XSTRATA COAL

XSTRATA COAL – GLENN BURLINSON
Response to Req # 1713373
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Volume 1 of 2 ORIGINAL

Statement of Glenn Burlinson

Volume 1 of 2

QFCI

Date: 8/11/11 JM

Exhibit Number: 938

IN THE MATTER OF
THE QUEENSLAND FLOODS COMMISSION OF INQUIRY

A COMMISSION OF INQUIRY UNDER THE COMMISSIONS OF INQUIRY ACT 1950

AND PURSUANT TO COMMISSIONS OF INQUIRY ORDER (NO. 1) 2011

STATEMENT OF GLENN KENNETH BURLINSON

I, **Glenn Kenneth Burlinson**, of c/- Level 10, Riverside Centre, 123 Eagle Street, Queensland, do solemnly, sincerely and truly affirm and declare:

1. I am currently employed by Xstrata Coal Queensland Pty Ltd (***XCQ***) as Operations Manager and Site Senior Executive for XCQ's Rolleston Coal Mine (the ***Mine***) which is managed by Rolleston Coal Pty Ltd (***RCM***) on behalf the joint venturers Xstrata Coal Queensland Pty Ltd, (75%), Sumisho Coal Australia Pty Ltd and IRCA Rolleston Pty Ltd (both 12.5%).

2. I make this statement in response to the requirement of the Queensland Floods Commission of Inquiry (***Commission***) dated 3 October 2011 (the ***Request***).

3. I have been permitted additional time to submit this statement prior to 4.00 pm on 19 October 2011. This was confirmed in email correspondence from the Commission dated 14 October 2011.

Qualifications and Experience

4. I hold the qualification of a Bachelor of Science (Honours), University of New England, 1977.

5. From 19 November 2007, to the present time, I have been employed by XCQ in the capacity of Rolleston Coal Mine's Operations Manager, Senior Site Manager and Site Senior Executive. This role involves responsibility for health, safety, environment and the community at the Mine and assisting in the delivery of strategic outcomes for the Mine's stakeholders.

6. In my role, I do not prepare, submit or directly negotiate Transitional Environment Programs (***TEPs***) with the Department of Environment and Resource Management (***DERM***). The performance of these tasks is undertaken by the Mine's Environment & Community Manager, [redacted] (and his predecessors in this role), who reports directly to me in relation to Environmental Authority (***EA***), TEP and community issues.

7. Accordingly, I am aware when TEPs are applied for by RCM and the purpose of those TEPs, as I must recommend to XCQ's General Manager, Southern Region any such proposed application to DERM. I also from time to time meet with DERM officers regarding a variety of matters including water management.

8. [redacted] and I will often meet to discuss matters before he has meetings with DERM and if [redacted] has concerns regarding the TEP process, discussions with DERM or similar such matters he raises them with me.

9. My responses to the questions raised in the Request are based on my experiences at the Mine only. XCQ operates other mines across Queensland, the experience and concerns regarding the matters raised in the Request at those sites may differ to those at the Mine.

Background to RCM

10. The Mine's operations are located on mining tenements ML70307 and MDL227. The Mine's activities on these mining tenements are considered to be 'onsite' activities.

11. The Mine is located 275 kilometres due west of Gladstone in the Bowen Basin. The Mine is 16 kilometres from the town of Rolleston in the Central Highlands Regional Council area.

12. The Mine is an open cut thermal coal mine, with current approved production levels of approximately 10 million tonnes per annum for export and domestic use. The Mine commenced operations in 2005.

13. Xstrata Coal and XCQ considers water management and flooding as part of the mine planning process (risk management) in line with current industry practice, and have robust internal standards and guidelines on water management.

14. The Mine has nine water storages, and a water management system that provides for the effective management of the potential environmental impacts resulting from RCM's operations and to ensure compliance with the conditions of RCM's EA.

15. Water management strategies include segregating clean water from mine affected water, and strategies to divert clean overland flow water away from mining activities. The primary purposes of the water management plan are:

    (a) to reduce the potential impacts of mine related activities on the surrounding environment; and

    (b) to reduce the impact of stormwater runoff (overland flow) entering from outside the site impacting on mining activities.

16. RCM is authorised by the EA to discharge water from the site from specified discharge points. Additional discharge points have at times been authorised pursuant to a TEP. A discharge offsite from an authorised discharge point is often described as a 'controlled discharge' or an 'active discharge'.

17. Mine affected water exiting the mining lease can be described as being either a "controlled" or "uncontrolled" discharge. An uncontrolled discharge is when mine affected water has not been pumped or passed through a valve mechanism and has entered the natural creek flows downstream of the mine lease. Controlled discharges are able to be varied, or ceased depending on receiving water creek flows and allowable release limits under the EA or a TEP. All of the Mine's dams are equipped with engineered spillways and other structures to allow water to flow safely in the event the dams reach capacity. In the event that there is a risk of uncontrolled discharge occurring the site Water Management Plan includes a backbone pipeline running the length of the Mine with side shoots enabling water to be pumped to and from all of the major storages as well as out of any mine pit areas. No uncontrolled discharges have occurred offsite from RCM.

Matter 1: Flood Related Concerns at RCM

18. RCM is concerned in relation to all of its activities, with maintaining a safe and healthy workplace; meeting its environmental commitments; and ensuring it works in partnership with the local community. A flood event impacts on each of these important matters.

19. In addition, in my role as Operations Manager, I am particularly concerned about the impacts of flooding on production rates, and the impact of flooding on regional infrastructure which supports operations, in particular, roads and rail.

20. Due to the impacts of the 2010/11 wet season, forecast production for the year to December 2011 was reduced by approximately 1.1 million tonnes. The impacts mainly related to managing water onsite and the inability to rail coal due to damage by floodwaters to Queensland Rail owned infrastructure. RCM's mining machinery and equipment were not damaged as a result of the 2010/11 wet season.

21. As noted below, the impacts of flooding on regional infrastructure (compared to difficulties managing water onsite) had the greatest impact upon RCM, particularly:

    (a) flooding of the Dawson Highway at the Panorama Creek crossing; and

    (b) the extensive damage to the Queensland Rail infrastructure, particularly on the RCM rail spur from Blackwater.

22. The period of flooding generally from December 2010 to March 2011 over the Panorama Creek Crossing on the Dawson Highway at Rolleston made the commute for many of

RCM's workforce difficult. Approximately 80 percent of the Mine's workforce comes from the east (Rockhampton/Yeppoon) and south-east (Bundaberg to Gold Coast). At times flying essential services to the Mine was the only option when regional flooding closed all access roads.

23. To access the Mine, some personnel were required to undertake a significant detour of 6-7 hours to avoid crossing the flooded roads at the Panorama Creek Crossing of the Dawson Highway. The detour involved driving north to the Capricorn Highway (Rockhampton to Barcaldine), then west to Emerald, then south through Springsure, and then to the Mine.

24. Deliveries to the Mine (food, fuels, parts, equipment, etc) also were hindered as a result of this flooding. The Mine sources the majority of its supply chain from the Brisbane area via the road network, this was cut off by the flooding of roads. During the period in which access was cut to the Mine in the 2010/11 wet season:

(a) RCM chose to fly in food from Sydney to the Mine on two occasions rather than buy it from the local community, that is Springsure or Emerald. This was because RCM was aware that these communities were experiencing their own food shortage issues due to the closure of the Rocklea Markets in Brisbane. RCM did not want to take food out of an area that was already struggling for food supplies;

(b) within the Rolleston township, two employees and one person who was not an employee, had their houses flooded. RCM provided these people with alternative accommodation. One person, who is an employee, still lives in the alternative accommodation as his house is still damaged;

(c) RCM used planes, and if required, helicopters to fly workers in and out from towns throughout Central Queensland, including Rockhampton, Biloela, Bundaberg and Mackay.

(d) RCM sent long life milk and bread from RCM's warehouse to the Rolleston township;

(e) RCM assisted landholders from a neighbouring property to get in out of their property by providing them with an escort through the RCM site. RCM would also advise these surrounding landholders when RCM had a helicopter coming into the site and ask if they needed any assistance. On occasions the landholders accepted RCM's assistance and were escorted through the Mine because their normal access road was impassable due to floodwaters.

25. The extensive damage to the Queensland Rail line resulted in no coal railings from 22 December 2010 until 9 March 2011. The damage occurred approximately 20 kms north of the Mine, over and adjacent to the Comet River.

26. This resulted not only in significant losses in sales but also the repairs to the Queensland Rail line, were undertaken by QR National and paid for by RCM. QR National's contractor's availability to immediately commence any repair work on the line was limited. As RCM had experienced contractors onsite they were subcontracted by QR National's contractors to complete the work. RCM paid for their contractor's work. An indirect cost to RCM was that as its contractors were working on the rail line repair, other construction and repair work at the Mine itself was delayed.

27. A second stage of rail upgrade work has also now been completed. This stage has been constructed in a manner that is likely to minimise damage and interruption in future events. The work was again undertaken by QR National and paid for by RCM.

Matter 2: Flood Preparedness Activities Prior to the 2010/11 wet season and government communications regarding above-average rainfall forecast

Rain forecasts

28. The Mine did not receive any communications from the State Government advising of a forecast of above-average rainfall for the 2010/11 wet season.

29. Since about March 2010, a RCM employee, has been reviewing various government and other publicly available rainfall models and sending updates to myself and other RCM employees regarding forecast rainfall (***Weather Update***).

30. The updates are sent every few days, and at a minimum weekly. An example of the type of Weather Update sent to us is provided in **Annexure GB1**.

31. Generally, the Weather Update advises us of any near term forecast rain (e.g. rain likely in one or two days) and a longer-term forecast, usually the likelihood of rain in the coming two weeks.

Responses to Forecasts

32. I have come to rely on the Weather Update to determine whether it's likely that RCM will have rain coming and about how much water we will receive.

33. Depending upon the magnitude of the forecast rain, I will undertake different actions.

34. For example, if there is a forecast for a big event, for example greater than 50 mm of rain, we check that all of the drainage contours are in place, block off coal haulage ramps into the open pits so that water won't flow into the open pit void, and we check our water

pumps to make sure they are in place and ready to commence pumping so the mine can keep operating.

35. If a small rainfall event is predicted, I will ask the grader drivers to check drains and make sure they are not blocked.

36. The Mine closes for Christmas Day and Boxing Day, so we effectively shut down at lunch time on Christmas Eve.

37. During the 2010/11 wet season, I recall that approximately a week before Christmas Day, it was clear from the Weather Update that we were due for a lot of rain. If the predicted amount of rain fell, I knew from history it was likely that access to and from the Mine would be cut.

38. On the basis of this, I then advised our workers that if they wanted to be sure they will be home for Christmas Day, they should take leave early so they could be sure they could get home.

39. For those workers who volunteered to stay and work, we undertook to assist them in getting home, by helicopter or plane, if the site was cut-off for an extended period.

40. In my opinion, RCM's own proactive forecasting assisted it, and continues to assist it in preparing for rain events.

General Flood Preparedness

41. In my opinion, RCM was well prepared for the 2010/11 wet season.

42. The reason for this is that prior to the 2010/11 wet season RCM had substantially implemented its detailed Water Management Plan, including the design and construction of levees and clean water diversions to direct overland flow water around mining areas, protecting both the water quality and infrastructure on site.

43. A Water Management Plan details steps to be taken over a period of time (in years, due to the time taken to upgrade infrastructure and the expansion of the mine open pit voids). The plan also takes into account the areas of the site that are being mined.

44. As I stated above, production was still impacted by the 2010/11 wet season. However, plant and equipment were able to restart within days following the major rain events and within hours of minor rain events.

45. Prior to the 2010/11 wet season, RCM placed a significant focus on its water management, particularly because of RCM's experience in the previous 2009/10 wet season.

46. During January to March 2010, the Mine experienced significant large rain events. Following 176 mm of rainfall in January which saturated the soil profile, February 2010 included a peak 1:50 year Rainfall Intensity Frequency Duration (***IFD***) event which reduced to a 1:10 year IFD event for a six hour period. This was the highest February rainfall experienced in the locality since 1954.

47. On or about 16 February 2010, an old agricultural clean water dam (Naroo Dam) that was built by previous landholders about 40 years ago that could hold up to (approximately) 700 ML of water, failed. The water from the dam flowed into Spring Creek Dam (also a clean water storage dam) which at the time was full to its spillway capacity of approximately 6,100 ML of water. Due to the high rainfall at the time, water from Spring Creek Dam overtopped and flowed into Spring Creek Pit. Significant damage was caused to Spring Creek Dam which greatly impacted on its capacity to store water because the dam wall ultimately eroded away in one area.

48. The dams were redesigned, repaired and upgraded prior to the 2010/11 wet season. Spring Creek Dam was repaired to its original design standard. Naroo Dam was redesigned to give it greater 'freeboard' and the spillway was enlarged. A diversion drain was built below Naroo Dam so that in the event that clean water flows over the spillway, the water is diverted away from Spring Creek Dam and directed into Bootes Creek.

49. To assist in the management of the impacts of the 2009/10 wet season, in the period to June 2010, RCM applied for two TEPs and one amendment to a TEP. The applications and approvals are provided in **Annexure GB2**.

50. In August 2010, RCM also applied to DERM to amend its EA. The amendments related to a number of matters, but included applying to amend 'Table 1 (Contaminant release points, sources and receiving waters)' to relocate a release point. Release Point 5, 'RP 5' was changed to Meteor Creek via Sandy Creek.

51. The proposed location for this release point had previously been applied for and granted by DERM in TEP MAN9879 on 5 March 2010 (see **Annexure GB2**). I was advised by [redacted] that relocating the release point in the EA would assist in water management at the site for coming wet seasons.

52. RCM did not apply to amend the quality, quantity or flow rate conditions in the EA as it was not considered necessary. The only amendment sought in relation to water issues was to relocate the release point.

53. Additionally, over the period of March to October 2010, RCM completed the site water balance model, and updated the Water Management Plan.

54. Prior to the commencement of the 2010/11 wet season I was mindful of the need to dispose of the water from the previously flooded Spring Creek Pit which was now stored in Spring Creek Dam (in accordance with TEP MAN10239 see **Annexure GB2**).

55. This was required to ensure RCM had adequate capacity to store mine affected water during the upcoming wet season and to ensure that any release of water offsite was done from an authorised discharge point.

56. Consequently, in September 2010, RCM applied to DERM, and was granted, an additional TEP to release this water (see **Annexure GB3**). Two amendments to this TEP were subsequently applied for, and granted, as it was determined changes to water quality parameters were required as well as an increase to the total volume of water to be discharged from Spring Creek Dam to reduce the potential for an uncontrolled discharge at the site during the upcoming 2010/11 wet season – (see **Annexure GB4** and **GB10**).

Release of Water – Wet season 2010/11

57. During the 2010/11 Wet Season the Mine received record levels of rainfall with 250 mm falling in September and 366 mm falling in December 2010.

58. As a result of this rain, RCM released water authorised by its EA and two (2) TEPs.

59. On the advice of [redacted] I understand, and am of the opinion that had RCM's EA amendment application lodged in August 2010 been approved prior to the 2010/11 wet season, it would not have been necessary for RCM to apply for a TEP to discharge water into Meteor Creek during the 2010/11 wet season. This is because the site would have been able to take advantage of the amended discharge points and reduce the amount of water stored in the onsite dams and therefore reduce the potential risk of causing environmental harm.

60. The following table summarises releases of water for the 2010/11 wet season.

Dates	Volume	Creek	Comment
6 Sept 2010	15.8 ML	Bootes Creek	Released under EA 4.0% of the natural flow in the creek
20 Sept 2010	24.7 ML	Bootes Creek	Released under EA 2.0% of the natural flow in the creek
23 Sept 2010	37.6 ML	Bootes Creek	Released under EA 3.4% of the natural flow in the creek
25-26 Sept 2010	50.4 ML	Bootes Creek	Released under EA 3.1% of the natural flow in the creek
28-29 Sept 2010	70.6 ML	Bootes Creek	Released under EA

Dates	Volume	Creek	Comment
			7.3% of the natural flow in the creek
15-16 Oct 2010	13.1 ML	Bootes Creek	Released under EA 4.0% of the natural flow in the creek
30 Oct 2010 – 16 Jun 2011	6788 ML	Bootes Creek	Released under: TEP MAN10919; TEP MAN11099; and TEP 11779 as applicable and amended over this period Stringent water conditions regarding water quality, rate of release max 100 ML / day
21 Nov 2010	2.3 ML	Bootes Creek	Released under EA 4% of the natural flow in the creek
2-9th Dec 2010	292 ML	Bootes Creek	Released under EA 2.2% of the natural flow in the creek
19-24 Dec 2010	263 ML	Bootes Creek	Released under EA 2.0% of the natural flow in the creek
27 Dec 2010 - 11 Jan 2011	1187 ML	Bootes Creek	Released under EA 4.0% of the natural flow in the creek
30 Dec 2010 - 4 Feb 2011	638 ML	Meteor Creek	Released under a Program Notice related to alternative release point 0.3% of the natural flow in the creek
7-8 Mar 2011	19.4 ML	Meteor Creek	Release under a TEP 12019 3.6 % of the natural flow in the creek TEP related to alternative release points
16 Mar 2011	14.4 ML	Bootes Creek	Released under EA 2.0% of the natural flow in the creek
16 Mar 2011 - 9 April 2011	245 ML	Meteor Creek	Release under a TEP 12019 0.3 % of the natural flow in the creek TEP related to alternative release points
18 Mar 2011	26.9 ML	Bootes Creek	Released under EA 6.0% of the natural flow in the creek
20-21 Mar 2011	50.1 ML	Bootes Creek	Released under EA 2.0% of the natural flow in the creek
18-19 Apr 2011	50 ML	Bootes Creek	Released under EA 3.0% of the natural flow in the creek

Dates	Volume	Creek	Comment
18-22 Apr 2011	54 ML	Meteor Creek	Release under a TEP 12019 1.0 % of the natural flow in the creek TEP related to alternative release points

61. On 30 December 2010, due to significant rain, particularly in the previous 5 days, and the likelihood of further additional heavy rain, RCM urgently needed to discharge water offsite due to the risk of an uncontrolled discharges occurring.

62. I understand that [redacted] and other RCM and XCQ personnel sought to contact regional DERM officers, without success, to discuss the issue.

63. I understand that [redacted] XCQ's Chief Operating Officer, and [redacted] XCQ's Group Environment & Community Manager, met with a senior DERM officer in Brisbane who advised them that RCM should lodge a Program Notice with DERM prior to discharging the water.

64. This advice was communicated to RCM and the Program Notice was submitted to DERM on 30 December 2011 (see **Annexure GB5**).

65. On 19 January 2011, [redacted] received a letter from DERM dated 6 January 2011 advising that a Program Notice was the incorrect process to use in the circumstances.

66. I assume that the extreme flooding that occurred throughout Queensland in the period on and after 6 January 2011, resulted in a delay in the letter being received at RCM.

67. The following day, on 20 January 2011, [redacted] spoke with a regional Senior Environment Officer at DERM. The DERM officer advised [redacted] that a Program Notice was the incorrect process and RCM should apply for a TEP. **Annexure GB6** is a copy of [redacted] diary note.

68. The DERM officer and [redacted] also exchanged emails regarding the matter on 20 January 2011 (see **Annexure GB7**).

69. Following their discussion and email exchange on 20 January 2011, I understand that [redacted] was in regular contact with DERM in negotiating the TEP. A TEP application was submitted to DERM on 28 January 2011 and subsequently granted on 23 February 2011 (see **Annexure GB8**). I understand that the TEP application and granted TEP were not significantly different.

70. Subsequent analysis of the controlled releases that commenced on 30 December 2010 determined that with the exception of one anomalous sample, water analysis of the downstream receiving environment (Meteor Creek) and monitoring of discharge water from RCM's storages during the release period demonstrated the release of water from

RCM complied with water quality and flow rates as prescribed under EA MIM800090802 (see **Annexure GB9**). This analysis was sent to DERM.

71. The controlled discharge points used during this period were the same as those previously approved in TEP MAN9879 (see **Annexure GB2**) and applied for in the EA amendment application lodged on 1 August 2010, which was approved on 4 February 2011.

72. During the period from 21 January 2011 to 1 February 2011, I understand that [redacted] was also in regular contact with DERM officers regarding the negotiation of an amendment to TEP MAN11099 in relation to the discharge of water from Spring Creek Dam to Bootes Creek. The amendments were granted, and the TEP was renumbered TEP MAN11779. A copy of the TEP application, granted TEP and correspondence between RCM and DERM is at **Annexure GB10**.

Matter 3: Concerns regarding EA MIM800090802 in force for the 2010/11 Wet Season

Concerns regarding negotiations with DERM

73. I was not personally involved in the negotiation of the amendments to RCM's EA prior to the 2009/10 wet season, which was also in force in the 2010/11 wet season. Accordingly, I cannot comment directly regarding concerns arising from the negotiation of it and consultation between XCQ and DERM.

74. However, in comparison with the EA that it replaced, I understand that RCM's EA MIM800090802 dated 30 November 2009, was more advantageous for RCM in that it provided an increased opportunity to undertake authorised discharges because the new conditions for releases were tailored to the site as they were based on site specific stream flow data rather than generic basin wide conditions.

75. I have been advised by [redacted] XCQ's Environment and Community Manager, that XCQ engaged through the Queensland Resources Council (***QRC***) process, in negotiations with DERM regarding the introduction of the Fitzroy Model Conditions in 2009 at an industry level.

76. Following the introduction of the Fitzroy Model Conditions in 2009, I am advised by [redacted] that where required, XCQ representatives discussed their implementation with the relevant DERM regional office on a site by site basis.

77. [redacted] has also advised me that XCQ participated in the QRC process regarding the negotiations with DERM surrounding the 2011 changes to the Fitzroy Model Conditions.

Concerns regarding compliance

78. RCM was capable of complying with the terms of the EA in force prior to the 2010/11 wet season. However, in order to do so without obtaining a TEP, it would have required RCM to store water in RCM's pits (i.e. shutting down production and suspending some operations).

79. Not only would production have ceased, but the quality of the water stored in a pit deteriorates over time and receiving stream flows may decline, making it more difficult to later discharge the excess water and recommence production.

80. This is because the longer water is stored in a pit, the water may become more affected by contaminants in the pit as well as salt concentrations increasing due to evaporation. Accordingly, the quality of the water can deteriorate to a level where it is not suitable for discharge. In order to discharge the water from the pit, a separate TEP may be required to then 'blend' the pit water so that it is of a suitable quality for discharge.

81. Once the water is of a suitable quality, the site must then wait for there to be an adequate flow in the receiving watercourse prior to making an authorised discharge.

82. The above steps can take a period of months to undertake.

83. As stated earlier, I am of the opinion that if the EA amendment application lodged in August 2010 had been granted prior to the 2010/11 wet season, RCM would not have required a TEP to release water into Meteor Creek via Sandy Creek.

84. The procedural steps required to obtain an EA amendment (for example preparing an amended Environmental Management Plan), meant the EA Amendment was not approved, until 4 February 2011. The time taken to complete the EA amendment process was a source of frustration. My frustration is not with DERM or its officers, but with the time intensive nature of the process itself.

Concerns regarding safety and the environment

85. The primary risk to safety caused by the conditions of the EA are the water sampling requirements. During periods of heavy rain it can be very difficult for our employees to access the water monitoring points.

86. We have purchased 5 four wheel drive agricultural tractors to assist in accessing the required areas in heavy rain, and in the past have had to use helicopters to access the monitoring points. The tractors allow access to pumps needed for the Mine's water management system.

87. On the rare occasions where we have not been able to safely conduct sampling, we have advised DERM. In my experience, DERM has been understanding in accepting these

practical limitations. However, I understand it exposes RCM to a potential technical breach of the EA.

88. Further, on some occasions, due to the site being isolated by road, there has been some delay in getting water monitoring samples to the lab in Brisbane. Again, although in my experience DERM has been understanding in accepting these practical limitations, it exposes RCM to a potential technical breach of the EA.

Matter 4: TEPs or Emergency Directions (ED) during the period 1 October 2010 to 30 July 2011

89. Annexures **GB3**, **GB4** and **GB8** and **GB10** are the TEPs and documents lodged with DERM during the period 1 October 2010 to 30 July 2011.

Were the TEPs effective in addressing the issue?

90. The reasons for these TEPs have been explained earlier, in my opinion they were effective in authorising the discharge requested. However, the TEP could have been more effective if it was approved in a shorter timeframe.

91. However, as stated above, had the EA amendment application of August 2010 been granted, a TEP for the 2010/11 wet season is unlikely to have been required.

Any concerns regarding the terms of the TEP

92. Prior to the lodgement of a TEP application, I understand that [redacted] has a number of conversations with DERM regarding the conditions he should include in the TEP application that would be acceptable to both DERM and RCM.

93. I understand that completing these negotiations and preparing the TEP submission often takes weeks.

94. Due to the negotiations with DERM prior to the submission of the application for the TEP, the terms of the TEP granted by DERM are usually acceptable and manageable for RCM.

95. Accordingly, my concerns regarding TEPs relate to the time it takes to negotiate the TEP and also that TEPs often require very stringent (i.e daily) monitoring and reporting of releases.

96. For the same reasons I've stated earlier, compliance with the stringent monitoring can be unduly onerous and difficult during wet weather events, particularly regarding safety concerns for our workers.

TEP Non-Compliance and Environmental Impacts – 1 October 2010 to 30 July 2011

97. I am not aware of any non-compliance by RCM with a condition of a TEP.

98. I am also not aware of any adverse effects to drinking water quality, plant or animal species, industry, agriculture, the environment or public health as a result of a discharge of water by RCM under a TEP.

99. During the most recent wet season I understand one complaint was made by a nearby landholder to RCM regarding the volume of water in a creek and the impact it had on the accessibility to part of his land. At the time the complaint was received, RCM was not releasing water under a TEP. The release of water was in accordance with RCM's EA and constituted approximately 1% of the receiving stream flows at the time.

100. The creek crossing the landholder was concerned about was a crossing over Meteor Creek, which is a designated watercourse under the *Water Act 2000.* The landholder sought assistance from RCM to construct a permanent low flow crossing over the creek. Discussions with the landholder suggested he was unaware of, and did not have, the required consents from DERM for the construction of works in a watercourse. Given that it appeared the landholder did not have the necessary approvals, and that the volume of water discharged by RCM in relation to natural creek flows was insignificant, RCM has not provided any assistance to date in the construction of a creek crossing over Meteor Creek.

101. Further discussions have been had (and are ongoing) with the landholder and RCM is also providing a civil engineer to investigate some options for a crossing.

102. RCM has however, previously assisted the landholder who lodged the complaint (at no cost) in the following ways:

(a) the search, location and salvage of a stationary diesel tank;

(b) the loan of a 6 inch high volume diesel pump;

(c) the rock lining of a creek crossing at Meteor Creek along an internal access road including supply of materials; and

(d) the re-sheeting of a floodway crossing along an internal access road including supply of materials.

Matter 5: Concerns arising from the process of applying for a TEP

103. I am not directly involved in the TEP application process. As explained above, this is primarily managed by [redacted]

104. RCM has a good understanding of the process of applying for a TEP.

105. As detailed above, my primary concern regarding the TEP process is that it can take up to a month for a TEP to be assessed, which is a significant period of time from an operational perspective. As detailed above, in my opinion, TEPs would be more effective if they were authorised in shorter time periods.

