPLETE
2 x measure vessels	leave empty after last regeneration and then remove bottom flange and remove standpipe and flush with water.	one before units come off and the other shortly afterwards	monitor pH in drain	1 or 2 litres 98% H2SO4	8/06/2016	COMPLETE
pipework	disconnect and flush with water.	one before units come off and the other shortly afterwards	Monitor pH in drain	<1 litre 98% H2SO4	8/06/2016	COMPLETE
2 x 20% sulphuric acid dilution tanks and pipework	run tank out during last regeneration and drain remnants to effluent system. Disconnect pipework and flush with water.	one before units come off and the other shortly afterwards	Monitor pH in drain	2 x 200litres 20% H2SO4	8/06/2016	COMPLETE
<b>50% sodium hydroxide</b>						
2 x bulk chemical storage tanks (max vol 36m3)	Use as much as possible during normal service. Pump down from either drain or 1inch take off, until level below man hole. Take off man hole cover and pump out sodium hydroxide until only remnants remain. Open drain to bund and wash tank out to decontaminate, and then release to effluent bulk tank with diluted sulphuric acid remnants to neutralise the mixture before pumping to ash pit and ash pond.	one before units come off and the other shortly afterwards	empty tank - monitor effluent for pH	3 to 4 m3 50% NaOH	23/06/2016	COMPLETE
2 x measure vessels	leave empty after last regeneration and then remove bottom flange and remove standpipe and flush with water.	one before units come off and the other shortly afterwards	monitor pH in drain	1 to 2 litres 50% NaOH	23/06/2016	COMPLETE
pipework	disconnect and flush with water.	one before units come off and the other shortly afterwards	monitor pH in drain	< 1 litre 50% NaOH	23/06/2016	COMPLETE
50% sulphuric acid IBC	run out product in service or send back to ace chemicals also could put in acid dilution tank and use in regeneration of cation resin. If only remnants drain to contaminated drains system.	in week before units shut down.	monitor pH in drain	< 500litres 50% H2SO4	8/06/2016	COMPLETE
42% Ferric chloride IBC	run out product in service or send back to ace chemicals also if only remnants remain drain to contaminated drains system.	in week before units shut down.	monitor pH in drain	< 5 Litres FeCL3 42%	21/06/2016	COMPLETE
10% Sodium metabisulphate tank	Bubble air through solution for a couple of days until sodium metabisulphite forms sodium sulphate and then drain to contaminated drains system.	in week before units shut down.	monitor pH and ORP in drain	<200 litres NaSO4 or SMBS	20/06/2016	COMPLETE
antiscalant tank	run out in normal service and drain residue to contaminated drains system	in week before units shut down.	Monitor Phosphate	20 litres antescalant	20/06/2016	COMPLETE
2 x anion, 2 x cation and 2 x mixed bed vessels ion exchange resin	pump out resin to storage truck to be removed from site - Cations 2 x 7000litres, Anions 2 x 5400 litres, Mixed beds 2 x 1250 litres of ion exchange resin	one train before units come off and the other shortly afterwards		27300 litre ion exchange resin	14/06/2016	COMPLETE
<b>Condensate polishers</b>						
5 x ion exchange resin charges	pump out resin to storage truck to be removed from site => Adelaide approx 6200 litres per charge	3 resin charges when first unit is in "non-return to service period" and other 2 when second unit is off.		31000 litre ion exchange resin	14/06/2016	COMPLETE
Sulphuric acid measure vessel and Sodium hydroxide measure vessel	leave empty after last regeneration and then remove bottom flange and remove standpipe and flush with water.	in week before units shut down.	monitor pH in drain	1 or 2 litres 98% H2SO4 and 50% NaOH soln.	8/06/2016	COMPLETE
pipework (concentrated chemical)	disconnect and flush with water.	in week before units shut down.	monitor pH in drain	<1 litre 98% H2SO4 and 50% NaOH soln.	8/06/2016	COMPLETE
Sulphuric acid dilution vessel and pipework	run tank out during last regeneration and drain remnants to effluent system. Disconnect pipework and flush with water.	in week before units shut down.	monitor pH in drain	250litres 20% H2SO4	8/06/2016	COMPLETE
<b>Ferrous Chloride</b>						
12% ferrous chloride tank	pump out ferrous chloride for disposal and wash out remnants to contaminated drains system with copious dilution.	in week before units shut down.	monitor pH and iron in drain	5 m3 12% FeCL2 soln	21/06/2016	COMPLETE

