Ridley Dry Creek
Base Case Closure for
Sections 2 to 4

May 2014
The Sections of the Salt Field

Section 1 – Dry Creek

Section 2 – St Kilda

Section 3 – Port Gawler

Section 4 – Middle Beach
Indicative Closure Sequence

SA Government and Ridley Agree Closure Concept (subject to outcomes of investigation and design)

- Final Definition of Closure Project for PEPR and EPBC Referral
- EPBC Referral of Closure

- Approval of:
  - PEPR
  - Commonwealth EIS (if required)

Closure Achieved and:
- Mining Leases Surrendered
- Crown Leases Surrendered
- Improvements / Assets on Crown land transferred to Government
- Land in an environmentally safe condition providing a platform for ongoing post closure rehabilitation and for adaptation for future land uses

Ridley

- Holding Pattern
- Investigation & Design of Closure
- Preparation and Approval Processes for:
  - Closure PEPR
  - Commonwealth EIS for Closure
- Implement PEPR
- Post Closure Management of Freehold Land

SA Government

- Planning, Investigation, Permitting Design, of Post Closure Land Uses
- Land is classified as a Mine, regulated by DMITRE, supported by other State Government Agencies

SA Government

- Post Closure Management of Crown Land using transferred Improvements / Assets (and adapted as Government sees fit)
- Land is no longer classified as a Mine, and is regulated by other State and Local Government Agencies
Key Challenges

• Two key issues are:
  – The management of water for the sustainable protection and conservation of an appropriate scale of migratory bird habitat
  – The prevention and management of risks from ASS and MBO within the ponds – especially risks to the external sensitive coastal environment
• The complexities and nature of the man-altered environment and geomorphology of the site, and of its adjacent natural coastal areas, are such that:
  – Long term post-closure environmental management of the different parts of the site will be unavoidable
  – Balanced judgements incorporating a range of perspectives of many factors will be required to derive the precise definition of the scope and compliance requirements for closure that are needed to engender confidence and certainty in all key stakeholders about the application of regulatory processes to this closure.
  – This document suggests a framework for considering alternatives and for discussing and reaching the balanced judgements needed.
  – Achieving closure cannot be risk-free, but risks can and must be managed in an adaptable and prudently regulated manner
  – Closure may not mark the end of rehabilitation processes. It is feasible to aim for the site’s environmental responses to closure actions to be established and on a stable footing at closure. However, these environmental responses may continue and evolve into the long term.
  – Closure can provide a prudent way-station along a pathway to future land uses. This means that for the environment at the site closure is not an end in itself, but a stage in a multi-staged transition to the future uses.
Key Principles For Closure

- Closure of each part of the site is to involve regulated works that have clear objectives, defined scopes, and measurable completion criteria, and that are capable of completion in a definable period of time.
- Closure marks the end of the site’s status as a mine and its regulation and management under the Mining Act; and the start of its regulation and management under other planning and environmental legislation.
- Closure triggers the surrender of mine leases and of the Crown leases.
- Closure is to achieve reasonable compliance (respecting the site specifics) with the:
  - State Legislation: Mining Act, Environment Protection Act & EPA Licence; Fisheries Management Act; and
  - Commonwealth Legislation: EPBC Act;
- Where a specific future land use can be defined for a part of the site, and can be assessed to be feasible, and achievable within reasonable time frames and with reasonable certainty, closure can be designed to progress the relevant part of the site towards that specific option;
- Where a specific future land use cannot be defined for a part of the site, the condition of that part of the site at closure is not to unduly constrain its plausible future land uses;
- Closure means that:
  - Crown Land will be returned to government control and management; and
  - Freehold land will be under Ridley control and management;
- Closure prepares each part of the site for practicable post-closure land management using assets provided for this purpose. Responsibility for that management rests with the owner or occupier of the relevant part of the site;
- Closure may be achieved for individual parts of the site in different time frames.
Need for a Base Case Closure Plan

- As of April 2014, there are no certain future land uses
  - Proponents of future land uses, if known, do not have clear descriptions of their future land use plans, time lines for their investigation design approval and implementation, or information to provide confidence about their feasibility.
  - There may be other as yet unknown proponents of other possible land uses
- It will take many months, perhaps a year or more for specific future land uses to be defined that have been assessed to be feasible, and achievable within reasonable time frames and with reasonable certainty.
- Therefore to provide a framework for investigations and design for the purposes of a PEPR and an EPBC referral, and to achieve process certainty and a clear definition of closure, a base case closure plan is needed
- This base case closure plan needs to be conceived so that:
  - it can be adapted to accommodate specific future land uses as these can be defined
  - Where feasible, the investigations for its PEPR and EPBC Referral can be done collaboratively with investigations needed by proponents for future land uses
A Base Case Closure Plan

• Serves to focus and frame the investigations and design needed for the closure PEPR, and EPBC referral. (A clear considered definition of the closure project is needed for the EPBC referral and for the PEPR)

• Helps identify issues / topics for those investigations and design so that this work can then be scoped and implemented

• Helps focus and scope the regulatory assessments and the criteria for those assessments

In other words.... There can be confidence in the sufficiency of investigations and design for the PEPR and EPBC Referral ....... There can be confidence in the regulatory assessment process.
Some Site Specific Constraints and Opportunities

• Topography wrt Pond Water Levels, Sea Level and Groundwater Levels
• Water Management for Migratory Birds
• ASS / MBO Risk Management
Operational Water Levels and Ground Levels
Section 2 – St Kilda

Operational Water Levels 2003 to 2013 (mAHD)
(Indicative ground level (mAHD))

1.30 to 1.99 (0.05 to 1.07)
1.86 to 2.20 (1.40)
1.65 to 2.12 (1.25)
2.00 to 2.45 (1.55)
1.90 to 2.11 (1.05 – 1.6)
Operational Water Levels and Ground Levels

Section 3 – Port Gawler

Operational Water Levels 2003 to 2013 (mAHD)
(Indicative ground level (mAHD))

Hypothesised Indicative 1.5 m AHD Ground Contour (ignoring creek lines)
Operational Water Levels and Ground Levels

Section 4 – Middle Beach

Operational Water Levels 2003 to 2013 (mAHD)
(Indicative ground level (mAHD))

Hypothesised Indicative 1.5 m AHD Ground Contour (ignoring creek lines)

DRAFT - FOR DISCUSSION PURPOSES ONLY
Could 1.5m AHD be a significant level?