106. Further, at times it is necessary to amend a TEP, for example to increase the volume of water released.

107. I am advised by [redacted] that the process to amend a TEP can take longer than may be considered necessary because it appears that DERM re-assess the TEP in its entirety rather than just the amendment.

108. For example, an application to change the volume that can be discharged shouldn't require the re-assessment of other parameters such as water quality, as they haven't changed. Additionally, an amendment to the TEP should not require the whole TEP to be re-written in a new format, as DERM have in the past initially requested.

109. In March 2010, when RCM was experiencing high rainfall events at the end of the 2009/10 wet season, [redacted] wrote to DERM expressing concerns regarding the time taken to obtain TEP approvals. A copy of the email is at **Annexure GB11.**

110. In that email, [redacted] does acknowledge that DERM officers had acted in highly professional manner. This is a view that I, and the employees at RCM share. In our experience, DERM officers have continued to be highly professional and outcome focused in all of our dealings with them, including regarding TEPs.

111. However, as detailed in that email, XCQ does consider that improvements could be made to the TEP process. Although not always directly within my experience as I do not negotiate TEPs, as detailed in [redacted] email and as otherwise explained to me by persons with the relevant experience, improvements to the TEP process may include:

(a) TEPs would be more effective if they were authorised in shorter time periods (for example within 12 to 24 hours of an event) as the most effective time to release water is when there are high background flows in streams. This is because the greater the receiving flows, the greater the dilution of any potential contaminants, therefore the potential for environmental harm is reduced;

(b) TEPs may be able to be authorised in a shorter time period if they were approved subject to further conditions to be imposed by DERM. For example, immediately authorising the EA holder to discharge water (including mine affected water) so long as the water is within existing background quality levels at that time, and then proceeding with the negotiation surrounding the further minor conditions (e.g. frequency of reporting);

(c) the imposition of discharge limits (in volume) does not always appear to be necessary. The key environmental concern should be in relation to the quality of the water to be released and the existing flow rates in the receiving watercourse. The imposition of a volumetric limit (particularly when there is heavy rain) often then necessitates a subsequent TEP amendment application, which DERM then appear to reassess as whole, rather then just the amended volumetric limit. Accordingly, in some circumstances, the imposition of a volumetric limit may not be necessary.

(d) where a site proposes to merely add additional release points, but otherwise comply with the water management conditions in its EA, more onerous monitoring and testing requirements (e.g. daily) often imposed in a TEP, do not appear to have a particular environmental benefit or purpose;

(e) as the proposed terms of TEPs are negotiated informally with DERM prior to their submission, it can be frustrating when further amendments or changes are requested by DERM following the formal submission of the TEP;

(f) over time the form (i.e. structure) of TEPs applications has changed. At times this has meant TEPs have had to be resubmitted or amended. Although there has been improvement in this area as the understanding between RCM and DERM as to the structural requirements of a TEP has improved (including with the recent introduction of DERM's TEP template), a concern has been that the approval of TEPs has sometimes been delayed because of minor matters such as document structure and layout rather than substance; and

(g) although RCM is unlikely to have to ask DERM for an Emergency Direction due its robust water management system, further clarity regarding the circumstances in which DERM may be agreeable to issue an Emergency Direction would be useful.

112. As explained above, we greatly appreciate the professionalism and hard work of the DERM officers. We appreciate that although they must work within the Department's policy constraints, individually they are outcome focused. However, if some of the

areas for improvement suggested above are taken up at a policy level, in my opinion the TEP approval process could be more efficient.

Matters 6 and 7: Whether the new Fitzroy Model Conditions will resolve concerns and whether they are advantageous in the management of water

113. I have not been directly involved in the negotiation of the new Fitzroy Model Conditions and do not have a detailed understanding of what is proposed in them, but I understand XCQ has been represented in negotiations on the conditions through the agency of the QRC.

114. As explained above, RCM's primary concern regarding its EA was the locations of the release point, rather than concerns about contaminant limits or flow rates. I understand these are concerns that other mine sites may have.

115. Accordingly, RCM's primary concerns have been addressed by the amendment of the EA to amend the release point.

116. Several advantages to the management of water at RCM will be afforded by the adoption of the 2011 changes in the Fitzroy Model EA Conditions.

117. The revised Model Conditions provide the opportunity to streamline the monitoring process by removing the need to monitor for those contaminants that do not occur in mine affected water on the site.

118. The allowance for continuation of discharges under low-flow and no-flow conditions will provide welcome flexibility in releasing additional volumes of good-quality water from the site. From an operational point of view, this is an important feature of the conditions in that it is often not until some time after a rainfall event on site and flow event in the receiving streams that mine workers are able to make safe access to smaller and more remote dams. Thus there will be the opportunity to move good-quality water from those dams to an appropriate release point, rather than retaining it on site, leading to a deterioration of water quality.

119. The provision for release of poorer-quality water under high flow conditions is unlikely to provide any advantage to RCM, although it will clearly be of advantage to other sites within the industry.

120. The analysis of RCM's background water quality and hydrographical monitoring data is at this stage incomplete, so an application for an EA amendment to adopt the revised Fitzroy Basin Model Conditions is yet to be made. As previously noted, the discharge conditions contained in RCM's existing EA are adequate to manage site water in most conditions, however, in order to take advantage of the additional water management flexibility

afforded by the revised Model Conditions, an amendment application will be prepared and submitted before the end of October.

Matters 8 & 9: Current and future procedures to manage water at RCM and explanation of what is involved in managing water at RCM

121. Current water use and management strategies used on site include:

(a) the accommodation village and infrastructure obtain their potable water supply from a clean water dam via a packaged water treatment plant on site;

(b) RCM's Water Management Plan ensures segregation of clean / overland flow by diverting clean water away from mining areas;

(c) increased use of mine affected water for dust suppression; and

(d) irrigation with mine affected water of grass areas on site. An additional benefit is that the irrigated areas are baled/harvested with the product used in rehabilitation.

122. As part of the RCM's Water Management Plan, a 'backbone pumping system' is being installed.

123. The pumping system allows RCM to transfer water from areas where there may be too much water to other areas of the site, and transport water to discharge points.

124. The whole of the system will not be in place by this wet season because procurement of pipe is an issue. Currently, coal seam gas operators have taken up the pipe production capacity, however, RCM will complete the system once we have procured the pipe.

125. Recently RCM had an audit by DERM about water and flood preparedness for the next season. I understand that the visiting DERM officers indicated RCM did particularly well. The written audit report has not yet been received, so I do not know at this stage the particular areas in which they considered RCM excelled, though I understand that the RCM Water Management Plan was considered to be better than the industry average. I understand we can expect the audit report by the end of October 2011. RCM will consider any areas identified for improvement.

126. In accordance with the Water Management Plan, future upgrades to water management infrastructure include:

(a) the construction of an additional water storage for mine affected water (the Spring Creek Pit Water Dam);

(b) the completion of the water pipeline (the 'backbone pumping system') running the length of the mine and between all water storages and pits;

(c) an additional water release point from a mine affected water storage to Bootes Creek;

(d) the installation of two stream gauges and automatic samplers on Sandy Creek upstream and downstream of the water release point;

(e) construction of two levees/diversions to prevent overland flow stormwater from entering mine operational areas around the Spring Creek Pit.

127. RCM will obtain the relevant regulatory approvals to undertake the above works.

Signed by **Glenn Kenneth Burlinson**
in the presence of:

[redacted]

Witness Signature

[redacted]

Print Name

19/10/11

Date

[redacted]

[redacted]

Signature

COMMISSIONER FOR DECLARATIONS

Reg.No [redacted]

DEPARTMENT OF JUSTICE QUEENSLAND

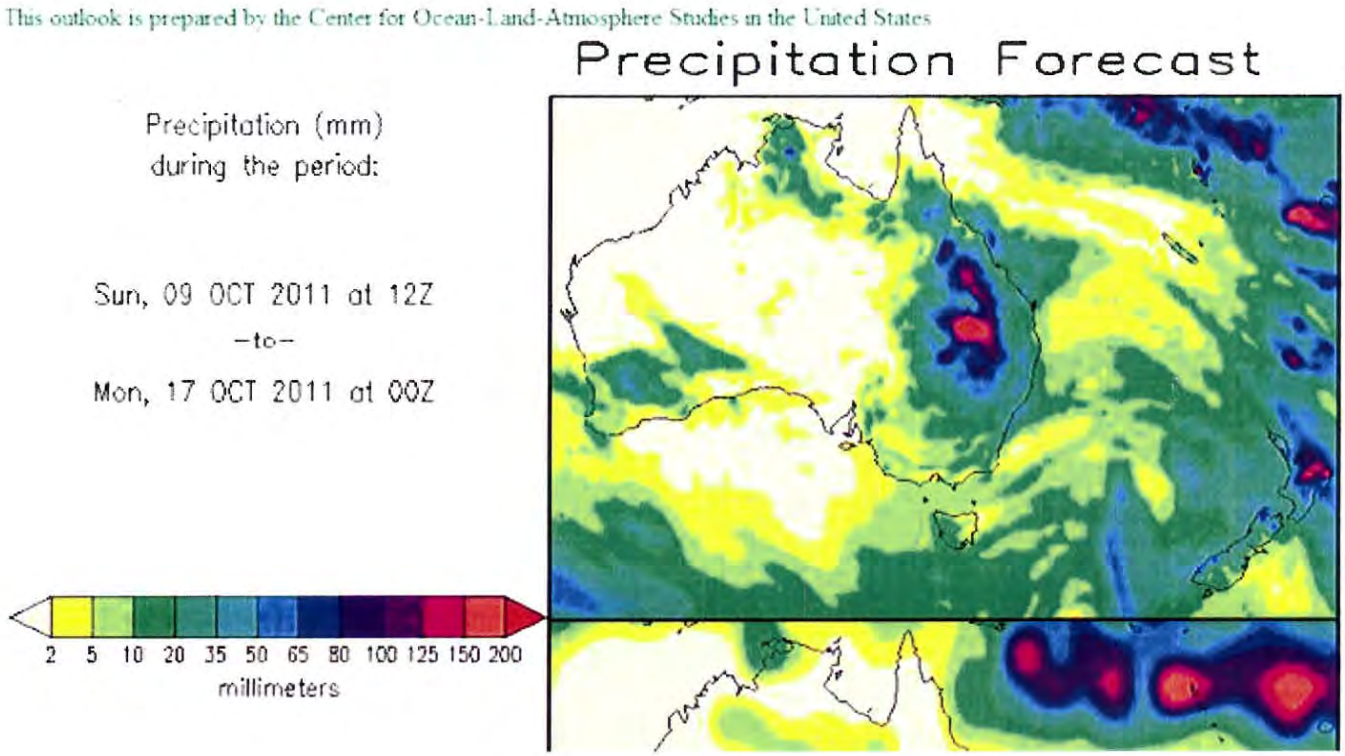
Example Weather Update

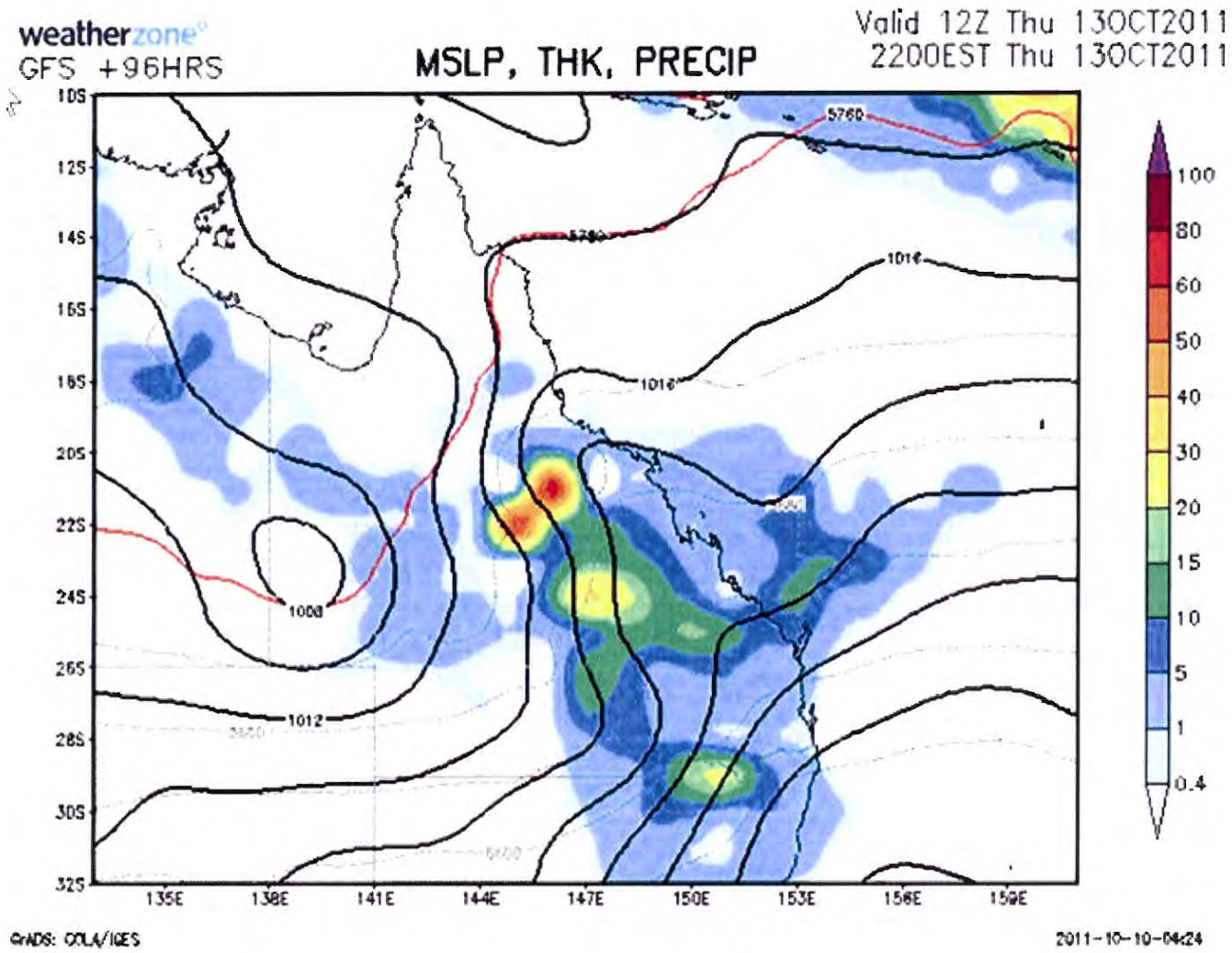
Burlinson, Glenn (Rolleston - Coal)

From: [redacted] (Rolleston - Coal)
Sent: Monday, 10 October 2011 8:13 AM
To: [redacted]
Subject: weather update

Offsite Thursday/Friday however site had 14.4mm of rain on Thursday.

The relative dry period of the last few months appears to be coming abruptly to an end. The middle of this month is looking particularly wet with rain forecasted to commence around the 13th and continuing through to at least the 19th (see below). Longer term models out to the 24th also indicate rain beyond the 19th and continuing. This is being driven by a sudden dip in the monsoonal trough down into the central parts of Queensland and total rainfall numbers are expected to exceed 50mm (see bottom figure – red line is the monsoonal trough line).





The convective outlook for the next few days show the chance of thunderstorms to be low throughout this region. As such, it's expected to remain fine through to when the more general rain is forecasted to commence on the 13th.

All major models are indicating this wet period and as such, there is a high likelihood it will occur.

Cheers,

[redacted]

What Occurred?

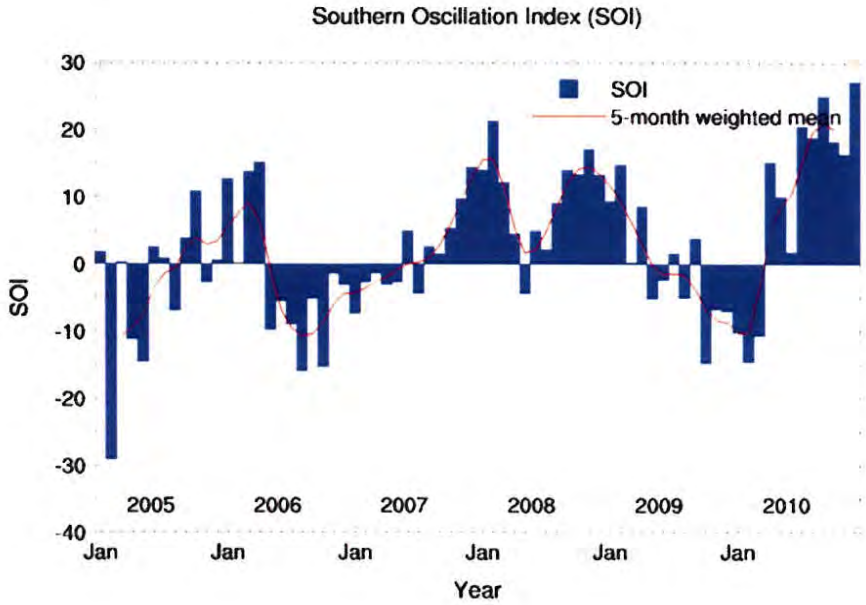
Strongest December La Nina event on record (SOI = +27)

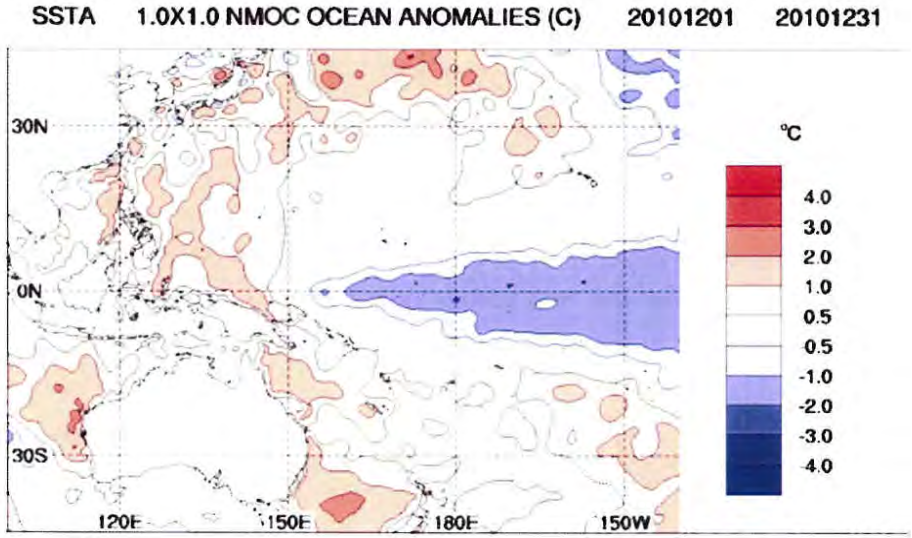
+

Typically Wet Month (monsoonal)

=

Wettest December on Record





Annexure GB2

2.1 TEP Application – 22 February 2010

ROLLESTON
COAL

22nd February 2010

Environmental Operations
Central Region
Department of Environment and Resource Management
PO Box 906
Emerald, Queensland 4720

Via Email: [redacted]

Attention: [redacted]

Dear [redacted]

Re: Rolleston Coal Mine Flooding

As discussed during your site visit to the mine on Friday of last week, Rolleston Coal wishes to apply for two Transitional Environmental Programs (TEPs) in relation to the discharge of mine-affected water from the site.

So far month to date, February has recorded the highest rainfall in the district of Rolleston since 1954.

Attached is the application and associated declaration form for a TEP concerning the release of water from the Meteor Creek West Pit and Diversion Pit 26. The focus of this TEP will be to allow the site to temporarily discharge water from locations other than those authorised by the recently-amended Environmental Authority. For the most part, Rolleston Coal believes that compliance with the remaining conditions of the Environmental Authority can be achieved during this discharge program. Where this is not the case, alternative water quality limits are nominated.

The present high levels of flow in the receiving waters of Bootes Creek, Sandy Creek and Meteor Creek provide an immediate opportunity to discharge water from Meteor West Pit and Diversion Pit 26 with the benefit of favourable dilution ratios. Rolleston Coal therefore seeks DERM's **urgent consideration** of this application for approval of the TEP. An urgent meeting is sought with DERM to discuss the enclosed application at the earliest opportunity. Please contact [redacted] to make appropriate arrangements.

We are currently working on the details of the second TEP proposal, relating to the discharge of mine-affected water from the Spring Creek Pit. This application will be forwarded shortly.

Yours Sincerely

[redacted]

General Manager

Southern Region XCQ

Statutory declaration

Environmental Operations

For an transitional environmental program

A statutory declaration is a written statement of facts that is sworn or declared under the Oaths Act 1867. *In accordance with section 556 of the* Environmental Protection Act 1994, *this statutory declaration must be completed and submitted with an transitional environmental program (TEP) and/or any additional information about an TEP that is requested by the administering authority.*

Oaths Act 1867

QUEENSLAND
TO WIT

I [redacted]

Insert the name of the person making this declaration

of C/- Dawson Highway, Rolleston QLD 4702

Insert the street address of the person making this declaration

in the State of Queensland do solemnly and sincerely declare that in relation to the submission of the transitional environmental program entitled Rolleston Coal Mine - Meteor West Pit and Diversion Pit 26

Insert title of TEP

for Discharges of mine affected water

Insert reason for TEP

at additional release points on Bootes Creek and Sandy Creek

Insert location of activity TEP relates to

and in accordance with section 556 of the *Environmental Protection Act 1994*, I have:

Environmental Protection Agency
www.epa.qld.gov.au ABN 87 221 158 786

Queensland Government
Environmental Protection Agency
Queensland Parks and Wildlife Service

- not knowingly given any false or misleading information, and
- given all relevant information

in relation to:

(tick applicable box)

☒ the preparation of the transitional environmental program, or

☐ a request by the administering authority for additional information about the transitional environmental program.

And I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of the *Oaths Act 1867*.

Taken and declared before me, at Rolleston

Insert location

this 22nd day of February in the year 2010

Insert day (e.g. 18th) Insert month Insert year

[redacted]

Signed

(Person making this declaration)

[redacted]

Signed

(Delete whichever is not applicable — Justice of the Peace / ~~Commissioner for Declarations / Solicitor / Barrister~~)

[redacted]

Printed name and registration number (if applicable)

[redacted]

Transitional Environmental Program (TEP)

Rolleston Coal Mine

Meteor West Pit and Diversion Pit 26

February 2010

ROLLESTON
COAL

Table of Contents

1. Introduction

This Transitional Environmental Program (***TEP***) describes proposed actions necessary for the immediate discharge of flood waters from the Rolleston Coal Mine from temporary additional discharge locations which require DERM authorisation.

Rolleston Coal Mine has experienced exceptionally heavy rainfall over January and February 2010, including the highest February rainfall experienced in the locality since 1954 [1]. As a consequence, a number of urgent actions have been required for the responsive management of overland flow water on site, as previously discussed with DERM [2].

This TEP relates to the proposed discharge of dilute mine affected waters that have built up in pit areas due to a series of heavy rainfall events. The Mine has an increasing volume of water in pit, as the water management system is presently unable to discharge water at a rate consistent with pit inflow. This TEP addresses proposed discharges from two relevant pits:

- from the Meteor West Pit into Meteor Creek, via Sandy Creek; and
- from Diversion Pit 26 into Bootes Creek.

Rolleston Coal voluntarily submits this TEP to seek authorisation under the *Environmental Protection Act 1994* to discharge flood waters from the Meteor West Pit and Diversion Pit 26 from additional discharge points on Bootes Creek and Sandy Creek.

The present high levels of flow in the receiving waters of Bootes Creek and Sandy / Meteor Creeks provide an **immediate** opportunity to discharge water from Meteor West Pit and Diversion Pit 26 while maintaining dilution ratios and contaminant limits that comply with the applicable requirements of Environmental Authority MIM800090802 (other than for suspended solids for Bootes Creek). Rolleston Coal therefore seeks DERM's **urgent consideration** of this application for approval of this TEP.

2. Environmental Authority

Xstrata Coal Queensland Pty Ltd, ICRA Rolleston Pty Ltd and Sumisho Coal Australia Pty Limited (***Rolleston Coal***) hold Environmental Authority MIM800090802 to carry out mining activities on ML70307 and MDL227, issued on 30 November 2009.

[1] Neighbours to Rolleston Coal Mine record that for the month of February 1954 Springwood had 547.9ml of rain. For February 2010, so far they have received 548ml, and the month is not yet concluded with continuing rainfall.

[2] Refer to previous correspondence from Rolleston Coal to Michael Rodgerson, DERM, dated 19th of February 2010.

3. Submission

This TEP is submitted on behalf of Xstrata Coal Queensland Pty Ltd, ICRA Rolleston Pty Ltd and Sumisho Coal Australia Pty Limited by [redacted], General Manager, Southern Region Xstrata Coal Queensland.

[redacted]

Signed

22/02/10

Date

4. Program Objective

The Objective of this TEP is to authorise any environmental impacts associated with undertaking appropriate responses to discharge overland flow water from the rain events of January/February 2010 from the Meteor West and Diversion Pit 26 pits on Rolleston Coal Mine.

5. Program Components

This TEP contains two program components involving the pumping and discharge of mine water from the following mine pits:

- Meteor West Pit; and
- Diversion Pit 26.

The flood response activities relating to each of the above pits is a ***Program Component.***

An action plan is included in this TEP for each Program Component which outlines the tasks and/or actions required to achieve the Program Objective for each of the above Program Components.

6. Background

Rolleston Mine has received approximately 450mm of rainfall since 1st January 2010, which has caused significant flooding across the mine and pit inundation.

On the 1st of February 2010 Rolleston Coal commenced discharging mine affected water under Environmental Authority MIM800090802. However the continual rain that has been occurring is increasing volumes of mine affected water in pit, as the current water management system is unable to discharge water at a rate consistent with pit inflow.

Further details of the situation and proposal are set out below.

Meteor West Pit

Meteor West Pit is currently inundated with approximately 190 ML of water. Rolleston Coal proposes to discharge mine affected water from Meteor West Pit to the flooded Meteor Creek via overland flow to Sandy Creek.

Rolleston Coal proposes to establish temporary monitoring points upstream and downstream of the confluence of Sandy Creek with Meteor Creek.

The existing release conditions and limits for Meteor Creek prescribed in Environmental Authority MIM800090802 would be applied at the temporary monitoring points.

Diversion Pit 26

Diversion Pit 26 is currently inundated with approximately 149 ML of water.

Rolleston Coal proposes for Diversion Pit 26 to act as a discharge storage facility so as pit pumps can be installed to transfer the water from the pit directly to Bootes Creek. The release point will occur approximately 2 km upstream of licensed Release Point 1.

Under standard operational conditions, water in Diversion Pit 26 is transferred to the Pit Water Dam prior to being discharged. Rolleston Coal would comply with all EA conditions for the discharge of mine affected water to Bootes Creek, including minimum flow height (EA condition W8), dilution ratios (EA condition W9), and water quality parameters and monitoring regime at Release Point RP 1 (with the exception of suspended solids as documented in Section 8.3).

The upstream and downstream grab samplers on Bootes Creek will collect the daily water quality samples whilst Rolleston Coal personnel will collect daily end of pipe sampling. Rolleston Coal does not predict any impact to downstream users as this discharge will be managed so as to comply with the EA requirements for Release Point RP 1.

7. Program Component 1: Discharge from Meteor West Pit

7.1 *Program Component*

Rolleston Coal proposes to discharge water from Meteor West Pit via overland flow to Sandy Creek, which will then run into Meteor Creek.

