INDEX – HAIL CREEK

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QFCI

Date: 22/09/11 JM

Exhibit Number: 605

Departmental Interest: Water

Contaminant Release

W1 Contaminants that will, or have the potential to cause environmental harm must not be released directly or indirectly to any waters except as permitted under the conditions of this environmental authority.

W2 The release of contaminants to waters must only occur from the release points specified in Table W1 and depicted in Figure 1 attached to this environmental authority.

Table W1 (Contaminant Release Points, Sources and Receiving Waters)

Release Point (RP)	Northing (AGD84)	Easting (AGD84)	Contaminant Source and Location	Monitoring Point	Receiving waters description
RP 1 (Polishing Pond)	7620504	643937	Water impounded in the Hail Creek mine water storage system. Including water used in processing, dewatering from pits and rainfall entering catchment	Pontoon on southern side of dam, next to spillway	Middle Creek, a small tributary feeding into Absent Creek then Hail Creek, then Bee Creek (~13 000ha catchment)

W3 The release of contaminants to waters must not exceed the release limits stated in Table W2 when measured at the monitoring points specified in Table W1 for each quality characteristic.

Table W2 (Contaminant Release Limits)

Quality Characteristic	Interim Release Limits for all mines (limits to apply from the date of issue)	Future Release Limits from 31 DEC 2011 *Note: These future limits will apply from a yet to be negotiated date using alternative numbers that will be derived from the information gathered by any combination of the following:* *(1) the results of near field monitoring,* *(2) any studies or investigations carried out in accordance with recommendations 2 & 3 of the Cumulative Impact Study on water quality in the Fitzroy River Basin.* *(3) any review of the QLD Water Quality Guidelines.* *(4) other relevant information* *Note: This information should be available by the end of 2011 if not before and when it becomes available limits will be determined for each mine site based on the environmental values to be protected and in accordance with criteria below*	Monitoring frequency	Comment
Electrical conductivity (uS/cm)	1500	Future limit to be determined to achieve aquatic ecosystem protection (no drinking water value): An end-of-pipe limit to achieve in the range 0 to 1000 EC in the receiving waters - for mines in the upper catchments must have natural flow i.e. the 20th percentile flow trigger.	Daily during release (first sample must be taken within 2 hours of the commencement of release)	
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	6.5 (minimum) 9.0 (maximum)	Daily during release (first sample must be taken within 2 hours of the commencement of release)	
Turbidity (NTU)	NA*	Turbidity data will be collected, with an appropriate local trigger value set as the release limit, to be agreed with DERM and applied from the end of 2011.	Daily during release (first sample must be taken within 2 hours of the commencement of release)	Turbidity is required to assess ecosystems impacts and can provide instantaneous results.
Suspended Solids (mg/L)	NA	Limit to be determined based on receiving water reference data and achievable best practice sedimentation control and treatment	Daily during release (first sample must be taken within 2 hours of the commencement of release)	Suspended solids are required to measure the performance of sediment and erosion control measures.
Sulphate (SO_4^{2-}) (mg/L)	1000 (Maximum)	1000 (Maximum) (Protection of irrigation environmental value)	Daily during release (first sample must be taken within 2 hours of the commencement of release)	

*Note: NA – not available, * local trigger values need to be developed*

W4 The release of contaminants to waters from the release points must be monitored at the locations specified in Table W1 for each quality characteristic and at the frequency specified in Table W2 and Table W3.

Table W3 (Release Contaminant Trigger Investigation Levels)

Quality Characteristic	Trigger Levels (µg/L)	Comment on Trigger Level	Monitoring Frequency
Aluminium	100	*For aquatic ecosystem protection, based on LOR for ICPMS*	Commencement of release and thereafter weekly during release
Arsenic	13	*For aquatic ecosystem protection, based on SMD guideline*	
Cadmium	0.2	*For aquatic ecosystem protection, based on SMD guideline*	
Chromium	1	*For aquatic ecosystem protection, based on SMD guideline*	
Copper	2	*For aquatic ecosystem protection, based on LOR for ICPMS*	
Iron	300	*For aquatic ecosystem protection, based on low reliability guideline*	
Lead	10	*For aquatic ecosystem protection, based on LOR for ICPMS*	
Mercury (inorganic)	0.2	*For aquatic ecosystem protection, based on LOR for CV FIMS*	
Nickel	11	*For aquatic ecosystem protection, based on SMD guideline*	
Zinc	8	*For aquatic ecosystem protection, based on SMD guideline*	
Molybdenum	34	*For aquatic ecosystem protection, based on low reliability guideline*	
Selenium	10	*For aquatic ecosystem protection, based on LOR for ICPMS*	
Silver	1	*For aquatic ecosystem protection, based on LOR for ICPMS*	
Uranium	1	*For aquatic ecosystem protection, based on LOR for ICPMS*	
Vanadium	10	*For aquatic ecosystem protection, based on LOR for ICPMS*	
Nitrate	1100	*For aquatic ecosystem protection, based on ambient Qld WQ Guidelines (2006) for TN*	
Petroleum hydrocarbons (C6-C9)	20		
Petroleum hydrocarbons (C10-C36)	100		

Notes:

1. All metals and metalloids must be measured as total (unfiltered) and dissolved (filtered). Trigger levels for metal/metalloids apply if dissolved results exceed trigger.

2. The list of quality characteristics required to be monitored as per Table W3 will be reviewed once the results of the monitoring data is gathered for the interim period until 31 December 2011 or an earlier date if the data is, or becomes, available and if its is determined that there is no need to monitor for certain individual quality characteristics these can be removed from Table W3.

3. SMD – slightly moderately disturbed level of protection, guideline refers ANZECC & ARMCANZ (2000).

4. LOR – typical reporting for method stated. ICPMS/CV FIMS – analytical method required to achieve LOR.

W5 If quality characteristics of the release exceed any of the trigger levels specified in Table W3 during a release event, the environmental authority holder must compare the down stream results in the receiving waters to the trigger values specified in Table W3 and:

1. where the trigger values are not exceeded then no action is to be taken; or
2. where the down stream results exceed the trigger values specified Table W3 for any quality characteristic, compare the results of the down stream site to the data from background monitoring sites and;
   (a) if the result is less than the background monitoring site data, then no action is to be taken; or
   (b) if the result is greater than the background monitoring site data, complete an investigation in accordance with the ANZECC & ARMCANZ 2000 methodology, into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining:
      (i) details of the investigations carried out; and
      (ii) actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with W5 (2)(b)(ii) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.

W6 If an exceedance in accordance with condition W5 2(b)(ii) is identified, the holder of the authority must notify the administering authority within fourteen (14) days of receiving the result.

Contaminant Release Events

W7 The holder must install, operate and maintain a stream flow gauging station to determine and record stream flows at the locations upstream of each Release Point as specified in Table W4 for any receiving water into which a release occurs.

W8 Notwithstanding any other condition of this environmental authority, the release of contaminants to waters must only take place during periods of natural flow events specified as minimum flow in Table W4 for the contaminant release point specified in Table W1.

Table 4 (Contaminant Release During Flow Events)

Receiving water description	Release Point	Gauging station description	Northing (GDA94)	Easting (GDA94)	Minimum Flow in Receiving Water Required for a Release Event	Flow recording Frequency
Middle Creek	RP 1 Polishing Pont	Bee Creek Monitoring Station	7615596	650715	> or = 2.0m^3/sec	Continuous (minimum daily)

W9 Contaminant release flow rate must not exceed **twenty percent (20%)** of receiving water flow rate.

W10 The daily quantity of contaminants released from each release point must be measured and recorded at the monitoring points in Table W1.

W11 Releases to waters must be undertaken so as not to cause erosion of the bed and banks of the receiving waters, or cause a material build up of sediment in such waters.

Notification of Release Event

W12 The authority holder must notify the administering authority as soon as practicable (no later than six (6) hours of having commenced releasing mine affected water to the receiving environment). Notification must include the submission of written verification to the administering authority of the following information:

(a) release commencement date/time;

(b) expected release cessation date/time;

(c) release point/s;

(d) release volume (estimated);

(e) receiving water/s including the natural flow rate; and

(f) any details (including available data) regarding likely impacts on the receiving water(s).

Note: Notification to the administering authority must be addressed to the Manager and Project Manager of the local administering authority via email or facsimile.

W13 The authority holder must notify the administering authority as soon as practicable, (nominally within twenty-four (24) hours after cessation of a release) of the cessation of a release notified under condition **W12** and within twenty-eight (28) days provide the following information in writing:

(a) release cessation date/time;

(b) natural flow volume in receiving water;

(c) volume of water released;

(d) details regarding the compliance of the release with the conditions of Department Interest: Water of this environmental authority (i.e. contamination limits, natural flow, discharge volume);

(e) all in-situ water quality monitoring results; and

(f) any other matters pertinent to the water release event.

Notification of Release Event Exceedance

W14 If the release limits defined in Table W2 are exceeded, the holder of the environmental authority must notify the administering authority within twenty-four (24) hours of receiving the results.

W15 The authority holder must, within twenty-eight (28) days of a release that exceeds the conditions of this authority, provide a report to the administering authority detailing:

(a) the reason for the release;

(b) the location of the release;

(c) all water quality monitoring results;

(d) any general observations;

(e) all calculations; and

(f) any other matters pertinent to the water release event.

Monitoring of Water Storage Quality

W16 Water storages stated in Table W5 which are associated with the release points must be monitored for the water quality characteristics specified in Table W6 at the monitoring locations and at the monitoring frequency specified in Table W5.

Table W5 (Water Storage Monitoring)

Water Storage Description	Northing (AGD84)	Easting (AGD84)	Monitoring Location	Frequency of Monitoring
Polishing Pond	7620504	643937	Sampling to be conducted from pontoon on southern side of dam, next to spillway and release point	Quarterly

W17 In the event that waters storages defined in Table W5 exceed the contaminant limits defined in Table W6, the holder of the environmental authority must implement measures, where practicable, to prevent access to waters by all livestock.

Table W6 (Onsite Water Storage Contaminant Limits)

Quality Characteristic	Test Value	Contaminant Limit
pH (pH unit)	Range	Greater than 4, less than 9[2]
EC (µS/cm)	Maximum	5970[1]
Sulphate (mg/L)	Maximum	1000[1]
Fluoride (mg/L)	Maximum	2[1]
Aluminium (mg/L)	Maximum	5[1]
Arsenic (mg/L)	Maximum	0.5[1]
Cadmium (mg/L)	Maximum	0.01[1]
Cobalt (mg/L)	Maximum	1[1]
Copper (mg/L)	Maximum	1[1]
Lead (mg/L)	Maximum	0.1[1]
Nickel (mg/L)	Maximum	1[1]
Zinc (mg/L)	Maximum	20[1]

Note:

Total measurements (unfiltered) must be taken and analysed

[1] *Contaminant limit based on ANZECC & ARMCANZ (2000) stock water quality guidelines.*

[2] *Page 4.2-15 of ANZECC & ARMCANZ (2000) "Soil and animal health will not generally be affected by water with pH in the range of 4–9".*

Receiving Environment Monitoring and Contaminant Trigger Levels

W18 The quality of the receiving waters must be monitored at the locations specified in Table W8 for each quality characteristic and at the monitoring frequency stated in Table W7.

Table W7 (Receiving Waters Contaminant Trigger Levels)

Quality Characteristic	Trigger Level	Monitoring Frequency	Comments
pH	6.5 – 8.0	Daily during the release	See Table 2 comments
Electrical Conductivity (µS/cm)	1000		
Suspended solids (mg/L)	950mg/L		
Sulphate (SO_4^{2-}) (mg/L)	1000		

Table W8 (Receiving Water Upstream Background Sites and Down Stream Monitoring Points)

Monitoring Points	Receiving Waters Location Description	Northing (AGD84)	Easting (AGD84)
Upstream Background Monitoring Points			
Middle Creek - upstream	Middle Creek 4km upstream of RP1 (polishing pond)	7622145	640925
Bee Creek - upstream	Bee Creek 15km upstream of point where release waters enter Bee Creek	7616700	639000
Hail Creek – upstream*	Hail Creek 5km upstream of confluence with Absent Creek	7621990	646869
Downstream Monitoring Points			
Bee Creek - downstream	Bee Creek 10km downstream of RP1 (polishing pond)	7615596	650715

Note:

The data from background monitoring points must not be used where they are affected by releases from other mines.

* *"Hail Creek – upstream" monitoring point is located in an area where periodic access difficulties may be experienced during heavy and extended rainfall. Whilst monitoring should aim to be undertaken at the frequency identified in Table W7, it is only required when access is available.*

W19 If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in Table W7 during a release event the environmental authority holder must compare the down stream results to the upstream results in the receiving waters and:

1. where the downstream result is the same or a lower value than the upstream value for the quality characteristic then no action is to be taken; or
2. where the down stream results exceed the upstream results complete an investigation in accordance with the ANZECC & ARMCANZ 2000 methodology, into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining:
    (i) details of the investigations carried out; and
    (ii) actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with W19 2(ii) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.

Receiving Environment Monitoring Program (REMP)

W20 A REMP must be developed and implemented by **27 February 2010** to monitor and record the effects of the release of contaminants on the receiving environment periodically and whilst contaminants are being discharged from the site, with the aims of identifying and describing the extent of any adverse impacts to local environmental values, and monitoring any changes in the receiving water. A copy of the REMP must be provided to the administering authority prior to its implementation and due consideration given to any comments made on the REMP by the administering authority.

For the purposes of the REMP, the receiving environment is the waters of the Bee Creek catchment and connected waterways within twelve (12) kilometres downstream of the release.

W21 The REMP must address (but not necessarily be limited to) the following:

(a) Description of potentially affected receiving waters including key communities and background water quality characteristics based on accurate and reliable monitoring data that takes into consideration any temporal variation (e.g. seasonality);

(b) Description of applicable environmental values and water quality objectives to be achieved (i.e. as scheduled pursuant to the *Environmental Protection (Water) Policy 1997*);

(c) Any relevant reports prepared by other governmental or professional research organisations that relate to the receiving environment within which the REMP is proposed;

(d) Water quality targets within the receiving environment to be achieved, and clarification of contaminant concentrations or levels indicating adverse environmental impacts during the REMP;

(e) Monitoring for any potential adverse environmental impacts caused by the release;

(f) Monitoring of stream flow and hydrology;

(g) Monitoring of toxicants should consider the indicators specified in Table W3 to assess the extent of the compliance of concentrations with water quality objectives and/or the ANZECC & ARMCANZ 2000 guidelines for slightly to moderately disturbed ecosystems;

(h) Monitoring of physical chemical parameters as a minimum those specified in Table W2 (in addition to dissolved oxygen saturation and temperature);

(i) Monitoring biological indicators (for macroinvertebrates in accordance with the AusRivas methodology) and metals/metalloids in sediments (in accordance with ANZECC & ARMCANZ 2000, BATLEY and/or the most recent version of *AS5667.1 Guidance on Sampling of Bottom Sediments*) for permanent, semi-permanent water holes and water storages;

(j) The locations of monitoring points (including the locations specified in Table W8 which are background and downstream impacted sites for each release point);

(k) The frequency or scheduling of sampling and analysis sufficient to determine water quality objectives and to derive site specific reference values within two (2) years (depending on wet season flows) in accordance with the *Queensland Water Quality Guidelines* 2006. For ephemeral streams, this should include periods of flow irrespective of mine or other discharges;

(l) Specify sampling and analysis methods and quality assurance and control;

(m) Any historical datasets to be relied upon;

(n) Description of the statistical basis on which conclusions are drawn; and

(o) Any spatial and temporal controls to exclude potential confounding factors.

W22 A report outlining the findings of the REMP, including all monitoring results and interpretations in accordance with condition **W20** must be prepared and submitted in writing to the administering authority by **1 October 2011**. This should include an assessment of background water quality, any assimilative capacity for those contaminants monitored and the suitability of current discharge limits to protect downstream environment values.

Water Reuse

W23 Water contaminated by mining activity may be piped or trucked or transferred by some other means that does not contravene the conditions of this authority during periods of dry weather for the purpose of supplying stock water to properties directly adjoining properties owned by the environmental authority holder or a third party and subject to compliance with the quality release limits specified in Table W9.

Table W9 (Stock Water Release Limits)

Quality characteristic	Units	Minimum	Maximum
pH	pH units	6.5	8.5
Electrical Conductivity	µS/cm	N/A	5000

W24 Water contaminated by mining activity may be piped or trucked or transferred by some other means that does not contravene the conditions of this authority during periods of dry weather for the purpose of supplying irrigation water to properties directly adjoining properties owned by the environmental authority holder or a third party and subject to compliance with quality release limits in Table W10.

Table W10 (Irrigation Water Release Limits)

Quality characteristic	Units	Minimum	Maximum
pH	pH units	6.5	8.5
Electrical Conductivity	µS/cm	N/A	Site specific value to be determined in accordance with ANZECC & ARMCANZ (2000) Irrigation Guidelines and provided through an amendment process.

W25 Water contaminated by mining activity may be piped or trucked off the mining lease for the purpose of supplying water to a third party for purpose of construction and/or road maintenance in accordance with the conditions of this environmental authority.

W26 If the responsibility of water contaminated by mining activities (the water) is given or transferred to another person in accordance with conditions **W23, W24 or W25:**

(a) the responsibility of the water must only be given or transferred in accordance with a written agreement (the third party agreement); and

(b) include in the third party agreement a commitment from the person utilising the water to use water in such a way as to prevent environmental harm or public health incidences and specifically make the persons aware of the General Environmental Duty (GED) under section 319 of the *Environmental Protection Act 1994*, environmental sustainability of the water disposal and protection of environmental values of waters.

Water General

W27 All determinations of water quality must be:

(a) performed by a person or body possessing appropriate experience and qualifications to perform the required measurements;

(b) made in accordance with methods prescribed in the latest edition of the administering authority's Water Quality Sampling Manual;

Note: Condition W27 requires the Water Quality Manual to be followed and where it is not followed because of exceptional circumstances this should be explained and reported with the results.

(c) collected from the monitoring locations identified within this environmental authority, within ten (10) hours of each other where possible;

(d) carried out on representative samples; and

(e) laboratory testing must be undertaken using a laboratory accredited (e.g. NATA) for the method of analysis being used.

W28 The release of contaminants directly or indirectly to waters:

(a) must not produce any visible discolouration of receiving waters; nor

(b) must not produce any slick or other visible or odorous evidence of oil, grease or petrochemicals nor contain visible floating oil, grease, scum, litter or other objectionable matter.

Annual Water Monitoring Reporting

W29 The following information must be recorded in relation to all water monitoring required under the conditions of this environmental authority and submitted to the administering authority in the specified format with each annual return:

(a) the date on which the sample was taken;

(b) the time at which the sample was taken;

(c) the monitoring point at which the sample was taken;

(d) the measured or estimated daily quantity of the contaminants released from all release points;

(e) the release flow rate at the time of sampling for each release point;

(f) the results of all monitoring and details of any exceedences with the conditions of this environmental authority; and

(g) water quality monitoring data must be provided to the administering authority in the specified electronic format upon request.

Temporary Interference with waterways

W30 Temporarily destroying native vegetation, excavating, or placing fill in a watercourse, lake or spring necessary for and associated with mining operations must be undertaken in accordance with Department of Environment and Resource Management *Guideline - Activities in a Watercourse, Lake or Spring associated with Mining Activities.*

Water Management Plan

W31 A Water Management Plan must be developed and implemented by **27 February 2010** that provides for the proper and effective management of the actual and potential environmental impacts resulting from the mining activity and to ensure compliance with the conditions of this environmental authority.