Before the salt field was created:

- Above 1.5m AHD reduced frequency of significant tidal exchange of water in natural creek lines
- Below 1.5m AHD increased prospect that monosulfidic materials existed at/near the ground surface
- Possible that groundwater declined from about 1.5m below ground level (i.e. from about 1.5 m AHD) at eastern boundary of Section 4, north eastern boundary of Section 3 down to mean sea level (approx -0.2 m AHD) at western boundary of the site, and at the natural creek lines.


Sea level wrt Chart Datum
Issues for Water Management For Migratory Birds?

- In each inundated pond provide areas of managed water depths / quality regime
  - Area A: 0 to 0.15 m deep
  - Area B: 0.15 to 0.3 m deep
  - Area C: > 0.3 m deep
- The relative proportions and values of A, B, C will influence the mix and numbers of different species that use the site
- Have levels in each pond such that there is gravity flow of water through the sequence of ponds
- Use topography and managed water levels to provide safe roosting areas adjacent to water, and that have wind protection for a variety of wind directions
  - Islands
  - Beaches in the lee of bunds
- Salinities in ponds to increase along the flow paths from ca 45 ppt (S.G. = 1.03) at the Chapman Creek end (XB3) to ca 120 ppt (S.G. = 1.08), at the Discharge Pump end (PA5), noting we do not want to accumulate precipitated or crystallised gypsum, magnesium or sodium salts, but we do want to encourage brine shrimp (which need salinity above 60 to 80 ppt and below 250 ppt to thrive in a natural environment). This means residence time of water in each pond needs to be managed, and it means that all salts imported by entrainment need to be exported by discharge, so that in aggregate over a year there is no net import and accumulation of salts.
- Absent tidal flushing (ie diurnal exchange of water), sustain a low nutrient environment, so that risk of algal blooms is low. This means residence time of water in each pond as a whole and in each 1/10th of each pond’s area needs to be managed
- Managing residence time means:
  - Managing entrainment rates at Chapman Creek
  - Managing discharge rates at SA Water Outfall - (Higher rates possible in Winter, lower in Summer – due to Bolivar flow rates and salinities in the discharge water (higher in summer))
  - Managing flow rates between ponds (by manipulating gate / weir settings)
  - Responding to changes in evaporation and rainfall
  - Allowing water levels in the ponds to fluctuate - (probably lower in winter (birds absent and greater discharge possible) and higher in summer (birds present and need to sustain water quality requires more entrainment, since discharge has to be lower))
ASS / MBO Hazards?

- Evidence from ASS investigations is that a veneer of MBO ("New MBO") formed in some places on top of original land surface during the inundated operation of some of the ponds
  - Tendency for this to have accumulated in greater thickness in topographic lows (e.g., creek lines, excavated trenches / drainage paths, at the exit points for water flow from the ponds)

- The mean high tide level where this is higher than the groundwater level, and the groundwater level where this is higher than the mean high tide level possibly represents a horizon ("Water Horizon") in the original geomorphology of the site:
  - Below which - MBO ("Old MBO") and soils (clays, silts, sands) remained anoxic and so would have the potential to become acidic if now exposed to the air; and
  - Above which - a band of partially saturated to saturated soils (clays, silts, sands) existed pre-salt field and so may have residual acid forming potential, if now exposed to the air and become unsaturated / less saturated than they were pre-salt fields

- In the original geomorphology, *Old MBO* would have accumulated most in the topographic lows in areas below the *Water Horizon*. This *Old MBO* could have been added to by *New MBO* formed during the operation of the ponds.

- Unsaturated to partially saturated and largely aerobic soils (clays, silts, sands) existed in the original geomorphology, above high tide level and on top of the partially saturated to saturated pre-salt field soils. These, where their geochemistry was unaltered by the inundation of the salt fields would have no to low residual acid forming potential if now exposed to the air.

- The clays, silts, sands have variable geochemistry and contain variable proportions of calcareous material in a range of particle sizes. This provides a mosaic of soil lenses / layers within each pond exhibiting variable acid generation potential and acid neutralising capacity.
Issues for Water Management For ASS / MBO Risk Management?

- Where the veneer of New MBO is above the Water Horizon, within a bunded pond which can contain runoff, and surrounded by / underlain by soils with sufficient acid buffering capacity, the sustainable risk management action may be to dry this out as quickly as possible and to keep it drained and dry. It is important to avoid cycles of drying and wetting of this New MBO as this would perpetuate the risk of mobilising acidity, metals and metalloids.

- Where cycles of drying and wetting of this New MBO cannot be avoided, or where this might occur in an area where the surface runoff might escape from the site, then it would be preferable to adopt some other risk management strategy such as restoration / preservation of inundation or some suitable combination of physical / chemical / biological treatment.

- Ground containing MBO (New and Old) and potentially acidic soils, and that is below the Water Horizon, should kept saturated and isolated from the air. This can be achieved:
  - In Section 2 by a combination of the gypsum cap to limit evaporation losses, and the groundwater levels beneath the cap being preserved at or close below the base of the cap by external boundary conditions (mean tide levels to the west and site boundary groundwater levels to the east).
  - In Sections 3 and 4 by inundation using pumped entrainment of water and the depth of water managed to accommodate seepage and evaporation losses.

- Tidal cycles of drying and wetting of New or Old MBO or other potentially acidic soils in the ponds is to be avoided unless trials demonstrate that risks of mobilising acidity, metals and metalloids into pond waters or into sensitive external receiving environment are acceptably low.
Base Case Closure Plan Concept
The Four Closure Domains

- **SA Government and Ridley Agree Closure Concept** (subject to outcomes of investigation and design)
- **Final Definition of Closure** Project for PEPR and EPBC Referral
- **Approval of:**
  - PEPR
  - Commonwealth EIS
- **Closure Achieved and:**
  - Mining Leases Surrendered
  - Crown Leases Surrendered
  - Improvements / Assets on Crown land transferred to Government
  - Land in an environmentally safe condition providing a platform for ongoing post closure rehabilitation and for adaptation for future land uses

**Investigations, Design, Approval and Conduct of Closure Works**

- **Section 2 (PA6 to PA12)**
- **Sections 2 & 3 Inundated Areas** (Chapman Creek to SA Water Outfall)
- **Sections 3 and 4 Dry Areas**
- **Section 4 Inundated Areas** (if required)

**Post Closure Management**

- **By Ridley of Freehold Land**
- **By Government of Crown Land using transferred Improvements / Assets (and adapted as Government sees fit)**

It is envisaged each Domain would be addressed separately but in an integrated manner in the PEPR.