The overland flow from the Pit to Sandy Creek will occur in a naturally formed channel that existed prior to mining and which runs for approximately 3 km until it meets Sandy Creek.

The Sandy Creek channel then runs for another approximately 500 m until its confluence with Meteor Creek.

There is currently approximately 190 ML of mine affected water in Meteor West Pit.

In discharging the water Rolleston Coal would comply with the Interim Release Limits in Table 2 of EA MIM800090802 for each quality characteristic (see below at 7.3) for water quality at the Monitoring Point TEP 1 (see below at 7.2).

Rolleston Coal would only release contaminants at Release Point TEP 1 when flow conditions are at 2.5m3/s (2,500 L/s) or greater in Meteor Creek when measured at Monitoring Point 4 as part of this Program Component (see below at 7.4).

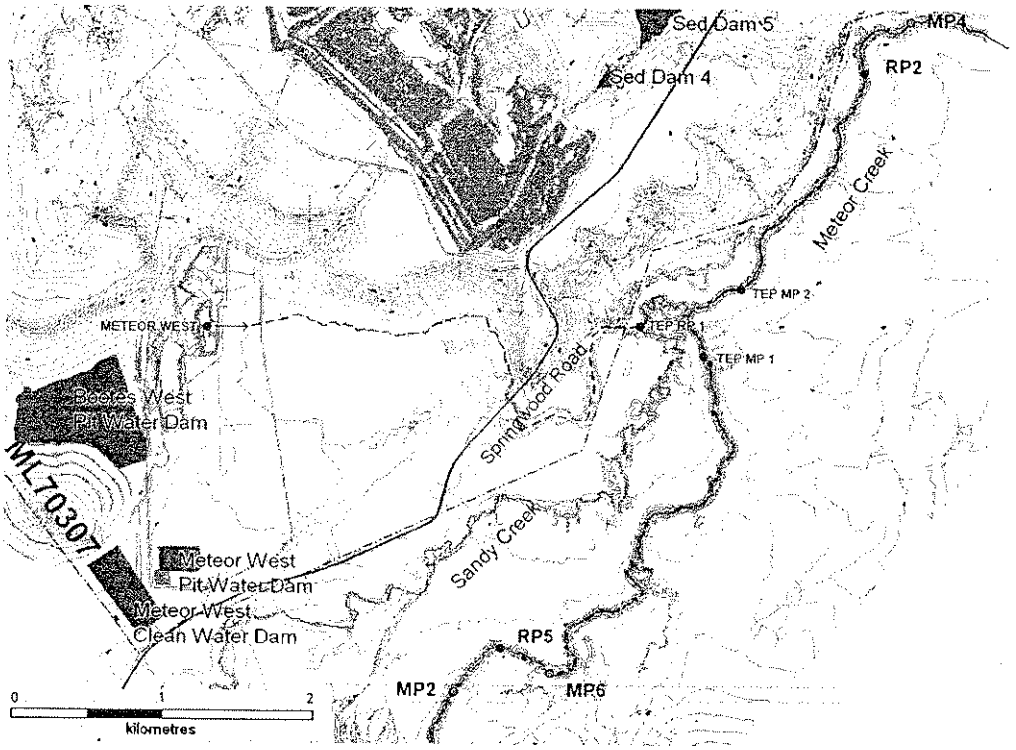
Rolleston Coal does not predict any impact to downstream users as this discharge will be managed so as to comply with EA requirements for Release Point RP 2.

7.2 Release Point

New Release Point TEP 1 will be established as per Table 1.

Table 1.

Release Point (RP)	Easting (GDA94)	Northing (GDA94)	Contaminant Source and Location	Monitoring Point	Receiving waters description
TEP 1	645207	7292541	Meteor West Pit	Sandy Creek above confluence of Sandy Creek and Meteor Creek	Meteor Creek (via Sandy Creek and overland flow)



7.3 Discharge Limits

The release of contaminants to waters must not exceed the release limits in Table 2 (Taken from Release Limits until 30-NOV-2011 in Table 2 of Environmental Authority MIM800090802) when measured at the monitoring point specified in Table 1 for Release Point TEP 1.

Table 2

Quality Characteristic	Release Limits	Monitoring frequency
Electrical conductivity (uS/cm)	1500	Daily during release (the first sample must be taken within 2 hours of commencement of release)
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	Daily during release (the first sample must be taken within 2 hours of commencement of release)
Turbidity (NTU)	NA	Daily during release (first sample within 2 hours of commencement of release)
Suspended Solids (mg/L)	1200	Daily during release (first sample within 2 hours of commencement of release)
Sulphate (SO_4^{2-}) (mg/L)	1000	Daily during release (first sample within 2 hours of commencement of release)

7.4 Environmental Requirements

(a) Quantity of Release

The daily quantity of contaminants released from Release Point TEP 1 must be measured and recorded at Release Point TEP 1.

(b) Contaminant Flow Rate

The contaminant flow rate must not exceed 20% of the flow rate in Meteor Creek at Monitoring Point 4.

(c) Minimum Flow requirements of Receiving Waters

The Minimum Flow in Receiving Water for a Release Event is 2.5m3/s (2,500 L/s) in Meteor Creek at Monitoring Point 4 with Continuous flow recording frequency.

(d) Receiving Environment Contaminant Trigger Levels

The water quality of Meteor Creek will be monitored in accordance with condition W18 of EA MIM800090802 and Rolleston Coal will comply with condition W19 during any release events from Release Point TEP 1.

7.5 Water Quality Monitoring

There are existing monitoring stations (pH, EC, Temperature and flow height) located upstream and downstream of the mining lease on Meteor Creek. Rolleston Coal will set up

additional temporary manual upstream and downstream monitoring on Meteor Creek which will be sampled daily, in conjunction with sampling of the release point in Table 1.

The locations for the temporary monitoring points are detailed in Table 3.

Table 3

Monitoring Point	Receiving Water Description	Easting (GDA94)	Northing (GDA94)
TEP 1	Meteor Creek Upstream	645318	7292270
TEP 2	Meteor Creek Downstream	645560	7292719

Monitoring at TEP MP1 and TEP MP2 will comply with the conditions of EA MIM800090802 and will be undertaken during any release event at Release Point TEP 1.

7.6 Risks of Actual Environmental Harm

Rolleston Coal plans to use an existing channel to release overland flow to Sandy Creek. This channel has consolidated over several decades and does not show any signs of erosion from recent natural flow events. Rolleston Coal will also maintain release rates from end of pipe that will not generate velocities that will incur scouring.

Rolleston Coal does not anticipate any impact to aquatic flora and fauna as the pit inflow is from recent rainfall events and will be consistent with surrounding water qualities sampled, which show no indication of contamination to date. As the overland flow path is heavily vegetated, Rolleston Coal is confident suspended solids will be naturally filtered from the water prior to reaching Sandy Creek. As the release will be occurring to Meteor Creek, which will have a minimum flow of 2,500 L/s, Rolleston Coal is confident that there will be sufficient dilution and blending to eliminate any potential contamination at the downstream TEP monitoring station.

Rolleston Coal is confident that the rate of water released from Meteor West Pit will not incur any increase in flood levels as the channel is appropriately sized to disperse this water.

Impact on stock watering will be negligible as water quality parameters documented in Environmental Authority MIM 800090802 are consistent with those listed in ANZECC guidelines for stock water.

At the completion of discharge of mine affected water from Meteor West Pit to Meteor Creek, Rolleston Coal will utilise water from an adjacent clean water dam to flush the discharge channel. This will also occur in a controlled manner and remove any residual contaminants that may have occurred from the release to ensure there is no potential for environmental harm from this release.

7.7 Program Action Plan

The above objectives will be achieved in accordance with the Program Action Plan which is set out below at Table 4. The Program Action Plan includes performance indicators and key dates by which actions will be implemented.

Table 4: Program Component 1 Action Plan

No.	Action Plan Item	Performance Indicator	Completion Date
1	Establish Release Point TEP 1	Necessary infrastructure located and commissioned	
2	Establish monitoring stations at Monitoring Points TEP 1 and TEP 2	Monitoring stations established and commissioned.	
3	Commence release in accordance with TEP	Discharge occurring	
4	Notification to DERM of commencement of release event at Release Point TEP 1 in accordance with EA Condition W 12.	Notification to DERM	
5	Monitoring in accordance with EA MIM800090802 .		
6	Notification of cessation of release event in accordance with EA condition W13	Notification to DERM	

8. Program Component 2: Discharge from Diversion Pit 26

8.1 Program Component

Rolleston Coal proposes to pump water directly from Diversion Pit 26 into Bootes Creek approximately 2 kilometres upstream of Release Point RP 1.

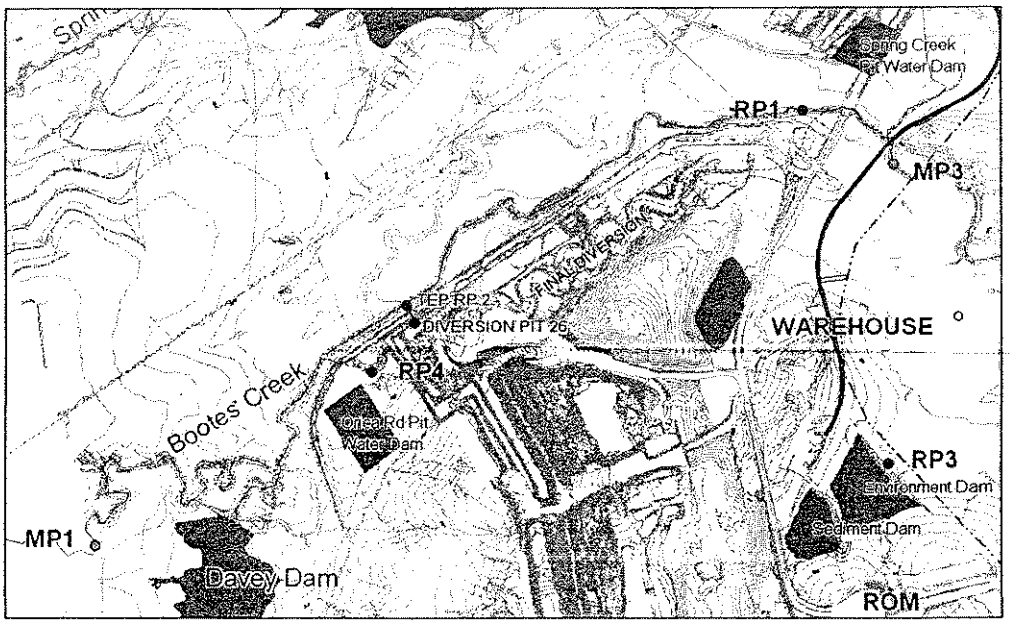
All Bootes Creek release conditions and limits would remain consistent with those prescribed in Environmental Authority MIM800090802 (other than suspended solids) in relation to Release Point RP 1, however mine affected water will not be transferred to the Pit Water Dam prior to discharge to Bootes Creek.

8.2 Release Point

New Release Point TEP 2 will be established at the location identified in Table 5 below.

Table 5

Release Point (RP)	Easting (GDA94)	Northing (GDA94)	Contaminant Source and Location	Monitoring Point	Receiving waters description
TEP 2	641613	7296708	Diversion Pit 26	End of Pipe	Bootes Creek



8.3 Discharge Limits

The release of contaminants to waters must not exceed the release limits in Table 6 (Taken from Release Limits until 30-NOV-2011 in Environmental Authority MIM800090802

- other than for suspended solids) when measured at the monitoring point specified in Table 5 for Release Point TEP 2.

Rolleston Coal requests a temporary amendment to the end of pipe release limit for suspended solids. Typically, the water is transferred to Pit Water Dam, which has been constructed to settle water prior to discharge. Recent sampling of water quality visually indicates the water has settled significantly since the last rainfall events, however Rolleston Coal would like an allowance to increase the limit of end of pipe suspended solids from 1,200 mg/L to 10,000 mg/L to account for this temporary change in water management arrangements. The proposed temporary limit is based on historical background data, which indicates that Bootes Creek upstream can exceed 10,000 mg/L with a maximum recorded reading of 17,500 mg/L.

Rolleston Coal will manage the discharge pumps and apply the prescribed dilution factors to reduce the potential for elevated levels of suspended solids at the receiving waters downstream monitoring point.

Table 6

Quality Characteristic	Release Limits	Monitoring frequency
Electrical conductivity (uS/cm)	1,500	Daily during release (the first sample must be taken within 2 hours of commencement of release)
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	Daily during release (the first sample must be taken within 2 hours of commencement of release)
Turbidity (NTU)	N/A	Daily during release (the first sample must be taken within 2 hours of commencement of release)
Suspended Solids (mg/L)	10,000	Daily during release (the first sample must be taken within 2 hours of commencement of release)
Sulphate (SO_4^{2-}) (mg/L)	1,000	Daily during release (the first sample must be taken within 2 hours of commencement of release)

8.4 Environmental Requirements

(a) Quantity of Release

The daily quantity of contaminants released from Release Point TEP 2 must be measured and recorded at Release Point TEP 2.

(b) Contaminant Flow Rate

The contaminant flow rate must not exceed 20% of the flow rate at Bootes Creek at Release Point RP 1.

(c) Minimum Flow requirements of Receiving Waters

The Minimum Flow in Receiving Water for a Release Event from Release Point TEP 2 is 0.75m3/s (750L/s) at the release point, which will be calculated at the gauging station at Monitoring Point 3.

(d) Receiving Environment Contaminant Trigger Levels

The water quality of Bootes Creek will be monitored in accordance with condition W18 of the EA MIM800090802 and Rolleston Coal will comply with EA condition W19 during any release events from Release Point TEP 2.

8.5 Water Quality Monitoring

No new Monitoring Points are proposed in Bootes Creek.

Monitoring will comply with EA MIM800090802 in relation to Release Point RP 1 during any release event at Release Point TEP 2.

8.6 Risks of Actual Environmental Harm

The largest risk of environmental harm from releasing from Diversion Pit 26 is the potential for increased levels of suspended solids to be discharged to Bootes Creek. Typically the water is transferred to Pit Water Dam, which has been constructed to settle the water prior discharge. However, recent sampling of water quality visually indicates the water has settled significantly since the last rainfall events, and Rolleston Coal will manage the discharge pumps to reduce the potential for elevated levels of suspended solids.

Rolleston Coal is confident there will be minimal potential for contamination from this release. As previously stated, the water in Diversion Pit 26 is generally transferred to Pit Water Dam prior to discharge. Rolleston Coal has been releasing water from this structure since 1 February 2010.

As the release will be occurring to Bootes Creek, which will have a minimum flow of 750 L/s, Rolleston Coal is confident that there will be sufficient dilution and blending to eliminate any potential contamination at the downstream monitoring station.

8.7 Program Action Plan

The above objectives will be achieved in accordance with the Program Action Plan which is set out below. The Program Action Plan includes performance indicators and key dates by which actions will be implemented.

Table 7: Program Component 2 Action Plan

No	Action Plan Item	Performance Indicator	Completion Date
1	Establish Release Point TEP 2	Necessary infrastructure located and commissioned	
2	Commence release in accordance with TEP	Discharge occurring	
3	Notification to DERM of commencement of release event at Release Point TEP 2 in accordance with EA Condition W 12.	Notification to DERM.	
4	Monitoring in accordance with EA MIM800090802.		
5	Notification of cessation of release event in accordance with EA condition W13	Notification to DERM	

9. Notifications and Reporting

9.1 Notifications

Rolleston Coal will comply with the notification conditions of EA MIM800090802 in relation to releases from Release Points TEP 1 and TEP 2 set out at conditions: W12, W13, W14 and W15.

9.2 Reporting

Rolleston Coal will incorporate results from release at Release Points TEP 1 and TEP 2 in the Receiving Environment Monitoring Program (REMP) in the report to be provided by 1 October 2011 under condition W22 of EA MIM800090802.

10. Term of the TEP

The proposed term for each component of the TEP is as follows:

Program Component	Action Plan Completion Date
1 – Meteor West Pit	28 May 2010
2 – Diversion Pit 26	28 May 2010

In the event of continuing rainfall and continued inflows into the pits, Rolleston Coal may approach DERM to approve an amendment to the term of the TEP for one or both Program Components. The Program Components may also be finalised earlier than this date.

11. Further information

For further information contact [redacted]

[redacted]

Rolleston Coal Pty Ltd
Xstrata Coal Queensland
P.O. BOX 11
Springsure QLD 4722

Mobile:

Email [redacted]

2.2 Amended TEP Application – 1 March 2010

ROLLESTON
COAL

1 March 2010

[redacted]
Environmental Operations Central Region
Department of Environment and Resource Management
PO Box 906
Emerald QLD 4720

By Email: [redacted]

Dear [redacted]

Re: Rolleston Transitional Environmental Program

We refer to the submission of a voluntary Transitional Environmental Program (***TEP***) for Rolleston Coal Mine lodged on 22 February 2010. Please find attached an updated TEP which deals with your comments forwarded by cover of email on 24 February 2010. The updated TEP addresses most of your specific comments and recommendations for measures to be included in the TEP.

Please note, that it is proposed to submit weekly reporting of monitoring results for releases from the Temporary Release Points under the TEP. This is in **addition** to the notification requirements under conditions W6, W14 and W15 of EA MIM80009082 for notification and reporting in relation to exceedances of discharge limits or release contaminant trigger investigation levels. In these circumstances, Rolleston Coal believes that a weekly summary report of available sampling results is sufficient.

Please note that in relation to the development and reporting of management, actions and time frames for future implementation to ensure water management systems achieve and maintain compliance with the Environmental Authority in the future that:

- The levy systems and water management systems associated with Meteor Creek Waste Pit and Diversion Pit 26 did not experience the failures that were associated with the Spring Creek Pit Area and upstream flows which involved the failure of Naroo and Spring Creek Dam; and

- Permanent management of overland flow and pit protection in the Spring Creek Area is currently subject to ongoing investigations. It is proposed that these investigations will lead to a report and recommendations to be formulated and submitted to DERM as part of the separate forthcoming Spring Creek Pit TEP.

The present high levels of flow in the receiving waters of Bootes Creek, Sandy Creek and Meteor Creek provide an immediate opportunity to discharge water. Rolleston Coal therefore seeks DERM's **urgent consideration** for approval of the TEP.

Please do not hesitate to contact [redacted] if you have any questions relating to this submission.

Yours sincerely

[redacted]

General Manager

Southern Region XCQ

Transitional Environmental Program (TEP)

Rolleston Coal Mine

Meteor West Pit and Diversion Pit 26

February 2010

ROLLESTON
COAL

Table of Contents

1. Introduction

This Transitional Environmental Program (***TEP***) describes proposed actions necessary for the immediate discharge of flood waters from the Rolleston Coal Mine from temporary additional discharge locations which require DERM authorisation.

Rolleston Coal Mine has experienced exceptionally heavy rainfall over January and February 2010, including the highest February rainfall experienced in the locality since 1954 [1]. As a consequence, a number of urgent actions have been required for the responsive management of overland flow water on site, as previously discussed with DERM [2].

This TEP relates to the proposed discharge of dilute mine affected waters that have built up in pit areas due to a series of heavy rainfall events. The Mine has an increasing volume of water in pit, as the water management system is presently unable to discharge water at a rate consistent with pit inflow. This TEP addresses proposed discharges from two relevant pits:

- from the Meteor West Pit into Meteor Creek, via Sandy Creek; and
- from Diversion Pit 26 into Bootes Creek.

Rolleston Coal voluntarily submits this TEP to seek authorisation under the *Environmental Protection Act 1994* to discharge flood waters from the Meteor West Pit and Diversion Pit 26 from additional discharge points on Bootes Creek and Meteor Creek via Sandy Creek.

The present high levels of flow in the receiving waters of Bootes Creek and Sandy / Meteor Creeks provide an **immediate** opportunity to discharge water from Meteor West Pit and Diversion Pit 26 while maintaining dilution ratios and contaminant limits that comply with the applicable requirements of Environmental Authority MIM800090802 (other than for suspended solids for Bootes Creek). Rolleston Coal therefore seeks DERM's **urgent consideration** of this application for approval of this TEP.

2. Environmental Authority

Xstrata Coal Queensland Pty Ltd, ICRA Rolleston Pty Ltd and Sumisho Coal Australia Pty Limited (***Rolleston Coal***) hold Environmental Authority MIM800090802 to carry out mining activities on ML70307 and MDL227, issued on 30 November 2009.

[1] Neighbours to Rolleston Coal Mine record that for the month of February 1954 Springwood had 547.9ml of rain. For February 2010, so far they have received 548ml, and the month is not yet concluded with continuing rainfall.

[2] Refer to previous correspondence from Rolleston Coal to Michael Rodgerson, DERM, dated 19th of February 2010.

3. Submission

This TEP is submitted on behalf of Xstrata Coal Queensland Pty Ltd, ICRA Rolleston Pty Ltd and Sumisho Coal Australia Pty Limited by [redacted] General Manager, Southern Region Xstrata Coal Queensland.

[redacted]

Signed

1/03/10

Date

4. Authorisation

This TEP authorises the discharges of water from the Meteor West and Diversion Pit 26 pits on Rolleston Coal Mine at Release Point TEP 1 and Release Point TEP 2 respectively, in accordance with the conditions and requirements of this TEP and Environmental Authority MIM800090802. To the extent there are any inconsistencies between this TEP and Environmental Authority MIM800090802 this TEP prevails.

5. Transition

The environmental protection commitments for the mining activities are enshrined in the Environmental Management Overview Strategy for the mine. This TEP proposes the implementation of Action Plans at the completion of which Rolleston Coal will comply with its obligations under EA MIM800090802.

6. Program Components

This TEP contains two program components involving the pumping and discharge of mine water from the following mine pits:

- Meteor West Pit; and
- Diversion Pit 26.

The flood response activities relating to each of the above pits is a ***Program Component.***

An action plan is included in this TEP for each Program Component which outlines the tasks and/or actions required to achieve the Program Objective for each of the above Program Components.

7. Background

Rolleston Mine has received approximately 450mm of rainfall since 1st January 2010, which has caused significant flooding across the mine and pit inundation.

On the 1st of February 2010 Rolleston Coal commenced discharging mine affected water under Environmental Authority MIM800090802. However the continual rain that has been occurring is increasing volumes of mine affected water in pit, as the current water management system is unable to discharge water at a rate consistent with pit inflow. In accordance with condition W32 of EA MIM800090802 a Water Management Plan had been developed prior to this rainfall event which designated appropriate infrastructure for the proper and effective management of the actual and potential environmental impacts resulting from the mining activity. This plan will be reviewed in accordance with Condition W34.

Further details of the situation and proposal are set out below.

Meteor West Pit

Meteor West Pit is currently inundated with approximately 190 ML of water. The Pit is surrounded by a levee system designed to divert external overland flow away from the Pit. The levee system performed as designed for this rainfall event, and the water currently in the Pit was collected from rainfall within the localised mining area (ie. inside of the levee system).

Rolleston Coal proposes to discharge mine affected water from Meteor West Pit to the flooded Meteor Creek via overland flow to Sandy Creek. It is also proposed to establish temporary monitoring points upstream and downstream of the confluence of Sandy Creek with Meteor Creek.

The existing release conditions and limits for Meteor Creek prescribed in Environmental Authority MIM800090802 would be applied at the temporary monitoring points.

Diversion Pit 26

Diversion Pit 26 is currently inundated with approximately 149 ML of water. Water management within the Bootes Creek mining area diverts water for collection at a number of locations, including Diversion Pit 26. The water presently within Diversion Pit 26 has been predominantly sourced from within the perimeter levee system which surrounds the Bootes Creek mining area.

Under standard operational conditions, water in Diversion Pit 26 is transferred to the Pit Water Dam prior to being discharged. Rolleston Coal proposes for Diversion Pit 26 to act as a temporary discharge storage facility so as pit pumps can be installed to transfer the water from the pit directly to Bootes Creek. The release point will occur approximately 2 km upstream of licensed Release Point 1. Rolleston Coal would comply with all EA conditions for the discharge of mine affected water to Bootes Creek, including minimum flow height (EA condition W8), dilution ratios (EA condition W9), and water quality parameters and monitoring regime at Release Point RP 1 (with the exception of suspended solids as documented in Section 9.4).

The upstream and downstream grab samplers on Bootes Creek will collect the daily water quality samples whilst Rolleston Coal personnel will collect daily end of pipe sampling. Rolleston Coal does not predict any impact to downstream users as this discharge will be managed so as to comply with the EA requirements for Release Point RP 1.

8. Program Component 1: Discharge from Meteor West Pit

8.1 Program Component

Rolleston Coal proposes to discharge water from Meteor West Pit via overland flow to Sandy Creek, which will then run into Meteor Creek.

The overland flow from the Pit to Sandy Creek will occur in a naturally formed channel that existed prior to mining and which runs for approximately 3 km until it meets Sandy Creek.

The Sandy Creek channel then runs for another approximately 500 m until its confluence with Meteor Creek.

There is approximately 190 ML of mine affected water currently in Meteor West Pit.

In discharging the water Rolleston Coal would comply with the Interim Release Limits in Table 2 of EA MIM800090802 for each quality characteristic (see below at 8.5) for water quality at the Release Point TEP 1 (see below at 8.3).

Rolleston Coal would only release contaminants at Release Point TEP 1 when flow conditions are at 2.5m3/s (2,500 L/s) or greater in Meteor Creek when measured at Monitoring Point 4 as part of this Program Component (see below at 8.6).

Rolleston Coal does not predict any impact to downstream users as this discharge will be managed so as to comply with EA requirements for Release Point RP 2.

8.2 Program Component Objectives

Objective 1
The release of contaminants to waters under this Program Component must only occur from the Release Point TEP 1 specified in Table 1 (Contaminant release points, sources and receiving waters) and depicted in Figure 1.

Objective 2
New Monitoring Points will be established at the locations specified in Table 2 and monitoring will be undertaken in accordance with the requirements of EA MIM800090802.

Objective 3
The release of contaminants to waters under this Program Component must not exceed the release limits in Table 3 when measured at the monitoring point specified in Table 1 for Release Point TEP 1.

Objective 4
Notifications and reporting will comply with requirements under conditions W6, W12, W13, W14 and W15 of EA MIM800090802 in relation to discharges from Release Point TEP 1. Rolleston Coal will lodge a weekly report which includes a summary of available daily monitoring results for water quality characteristics in Table 3 for releases from Release Point TEP 1.

Objective 5
Rolleston Coal will complete and lodge with DERM a Decommissioning Report outlining actions undertaken under TEP Program Component 1 and summarising compliance against this Program Component and EA MIM800090802 for discharges from Release Point TEP 1 within 56 days of the cessation of the final discharge from Release Point TEP 1.

Objective 6
Rolleston Coal will meet all other requirements of EA MIM800090802 not specifically incorporated into this TEP which are relevant to discharges from Release Point TEP 1 to Meteor Creek (conditions W1-W19). To the extent of any inconsistency with Program Component 1 of this TEP and the conditions of EA MIM800090802 the requirements and conditions of this TEP shall prevail.

8.3 Release Point

New Release Point TEP 1 will be established as per Table 1 and as depicted on Figure 1.

Table 1.

Release Point (RP)	Easting (GDA94)	Northing (GDA94)	Contaminant Source and Location	Monitoring Point	Receiving waters description
TEP 1	645207	7292541	Meteor West Pit	Sandy Creek above confluence of Sandy Creek and Meteor Creek	Meteor Creek (via Sandy Creek and overland flow)

8.4 Water Quality Monitoring

There are existing monitoring stations (pH, EC, Temperature and flow height) located upstream and downstream of the mining lease on Meteor Creek. Rolleston Coal will set up additional temporary manual upstream and downstream monitoring on Meteor Creek which will be sampled daily, in conjunction with sampling of the Release Point in Table 1.