W32 The Water Management Plan must be developed in accordance with DERM Guideline for Preparing a Water Management Plan 2009 (to be developed by 1 October) or any updates that become available from time to time and must include at least the following components:

(a) Contaminant Source Study;

(b) Site Water Balance and Model;

(c) Water Management System;

(d) Saline Drainage Prevention and Management Measures;

(e) Acid Rock Drainage Prevention and Management Measures (if applicable);

(f) Emergency and Contingency Planning;

(g) Monitoring and Review.

W33 Each year the holder of the environmental authority must undertake a review of the Water Management Plan prior to the wet season (i.e. by **1 November**) and a further review following the wet season (i.e. by **1 May** the following year) to ensure that proper and effective measures, practices or procedures are in place so that the mine is operated in accordance with the conditions of this environmental authority and that environmental harm is prevented or minimised.

W34 A copy of the Water Management Plan and/or a review of the Water Management Plan must be provided to the administering authority on request.

Saline Drainage

W35 The holder of this environmental authority must ensure proper and effective measures are taken to avoid or otherwise minimise the generation and/or release of saline drainage.

Acid Rock Drainage

W36 The holder of this environmental authority must ensure proper and effective measures are taken to avoid or otherwise minimise the generation and/or release of acid rock drainage.

Stormwater and Water sediment controls

W37 An Erosion and Sediment Control Plan must be developed by an appropriately qualified person and implemented for all stages of the mining activities on the site to minimise erosion and the release of sediment to receiving waters and contamination of storm water.

W38 The maintenance and cleaning of any vehicles, plant or equipment must not be carried out in areas from which contaminants can be released into any receiving waters.

W39 Any spillage of wastes, contaminants or other materials must be cleaned up as quickly as practicable to minimise the release of wastes, contaminants or materials to any stormwater drainage system or receiving waters.

All Dams

W40 The hazard category of each dam must be determined by a suitably qualified and experienced person at least once in each two (2) year period.

W41 Dams having a hazard category determined to be significant or high, must be specifically authorised by an environmental authority.

W42 All water retention dams must be constructed to the design criteria outlined in Table W11.

Table W11 (Retention dams design criteria)

Retention Dam	Design Storm	Target Particle Size for Settlement
Polishing Pond	1 in 10 ARI *(Average Recurrence Interval)*	0.02 mm (medium silt)
All other retention dams	1 in 10 ARI	0.06 mm (coarse silt)

Fitzroy River Basin Study

W43 The administering authority and the holder of this environmental authority both acknowledge that the conditions for release of contaminants to the Bee Creek catchment in this environmental authority have been calculated without the benefit of the findings of projects proposed to be undertaken as per recommendations 2 and 3 of the *Study of cumulative impacts on water quality of mining activities in the Fitzroy River Basin* (April 2009). The administering authority may, based on the information provided in the study report when it becomes available, all relevant information available at the time and the regulatory framework applicable at that time, consult with the holder of this environmental authority about the conditions in the environmental authority concerning the treatment and disposal of waste water.

The aim of the consultation shall be the meaningful review of the contaminant release limits imposed in this authority having regard to:

(a) the study results;

(b) near field monitoring results;

(c) QLD Water Quality Guidelines; and

(d) best practice environmental management.

If this review leads to a change in the requirements on this environmental authority holder, this shall be advanced by way of an authority amendment or a Transitional Environmental Program and as is necessary or desirable.

Sewage Effluent

W44 The quality of treated sewage effluent used for dust suppression or irrigation must be demonstrated to comply with Table W12.

Table W12 (Sewage effluent quality limits)

Parameter	Type	Criteria	Monitoring Frequency
5-day Biological oxygen demand	Maximum	20 mg/L	Every 3 months
Suspended solids	Maximum	30 mg/L	Every 3 months
pH	Maximum	6.5 - 8.0	Every 3 months
Free residual chlorine	Maximum	1 mg/L	Every 3 months
Faecal coliforms	Maximum	1000 thermotolerant coliforms/100 ml	Every 3 months

W45 All treated sewerage effluent used for dust suppression or irrigation must be contained on site.

Groundwater

W46 Any non seasonal decreases in groundwater levels greater than 2.5 metres from the previous six (6) monthly monitoring period, not resulting from the pumping of licensed bores, must be reported immediately in writing to the administering authority.

Definitions:

"20th percentile flow" means the 20th percentile of all daily flow measurements (or estimations) of daily flow over a 10 year period for a particular site. The 20th percentile calculation should only include days where flow has been measured (or estimated), i.e. not dry weather days.

"Acid rock drainage" means any contaminated discharge emanating from a mining activity formed through a series of chemical and biological reactions, when geological strata is disturbed and exposed to oxygen and moisture as a result of mining activity.

"Administering authority" means the Department of Environment and Resource Management or its successor.

"Anniversary day" means the anniversary day the authority is issued, whether or not it has been amended or transferred.

"Appropriately qualified person" means a person who has professional qualifications, training, skills or experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis on performance relative to the subject matter using the relevant protocols, standards, methods or literature.

"ARI" means the average or expected value of the periods between exceedances of a given rainfall total accumulated over a given duration.

"Contaminated Land" has the meaning provided in schedule 3 of the *Environmental Protection Act 1994.*

"Dam" means a land-based structure or a void that is designed to contain, divert or control flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and associated works. However; a dam does *not* mean a fabricated or manufactured tank or container designed to a recognised standard, *nor* does a dam mean a land-based structure where that structure is designed to an Australian Standard. In case there is any doubt, a levee (dyke or bund) is a dam, but (for example) a bund designed for spill containment to AS1940 is *not* a dam.

"Endangered Remnant Ecosystem 11.9.5" means Regional Ecosystem 11.9.5 defined in Sattler, P. and Williams, R. (1999) *The Conservation Status of Queensland's Bioregional Ecosystems.* pp 11/29. Environmental Protection Agency, Queensland Government, Australia.

"Environment" has the meaning provided in section 8 of the *Environmental Protection Act 1994.*

"Environmental authority" means an environmental authority granted in relation to an environmentally relevant activity under the *Environmental Protection Act 1994.*

"Environmental authority holder" means the holder of this environmental authority.

"ESP" means Exchangeable Sodium Percentage

Hail Creek Mine

Transitional Environmental Programme under Section 333 of the *Environmental Protection Act 1994*

Environmental Authority MIN100913309

Principal Holder: Queensland Coal Pty Ltd

Joint Holder: Marubeni Coal Pty Ltd.
Sumisho Coal Development Queensland Pty Ltd.
Nippon Steel Australia Pty Ltd

18th January 2011 – 17th June 2010

Approvals

N ame	Position	Signed	Date
Originator	Environmental Specialist	- -	
Checked	HSEC Manager	- -	
Authorised	General Manager	- -	

Revisions

Date	Description	By	Check	Authorised
17.01.2011	Issued for internal review	MG		
28.01.2011	Issued for use	MG	LW	GS

Contents Page

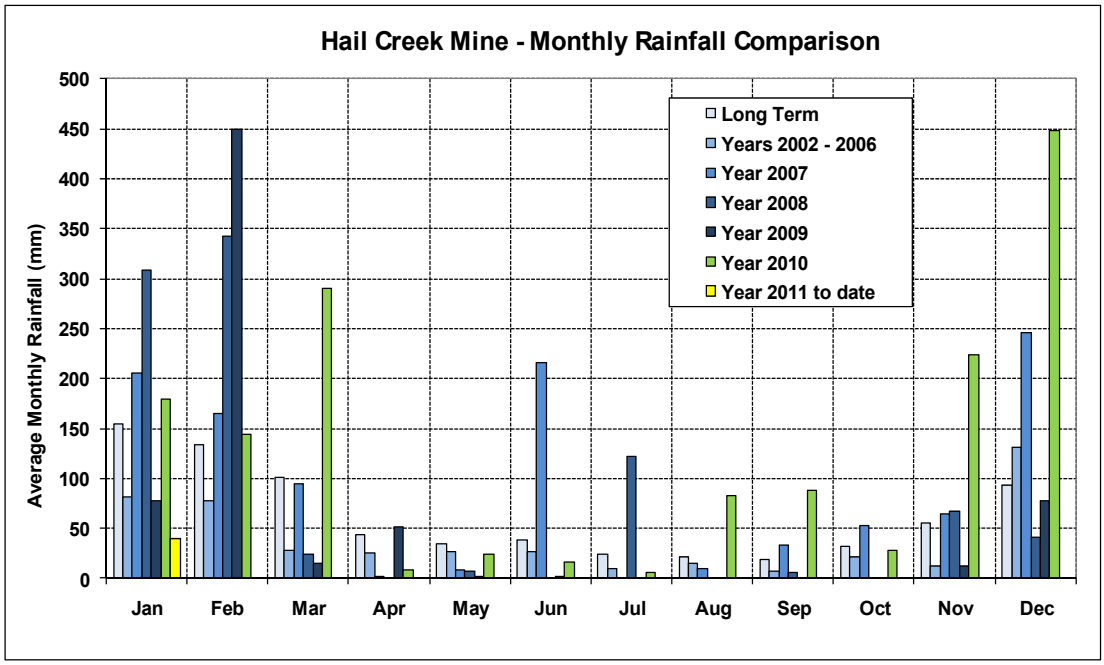
1. Background

1.1 Reason for TEP

This Transitional Environmental Programme (TEP) has been voluntarily submitted to the Queensland Department of Environment and Resource Management (DERM) in accordance with the *Environmental Protection Act 1994* (EP Act) and the Environmental Authority (EA) MIN100913309 under which Hail Creek Mine (HCM) operates.

The 2010-2011 wet season has been characterised by prolonged and above average rainfall events and this is forecast to continue into 2011. Based on onsite rain gauges, the area has received above average rainfall consistently since August 2010, as shown in **Figure 1** below. Further it is noted that, historically, the high rainfall months of the year that comprise the wet season are January through to March, indicating the wettest months are yet to be experienced.

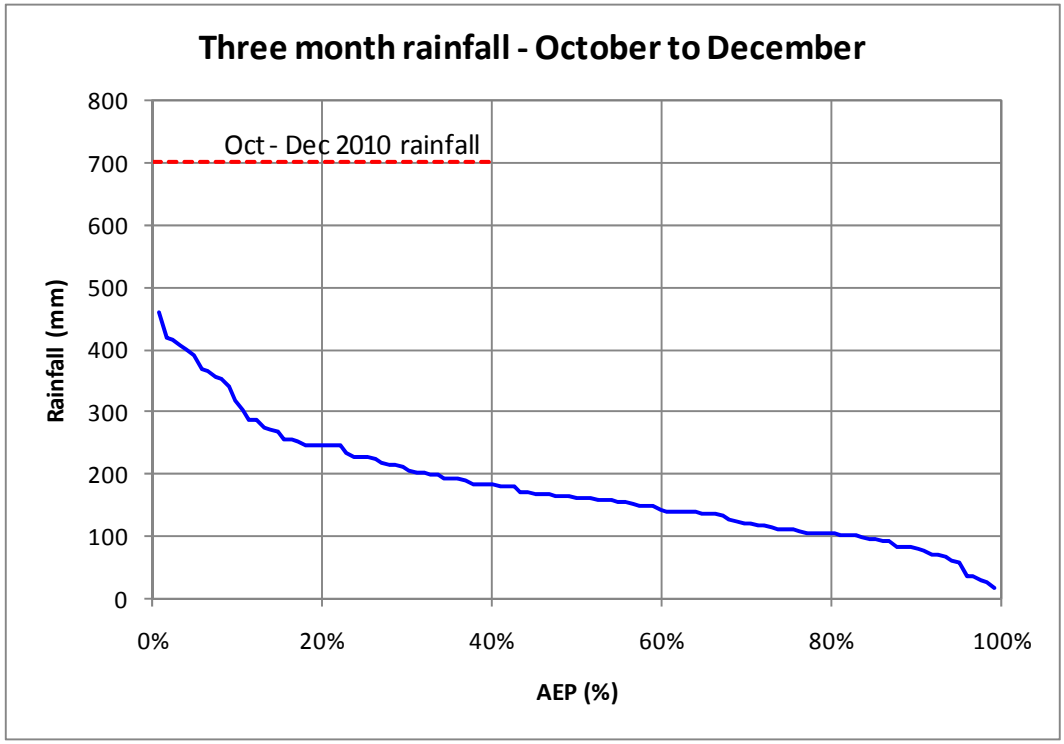
Figure 1. Monthly Rainfall Comparison



The months of August, September, November and December 2010 have all recorded approximately four times the long-term monthly average rainfall. Further, a total of around 700mm of rain has fallen in the period of October to December 2010, which is the highest historical rainfall for this period on record (by around 200mm), and around 525mm greater than the long term average for these months. Refer to **Figure 2** for details.

Exceptionally heavy rainfall experienced in late December has meant Hail Creek Mine can no longer accommodate the water impounded in its system.

Figure 2. Annual Exceedence Probability of Oct-Dec Rainfall



A total of six controlled release events have been conducted thus far for the 2010/11 wet season, discharging water for a total period of 16 days. A total volume of approximately 2,919 ML has been discharged from the Polishing Pond (RP1) in compliance with the Hail Creek EA (MIN100913309) with respect to both water quality and stream flow.

The status of the HCM water balance at the time of submitting the TEP is as follows:

- There is currently one licensed discharge point, the Polishing Pond (RP1);
- A significant volume of water is currently being impounded in pit, restricting access to coal reserves (as per Table 1). This is having a critical operational impact and is contributing to Hail Creek being unable to maintain required coal production levels;
- Each of the four main dams are over the full supply volume (FSV), with the exception of the Polishing Pond which is kept drawn down to protect against uncontrolled release, as detailed in Table 1 below. Therefore, there is little opportunity to manage water impounded in pit by transferring to the water storage network, simply because there is no free volume available in the dams;
- The current water quality in the key dams is consistent with the background water quality in the area, but is variable in terms of certain parameters, as shown in Table 1. Similarly, overall water impounded in pit is of good quality is representative of the background water quality, and limits specified by the EA (MIN100913309);
- Flow volume and frequency of flows in the receiving waterways limit the opportunities to discharge water in compliance with the EA (MIN100913309) and subsequently restrict the total volume of mine water than has been released.

Table 1. Latest Dam and Pit Storage Capacity and Water Quality readings

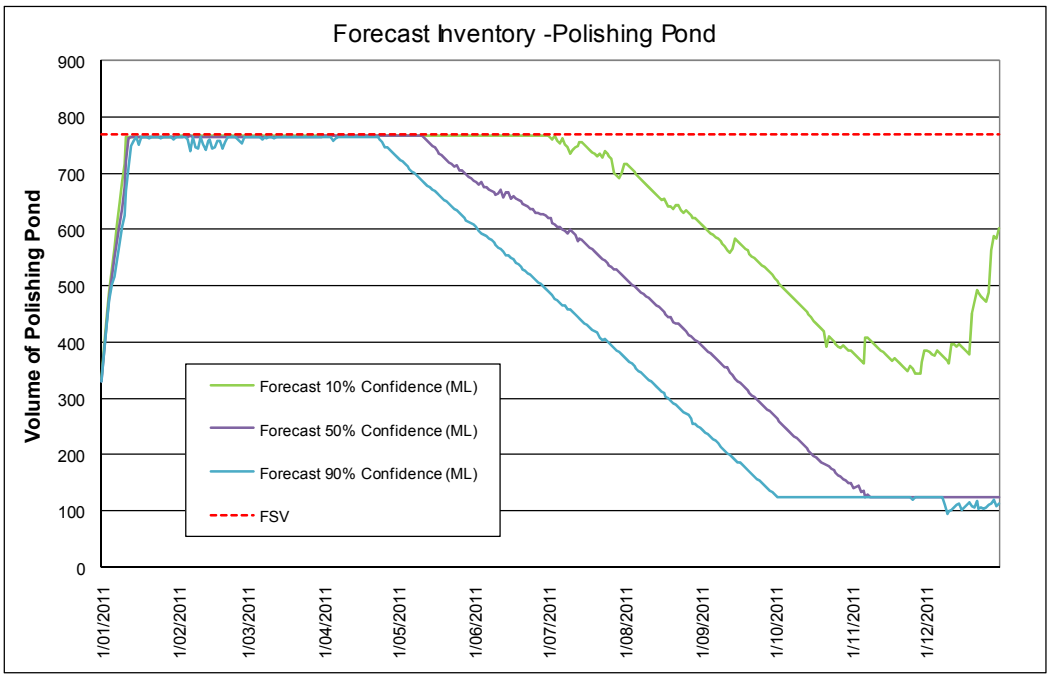
Dam Storage/ Pit Name	Water Volume Impounded (ML)	Percentage of Full Supply Volume
Polishing Pond *(Release Point 1)*	275 ML	36% full (495 ML available)
Central Dam	855 ML	107% full (spills to Polishing Pond via Low Wall Drainage Channel)
Northern Dam	300 ML	91% full (30 ML available)
Ramp 0 *(This disused pit is now used as a water storage)*	2791 ML	107% full (contained by spoil dumps, but FSV based on geotechnical risk)
Ramp 1	100 ML	N/A
Ramp 2	250 ML	N/A
Ramp 3	568 ML	N/A
Ramp 5	468 ML	N/A
Ramp 6	959 ML	N/A

Therefore, at the time of writing, Hail Creek has 2345 ML impounded in pit, and can only accommodate approximately 279 ML in the water storage network (assuming overflows from Ramp 0 and Central report to the Polishing Pond).

Further, we expect significant additional volumes of rainfall as the wet season continues. Should this rainfall occur and the opportunities to conduct a controlled release be restricted by stream flow in the receiving waters (as has been the case to date), there is a high risk of uncontrolled spillway release from the Polishing Pond. Once this spillway release begins, it would be expected to continue for an extended period.

Figure 3 below shows modelling completed to forecast the period that uncontrolled release is expected, given the volumes of water currently impounded, and the extended uncontrolled spillway release.

Figure 3. Current Site Forecast Inventory of Polishing Pond – RP1



This graph shows a high probability of continuous uncontrolled spillway release (based on the 121 years of data in our water balance model – OPSIM) until May 2011. Essentially, this forecast indicates that, without a TEP in place to release water outside of the current EA conditions, Hail Creek is highly unlikely to be able to maintain controlled release of water over the remainder of the wet season.

Site rainfall for the period Oct-Dec 2010 is the highest on record and as such represents a nominal wet season AEP of around 1% (i.e. 1 in 100). Forecast modelling for the 2010/11 water year (Oct-Sep) based on the historical rainfall records, suggests that an additional volume of around 5000ML potentially could be captured within the Hail Creek water management system. **Table 1** above indicates that Hail Creek is currently impounding a total of around 6500ML on site.