Land is classified as a Mine, regulated by DMITRE, supported by other State Government Agencies

- Feb 2014
- May 2014
- 2014
- 2015

Land is no longer classified as a Mine, and is regulated by other State and Local Government Agencies
Summary of Base Case Closure Plan

Sections 2 to 4

- Maintain Holding Pattern until replaced by outcomes from closure works
- Water level management as per following
- Change Water Management Infrastructure
  - Move 2 Middle Beach Pumps to Chapman Creek, and provide permanent power supply
  - If results of ASS investigations require inundation of lower parts of Section 4, retain 1 Middle beach Pump at Middle Beach. Otherwise remove all Middle beach entrainment pumping systems
  - Retain No 2 pump at St Kilda for discharge to SA Water Outfall
  - Retain 1 of the existing St Kilda pumps for emergency discharge into PA6
  - Once ASS risks confirmed acceptable in drained / dry ponds
    - Remove Section 4 Transfer Pumps and decommission their power supply
    - Remove Gawler Transfer Pumps, pump stations and pipeline and decommission their power supply
    - Remove Virginia Gate Pump and decommission its power supply
    - Remove unused Middle Beach pump stations
  - Retain as spares: 1 Middle beach Pump; 1 pump for the St Kilda discharge (? 1 of the existing Chapman Creek Pumps); the 2nd existing St Kilda Pump
  - Retain in case of need: a pump to be inserted at PA9 to connect to the existing pipeline to PA10
  - Remove / Block / Fill and make safe disused culverts and syphons
  - Install new discharge to Gawler River
  - Where creek lines run under internal bunds, or needed for drainage, provide additional gated culvert pipes for hydraulic connection
  - Provide swale drains to ensure that drained/ dry areas cannot pool water, and instead drain freely into the inundated area
- Maintain bunds needed for:
  - Protection of ponds, roads, settlements against tides, storm surges and sea level rise
  - Management of water depths / quality regime below the target level
- Rehabilitation for Vegetation / Terrestrial Ecology
  - Rehabilitation (using a balanced mix of deliberate plantings and of encouraged colonisation) in drained / dry ponds for soil stabilisation; for dust inhibition; for drainage and water table management; and for provision of ecological habitat.
  - Continue pest and feral animal control regime
- Create and Implement an Environmental Monitoring and Management Plan for a) compliance and b) conduct of the closure works and c) post closure
Base Case Closure Water Level Management – Section 2

See next slide for illustration of the following:

- All Ponds PA6 to PA12 kept drained and dry, due to presence of gypsum cap and sustainable saturation of underlying soils from groundwater and capillary action above this.
- Ponds PA6 to PA9 kept available as emergency, temporary, storage / evaporation area for pumped overflow from PA5, (e.g., due to problem with discharge pump, extreme weather, or with SA Water Outfall)
- Ponds PA3 to PA5 kept inundated to conduct gravity flow of water for pumped discharge to SA Water Outfall
  - There will be no surface water discharge to external environment other that this pumped discharge to the Outfall
  - There will need to be a License for that discharge
    - Initially to Ridley pursuant to the Closure PEPR Approval. This is envisaged to be an extension of the Holding Pattern discharge License;
    - Then, post-closure, for the Government as land manager for the crown land
Section 2 – St Kilda – Possible Managed Water Levels

Ponds PA6 to PA12 leave drained and dry because:
• Gypsum Capped – provides acid neutralisation and limits evaporation losses
• Soils below cap kept saturated by groundwater levels in ponds and capillary rise above these levels

These levels dictated by mean high tide level of 1.5m AHD to the west and shallow groundwater levels to the immediate east of the ponds (due to seepage from Bolivar and the invert levels (estimated at approx 1.7 to 1.9 m AHD) of drainage channels for land to the east.

Operational Water Levels
2003 to 2013 (mAHD)
(Indicative ground level (mAHD))
Suggested future managed water levels

PA6 to PA9 kept available as emergency, temporary, storage / evaporation area for pumped overflow from PA5, (e.g., due to problem with discharge pump, extreme weather, or with SA Water Outfall)

In each pond, the general tendency is for ground levels to fall towards the south west, and also towards creek lines that tend to meander towards the southwest
Base Case Closure Water Level Management – Section 3

See next slide for illustration of the following:

- All land below 1.5 m AHD (level to be confirmed by investigations of ASS and design of Water Management Regime) in Section 3 kept inundated:
  - For ASS / MBO risk management
  - To provide Required Migratory Bird Habitat

- Use of pumped entrainment at Chapman Creek and pumped discharge at PA5 into SA Water Outfall to:
  - Provide certainty of control of areas of required water depths and quality needed for migratory bird habitat conservation
  - Sustain a suitable salinity gradient as part of the required water quality regime
  - Preserve aspects of the site’s operational heritage

- Managed water levels (level to be confirmed by design of Water Management Regime) in inundated ponds provide for:
  - Gravity flow between Chapman Creek Pumps and the Discharge Pump at PA5
  - A mix of areas of different water depths (0-0.15m; 0.15 to 0.3 m; > 0.3m to approx 1.0 m) to suit the desired mix of birds?

- Connections to be provided through internal bunds will:
  - Keep the old creek lines outside the bunds (where these incise into ground with levels above 1.5m AHD ) suitably inundated with water levels similar to those in the ponds
  - Allow seepage drains outside these bunds to drain freely
  - Allow land inside the site and outside the bunds to drain freely

- All water discharged from Section 3 will end up in PA3 to PA5, from where excess water will be discharge to the SA Water Outfall under Licence. There will be no other surface water discharge to the external environment.
Section 3 – Port Gawler – Possible Managed Water Levels

In each pond, the general tendency is for ground levels to fall towards the southwest, and also towards creek lines that tend to meander towards the southwest.

Potential line of landward bunds for permanently inundated ponds with ground level below 1.5 m AHD. Note corridor outside this line that would be subject to seepage and to which water would drain from remainder of site to east. This line of bunds would become adapted to form the sea defence line after sufficient sea level rise had occurred.