dilution 1-2% solution tank	Use as much as possible during normal operation and flush out remnants of tanks to contaminated drains system.	in week before units shut down.	monitor pH and iron in drain	1.5m3 1 - 2% soln	21/06/2016	COMPLETE
<b>Carbon dioxide</b>						
36 G size cylinders	Use carbon dioxide up in generator purge and purging hydrogen lines.	After Units off. Could start one unit purge in last week of running.			21/06/2016	COMPLETE
Pipework	break pipe work at various locations to release carbondioxide.	After Units off. Could start one unit purge in last week of running.			21/06/2016	COMPLETE
<b>Generators</b>						
2 x hydrogen in generator space	Displace hydrogen with carbon dioxide at earliest time possible and then purge with air	After Units off. Could start one unit purge in last week of running.	orsat check		21/06/2016	COMPLETE
<b>Chlorine plant</b>						
1000litres of 2% to 3% hydrochloric acid solution	Drain to contaminated drains system with copious water/seawater dilution	in week before units shut down.	monitor pH in drain	5000 litres <1% HCl solution	21/06/2016	COMPLETE
<b>Auxillary boiler dosing tank</b>						
60 litres BWT dosing solution	Neutralise with acid or dilute with lots of water and into contaminated drains system	in week before units shut down.	monitor pH in drain	40 litres BWT	21/06/2016	COMPLETE
<b>Workshop and laboratory chemicals &amp; hazardous substances</b>						
Various chemicals, solvents, oils and Greases	Arrange disposal by contractor	After shut down			27/06/2016	COMPLETE
<b>Bottled Gas</b>						
Various Cylinders on site	Arrange transport to BOC	After shut down	Cylinders removed - no monitoring required		21/06/2016	COMPLETE
<b>SF6 &amp; Freon in GCB &amp; transformers and Spare SF6/ Freon cylinders</b>						
SF6 and Freon in Generator circuit breaker and transformers and cylinders of SF6 and Freon in workshops and store compound.	Arrange recovery and disposal by contractor.	After Shut down				31/08/2017
<b>Radio active substances (XRF, etc etc)</b>						
Pulsed XRF, 2 x hand held XRF and Benchtop XRF in Laboratory	Oxford Instruments model X-Met 3000T, Tube serial no 702033 (EPA no. 21237) has been disabled. Hand held, pulsed and benchtop XRF to be sold.	After Shut down			1/10/2016	COMPLETE