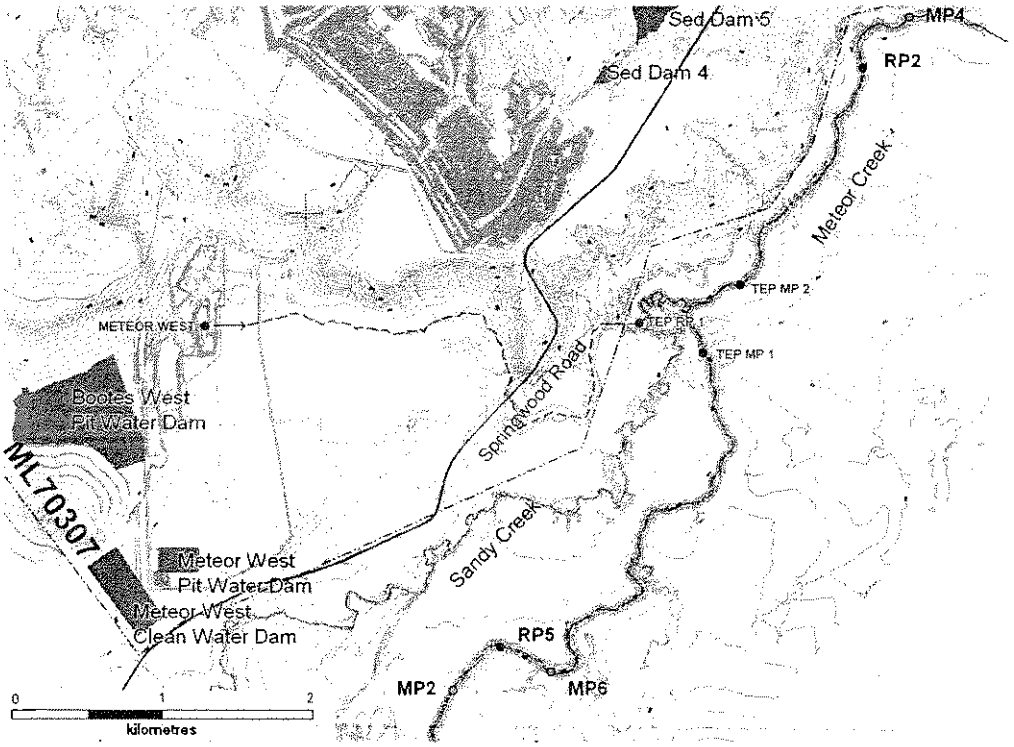
The locations for the temporary monitoring points are detailed in Table 2 and are depicted on Figure 1.

Table 2

Monitoring Point	Receiving Water Description	Easting (GDA94)	Northing (GDA94)
TEP MP 1	Meteor Creek Upstream	645318	7292270
TEP MP 2	Meteor Creek Downstream	645560	7292719

Monitoring at TEP MP1 and TEP MP2 will comply with the conditions of EA MIM800090802 and will be undertaken during any release event at Release Point TEP 1.

Figure 1



8.5 Discharge Limits

The release of contaminants to waters from Release Point TEP 1 must not exceed the release limits in Table 3 when measured at the monitoring point specified in Table 1 for Release Point TEP 1.

Table 3 [3]

Quality Characteristic	Release Limits	Monitoring frequency
Electrical conductivity (uS/cm)	1500	Daily during release (the first sample must be taken within 2 hours of commencement of release)
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	Daily during release (the first sample must be taken within 2 hours of commencement of release)
Turbidity (NTU)	NA	Daily during release (first sample within 2 hours of commencement of release)
Suspended Solids (mg/L)	1200	Daily during release (first sample within 2 hours of commencement of release)
Sulphate (SO_4^{2-}) (mg/L)	1000	Daily during release (first sample within 2 hours of commencement of release)

8.6 Environmental Requirements

Rolleston Coal will meet all other requirements of EA MIM800090802 which are relevant to discharges from Release Point TEP 1 to Meteor Creek (conditions W1-W19). To the extent of any inconsistency with Program Component 1 of this TEP and the conditions of EA MIM800090802, the requirements and conditions of this TEP shall prevail.

These include, but are not limited to, the following:

(a) Quantity of Release

The daily quantity of contaminants released from Release Point TEP 1 must be measured and recorded at Release Point TEP 1 (Condition W10).

(b) Contaminant Flow Rate

The contaminant flow rate must not exceed 20% of the flow rate in Meteor Creek at Monitoring Point 4 (Condition W9).

[3] Taken from Release Limits until 30-NOV-2011 in Table 2 of Environmental Authority MIM800090802.

(c) Minimum Flow requirements of Receiving Waters

The Minimum Flow in Receiving Water for a Release Event is 2.5m3/s (2,500 L/s) in Meteor Creek at Monitoring Point 4 with Continuous flow recording frequency (Condition W8).

(d) Receiving Environment Contaminant Trigger Levels

The water quality of Meteor Creek will be monitored in accordance with condition W18 of EA MIM800090802 and Rolleston Coal will comply with condition W19 during any release events from Release Point TEP 1.

8.7 Risks of Actual Environmental Harm

Rolleston Coal plans to use an existing channel to release overland flow to Sandy Creek. This channel has consolidated over several decades and does not show any signs of erosion from recent natural flow events.

Rolleston Coal will also maintain release rates from end of pipe that will not generate velocities that will incur scouring. The risk of scouring will be minimised by the diffusion of water velocity from end of pipe release by discharging onto a basalt emplacement to dissipate the energy as the water runs into the heavily grassed natural channel or as otherwise agreed with DERM.

Rolleston Coal is confident there will be minimal potential for contamination from this release. Rolleston Coal does not anticipate any impact to aquatic flora and fauna as the pit inflow is a result of recent rainfall events and the discharge will occur in accordance with condition W9 of EA MIM800090802 at a dilution ratio to minimise the potential for environmental harm. As the overland flow path is heavily vegetated, Rolleston Coal is confident suspended solids will be naturally filtered from the water within the Mining Lease area prior to reaching Sandy Creek. As the release will be occurring to Meteor Creek, which will have a minimum flow of 2,500 L/s, Rolleston Coal is confident that there will be sufficient dilution and blending to eliminate any potential contamination at the downstream TEP monitoring station.

Rolleston Coal is confident that the rate of water released from Meteor West Pit will not incur any increase in flood levels as the channel is appropriately sized to disperse this water. Rolleston Coal has consulted with the adjacent landholder in relation to likely impacts on the useability of local roads.

Impact on stock watering will be negligible as water quality parameters documented in Environmental Authority MIM 800090802 are consistent with those listed in ANZECC guidelines for stock water. Rolleston Coal has consulted with the landowner of Meteor Park in relation to the proposed discharge of mine affected water by overland flow to Meteor Creek via Sandy Creek.

At the completion of discharge of mine affected water from Meteor West Pit to Meteor Creek, Rolleston Coal will utilise water from an adjacent clean water dam to flush the discharge channel. This will also occur in a controlled manner and displace any residual mine affected water from the release.

8.8 Notifications and Reporting

(a) Discharge Notifications

Rolleston Coal will comply with the notification conditions of EA MIM800090802 in relation to releases from Release Point TEP 1 set out at conditions W12 and W13.

(b) Exceedence Notifications

Rolleston Coal will comply with the notification conditions of EA MIM800090802 in relation to releases from Release Point TEP 1 set out at conditions: W6, W14 and W15.

(c) Investigation Notification

If Rolleston Coal is required to complete an investigation in accordance with EA condition W5(2)(b) or W19(2)(b) the investigation report must be submitted to DERM within seven days of completing the report.

(d) Monitoring Results Reporting

During Releases from TEP 1 Rolleston Coal will submit to DERM a weekly summary report with the available daily sampling results for water quality characteristics in Table 3 from releases from Release Point TEP 1. Total Suspended Solids data will be analysed by an accredited third party laboratory, and are generally available within 10-14 days of being submitted.

(e) Decommissioning Report

Rolleston Coal will complete and lodge with DERM a Decommissioning Report outlining actions undertaken under TEP Program Component 1 and summarising compliance against this TEP and EA MIM800090802 for discharges from Release Point TEP 1 within 56 days of the cessation of the final discharge from Release Point TEP 1.

8.9 Program Action Plan

The above objectives will be achieved in accordance with the Program Action Plan which is set out below at Table 4. The Program Action Plan includes performance indicators and key dates by which actions will be implemented.

Table 4: Program Component 1 Action Plan

Objective No	Action Plan Item	Performance Indicator	Completion Date
1	AP 1- Establish Release Point TEP 1 by establishing necessary infrastructure and notify DERM when established.	Necessary infrastructure located and commissioned and notification given to DERM	Within 48 hours of approval of this TEP
2	AP 2 -Establish monitoring stations at Monitoring Points TEP 1 and TEP 2 and notify DERM when established.	Monitoring stations established and commissioned and notification given to DERM.	Within 48 hours of approval of this TEP
3	AP 3 – Commence first discharge in accordance with TEP and EA MIM800090802.	Discharge occurring	Within 48 hours of approval of this TEP
4	AP 4- Notification to DERM of commencement of release event at Release Point TEP 1 in accordance with EA Condition W 12.	Notification to DERM	No later than six (6) hours of having commenced releasing mine affected water to the receiving environment.
2	AP 5 - Monitoring in accordance with EA MIM800090802 .	Daily Monitoring	Daily during discharge

Objective No	Action Plan Item	Performance Indicator	Completion Date
1 and 6	AP 6 - Cease discharge if an exceedence of Discharge Limit in Table 3 is identified. Discharge may recommence when the relevant water quality characteristic returns to compliance.	Discharge ceases	As soon as practicable after an exceedence is identified. Discharge may recommence when the relevant water quality characteristic returns to compliance
4	AP – 7 Submit weekly summary report during Releases from TEP 1 of the available daily sampling results for water quality characteristics in Table 3 for releases from Release Point TEP 1.	Report submitted to DERM	Weekly during discharge from Release Point TEP 1.
4	AP 8 - Notification of cessation of release event in accordance with EA condition W13	Notification to DERM	Within 24 hours of cessation of discharge
3	AP 9 – Cease discharge at completion of Program Component 1.	Discharge ceases	Final discharge to cease by 28 May 2010[4]
5	AP 10 - Submission to DERM the final report outlining actions undertaken under TEP Program Component 1 and summarising compliance against TEP and EA MIM800090802 for discharges from Release Point TEP 1.	Report submitted to DERM	Within 56 days after cessation of final discharge and no later than 23 July 2010.

[4] In the event of continuing rainfall and continued inflows into the pits, Rolleston Coal may approach DERM to approve an amendment to the completion date of this action plan item. The discharge may also be finalised earlier than this date.

Objective No	Action Plan Item	Performance Indicator	Completion Date
6	AP 11 – Meet all requirements of EA MIM800090802 in relation to release of contaminants to Meteor Creek (conditions W1-W19) for discharges from Release Point TEP 1.	Compliance	At all times during discharge from Release Point TEP 1.

9. Program Component 2: Discharge from Diversion Pit 26

9.1 Program Component

Rolleston Coal proposes to pump water directly from Diversion Pit 26 into Bootes Creek approximately 2 kilometres upstream of Release Point RP 1.

All Bootes Creek release conditions and limits would remain consistent with those prescribed in Environmental Authority MIM800090802 (other than suspended solids) in relation to Release Point RP 1, however mine affected water will not be transferred to the Pit Water Dam prior to discharge to Bootes Creek.

9.2 Program Component 2 Objectives

Objective 1
The release of contaminants to waters under this Program Component must only occur from the Release Point TEP 2 specified in Table 5 (Contaminant release points, sources and receiving waters) and depicted in Figure 2.

Objective 2
Monitoring will be undertaken in accordance with the requirements of this Program Component and EA MIM800090802 in relation to the monitoring point specified in Table 5 and at existing Monitoring Points in Bootes Creek (MP 1 and MP 3) under EA MIM800090802 during any release event at Release Point TEP 2.

Objective 3
The release of contaminants to waters under this Program Component must not exceed the release limits in Table 6 when measured at the monitoring point specified in Table 5 for Release Point TEP 2.

Objective 4
Notifications and Reporting will comply with requirements under conditions W6, W12, W13, W14 and W15 of EA MIM800090802 in relation to discharges from Release Point TEP 2. Rolleston Coal will lodge a weekly report which includes a summary of available daily monitoring results as against water quality characteristics in Table 6 for releases from Release Point TEP 2.

Objective 5

Rolleston Coal will complete and lodge with DERM a final report outlining actions undertaken under TEP Program Component 2 and summarising compliance against this Program Component and EA MIM800090802 for discharges from Release Point TEP 2 within 56 days of the cessation of the final discharge from Release Point TEP 2.

Objective 6

Rolleston Coal will meet all other requirements of EA MIM800090802 not specifically incorporated into this TEP which are relevant to discharges from Release Point TEP 2 to Bootes Creek (conditions W1-W19). To the extent of any inconsistency with Program Component 2 of this TEP and the conditions of EA MIM800090802, the requirements and conditions of this TEP shall prevail.

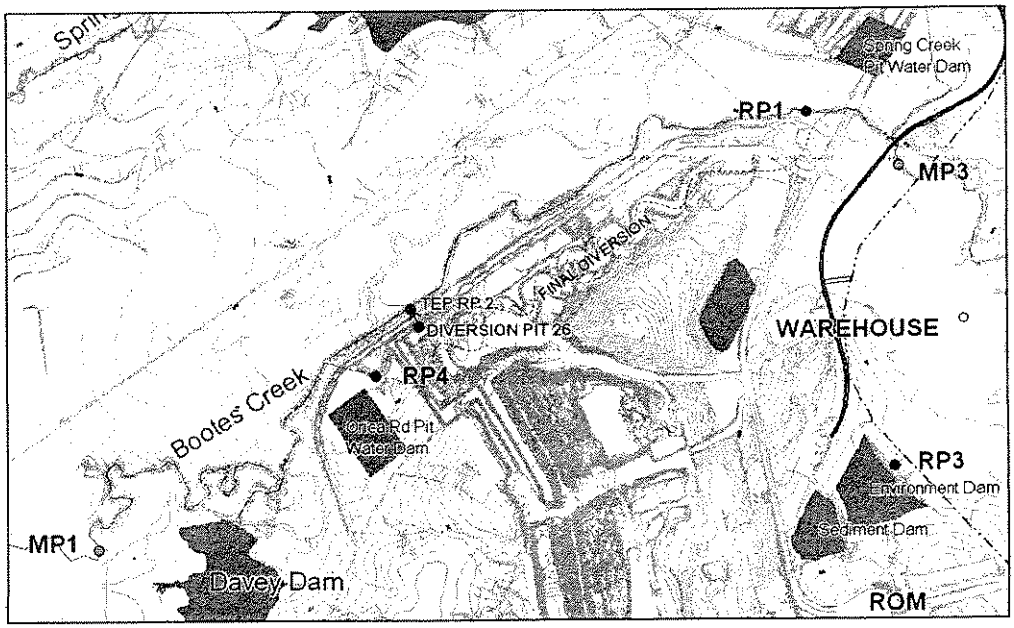
9.3 Release Point

New Release Point TEP 2 will be established at the location identified in Table 5 below and depicted in Figure 2.

Table 5

Release Point (RP)	Easting (GDA94)	Northing (GDA94)	Contaminant Source and Location	Monitoring Point	Receiving waters description
TEP 2	641613	7296708	Diversion Pit 26	End of Pipe	Bootes Creek

Figure 2



9.4 Discharge Limits

The release of contaminants to waters must not exceed the release limits in Table 6 when measured at the monitoring point specified in Table 5 for Release Point TEP 2.

Rolleston Coal requests a temporary amendment to the end of pipe release limit for suspended solids. Typically, the water is transferred to Pit Water Dam, which has been constructed to settle water prior to discharge. Recent sampling of water quality visually indicates the water has settled significantly since the last rainfall events, however Rolleston Coal would like an allowance to increase the limit of end of pipe suspended solids from 1,200 mg/L to a limit of 2070 mg/L (representing 90th percentile of Bootes Creek Upstream data collected since the establishment of the upstream monitoring station in 2005) to account for this temporary change in water management arrangements. The proposed temporary limit is based on historical background data, which indicates that Bootes Creek upstream can exceed 10,000 mg/L with a maximum recorded reading of 17,500 mg/L .

Rolleston Coal will manage the discharge pumps and apply the prescribed dilution factors to reduce the potential for elevated levels of suspended solids at the receiving waters downstream monitoring point.

Table 6 [5]

Quality Characteristic	Release Limits	Monitoring frequency
Electrical conductivity (uS/cm)	1,500	Daily during release (the first sample must be taken within 2 hours of commencement of release)
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	Daily during release (the first sample must be taken within 2 hours of commencement of release)
Turbidity (NTU)	N/A	Daily during release (the first sample must be taken within 2 hours of commencement of release)
Suspended Solids (mg/L)	2,070	Daily during release (the first sample must be taken within 2 hours of commencement of release)
Sulphate (SO_4^{2-}) (mg/L)	1,000	Daily during release (the first sample must be taken within 2 hours of commencement of release)

[5] Taken from Release Limits until 30-NOV-2011 in Environmental Authority MIM800090802 - other than for suspended solids.

9.5 Environmental Requirements

Rolleston Coal will meet all other requirements of EA MIM800090802 which are relevant to discharges from Release Point TEP 2 to Bootes Creek (conditions W1-W19). To the extent of any inconsistency with this Program Component 2 of the TEP and the conditions of EA MIM800090802, the requirement of this TEP shall prevail.

These include, but are not limited to, the following:

(a) Quantity of Release

The daily quantity of contaminants released from Release Point TEP 2 must be measured and recorded at Release Point TEP 2.

(b) Contaminant Flow Rate

The contaminant flow rate must not exceed 20% of the flow rate of Bootes Creek which will be calculated at the gauging station at Monitoring Point MP 3.

(c) Minimum Flow requirements of Receiving Waters

The Minimum Flow in Receiving Water for a Release Event from Release Point TEP 2 is 0.75m3/s (750L/s) at the release point, which will be calculated at the gauging station at Monitoring Point MP 3.

(d) Receiving Environment Contaminant Trigger Levels

The water quality of Bootes Creek will be monitored in accordance with condition W18 of the EA MIM800090802 and Rolleston Coal will comply with EA condition W19 during any release events from Release Point TEP 2.

9.6 Water Quality Monitoring

No new Monitoring Points are proposed in Bootes Creek.

Monitoring will comply with EA MIM800090802 during any release event at Release Point TEP 2.

9.7 Risks of Actual Environmental Harm

The largest risk of environmental harm from releasing from Diversion Pit 26 is the potential for increased levels of suspended solids to be discharged to Bootes Creek. Typically the water is transferred to Pit Water Dam, which has been constructed to settle the water prior discharge. However, recent sampling of water quality visually indicates the water has settled significantly since the last rainfall events, and Rolleston Coal will manage the discharge pumps and conduct daily analysis to reduce the potential for elevated levels of suspended solids.

Rolleston Coal is confident there will be minimal potential for contamination from this release. Rolleston Coal does not anticipate any impact to aquatic flora and fauna as the pit inflow is a result of recent rainfall events and the discharge will occur in accordance with condition W9 of EA MIM800090802 at a dilution ratio to minimise the potential for environmental harm.

Release Point TEP 2 will be established such that releases will not cause erosion of the bed and banks of the receiving waters, or cause a material build up of sediment in the receiving waters.

9.8 Notifications and Reporting

(a) Discharge Notifications

Rolleston Coal will comply with the notification conditions of EA MIM800090802 in relation to releases from Release Point TEP 2 set out at conditions W12 and W13.

(b) Exceedence Notifications

Rolleston Coal will comply with the notification conditions of EA MIM800090802 in relation to releases from Release Point TEP 2 set out at conditions: W6, W14 and W15.

(c) Investigation Notification

If Rolleston Coal is required to complete an investigation in accordance with EA condition W5(2)(b) or W19(2)(b) the investigation report must be submitted to DERM within seven days of completing the report.

(d) Monitoring Results Reporting

During Releases from TEP 2 Rolleston Coal will submit to DERM a weekly summary report with the available daily sampling results for water quality characteristics in Table 6 for releases from Release Point TEP 2. Total Suspended Solids data will be analysed by an accredited third party laboratory, and are generally available within 10-14 days of being submitted.

(e) Decommissioning Report

Rolleston Coal will complete and lodge with DERM a Decommissioning Report outlining actions undertaken under TEP Program Component 2 and summarising compliance against this TEP and EA MIM800090802 for discharges from Release Point TEP 2 within 56 days of the cessation of the final discharge from Release Point TEP 2.

9.9 Program Action Plan

The above objectives will be achieved in accordance with the Program Action Plan which is set out below. The Program Action Plan includes performance indicators and key dates by which actions will be implemented.

Table 7: Program Component 2 Action Plan

Objective No	Action Plan Item	Performance Indicator	Completion Date
1	AP 1- Establish Release Point TEP 2 by establishing necessary infrastructure and notify DERM when established.	Necessary infrastructure located and commissioned and notification given to DERM	Within 48 hours of approval of this TEP
3	AP 2 – Commence first discharge in accordance with TEP and EA MIM800090802.	Discharge occurring	Within 48 hours of approval of this TEP
4	AP 3- Notification to DERM of commencement of release event at Release Point TEP 2 in accordance with EA Condition W 12.	Notification to DERM	No later than six (6) hours of having commenced releasing mine affected water to the receiving environment
2	AP 4 - Monitoring in accordance with EA MIM800090802 .	Daily Monitoring	Daily during discharge
1 and 6	AP 5 - Cease discharge if an exceedence of Discharge Limit in Table 6 is identified. Discharge may recommence when the relevant water quality characteristic returns to compliance.	Discharge ceases	As soon as practicable after an exceedence is identified. Discharge may recommence when the relevant water quality characteristic returns to compliance

Objective No	Action Plan Item	Performance Indicator	Completion Date
4	AP – 6 Submit weekly summary report during Releases from TEP 2 of the available daily sampling results for water quality characteristics in Table 6 for releases from Release Point TEP 2.	Report submitted to DERM	Weekly during discharge from Release Point TEP 2
4	AP 7 - Notification of cessation of release event in accordance with EA condition W13	Notification to DERM	Within 24 hours of cessation of discharge
3	AP 8 – Cease discharge at completion of Program Component 2.	Discharge ceases	Final discharge to cease by 28 May 2010[6]
5	AP 9 - Submission with DERM the final report outlining actions undertaken under TEP Program Component 2 and summarising compliance against TEP and EA MIM800090802 for discharges from Release Point TEP 2.	Report submitted to DERM	Within 56 days after cessation of final discharge and no later than 23 July 2010
6	AP 10 – Meet all requirements of EA MIM800090802 in relation to release of contaminants to Bootes Creek (conditions W1-W19) for discharges from Release Point TEP 2 not inconsistent with this TEP.	Compliance	At all times during discharge from Release Point TEP 1

[6] In the event of continuing rainfall and continued inflows into the pits, Rolleston Coal may approach DERM to approve an amendment to the completion date of this action plan item. The discharge may also be finalised earlier than this date.

10. Receiving Environment Monitoring Program

Rolleston Coal will incorporate results from release at Release Points TEP 1 and TEP 2 in the Receiving Environment Monitoring Program (REMP) in the report to be provided by 1 October 2011 under condition W22 of EA MIM800090802.

11. Stakeholder Notification

Prior to undertaking the initial discharge Rolleston Coal will:

(a) notify adjoining land holders, (including National Parks) and Central Highlands Regional Council of the discharge event where Rolleston Coal considers that the release is likely to impact upon the passability of Springwood Road; and

(b) notify the owner of "Meteor Park" of the approval of this TEP and the authorisation of discharge of mine affected water to Meteor Creek via Sandy Creek.

12. Complaint Response

All complaints received must be recorded including details of complainant, reasons for the complaint, investigations undertaken, conclusions formed and actions taken. This information must be made available for inspection by DERM on request.

13. Term of the TEP

The proposed term for each component of the TEP is as follows:

Program Component	Action Plan Completion Date
1 – Meteor West Pit	56 days after submission of Final Report under Objective 5 and no later than 17 September 2010.
2 – Diversion Pit 26	56 days after submission of Final Report under Objective 5 and no later than 17 September 2010.

14. Further information

For further information contact [redacted]

[redacted]

Rolleston Coal Pty Ltd
Xstrata Coal Queensland
P.O. BOX 11
Springsure QLD 4722

Mobile:

Email [redacted]

2.3 TEP Approval MAN9879 – 5 March 2010

ecoaccess
environmental licences and permits

Environmental Services - Mining

Transitional environmental program certificate of approval number MAN9879

This certificate of approval is issued by the administering authority pursuant to section 339 of the Environmental Protection Act 1994. *An 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:

Xstrata Coal Queensland Pty Ltd
Level 10 Riverside Centre
123 Eagle Street
BRISBANE QLD 4000

ICRA Rolleston Pty Ltd
Level 15
Commonwealth Bank Building of Australia
240 Queen St
BRISBANE QLD 400

Sumisho Coal Australia Pty Ltd
Level 34
Central Plaza One
BRISBANE QLD 4000

approving the draft transitional environmental program; titled Transitional Environmental Program (TEP) Rolleston Coal Mine Meteor West Pit and Diversion Pit 26 (received 5 March 2010) for management of pit detwatering at Rolleston Mine.

The draft transitional environmental program, dated 5 March 2010, was received by this office on 5 March 2010.

The transitional environmental program remains in force until 17 September 2010.

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.

Queensland Government

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

ecoaccess
environmental licences and permits

Notice

Transitional environmental program certificate of approval

Should you have any queries in relation to this Notice, [redacted] of the department on telephone [redacted] would be happy to assist you.

[redacted]
SIGNATURE

5 March 2010
DATE

[redacted]
Delegate of the Administering Authority
Manager – Environmental Services (Mining)
Central West Region

Enquiries:
Department of Environment and Resource Management
PO Box 906
EMERALD QLD 4720
Phone: 4980 6200
Fax: 4982 2568

ecoaccess
licences and permits

Notice

Environmental Services - Mining

Decision to grant an approval for a draft transitional environmental program

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

Mr Glenn Burlinson
Senior Site Manager and SSE
Rolleston Coal Mine
PO Box 11
SPRINGSURE QLD 4722

[redacted]
Xstrata Coal QLD
PO Box 11
SPRINGSURE QLD 4722

Your reference: Transitional Environmental Program (TEP) Rolleston Coal Mine Meteor West Pit and Diversion Pit 26 – 5 March 2010

Our reference : EMD866:MAN9879

Attention: Mr Glenn Burlinson,

Re: Application for an approval for a transitional environmental program for water management at Rolleston Coal Mine.

Thank you for your application for an approval for a transitional environmental program. This application has been issued with the Certificate Approval number: MAN9879.

Your application, which was received by this office on 5 March 2010, has been approved.

A copy of the certificate of approval, 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 **$3868.00** 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

Notice

Should you have any queries in relation to this Notice, [redacted] of the department on telephone [redacted] would be happy to assist you.