Operational Water Levels
2003 to 2013 (mAHD)
(Indicative ground level (mAHD))

Suggested future managed water levels

--- Hypothesised
Indicative 1.5 m AHD
Ground Contour. (Contour ignores creek lines)

--- Hypothesised
Drainage Corridor with indicative ground levels 1.5 to 2.0 m AHD, and which may be kept moist by seepage from inundated ponds and creek lines, and by drainage from higher ground to the east.
See next slides for illustration of the following:

- Subject to ASS investigation outcomes, all land to be drained and dry, with a suitable managed revegetation programme afoot, and left in a free draining state (i.e. rainfall accommodated by evapo-transpiration, surface run off and infiltration)

- In event that ASS investigation outcomes demonstrate the need:
  - All land below 1.5 m AHD in Section 4 kept inundated, with a suitable drainage corridor above this level
  - All land above the drainage corridor to be drained and dry, with a suitable managed revegetation programme afoot, and left in a free draining state (i.e. rainfall accommodated by evapo-transpiration, surface run off and infiltration)

- In event inundation required:
  - Use of pumped entrainment at Middle Beach, and gated gravity discharge at XE6 into Gawler River to:
    - Provide certainty of control of areas of required water depths and quality
    - Sustain a suitable salinity of discharge
  - Managed water levels in inundated ponds provide for:
    - Gravity flow between Middle Beach Pumps and the Discharge Point at XE6
  - Envisage that connections to be provided through internal bunds will:
    - Keep the old creek lines outside the bunds (where these incise into ground with levels above 1.5m AHD) suitably inundated with water levels similar to those in the ponds
    - Allow seepage drains outside these bunds to drain freely
    - Allow land outside the bunds to drain freely
  - There will need to be a License for the discharge to Gawler River
    - Initially to Ridley pursuant to the Closure PEPR Approval. This is envisaged to be an extension of the Holding Pattern discharge License;
    - Then, post-closure, for the Government as land manager for the crown land
Section 4 – Middle Beach – Possible Managed Water Levels

In each pond, the general tendency is for ground levels to fall towards the southwest, and also towards creek lines that tend to meander towards the southwest.

Operational Water Levels 2003 to 2013 (mAHD) (Indicative ground level (mAHD))

Suggested future managed water levels

Investigations will determine the level and location of the Ground Contour and the shape and dimensions of the Drainage Corridor.

Operational Water Levels 2003 to 2013 (mAHD) (Indicative ground level (mAHD))

Suggested future managed water levels

Note that if the results of ASS Investigations so permit, Section 4 would be fully drained and dried, and all water entrainment and flow management systems would be removed/decommissioned.

The scheme illustrated here applies if the results of ASS investigations require the low parts of Section 4 to be kept inundated.

--- Hypothesised
Indicative 1.5 m AHD Ground Contour. (Contour ignores creek lines)

--- Hypothesised
Drainage Corridor with indicative ground levels 1.5 to 2.0 m AHD, and which may be kept moist by seepage from inundated ponds and creek lines, and by drainage from higher ground to the east.

Potential line of landward bunds that could become adapted to form the sea defence line after sufficient sea level rise had occurred.

2.00 to 2.34 (1.45)
1.70 to 2.00

2.06 to 2.68 (1.85)
1.70 to 2.00

2.52 to 3.10 (1.15 to 2.45)
1.70 to 2.00

2.00 to 2.34 (1.45)
1.70 to 2.00

2.41 to 3.07

Drained / Dry above about 2.0 m AHD

3.77 to 4.08

Drained / Dry above about 2.0 m AHD

2.87 to 3.24

Drained / Dry above about 2.0 m AHD

Drained / Dry above about 2.0 m AHD

Drained / Dry above about 2.0 m AHD

Drained / Dry above about 2.0 m AHD
Note that if the results of ASS Investigations so permit, Section 4 would be fully drained and dried. The flow paths illustrated here apply if the results of ASS investigations require the low parts of Section 4 to be kept inundated.
Indicative Areas

(Assuming Closure results in the indicated inundated areas. Note that the preference, subject to ASS investigations is that all of Section 4 is drained and dried.)

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Note: Areas subject to outcomes of investigations and may in the aggregate vary significantly from those indicated here.

These areas assume that the Government agrees that post-Closure, it will take over and operate the systems to keep water flowing through the inundated areas (ie the pumps, the bunds, the connections between the ponds, and the Licensed discharges).

Assuming these areas and that suitable land transfer arrangements can be effected at the end of Closure:

- the Government would have control and management of:
  - 1977 ha of inundated and seepage / drainage corridor land in Sections 2 to 4; and
  - 260 ha of drained and dry land in Section 2
- Ridley would have control and management of 1263 ha of drained and dry land in Sections 3 and 4
Why No Tidal Exchange for Base Case Closure Plan

- Ridley does not want to take the risk that introducing tidal exchange into the salt fields could mobilise acidity, metals and metalloids
  - Within the ponds, and so harm the aquatic, groundwater and terrestrial environment there; and
  - Into the external drainage lines and channels and the associated mangroves and intertidal areas; thereby harming the benthic and aquatic ecosystems there.

- The definition of an “end point” for closure becomes problematical and uncertain in its timing because these and the other environmental effects of introducing tidal exchange into the salt field (e.g., redevelopment of mangroves, and salt marsh, salt grass, salt bush habitats) would be long term in nature and could require substantial oversight, monitoring and management.

- Remedying adverse environmental impacts from introducing tidal exchange into the salt fields could be time consuming and expensive, and involve works both within and outside the salt field.

- Ridley wishes to bequeath a well controlled manageable water regime to the post-closure land managers, one that has predictably safe features and impacts.

- The time and cost involved in investigating, modelling, trialling the re-introduction of tidal exchange could be considerable, and lead to interminable PEPR and EPBC investigation, assessment and approval processes.
Envisaged Issues and Outcomes from Base Case Closure Plan

The following presents a framework for describing issues and outcomes. The contents are provided to initiate discussion. Investigations and Risk Assessment will refine these issues and outcomes.

For each feasible variant on this closure plan that is entertained, it must be possible to describe the issues and outcomes envisaged.

Then the merits of the issues and outcomes for different closure plans can be compared.
# Environmental Aspects & Outcomes from Base Case Closure – Domain A

<table>
<thead>
<tr>
<th>Key Environmental Aspect</th>
<th>Outcomes Sought at Closure</th>
<th>Issues for Domain A</th>
</tr>
</thead>
</table>
| **Flora and Fauna Communities and Species**      | • No adverse impacts from closure works, or from the condition of the site at closure on flora and fauna communities and species outside the site.  
• The adequate and sustainable offsetting of potential impacts from closure on EPBC Act protected bird habitats within the site, with oversight from an adequate management plan.  
• The restoration by re-colonisation of native vegetation habitats in drained parts of the site is demonstrably underway; with oversight from an adequate management plan that, *inter alia*, contains measures to limit adverse impacts from feral animals and weeds. | • In a drained and dry condition the driving force outward hypersaline seepage will be eliminated. This will reduce the potential for adverse effects outside the site from hypersaline seepage.  
• The prevention of mobilisation and seepage of acidity, metals and metalloids from ASS and MBO into the external environment relies on a) integrity of the gypsum cap to limit evaporative losses and oxygenation of the underlying soils and MBO; b) the continued high groundwater levels (relative to ground levels) sustaining soil and MBO saturation beneath the cap  
• It is expected vegetation will progressively colonise those parts of the gypsum surface that do not become contaminated with NaCl.  
• These ponds have not been much used during operations of the salt field by migratory birds due to the high salinity of the supernatant water. Recolonisation by native vegetation may provide opportunities for roosting use.  
• A management plan will be needed to limit adverse impacts from feral animals and weeds; and to monitor / manage groundwater levels beneath the gypsum cap. |