<b>Petrol Tank / underground storage</b>		<b>Timeframe</b>	<b>Target date</b>	<b>Status</b>
NPS Store	Get pumped out in preparation for removal and soilclean up as per DSI Phase 3	After Shutdown	30/06/2016	Complete (empty)
<b>Diesel tanks</b>				
Fire diesel tanks	Get Pumped out	Late June	30/06/2016	Complete
Cat Generator Tank	Get Pumped out	Late June	30/06/2016	Complete
<b>Fuel Oil</b>				
Aux Boiler	Get pumped out and cleaned	After Shutdown	31/08/2017	Emptied - to be cleaned
Main fuel oil tank	Get pumped out and cleaned	After Shutdown	31/08/2017	Emptied - to be cleaned
PPS fuel oil tank	Clean out	After Shutdown	31/08/2017	Emptied - to be cleaned
Flush fuel oil system including PPS to NPS pipeline	Get pumped out and cleaned	After Shutdown	31/08/2017	Emptied - to be cleaned
<b>Oils</b>				
Plant - all but transformers and turbines	Pump out - fans, air heaters, BFPs, ID fans, Gr Fans, Mills, Deashers and ploughs	After Shutdown	31/08/2017	As per Demolition Plan
Workshop and stores	collect together on shut down	After shut down	31/08/2017	95% complete
<b>Transformers degass- Remove Freon gas</b>				
Coal line transformers	Reclaim at shut down	After shut down	31/08/2017	A number of transformers have been removed from site
site transformers	Reclaim when de-energised	June	31/08/2017	
<b>Generator circuit breakers remove SF6</b>				
Generator circuit breakers	reclaim gas from circuit breakers	after shut down	31/08/2017	As per Demolition Plan
SF <sup>6</sup> in store	Dispose of gas cylinders	after shut down	30/06/2016	Complete
<b>Batteries</b>				
Various NiCad, Lithium, NiMetal hydride etc	collect together on shut down	After shut down	30/06/2016	Complete
Lead acid in disposal area	collect together at shutdown	After shut down	30/06/2016	Complete
Battery room batteries	McMahons	After shutdown	30/06/2016	Complete
<b>Mercury</b>				
Globes and mamometers etc	Collect together on shutdown	After shutdown	30/06/2016	Complete
<b>Greases and permalubes</b>				
Workshop and stores	Collect together on shutdown	After shutdown	31/08/2017	95% complete

# NPS Chemical plant that needs to be decommissioned

Item number	decommissioning	when	amount to contend with	
<b>Ammonia Dilution system</b>				
1	NPS ammonia dilution 20 m3 tank	Drain tank and flush out	in week before units shut down.	1 to 2 m3 2.5 to 5% NH3
2	3 x 2000 litre dosing tanks at NPS.	pump out remnants	one at a time as units come off	3 x 200litres 2.5% NH3
<b>Water Treatment Plant including Reverse Osmosis plant</b>				
<b>98% sulphuric acid</b>				
3	2 x bulk chemical storage tanks (max vol 36m3) at NPS	Pump out tank and decontaminate. Remove built up sludge	one before units come off and the other shortly afterwards	3 to 4 m3 98% H2SO4
4	2 x 20% sulphuric acid dilution tanks at NPS	pump out tank and decontaminate.	one before units come off and the other shortly afterwards	2 x 200litres 20% H2SO4
<b>50% sodium hydroxide</b>				
5	2 x bulk chemical storage tanks (max vol 36m3) at NPS	Pump out tank and decontaminate. Remove built up sludge	one before units come off and the other shortly afterwards	3 to 4 m3 50% NaOH
6	50% sulphuric acid IBC at NPS	Pump out tank and decontaminate. Remove built up sludge	in week before units shut down.	< 500litres 50% H2SO4
7	10% Sodium metabisulphate tank RO plant NPS	pump out tank and decontaminate.	in week before units shut down.	<200 litres NaSO4 or SMBS
8	antiscalant tank RO plant NPS	pump out tank and decontaminate.	in week before units shut down.	20 litres antescalant
9	2 x anion, 2 x cation and 2 x mixed bed vessels ion exchange resin at NPS	pump out resin to storage truck to be removed from site - Cations 2 x 7000litres, Anions 2 x 5400 litres, Mixed beds 2 x 1250 litres of ion exchange resin	one train before units come off and the other shortly afterwards	27300 litre ion exchange resin
<b>Condensate polishers</b>				
10	5 x ion exchange resin charges at NPS	pump out resin to storage truck to be removed from site => Adelaide approx 6200 litres per charge	3 resin charges when first unit is in "non-return to service period" and other 2 when second unit is off.	31000 litre ion exchange resin
11	Sulphuric acid dilution vessel at NPS	pump out tank and decontaminate.	in week before units shut down.	250litres 20% H2SO4
<b>Ferrous Chloride</b>				
12	NPS 12% ferrous chloride tank	pump out tank and decontaminate.	in week before units shut down.	5 m3 12% FeCL2 soln
13	NPS dilution 1-2% solution tank	pump out tank and decontaminate.	in week before units shut down.	1.5m3 1 - 2% soln
<b>Auxillary boiler dosing tank</b>				
14	NPS AUX BLR - 60 litres BWT dosing solution	pump out tank and decontaminate.	in week before units shut down.	60 litres BWT
<b>Workshop and laboratory chemicals &amp; hazardous substances</b>				
15	Various chemicals, solvents, oils and Greases at NPS	remove workshop chemicals, oils etc.	After shut down	manifest
16	Various chemicals, paints & glues at NPS	Remove Site store oils and chemicals	After shut down	manifest
<b>Petrol Tank / underground storage</b>				
17	NPS Store	Get pumped out for Macmahons to remove tank	After Shutdown	Max 11.5 Kilolitres, hopefully done to <1000 litres