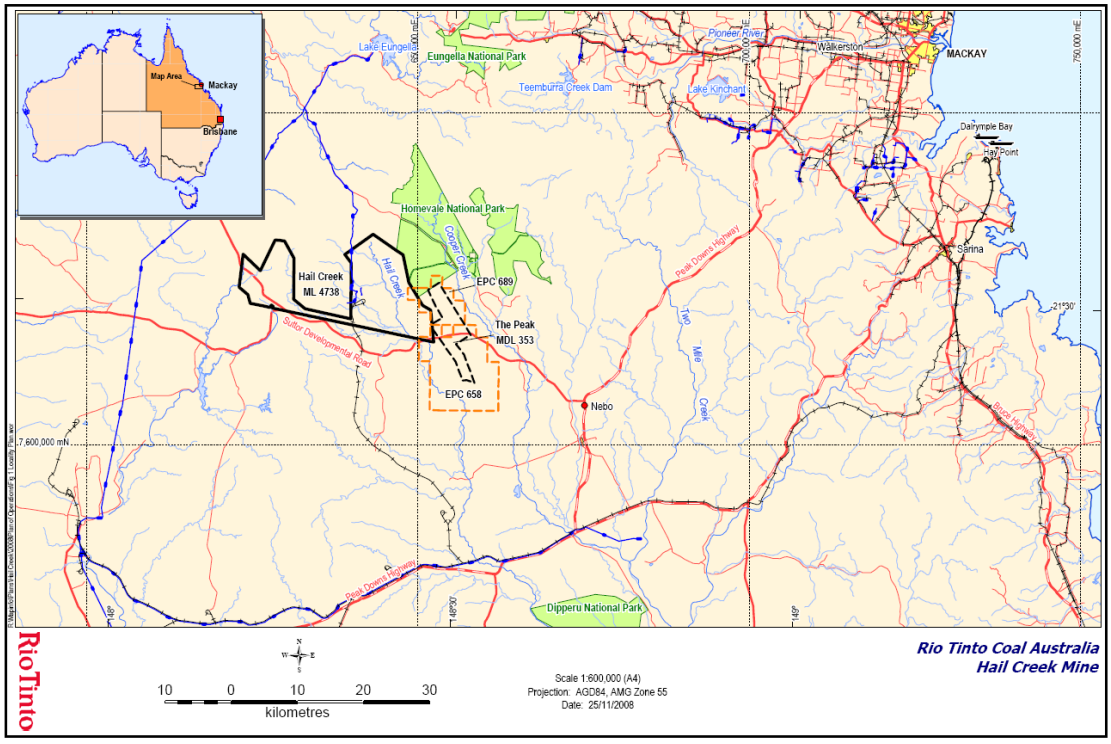
The containment standard of the Hail Creek water management system has been designed to satisfy a 10% AEP, meaning that normal operation of the water management system would result in risk of uncontrolled spillway release in any year of 10%.

This TEP has been prepared to outline the proposed control strategies to manage the excess mine water currently contained by Hail Creek Mine, and that expected to be impounded throughout the remainder of the 2010/11 wet season. The objective of this TEP is to manage effectively mine water during the 2010 – 2011 wet season to ensure that an uncontrolled spillway discharge does not occur, and to reduce site inventories to ensure Hail Creek can contain water into the future. This TEP will be effective from the date of approval until 17 June 2011.

1.2 Receivi ng Environment

Hail Creek Mine is surrounded by a number of small ephemeral stream systems, which support small catchments, and feed into larger catchments. HCM's current active mining area is located to the west of Hail Creek, which is an upper tributary of the Fitzroy River drainage system. Hail Creek flows into Bee Creek, thence into the Isaac and Fitzroy rivers, entering the sea at Rockhampton, 300 km downstream. Hail Creek Mine is located in the upper reaches of the catchment. See **Figure 4** below.

Figure 4. Locality Plan



Within the HCM catchment area of interest, all creeks are strongly ephemeral streams that flow only after periods of rain, and dry to a few isolated pools that remain briefly into the drier periods of the year. The receiving environments of the Bee Creek catchment, including all tributaries, are characterised as having high flow events immediately following heavy rainfall, which are then followed by very low or zero flows and dry creek beds.

HCM discharges water to Middle Creek, which then flows to Absent Creek, then into Hail Creek and finally, Bee Creek catchment. HCM discharges mine affected water from one on-site water storage location, Polishing Pond (RP1).

Middle Creek is a minor stream system, with a small catchment (3020 ha), and HCM is positioned to divert much of the water that historically entered the Middle Creek system into the mine water storage system. Absent Creek also supports a small relatively undisturbed catchment (1,790 ha), and again the activities of Hail Creek would represent the primary external influence to waters in the catchment.

In contrast, both Bee and Hail Creek support large catchments (19,600 ha and 10,500 ha, respectively), which extend both upstream and downstream of HCM, and receive water from a range of sources that may be subject to influence from grazing and agricultural activities.

Other stream systems of note include Schammer Creek, which supports a small size undisturbed catchment (2,100 ha) to the north of HCM and feeds into Hail Creek. There is also Brumby Creek, which historically feed into Hail Creek but has now been diverted by HCM's operations to feed into Middle Creek.

1.2.1 Receiving Water Quality

Background water quality has been routinely collected since 2005, and has been summarised in the most recent Water Management Plan (HCM-10-E10-PLN-001), which has been supplied previously to DERM. A further synopsis of the information contained within this Plan is reproduced below, as **Table 2**. Additional information on water quality within the receiving environment is also collected annually as part of the Regional Environmental Monitoring Programme (REMP) for Hail Creek Mine.

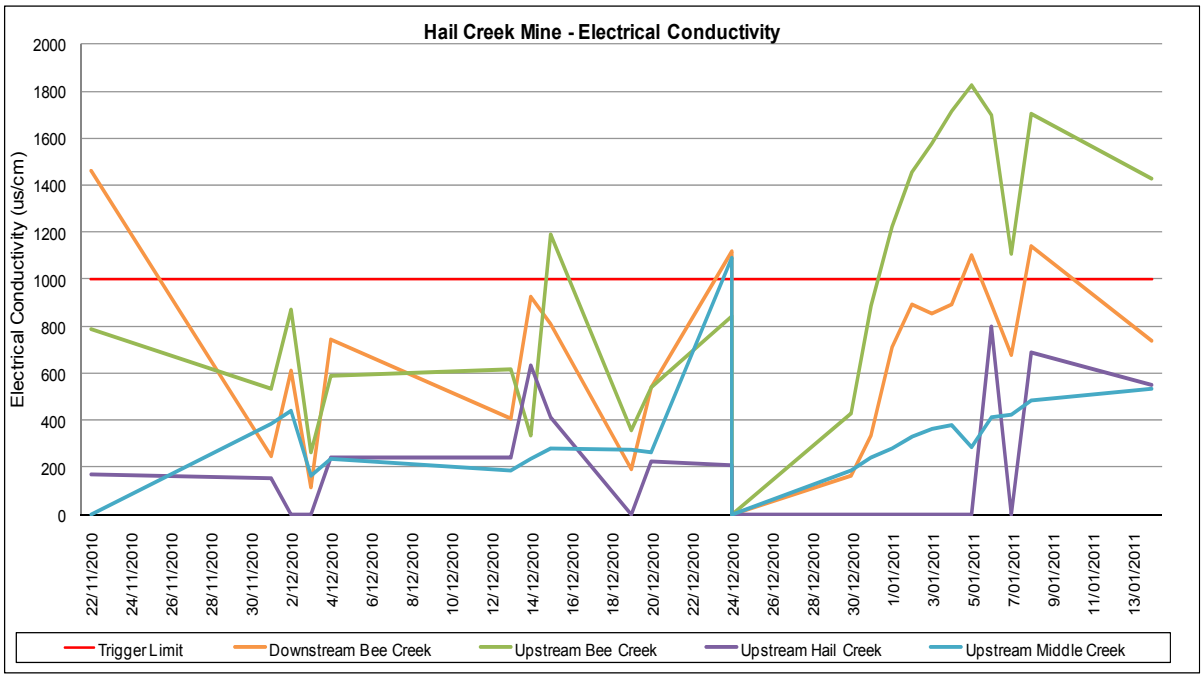
Table 2. Historic water quality results for Receiving Waters & Polishing Pond (RP1)

		Hail Creek Upstream	Middle Creek Upstream	Bee Creek Upstream	Polishing Pond (April to Nov- Dry Season)	Polishing Pond (Dec to Mar- Wet Season)	Bee Creek Downstream
Site ID		**HCU**	**MCU**	**BCU**	**RP1**	**RP1 BCD**	
Electrical Conductivity (EC) (µS/cm)	Min – Max	124 – **1395**	81 – 696	96 – **1660**	1265 – **1947**	783 – **2262**	119 – **1610**
	Ave	529	350	750	**1562**	1348	886
	80th %	1001	504	1411	**1781**	**1692**	1338
pH	Min – Max	7.2 – **8.9**	7.1 – **8.7**	6.6 – **8.9**	7.7 – **9.3**	7.3 – **9.3**	**7.0 – 8.6**
	Ave	**8.1**	7.1	7.9	8.6	8.4	**8.2**
	80th %	**8.6**	**8.3**	**8.2**	8.8	8.6	**8.6**
Sulphate (SO4 2) (mg/L)	Min – Max	1 – 206	1 – 40	1 – 300	1 – 777	6 – 627	1 – 54
	Ave	39.9	6.5	98.0	436.0	262.2	18.5
	80th %	55.6	7.2	193.4	657.6	346.6	38.4
Suspended Solids (mg/L)	Min – Max	4 – 1630	1 – 3200	1 – 8400	1 – 183	1 – 391	1 – 6800
	Ave	103.0	244.4	821.2	18.5	54.0	554.4
	80th %	237.6	172.6	916.4	15.8	71	708.8
Turbidity (NTU)**	Min – Max	16 – 1156	22 – 284	45 – 920	14 - 936		44 – 1362
	Ave	319	129	246	144		440

** Records of turbidity have only been collected since 2010.
Note: Cells in red bold are above the EA Table W7 Receiving Water Trigger Limits (for HCU, MCU, BCU & BCD), or above the W2 Contaminant Release Limits for Polishing Pond (RP1). No limits have been set for Suspended Solids or Turbidity.

Electrical Conductivity (EC) is a key water quality parameter for the area, and is quite variable across both time and space. The historical maximum, and the 80th percentile value, are typically above the contaminant release limits for Polishing Pond, and the receiving water trigger limits for the background receiving environment locations. In particular, recent water quality records show that the heavy rainfall experienced thus far has had the effect of elevating EC at a number of background monitoring locations, as shown in **Figure 6**.

Figure 5. Recent Electrical Conductivity Records at Hail Creek Mine



The above graph shows that, in particular, the Bee Creek Upstream monitoring location has been elevated significantly above the trigger value. A similar phenomenon was observed in 2008, again after significant rainfalls associated with the floods. Anecdotal evidence suggests that this location experiences significant interaction with the underlying ground water reserves, and perhaps this interaction is resulting in the elevated EC values.

1.9.1 Flow Rates & Volumes

An assessment of the volumes and frequency of creek flows for the Hail Creek Mine area was completed in 2009, to support the identification of the minimum flow trigger in the amended EA, and to understand the flow characteristics of the receiving Bee Creek catchment.

The flow rates were modelled using available site data, long-term rainfall records and the Hail Creek OPSIM model, and calibrated back to the Smith's Yard gauging station (130411A) maintained by DERM. This gauging station has data records for Bee Creek for a 16 year period (between 1972 and 1987), but is considered too far downstream to use directly.

A minimum flow trigger for the Bee Creek Downstream location (at the crossing with the Suttor Developmental Road) of 1.6m^3/s was modelled, representing the 20th percentile flow event. However, in the EA, a minimum flow trigger of 2m^3/s was agreed, to compensate for the fact that a downstream stream gauge is being used. This modelling indicated an average flow rate of 14.0 m^3/s in the receiving Bee Creek waterway, and an average of 17 potential release days per year (when the minimum flow trigger has been reached) for Hail Creek Mine.

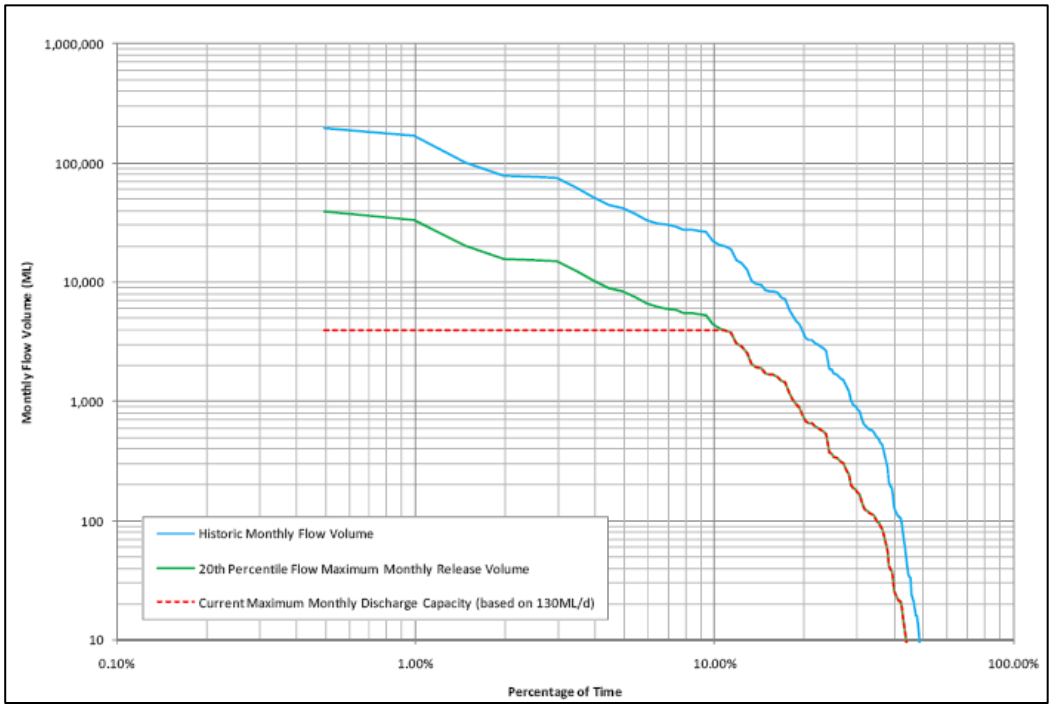
Already this year, Hail Creek has released for 16 days with the peak wet season yet to begin. Again, this demonstrates the extreme nature of this wet season, which the Hail Creek water management system was not designed to cope with.

Further modelling has investigated expected monthly flow volumes (according to probabilities corresponding with expected wet season conditions), as shown in **Figure 6**. These graphs show that for a 1 in 100 year wet season, the expected monthly total flow volume would be just

under 200,000 ML, and the 20th percentile monthly flow volume (equivalent to the potential release volume) would be approximately 30,000 ML. The graph also shows that only using existing infrastructure and the release points approved in the EA (RP1 - Polishing Pond), Hail Creek cannot achieve peak discharge volumes during periods of flow.

Therefore, during a 1 in 100 year wet season, the Bee Creek catchment would naturally receive very significant flow volumes over the course of a month.

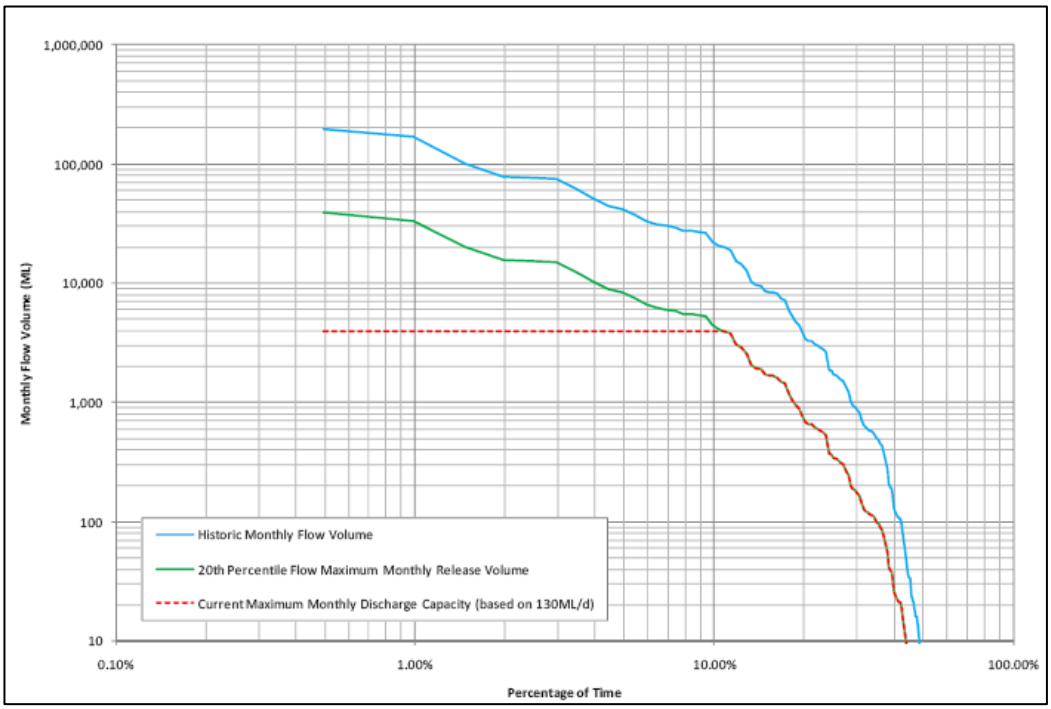
Figure 6. Bee Creek – Modelled Monthly Flow Volume (ML)



Considering the expected peak flow rate experienced during a month, **Figure 7** below, shows that for a 1 in 100 year wet season, the expected monthly peak flow rate would be approximately 800m³/s (or 800,000L/s), and the 20th percentile monthly peak flow rate would be approximately 150m³/s (or 150,000L/s).

Therefore, during a 1 in 100 year wet season, the Bee Creek catchment would naturally receive very large monthly peak flow rates, associated with very heavy and rapid natural flows.

Figure 7. Bee Creek – Modelled Monthly Peak Flow Rate (m^3/s)



It is therefore proposed to temporarily remove the minimum flow trigger on Bee Creek, and instead establish a system under this TEP of mimicked natural flow events. Hail Creek will release water in a defined pattern of creating a peak flow event and then tapering the flow rate.

1.10 Mine Water Quality

Electrical conductivity levels within some of the mining pits, the Polishing Pond and Ramp 0 are sitting close to, or over, the current compliance limit (1500 µS/cm) specified in Table W2 of the EA. We can expect that this EC value will continue to deteriorate the longer the water remains in pit without further dilution. Generally, EC within the Polishing Pond can be quite variable, depending from where water has been transferred.

Review of historic data (**Table 3 and Appendix B**) shows that over the course of a year, the poorest quality EC reading is approximately 2000 µS/cm. Other key contaminants rarely approach or exceed the release limits specified in the EA.

Table 3. Recent water quality results for Mine Water Storages & Pits

Dam Storage/ Pit Name	Electrical Conductivity (µS/cm)	pH	Turbidity (NTU)	Sulphate (SO_4^{2-}) (mg/L)	Suspended Solids (SS) (mg/L)
	Field readings taken 11/01/2011			*Lab analysis dating 09/12/2010*	
Polishing Pond *(Release Point 1)*	**1574**	8.57 49.4		130	8
Central Dam	768	8.87	30.2	73	9
Northern Dam	332	8.73	53.1	16	8
Ramp 0 *(This disused pit is now used as a water storage)*	**1490**	8.85 184.5		196	11
Ramp 1 (S)	**1907**	8.41 321		N/A	N/A
Ramp 2 (N)	**1625**	8.27 120.5		N/A	N/A
Ramp 3 (N)	675	8.50	151.8	N/A	N/A
Ramp 5 (N)	985	**8.95**	10.0 N/A		N/A
Ramp 6	574	8.14	150	N/A	N/A
EA Compliance Limits	**1500**	**6.5 – 9.0**	**N/A**	**1000**	**N/A**

Note: Cells in red bold are above (or very close to) the EA Table W2 Contaminant Release Limits for Polishing Pond (RP1). No limits have been set for Suspended Solids or Turbidity.