(Note it is assumed that the closure works themselves would be subject to an EMP that would monitor, manage and control environmental risks during the conduct of the works)
### Environmental Issues & Outcomes from Base Case Closure – Domain A

<table>
<thead>
<tr>
<th>Key Environmental Value</th>
<th>Outcomes Sought at Closure</th>
<th>Issues for Domain A</th>
</tr>
</thead>
</table>
| **Surface water**       | • The land surface within drained ponds at the site is free draining, such that ponding of water from rainfall, outside natural or man-made drainage courses within the site, is temporary and able to disappear within a reasonably short time, from a combination of infiltration, surface runoff, evaporation and evapo-transpiration, without human intervention.  
  • The discharge of surface water into the external environment from the site during closure works, and at closure, occurs at defined discharge points approved under EPA Licences and Fisheries Management Act Exemptions.  
  • There are no significant adverse impacts on surface water quality within the site from closure works, or from the condition of the site at closure.  
  • Within ponds that continue to hold water, the water levels and water quality are consistent with the aims of providing the required offsetting habitat for EPBC Act protected birds and of complying with criteria for discharge to the external environment, with oversight from an adequate management plan. | • **Free draining Issues**  
  o Incident rainfall is removed by a combination of evaporation, infiltration and run off to low lying areas. In most months evaporation exceeds rainfall  
  o The surfaces within the ponds are uneven but reflect the pre-saltfield landform in which surface run off drained reasonably freely towards and in the creek lines. These creek lines drain towards Barker’s Inlet. The seaward bund retain surface water that would otherwise drain freely from the ponds; they also protect the ponds from tidal incursions.  
  o In the low elevation parts of some ponds, surface water is provided by groundwater seepage driven from the tidal water levels outside the seaward bunds, or by groundwater levels outside the eastern bunds. This water is retained within the ponds and is subject to evaporation.  
  • **Discharges**  
  o The hypersalinity of discharges into the external environment should these occur may constrain the ability of such discharges to be Licensed or obtain Exemptions  
  o The prevention of mobilisation and seepage of acidity, metals and metalloids from ASS and MBO into the external environment relies on a) integrity of the gypsum cap b) the continued high groundwater levels (relative to ground levels) sustaining soil and MBO saturation beneath the cap  
  • **Pond water quality**  
  • The quality of water retained in low lying areas of ponds and sustained by groundwater seepage will need investigation to assess whether this needs management to prevent adverse environmental impacts  
  • **Offsetting Bird habitat**  
  o These ponds have not been much used during operations of the salt field by migratory birds due to the high salinity of the supernatant water. Recolonisation by native vegetation may provide opportunities for roosting use. |
## Environmental Aspects & Outcomes from Base Case Closure – Domain A

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<thead>
<tr>
<th>Key Environmental Value</th>
<th>Outcomes Sought at Closure</th>
<th>Issues for Domain A</th>
</tr>
</thead>
</table>
| **Air Quality**         | • There are no on-going significant odours emanating from the salt fields.  
                          • At final closure, the incidence of dust in air emitted by the site is trending towards comparability with the incidence of dust in air emitted by land that was not developed as a salt field, and that has similar topography, geomorphology and vegetation patterns. | • Odours  
  ○ The sustainable prevention of odours from MBO / ASS requires the soils beneath the gypsum cap to be kept saturated. The hypothesised (being investigated) mechanism for this is ground water seepage into the ponds from a) the tidal water to the west of the ponds, and by groundwater from the land to the east of the ponds.  
  ○ The risk of odours from retained areas of surface water in low parts of the ponds needs investigation to assess whether this needs prevention or management  
• Dusts  
  ○ Where the gypsum cap exists (the majority of the pond areas), this itself resists wind erosion and dust formation. At the edges of the ponds where the gypsum cap is thinner or non-existent, natural re-coolonisation by salinity tolerant plants will help prevent / constrain dust formation  
  ○ Wind blown dusts can be expected to settle on the gypsum cap and be susceptible to re-entrainment into their air. This issue should be monitored to assess the significance. |
### Environmental Aspects & Outcomes from Base Case Closure – Domain A

<table>
<thead>
<tr>
<th>Key Environmental Value</th>
<th>Outcomes Sought at Closure</th>
<th>Issues for Domain A</th>
</tr>
</thead>
</table>
| **Soil and Groundwater Quality (Contamination / Wastes, Salinity, Acid Sulfate)** | During closure works and at closure, no contamination or wastes in soil that increases the risk of:  
- Significant impacts to groundwater or surface water quality;  
- Significant dusts or odours in air offsite;  
- Of material liabilities for future land uses of the site, whether in site preparation, construction of the future land use, or its subsequent operation / maintenance.  
- The residual salinity in or on soils within drained ponds is understood.  
- Risks from MBO, from PASS and AASS to be approximately consistent with those that pertained before salt field operation. Impacts from acidity are to be buffered and contained, to the extent practicable, preferably within their pond of origin and definitely within the salt field. That is the external environment is to be protected.  
- There are no significant permanent adverse impacts on groundwater quality outside the site from closure works, or from the condition of the site at closure. | - Contamination and wastes  
  - The remaining disused infrastructure from saltfield operations will need to be removed  
  - The materials used in bund construction will need to be investigated for contamination or waste content that may need removal or management  
  - The soils in the broad area of the ponds are impregnated with salts (mostly magnesium and calcium salts). The environmental risks associated with these needs to be understood  
  - ASS and MBO  
  - There are ASS and MBO under the gypsum cap. The environmental risks associated with these are being investigated. Present information suggests that while these materials are being kept saturated (from groundwater entering the ponds via seepage) the environmental risks are low.  
  - Groundwater  
  - The ponds may be recipients of groundwater seepage from the Bolivar STP. The environmental risks associated with these needs to be understood  
  - The draining and drying of the ponds means that the ponds will, for the most part, be recipients of ground water seepage, not sources of it. The exceptions are the seepage pathways provided by the former creek lines within the ponds. It is suspected that these provide preferential pathways for groundwater seepage to migrate through the site from east to west. The draining and drying of the ponds means that within pond contribution to this seepage will be reduced. |
## Environmental Values and Outcomes at Closure – Domain A