**Diesel tanks**

18	NPS and PPS Fire diesel tanks	Move to main diesel tank near tower C	Late June	3700 litres max
19	NPS Cat Generator Tank	Move to main diesel tank near tower C	Late June	4700 litre max

**Fuel Oil**

20	NPS Aux Boiler tank	Pump out and Clean	After Shutdown	5000 litres max
21	NPS Main fuel oil tank	Pump out and Clean	After Shutdown	250000 litres max <50,000 litres
22	PPS fuel oil tank	Pump out and Clean	After Shutdown	<10,000 litres
23	fuel oil Pipe from delivery point to NPS and PPS service tanks	clean out line	After Shutdown	Unkown
24	fuel oil Pipe from PPS service tank to PPS LP and HP oilheater and return line	Clean out line	After Shutdown	Unkown
25	PPS fuel oil lp heater X 2	Clean out heater	After Shutdown	Unkown
26	PPS fuel oil hp heater X 2	Clean out heater	After Shutdown	Unkown
27	PPS fuel oil lines to burner and back to heaters	clean out line	After Shutdown	Unkown
28	NPS fuel oil heaters x 2	Clean out heater	After Shutdown	Unkown
29	NPS fuel oil lines to transfer pumps, service pumps lines to burners and back to main oil tank. NPS unit 1 and 2.	Clean out lines	After Shutdown	Unkown

**Oils**

30	NPS Turbine oils from unit 1 and 2	Pump out and dispose	After Shutdown	32860 x 2
31	NPS unit turbine oil tanks and oil conditioners	clean out	After Shutdown	
32	NPS turbine oil transfer lines and storage tank	clean out	After Shutdown	
33	NPS mills x 12 ground floor	collect together on shut down	After shut down	1800 x 12
34	NPS Primary and secondary air fans above ground x 2	Pump out and dispose	After Shutdown	770 x 4
35	NPS Primary air and secondary air heaters lube oil X 2 - above ground level	Pump out and dispose	After Shutdown	425 X 4
36	NPS Primary air and secondary air heaters gearbox oil X 2 - above ground level	Pump out and dispose	After Shutdown	80 x 4
37	NPS Boiler Feed pumps grbx, tank & cooler X 4	Pump out and dispose	After Shutdown	2800 x 4
38	NPS Deasher x 2 hydraulic oil	Pump out and dispose	After Shutdown	60 x 2
39	NPS Coal line ploughs x 2	Pump out and dispose	After Shutdown	450 X 2
40	NPS ID fans x 4	Pump out and dispose	After Shutdown	770 x 4
41	NPS GR fans x 2	Pump out and dispose	After Shutdown	500 x 2
42	NPS Conveyer gearbox/fluid drives 1(x2), 2(x2), 3, 7(x2) 9(2),11(x2) - above and below ground level.	Pump out and dispose	After Shutdown	130 to 372 mainly in 150litre range
43	NPS compressors x 3	Pump out and dispose	After Shutdown	100 x 3
44	NPS Cat generators x 2	Pump out and dispose	After Shutdown	200 x 2
45	Workshop storages at NPS	collect, remove from site and dispose	After Shutdown	y
46	Stores Shed oils and grease at NPS	remove from site and dispose	After Shutdown	lots
47	waste oil collection area at NPS	remove from site and dispose	After Shutdown	12000 + litres

