

WATER MANAGEMENT

Surface Water Management Plan

Objectives	<p>To:</p> <ul style="list-style-type: none"> • Ensure that statutory requirements and corporate standards are met; • Manage catchments and water on the mine lease in a way that minimises surface water impacts to environment and downstream neighbours, and limits interference to mining production; • Maintain quality control and segregation of clean and mine affected water; • Reduce reliance on fresh water usage; and • Keep the local community and regulators informed of activities where required and to respond quickly and effectively to issues and complaints. 												
Scope	<p>HVO</p> <ul style="list-style-type: none"> • Environmental Protection Licence Boundary • Downstream water users 												
Key Environmental Issues	<p>Construction, operational, and rehabilitation activities that may affect:</p> <ul style="list-style-type: none"> • Water supply and storage; • Excess water disposal; • Water quality management; and • Flood controls. 												
Performance Criteria	<p><i>Discharge Limits</i></p> <table border="1" data-bbox="448 1149 1374 1346"> <thead> <tr> <th>Pollutant</th> <th>Units</th> <th>100 Percentile Concentration Limit</th> </tr> </thead> <tbody> <tr> <td>pH</td> <td>pH</td> <td>6.5 ≤ pH ≤ 9.5</td> </tr> <tr> <td>Non filterable residue</td> <td>mg/L</td> <td>NFR ≤ 120</td> </tr> <tr> <td>EC</td> <td>µS/cm</td> <td>900</td> </tr> </tbody> </table> <ul style="list-style-type: none"> • Maximum Hunter River Licence Entitlement (High Security) ≤ 4165 Units (ML/annum or a share of available resources); • Maximum Discharge Volume ≤ 357 ML/day; and • Water Use = 90% mine water, of which 60% is recycled. <p>The detailed predicted site water balance is provided in the Operations Water Management Manual, with the conceptual site water balance model attached in Appendix 1.</p> <p>Discharge events and durations managed in accordance with the HRSTS and CNA Environmental Procedure <i>Water Discharge</i> (EP7.2).</p>	Pollutant	Units	100 Percentile Concentration Limit	pH	pH	6.5 ≤ pH ≤ 9.5	Non filterable residue	mg/L	NFR ≤ 120	EC	µS/cm	900
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Control Measures	<p><i>Mine Water Management</i></p> <ul style="list-style-type: none"> • Recycling of mine affected water; • Diversion of clean water runoff around disturbed areas; • Drains in rehabilitated areas to direct potentially sediment laden water to new or existing sedimentation dams; and • Levee construction to prevent flood water inflows to pits. <p>(Refer to Appendix 2 for HVO Dam and Levee Plan and Appendix 3 for HVO Levee Management Plan).</p>												

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<p>Monitoring and Inspection</p>	<p><i>Monitoring</i> (set out in the operations Water Monitoring Manual):</p> <ul style="list-style-type: none"> • Dam inspections, to consider general condition, structural integrity and silt capacity; • Water level for sediment capacity; • Water quality; and • Inspections of contour banks, levees, channels and diversions to assess erosion risk.
<p>Incident Management</p>	<p><i>Incident Reporting</i> Incident reporting as per CNA Environmental Procedure <i>Incident Management and Reporting</i> (EP1.8).</p> <p><i>Complaints Management</i> Complaints management as per CNA Environmental Procedure <i>Communications</i> (EP1.9).</p> <p><i>Incident Response – Exceedance or Complaint</i> Investigate event and identify operational location, timing and climatic conditions to determine if additional management measures are required.</p>
<p>Performance Reporting</p>	<p>Reporting in Annual Environmental Management Report of:</p> <ul style="list-style-type: none"> • Monitoring results • Discharge events • Performance against implementation of control measures.
<p>Definitions</p>	<p><i>EC</i> – Electrical conductivity, measured in $\mu\text{S}/\text{cm}$.</p> <p><i>HRSTS</i> – Hunter River Salinity Trading Scheme.</p> <p><i>pH</i> - measure used to express the acidity or alkalinity of a solution on a scale of 0 to 14, where less than 7 represents acidity, 7 neutrality, and more than 7 alkalinity.</p>
<p>Key Documents</p>	<p><i>Development Consents</i> DA 450-10-2003 – Conditions 4.20 to 4.26 and 4.29; DA 114-12-98 – Condition 4; and DA 215/97 – Condition 14.</p> <p><i>Licences</i> CNA Water Licence Register; and EPL 640.</p> <p><i>External Guidelines</i> Hunter River Salinity Trading Scheme.</p> <p><i>EMS Documents</i> RT Environment Standard <i>Water Use and Quality Control</i> (V1.0); CNA Environmental Standard <i>Water Management</i> (ES7); CNA Environmental Procedure <i>Water Management</i> (EP7.1); CNA Environmental Procedure <i>Water Discharge</i> (EP7.2);</p>