<table>
<thead>
<tr>
<th>Key Environmental Value</th>
<th>Outcomes Sought at Closure</th>
<th>Issues for Domain A</th>
</tr>
</thead>
</table>
| *Integrity and Functionality of Engineered Systems and Structures* | • The existing bunds are maintained at their existing crest heights and with their integrity and functionality intact.  
• All redundant gates, syphons, connections or other hydraulic flow control structures between ponds have been removed or blocked off / closed in a durable manner that protects public safety.  
• All redundant water pumps have been removed from site. The supporting structures, pipelines, flow control valves and power supplies associated with these pumps have also been removed or appropriately decommissioned in manner that protects public safety.  
• All remaining operating pumps, and their associated supporting structures, pipelines flow control valves and power supplies are in operable, well-maintained condition, with an effective care and maintenance plan in place.  
• All site fences and gates remain intact, with sufficient warning signs advising the public that entry to the site without permission from the land owner is forbidden and that entry carries safety risks. | • A schedule of these works will need to be developed |

(Note it is assumed that the closure works themselves would be subject to an EMP that would monitor, manage and control environmental risks during the conduct of the works.)
Environmental Aspects & Outcomes from Base Case Closure – Domain A

| Key Environmental Value | Outcomes Sought at Closure | Issues for Domain A  
|-------------------------|---------------------------|-------------------------
|                         | (Note it is assumed that the closure works themselves would be subject to an EMP that would monitor, manage and control environmental risks during the conduct of the works) | Section 2 (PA6 to PA12)  
|                         |                           | Closure Concept: Drained and Dry Surface |
| Stakeholder Consultation | • By closure there has been pro-active consultation that has enabled stakeholders who are interested in, may be affected by or have influence on the achievement of rehabilitation and closure outcomes, to be well informed about the environmental constraints and opportunities on future uses of the salt field land after closure.  
|                         | • Acceptance by the relevant regulators that audited validations have demonstrated achievement of the outcomes in this table.  
|                         | • Acceptance by site land owners (Crown and Ridley) of the environmental management plans, and responsibility for their implementation for their parts of the site on closure. | • TBA |
### Environmental Aspects & Outcomes from Base Case Closure – Domain A

<table>
<thead>
<tr>
<th>Key Environmental Value</th>
<th>Outcomes Sought at Closure</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Cultural and geological heritage</strong></td>
<td>• The cultural heritage values of the site (to-be-defined) are protected.</td>
<td>• TBA</td>
</tr>
<tr>
<td></td>
<td>• The geological heritage (landform, geomorphology) of the site within drained ponds, as revealed by draining, remains substantially undisturbed.</td>
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(Note it is assumed that the closure works themselves would be subject to an EMP that would monitor, manage and control environmental risks during the conduct of the works)

Section 2 (PA6 to PA12)

Closure Concept: Drained and Dry Surface
# Environmental Aspects & Outcomes from Base Case Closure – Domain B

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<thead>
<tr>
<th>Key Environmental Value</th>
<th>Outcomes Sought at Closure (Note it is assumed that the closure works themselves would be subject to an EMP that would monitor, manage and control environmental risks during the conduct of the works)</th>
<th>Issues for Domain B Sections 2 &amp; 3 Inundated Areas (Pumped Entrainment at Chapman Creek &amp; Discharge at SA Water Outfall)</th>
<th>Issues for Domain B Sections 2 &amp; 3 Inundated Areas (Other Candidate Method of Achieving the Sought For Outcomes)</th>
</tr>
</thead>
</table>
| **Flora and Fauna Communities and Species (terrestrial, aquatic, marine)** | • No adverse impacts from closure works, or from the condition of the site at closure on flora and fauna communities and species outside the site.  
  The adequate and sustainable offsetting of potential impacts from closure on EPBC Act protected bird habitats within the site, with oversight from an adequate management plan.  
  The restoration by re-colonisation of native vegetation habitats in drained parts of the site is demonstrably underway; with oversight from an adequate management plan that, inter alia, contains measures to limit adverse impacts from feral animals and weeds. | • The seepage fluxes are likely to be similar due to similar water levels. The salinities in these ponds will be reduced by comparison with those pertaining under operational conditions. This will reduce the potential for adverse effects outside the site from hypersaline seepage.  
  The entrainment and discharge regime will manage water levels so that existing MBO and ASS (from salt field operations or earlier) remain anoxic. This prevents mobilisation and seepage of acidity, metals and metalloids from ASS and MBO into the external environment  
  History at other ex-saltfield sites shows that managed water regimes can increase the utilisation per unit area by migratory birds. This offers the opportunity to offset losses to bird habitat and bird species / numbers from the drying and draining of other ponds in Section 2 and 4.  
  The pumping and discharge regime represents an adaptation established processes. It avoids the uncertainties about the timing, and scale of changes to aquatic and terrestrial habitats and communities inside and outside the site that would attend introducing tidal water exchange to the man-altered aquatic environment of the ponds.  
  A management plan will be needed for monitoring and control or water levels, water quality and food sources for birds that will use the ponds. | • TBA |

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Evaluating Future Land Use and Closure Options  
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### Environmental Values and Outcomes at Closure – Domain B

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| Surface water           | • The land surface within drained ponds at the site is free draining, such that ponding of water from rainfall, outside natural or man-made drainage courses within the site, is temporary and able to disappear within a reasonably short time, from a combination of infiltration, surface runoff, evaporation and evapo-transpiration, without human intervention.  
• The discharge of surface water into the external environment from the site during closure works, and at closure, occurs at defined discharge points approved under EPA Licences and Fisheries Management Act Exemptions.  
• There are no significant adverse impacts on surface water quality within the site from closure works, or from the condition of the site at closure.  
• Within ponds that continue to hold water, the water levels and water quality are consistent with the aims of providing the required offsetting habitat for EPBC Act protected birds and of complying with criteria for discharge to the external environment, with oversight from an adequate management plan. | • TBA | • TBA |
### Environmental Aspects & Outcomes from Base Case Closure – Domain A

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<td>Air Quality</td>
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<td>- At final closure, the incidence of dust in air emitted by the site is trending towards comparability with the incidence of dust in air emitted by land that was not developed as a salt field, and that has similar topography, geomorphology and vegetation patterns.</td>
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# Environmental Aspects & Outcomes from Base Case Closure – Domain B