**Transformers oils**

48	NPS transformer - 2 x stepup, Fuji	Remove oil	late june	2x 53000litre
49	NPS transformer - 2 x unit Wilson,	Remove oil	late june	2 x 13000 l
50	NPS transformer - 2 x station, tyree	Remove oil	late june	26000
51	Fuel oil unloading	Remove oil	late june	600
52	Town water	Remove oil	late june	600
53	Spare step up at NPS	Remove oil	late june	50000
54	PPS PPS Met vickers step up x 4	Remove oil	late june	4 x 69000
55	PPS Ferranti house	Remove oil	late june	36000
56	PPS Unit	Remove oil	late june	4 x 4000
57	PPS Aux	Remove oil	late june	4 x 700
58	PPS GP	Remove oil	late june	1400
59	PPS ASH	Remove oil	late june	1400
60	PPS coal line starter	Remove oil	late june	2100
61	Spare unit at PPS	Remove oil	late june	1300

total 565900 litres

**Batteries**

62	Various NiCad, Lithium, NiMetal hydride etc at N	remove from site and dispose	After shut down	Unknown
63	Lead acid in disposal area at NPS	remove from site and dispose	After shut down	Unknown
64	NPS Battery room batteries	remove from battery room and put on pallet (outside)	late june	Unknown
65	NPS Battery room Batteries	Remove from site	late june	Unknown

**Mercury**

66	Globes and mamometers etc at NPS	remove from site and dispose	After shutdown	Unknown
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**Greases and permalubes**

67	Workshop and stores at NPS	remove from site and dispose	After shutdown	Unknown
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**Coolant**

68	Cat diesels NPS	Pump out and dispose	late june	100 litre
69	PPS fire diesel pumps	Pump out and dispose	late june	100 litre

## Appendix F – McMahons Early Works Agreement Plans

- Concept Closure Plan
- Dismantling Plan
- Environmental Management Plan
- Work Health and Safety Plan
- Work Packages and Staging
- Demolition Plans (AS 2601) for:
  - Playford A,
  - Playford B,
  - Northern and
  - Infrastructure
- Hazardous Materials Management Plan
- Work Package Detailed Program
- Waste Management Plan
- Site Management Plan
- Communications Management Plan
- Project Delivery Plan
- Transport Management Plan
- Completion & Handover Plan

**Appendix G – APS Dust Management Plan**

**Appendix H – Project Risk Assessment Register (PRAR)**



## Document Control:

Version	Date	Update	Authorised
<b>1 (Draft)</b>	18/3/16	Internal draft for comment	K.Smith
<b>2 (Draft for Comment)</b>	31/3/16	Final draft issued to SA EPA for comment	K.Smith / B.Williams
<b>3 (Final)</b>	28/04/16	Final version including EPA feedback and plan updates.	K.Smith / B.Williams
<b>4 (Revised Final)</b>	10/06/16	Final revised version incorporating EPA feedback and plan updates	K.Smith / B.Williams
<b>5 (Revised Final)</b>	9/09/16	Final revised version incorporating EPA feedback, use of WDF and plan updates	K.Smith / B.Williams
<b>6 (Revised Final)</b>	10/10/16	Final revised version incorporating EPA feedback and plan updates	K.Smith / B.Williams
<b>7 (Revised Final)</b>	03/02/17	Review following Dust Event of 1 <sup>st</sup> /2 <sup>nd</sup> January 2017	B.Williams
<b>8 (Revised Final)</b>	03/03/17	Revised to address EPA correspondence of 20 February 2017	B.Williams
<b>9 (Revised Final)</b>	15/09/17	Revised to address EPA correspondence of 30 August 2017	B.Williams