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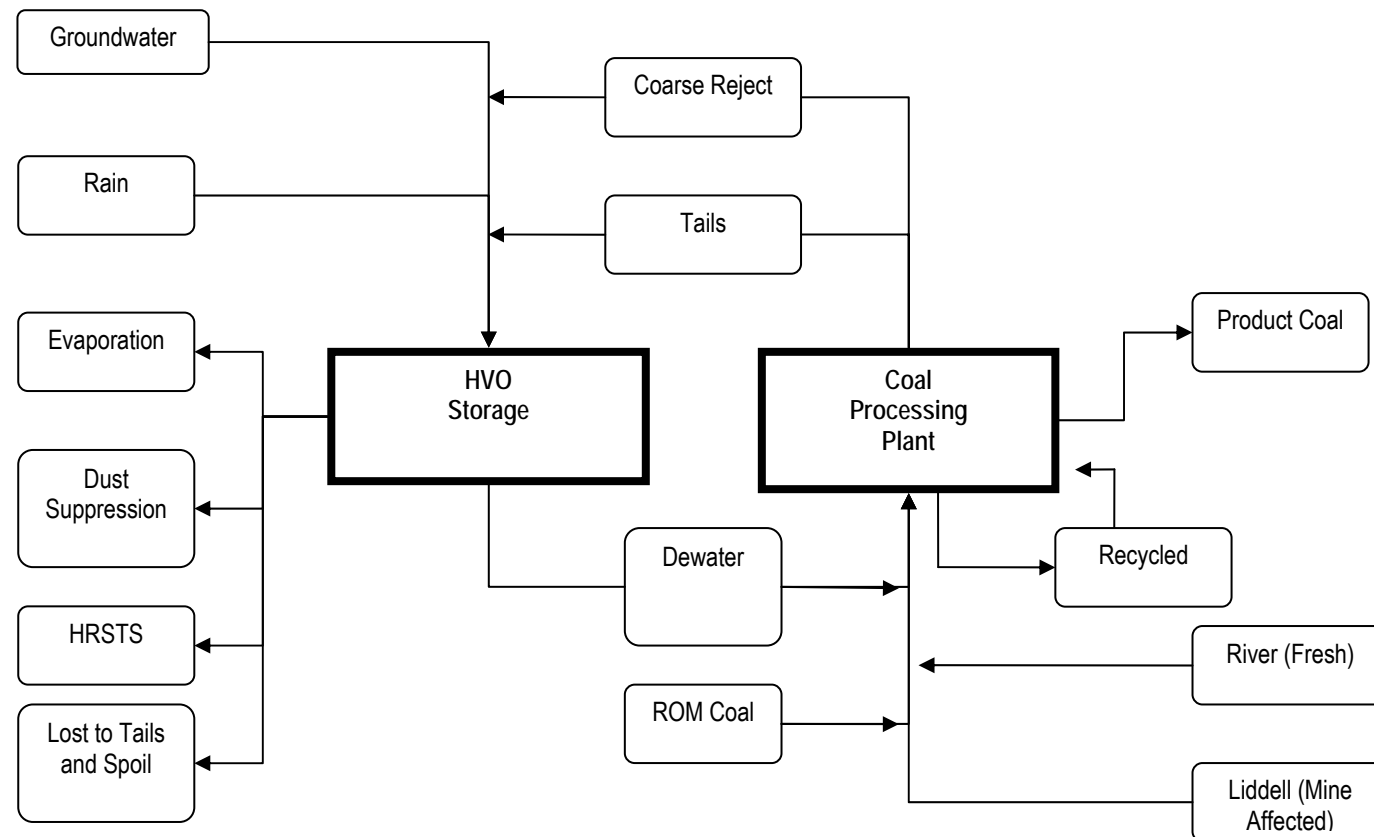
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Key Documents (cont)	<p>CNA Environmental Procedure <i>Communications</i> (EP1.9); CNA Environmental Procedure <i>Incident Management and Reporting</i> (EP1.8); and HVO Erosion and Sediment Control Management Plan.</p> <p><i>Forms</i></p> <p>CNA Ground Disturbance Permit; and CNA Environmental Risk Assessment Checklist.</p>
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Appendix 1

Conceptual Water Balance Model - HVO



title
Document No. PLN-7-00-HVO
Surface Water Management Plan

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1.0

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Appendix 3

HVO Levee Management Plan

Item No	Name	Location	Constructed	Scheduled Decommissioning
HVO North				
1	Original Alluvial Lands Levee	Hunter River - Ties into east end of Alluvial Lands Levee and Curtain Wall	1988	After North Void has been backfilled and height is > flood level or Permanent
2	Alluvial Lands Levee and Curtain Wall	Hunter River - Southern boundary of HVO North Alluvial Lands area	1993	After North Void has been backfilled and height is > flood level or Permanent
3	Cook's Hole Levee (Eather's Levee)	Hunter River - West side of North Void Tailing Storage Facility	2002	After North Void is capped
Carrington Pit & West Wing				
4	Levee 4	Hunter River - Interim Carrington levee (levee runs E-W)	2005	To be mined through following construction of Levee 5
5	Levee 4A	Hunter River - Gully south of Carrington Pit (levee runs N-S)	2005	After Carrington Pit South is backfilled
6	West Wing Main Levee	Hunter River - Southern limit of Carrington West Wing	2003	After creek diversion
7	Cook's Carrington Levee	Hunter River - West side of Carrington Pit	2001	2006 (gone)
8	West Wing Watercourse Levee	Hunter River - East side of Carrington West Wing (parallel to Cook's Carrington Levee)	2003	2006 (gone)
9	Levee 5	Hunter River - South edge of Carrington Extension	2007 (scheduled)	After Carrington Pit South is backfilled
10	Levee 6	Hunter River - below Carrington West Wing (approved, but will not be built)	-	-
HVO South - Cheshunt & Riverview Pits				
11	Cook's Road Levee	Hunter River - North boundary of HVO South (Riverview crib hardstand to Barry's Knoll)	2001	After completion of mining in Cheshunt Pit or Permanent protection for final void
12	Barry's Levee	Hunter River - North of Cheshunt Pit Extension	2006	After completion of mining in Cheshunt Pit Extension or If built to specifications will form part of final landform
HVO South - South Lemington Pits 1 & 2				
13	South Lemington Pit 1 bund	Wollombi Brook - East limit of pit	1999	After completion of mining in South Lemington Pit 1
14	Apple Yard Levee	Wollombi Brook - South edge of South Lemington Pit 2	2008	Permanent