It is noted that to date for the 2010/11 wet season, all release events have been within normal compliance limits, as specified by the contaminant release limits in Table W3 of the EA. Appendix B contains graphs representing the trends for EC, pH, and Turbidity across 2010 for the four (4) main water storages listed below. Further, **Table 2** summarises longer-term records for the release point (Polishing Pond) and receiving environment monitoring points.

2. Hail Creek TEP Strategy

2.1 Plan for the Release of Mine Affected Water

Hail Creek propose the following plan to manage the excess mine water currently contained and expected to be impounded during the remainder of the 2010/11 wet season:

- Immediately commence a system of mimicked natural flow, entirely independent of the former flow dilution system under the EA. A structure of tiered release will be established with each release point operating during differing time periods, with the total flow rate scaled back to mimic a natural flow event. All approved release locations (i.e. the existing RP1 and all ARPs specified by this TEP) will commence releasing as per this pattern;
- Ensure no more than 4 release points are being utilised at any one time;
- Ensure a minimum of 1 day of rest between the commencement and cessation of each discharge flow event, to allow each release location along the receiving waterway to rest (most locations will rest for longer than the 1 day);
- Ensure water quality at each release point (end-of-pipe) meets the quality criteria outlined under this TEP (as per **Table 7**);
- Utilise more release points initially to get mine affected water off site rapidly to ensure water is released at the peak of the wet season, and before water quality deteriorates;
- Continue to follow this system of mimicked natural flow events until a total volume of 10,000 ML has been discharged, or 17 June 2011 when this TEP expires; and
- After the end of this TEP, if required, recommence releasing water as per the approved EA (MIN100913309) requirements (i.e. requiring 2m^3/s minimum flow and 20% dilution to the Bee Creek Downstream location, meeting release limits as per Table W2).

2.1.1 Total Volume of Mine Affected Water to be Released

As detailed in the Introduction (Section 1), site modelling indicates that if the wet season continues to follow its current pattern in terms of extremity, a conservative estimate of 5,000ML additional water will be contained between January and June 2011. This estimate is based on 121 years of data in the OPSIM water balance model, assuming the volume associated with an 80th percentile net rainfall yield year. Further, Hail Creek Mine is currently impounding a total of 6,500ML on site.

Hail Creek needs to release the current excess volumes of impounded mine affected water, but also to ensure the TEP plans for the remainder of water expected to be impounded over the course of the 2010/11 wet season. Therefore, a maximum volume of 10,000ML to be discharged under this TEP is proposed as reasonable. If either less or more water continues to be impounded as the wet season progresses, Hail Creek will approach DERM to discuss required amendments to this TEP.

Considering expected monthly flow volumes for the coming wet season, presented in Section 1.2.2, it is again highlighted that a monthly total flow of approximately 200,000 ML is expected to pass through Bee Creek (at the crossing with the Suttor Developmental Road), with a 20th percentile monthly flow volume of approximately 30,000 ML. In this context, the total volume of water intended to be released under this TEP by Hail Creek Mine is insignificant (approximately 4,977 ML per month with a peak flow rate of just 4.0m^3/s).

2.1.2 TEP Release Event Flow Pattern

Hail Creek proposes the following standard pattern for a typical flow event to be undertaken under this TEP. The flow pattern has been designed to mimic a natural flow, ensuring minimal environmental harm and erosion, and providing for a period where the receiving waterway can experience no flow conditions (assuming the absence of rainfall).

Table 4. Typical Release Flow Event to be followed under this TEP

Time/Duration of Flow Event (Day/hours)	Release Points Active	Pump Rate (L/s)	Mimicked Flow Rate (m^3/s)	Volume released (ML)
Day 1 - 3 (0 – 72hrs)	x4	4000	4.0 1036.8	
Day 4 - 6 (72 – 144hrs)	x3	3200	3.2 829.4	
Day 7 - 9 (144 – 216hrs)	x2	1600	1.6 414.7	
Day 10 - 12 (216 – 288 hrs)	x1	800	0.8 207.4	
Days 13 (288 – 312hrs) *Rest Day*	- -		- -	
		Peak Flow Rate	4.0 m^3/s -	
		Average Flow Rate	2.4 m^3/s -	
		Total Volume Released per Flow Event		2488.3 ML

Hail Creek intends to operate each of the release points for differing periods of time (for example: RP1 operating for 3 days, ARP3/4 operating for 6 days, ARP2/3 operating for 9 days and ARP1 operating for 12 days). In this way, a natural flow event will be mimicked with flow being injected into the receiving waterway system for differing times, and at different locations. Thus, for a single 13-day period, a maximum of 2,488.3 ML will be released.

As water storages and pit areas are emptied of water (and assuming no further rainfall), they will no longer be used as release points, and other release points will be operated longer. Similarly, if logistic issues are experienced for release points, others will be substituted. The maximum pumping rates, and therefore peak flow rates, will be maintained as per **Table 4**.

Considering the expected peak flow rate, presented in Section 1.2.2, it is again highlighted that a monthly peak flow rate of approximately 800m^3/s (or 800,000L/s) is expected at Bee Creek (at the crossing with the Suttor Developmental Road), with a 20th percentile flow rate of approximately 150m^3/s (or 150,000L/s).

Assuming the maximum pump rate of 4000L/s for a mimicked release flow event, this equates to a peak flow rate of just 4.0m^3/s. In this context, the anticipated peak flow rates to be achieved under this TEP by Hail Creek mine represents very minor flow events compared to those typically experienced within this catchment, less than the 1st percentile flow rate.

2.1.3 TEP Release Water Quality Criteria

As shown in Section 1.3, the water within both Hail Creek's dam storage areas and pits is variable but typical of that generally observed for Hail Creek and the surrounding area. The current average water quality within the dams and pits would meet the existing contaminant release limits for discharged water (as per Table W2 of the EA - MIN100933109), however, independently some areas exceed the criteria whilst others are well below. Overall, the water quality is representative of that currently being experienced in the downstream catchment.

It is noted that these criteria have been developed in accordance with the ANZECC guidelines for aquatic ecosystem protection (2000), and are intended to ensure water quality supports and protects the natural ecology of the receiving waterways, and more than meets the quality requirements for livestock drinking water.

Current average pit EC is 974us/cm, and the average EC within the dams is 1041 us/cm. It is of note that Ramp 0 water is elevated, as there have been significant volumes stored for over a year, and evaporators/atomisers have been in place over this storage in an attempt to draw down total site inventory during 2010. Polishing Pond is also believed to be elevated due to recent transfers from Ramp 0 to sustain compliant release, and recent transfers from other pit areas. Current average pit pH is 8.76, and the average pH within the dams is 8.45 us/cm. These pH ranges are typically observed for the region, and often upstream receiving environment monitoring points are elevated above 9.0.

It is, however, noted that EC & pH levels within some of the individual mining pits, as well as Polishing Pond and Ramp 0 are sitting close to, or slightly over, the current compliance limits specified in the EA. It is further appreciated that these values are likely to continue to deteriorate the longer the water continues to remain in pit without further dilution. As previously mentioned, Hail Creek wishes to release excess water under this TEP as soon as possible, and therefore propose a modified strategy with respect to the EC release limits and flow conditions for each additional release point, as detailed in **Table 5** below.

A strategy of mixed release criteria is being proposed to ensure appropriate in-stream mixing, and also staggering the time period whereby release of differing quality of water occurs to acclimate the receiving waters to higher salinity water.

Table 5. Electrical Conductivity Release Limits to be followed under this TEP

Release point (RP)	Contaminant source and location	Quality Characteristic - Electrical Conductivity (µS/cm)
RP 1 (Polishing Pond)	Polishing Pond, including Central & North Dams. Also water from Ramp 2 pit, Ramp 3 pit, Ramp 5 pit	2000µs/cm at end of pipe. Assume 250L/s release from Brumby Dam into Middle Creek.
ARP1	Ramp 6 pit	800µs/cm at end of pipe.
ARP2	Ramp 5 pit, Ramp 3 pit	
ARP3	Ramp 0 (water storage), Ramp 1 pit	1000µs/cm at end of pipe.
ARP4	Ramp 0 (water storage), Ramp 1 pit	

All other contaminant release limits are specified in **Table 6**, below.

Table 6. Other Contaminant Release Limits under this TEP

Release point (RP)	Quality characteristic	Release Limit
All	pH (pH Unit)	6.5 (minimum) - 9.0 (maximum)
	Turbidity (NTU)	Background plus 10% **or** 230mg/L*
	Total Suspended Solids (mg/L)	Background plus 10% **or** 390 mg/L*
	Sulphate (SO_4^{2-}) (mg/L)	1000mg/L

* Numerical trigger limits for TSS & Turbidity are derived from the approximate combined average of the three upstream monitoring locations. The background plus 10% will be used as a preferential trigger limit wherever possible.

2.2 Add itional Release Points

In order to release water in a timely manner, Hail Creek proposes to establish a network of Additional Release Points (ARPs) to distribute water towards the east and over the mining highwall. Water will be released into Hail Creek (either via overland flow or through injection into various smaller tributaries), which then flows into Bee Creek. The existing downstream monitoring point specified in the EA (Bee Creek Monitoring Station at the Suttor Development Road) is downstream of all additional release points.

A map (provided as **Appendix A**) has been prepared with shows each of the additional release points, and **Table 7** below provides a summary of information for each ARP.

It is noted, that for the initial approval of this TEP, Hail Creek have committed not to release water from ARP3 or ARP4. Approval for these additional release locations will be sought at a later date. However, these locations are still shown on the map, and on the gantt chart.

Table 7. Contaminant release points, sources and receiving waters

Release point (RP)	Northing (AGD84)	Easting (AGD84)	Contaminant source and location	Monitoring point location	Receiving waters description
RP 1 (Polishing Pond)	7620504	643937	Polishing Pond, including Central & North Dams. Also water from Ramp 2 pit, Ramp 3 pit, Ramp 5 pit	End of pipe	Middle Creek via grassed channel
ARP1*	7628010	642570	Ramp 6 pit	End of pipe	Hail Creek via Schammer Creek, with direct injection to creek from pipe. A temporary overland flow location will be used for first week.*
ARP2	7626240	644220	Ramp 5 pit, Ramp 3 pit	End of pipe	Hail Creek via unnamed tributary

* A temporary overland flow location will be used for first week, at ARP1. This location will be utilised to commence dewatering immediately, and until infrastructure can establish a more permanent release location

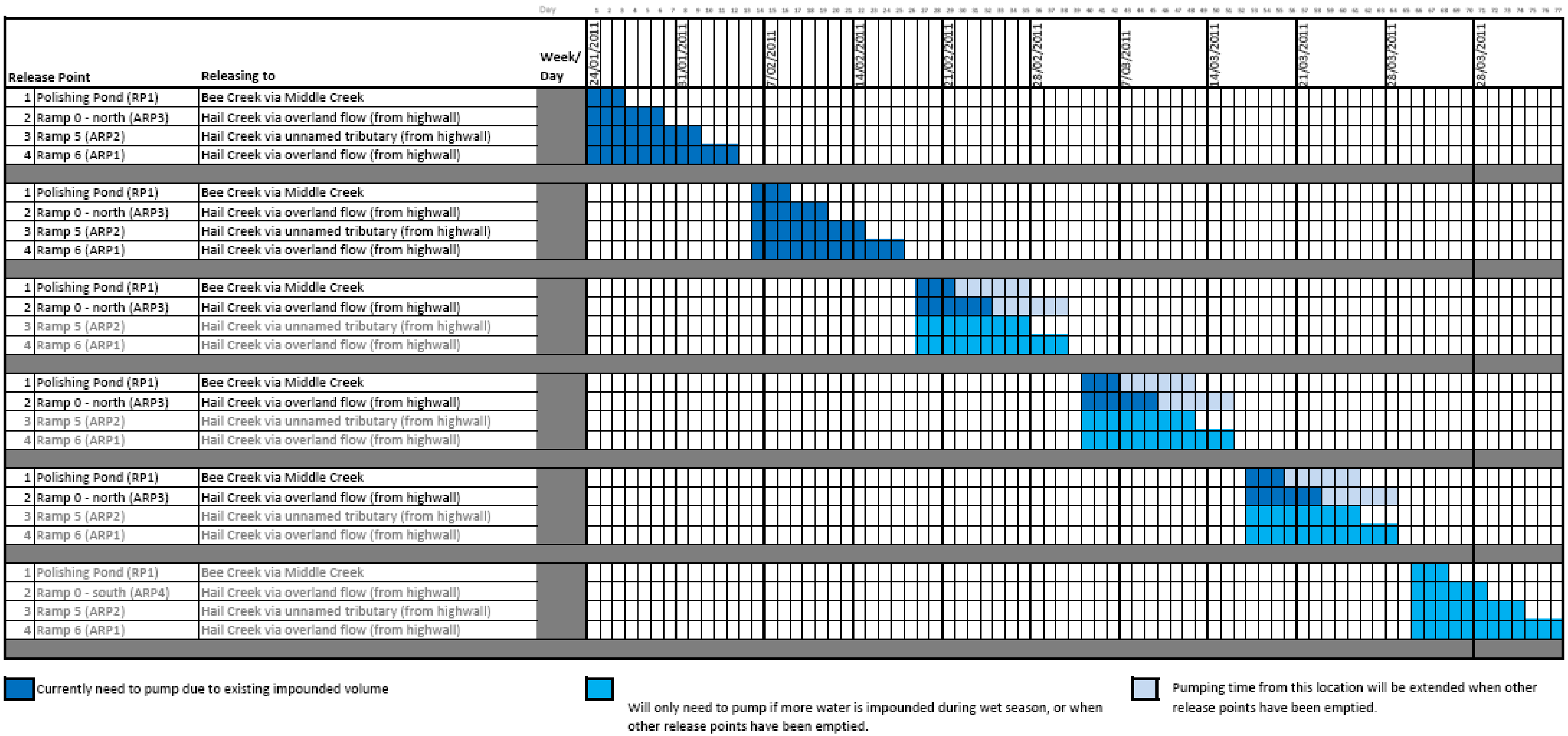
2.2.1 Treatment of Additional Release Points

In response to concerns from DERM, Hail Creek have modified a number of additional release points to minimise the requirement for overland flow. It is also highlighted that all additional release points will be constructed to minimise the potential for erosion.

The end-of-pipe location of all additional release points will be armoured, preferentially with rock material of an appropriate size for the pump flow rate, but perhaps lined with heavy plastic matting or sheeting. The armouring will be a minimum width of 1.5m wide, and 10m long, from the end of the pipe outlet. Standard 355mm diameter pipe is proposed to be used.

At the cessation of each mimicked flow event, each additional release point will be inspected for signs of erosion damage, and mitigations measures will be implemented as appropriate, prior to the re-use of the release point in question.

2.3 TE P Timeframe



Note: Order and use of release points are an example only and may vary depending on volumes impounded and logistics.

2.4 Monitoring under the TEP

The following outlines the monitoring requirements to be met under this TEP. This information, and in particular the tables, have been designed to be incorporated into the conditions attached to the TEP (as provided in Section 5).

2.4.1 Monitoring Mine Affected Water Released

As outlined in Section 2.1.3., contaminant release limits will be specified for all water released under this TEP. Monitoring of these release limits will occur at the frequency and locations outlined in **Table 8**.

Table 8. Monitoring of Water Quality - Contaminant release limits

Quality characteristic	Release Limit	Monitoring Frequency	Sample Type	Release Point and Monitoring Location
Electrical conductivity (µS/cm)	As per TEP Table 5 (either 2000 µS/cm or 800 µS/cm	Twice daily whilst releasing	In situ water quality reading[1]	As per map showing each release point, monitoring from end of pipe. If discrepancies, monitor pit/dam prior to discharge to Hail Creek/ Middle Creek.
pH (pH Unit)	6.5 (minimum) - 9.0 (maximum)	Twice daily whilst releasing	In situ water quality reading[1]	As per map showing each release point, monitoring from end of pipe. If discrepancies, monitor pit/dam prior to discharge to Hail Creek/ Middle Creek.
Turbidity (NTU)	Background plus 10% **or** 230mg/L*	Twice daily whilst releasing (the first sample must be taken within 2 hours of commencement of release)	In situ water quality reading[1] and laboratory analysis[2]	As per map showing each release point, monitoring from end of pipe. If discrepancies, monitor pit/dam prior to discharge to Hail Creek/ Middle Creek.
Total Suspended Solids (mg/L)	Background plus 10% **or** 390 mg/L*	Weekly whilst releasing	Laboratory analysis[2]	As per map showing each release point, monitoring from end of pipe. If discrepancies, monitor pit/dam prior to discharge to Hail Creek/ Middle Creek.
Sulphate (SO_4^{2-}) (mg/L)	1000mg/L	Weekly whilst releasing	Laboratory analysis[2]	As per map showing each release point, monitoring from end of pipe. If discrepancies, monitor pit/dam prior to discharge to Hail Creek/ Middle Creek.

Metals/Metalloid contaminants (as outlined in W3 of EA 10)	As per existing EA	Weekly whilst releasing	Laboratory analysis[2]	As per map showing each release point, monitoring from end of pipe. If discrepancies, monitor pit/dam prior to discharge to Hail Creek/ Middle Creek.

1. In situ samples can be taken using electronic sampling equipment available on site.
2. Samples are required to be analysed at a NATA accredited facility in accordance with this Transitional Environmental Program.

2.4.2 Monitoring Background Water Quality

In addition to monitoring the water quality of mine-affected water being released, Hail Creek will also monitor the background water quality in the receiving waterways, to provide a reference point for comparison. Monitoring of the receiving environment proposed under this TEP will be similar to that routinely conducted under the EA (MIN100913309).

The quality of the receiving water will be monitored at the locations specified in **Table 9** for each quality characteristic and at the monitoring frequency stated in **Table 10** and **Table 11**.

Table 9. Receiving Waterway Monitoring Points

Monitoring points		Receiving waters location description	Northing (AGD84)	Easting (AGD84)
Upstream Background Monitoring Points				
MCU	Middle Creek - Upstream	Middle Creek, 4km upstream of all release points (RP1 (Polishing Pond) and all ARPs).	7622145	640925
BCU	Bee Creek – Upstream	Bee Creek, 15km upstream of point where release waters enter Bee Creek from Middle Creek, and all release points. (RP1 & all ARPs).	7616700	639000
HCU	Hail Creek – Upstream*	Hail Creek, 5km upstream of the confluence with Absent Creek, downstream of ARP1 & ARP2all release points, upstream of RP1, ARP3 & ARP4.	7621990	646869
SCU	Schammer Creek – Upstream*	Schammer Creek, 10km upstream of HCU monitoring point. Upstream of all release points, including all ARPs.	7628710	641020
Downstream Monitoring Points				
BCD	Bee Creek - Downstream	Bee Creek, 10km downstream of all release points (including RP1 and all ARPs)	7615596	650716

* 'Hail Creek – Upstream' and 'Schammer Creek – Upstream' monitoring point are both located in areas where periodic access difficulties may be experienced during heavy and extended rainfall. Whilst monitoring should aim to be undertaken at the frequency identified in Table 8, it is only required when access is available.