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| Soil and Groundwater Quality (Contamination / Wastes, Salinity, Acid Sulfate) | • During closure works and at closure, no contamination or wastes in soil that increases the risk of:  
  - Significant impacts to groundwater or surface water quality;  
  - Significant dusts or odours in air offsite;  
  - Of material liabilities for future land uses of the site, whether in site preparation, construction of the future land use, or its subsequent operation / maintenance.  
  - The residual salinity in or on soils within drained ponds is understood.  
  - Risks from MBO, from PASS and AASS to be approximately consistent with those that pertained before salt field operation. Impacts from acidity are to be buffered and contained, to the extent practicable, preferably within their pond of origin and definitely within the salt field. That is the external environment is to be protected.  
  - There are no significant permanent adverse impacts on groundwater quality outside the site from closure works, or from the condition of the site at closure. | • TBA | • TBA |
### Environmental Aspects & Outcomes from Base Case Closure – Domain B

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| Integrity and Functionality of Engineered Systems and Structures | • The existing bunds are maintained at their existing crest heights and with their integrity and functionality intact.  
• All redundant gates, syphons, connections or other hydraulic flow control structures between ponds have been removed or blocked off / closed in a durable manner that protects public safety.  
• All redundant water pumps have been removed from site. The supporting structures, pipelines, flow control valves and power supplies associated with these pumps have also been removed or appropriately decommissioned in manner that protects public safety.  
• All remaining operating pumps, and their associated supporting structures, pipelines flow control valves and power supplies are in operable, well-maintained condition, with an effective care and maintenance plan in place.  
• All site fences and gates remain intact, with sufficient warning signs advising the public that entry to the site without permission from the land owner is forbidden and that entry carries safety risks. | • TBA | • TBA |
# Environmental Aspects & Outcomes from Base Case Closure – Domain B

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<tr>
<td></td>
<td>Stakeholder Consultation</td>
<td>Sections 2 &amp; 3 Inundated Areas (Pumped Entrainment at Chapman Creek &amp; Discharge at SA Water Outfall)</td>
<td>Sections 2 &amp; 3 Inundated Areas (Other Candidate Method of Achieving the Sought For Outcomes)</td>
</tr>
</tbody>
</table>
|                         | • By closure there has been pro-active consultation that has enabled stakeholders who are interested in, may be affected by or have influence on the achievement of rehabilitation and closure outcomes, to be well informed about the environmental constraints and opportunities on future uses of the salt field land after closure.  
• Acceptance by the relevant regulators that audited validations have demonstrated achievement of the outcomes in this table.  
• Acceptance by site land owners (Crown and Ridley) of the environmental management plans, and responsibility for their implementation for their parts of the site on closure. | • TBA | • TBA |
### Environmental Aspects & Outcomes from Base Case Closure – Domain B

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<th>Issues for Domain B Sections 2 &amp; 3 Inundated Areas (Other Candidate Method of Achieving the Sought For Outcomes)</th>
</tr>
</thead>
</table>
| Cultural and geological heritage | • The cultural heritage values of the site (to-be-defined) are protected.  
• The geological heritage (landform, geomorphology) of the site within drained ponds, as revealed by draining, remains substantially undisturbed. | • TBA | • TBA |
Post Closure Adaptation of Land
Opportunities for Post Closure Adaptations on Crown Land

- With a clear definition of closure, Government can plan what further adaptations are needed to take the Crown Land to its future uses.
- For example, if investigations and trials by Government on Crown Land indicate this has economic and environmental feasibility and sustainability (hydraulic, water quality, and ecological and that ASS / MBO risks are acceptably low), the Government could consider opening selected ponds or parts of ponds (segregated by bunds from the pumped flows) to tidal ebbs and flows, and embark on the processes to design and to secure environmental approvals (State and Commonwealth) for this.
Opportunities for Post Closure Adaptations on Freehold Land

- With a clear definition of closure, prospective purchasers of the Freehold land can plan what further adaptations are needed to enable their desired future uses.

- These purchasers can then consider what investigations and design are needed to assess feasibility of these uses, and if feasible to obtain planning and environmental approvals (State and Commonwealth)
Identifying and Screening Merits of Options for Future Land Uses

• Tailoring closure to progress the relevant part of the site towards a feasible future use can minimise post closure environmental risks

• A deliberate and competitive approach to identifying future land uses is required – hence an EoI process

• Future land uses may need planning and environmental (State and Commonwealth) approvals

• Screening the closure planning merits of options for future land uses needs to compare their potential environmental, engineering, compliance, and commercial risks in a systematic way
Some Possible Options for Future Land Use

More Options to Be Added As They Are Identified

Risk Assessment to provide systematic way to rate these options leading to preferred options selection
### Possible Future Land Use Options and Tailored Closure: Section 1 - Dry Creek

<table>
<thead>
<tr>
<th>Option #</th>
<th>Description</th>
<th>Closure End Point</th>
<th>Outcome of Closure Option Risk Assessment</th>
<th>Preferred Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mixed Use Masterplanned Suburb</td>
<td>TBA... Ideas include: • Salt in stockpiles and in crystallisers removed • Crystalliser floors and finishing areas ponds remain intact to provide cap over ASS / MBO and to limit dust formation • Drainage systems and pumps remain in place. • Dilution systems using bore water for discharge of stormwater from the site • Workshop and infrastructure remain in place to provide site facilities for subsequent site development works The post closure, when the development plan is known and the Northern Connector has been built: • Calgrit / calsit placed on highly saline soils in floors of crystallisers to buffer salt • Coarse crushed rock placed over this to form capillary break for subsequent filling / preloading using sand / gravel from dredge spoil or suitable fill from other sources</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Possible Future Land Use Options and Tailored Closure:
#### Section 2 - St Kilda - Ponds PA6 to PA12