[redacted]

SIGNATURE

5 March 2010

DATE

[redacted]
Manager (Environmental Services - Mining)
Central West Region
Delegate of the Administering Authority
Environmental Protection Act 1994

Enquiries:
Department of Environment and Resource Management
PO Box 906
EMERALD QLD 4720
Phone: 4980 6200
Fax: 4982 2568

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

2.4 Water Release Event Report – 14 April 2010

ROLLESTON
COAL

Rolleston Coal Mine

Environmental Authority: MIM800090802

WATER RELEASE EVENT - REPORT

1 FEBRUARY – 17 MARCH 2010

April 14, 2010

Rolleston Coal Pty Ltd ABN 73 106 690 037
Dawson Highway, Via Rolleston, PO Box 11, Springsure QLD 4722

Managed by
xstrata
coal

Intentional Blank Page

Rolleston Coal Pty Ltd ABN 73 106 690 037
Dawson Highway, Via Rolleston, PO Box 11, Springsure QLD 4722
Telephone 07 4988 9100 Facsimile 07 4988 9151 Internet www.xstrata.com

Contents

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1. Background

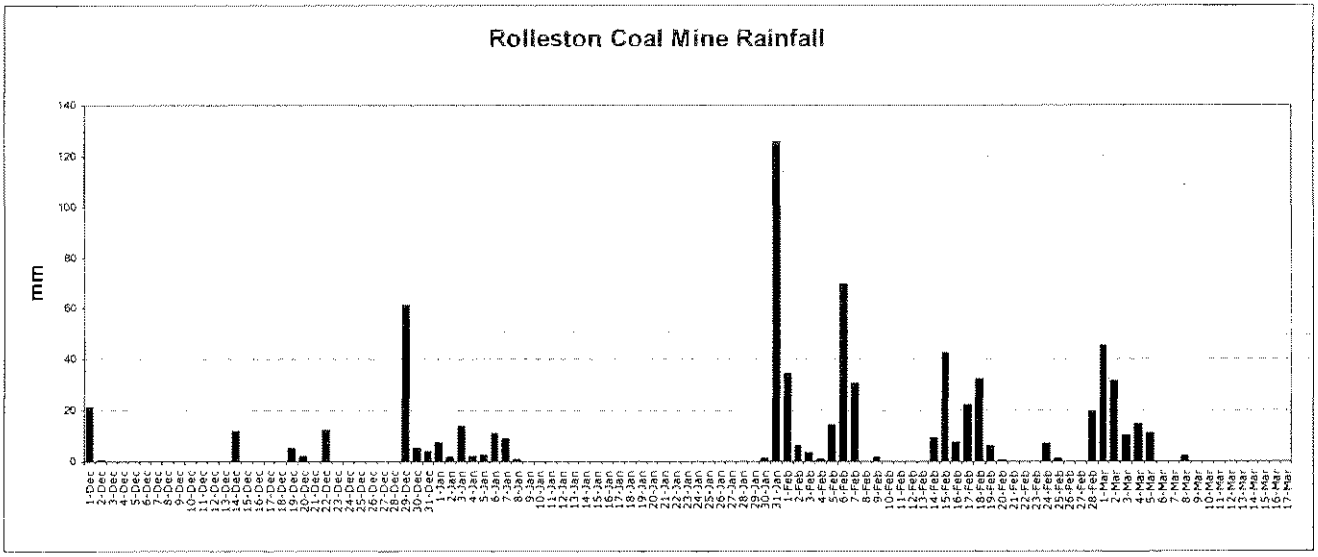
This report is prepared in accordance with the requirements to report on release events to DERM , under Licence EA MIM 800090802, specifically condition WW15, and in General Conditions W1 – W19, for the Q1 2010 rainfall event impacting Rolleston Coal.

This report has been prepared based on results received and interpretations undertaken of samples collected during the period 1 February – 17 March.

Lease:	Mining Lease ML 70307	
Lease area:	4875 Ha	
Release period:	1 February 2010 – 17 March 2010	
Total release:	960 ML	
Rainfall:	1/2/2010-17/3/2010 – Rolleston Coal Mine	551mm
	(YTD 1/1/2010 – 28/3/2010 - Rolleston Coal Mine	616mm)

The initial rainfall in December resulted in saturation of the area which impacted on runoff from the rain in late January early February and later.

Graph 1: Rainfall Rolleston Coal Mine 1/12/10 - 17/3/10



2. Department Interest – Water

In accordance with EA MIM 800090802 this report is assessing performance of Xstrata Rolleston Coal Mine, against Licence conditions through a major flooding and release event in Q1 2010.

> ***EA Condition W1*** *–"Contaminants that will or have potential to cause environmental harm must not be released directly or indirectly to any waters except as permitted under this environmental authority".*

During this significant rainfall and flooding event, Rolleston Coal did not release contaminants that will or have potential to cause environmental harm directly or indirectly to any waters except as permitted under this environmental authority, and conditions therein. All contaminant releases of note are recorded in the relevant sections below.

2.1.Contaminant Release Points

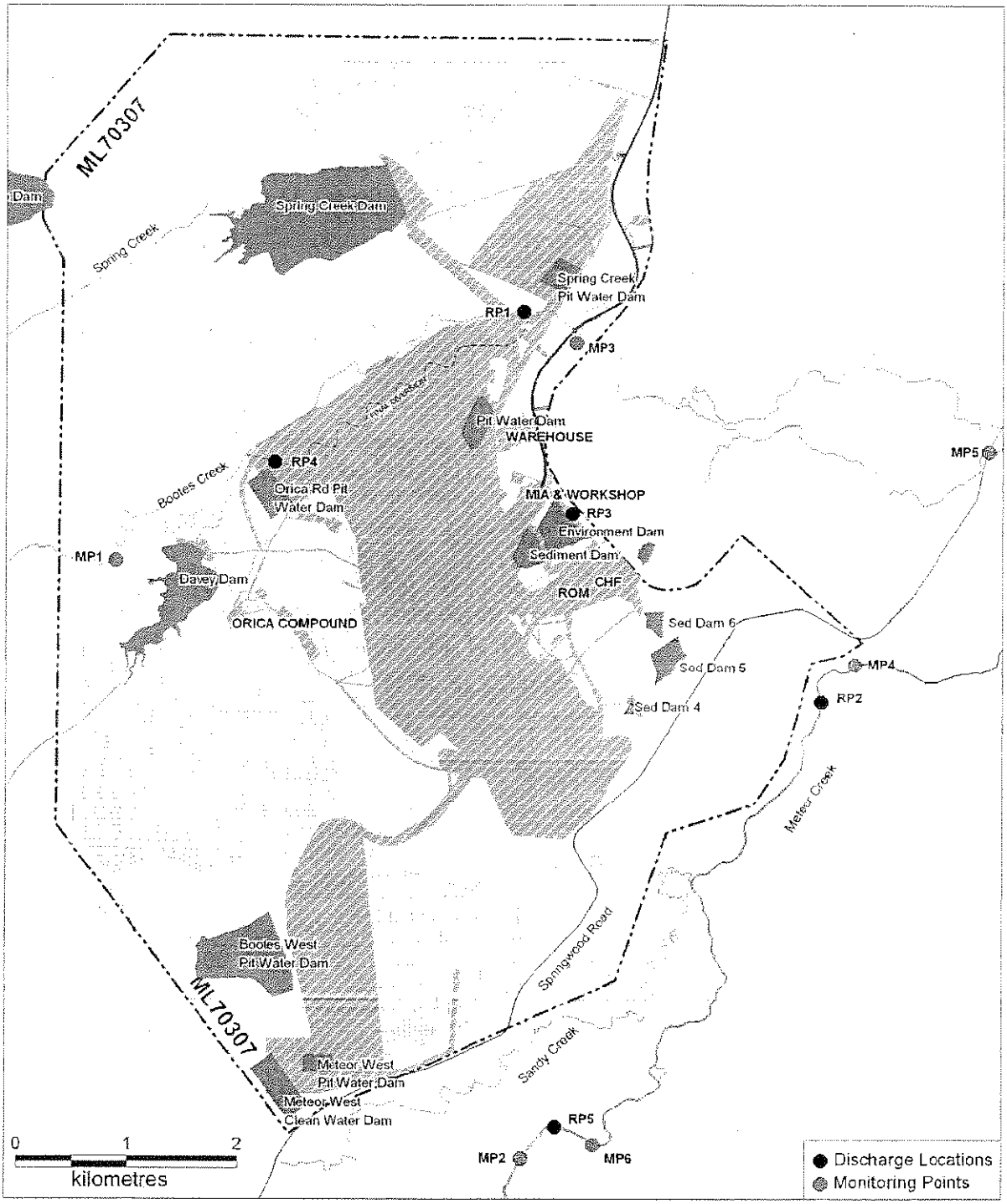
> ***EA Condition W2*** *- "The release of contaminants to water must only occur from the release points specified in Table 1 and depicted in Appendix 1 of this environmental authority".*

During this release period the releases of contaminants was in accordance with EA condition W2, (i.e. RP1 & RP3) unless approved otherwise (viz: TEP Approved for Rolleston Coal Mine, Meteor West Pit and Diversion Pit 26). (Table 1, Figure 1)

Table 1: Contaminant release points

Release Point	Easting (GDA94)	Northing (GDA94)	Contaminant Source and Location	Monitoring Point	Receiving Waters Description
RP 1	**643688**	**7297724**	**Bootes Creek Discharge Point 1**	**End of Pipe**	**Bootes Creek**
RP 2	646373	7294170	Meteor Creek Discharge Point 1	End of Pipe	Meteor Creek
RP 3	**644115**	**7295882**	**Environment Dam**	**Spillway**	**Bootes Creek**
RP 4	641632	7296357	Bootes Creek Discharge Point 2	End of Pipe	Bootes Creek
RP 5	643974	7290327	Meteor Creek Discharge Point 2	End of Pipe	Meteor Creek

Figure 1: Location Plan



2.2.Contaminant Release Limits

EA Condition W3 – *"The release of contaminants to waters must not exceed the release limits stated in Table 2 when measured at the monitoring points specified in Table 1 for each quality characteristic".*

During the release period the release of contaminants to waters did not exceed the release limits stated in Table 2, aside from those results listed below and discussed in Section 4.

Table 2: Release Limits for contaminants

Quality Characteristic	Release Limits	Monitoring frequency
Electrical conductivity (uS/cm)	1500	Daily during release (the first sample within 2 hours of commencement of release)
pH (pH Unit)	6.5 (min) 9.0 (max)	Daily during release (the first sample within 2 hours of commencement of release)
Turbidity (NTU)	NA	Daily during release (the first sample within 2 hours of commencement of release)
Suspended Solids (mg/L)	1200	Daily during release (the first sample within 2 hours of commencement of release)
Sulphate (SO_4^{2-}) (mg/L)	1000	Daily during release (the first sample within 2 hours of commencement of release)

A total of 21 samples returned anomalous results from upstream sampling (Section 2.2.5) and 28 Samples returned anomalous results from release point or points downstream from the release points.(Sections: 2.2.1, 2.2.2, 2.2.3, 2.2.4 below). Samples recorded above Release Limits were as listed below:

2.2.1. RP1

Release Point 1 (RP1) received water from Bootes Creek, Spring Creek, Environment Dam and Pit Water Dam. Monitoring point 3 (MP3) is downstream *(and MP5 further down) (Figure 1). Results are attached in Table 3.

Table 3: RP1 Anomalous Results

Sample Number	Date	Location	Quality Characteristic	Limit	Result	Comment
E1002147001	03/2/ 2010	Spring Creek PWD End of Pipe	Suspended Solids	1200	2780 mg/L	These samples are related to the initial flooding event and subsequent release from McDonald's Dam, and Spring Creek, on 24/2/2010 (Section 5.8) which included several samples reported related to this event.
E1002147002	4/2/2010				1690	
EB1002258006	07/02/2010				8380 mg/L	
EB1002258008	08/02/2010				3160 mg/L	
EB10022458003	09/02/2010				1840mg/L	
EB1002458004	10/2/2010				2170mg/L	
EB10028822002	11/2/2010				4850 mg/L	
EB1002868001	12/2/2010				2102mg/L	
EB1003003003	15/2/2010				1720 mg/L	
EB1002458002	10/2/2010	Pit Water Dam End of Pipe	pH	9.00	8.99	ALS result was 9.03, which is discounted due to the retention time being longer than recommended for method.
EB1002868002	12/2/2010				8.89	ALS result was 9.06, which is discounted due to the retention time being longer than recommended for method.
EB1004386006	7/3/2010		Suspended Solids	1200	2990 mg/L	It was identified on the 7th March 2010 at 6:40 am, when this sample was taken, that suspended solid levels were outside the discharge limits. Once this was identified discharging from Pit Water Dam End of Pipe ceased.
EB1002258002	06/02/2010	Pit water Dam End of Pipe 2	pH	9.00	9.02	It was identified at 13:50 on the 6th of February 2010, that the pH at PWD end pipe 2 was outside the release limits and subsequently the pump was switched off.
EB1003001004	15/2/2010				8.68	ALS result was 9.18, which is discounted due to the retention time being longer than recommended for method.
EB1003183001	18/2/2010				8.98	ALS result was 9.23, which is discounted due to the retention time being longer than recommended for method.
EB1002258003	6/2/2010	Pit Water Dam End of Pipe 3			9.18	It was identified at 13:50 on the 6th of February 2010 that water discharging from Pit Water Dam End of Pipe 3 was outside the limits of release. Once this was identified discharging ceased from this end of pipe.

2.2.1. MP3/RP1

Table 4: MP3/RP1 Anomalous Result

Sample Number	Date	Location	Quality Characteristic	Limit	Result	Comment
EB1002142001	01/2/2010	Bootes Creek DS Monitoring Stn	Suspended Solids:	1170mg/L	4420 mg/L	Two samples were taken on the 1st of February 2010 at Bootes Creek downstream monitoring station, one registered 4420 mg/L and the other 1340 mg/L for suspended solids. Increases in suspended solids during this time could be a result of first flush. From the 31st of January to the 2nd of February suspended solids at the upstream monitoring station on Bootes Creek registered levels between 2070mg/L and 1240 mg/. On the 3rd of February 2010 these levels dropped significantly.
EB1002142002	01/02/2010				1340 mg/L	
EB1002142003	02/02/2010				1410 mg/L	Increases in suspended solids from the 31st of January to the 2nd of February 2010 could be a result of first flush. From the 31st of January to the 2nd of February suspended solids at the upstream monitoring station on Bootes Creek registered levels between 2070mg/L and 1240 mg/L. On the 3rd of February 2010 these levels dropped significantly. Samples taken on the 2nd of February 2010 further downstream do not exceed suspended solids.
EB100287002	06/02/2010		EC	315uS/cm	347 uS/cm	The level of these anomalies are regarded as a direct result of the flushing of the system and possibly represent a patch or slug of slightly saline material moving through the system.
EB100287003	06/02/2010				330 uS/cm	
EB100287004	07/02/2010		Suspended Solids	1170mg/L	2480 mg/L	This sample was taken at 8:13 am of the 7th of February 2010 registering a suspended solids level outside the receiving water limits. This has not been translated from the upstream nor does it translate to MP5, Bootes downstream monitoring station. These samples are related to the initial flooding event and subsequent release from McDonald's Dam, and Spring Creek, on 24/2/2010 (Section 5.8).

Sample Number	Date	Location	Quality Characteristic	Limit	Result	Comment
EB1002970005	07/02/2010				1260 mg/L	This sample was taken at 21:33 am of the 7th of February 2010 registering a suspended solids level outside the receiving water limits. This has not been translated from the upstream nor does it translate to MP5, Bootes downstream monitoring station. These samples are related to the initial flooding event and subsequent release from McDonald's Dam, and Spring Creek, on 24/2/2010 (Section 5.8).
EB1003004008	15/2/2010				1410 mg/L	Suspended solids at Bootes Creek downstream monitoring station reported levels outside the release limits. This could be due to the higher suspended solids level reported upstream at Bootes Creek on the 15th of February 2010.

2.2.1. RP1/RP3 (MP5)

Table 5: RP1/RP3 (MP5) Anomalous result

Sample Number	Date	Location	Quality Characteristic	Limit	Result	Comment
EB1005126001	18/3/2010	Bootes Creek at Springwood road	EC	315 uS/cm	316 uS/cm	This result is in with acceptable margin of error for the method of analysis. And was returned after cessation of discharge from site. This indicates a natural or non-mine source.

2.2.1. RP3

A single anomalous result was recorded and reported from release point 3 (RP3)(Table 6).

Table 6: RP 3 Anomalous Result

Sample Number	Date	Location	Quality Characteristic	Limit	Result	Comment
EB1002457006	10/2/2010	Environment Dam end of Pipe	Suspended Solids	1200 mg/L	1470 mg/L	Reported to DERM 2/3/2010 (W14). Investigation complete (as per W15 req.). Result was an anomaly not consistent with water quality indicated in the 29 other samples from this location which were in within limits. Results were sent in report 24/2/2010 to DERM

2.2.1. MP1/RP1 (Background Anomalies)

All of the results in Table 7 are from background (upstream sample sites) indicating that anomalous results can be derived from natural or non-mining sources.

2.1.Release contaminant trigger investigation levels

EA Condition W4 – *"The release of contaminants to waters from the release points must be monitored at the locations specified in Table 1 for each quality characteristics and at the frequency specified in Table 2 and Table 3".*

The release of contaminants (Table 8 below), to waters from the release points were monitored at the locations specified in accordance with EA condition W4.

The exceptions to this were the approved TEP release points where additional monitoring was undertaken, and will been reported in a separate report.

Table 7: Release contaminants trigger investigation levels.

Quality Characteristic	Trigger Levels (ug/l)	Frequency
Aluminium	650	Within 2 hours of commencement of release and there after weekly
Arsenic	13	
Cadmium	0.2	
Chromium	3	
Copper	13	
Iron	520	
Lead	10	
Mercury	0.2	
Nickel	11	
Boron	370	
Cobalt	90	
Molybdenum	34	
Selenium	10	
Silver	1	
Uranium	1	
Vanadium	10	
Ammonia	900	
Nitrate	1100	
Petroleum hydrocarbons (C6-C9)	20	
Petroleum hydrocarbons (C10 – C36)	100	
Zinc	8	

Table 8: Background anomalous results

Sample Number	Date	Location	Quality Characteristic	Limit	Result	Comment
EB1002145001	31/1/2010	Bootes Creek US Monitoring Stn	Suspended Solids	1170 mg/L	1340 mg/L	Upstream source not related to mine activity, no investigation required, these results indicate that contaminants are from non-mine sources and or natural events. Where relevant these results have been captured to assess the anomalous results downstream.
EB1002145002	01/02/2010				1240 mg/L	
EB 1002145003	02/02/2010				2070 mg/L	
EB1002871003	06/02/2010				1300 mg/L	
EB1002871004	06/02/2010				2940 mg/L	
EB1002868005	13/02/2010		EC	315 uS/cm	321 uS/cm	
EB1003181003	16/02/2010		Suspended Solids	1170 mg/L	1460 mg/L	
EB1003181005	18/2/2010				1200 mg/L	
EB1003462003	22/2/2010		EC	315uS/cm	339 uS/cm	
EB1003462004	23/02/2010				360 uS/cm	
EB1004037001	24/2/2010				402 uS/cm	
EB1004037004	27/2/2010				377 uS/cm	
EB1004037005	28/02/2010				409 uS/cm	
EB1004383003	05/03/2010		Suspended Solids	1170mg/L	1700 mg/L	
EB1004383005	07/03/2010		EC	315uS/cm	355 uS/cm	
EB1004383005	07/03/2010		Suspended Solids	1170mg/L	2650 mg/L	
EB1004383006	08/03/2010				2720 mg/L	
EB1004809001	09/03/2010		EC	315uS/cm	330 uS/cm	
EB100489004	12/03/2010				366 uS/cm	
EB100489005	13/3/2010				386 uS/cm	
EB1005126003	17/3/2010				525 uS/cm	
EB 1005126004	18/3/2010				538 uS/cm	

EA Condition W5 – *" If quality characteristics of the release exceed any of the trigger levels specified in Table 3 during a release event, the environment authority holder must compare downstream results in the receiving waters to the trigger values specified in Table 3 and:*

1) *Where trigger values are not exceeded then no action is to be taken; or*
2) *Where the downstream results exceed the trigger values specified in Table 3 for any quality characteristic, compare the results of the downstream site to the data from the background monitoring sites and;*
   - *(a) If the result is less than the background monitoring site data, the 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 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*

Quality characteristics of the release which have exceeded trigger levels specified in Table 8 (above) have been assessed in accordance with Condition W5.

EA Condition 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".*

Quality characteristics of samples from the release monitoring program, above the trigger levels specified in Table 8, which have been assessed as an exceedance in accordance with Condition W5 2(b)(ii) have been notified to the administering authority. None of the results are currently regarded as having potential for environmental harm.

Details of these notifications are included in Section 5. Complete results are included in Appendix B.

2.2.Contaminant release – natural flow rates

EA Condition 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 4 for any receiving water into which a release occurs.*

The authority holder has installed, operated and maintained stream flow gauging stations in accordance with EA condition W7. (Table 9)

Table 9: Contaminant release during flow events (minimum flow rates)

Receiving Waters Description	Release Point	Gauging station description	Easting (GDA94)	Northing (GDA94)	Minimum Flow in receiving Water required for a release Event	Flow recording Frequency
Bootes Creek	RP 1	Bootes Creek Discharge Point 1	643688	7297724	0.75 m^3/s (750L/s)	Continuous (minimum daily)
Bootes Creek	RP 3	Environment Dam	644115	7295882		
Bootes Creek	RP 4	Bootes Creek Discharge Point 2	641632	7296357		
Meteor Creek	RP 2	Meteor Creek Discharge Point 1	646373	7294170	2.5m^3/s (2500L/s)	
Meteor Creek	RP 5	Meteor Creek Discharge Point 2	643974	7290327		

EA Condition 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 4 for the contaminants release points specified in Table1.*

The release of contaminants was undertaken in accordance with the requirements of EA Condition W8. As indicated in Graph 2 below, the release rate was maintained in accordance with the required flow rates and the flow rates were monitored at the release points. The relationship can be seen on Graph 3.

EA Condition W9 – *"Contaminant release flow rate must not exceed 20% of the receiving water flow rate".*

The contaminant flow rate did not exceed 20% of the receiving water flow rate as required in Condition W9. (Graph 3)

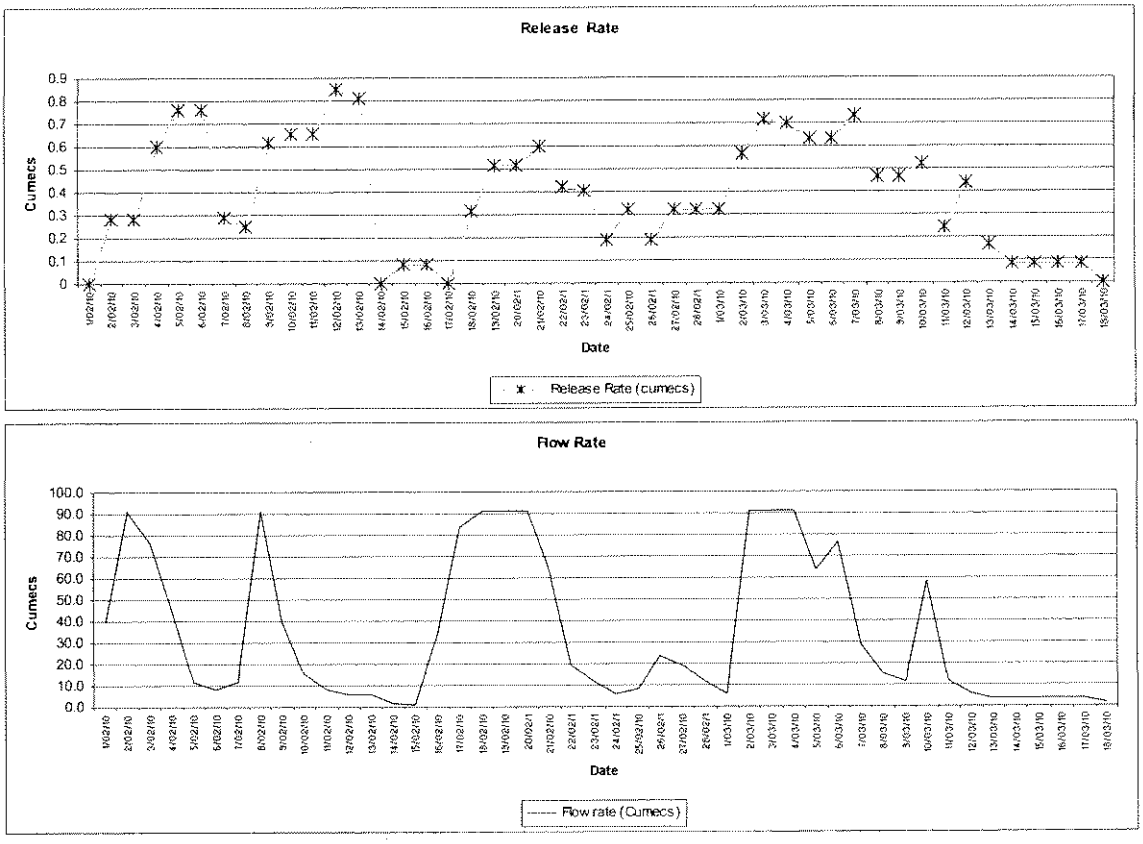
EA Condition W10 – *"The daily quantity of contaminants released from each release point must be measured and recorded at the monitoring points in Table 1".*

The daily quantity of contaminants released from each release point was monitored in accordance with condition W10.

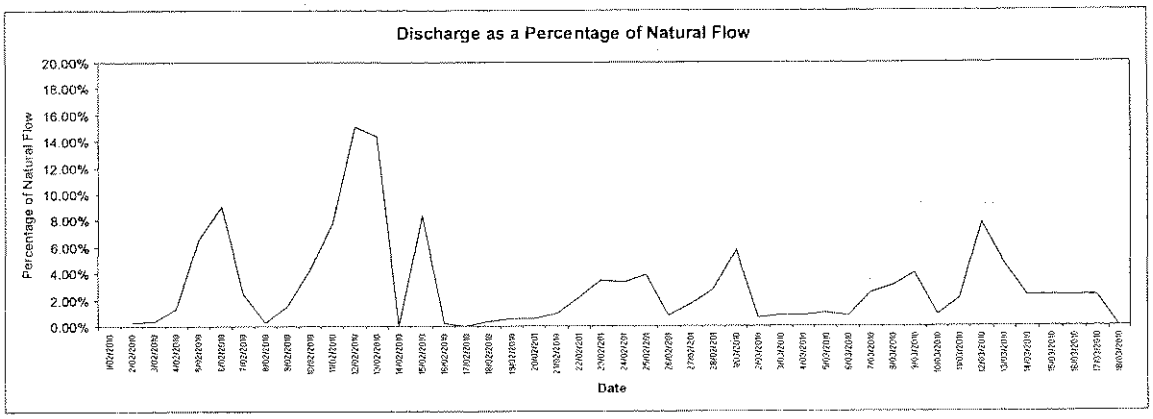
EA Condition W11 – *"Releases to waters must be undertaken so as not to cause erosion of the bed and the banks of the receiving waters, or cause a material build up of sediment in such waters".*

The release to waters was undertaken in accordance with the requirements of condition W11. RP 1 & 3 were the release points used during this event.