Table 10. Receiving Waters Downstream Contaminant Trigger Levels

Monitoring Points (TEP MP)	Quality characteristic	Monitoring frequency	Sample Type	Trigger Criteria
BCD – Bee Creek Downstream	Electrical Conductivity (μS/cm)	Daily during the release (the first sample must be taken within 2 hours of commencement of release).	In situ water quality reading	1000
	pH (pH Unit)		In situ water quality reading	6.5 (minimum) – 9.0 (maximum)
	Suspended solids (mg/L)		Laboratory analysis	Background at BCU plus 10% Turbidity will also be recorded as an instantaneous reading
	Sulphate (SO_4^{2-}) (mg/L)		Laboratory analysis	1000

Table 11. Receiving Waters Contaminant Trigger Levels

Quality characteristic	Trigger level	Monitoring frequency
Aluminium	100 µg/L	Commencement of release and thereafter weekly during the release
Arsenic	13 µg/L	
Cadmium	0.2 µg/L	
Chromium	1 µg/L	
Copper	2 µg/L	
Iron	300 µg/L	
Lead	10 µg/L	
Mercury (inorganic)	0.2 µg/L	
Nickel	11 µg/L	
Zinc	8 µg/L	
Molybdenum	34 µg/L	
Selenium	10 µg/L	
Silver	1 µg/L	
Uranium	1 µg/L	
Vanadium	10 µg/L	
Nitrate	1100 µg/L	
Petroleum hydrocarbons (C6-C9)	20 µg/L	
Petroleum hydrocarbons (C10-C36)	100 µg/L	

2.4.3 Review of Downstream Contaminant Trigger Levels

Hail Creek commit to engage with DERM to re-negotiate the downstream receiving water contaminant trigger limit (at BCD - Bee Creek Downstream) for Electrical Conductivity from the current 1000µs/cm to a lower limit of 800µs/cm for the remainder of the TEP. This will occur once higher EC water has been discharged, and mixing with lower EC pit water can be achieved, envisaged to be within a period of 2 weeks from the commencement of this approval.

2.5 Requirements to Cease the Release of Mine Affected Water

The release of mine affected waters must cease immediately and DERM immediately notified if any downstream water quality trigger criteria, as specified in **Table 10**, is exceeded when monitored at the downstream point specified in **Table 10** (and **Table 9**).

2.6 Reporting under the TEP

Notification and reporting will be conducted in accordance with TEP conditions (Section 5). The following table provides a summary of what information will be reported to DERM, and at what frequencies, during the term of this TEP.

Table 12. Reporting Requirements

Report	Frequency	Content	Timing	Format
Weekly Water Quality and Flow Report	Weekly	Weekly monitoring results from monitoring locations Notification of flow releases including flow rates and durations – commencement and cessation of releases included.	By close of business of the following Monday.	Email or Fax
Water Quality and Flow Exceedence Report	As required under this TEP	Details of any exceedence and actions taken as per the requirements of this TEP	Within 24 hours of confirmation of exceedence	Verbal Notification and Email or Fax
Monthly Progress Report	Monthly	Progress and compliance against the TEP in relation to release activities.	Submitted 5th working day of the month for the previous calendar month	Email or Fax
Final Completion Report	Completion of TEP	Detailed report providing compliance statistics and commentary against all conditions of the TEP and resultant environmental outcomes.	Submitted by the 31 July 2011	Email or Fax

2.7 Stakeholder Management Strategy

It is recognised that this TEP is likely to have an impact on downstream users of the receiving waterways, and the following strategies will be employed to minimise impact on our stakeholders:

- Supply downstream neighbours with a schedule showing timing of release events of the next 6 months;
- Establish a regular weekly communication to provide neighbours with the opportunity to raise queries and concerns;
- Commit to ceasing or scaling back release events if a neighbour has a particular time or date where they need access to the receiving waterways (if this can practically be dome by Hail Creek);

- Supply monthly reports on water quality, flow and total volume of water released under this TEP (aligned with monthly reporting to DERM); and
- Investigate whether stakeholders would be interested in participating in a forum for the sharing of ideas, communication of constraints, and brainstorming to allow neighbours the opportunity to input into future changes to the Hail Creek water management system.

3. Further Supporting Information

3.1 Environmental Values and Water Quality Objectives

Water quality results from the Hail Creek Mine as presented in this document and in the Water Management Plan and the results of the 2009 & 2010 REMPs indicate significant variability in receiving water quality and habitat values. Water quality is influenced by other activities within the upstream and surrounding catchment, flow rates, rainfall intensity and in turn erosion rates, and evaporative losses. Water flows are infrequent and unreliable, reflecting district rainfall patterns. Downstream water is utilised for stock watering purposes.

The area surrounding Hail Creek Mine is characterised by the following environmental attributes:

- Significantly affected ecosystems due to historic clearing of native vegetation for agricultural activities.
- Agricultural land uses - predominantly grazing and associated improved pasture, although some cropping is also undertaken.
- Degraded riparian environment from stock grazing, though more ecologically diverse than surrounding grazing and cropping areas.
- Consistent and moderate water quality across the Hail Creek Mine area, with some minor differences between upstream and downstream sampling locations. Further sampling (as part of the REMP program) is seeking to understand the contribution of HCM discharges to this trend in water quality in the receiving environment.
- Good sediment quality and generally similar across the sites, with no trends observed between upstream and downstream sampling locations.
- Aquatic habitat of moderate condition, moderately stable banks, and substrates dominated by finer sediments such as sand and silt.
- A diversity of aquatic fauna species within the receiving environment waterways that is typical of central Queensland inland with no rare or endangered species recorded.
- Macroinvertebrate communities of moderate condition, and indicative of moderate water and/or habitat quality.

The following is a summary of the water quality objectives for the region based on the Draft *Establishing Environmental Values, Water Quality Guidelines and Water Quality Objectives for Fitzroy Basin Waters* (DERM, 2010) for the Isaac/Connors catchment, within which Hail Creek Mine is located (discharging into Bee Creek).

For the protection of aquatic ecosystems in the Fitzroy Basin lowland freshlands, the following guidelines apply for the Upper Isaac Creek catchment:

- A pH range of between 6.5 and 8.5 has been proposed for the sub-region.
- A sub-regional guideline of 835 µs/cm for EC.
- A sub-regional guideline of 55 mg/L for TSS.
- A sub-regional guideline of 25 mg/L sulphate (SO_4^{2-}).

- There is insufficient data to derive a guideline for total nitrogen. The regional guideline of 500mg/L for total nitrogen has been proposed from QWQG based on moderately disturbed upland freshwater systems.
- There is insufficient data to derive a guideline for total phosphorus. The guideline of 50mg/L for total phosphorus has been proposed from the QWQG based on moderately disturbed upland freshwater systems.

Guidelines for irrigation, farm use and stock watering are based on the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC and ARMCANZ 2000).

The Bee Creek catchment also contains a specific waterway valued ecological characteristic known as the Pink Lily Lagoon, in the Oxbow Lake of Bee Creek. This feature is located next to South Walker Mine and is a significant distance downstream (~50km) of Hail Creek.

3.2 Impact Assessment Relating to the Release

Table 13 considers the potential impacts on downstream receivers associated with proposed short-term changes to operating conditions, an assessment of risks of these impacts and measures to be implemented to minimise each potential impact.

Table 13 Impact Assessment & Control Summary

Potential Impact	Assessment of Risk	Management Measures
Aspect: Decrease in water quality		
Decrease in biodiversity Reduced use of water to downstream users Sedimentation	Already low to moderate environmental values. Receiving environment significantly affected ecosystems due to historic clearing of native vegetation for agricultural activities. Degraded riparian environment from stock grazing. Local downstream users limited to stock. Sediment level in dams negligible in comparison to expected sediment levels of receiving waters. Discharge water EC will be lower than the livestock tolerance level specified in Table 4.3.1 of *ANZECC for fresh and Marine Water Quality 2000*. Based on existing stream water quality there will be sufficient mixing of discharge water to allow the EC to be lower than the livestock watering and crop irrigation salinity threshold tolerance levels specified in Table 4.3.1 of *ANZECC for fresh and Marine Water Quality 2000*.	Monitor discharge and receiving water quality in accordance with EA and TEP. Discharge procedure. Monitor water quality in dams and at end-of-pipe. Monitor discharge and receiving water flow in accordance with EA and TEP. Reduced discharge where appropriate. Stakeholder management strategy.

Potential Impact	Assessment of Risk	Management Measures
Aspect: Increase in flows		
Erosion/ scouring Increase in downstream flood levels Potential to restrict access to properties	Discharge flows will be contained within the existing downstream channel. The direct downstream access roads crossing channels have sufficient capacity to convey additional flow. Water will be preferentially released as soon as possible, minimising environmental harm by releasing when water is still in creek systems	Reduced discharge where appropriate/possible. Monitor discharge and receiving water flow in accordance with EA and TEP. Try to mimic a natural flow event with a high volume/flow discharge surge followed by low volume/flow extended discharge Stakeholder management strategy.

4. TEP Objectives

In accordance with section 331 of the EP Act, **Table 14** sets out the objectives of this TEP and provides actions, timeframes and performance indicators to measure progress in returning to normal operating conditions before the expiry of this TEP.

The objective of this TEP is to manage effectively mine water during the 2010 – 2011 wet season to ensure that an uncontrolled spillway discharge does not occur. The TEP prescribes operating parameters from approval to 17 June 2011 for Hail Creek Mine to implement temporary infrastructure and procedures in order to draw down site water inventories to return to compliance by 17 June 2011.

Rainfall in Central Queensland has been above average between August to December 2010, filling all holding facilities on site. Hail Creek has not been able to discharge the volumes required to maintain a functioning water management system. This TEP is aimed at finding a temporary solution that allows Hail Creek to discharge water being impounded in pit due to the extreme wet season.

If any confounding event transpires to alter the actions or timeframes set out in **Table 13**, for example as a result of equipment failure, incidents, lack of physical access to discharge site or unexpected events relating to this TEP, DERM will be notified as soon as possible after becoming aware of the issue. The findings of investigations will provide the basis for submitting an amendment to this TEP to DERM in accordance with section 344 of the EP Act.

Table 14. TEP Objectives

Objective A	ction	Accountable	Time frame	Performance indicator
Effectively manage mine water during the 2010 – 2011 wet season to ensure that an uncontrolled spillway discharge does not occur	Conduct controlled discharges from mine storages under proposed TEP conditions (as per conditions W1 through W9).	Liam Wilson (HSEC Manager)	From approval to 17 June 2011	Compliance with TEP conditions. Water levels in mine storages reduced to below MRL.
	Maximise mine water consumption (i.e. dust suppression, construction, etc.) activities with immediately available resources (as per conditions within existing EA).	Tim Squance (CHPP Manager) Bill Hall (Mining Manager)	From approval to 17 June 2011	Increase in mine water usage/reuse.
Environmental Monitoring Procedures	Amend environmental monitoring procedures to include additional monitoring requirements during release events and in emergencies.	Liam Wilson (HSEC Manager)	Within 2 weeks of TEP approval granted	Procedures in place and available to relevant site personnel.

Review Water Management System	Review water management system and associated documents to ensure preparedness for wetter seasons than previously modelled.	Liam Wilson (HSEC Manager)	From approval to 17 June 2011	Water Management Plan and associated site documentation reviewed. Use of OPSIM model to forecast future rainfall scenarios and ensure site meets required containment standard HCM to engage with DERM to ensure agreement on site containment standard Action plan developed and implemented to address infrastructure requirements.

5. Proposed TEP Conditions

In carrying out this TEP, Hail Creek Mine will undertake all activities in accordance with the following conditions.

If any inconsistencies occur between this TEP and the current EA, this TEP document will prevail over the extent of the inconsistency. On approval by DERM, Hail Creek is to be authorised to undertake the actions specified in this TEP document.

Release of Mine Affected Water

W1. Contaminants that will, or have the potential to cause environmental harm must not be released directly or indirectly to any waters except as permitted under this *Transitional Environmental Approval – Certificate of Approval*, unless otherwise authorised to under the *Environmental Protection Act 1994*.

W2. The release of contaminants to waters must only occur from the release points specified in **Table 7** and depicted in **Figure 1** (Appendix A) of this TEP.

W3. The release of contaminants to waters must not exceed the release limits stated in **Table 5** at the monitoring points specified in **Table 7** of this TEP.

W4. The release of contaminants to waters from the release points must be monitored at the locations specified in **Table 7** for each quality characteristic and at the frequency specified in **Table 8** of this TEP.

W5. If quality characteristics of the release exceed any of the trigger levels in **Table 11** during a release event, the TEP holder must compare the downstream results for the receiving waters monitoring point identified in **Table 9** to the trigger values in **Table 10**; and

a) where the trigger values are not exceeded then no action is to be taken;

b) where the downstream results exceed the trigger values specified **Table 10** for any quality characteristic, compare the results of the downstream site to the data from background (upstream) monitoring sites; and

(i) if the result is less than the background (upstream) monitoring site data, then no action is to be taken; or

(ii) if the result is greater than the background (upstream) monitoring site data, complete an investigation in accordance with the ANZECC & ARMCANZ 2000 methodology, into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining:

1. details of the investigations carried out;

2. actions taken to prevent environmental harm.

W6. If an exceedence in accordance with condition W5(a)(ii)(2) is identified, the holder of the TEP must notify the administering authority within fourteen (14) days of receiving the result. The notification must include written verification of the exceedence forwarded to the administering authority either via facsimile or email to Manager.MiningCWR@derm.qld.gov.au

Contaminant Release Events

W7. The TEP holder must follow a mimicked flow event pattern (in terms of modifying release flow rate) as outlined in Section 2.1.2 of this document (and **Table 4**) where:

a) peak flow rate to be achieved is no greater than (4000L/s), followed by a scaling back of the pumped flow rate;

b) maximum volume released during a release event is to be no greater than 2500 ML;

c) no more than 4 release points will be operating at any one time; and

d) each release flow event is to be followed by no less than 1 day without flow.

W8. The period, flow rates and volumes discharged for the time that each additional release point is operating must be monitored and follow the pattern outlined in Section 2.1.2 of this document (outlined in **Table 4**).

W9. The daily quantity of contaminants released from each release point must be measured and recorded at the monitoring points in **Table 7**.

Requirements to Cease the Release of Mine Affected Water

W10. The release of mine-affected waters must cease immediately if any water quality limit as specified in **Table 5** or **Table 6** is exceeded.

W11. If quality characteristics at the downstream receiving environment monitoring point exceed any of the trigger levels specified in **Table 10**, release of water must cease immediately and DERM must be immediately notified.

W12. The release of mine-affected waters must cease immediately if identified that the release of mine-affected waters is causing erosion of the bed and banks of the receiving waters, or is causing a material build up of sediment in such waters.

W13. The release of mine-affected waters must cease immediately if the holder of this Transitional Environmental Program is directed to do so by the administering authority.

W14. The release of mine-affected waters authorised under this Transitional Environmental Program must cease by 17/06/2011 (i.e. the last action date for discharges in Table 1).

Erosion and Sediment Control

W15. Releases to waters must be undertaken so as not to cause erosion of the bed and banks of the receiving waters, or cause a material build up of sediment in such waters. Treatment of additional release points must be in accordance with Section 2.2.1 of this TEP.

W16. If W14 cannot be met, erosion protection must be designed, installed and maintained at each release point authorised by this Transitional Environmental Program and must:

a) be designed and constructed by a suitably qualified and experienced person; and

b) be inspected by a suitably qualified and experienced person prior to the commencement of dewatering operations; and

c) be inspected by a suitably qualified and experienced person following the cessation of release in accordance with the conditions of this *Transitional Environmental Program – Certificate of Approval*.

W17. The holder of this Transitional Environmental Program must provide a report to the administering authority within 10 business days following the cessation of release of mine-affected water authorised under authority of this Transitional Environmental Program. The report must detail the performance of erosion protection measures, including:

a) identification of erosion, slumping and scour impacts to vegetation;

b) rehabilitation, including earthworks, scour protection and flow velocity controls undertaken to minimise environmental harm; and

c) detailed engineering assessment of erosion protection works completed to date and any proposed works to be undertaken.

Notification of Release Events

W18. The Transitional Environmental Program holder must notify the administering authority within twelve (12) hours of having commenced releasing mine-affected water to the receiving environment. Notification must include the submission of written verification to the administering authority (either via facsimile or email to Manager.MiningCWR@derm.qld.gov.au) of the following information:

a) release commencement date/time;

b) expected release cessation date/time;

c) release point/s;

d) release volume (estimated); and

e) any details (including available data) regarding likely impacts on the receiving water(s).

W19. The Transitional Environmental Program holder must provide the administering authority weekly during the release of mine affected water, in writing (either via facsimile or email to Manager.MiningCWR@derm.qld.gov.au) of the following information:

a) all in situ monitoring data for the preceding week;

b) the receiving water flow rate for the preceding week; and

c) the release flow rate for the preceding week.

W20. The Transitional Environmental Program holder must notify the administering authority as soon as practicable, (no later than within twenty-four (24) hours after cessation of a release) of the cessation of a release notified under W14 and within twenty-eight (28) days provide the following information in writing:

a) release cessation date/time;

b) natural flow volume in receiving water;

c) volume of water released;

d) details regarding the compliance of the release with the conditions of this Transitional Environmental Program (i.e. contamination limits, natural flow, discharge volume);

e) all in-situ water quality monitoring results; and

f) any other matters pertinent to the water release event.

Notification of Release Event Exceedence

W21. If the release limits defined in **Table 5** are exceeded, the holder of the Transitional Environmental Program must notify the administering authority within eighteen (18) hours of receiving the results.

W22. The Transitional Environmental Program holder must, within twenty-eight (28) days of a release that exceeds the conditions of this Transitional Environmental Program, provide a report to the administering authority detailing:

a) the reason for the release;

b) the location of the release;

c) all water quality monitoring results;

d) any general observations;

e) all calculations; and

f) any other matters pertinent to the water release event.

Monitoring Requirements

W23. Where monitoring is a requirement of this Transitional Environmental Program, ensure that a competent person(s) conducts all monitoring.

W24. All monitoring undertaken as a requirement of this Transitional Environmental Program must be undertaken in accordance with the administering authority's Water Sampling Manual.

Notification of emergencies, incidents and exceptions

W25. As soon as practicable after becoming aware of any emergency or incident that results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with, the conditions of this Transitional Environmental Program, the administering authority must be notified of the release by telephone, facsimile or email.

W26. The notification of emergencies or incidents must include but not be limited to the following information:

a) the holder of the Transitional Environmental Program;

b) the location of the emergency or incident;

c) the number of the Transitional Environmental Program;

d) the name and telephone number of the designated contact person;

e) the time of the release;

f) the time the holder of the Transitional Environmental Program became aware of the release;

g) the suspected cause of the release;

h) the environmental harm caused, threatened, or suspected to be caused by the release; and

i) actions taken to prevent any further release and mitigate any environmental harm caused by the release.