<table>
<thead>
<tr>
<th>Option #</th>
<th>Description</th>
<th>Closure End Point</th>
<th>Outcome of Closure Option Risk Assessment</th>
<th>Preferred Options</th>
</tr>
</thead>
</table>
| 1        | These ponds to be preserved as a Buffer zone for the Bolivar Facility  
   a) Preserve as much of the ponds area freely draining by arranging one way drainage to the southern end of PA9 (for Ponds PA6 to PA9); and to PA12 (for PA10 to PA12)  
   b) Allow the southern end of PA9 and PA12 to become evaporation basins for this surface water  
   c) Allow natural revegetation of the gypsum surface | • The water management regime and systems operational, with monitoring demonstration that the environmental condition is stable and sustainable  
   • Commercial agreement in place for transfer of the assets and systems for the water management regime from Ridley to the Government | | |
| 2        | These ponds will provide a dedicated dredge spoil facility for Flinders Ports  
   a) Prepare these ponds to provide a dedicated facility for dredge spoil on demand from Flinders Ports able to manage the associated water flows.  
   b) The preparation works would primarily entail adjustment of pond connections and within pond drainage paths to manage the water flows and detention times  
   c) Over 10 plus years the dredge spoil would cover significant areas of these ponds to 1 m depth | • Receipt by Flinders Ports of planning and environmental approvals for the facility  
   • Commercial agreements in place for land transactions to enable Flinders Ports to control the land involved | | |
| 3        | These ponds will form part of a new small salt field, providing the new finishing areas and crystallisers, with the condensers using the western ponds of Section 3 | • The completion of a (to be defined) work programme, with monitoring demonstration that the environmental condition is stable and sustainable  
   • Commercial agreement in place for transfer of the assets and systems for the water management regime from Ridley to the Government | | |
### Possible Future Land Use Options and Tailored Closure:

#### Section 3 - Port Gawler – Ponds XD1 (west half); XB6, XC3, XA7, Channel to PA4

<table>
<thead>
<tr>
<th>Option #</th>
<th>Description</th>
<th>Closure End Point</th>
<th>Outcome of Closure Option Risk Assessment</th>
<th>Preferred Options</th>
</tr>
</thead>
</table>
| 1        | These ponds will form the buffer zone between the dry ponds to the east and the inundated ponds to the west; and accommodate inundated pond seepage, groundwater seepage, and surface water runoff:  
  a) Improve drainage so as to conduct ground water seepage, inundated pond water seepage, and runoff from more elevated ponds to east through to No 1 Flood Gap  
  b) Implement measures to improve infiltration character of surface soils where needed  
  c) Implement revegetation and encourage natural re-colonisation by suitable native species to provide habitat and prevent wind erosion and dusts | The completion of a (to be defined) work programme, with monitoring demonstration that the environmental condition is stable and sustainable | | |
| 2        | These ponds will provide a dedicated dredge spoil facility for Flinders Ports  
  a) Prepare these ponds to provide a dedicated facility for dredge spoil on demand from Flinders Ports able to manage the associated water flows.  
  b) The preparation works would primarily entail adjustment of pond connections and within pond drainage paths to manage the water flows and detention times  
  c) Over 10 plus years the dredge spoil would cover significant areas of these ponds to 1 m depth | Receipt by Flinders Ports of planning and environmental approvals for the facility  
  • Commercial agreements in place for land transactions to enable Flinders Ports to control the land involved | | |
| 3        | These ponds will be taken over by SA Water “as is where is” for its purposes | Commercial agreements in place for Transfer of land to SA Water | | |
### Possible Future Land Use Options and Tailored Closure:

Section 2 - St Kilda Ponds PA3 to PA5; and Section 3 - Port Gawler - Ponds XB3, XB 4-5, XA1, XA2, XA3, XA4, XB8, XB8A

<table>
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<tr>
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</thead>
</table>
| 1        | Keep Ponds inundated and providing a suitable flow, water depth and water quality regime (varying with the seasons) using entrainment at Chapman Creek with the objective of providing bird habitat | • The water management regime and systems operational, with monitoring demonstration that the environmental condition is stable and sustainable  
• Commercial agreement in place for transfer of the assets and systems for the water management regime from Ridley to the Government | | |
| 2        | Open ponds to tidal exchange as means managing water quality and providing bird habitat | • ?????? | | |
| 3        | These ponds will be taken over by SA Water “as is where is” for its purposes | • Commercial agreements in place for Transfer of land to SA Water | | |
| 4        | These ponds will form part of a new small salt field, providing the the condensers, with Section 2 providing the finishing areas and crystallisers. Sea water to be pumped in from Chapman Creek | • The water management regime and systems operational, with monitoring demonstration that the environmental condition is stable and sustainable  
• Commercial agreement in place for transfer of the assets and systems for the water management regime from Ridley to the Government | | |
Possible Future Land Use Options and Tailored Closure:

Section 3 - Port Gawler – Ponds XD1 (east half), XC1, XC2, XC2S and not forgetting XC2E; and Section 4 - Middle Beach (Ponds XF2, XE4, and such other ponds as can be drained)

<table>
<thead>
<tr>
<th>Closure Option #</th>
<th>Description</th>
<th>Closure End Point</th>
<th>Outcome of Closure Option Risk Assessment</th>
<th>Preferred Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>These ponds will be permanently drained and made available for other uses that required drained land</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>a) Improve drainage so as to conduct ground water seepage, inundated pond water seepage, and runoff from more elevated ponds to east through to No 1 Flood Gap</td>
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<tr>
<td></td>
<td>b) Implement measures to improve infiltration character of surface soils where needed</td>
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<tr>
<td></td>
<td>c) Implement revegetation and encourage natural re-colonisation by suitable native species to provide habitat and prevent wind erosion and dusts</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• The completion of a (to be defined) work programme, with monitoring demonstration that the environmental condition is stable and sustainable</td>
<td></td>
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</tr>
<tr>
<td>2</td>
<td>The ponds in Section 3 will be taken over by SA Water “as is where is” for its purposes. The other ponds (in Section 4) would be closed as per Option 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Commercial agreements in place for Transfer of land in Section 3 to SA Water</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>For the Section 4 ponds, the completion of a (to be defined) work programme, with monitoring demonstration that the environmental condition is stable and sustainable</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
## Possible Future Land Use Options and Tailored Closure:
### Section 4 - Middle Beach – Ponds unable to be drained

<table>
<thead>
<tr>
<th>Closure Option #</th>
<th>Description</th>
<th>Closure End Point</th>
<th>Outcome of Closure Option Risk Assessment</th>
<th>Preferred Options</th>
</tr>
</thead>
</table>
| 1                | Maintain sufficient pumping at Middle Beach to pump water through these ponds with minimal increase in salinity. Discharge the water (with approval) to Gawler River | • The water management regime and systems operational, with monitoring demonstration that the environmental condition is stable and sustainable  
• Commercial agreement in place for transfer of the assets and systems for the water management regime from Ridley to the Government | | |
| 2                | Where feasible, open ponds to tidal exchange as means managing water quality and providing bird habitat; where not feasible, use Option 1 | • ?????? | | |