Graph 2: Release Rates & Flow Rates



Graph 3: Contaminant Flow Rate as % of Natural Flow Rate



2.3.Notification of Release Event

EA Condition W12 – *"The authority holder must notify the administering authority as soon as practicable (no later than six (6) hours) of 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 natural flow rate; and

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

The authority holder notified the administering authority in accordance with condition W12, on commencing release of mine affected water. (Section 5)

EA Condition W13 – *"The authority holder must notify the administering authority as soon as practicable (nominally within 24 hours of cessation of a release) of the cessation of a release notified under Condition W12 and within twenty eight days (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 Agency 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".

The authority holder notified the administering authority in accordance with Condition W13 of the cessation of release. Detail of this notification is included in Section 5.

This report is written notification of information in accordance with condition W13.

2.4.Notification of a Release Event Exceedance

EA Condition W14 – *"If the release limits defined in Table 2 are exceeded, the holder of the environmental authority must notify the administering authority within 24 hours of receiving the results".*

The holder of the environmental authority has notified the administering authority in accordance with Condition W14 as required (Section 5).

EA Condition 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; all calculations; and
e) Any other matters pertinent to the water release event".

The February / March rain event was an exceptional event beyond site capacity to contain all rainwater and overland flow on the Mine lease, requiring release via approved release points. In addition a Transitional Environmental Program was approved for additional release from Meteor West Pit and Diversion Pit 26 during the event. Separate reports are being prepared for the TEP.

A previous notification 24/2/2010 was sent to DERM in respect to release event of Zinc, Vanadium and suspended solids. (Section 5).

The authority holder is providing this report to the administering authority to meet the requirements of condition W15.

2.5.Onsite water storage monitoring

EA Condition W16 – *"Water storages stated in Table 5 which are associated with the release points must be monitored for the water quality characteristics specified in Table 6 at the monitoring locations and at the frequency specified in Table 5".*

Water storages (Table 10 below) associated to release points have been monitored for the water characteristics as required (Table 11) at the specified locations (Table 12).

Table 10: Onsite water storage monitoring locations

Water Storage Description	Easting (GDA94)	Northing (GDA94)	Monitoring Location	Frequency of Monitoring
Environment Dam	643833	7295779	Embankment	Quarterly
Pit Water Dam	643253	7296718	Embankment	
Sediment Dam 5	644993	7294574	Embankment	
Sediment Dam 6	644857	7294123	Embankment	
Meteor West PWD	641839	7290898	Embankment	
Orica Road PWD	641415	7296375	Embankment	
Spring Creek PWD	643999	7298059	Embankment	

2.6.Onsite water storage contaminant limits

EA Condition W17 – *"In the event that water storages defined in Table 5 exceed the contaminant limits defined in Table 6, the holder of the environmental authority must implement measures, where practicable, to prevent access to waters by all livestock".*

The contaminants in the surface water storages may have been significantly diluted due this reported rain and release event. Contaminants were monitored in accordance with Condition W17 (Table 11).

Table 11: Onsite water storage contaminant limits

Quality characteristics	Test Values	Contaminant Limit[1]
pH (pH unit)	Range	Greater than 4,less than 9.5
EC (uS/cm)	Maximum	5970
Sulphate (mg/L)	Maximum	1000
Aluminium (mg/L)	Maximum	5
Arsenic (mg/L)	Maximum	0.5
Cadmium (mg/L)	Maximum	0.01
Cobalt (mg/L)	Maximum	1
Copper (mg/L)	Maximum	1
Lead (mg/L)	Maximum	0.1
Nickel (mg/L)	Maximum	1
Zinc (mg/L)	Maximum	20
[1] Contaminant Limits based on ANZECC & ARMCANZ (2000) stock water quality guidelines.		

2.7.Receiving water contaminant levels & monitoring points

EA Condition W18 – *"The quality of receiving waters must be monitored at the locations specified in Table 8, and shown in Appendix 1 for each quality characteristic and at the monitoring frequency stated in Table 7".*

The quality receiving waters were monitored in accordance with the requirements of Condition W18 (Table 12, Table 13).

Table 12: Receiving Water contaminant trigger levels

Quality characteristics	Trigger Level	Monitoring Frequency
pH	6.5 – 9.0	Daily during release
Electrical Conductivity (uS/m)	315 (Bootes Creek) 500 (Meteor Creek)	
Suspended Solids (mg/L)	1170	
Sulphate (SO42-) (mg/L)	250	

Table 13: Receiving water upstream background & downstream monitoring points

Monitoring Point(MP)	Receiving Waters Location Description	Easting (GDA94)	Northing (GDA94)
Upstream Background Monitoring Points			
MP 1	Bootes Creek Upstream	639993	7295456
MP 2	Meteor Creek Upstream	643665	7290040
Downstream Monitoring Points			
MP 3	Bootes Creek Downstream	644141	7297437
MP 4	Meteor Creek Down Stream	646677	7294504
MP 5	Bootes Creek Downstream	647881	7296451
MP 6	Meteor Creek Downstream	644310	7290161

A previous notification 24/2/2010 was sent to DERM in respect to release event s of Zinc, Vanadium and Suspended Solids (Section 5).

> ***EA Condition W 19*** *– "If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in Table 7 during a release event, the environmental authority holder must compare the downstream 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 the no action is to be taken; or*
> 2. *Where the downstream results exceed the upstream results, complete an investigation in accordance with the ANZECC 7& AARMCANZ 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".*

The environmental authority holder has assessed results exceeding the trigger levels in accordance with the requirements Condition W19, and as necessary, will provide a written report to the administering authority in the next annual return covering investigations and actions resulting from this assessment.

A previous notification 24/2/2010 was sent to DERM in respect to release event s of Zinc, Vanadium and suspended solids (Section 5).

3. Sampling

3.1.Sample Methodology

3.1.1. Calibration

EC, pH and temperature was monitored using the Hanna Pocket Tester. To ensure the accuracy of the readings the Hanna Pocket Tester was calibrated once a day before use. This was a single point calibration of the pH and EC to 7 and 1413 respectively.

Turbidity was monitored using the Hach TSS Portable which does not require calibration. To ensure the accuracy of the monitor, it was frequently checked against a calibrated turbidity metering instrument from Ecowise.

3.1.1. Sampling and Storage

Samples were taken daily throughout the discharge event. Before sampling, the sample bottles were named according the location, date and time the sample will be taken, this ensured that the samples could be tracked.

Samples were taken from flowing water, either directly from the end of pipe or a pump valve, to gather an accurate picture of the discharged from the end of pipe. Once the sample was taken an in situ pH, EC, temperature and turbidity reading was also taken.

Once the sample was taken it was refrigerated until sent offsite to ALS in Brisbane.

Methodology was consistent with standard practices.

3.2.Analytical procedure

Samples were analyses in accordance with ALS standard NATA certified procedures. Access and delivery to the lab was at times delayed due to rain isolation and in ability to deliver to Emerald to deliver to Brisbane within 24 hours.

Some sample retention times did not meet quality control limits and guidelines as indicated in the attached Assay results and quality control reports.

4. Results

As per EA condition W5 some results require investigation as to source or cause of contamination, elevated or anomalous values. Table 14 below summarizes all anomalous values which have been allocated an appropriate level of investigation (last column) in line with Condition W5 in EA MIM800090802. Results are also presented in Table 15 below.

Overall the following general observations are noted:

- Where there is only a single anomalous value (Aluminum, Cadmium, Copper, and Mercury), triggering a W5(2) investigation these are regarded as probable spurious results with unknown provenance at this point in time;
- Chromium & Molybdenum sources are not known and are regarded as potentially spurious results; and
- The majority of Arsenic, Nitrate, Uranium, Vanadium and Zinc values suggest an elevated background for these elements and that the trigger values may be under estimated.
- Upstream sampling (background) returned +60 anomalous results and has been included for completeness on Table 19 in Section 4.4. (including Mercury and Copper anomalous results)

4.1.W5 (1) - Results

Eighty- six sample analyses were of note and followed-up (Table 14):

Table 14: W5 Investigation Assessment

W5 Condition	Number of Analyses as assessed
W5(1)	53
W5(2)(a)	7
W5(2)(b)	26
TOTAL	86

> ***EA Condition W5*** *– " If quality characteristics of the release exceed any of the trigger levels specified in Table 3 during a release event, the environment authority holder must compare downstream results in the receiving waters to the trigger values specified in Table 3 and:*
>
> *(1) Where trigger values are not exceeded then no action is to be taken;*

The fifty three anomalous results (Table 15) determined to be in accordance W5 (1) require no further action and are not discussed further in this report, and have been included for completeness.

Table 15: Summary of Sample Results > Trigger Levels

Location	Date	ALS Sample Number	Quality Characteristic	End of Pipe Level (mg/L)	Monitoring Point Upstream (mg/L)	Monitoring Point Downstream Levels (mg/L)		EA Trigger Level (mg/L)	Investigation
						MP 3	MP 5		
Puds Pond End Pipe	26/02/2010	EB1004044001	Molybdenum	0.077	<0.001	<0.001	0.001	0.034	W5 (1)
Puds Pond End Pipe	26/02/2010	EB1004044001	Uranium	0.002	<0.001	<0.001	<0.001	0.001	W5 (1)
Puds Pond End Pipe	26/02/2010	EB1004044001	Zinc	0.033	0.046	0.035	0.069	0.008	W5 (2b)
Puds Pond End Pipe	26/02/2010	EB1004044001	Nitrate	10	<0.01	0.14	0.12	1.1	W5 (2b)
Puds Pond End Pipe	4/03/2010	EB1004250001	Zinc	0.043	0.006	0.056	0.124	0.008	W5 (2b)
Puds Pond End Pipe	4/03/2010	EB1004250001	Nitrate	3.67	<0.01	0.01	<0.01	1.1	W5 (1)
Puds Pond End Pipe	11/3/2010	EB1004612007	Molybdenum	0.039	<0.001	0.002	0.004	0.034	W5 (1)
Puds Pond End Pipe	11/03/2010	EB1004612007	Nitrate	1.43	<0.01	<0.01	0.36	1.1	W5 (1)
Puds Pond End Pipe 2	21/02/2010	EB1003170004	Copper	0.043	0.005	0.016	0.005	0.013	W5 (1)
Puds Pond End Pipe 2	21/02/2010	EB1003170004	Zinc	0.198	0.078	0.116	0.157	0.008	W5 (2b)
Puds Pond End Pipe 2	21/02/2010	EB1003170004	Nitrate	3.33	0.07	0.14	0.02	1.1	W5 (1)
Puds Pond End Pipe 2	3/03/2010	EB1004250013	Zinc	0.034	0.012	0.026	0.026	0.008	W5 (2b)
Puds Pond End Pipe 2	3/03/2010	EB1004250013	Nitrate	3.54	<0.01	0.07	0.06	1.1	W5 (1)
Puds Pond End Pipe 3	21/02/2010	EB1003170005	Nitrate	3.5	0.07	0.14	0.02	1.1	W5 (1)
Puds Pond End Pipe 3	21/02/2010	EB1003170005	Mercury	0.0003	<0.0001	<0.0001	<0.0001	0.0002	W5 (1)
Sed dam end pipe	3/02/2010	EB1002136003	Zinc	0.065	0.037	0.06	0.112	0.008	W5 (2b)
Sed dam end pipe	19/02/2010	EB1003183005	Zinc	0.071	0.057	0.134	0.126	0.008	W5 (2b)
Sed dam end pipe	26/02/2010	EB1004052001	Arsenic	0.072	<0.001	0.001	<0.001	0.013	W5 (1)
Sed dam end pipe	26/02/2010	EB1004052001	Molybdenum	0.076	<0.001	<0.001	0.001	0.034	W5 (1)
Sed dam end pipe	26/02/2010	EB1004052001	Zinc	0.048	0.046	0.035	0.043	0.008	W5 (2b)
Sed dam end pipe	26/02/2010	EB1004052001	Nitrate	2.21	<0.01	0.14	0.12	1.1	W5 (1)
Sed dam end pipe	2/03/2010	EB1004052003	Zinc	0.031	0.038	0.023	0.036	0.008	W5 (2a)
Sed dam end pipe	9/03/2010	EB1004439005	Arsenic	0.026	<0.001	<0.0001	0.001	0.013	W5 (1)
Sed dam end pipe	9/03/2010	EB1004439005	Molybdenum	0.037	<0.001	<0.001	0.002	0.034	W5 (1)
Sed dam end pipe	9/03/2010	EB1004439005	Zinc	0.034	0.06	0.248	0.052	0.008	W5 (2b)
Sed dam end pipe	9/03/2010	EB1004439006	Nitrate	2.51	<0.01	0.08	0.12	1.1	W5 (1)
PWD end pipe	1/02/2010	EB1001824001	Arsenic	0.019	0.001	<0.001	<0.001	0.013	W5 (1)
PWD end pipe	1/02/2010	EB1001824001	Chromium	0.012	<0.001	<0.001	0.002	0.003	W5 (1)
PWD end pipe	1/02/2010	EB1001824001	Uranium	0.002	<0.001	<0.001	<0.001	0.001	W5 (1)
PWD end pipe	1/02/2010	EB1001824001	Vanadium	0.03	<0.01	0.01	<0.01	0.01	W5 (1)
PWD end pipe	2/02/2010	EB1001824002	Arsenic	0.021	<0.001	0.001	<0.001	0.013	W5 (1)
PWD end pipe	2/02/2010	EB1001824002	Chromium	0.012	<0.001	<0.001	0.002	0.003	W5 (1)
PWD end pipe	2/02/2010	EB1001824002	Uranium	0.002	<0.001	<0.001	<0.001	0.001	W5 (1)
PWD end pipe	2/02/2010	EB1001824002	Vanadium	0.03	<0.01	0.01	<0.01	0.01	W5 (1)
PWD end pipe	8/02/2010	EB1002258006	Vanadium	0.03	<0.01	0.01	0.01	0.01	W5 (1)
PWD end pipe	26/02/2010	EB1004045001	Arsenic	0.026	<0.001	0.001	<0.001	0.013	W5 (1)
PWD end pipe	26/02/2010	EB1004045001	Nitrate	2.49	<0.01	0.14	0.12	1.1	W5 (1)
PWD end pipe	4/03/2010	EB1004244001	Arsenic	0.02	<0.001	0.001	<0.001	0.013	W5 (1)
PWD end pipe	4/03/2010	EB1004244001	Vanadium	0.02	<0.01	0.01	<0.01	0.01	W5 (1)
PWD end pipe	4/03/2010	EB1004244001	Zinc	0.022	0.006	0.056	0.08	0.008	W5 (2b)
PWD end pipe	4/03/2010	EB1004244001	Nitrate	3.43	0.03	0.22	0.01	1.1	W5 (1)
PWD end of pipe No 2	3/02/2010	EB1002138002	Arsenic	0.019	<0.001	<0.001	<0.001	0.013	W5 (1)
PWD end of pipe No 2	3/02/2010	EB1002138002	Uranium	0.002	<0.001	<0.001	<0.001	0.01	W5 (1)
PWD end of pipe No 2	3/02/2010	EB1002138002	Vanadium	0.02	<0.01	0.01	<0.01	0.001	W5 (1)
PWD end pipe 2	15/02/2010	EB1003001004	Arsenic	0.018	<0.001	0.001	0.002	0.013	W5 (1)
PWD end pipe 2	15/02/2010	EB1003001004	Molybdenum	0.039	<0.001	0.005	0.003	0.034	W5 (1)
PWD end pipe 2	15/02/2010	EB1003001004	Uranium	0.002	<0.001	<0.001	<0.001	0.01	W5 (1)
PWD end pipe 2	15/02/2010	EB1003001004	Vanadium	0.02	0.01	0.02	0.01	0.001	W5 (2b)
PWD end pipe 2	15/02/2010	EB1003001004	Zinc	0.01	0.098	0.076	0.069	0.008	W5 (2a)
PWD end pipe 2	15/02/2010	EB1003001004	Nitrate	2.75	0.06	0.32	0.04	1.1	W5 (2b)
PWD End Pipe 2	24/02/2010	EB1003462005	Arsenic	0.025	<0.001	0.002	0.001	0.013	W5 (1)
PWD End Pipe 2	24/02/2010	EB1003462005	Zinc	0.018	0.054	0.031	0.098	0.008	W5 (2b)
PWD End Pipe 2	24/02/2010	EB1003462005	Nitrate	2.31	<0.01	<0.01	0.11	1.1	W5 (1)
PWD end pipe No 2	5/03/2010	EB1004244004	Arsenic	0.021	<0.001	<0.001	0.001	0.013	W5 (1)
PWD end pipe No 2	5/03/2010	EB1004244004	Vanadium	0.02	<0.01	0.01	<0.01	0.001	W5 (2b)
PWD end pipe No 2	5/03/2010	EB1004244004	Zinc	0.026	0.005	0.056	0.09	0.008	W5 (2b)
PWD end pipe No 2	5/03/2010	EB1004244004	Nitrate	3.41	0.04	0.14	0.02	1.1	W5 (2b)
PWD end of pipe No.3	3/02/2010	EB1002138003	Arsenic	0.017	<0.001	<0.001	<0.001	0.013	W5 (1)
PWD end of pipe No.3	3/02/2010	EB1002138003	Uranium	0.002	<0.001	<0.001	<0.001	0.01	W5 (1)
PWD end of pipe No 3	3/02/2010	EB1002138003	Vanadium	0.02	<0.01	0.01	<0.01	0.001	W5 (2b)
PWD end of pipe No 4	4/02/2010	EB1002138007	Arsenic	0.017	<0.001	0.002	<0.001	0.013	W5 (1)
PWD end of pipe No 4	4/02/2010	EB1002138007	Uranium	0.002	<0.001	<0.001	<0.001	0.01	W5 (1)
PWD end of pipe No 4	4/02/2010	EB1002138007	Vanadium	0.02	<0.01	0.02	<0.01	0.001	W5 (2b)
Enviro Dam end pipe	1/02/2010	EB1001824003	Chromium	0.004	<0.001	<0.001	0.002	0.003	W5 (1)
Enviro Dam end pipe	2/02/2010	EB1001824004	Chromium	0.004	<0.001	<0.001	0.002	0.003	W5 (1)
Enviro dam end pipe	8/02/2010	EB1002256003	Zinc	0.086	<0.005	0.104	0.098	0.008	W5 (2b)
Enviro Dam end pipe	15/02/2010	EB1003003004	Zinc	0.077	0.098	0.076	0.069	0.008	W5 (2a)
Enviro dam end pipe	26/02/2010	EB1004051001	Arsenic	0.04	<0.001	0.003	<0.001	0.013	W5 (1)
Enviro dam end pipe	26/02/2010	EB1004051001	Molybdenum	0.067	<0.001	0.002	0.001	0.034	W5 (1)
Enviro dam end pipe	26/02/2010	EB1004051001	Uranium	0.002	<0.001	<0.001	<0.001	0.01	W5 (1)
Enviro dam end pipe	26/02/2010	EB1004051001	Nitrate	1.48	<0.01	0.18	0.22	1.1	W5 (1)
Enviro Dam end pipe	6/03/2010	EB1004396003	Arsenic	0.014	<0.001	<0.001	0.001	0.013	W5 (1)
Enviro dam end pipe 2	8/03/2010	EB1002256004	Zinc	0.097	<0.005	0.104	0.098	0.008	W5 (2b)
Enviro Dam end pipe No 2	17/02/2010	EB1003003006	Zinc	0.098	0.127	0.116	0.073	0.008	W5 (2a)
Enviro dam end pipe No.2	2/03/2010	EB1004051005	Zinc	0.027	0.038	0.023	0.036	0.008	W5 (2a)
Enviro Dam end pipe 2	6/03/2010	EB1004396004	Arsenic	0.019	<0.001		0.001	0.013	W5 (1)
Enviro Dam end pipe 2	6/03/2010	EB1004396004	Zinc	0.024	<0.005		0.01	0.008	W5 (2b)
Enviro Dam end pipe No 3	17/02/2010	EB1003003007	Zinc	0.1	0.127	0.116	0.073	0.008	W5 (2a)
Enviro dam end pipe No.3	3/03/2010	EB1004246007	Zinc	0.04	0.012	0.028	0.026	0.008	W5 (2b)
Enviro Dam end pipe no.4	11/02/2010	EB1002662006	Zinc	0.01	<0.005	0.01	0.006	0.008	W5 (1)
Spring creek PWD end pipe	3/02/2010	EB1002147001	Vanadium	0.06	<0.01	0.01	<0.01	0.001	W5 (2b)
Spring creek PWD end pipe	3/02/2010	EB1002147001	Zinc	0.01	0.037	0.06	0.112	0.008	W5 (2b)
Spring creek PWD end pipe	10/02/2010	EB1002458004	Cadmium	0.0004	0.0004	0.0001	<0.0001	0.0002	W5 (1)
Spring creek PWD end pipe	10/02/2010	EB1002458004	Vanadium	0.05	0.01	0.01	<0.01	0.01	W5 (1)
Spring Creek PWD	15/02/2010	EB1003003003	Aluminium	2.67	0.27	8.74	0.19	0.65	W5 (2b)
Spring Creek PWD	15/02/2010	EB1003003003	Chromium	0.004	0.002	0.013	<0.0001	0.003	W5 (2b)

An analysis of results has been undertaken and the data is presented below in graphs and tables for assessment. Locations of anomalous results highlight Pit Water Dam as a potential priority source of anomalous results, although the numbers of results are not reconciled with volumes of release to determine relevance. The large number of Zinc Anomalies (23) reflects the background & trigger values are underestimated in this environment.

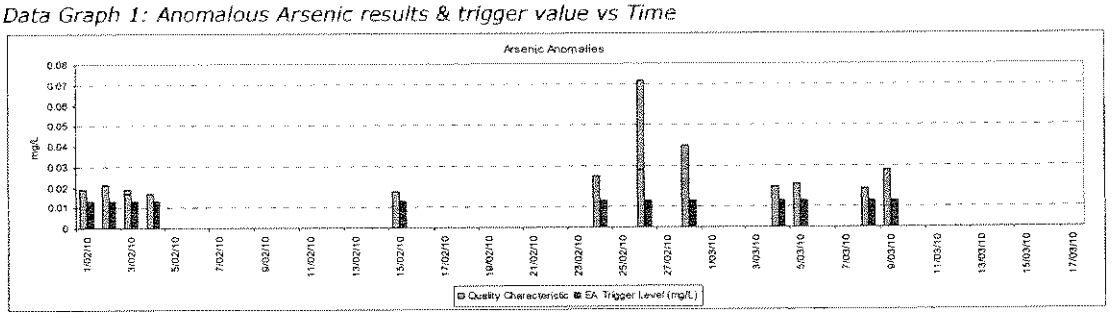
It is also noted the background results also exceeded the trigger values on a number of occasions, suggesting additional data is required to reset trigger values in the future(Section 4.4).

Table 16: W5 trigger values - Location & Anomalous results vs Location

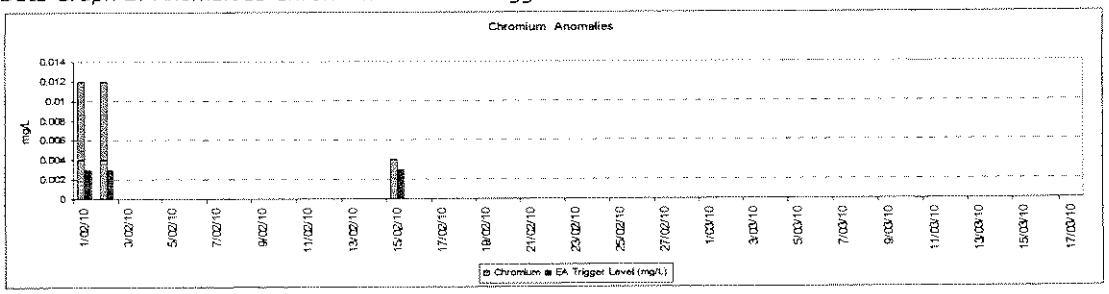
W5 Anomalous results												
	Aluminum	Arsenic	Cadmium	Chromium	Copper	Mercury	Molybdenum	Nitrate	Uranium	Vanadium	Zinc	Total
Puds Pond End Pipe					1	1	2	6	1		4	15
Sed Dam end pipe		2					2	2			5	11
PWD End pipe		10		2			1	5	6	8	4	36
Enviro dam		3		2			1	1	1		9	17
Spring Creek Dam PWD	1		1	1					1	2	1	7
	1	15	1	5	1	1	6	14	9	10	23	86

The assessment of results vs time (Data Graphs 1- 7) indicate a general correlation with rain events. Uranium (Data Graph 4) indicates a potential for background to be slightly higher, with results only reaching twice LOR. LOR is equivalent to EA requirements and as such the results show little significance in this environment. Vanadium results (Data Graph 6) are inconsistent rain events.