W27. Not more than fourteen (14) days following the initial notification of an emergency or incident, written advice must be provided of the information supplied to the administering authority in relation to:

a) proposed actions to prevent a recurrence of the emergency or incident; and

b) outcomes of actions taken at the time to prevent or minimise environmental harm.

Reporting

W28. The holder of this Transitional Environmental Program will provide weekly monitoring reports to the administering authority, detailing in-situ water quality parameters monitoring during release, as outlined in **Table 12**.

W29. The holder of this Transitional Environmental Program will also submit a report to the administering authority by the fifth (5) business day of each month detailing:

a) all activities undertaken under the Transitional Environmental Program;

b) how the Transitional Environmental Program holder has met the objectives of the Transitional Environmental Program, taking into account:

(i) the best practice environmental management for the activity; and

(ii) the risks of environmental harm being caused by the activity.

c) how the Transitional Environmental Program holder has complied with all conditions contained within the Transitional Environmental Program.

W30. The holder of this Transitional Environmental Program must also submit a report to the administering authority by 31st July 2011 including:

a) details of the completion of the Transitional Environmental Program;

b) details on all activities undertaken under the Transitional Environmental Program;

c) identification of how the Transitional Environmental Program holder has met the objectives of the Transitional Environmental Program, taking into account:

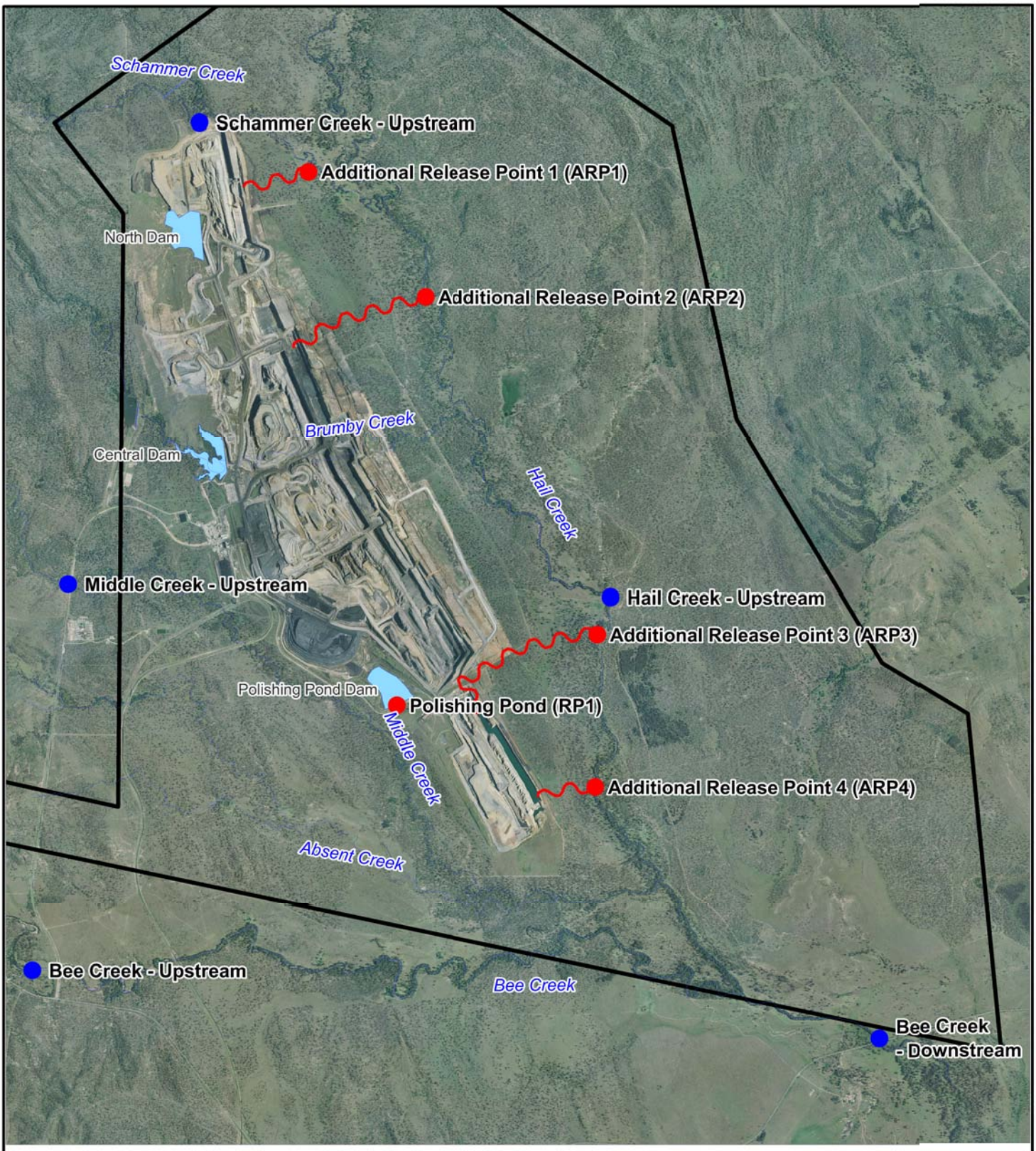
(iii) the best practice environmental management for the activity; and

(iv) the risks of environmental harm being caused by the activity.

d) identification of how the Transitional Environmental Program holder has complied with all conditions contained within the Transitional Environmental Program; and

e) confirmation that at closure of the Transitional Environmental Program, the holder will be able to comply with the conditions of the current Environmental Authority for Hail Creek Mine, (MIN100913309) and the *Environmental Protection Act 1994*.

Appendix A – Map showing Additional Release Points and Monitoring Locations



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Contaminant Release Points (RP1 & ARPs)

Receiving Environment Monitoring Points

RioTinto

Rio Tinto Coal Australia - Hail Creek Mine

Appendix A - Map showing Additional Release Points and Monitoring Points

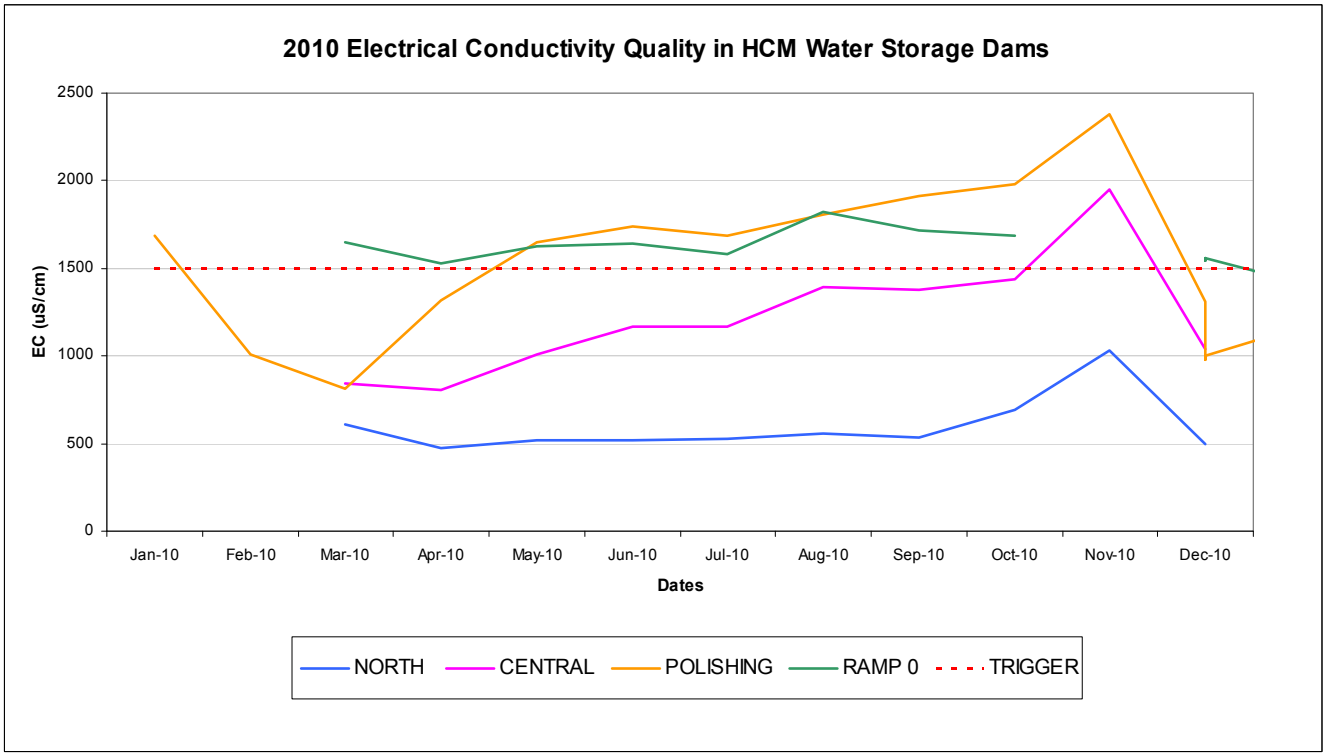
Author: [redacted]	Date: 14/01/2011
Scale: 1:75,010	Datum/Projection: AMG Zone 55, AGD84

Plan: Z:\Mapinfo\Plans\Hail Creek\2011\Hail Creek TEP_2011

Appendix B – Water Quality Trends over 2010

Appendix B – Water Quality Trends over 2010

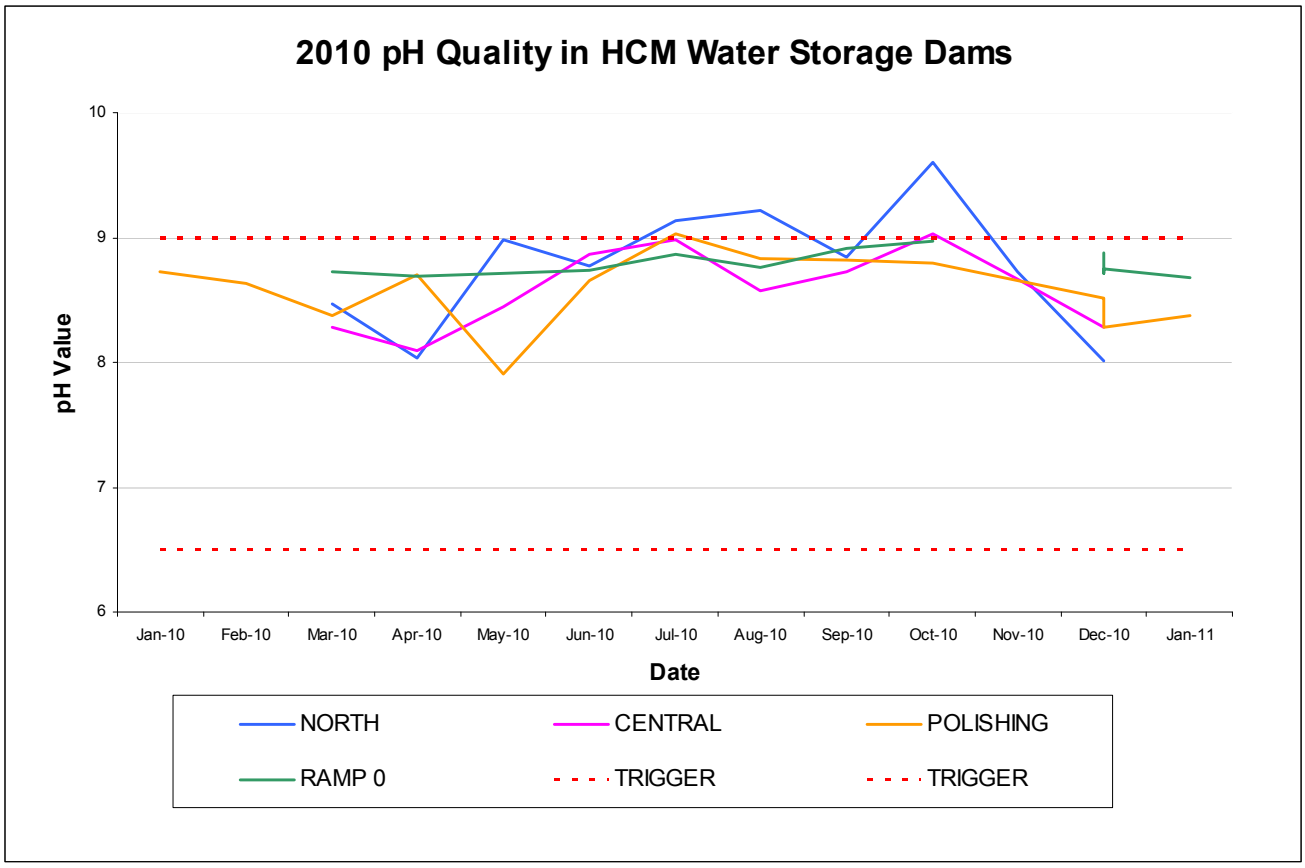
Graph 1 - Electrical Conductivity Trends within HCM Water Storage Dams for 2010



Comments:

- The graph above displays a trigger limit of 1500 µS/cm in accordance with table W2 in EA MIN100913309 – Hail Creek Mine.
- This graph represents four (4) main water storage dams on site including: Polishing Pond (RP1), North Dam, Central Dam and Ramp 0 (disused mining pit).
- First discharge for the 2010/11 wet season commenced on November 21st, at the time of commencement EC for Polishing Pond was 1485 as stated in the Notification of Commencement document submitted to DERM.
- Polishing Pond tends to fluctuate throughout the year with a minimum EC level in March of 811 µS/cm and a maximum in early November of 2380 µS/cm.
- Discharge events have occurred throughout December and early January to date. EC for Polishing Pond has remained relatively stable, below the trigger limit, over this period.
- Ramp 0 has continued to demonstrate EC levels above the trigger limit consistently throughout 2010. However, due to increased rainfall, EC for Ramp 0 has fallen to at or near the trigger limit in December.
- North Dam has remained below the trigger limit consistently throughout 2010, while Central Dam during mid October rose above 1500 µS/cm and peaked in November to 1950 µS/cm.

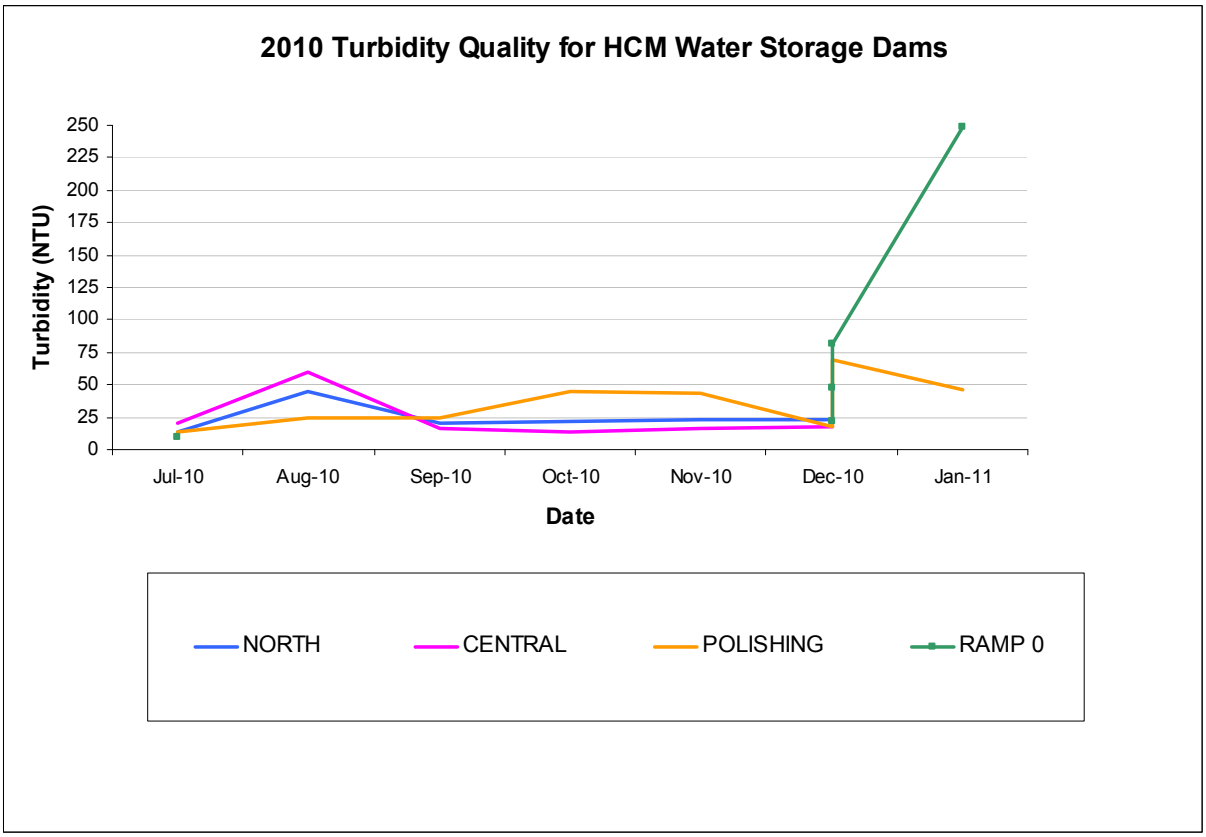
Graph 2 - pH Trends within HCM Water Storage Dams for 2010



Comments:

- The graph above displays a trigger limit range of 6.5- 9.0 pH, in accordance with table W2 in EA MIN100913309 – Hail Creek Mine.
- This graph represents four (4) main water storage dams on site including: Polishing Pond (RP1), North Dam, Central Dam and Ramp 0 (disused mining pit).
- The pH for Polishing Pond has varied throughout 2010, with a minimum of 7.91 recorded in May and a peak of 9.03 recorded in July. pH has stabilised somewhat between the months of August and November.
- Ramp 0 has consistently remained within the trigger limit range for pH throughout 2010.
- For Central Dam pH peaked twice above the trigger limit, once in July and October. From October onwards trends suggest there has been a decline in pH value towards neutral.
- North Dam data can be seen to be consistently and commonly above the maximum trigger limit of 9.0. Peaking in October, perhaps as a result of changing seasons, an increase in temperature and photosynthetic productivity within this dam. North Dam is a fresh water dam and contains large amounts of aquatic macrophytes and various algae species.

Graph 3 - Turbidity (NTU) Trends within HCM Water Storage Dams for 2010



Comments:

- Data for Turbidity has only been collected from July 2010 onwards for North Dam, Central Dam and Polishing Pond.
- Fewer records exist for turbidity for Ramp 0, as this parameter has only recently been incorporated into current monitoring programs.
- As there is currently no trigger limit set for Turbidity, the collected data cannot be compared for compliance purposes. However, general trends can be observed.
- All sites typically lie below 75 NTU with central dam representing the lowest value of Turbidity.
- Polishing Pond results shows an increase during December, along with values for Ramp 0. This may be due to the use of evaporators/atomisers within the Ramp 0 water storage, or perhaps as a result of mixing of water between within these water bodies, along with the impact of discharging and rain fall.

Hail Creek Mine

Amendment

Transitional Environmental Programme under Section 333 of the *Environmental Protection Act 1994*

Environmental Authority MIN100913309

Principal Holder: Queensland Coal Pty Ltd

Joint Holder: Marubeni Coal Pty Ltd.
Sumisho Coal Development Queensland Pty Ltd.
Nippon Steel Australia Pty Ltd

6th June 2011 – 30th September 2011

Approvals

N ame	Position	Signed	Date
Originator	Environmental Specialist	- -	
Checked	HSEC Manager	- -	
Authorised	General Manager	- -	

Revisions

Date	Description	By	Check	Authorised
10.06.2011	Issued for use	MG	LW	RM

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1. Background

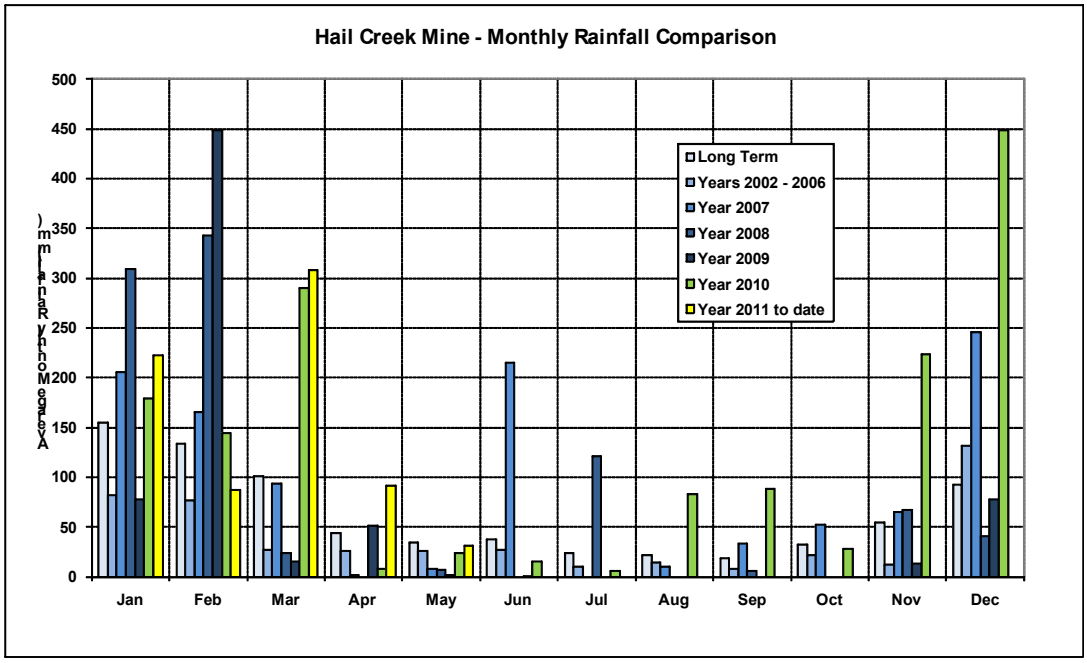
This document has been prepared to supercede and update the Transitional Environmental Programme (TEP) currently in force for Hail Creek Mine (HCM) (MAN11801). This TEP has been voluntarily submitted to DERM in accordance with the *Environmental Protection Act 1994*. A directive was issued by DERM for Hail Creek to cease discharge under this TEP, effective 20/05/2011. This amendment outlines a strategy to recommence release under this TEP.

1.1 2010-2011 Wet Season

As detailed in the initial TEP document, the 2010-2011 wet season has been characterised by prolonged and above average rainfall events. This has continued since the approval of the TEP, impacting upon HCM's ability to release water as per the TEP timeframes.

Figure 1, below, provides an update of rainfall received to May 2011.

Figure 1. Monthly Rainfall Comparison



The months of January, February, March and April 2011 have all recorded significantly above average rainfall, with March in particular recording extremely large rain volumes. A total of 742 mm of rain has fallen in the period of January to May 2011, which is 274 mm more than the long-term average for these months.

This additional rainfall has had a two-fold effect on the ability of HCM to release water. Firstly, it has continued to replace water discharged with fresh volumes impounded in the catchment, effectively meaning that dewatering has continued without any net reductions in site inventory. Secondly, it has caused significant delays in upgrading infrastructure to achieve the approved release rates under the TEP as a result of access, transport and installation constraints.

1.2 Current Hail Creek Water Management Status

An update of the status of the HCM water balance at the time of submitting this TEP amendment is as follows:

- Water has been released from 3 of the initial approved licensed discharge points, Polishing Pond (RP1), Ramp 6 (ARP1) and Ramp 5 (ARP2);
- Ramp 6 area has been dewatered through consistent and continued operation of ARP1 release point (as per **Table 1**);
- However, significant volumes of water continue to be impounded in most other pits, with less progress on dewatering these areas (as per **Table 1**);
- Of the four main dams/water storages, one continues to sit close to the full supply volume (FSV), again as per **Table 1** below;
- In pit water quality has deteriorated, with EC being the key parameter of concern. However, a similar phenomenon has been observed with the background water quality in the area. Overall, water impounded in pit is representative of current background water quality.

Table 1. Latest Dam and Pit Storage Capacity and Water Quality readings (May 2011)

Dam Storage/ Pit Name	Water Volume Impounded (ML)	Percentage of Full Supply Volume
Polishing Pond *(Release Point 1)*	362.5 ML	47% full (407.5 ML available)
Central Dam	750.4 ML	94% full (spills to Polishing Pond via Low Wall Drainage Channel, 49.6 ML available)
Northern Dam	89.9 ML	27% full (240.1 ML available)
Ramp 0 *(This disused pit is now used as a water storage)*	2082 ML	80% full (FSV based on geotechnical risk, 518 ML available)
Ramp 1	521 ML	N/A
Ramp 2	100 ML	N/A
Ramp 3	470 ML	N/A
Ramp 5	350 ML	N/A
Ramp 6	negligible	N/A

Therefore, HCM have a volume of 1441 ML free water impounded in operational pit areas. In addition, an estimated 1000ML additional volume will recharge into pit from adjacent spoil areas as dewatering continues. Further to this, HCM are also seeking to draw down the Ramp 0 storage area to provide further capacity for the next wet season, and thus ensure 2012 production levels can be acheived. In order to restore HCM to 90% production levels, and prepare for the next wet season, an approximate volume of **4,000ML**, is considered to be critical for release.

1.3 Impact to Hail Creek Mine Operations

Since the commencement of the 2010/11 wet season, HCM has experienced significant operational impact due to the volumes of water impounded within pit and water storage areas. The constraint of the HCM EA discharge conditions have allowed limited opportunities to release mine affected water, with the result that all operational pits were flooded in late January. Rio Tinto Coal Australia declared *force majeure* over our contractual arrangements in late December 2010, which remained in place until May 2011. The TEP has provided flexible dewatering options, which has effectively allowed HCM to re-establish coaling operations within higher priority pit areas, however HCM are still operating at reduced capacity.

As detailed in Section 1.2, many pit areas still contain large volumes of water, which will limit future production capacity in the 2011 and 2012 calendar years unless further opportunities for release are provided. Continuing to dewater an additional volume of approximately **4,000ML** will be critical to simply re-establishing normal operations for 2011 & 2012, as detailed in **Table 1** above. With the strategy outlined by this TEP amendment, Hail Creek are seeking to re-establish its operations to 90% capacity, and will then re-engage with DERM to address long term underlying issues, which are expected to arise in future wet seasons.

Key areas of operational impact are summarised below:-

- Water has been impounded from December 2010 onwards within the Ramp 6, Ramp 5S, Ramps 3s & 3N and Ramp 1 pits with some pit areas completely flooded;
- Inability to access exposed coal in both the Ramp 6 and Ramp 3S areas, with previous operational plans to access these areas being significantly delayed;
- Operational delays for both draglines due to ongoing wet and muddy conditions;
- Time delays with dewatering as a result of logistical constraints and infrastructure limitations with dewatering areas under the TEP;
- Unforseen costs associated with pump hire and operating costs;
- Other damages and increased costs associated with:-
    - Haul truck tyre early failure / damage from operating on wet roads and ramp areas;
    - Damage to equipment from free digging impact;
    - Pump damage following submersion;
    - Materials to restore roads and ramp areas to operational conditions;
    - Take or pay penalties on QR National rail contract; and
    - Demurrage.

1.4 Background Water Quality & Stream Flow

Detailed background water quality information was presented in the initial TEP document.

Since the commencement of this approval, a number of phenomenon have been observed in the receiving waterways. In particular, Electrical Conductivity (EC) is a key water quality parameter for which recent records have been outside of the normal range of historical results for the area. EC levels at all upstream receiving environment monitoring locations, and Bee Creek Upstream in particular, has been elevated above the normal background range since January 2011. **Table 2**, below, summarises the trends observed over the long-term and in the last few months.

Table 2. Historic & recent water quality results for Electrical Conductivity (EC) (µS/cm)

		Hail Creek Upstream	Middle Creek Upstream	Bee Creek Upstream	Schammer Creek Upstream	Bee Creek Downstream
		HCU	MCU	BCU	SCU	BCD
Long-term results (µS/cm)	Min – Max	124 – **1395**	81 – 696	96 – **1660**	71 – **1000**	119 – **1610**
	Ave	529	350	750	282	886
	80th %	**1001**	504	**1411**	247	**1338**
2011 TEP results (µS/cm)	Min – Max	348 – **1946**	217 – **1350**	216 – **3210**	145 – **1833**	131 – **2260**
	Ave	**1005**	718	**2114**	**1267**	**1321**
	80th %	**1331**	**1035**	**2758**	**1631**	**1752**

Note: Cells in red bold are above Table 10 Receiving Waters Downstream Contaminant Trigger Levels (for BCD, although this table also highlights when other locations (BCU, HCU, MCU, SCU) are above the trigger level.

Anecdotal evidence suggests that the surface creek systems experience significant interaction with the underlying groundwater reserves and this interaction has resulted in the elevated EC values. Indeed, the relationship between EC & rainfall can be seen in **Figure 2**, where rainfall causes EC to fall as this fresh water reaches the waterway systems as surface runoff, and a continued elevation of EC is observed when less or no rainfall is observed.

It is also noted that all waterways have continued to flow since December 2010, which is unusual for this region, given the strongly ephemeral nature of the area. It is postulated that the groundwater reserves, which are known to be more saline than the surface systems, are recharging into the creeks. Standing groundwater levels collected as part of Hail Creek Mine biannual monitoring of the groundwater levels and quality show some parts of the aquifer are as close as 2 metres from the surface, and confirm the saline nature of the aquifer.

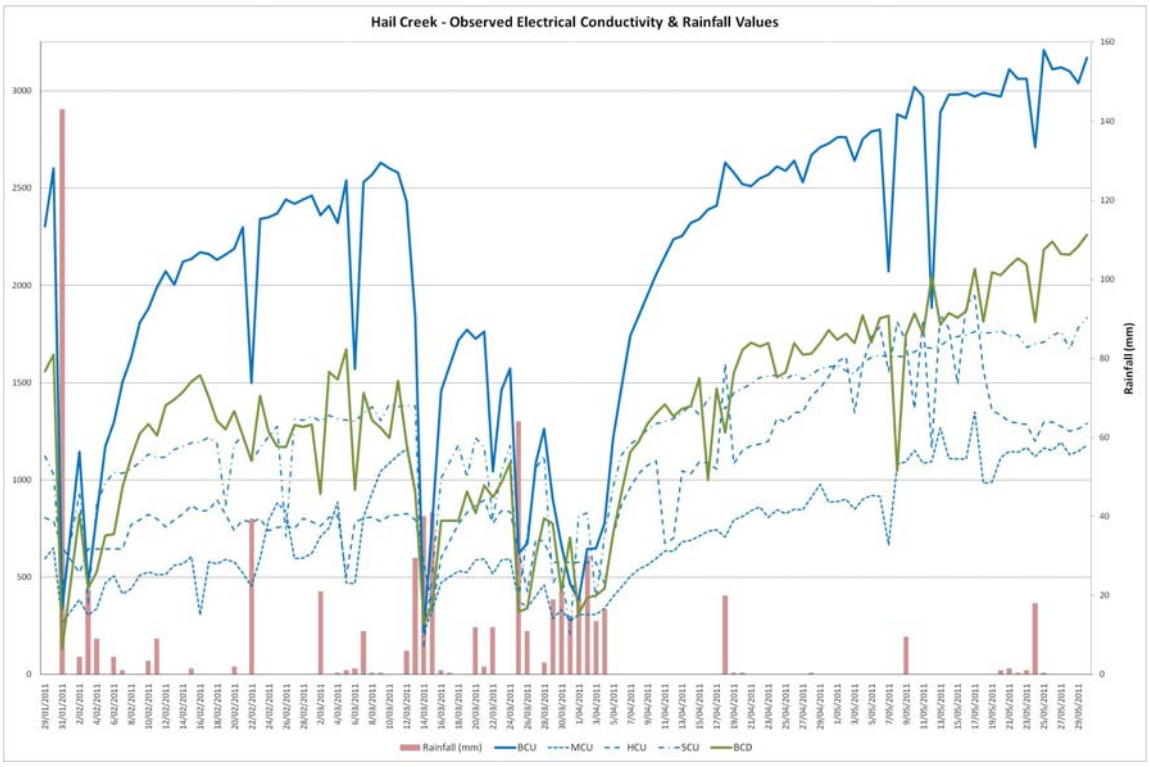


Figure 2. Recent Electrical Conductivity & Rainfall Records at Hail Creek Mine

At a recent meeting between DERM & HCM personnel, DERM expressed concern that mine affected water being released with elevated EC levels, at HCM among others, is contributing to elevated EC observed within downstream sensitive areas, and in particular, there is concern around recorded EC levels at the Pink Lagoon. In order to understand the relative contribution of water released by Hail Creek Mine, and saline water recharging from groundwater, details of upstream base stream flow has been collected to understand the relative contribution of this water to the stream flow downstream in the catchment.

This data (provided as **Table 3**)confirms that only small volumes of elevated EC water is recharging to the surface at the Bee Creek Upstream location (in the order of ~0.2m^3/s), but also shows poor correlation between stream flow the Bee Creek Upstream and Downstream locations. This suggests that groundwater recharge/ sub-surface flow may be occurring between the two locations (which are approximately 20km apart), to result in the downstream flow observed.

Table 3. Stream Flow (m^3/s) and Electrical Conductivity (EC) (µS/cm) in Bee Creek Catchment

			25 May 11	26 May 11	27 May 11	28 May 11	29 May 11	30 May 11	31 May 11	1 June 11
Stream Flow	Bee Creek Upstream	m^3/s	0.01	0.13	0.18	0.23	0.23	0.13	0.13	0.13
		Ml/day	0.4	10.9	15.8	19.7	19.7	10.9	10.9	10.9
	Bee Creek Downstream	m^3/s	4.00	1.60	0.70	0.70	0.70	0.70	0.00	0.00
		Ml/day	345.6	138.2	60.5	60.5	60.5	60.5	0.00	0.00

Electrical Conductivity/ Salinity	Bee Creek Upstream	µs/cm^2	3210	3110	3120	3100	3040	3170	3190	3090
		ppm TDS	2189	2121	2128	2114	2073	2162	2176	2107
	Bee Creek Downstream	µs/cm^2	2182	2225	2160	2158	2200	2260	2230	2251
		ppm TDS	1488	1517	1473	1472	1500	1541	1521	1535

It is noted that approximately 20km distance separates BCU and BCD. The relationship between EC & TDS have been determined from site specific water quality records to be TDS (ppm) = 0.682 x EC (µs/cm)

1.5 Mine affected Water Quality

Since the commencement of the TEP in January 2011, electrical conductivity levels within most of the mining pits have elevated. It is expected that this EC value will continue to deteriorate the longer the water remains in pit without further dilution, and as warmer and drier weather is experienced. Higher than normal EC water may be due to additional groundwater flow into the pits, as well as water recharging from spoil/dump areas. Recent EC water quality results from all pit and dam storage areas are presented below, in **Table 4,** which shows EC elevation since the commencement of the TEP.

Table 4. Recent EC water quality results for Mine Water Storages & Pits

Dam Storage/ Pit Name	Electrical Conductivity (µS/cm)		
	Field readings taken Jan 2011	*Field readings taken Mar 2011*	*Field readings taken May 2011*
Polishing Pond *(Release Point 1)*	1574 1227		1739
Central Dam	768	790	1094
Northern Dam	332	449	1031
Ramp 0 *(This old pit is used for water storage)*	**1490 1482**		**1608**
Brumby Dam (clean water diversion)	315	385	746
Raw Water Dam (water allocation from Eungella/Burdekin Dam)	100 125		152
Ramp 1 (S)	**1907 Not**	**accessible**	**1762**
Ramp 2 (N)	**1625**	**Not accessible**	**Not accessible**
Ramp 3 (N)	675	**1329 1956**	
Ramp 5 (N)	**985 951**		**1838**
Ramp 6	574	**1004**	**1526**

Note: Cells in red bold are above the TEP Contaminant Release Limits.

2. Amended Hail Creek TEP Strategy

It is understood that DERM are seeking to maintain and protect downstream water quality, with the aim to return EC levels in the Connors River (at the Pink Lagoon) to historical readings close to 400µs/cm². However, it is of note that despite HCM ceasing water discharge on 16/5/2011, water quality observations at the Pink Lagoon have remained elevated at close to 700µs/cm².this suggests that natural processes are ongoing which may be resulting in elevated EC.

As outlined, HCM are still in a position of impaired operational capacity, due to flood waters impounded during the wet season, and must release further volumes of water in order to run the mine within 90% of normal operational capacity.

This amended TEP strategy seeks to recommence release of mine-affected water from HCM whilst also injecting volumes of fresh water into the receiving waterway, in an attempt to stabilise and reduce the current EC levels in the downstream catchment. HCM have some limited capacity to control the quality and volume of released water to ensure end-of-pipe EC limits as specified in the document meet required water quality limits, and the proposed strategy will achieve the most dilution of mine-affected waters possible given infrastructure constraints.

The strategy also aims to dewater the required volumes in as timely a manner as possible, not only for operational reasons, but also in recognition of potential downstream environmental and community issues that may arise with extended release.

2.1 Plan for the Release of Mine Affected Water

The TEP release strategy (MAN11801) sought in this amendment is summarised in **Table 5**.

Table 5. TEP Strategy Details

Total Release Volume		4000ML mine affected water (with dilution up to 500ML raw water, for a total release volume of 4500 ML)
Approval Timeframe		Effective immediately (6/6/11) to 30th September 2011
Release Point		RP1 – Polishing Pond with release via permanent rock/grass lined release channel
Release Strategy	**- Flow trigger/ release rate**	HCM to achieve end-of-pipe release rate (in L/s) equal to 10% of total flow in Funnel Creek (at the DERM gauging station) **or** If flow in Funnel Creek falls below 1.5 cumecs, maintain release at a maximum of 150L/s
-	**Dilution**	Dilute mine affected water with Raw water (from Eungella/Burdekin Dam) at a maximum rate of 40L/s
-	**Water Quality Criteria**	Upper release limit of 2000 µs/cm for EC All other parameters as per previous TEP (pH, Turbidity, TSS)
-	**Rest Days**	Nil proposed.
	- Clean Water Flushing	HCM will release a volume of approximately 280 ML (to be confirmed) from an available clean water diversion dam (Brumby Dam) at 250L/s after dewatering program is complete.