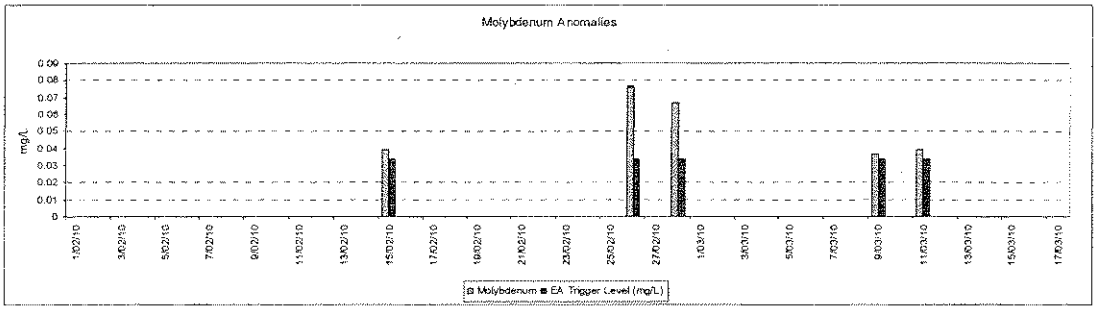
Data Graph 1: Anomalous Arsenic results & trigger value vs Time



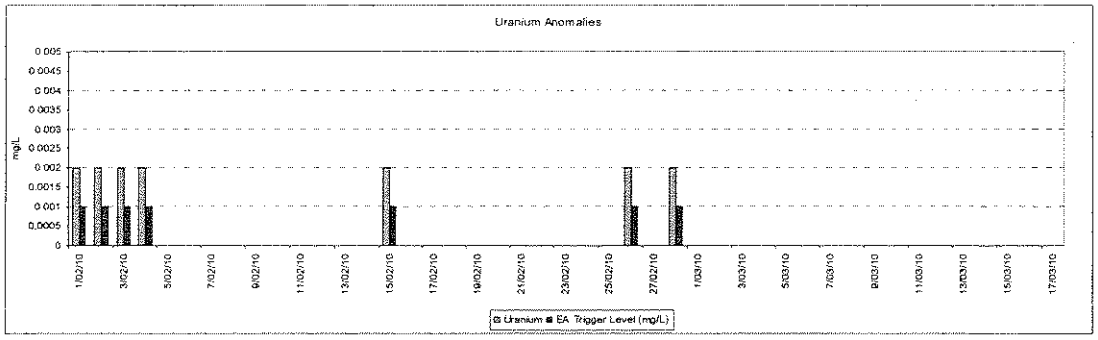
Data Graph 2: Anomalous Chromium results & trigger value vs Time



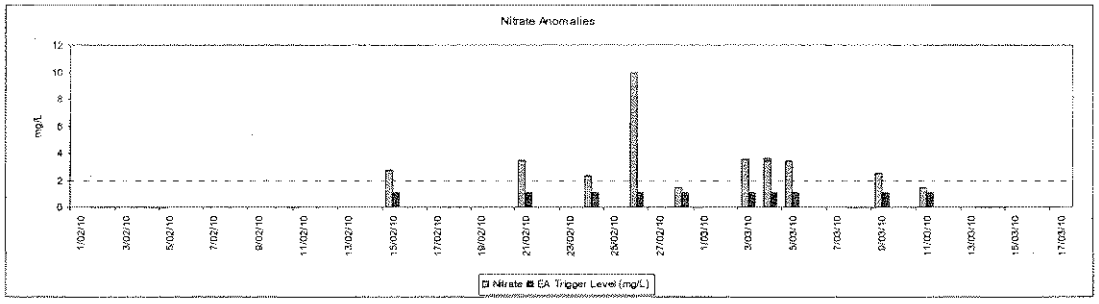
Data Graph 3: Anomalous Molybdenum results & trigger value vs Time



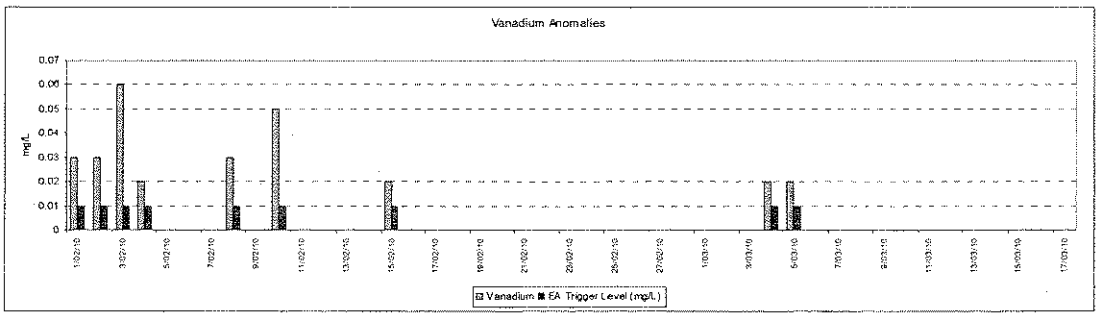
Data Graph 4: Anomalous Uranium results & trigger value vs Time



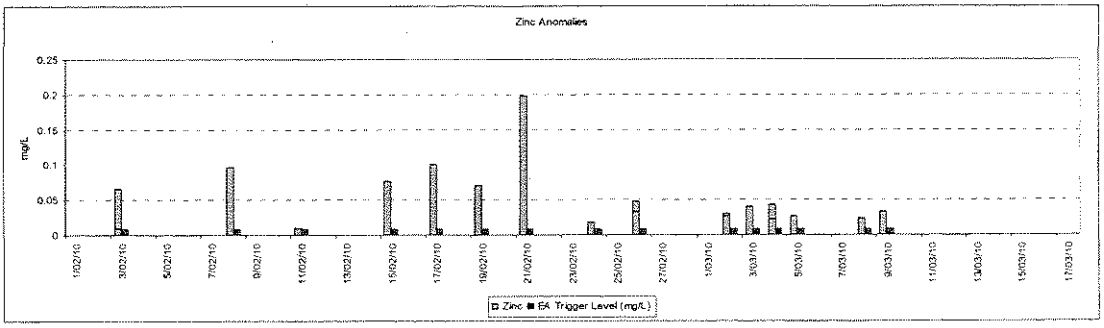
Data Graph 5: Anomalous Nitrate results & trigger value vs Time



Data Graph 6: Anomalous Vanadium results & trigger value vs Time



Data Graph 7: Anomalous Zinc results & trigger value vs Time



4.2. W5 (2) (a) - Results

EA Condition W5 – *" If quality characteristics of the release exceed any of the trigger levels specified in Table 3 during a release event, the environment authority holder must compare downstream results in the receiving waters to the trigger values specified in Table 3 and:*

(2) Where the downstream results exceed the trigger values specified in Table 3 for any quality characteristic, compare the results of the downstream site to the data from the background monitoring sites and;

(a) If the result is less than the background monitoring site data, the 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 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

A total of seven (7) anomalous results (of 31 x W5(2) results) returned lower results than the upstream background monitoring and have been assessed as being W5(2)(a). (Table 17)

No further investigation has been undertaken for this group of results.

Table 17: Summary of W5(2)(a) & W(5)(b) results

Location	Date	ALS Sample Number	Quality Characteristic	End of Pipe Level (mg/L)	Monitoring Point Upstream (mg/L)	MP3 Monitoring Point Downstream Levels (mg/L)	MP5 Monitoring Point Downstream Levels (mg/L)	EA Trigger Level (mg/L)	Investigation
Enviro Dam end pipe	15/2/2010	EB1003003004	Zinc	0.077	0.098	0.076	0.069	0.008	W5 (2a)
Enviro Dam end pipe No.2	17/2/2010	EB1003003006	Zinc	0.098	0.127	0.118	0.073	0.008	W5 (2a)
Enviro dam end pipe No.2	2/3/2010	EB1004051005	Zinc	0.027	0.038	0.023	0.036	0.008	W5 (2a)
Enviro Dam end pipe No.3	17/2/2010	EB1003003007	Zinc	0.1	0.127	0.118	0.073	0.008	W5 (2a)
Puds Pond End Pipe	26/2/2010	EB1004044001	Zinc	0.033	0.046	0.035	0.069	0.008	W5 (2a)
PWD end pipe 2	15/2/2010	EB1003001004	Zinc	0.01	0.098	0.076	0.069	0.008	W5 (2a)
Sed dam end pipe	2/3/2010	EB1004052003	Zinc	0.031	0.038	0.023	0.036	0.008	W5 (2a)
Spring Creek PWD	15/02/2010	EB1003003003	Aluminium	2.67	0.27	8.74	0.19	0.65	W5 (2b)
Spring Creek PWD	15/02/2010	EB1003003003	Chromium	0.004	0.002	0.013	<0.0001	0.003	W5 (2b)
PWD end pipe 2	15/2/2010	EB1003001004	Nitrate	2.75	0.06	0.32	0.04	1.1	W5 (2b)
PWD end pipe No.2	5/3/2010	EB1004244004	Nitrate	3.41	0.04	0.14	0.02	1.1	W5 (2b)
Puds Pond End Pipe	26/2/2010	EB1004044001	Nitrate	10	<0.01	0.14	0.12	1.1	W5 (2b)
PWD end of pipe No.3	3/2/2010	EB1002136003	Vanadium	0.02	<0.01	0.01	<0.01	0.01	W5 (2b)
PWD end of pipe No.4	4/2/2010	EB1002136007	Vanadium	0.02	<0.01	0.02	<0.01	0.01	W5 (2b)
PWD end pipe 2	15/2/2010	EB1003001004	Vanadium	0.02	0.01	0.02	0.01	0.01	W5 (2b)
PWD end pipe No.2	5/3/2010	EB1004244004	Vanadium	0.02	<0.01	0.01	<0.01	0.01	W5 (2b)
Spring creek PWD end pipe	3/02/2010	EB1002147001	Vanadium	0.06	<0.01	0.01	<0.01	0.001	W5 (2b)
Enviro dam end pipe	8/2/2010	EB1002256003	Zinc	0.086	<0.005	0.104	0.098	0.008	W5 (2b)
Enviro dam end pipe No.3	3/3/2010	EB1004246007	Zinc	0.04	0.012	0.028	0.026	0.008	W5 (2b)
Enviro dam end pipe 2	8/2/2010	EB1002256004	Zinc	0.097	<0.005	0.104	0.098	0.008	W5 (2b)
Enviro Dam end pipe 2	8/3/2010	EB1004386004	Zinc	0.024	<0.005		0.01	0.008	W5 (2b)
Enviro Dam end pipe no.4	11/2/2010	EB1002862006	Zinc	0.01	<0.005	0.01	0.008	0.008	W5 (2b)
Puds Pond End Pipe	4/3/2010	EB1004250001	Zinc	0.043	0.006	0.056	0.124	0.008	W5 (2b)
Puds Pond End Pipe 2	21/2/2010	EB1003170004	Zinc	0.198	0.078	0.116	0.157	0.008	W5 (2b)
Puds Pond End Pipe 2	3/3/2010	EB1004250013	Zinc	0.034	0.012	0.028	0.026	0.008	W5 (2b)
PWD end pipe	4/3/2010	EB1004244001	Zinc	0.022	0.006	0.056	0.08	0.008	W5 (2b)
PWD End Pipe 2	24/2/2010	EB1003462005	Zinc	0.018	0.054	0.031	0.098	0.008	W5 (2b)
PWD end pipe No.2	5/3/2010	EB1004244004	Zinc	0.026	0.005	0.056	0.09	0.008	W5 (2b)
Sed dam end pipe	3/2/2010	EB1002136003	Zinc	0.065	0.037	0.06	0.112	0.008	W5 (2b)
Sed dam end pipe	19/2/2010	EB1003183005	Zinc	0.071	0.057	0.134	0.126	0.008	W5 (2b)
Sed dam end pipe	26/2/2010	EB1004052001	Zinc	0.048	0.046	0.035	0.043	0.008	W5 (2b)
Sed dam end pipe	9/3/2010	EB1004439006	Zinc	0.034	0.06	0.248	0.052	0.008	W5 (2b)
Spring creek PWD end pipe	3/02/2010	EB1002147001	Zinc	0.01	0.037	0.06	0.112	0.008	W5 (2b)

4.3. W5 (2) (b) – Results

EA Condition W5 – *" If quality characteristics of the release exceed any of the trigger levels specified in Table 3 during a release event, the environment authority holder must compare downstream results in the receiving waters to the trigger values specified in Table 3 and:*

(2) Where the downstream results exceed the trigger values specified in Table 3 for any quality characteristic, compare the results of the downstream site to the data from the background monitoring sites and;

(a) If the result is less than the background monitoring site data, the 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 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***

The twenty six (26) results that fall into the W5(2)(b) category will be further investigated and reported in the next annual return as required. An initial assessment is provided below.

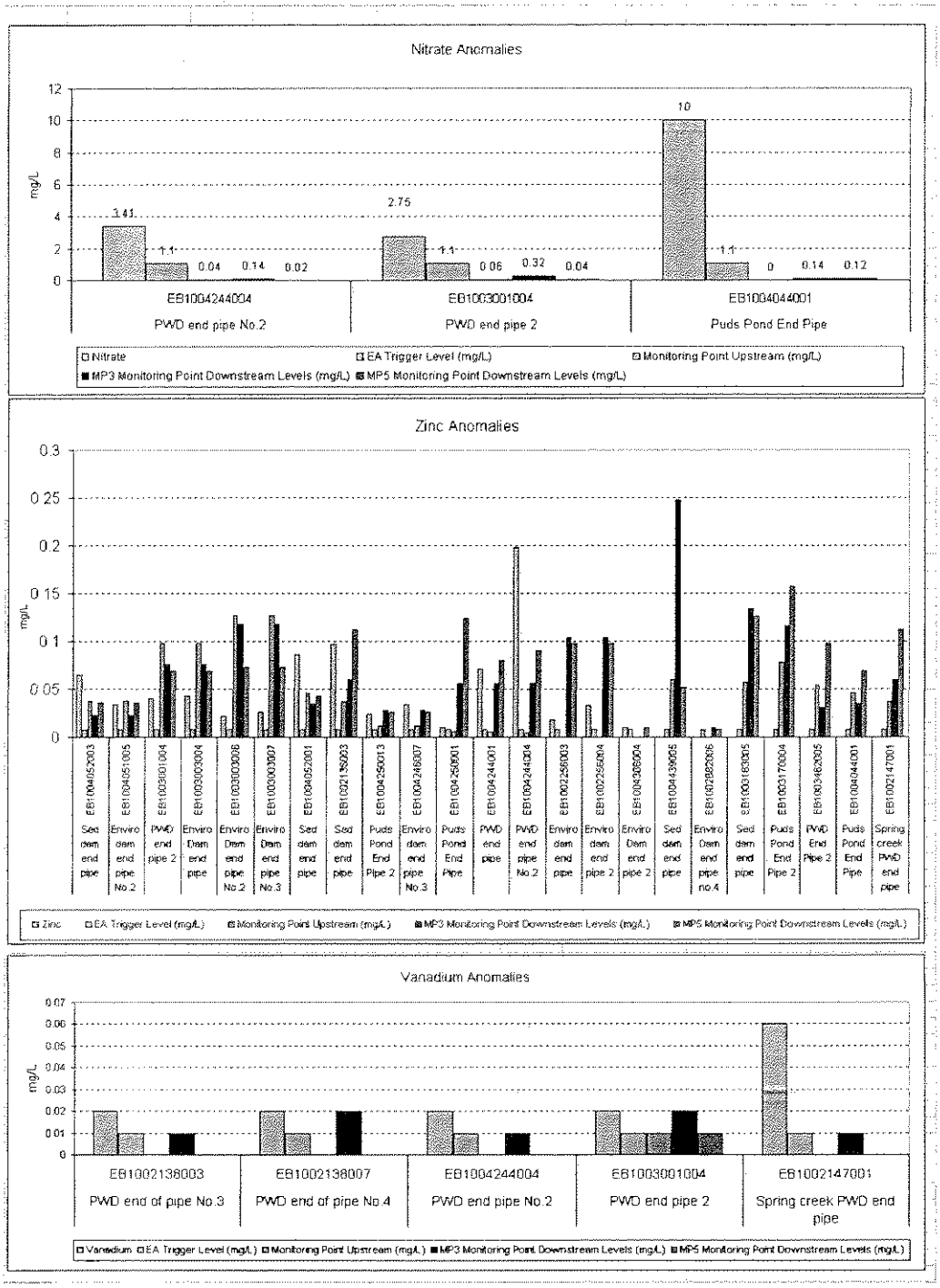
- **Zinc (16):** Sixteen (16) anomalous results for Zinc (W5 (2)(b)) indicate that the trigger values are underestimating the background values in the local environment. This is further supported by the thirty-one (31) anomalous results from background sampling upstream of the operations (Section 4.4 Table 17). Initial evaluation would suggest the local volcanic stratigraphy and soils in the region as being a likely source of the released elevated zinc, through ground disturbance by local agriculture and mining activities, and as part of the background geochemistry of the area.
- **Vanadium(5):** Five (5) anomalous results (Data Graph 11) were returned for Vanadium. Four of the five results are only twice the background (0.01mg/L) which is also the LOR for analysis at ALS. These samples do not represent significant contamination, one sample (EB1002147001) from Spring Creek Pit Water Dam was returned 0.06mg/L on 3/2/2010 is interpreted to be a spurious result related to the failure of the Spring Creek Dam ,
- **Nitrate: (3):** Two (2) anomalous Nitrate results (Data Graph 11) were recorded from Pit Water Dam (PWD end of pipe 2) on 26/2/2010 & 4/3/2010, and one (1) result from Puds Pond end of pipe 10mg/L (26/2/2010).
- **Aluminum: (1):** One (1) anomalous result (2.67mg/L) (EB1003003003) was received for Aluminum from Spring Creek PWD on 15/2/2010, and,
- **Chromium (1):** One (1) anomalous result (0.004mg/L) (EB1003003003) was received for Chromium from Spring Creek PWD, this result is 0.001mg/L above the trigger value and is not regarded as a significant result.

Subsequent investigation (as per report email to DERM 12/3/2010) and results from follow-up with original results (EB1003001002 & EB1003001003) indicating a laboratory error in filtering of some samples led to an over estimation of the results due to a probable colloidal suspension of aluminum and chromium.

Table 18: Anomalous Characteristic triggering a W5(2) investigations vs Location

W5(2a) & W5(2b) Anomalous results											
	Aluminum	Arsenic	Chromium	Copper	Mercury	Molybdenum	Nitrate	Uranium	Vanadium	Zinc	Total
Puds Pond End Pipe							1			4	5
Sed Dam end pipe										5	5
PWD End pipe							2		4	4	10
Enviro dam										9	9
Spring Creek Dam PWD	1		1						1	1	4
	1	0	1	0	0	0	3	0	5	23	33

Data Graph 8: Data Graph (EOP) -W5(2) anomalous values vs monitoring point data



4.4.Upstream Anomalous results

Included for completeness, no detailed analysis or assessment undertaken.

Table 19: Results above trigger values from Upstream monitoring points.

Location	Date	ALS Sample Number	Quality Characteristic	Monitoring Point Upstream (mg/L)	EA Trigger Level (mg/L)
Meteor CK US	19/02/10	EB1003178001	Copper	0.013	0.013
Bootes Creek US	13/02/10	EB1002868005	EC	321	315
Bootes Creek US	22/02/2010	EB1003462003	EC	339	315
Bootes Creek US	23/02/2010	EB1003462004	EC	360	315
Bootes Creek US	24/02/2010	EB1004037001	EC	402	315
Bootes Creek US	27/02/2010	EB1004037004	EC	377	315
Bootes Creek US	28/02/2010	EB1004037006	EC	409	315
Bootes Creek US	7/03/10	EB1004383005	EC	355	315
Bootes Creek US	09/03/2010	EB1004809001	EC	330	315
Bootes Creek US	12/03/2010	EB1004809004	EC	366	315
Bootes Creek US	13/03/2010	EB1004809005	EC	386	315
Bootes Creek US	17/03/2010	EB1005126003	EC	525	315
Bootes Creek US	18/03/2010	EB1005126004	EC	538	315
Bootes Creek US	19/03/2010	EB1005320001	EC	565	315
Bootes Creek US	20/03/2010	EB1005320002	EC	573	315
Bootes Creek US	21/03/2010	EB1005320003	EC	569	315
Bootes Creek US	22/03/2010	EB1005320004	EC	433	315
Bootes Creek US	23/03/2010	EB1005320005	EC	480	315
Bootes Creek US	13/02/10	EB1002868005	Iron	0.66	0.52
Bootes Creek US	09/03/2010	EB1004809001	Iron	0.53	0.52
Meteor CK US	19/02/10	EB1003178001	Iron	0.65	0.52
Bootes Creek US	21/03/2010	EB1005320003	Manganese	0.002	0
Bootes Creek US	22/03/2010	EB1005320004	Manganese	0.002	0
Bootes Creek US	23/03/2010	EB1005320005	Manganese	0.006	0
Meteor CK US	3/03/10	EB1004052006	Mercury (total)	0.0013	0.0002
Meteor CK US	19/02/10	EB1003178001	Silver	0.003	0.001
Bootes Creek US	23/03/2010	EB1005320005	Sulphate	2390	250
Bootes Creek US	6/02/10	EB1002871004	Suspended Solids	2940	1170
Bootes Creek US	18/02/2010	EB1003181005	Suspended Solids	1200	1170
Bootes Creek US	5/03/10	EB1004383003	Suspended Solids	1700	1170
Bootes Creek US	7/03/10	EB1004383005	Suspended Solids	2650	1170
Bootes Creek US	8/03/10	EB1004383006	Suspended Solids	2720	1170
Bootes Creek US	23/03/2010	EB1005320005	Suspended Solids	2390	1170
Meteor CK US	3/03/10	EB1004052006	Suspended Solids	1450	1170
Meteor CK US	19/02/10	EB1003178001	Suspended Solids	1610	1170
Meteor CK US	17/02/10	EB1003003001	Suspended Solids	1630	1170
Bootes Creek US	5/03/10	EB1004383003	TPH	150	100
Bootes Creek US	6/02/10	EB1002871005	Zinc	0.01	0.008
Bootes Creek US	13/02/10	EB1002868005	Zinc	0.009	0.008
Bootes Creek US	15/02/10	EB1003181002	Zinc	0.096	0.008
Bootes Creek US	16/02/10	EB1003181003	Zinc	0.086	0.008
Bootes Creek US	17/02/10	EB1003181004	Zinc	0.127	0.008
Bootes Creek US	16/02/10	EB1003181003	Zinc	1460	1170
Bootes Creek US	18/02/2010	EB1003181005	Zinc	0.09	0.008
Bootes Creek US	19/02/10	EB1003181006	Zinc	0.057	0.008
Bootes Creek US	20/02/2010	EB1003462001	Zinc	0.064	0.008
Bootes Creek US	21/02/2010	EB1003462002	Zinc	0.078	0.008
Bootes Creek US	22/02/2010	EB1003462003	Zinc	0.037	0.008
Bootes Creek US	23/02/2010	EB1003462004	Zinc	0.036	0.008
Bootes Creek US	24/02/2010	EB1004037001	Zinc	0.054	0.008
Bootes Creek US	25/02/2010	EB1004037002	Zinc	0.041	0.008
Bootes Creek US	26/02/2010	EB1004037003	Zinc	0.046	0.008
Bootes Creek US	27/02/2010	EB1004037004	Zinc	0.042	0.008
Bootes Creek US	28/02/2010	EB1004037005	Zinc	0.039	0.008
Bootes Creek US	01/03/2010	EB1004037006	Zinc	0.018	0.008
Bootes Creek US	02/02/2010	EB1004037007	Zinc	0.038	0.008
Bootes Creek US	03/03/2010	EB1004383001	Zinc	0.12	0.008
Bootes Creek US	7/03/10	EB1004383005	Zinc	0.013	0.008
Bootes Creek US	09/03/2010	EB1004809001	Zinc	0.06	0.008
Bootes Creek US	11/03/2010	EB1004809003	Zinc	0.042	0.008
Bootes Creek US	12/03/2010	EB1004809004	Zinc	0.052	0.008
Bootes Creek US	13/03/2010	EB1004809005	Zinc	0.046	0.008
Meteor CK US	3/03/10	EB1004052006	Zinc	0.028	0.008
Meteor CK US	4/03/10	EB1004248002	Zinc	0.09	0.008
Meteor CK US	24/02/10	EB1003462008	Zinc	0.089	0.008
Meteor CK US	20/02/10	EB1003178002	Zinc	0.097	0.008
Meteor CK US	19/02/10	EB1003178001	Zinc	0.11	0.008
Meteor CK US	17/02/10	EB1003003001	Zinc	0.121	0.008

5. Notification

5.1. Commencement of release

From: [redacted]
Sent: Monday, 1 February 2010 5:31 PM
To: [redacted]
Cc:

Subject: Notification of release of mine affected water
Attachments: PHOT 100201 BC Flow at SC Haulroad.jpg

[redacted]

Further to my discussion with [redacted] by phone earlier today, this message is to fulfil the requirements of Condition W12 of the EA for the Rolleston Coal Mine (MIM800090802).

Discharge of stored water commenced at 1130 today from the Environment Dam (Release Point 3), at a flow rate of approximately 60L/s.
The receiving waterway is Bootes Creek, which at the time of commencement had a flow depth of more than three metres.

At 1330, a second discharge was commenced from the Pitwater Dam (Release Point 1) at a flow rate of approximately 130 L/s.
Bootes Creek is also the receiving watercourse for this discharge and continued to flow at a depth of more than three metres.

Both of these discharges are planned to continue until either the flow rate in the receiving stream falls below (750L/s), or the quality of the discharged water falls outside the limits specified in Table 2 of the EA.

It is extremely unlikely that any measurable impact on the receiving waters will occur as a result of these discharges. The attached photograph shows the scale of the follow event. The Pit water dam, which is the source of water for Release Point 1, can be seen in the background.

Sampling and measurement of the discharges, background flows and receiving waters are being undertaken in accordance with the EM Plan for the site.

As previously discussed, water being discharged from the Pit water dam is very close to the EA compliance limit of 9 pH units. Our regular Environmental monitoring contractor will be on site in the morning to confirm that the pH meets specified discharge quality. The discharge will of course be immediately discontinued if the pH is found to be outside the acceptable range.

Should further information be required on this matter, please do not hesitate to contact me.

Regards,

[redacted]
Environment & Community Manager
Xstrata Coal Queensland

5.2. Cessation of release

From: [redacted] (Rolleston - Coal)
Sent: Sunday, 14 February 2010 1:38 PM
To: [redacted]
Cc:
Subject: Rolleston Coal MIM600090602

Hello [redacted]

Following email correspondence from [redacted] on Monday the 1st of February 2010, Rolleston Coal commended discharging mine affected water from Release Points 1 & 3 on Monday the 1st of February 2010. Rolleston Coal ceased discharging mine affected water from ML70307 at 6:00pm on Saturday the 13th of February 2010. At the time of cessation Bootes Creek was flowing at 2000 L/s. During this 13 day period, 582ML was released from site. Rolleston Coal will provide further information on this release event tomorrow, including in-situ water quality monitoring results.

Regards,

[redacted]

[redacted]
Environment & Community
Rolleston Coal Pty Ltd
Xstrata Coal Queensland
P O BOX 11
Springsure QLD 4722

5.3. Recommencement of Release

From: [redacted]
Sent: Monday, 15 February 2010 10:27 AM
To: [redacted]
Cc:
Subject: Notification of release of mine affected water

Hello [redacted]

At 7am this morning Rolleston Coal re-commenced discharging mine affected water at Release Points 1 & 3, following storms in the Bootes Creek upstream catchment last night, with rain continuing today. Both of these discharges are planned to continue until either the flow rate in the receiving stream falls below (750L/s), or the quality of the discharged water falls outside the limits specified in Table 2 of the EA. Rolleston Coal can not estimate total discharge volumes at this stage, as this will be dependent on pit in-flows from the current rain event. At 6:30am today Bootes Creek was flowing at 5600L/s.

It is extremely unlikely that any measurable impact on the receiving waters will occur as a result of these discharges.

Sampling and measurement of the discharges, background flows and receiving waters are being undertaken in accordance with the EM Plan for the site.

Should further information be required on this matter, please do not hesitate to contact me.

Regards,

[redacted]
Environment & Community
Rolleston Coal Pty Ltd
Xstrata Coal Queensland
P.O. BOX 11
Springsure QLD 4722

5.4. Cessation of release under EA

From: [redacted] (Rolleston - Coal)
Sent: Thursday, 18 March 2010 12:26 PM
To: [redacted]
Cc:
Subject: Cease of Discharge to Bootes Creek

Hello [redacted]

On Wednesday the 17th of March at 4pm Rolleston Coal ceased all discharge into Bootes Creek under Environmental Authority MIM800090802. This release commenced on Monday the 15th of February, and followed a release event from the 1st to the 13th of February that DERM were previously notified about.

At the time the release stopped the creek was flowing at 2,000 L/s. During this 31 day period Rolleston Coal released 926 ML was released from site.

Rolleston Coal has previously supplied DERM with information pertaining to elevated suspended solids that were recorded at end of pipe at Spring Creek Pit Water Dam and Environment Dam, and investigations into dissolved Aluminium, Chromium and Vanadium that were outside trigger values. As approved in correspondence from DERM on the 12th of March 2010, Rolleston Coal will provide to DERM a report documenting all water quality monitoring that has occurred for all releases from ML70307 that commenced on the 1st of February 2010, by 28 days of stopping all discharge (as per Condition C13). This report will be provided by Wednesday the 14th of April 2010. In the event of further rain that may require Rolleston Coal to re-commence discharge, site will contact DERM and discuss the opportunity to extend this date to 28 days after discharge stops, to ensure all results are received back by the laboratory and investigated.

Please call if you have any queries.

Regards,

[redacted]
Environment & Community
Rolleston Coal Pty Ltd
Xstrata Coal Queensland
P.O. BOX 11
Springsure QLD 4722

5.5. EB1002457006

Date: 10/2/2010

- **Location:** Environment Dam end of Pipe
- **Quality Characteristic & Limit:** Suspended Solids (1200 mg/L)
- **Value:** 1470 mg/L
- **Comment:** Reported to DERM 2/3/2010 (W14).