2.2 Stakeholder Management Strategy

It is recognised that this TEP amendment is likely to have an impact on downstream users of the receiving waterways, and that release under the TEP has already resulted in some unrest amongst the neighbouring community. As such, the following key strategies have been and will continue to be employed to minimise impact on our stakeholders:

- Supply downstream neighbours with a fortnightly schedule showing timing and volumes of release events;
- Establish a regular weekly communication to provide neighbours with the opportunity to raise queries and concerns; and
- Commit to ceasing or scaling back release events if a neighbour has a particular time or date where they need access to the receiving waterways (if this can practically be done by HCM).

Under the existing TEP, HCM have already undertaken a range of actions to address and resolve the concerns of our neighbouring property owners, and further action is on-going with some neighbours. These actions have consisted of the following:

- Construction of a low-level rock crossing on St Albans, after site inspection and review. The Bee Creek crossing at this location was very soft due to being inundated with released water, preventing the safe crossing of cattle during mustering;
- Upgrades of lengths of unsealed track on the agisted eastern part of the HCM mining lease (and adjacent parts of Fort Cooper station) to ensure access to cattle yards to the north (Bar X yard), for the neighbour at Fort Cooper. This has involved remedial work to the low gully where pit release from ARP2 was reporting;
- Pre-feasibility work to investigate a permanent creek crossing for the landholders of the Strathfield property. This permanent crossing will need to be designed and approved as per relevant legislation, and HCM have engaged with Isaac Regional Council to understand the pathway forward. Monitoring equipment is also being arranged to better correlate between HCM release and impact on access to this neighbours property; and
- Engagement with the landholder for the Oxford Downs and Mt Flora properties, which is approximately 80km downstream of HCM. Legal representation has now been involved for both the landholder and HCM, in order to resolve the landholders concerns. Discussions are on-going considering the potential relationship between HCM's activities and access to these properties, as well as understanding the relative contribution of HCM compared to other mine's water release, and the natural fluctuations of the Bee Creek system. HCM are strongly committed to resolving this landholders concerns, and will continue to progress the matter.

3. Hail Creek Water Management System

HCM recognise that DERM are seeking to gain commitment from HCM to improving water management practices on site, by identification and resolution of long-term issues resulting in adverse water management decisions. HCM consider water management as a key tenet of operational site management, and perhaps the primary area of environmental risk.

In the past few years, extensive work has occurred, and is on-going to improve site practices with the aim of ultimately improving management of water on site, and primarily during the wet season. Briefly, this past work consists of the following:-

- Altered pumping arrangements to reduce time lags for transfers between storages;
- Procuring and hiring additional pumping infrastructure for flexibility of transfers;
- Targeted upgrades of pumps and transfer points to reduce bottle-necks and improve compliance with the containment standard;
- Implementation of water atomisers to draw down total inventory;
- Improved cross-site awareness and communication of water management issues, with regular meetings and workshops;
- Extensive modelling of the site water balance to forecast expected volumes to be impounded, and to understand the impact of proposed alterations to the system;
- Completion of a pre-feasibility assessment into constructing new dam storage areas, and upgrading existing release infrastructure for enhanced peak release flow capacity;
- Completion of feasibility studies to retrofit infrastructure to allow for raw water to be substituted with mine affected water (which considered introducing a reverse osmosis plant and retrofitting the existing plant to cope with mine water);
- Completion of a geotechnical risk assessment to consider allowing for further volumes of water to be stored within one of the available water storage areas (Ramp 0 - a old mining pit area now used for water storage);
- Review of annual operating and long-term mine planning to assess the sites ability to sacrifice pit capacity for peak wet season water storage;
- Automation of permanent release infrastructure to ensure rapid and accurate control over release valves;
- Upgrades of metering network within Coal Handling & Processing Plant (CHPP) to better understand key water processes for primary site water user;
- Engaging with near neighbours to respond to and address concerns around water release volumes and qualities, with numerous meetings and discussions, and agreed outcomes being progressed;
- Review and upgrade of the environmental water sampling and analysis/monitoring program to enhance the water quality information being collected;
- Repair and upgrade of existing remote environmental monitoring stations (located at Bee Creek Downstream (BCD) and Middle Creek Upstream (MCU));

- Planned installation of a number of new remote environmental monitoring stations to continue to collect real-time high quality data from upstream background monitoring locations (located at Hail Creek Upstream (HCU), Bee Creek Upstream (BCU); and
- Planned installation of a real-time environmental monitoring infrastructure on the key dam storages, to ensure continuous high quality data of quality within the HCM water management system.

Essentially, HCM have followed a number of avenues to improve water management practices, and will continue to do so.

However, an avenue not yet pursued is approaching DERM to modify our EA approval to better address the environmental context around which the water management system was approved and constructed. The HCM Water Management System was designed to have a containment standard of 1 in 10 AEP (Annual Exceedence Probability). This was approved and accepted as DERM as an appropriate containment standard to address potential environmental harm, but in essence means that in any given year, HCM are exposed to a 10% risk of not being able to contain the volumes of water being impounded.

The water management system, and the available storage capacity, is not designed to contain water for all expected volumes of water to be impounded, rather it is designed to contain and control water 90% of the time. When an extreme wet season occurs (as in 2010/11), the system design response should be to allow out release point spillway to simply overtop, and for uncontrolled release to occur until site inventory is reduced.

However, the Environmental Authority (EA) does not reflect this containment standard. This means for HCM to allow the water management system to do what it is designed to do will represent a non-compliance with our Environmental Authority. Modification to the EA in 2009 to transition to the model water conditions further restricted HCM's ability to release water compliantly, with the effect that HCM could no longer achieve a 1 in 10 containment standard.

Therefore, independent of this TEP amendment, HCM will seek to engage with DERM to review the EA and revise the model water conditions to reflect the constraint posed by the containment standard, and provide guidance as to what water management response should be progressed in situations beyond the capacity of the system. This disconnect between the site containment standard and the EA means that, without modification to the EA or extensive re-design of the water management system, the situation that has occurred during the 2010/11 wet season will continue to occur for all extreme wet seasons beyond the 1 in 10 containment standard. Due to these reasons, Hail Creek Mine cannot operate a compliant water management system during extreme wet seasons.

4. Proposed TEP Conditions

As per the initial TEP approval, this set of conditions will be adhered to. In carrying out this TEP, Hail Creek Mine will undertake all activities in accordance with the following conditions.

Those conditions which have been altered or modified for this amendment have been highlighted in darker test. For completeness and ease of ensuring compliance, the entire set of conditions have been reproduced herein, and where no changes have been made, the text of the condition has been greyed out.

If any inconsistencies occur between this TEP amendment and the current TEP, this TEP amendment document will prevail over the extent of the inconsistency. On approval by DERM, Hail Creek is to be authorised to undertake the actions specified in this TEP amendment.

Release of Mine Affected Water

W1. Contaminants that will, or have the potential to cause environmental harm, must not be released directly or indirectly to any waters except as permitted under this *Transitional Environmental Approval – Certificate of Approval*, unless otherwise authorised to under the *Environmental Protection Act 1994*.

W2. The release of contaminants to waters must only occur from the release point specified in **Table 5** of this TEP Amendment, and depicted in **Figure 1** of the EA (MIN100913309).

W3. The release of contaminants to waters must not exceed the release limits stated in **Table 5** of this TEP amendment at the release points also specified in **Table 5** of the TEP amendment.

W4. The release of contaminants to waters from the release points must be monitored at the locations specified in **Table 5** of the TEP for each quality characteristic and at the frequency specified in **Table 8** of the TEP.

W5. If quality characteristics of the release exceed any of the applicable trigger levels in the TEP, the TEP holder must compare the downstream results for the receiving waters monitoring point identified in **Table 9** to the trigger values in **Table 10** or **11**; and

a) where the trigger values are not exceeded then no action is to be taken;

b) where the downstream results exceed the trigger values specified **Table 10** or **11** for any quality characteristic, compare the results of the downstream site to the data from background (upstream) monitoring sites; and

(i) if the result is less than the background (upstream) monitoring site data, then no action is to be taken; or

(ii) if the result is greater than the background (upstream) monitoring site data, complete an investigation in accordance with the ANZECC & ARMCANZ 2000 methodology, into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining:

1. details of the investigations carried out;

2. actions taken to prevent environmental harm.

W6. If an exceedence in accordance with condition W5(a)(ii)(2) is identified, the holder of the TEP must notify the administering authority within fourteen (14) days of receiving the result. The

notification must include written verification of the exceedence forwarded to the administering authority either via facsimile or email to Manager.MiningCWR@derm.qld.gov.au

Contaminant Release Events

W7. The TEP holder must only release water, from RP1 only, according to the mixing/dilution regime as follows:-

a) Releasing at a rate equal to 10% of the total flow recorded in Funnel Creek (at the DERM gauging station), as specified in **Table 5** of this TEP amendment; or

b) At maximum rate of 150L/s if flow in Funnel Creek falls below 1.5 cumecs.

W8. Monitoring of the flow rate in Funnel Creek must be undertaken no less than twice daily whilst release is being occurring.

W9. The period, flow rates and volumes discharged for the time that each release point is operating must be monitored and follow the pattern outlined above in W7.

W10. The daily quantity of contaminants released from each release point must be measured and recorded at the monitoring points in **Table 7** of the TEP **and Table 5** of the amendment.

Requirements to Cease the Release of Mine Affected Water

W11. The release of mine-affected waters must cease immediately if any water quality limit as specified in **Table 6** of the TEP or **Table 5** of this TEP amendment are exceeded, unless direction can be sought from DERM to the contrary.

W12. The release of mine-affected waters must cease immediately if identified that the release of mine-affected waters is causing erosion of the bed and banks of the receiving waters, or is causing a material build up of sediment in such waters.

W13. The release of mine-affected waters must cease immediately if the holder of this Transitional Environmental Program is directed to do so by the administering authority.

W14. The release of mine-affected waters authorised under this Transitional Environmental Program must cease by **30/09/2011**.

Erosion and Sediment Control

W15. Releases to waters must be undertaken so as not to cause erosion of the bed and banks of the receiving waters, or cause a material build up of sediment in such waters.

W16. If W14 cannot be met, erosion protection must be designed, installed and maintained at each release point authorised by this Transitional Environmental Program and must:

a) be designed and constructed by a suitably qualified and experienced person; and

b) be inspected by a suitably qualified and experienced person prior to the commencement of dewatering operations; and

c) be inspected by a suitably qualified and experienced person following the cessation of release in accordance with the conditions of this *Transitional Environmental Program – Certificate of Approval.*

W17. The holder of this Transitional Environmental Program must provide a report to the administering authority within 10 business days following the cessation of release of mine-

affected water authorised under authority of this Transitional Environmental Program. The report must detail the performance of erosion protection measures, including:

a) identification of erosion, slumping and scour impacts to vegetation;

b) rehabilitation, including earthworks, scour protection and flow velocity controls undertaken to minimise environmental harm; and

c) detailed engineering assessment of erosion protection works completed to date and any proposed works to be undertaken.

Notification of Release Events

W18. The Transitional Environmental Program holder must notify the administering authority within twelve (12) hours of having commenced releasing mine-affected water to the receiving environment. Notification must include the submission of written verification to the administering authority (either via facsimile or email to Manager.MiningCWR@derm.qld.gov.au) of the following information:

a) release commencement date/time;

b) expected release cessation date/time;

c) release point/s;

d) release volume (estimated); and

e) any details (including available data) regarding likely impacts on the receiving water(s).

W19. The Transitional Environmental Program holder must provide the administering authority weekly during the release of mine affected water, in writing (either via facsimile or email to Manager.MiningCWR@derm.qld.gov.au) of the following information:

a) all in situ monitoring data for the preceding week;

b) the receiving water flow rate for the preceding week; and

c) the release flow rate for the preceding week.

W20. The Transitional Environmental Program holder must notify the administering authority as soon as practicable, (no later than within twenty-four (24) hours after cessation of a release) of the cessation of a release notified under W14 and within twenty-eight (28) days provide the following information in writing:

a) release cessation date/time;

b) natural flow volume in receiving water;

c) volume of water released;

d) details regarding the compliance of the release with the conditions of this Transitional Environmental Program (i.e. contamination limits, natural flow, discharge volume);

e) all in-situ water quality monitoring results; and

f) any other matters pertinent to the water release event.

Notification of Release Event Exceedence

W21. If the release limits defined in **Table 5** of the TEP or **Table 5** of the TEP amendment are exceeded, the holder of the Transitional Environmental Program must notify the administering authority within eighteen (18) hours of receiving the results.

W22. The Transitional Environmental Program holder must, within twenty-eight (28) days of a release that exceeds the conditions of this Transitional Environmental Program, provide a report to the administering authority detailing:

a) the reason for the release;

b) the location of the release;

c) all water quality monitoring results;

d) any general observations;

e) all calculations; and

f) any other matters pertinent to the water release event.

Monitoring Requirements

W23. Where monitoring is a requirement of this Transitional Environmental Program, ensure that a competent person(s) conducts all monitoring.

W24. All monitoring undertaken as a requirement of this Transitional Environmental Program must be undertaken in accordance with the administering authority's Water Sampling Manual.

Notification of emergencies, incidents and exceptions

W25. As soon as practicable after becoming aware of any emergency or incident that results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with, the conditions of this Transitional Environmental Program, the administering authority must be notified of the release by telephone, facsimile or email.

W26. The notification of emergencies or incidents must include but not be limited to the following information:

a) the holder of the Transitional Environmental Program;

b) the location of the emergency or incident;

c) the number of the Transitional Environmental Program;

d) the name and telephone number of the designated contact person;

e) the time of the release;

f) the time the holder of the Transitional Environmental Program became aware of the release;

g) the suspected cause of the release;

h) the environmental harm caused, threatened, or suspected to be caused by the release; and

i) actions taken to prevent any further release and mitigate any environmental harm caused by the release.

W27. Not more than fourteen (14) days following the initial notification of an emergency or incident, written advice must be provided of the information supplied to the administering authority in relation to:

a) proposed actions to prevent a recurrence of the emergency or incident; and

b) outcomes of actions taken at the time to prevent or minimise environmental harm.

Reporting

W28. The holder of this Transitional Environmental Program will provide weekly monitoring reports to the administering authority, detailing in-situ water quality parameters monitoring during release, as outlined in **Table 12**.

W29. The holder of this Transitional Environmental Program will also submit a report to the administering authority by the fifth (5) business day of each month detailing:

a) all activities undertaken under the Transitional Environmental Program;

b) how the Transitional Environmental Program holder has met the objectives of the Transitional Environmental Program, taking into account:

(i) the best practice environmental management for the activity; and

(ii) the risks of environmental harm being caused by the activity.

c) how the Transitional Environmental Program holder has complied with all conditions contained within the Transitional Environmental Program.

W30. The holder of this Transitional Environmental Program must also submit a report to the administering authority by **31st October 2011** including:

a) details of the completion of the Transitional Environmental Program;

b) details on all activities undertaken under the Transitional Environmental Program;

c) identification of how the Transitional Environmental Program holder has met the objectives of the Transitional Environmental Program, taking into account:

(iii) the best practice environmental management for the activity; and

(iv) the risks of environmental harm being caused by the activity.

d) identification of how the Transitional Environmental Program holder has complied with all conditions contained within the Transitional Environmental Program; and

e) confirmation that at closure of the Transitional Environmental Program, the holder will be able to comply with the conditions of the current Environmental Authority for Hail Creek Mine, (MIN100913309) and the *Environmental Protection Act 1994*.

Department of Environment and Resource Management

EMD20 /.....

Notice

Environmental Protection Act

Decision to grant amendment of an approval of a transitional environmental program

This statutory notice is issued by the administering authority pursuant to sections 340 and 344 of the Environmental Protection Act 1994*, to advise you of a decision or action.*

Your reference : MAN13001, EA MIN100913309

Queensland Coal Pty Ltd
Level 3 – West Tower
410 Ann Street
Brisbane QLD 4000

C/c: Ms [redacted]
Environmental Specialist
Rio Tinto Hail Creek Mine
PO Box 3097
Mackay QLD 4740

Attention: Ms [redacted]

Re: Application for an amendment of approved transitional environmental program titled '*Hail Creek Mine – Modification to Amendment Transitional Environmental Programme under Section 333 of the Environmental Protection Act 1994*', for discharge of mine affected water at Hail Creek Mine, ML4738.

Thank you for your application to amend the approved transitional environmental program for Hail Creek Mine.

Your application dated 8 July 2011, which was originally received by this office on 11 July 2011, has been approved.

A copy of the amended certificate of approval (MAN13001) is attached.

Fees apply for the assessment of a draft transitional environmental program and any subsequent annual returns. The fees are outlined in the attached operational policy *Transitional Environmental Program (TEP) Fees.*

A fee of $185.80 is payable.

You may apply to the Department of Environment and Resource Management for a review of this decision within 10 business days of receiving this notice. You may also appeal against this decision to the Planning and Environment Court.

Information outlining the review and appeal processes under the *Environmental Protection Act 1994* is included with this notice. This information is intended as a guide only. You may have other legal rights and obligations.

Department of Environment and Resource Management
www.derm.qld.gov.au ABN 46 640 294 485

Queensland Government

Department of Environment and Resource Management

Notice

Should you have any queries in relation to this notice, Tristan Roberts of the Department of Environment and Resource Management on telephone [redacted] would be happy to assist you.

[redacted]

SIGNATURE

11/07/2011

DATE

Christopher Loveday
Manager, Environmental Services (Mining)
Department of Environment and Resource Management
Delegate of the *Environmental Protection Act 1994*

Enquiries:
Department of Environment and Resource Management
PO Box 19
Emerald Qld 4720
[redacted]
Fax: (07) 4987 9399

MC1477

Department of Environment and Resource Management

EMD20 /.....

Environmental Protection Act

Transitional environmental program certificate of approval number MAN13001

This certificate of approval is issued by the administering authority pursuant to sections 339 and 344 of the Environmental Protection Act 1994. *A transitional environmental program is a specific program that, when approved, achieves compliance with the* Environmental Protection Act 1994 *for the matters dealt with by the program by reducing environmental harm, or detailing the transition to an environmental standard.*

Under the provisions of the *Environmental Protection Act 1994*, this certificate of approval is hereby granted to:

Queensland Coal Pty Ltd
Level 3 – West Tower
410 Ann Street
Brisbane QLD 4000

C/c: Ms [redacted]
Environmental Specialist
Rio Tinto Hail Creek Mine
PO Box 3097
Mackay QLD 4740

approving the amendment to draft transitional environmental program, titled '*Hail Creek Mine – Modification to Amendment Transitional Environmental Programme under Section 333 of the Environmental Protection Act 1994*', for management of on-site water at Hail Creek Mine, ML4738.

The draft transitional environmental program, dated 8 July 2011, was originally received by this office on 11 July 2011. The transitional environmental program remains in force until 31 September 2011.

In any case where conditions are imposed upon a certificate of approval, you may apply to the administering authority for a review of the decision. You may also appeal against the decision to the Planning and Environment Court.

Information relating to a review of decisions or appeals under the *Environmental Protection Act 1994* is included with this notice. This information is intended as a guide only. You may have other legal rights and obligations.

Should you have any queries in relation to this Notice, Tristan Roberts of the Department of Environment and Resource Management on telephone [redacted] would be happy to assist you.

[redacted]
Signature

11/07/2011
Date

Chris Loveday
Manager – Environmental Services (Mining)
Department of Environment and Resource Management
Delegate of the *Environmental Protection Act 1994*

Enquiries:
Department of Environment and Resource Management
PO Box 19
Emerald QLD 4720
[redacted]
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