Investigation: complete (as per W15 req.). Result was an anomaly not consistent with water quality indicated in the 29 other samples from this location which were in within limits. Results were sent in report 24/2/2010 to DERM.

5.6. EB1003001002

- **Location:** Monitoring point 5
- **Quality Characteristic (Limit):** Aluminum (0.65 mg/L)
- Al **Value:** 3.08 mg/L
- **Quality Characteristic (Limit):** Chromium (0.003mg/L)
- Cr **Value:** 0.004 mg/L
- **Comment:** Reported to DERM 12/3/2010 (W14).

5.7. EB1003001003

- **Location:** Monitoring Point 5
- **Quality Characteristic (Limit):** Aluminum (0.65 mg/L)
- Al **Value:** 3.19 mg/L
- **Quality Characteristic (Limit):** Chromium
  - Cr **Value:** 0.005 mg/L
  - **Comment:** Reported to DERM 12/3/2010 (W14).

5.8. W5 - Notification Release exceedance 24/2/2010

ROLLESTON COAL

24th of February 2010

Environmental Operations
Central Region
Department of Environment and Resource Management
PO Box 906
Emerald, Queensland 4720

Attention: [redacted]

Re: MIM 800090802 Notification of Release Event Exceedence

Dear [redacted]

Rolleston Coal wishes to notify DERM of recent water quality data that has been received for the release event on ML70307 that commenced on the 1st of February 2010.

Condition W5

Environmental Authority (EA) MIM 800090802 Condition W4 requires Rolleston Coal to monitor end of pipe releases for any exceedence of the Release Contaminant Trigger Levels listed in Table 3. Rolleston Coal recorded end of pipe exceedences of the Trigger Levels for Zinc and Vanadium at Release Points 1 and 3, and the analysis of downstream monitoring results in compliance with Condition W5 indicated that the respective Trigger Levels were exceeded for those metals.

The Zinc and Vanadium levels for Bootes Creek Upstream and Downstream monitoring points are reported as follows.

Zinc (Trigger Level = 0.008 mg/L)

EG020F: Dissolved Metals by ICP-MS	Reference	Unit	1	2	3	4	5	6	7	8
Zinc										
Bootes Creek Upstream	MP 1	mg/L	0.076	0.069	0.066	0.133	0.037	0.046	0.051	0.009
Bootes Creek Downstream	MP 3	mg/L	0.049	0.053	0.075	0.086	0.06	0.018	0.01	0.008
Bootes Creek @ Springwood Road	MP 5	mg/L	<0.005	<0.005	0.112	0.124	0.079	0.055	0.09	0.056

Note- Sampling occurs at least daily during discharge events.

Bootes Creek Upstream (MP1), Downstream (MP3) and Bootes Creek at Springwood Road (MP5) all returned results that exceeded the Trigger Level listed in Table 3 for Zinc. Bootes Creek Upstream recorded the highest reading of 0.133 mg/L, indicating naturally elevated levels of Zinc during this flow event, with downstream results being relatively proportional to upstream results.

Rolleston Coal Pty Ltd ABN 73 106 690 037
Dawson Highway, Via Rolleston, PO Box 11, Springsure QLD 4722
Telephone 07 4988 9100 Facsimile 07 4988 9151 Internet www.xstrata.com

As the results for the downstream levels of Zinc are generally high, Rolleston Coal will commence an investigation in accordance with Condition W5.

Vanadium (Trigger Level = 0.01 mg/L)

EG020F: Dissolved Metals by ICP-MS	Reference	Unit	1	2	3	4	5	6	7	8
Vanadium										
Bootes Creek Upstream	MP 1	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Bootes Creek Downstream	MP 3	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02
Bootes Creek @ Springwood Road	MP 5	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01

Note- Sampling occurs at least daily during discharge events.

Bootes Creek Downstream (MP3) recorded 2 samples of 0.02 mg/L for Vanadium against a Trigger Level of 0.01 mg/L, with the 6 remaining samples all in compliance. Bootes Creek Upstream (MP1) and Bootes Creek at Springwood Road (MP5) results were all in compliance with the EA.

As the results for the downstream levels of Vanadium are higher than for the upstream levels, Rolleston Coal will commence an investigation in accordance with Condition W5.

Condition W6

This letter constitutes formal notification of the discharge exceedences of the Zinc and Vanadium Trigger Levels for the purposes of Condition W6.

Condition W14

Under Condition W14 of EA MIM 800090802 Rolleston Coal is required to notify the administering authority of any end of pipe exceedences of the Contaminant Release Limits provided in Table 2. Rolleston Coal had a total of 6 exceedences of the Release Limits for Suspended Solids from the Spring Creek Pit Water Dam (RP1) over 8 samples. This dam was constructed recently and it is possible that the unconsolidated earthen construction materials contributed to the Suspended Solids recorded in the discharge.

Suspended Solids (Contaminant Release Limit = 1200 mg/L)

EA025: Suspended Solids	Reference	Unit	1	2	3	4	5	6	7	8
Suspended Solids (SS)										
Spring Creek PWD	RP 1	mg/L	2760	1690	1000	1150	6380	3160	1640	2170

Rolleston Coal had ceased discharging from Release Point 1 prior to the analysis results being received from the laboratory. An investigation of the Bootes Creek Downstream (MP3) results did not indicate an exceedence at the monitoring point as a result of the Suspended Solids exceedence from RP1. Rolleston Coal received the first round of results from the laboratory on Thursday 18th of February 2010 which identified, out of a total of 6 samples, only 2 results were compliant. Rolleston Coal verbally notified DERM representatives of these results on Friday the 19th of February 2010 during their site visit. This letter confirms the advice given verbally on site on the 19th of February 2010.

Condition W15

An investigation report concerning the Suspended Solids Contaminant Release Limit exceedence will be prepared by Rolleston Coal for submission to the administering authority within 28 days in compliance with Condition W15.

Condition W19

Under Condition W19 of EA MIM 800090802 Rolleston Coal is required to notify the administering authority of exceedences of the Receiving Waters Contaminant Trigger Levels.

Suspended Solids (Contaminant Trigger Limit = 1170 mg/L)

EA024: Suspended Solids	Reference	Unit	1	2	3	4	5	6	7	8
Suspended Solids (SS)										
Bootes Creek Upstream	MP 1	mg/L	1340	1240	2070	494	336	482	253	191
Bootes Creek Downstream	MP 3	mg/L	4420	1340	1410	634	391	462	428	702
Bootes Creek @ Springwood Road	MP 5	mg/L	273	265	218	449	150	66	125	264

The first 3 samples for Bootes Creek Upstream (MP1) and Downstream (MP3) both returned elevated levels of Suspended Solids that exceeded the Receiving Water Contaminant Trigger Levels in Table 7. The remaining results all fell below those levels. Rolleston Coal is confident that this anomaly is due to the samples being the first 3 of the flow event, which would have been extremely turbid and unrepresentative of the actual water quality (as indicated by the remaining results).

Rolleston Coal does not believe there is cause for concern with the water quality results that have been received to date, with evidence of naturally elevated levels in the water quality results at upstream locations. Rolleston Coal has been conducting extensive sampling at Bootes Creek Upstream and Downstream, and Meteor Creek Upstream and Downstream and continues to collate all the results.

Further Actions

Rolleston Coal will continue to analyse water quality sampling results as they are returned and will provide the administering authority with:

(1) an investigation report concerning the Suspended Solids levels for the purposes of Condition W15 within 28 days, and

(2) an investigation report concerning the Zinc and Vanadium levels for the purposes of Condition W5 with the next annual return.

Should you require further information, please contact Sam Tarlinton in the first instance on Telephone 0417 754 418.

Yours sincerely

[redacted]

General Manager

Southern Region XCQ

Appendix A Environmental Authority MIM800090802(extract)

access
environmental licences & permits

Environmental Authority (Mining Activities) Non Code Compliant Level 1 Mining Project

Permit[1] Number: MIM800090802 – Rolleston Coal Mine

Section 258 - *Environmental Protection Act 1994*

Takes Effect From: 30 November 2009

Details

Permit Holder(s)	Name	Address
Principal Holder	Xstrata Coal Queensland Pty Ltd	Level 10, Riverside Centre 123 Eagle St BRISBANE QLD 4000
Joint Holder	ICRA Rolleston Pty Ltd	Level 15 Commonwealth Bank of Australia Building 240 Queen St BRISBANE QLD 4000
Joint Holder	Sumisho Coal Australia Pty Limited	Level 34 Central Plaza One BRISBANE QLD 4000

Activity(s)	Location(s)
Mining Lease	ML70307 MDL227

The anniversary date of the environmental authority is *10 December* each year.

The environmental authority is subject to the attached conditions of approval.

[redacted]
Delegate
Environmental Protection Act 1994
30 November 2009

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Department of Environment and Resource Management.

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

Queensland Government

Appendix B ALS Assay Results

As per attached Pdf Files

Figure 2: Drainage impacts from disturbed farmland Meteor Creek.(19/2/2010)

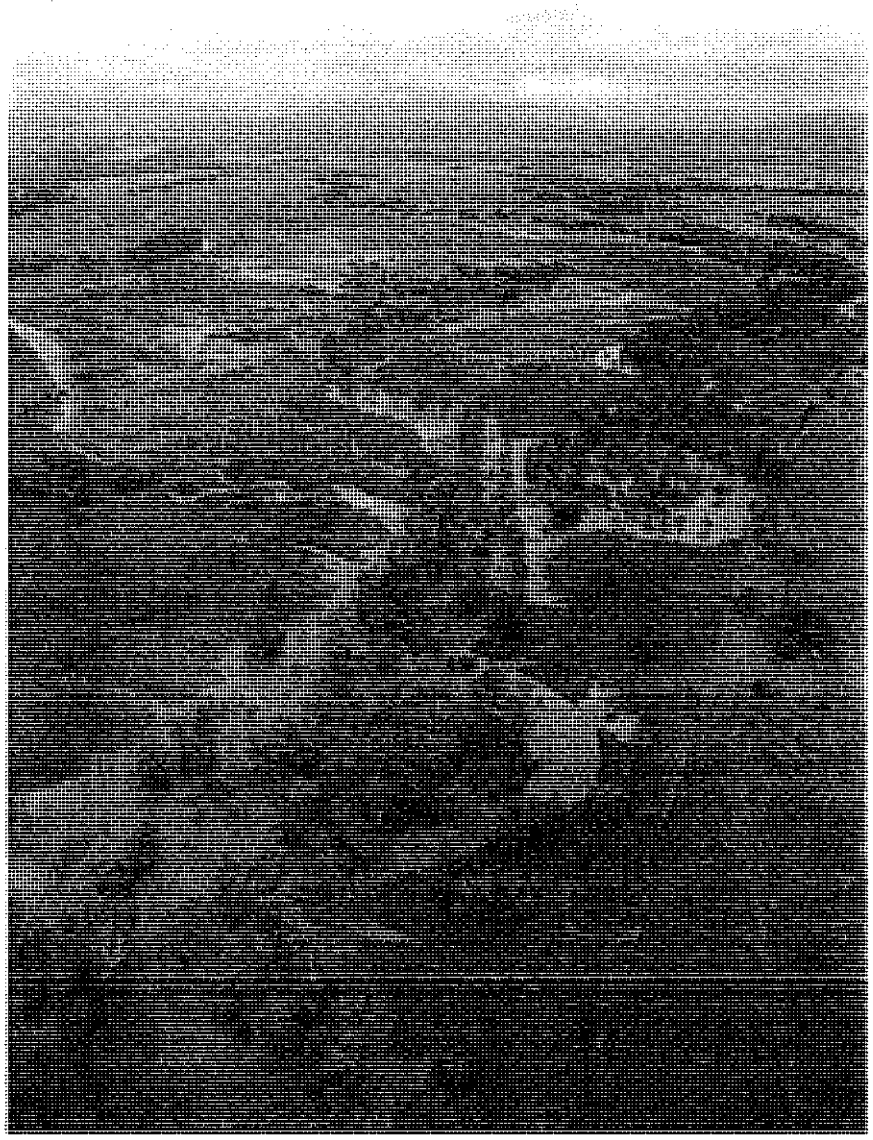


Figure 3: Meteor West Open Pit (19/2/2010)

2.5 Decommission Report – 7 May 2010

ROLLESTON
COAL

Rolleston Coal Mine

Transitional Environmental Program (TEP)

DECOMMISSIONING REPORT

DIVERSION PIT 26 RELEASE POINT - TEP RP2

May 7, 2010

Rolleston Coal Pty Ltd ABN 73 106 690 037
Dawson Highway, Via Rolleston, PO Box 11, Springsure QLD 4722
Telephone 07 4988 9100 Facsimile 07 4988 9151 Internet www.xstrata.com

Managed by
xstrata
COAL

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1. Background

Rolleston Coal Mine experienced exceptionally heavy rainfall in January and February 2010, including the highest February rainfall experienced in the locality since 1954[1].

Rolleston Coal Mine has received over 600 mm of rainfall from 1st January to 17 March 2010 (Table 2), which caused significant flooding across the mine and pit inundation. As a consequence, a number of urgent actions were required for the responsive management of overland flow water on site, as previously discussed with DERM[2].

In accordance with condition W32 of EA MIM800090802 a Water Management Plan was developed prior to this rainfall event which designated appropriate infrastructure for the proper and effective management of the actual and potential environmental impacts resulting from the mining activity.

On the 1st of February 2010 Rolleston Coal Mine commenced discharging mine affected water under Environmental Authority MIM800090802. However continual rain increased volumes of mine affected water in pit, exceeding the water management system capability to discharge water at a rate consistent with pit inflow.

A Transitional Environmental Program (TEP) (Appendix A) was submitted to DERM on behalf of Xstrata Coal Queensland Pty Ltd, ICRA Rolleston Pty Ltd and Sumisho Coal Australia Ltd to establish two additional discharge points for flood waters from the Rolleston Coal Mine.

The two discharge points were:

TEP RP 1: from Meteor West Pit into Meteor Creek via Sandy Creek[3]; and

TEP RP 2: from Diversion Pit 26 into Bootes Creek.

Approval for the TEP was received from DERM on 5 March 2010. (MAN9879).

This TEP Decommissioning Report relates to the Diversion Pit 26 discharge event as indicated above, into Bootes Creek (Program Component 2), and meets the requirements of TEP Objective 5, TEP Action Plan Item AP-10 and TEP section 9.8 (e)

The Objectives for Program Component 2 of the TEP are summarized below in Table 1, Section 2.

---

[1] Neighbours to Rolleston Coal Mine record that for the month of February 1954 Springwood had 547.9ml of rain.

[2] Refer to previous correspondence from Rolleston Coal to Michael Rodgerson, DERM, dated 19th of February 2010.

[3] Decommissioning Report – Meteor West Pit Release Poinr – TEP RP 1, Report to DERM, April 21, 2010.

2. Objectives

The TEP for Program Component 2 had seven stated objectives indicated in Table 1.

Table 1: Objectives of the Program Component 2

Objectives	Detail
1	The release of contaminants to waters under this Program Component must only occur from the Release Point TEP RP 2 specified in Table 3 (Contaminant release points, sources and receiving waters) and depicted in Figure 1
2	Monitoring will be undertaken in accordance with the requirements of this Program Component and EA MIM800090802 in relation to the monitoring point specified in Table 5 and at existing Monitoring Points in Bootes Creek (MP 1 and MP 3) under EA MIM800090802 during any release event at Release Point TEP 2
3	The release of contaminants to waters under this Program Component must not exceed the release limits in Table 6 when measured at the monitoring point specified in Table 5 for Release Point TEP 2
4	Notifications and Reporting will comply with requirements under conditions W6, W12, W13, W14 and W15 of EA MIM800090802 in relation to discharges from Release Point TEP 2. Rolleston Coal will lodge a daily (business days only) report which includes a summary of available daily monitoring results as against water quality characteristics in Table 6 for releases from Release Point TEP 2. Rolleston Coal will provide stakeholder notification in accordance with section 12 of this TEP
5	Rolleston Coal will complete and lodge with DERM a Decommissioning Report outlining actions undertaken under TEP Program Component 2 and summarizing compliance against this Program Component and EA MIM800090802 for discharges from Release Point TEP 2 within 56 days of the cessation of the final discharge from Release Point TEP 2.
6	Rolleston Coal will meet all other requirements of EA MIM800090802 not specifically incorporated into this TEP which are relevant to discharges from Release Point TEP 2 to Bootes Creek (conditions W1-W19). To the extent of any inconsistency with Program Component 2 of this TEP and the conditions of EA MIM800090802 the requirements and conditions of this TEP shall prevail
7	Rolleston Coal will review its Water Management Plan to investigate the need, and options, for any water management system upgrades to ensure that proper and effective measures, practices or procedures are in place so that the mine is operated in accordance with conditions of EA MIM800090802 Rolleston Coal will provide a copy of the review of the Water Management Plan to the DERM by 31 July 2010

3. Release Event Details

3.1. Event Detail

Diversion Pit 26 was inundated with approximately 149 ML of water. Water management within the Bootes Creek mining area diverts water for collection at a number of locations, including Diversion Pit 26. The water presently within Diversion Pit 26 has been predominantly sourced from within the perimeter levee system which surrounds the Bootes Creek mining area.

Under standard operational conditions, water in Diversion Pit 26 is transferred to the Pit Water Dam prior to being discharged. Rolleston Coal proposed Diversion Pit 26 to act as a temporary discharge storage facility so as pit pumps can be installed to transfer the water from the pit directly to Bootes Creek. The release point TEP RP2 as established approximately 2 km upstream of licensed Release Point 1. Rolleston Coal managed the discharge to comply with all EA conditions for the discharge of mine affected water to Bootes Creek, including minimum flow height (EA condition W8), dilution ratios (EA condition W9), and water quality parameters and monitoring regime at Release Point RP 1 (with the exception of suspended solids as documented in TEP Section 9.4).

The upstream and downstream grab samplers on Bootes Creek collected the daily water quality samples whilst Rolleston Coal personnel will collect daily end of pipe sampling. The rainfall and discharge event details are summarized below on Figure 1 and Table 2.

Figure 1: Rolleston Coal Mine Rainfall 1 January - 17 March 2010

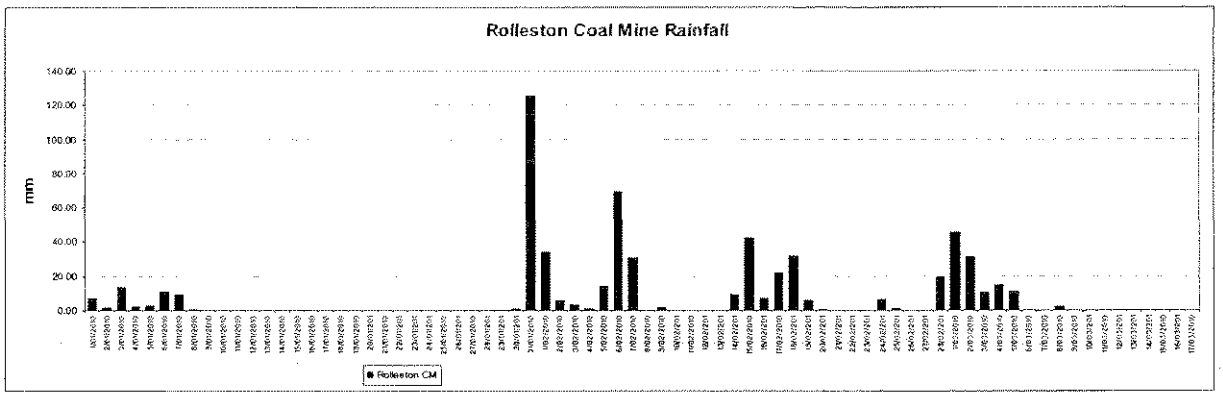


Table 2 : Bootes Creek Discharge Event summary

Item	Detail
Rainfall (31 Dec 09 to 17 March 10)	~ 616 mm
Volume of discharge (estimate) ML	54.9 ML

3.2. Release & Monitoring Points

For the Diversion Pit 26, a new release point (TEP RP 2) was established as per Table 3, with applicable Monitoring Points as indicated on Table 4, and all points as depicted on Figure 2.

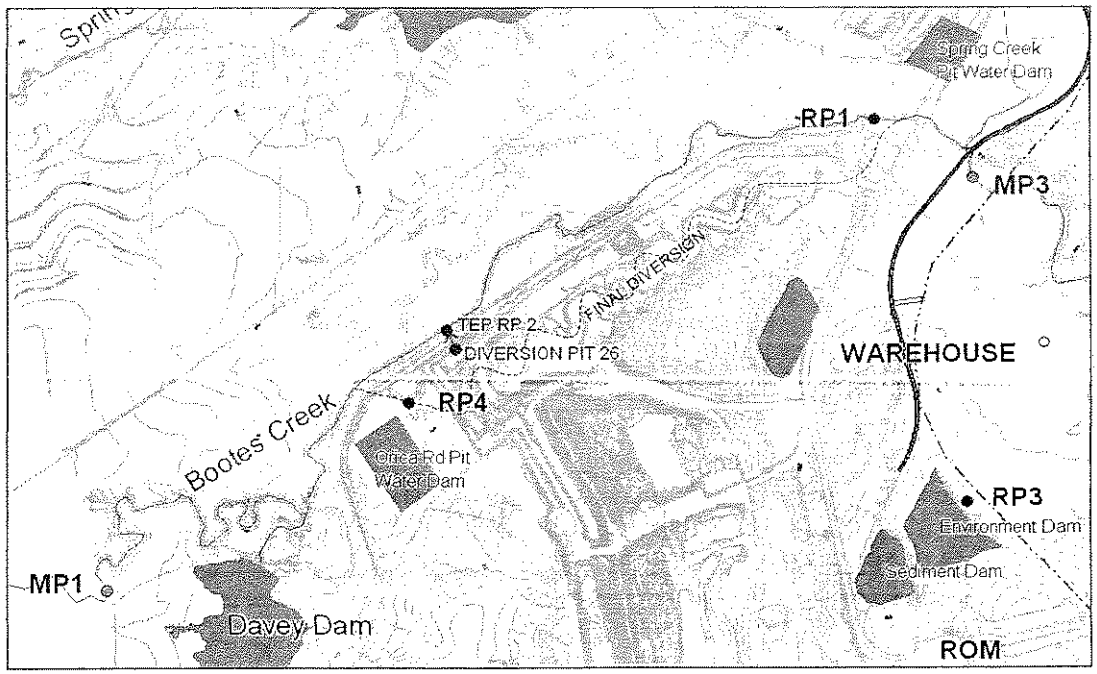
Table 3: Location of TEP Release Point 2

Release Point (RP)	Easting (GDA94)	Northing (GDA94)	Contaminant Source and Location	Monitoring Point	Receiving waters description
TEP RP 2	641613	7296708	Diversion Pit 26	End of Pipe	Bootes Creek

Table 4: Location of TEP RP 2 Monitoring Points

Monitoring Point	Receiving Water Description	Easting (GDA94)	Northing (GDA94)
EA MP 1	Bootes Creek Upstream	639993	7295456
EA MP 3	Bootes Creek Downstream	644141	7297437

Figure 2: Location of TEP RP 2 , EA- MP1, EA - MP3



The upstream and downstream grab samplers on Bootes Creek collected the daily water quality samples whilst Rolleston Coal personnel collected daily end of pipe sampling. Rolleston Coal managed the discharge so as to comply with the EA requirements for EA Release Point RP 2.

The existing release conditions and limits for Bootes Creek prescribed in Environmental Authority MIM800090802 were applicable for the monitoring points.

3.3. Water Quality Data

This TEP Decommissioning Report relates to the Program Componenet 2, Diversion Pit 26 discharge event as indicated above, into Bootes Creek, , and meets the requirements of TEP Objective 5, TEP Action Plan Item AP-10 and TEP section 9.8 (e).

In discharging the water Rolleston Coal managed the discharge to comply with the Interim Release Limits in Table 2 of EA MIM800090802 for each quality characteristic for water quality at the Release Point TEP RP 2 (Table 6).

(a) Quantity of Release

"The daily quantity of contaminants released from Release Point TEP 2 must be measured and recorded at Release Point TEP RP 2 (Condition W10)".

Daily quantity of contaminants released were measured as required and are as detailed on Table 5 below. A total of 54.92 ML of Mine affected water was released from TEP RP2.

Table 5: Contaminant Flow Rate and Volume of Release.

Date	MP 3 - Receiving water flow rate	Contaminant Flow Rate TEP RP2	Relative %	Volume of contaminant release TEP RP 2
	m^3/s	m^3/s		ML
6/03/2010	51.7	0.11	0.2	4.75
7/03/2010	23.7	0.11	0.5	9.50
8/03/2010	19.3	0.11	0.6	9.50
9/03/2010	51.7	0.11	0.2	4.95
10/03/2010	39.5	0.11	0.3	9.50
11/03/2010	11.6	0.11	0.9	9.50
12/03/2010	5.6	0.11	2.0	7.20

(b) Contaminant Flow Rate

"The daily contaminant flow rate must not exceed 20% of the flow rate in Bootes Creek at Monitoring Point 3 (Condition W9)".

During the event the daily contaminant flow rate was less than 20% of the flow rate of Bootes Creek at Monitoring Point 3, as indicated on Table 5 (Figure 3, Figure 4, Figure 5).

(c) Minimum Flow requirements of Receiving Waters

"The Minimum Flow in Receiving Water for a Release Event from Release Point TEP 2 is 0.75m^3/s (750L/s) at the release point, which will be calculated at the gauging station at Monitoring Point EA MP 3 "

Rolleston Coal only released contaminants at Release Point TEP RP 2 when flow conditions were at 0.75m^3/s (750L/s) or greater in Meteor Creek when measured at Monitoring Point 3 (Table 5).

Table 5 summarises the flow rates for Monitoring Point 3 – Receiving water flow rate.

(d) Receiving Water Contaminant Trigger Levels

"The water quality of Bootes Creek will be monitored in accordance with Condition W18 of EA MIM 800090802 and Rolleston Coal will comply with Condition W19 during any release events from Release Point TEP RP 2."

The water quality of Bootes Creek was monitored in accordance with Condition W18 as indicated on Table 10 and Table 12 below. Results were assessed in accordance with condition W19 during as received (see below).

Figure 3: Total Discharge TP RP2

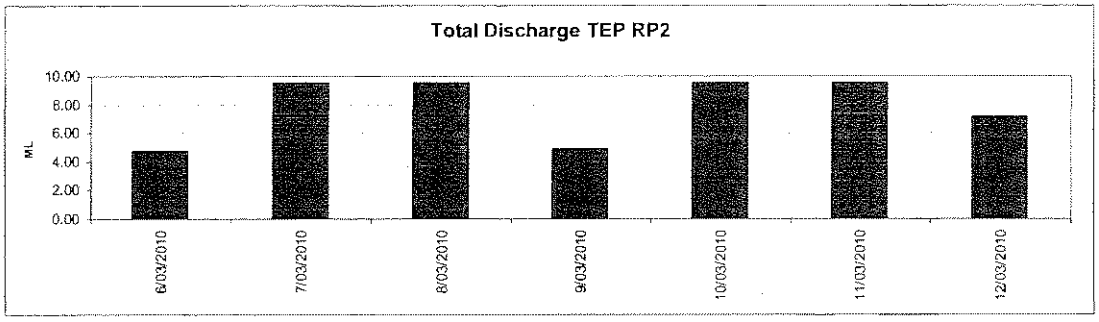


Figure 4: Discharge rate VS Receiving Waters

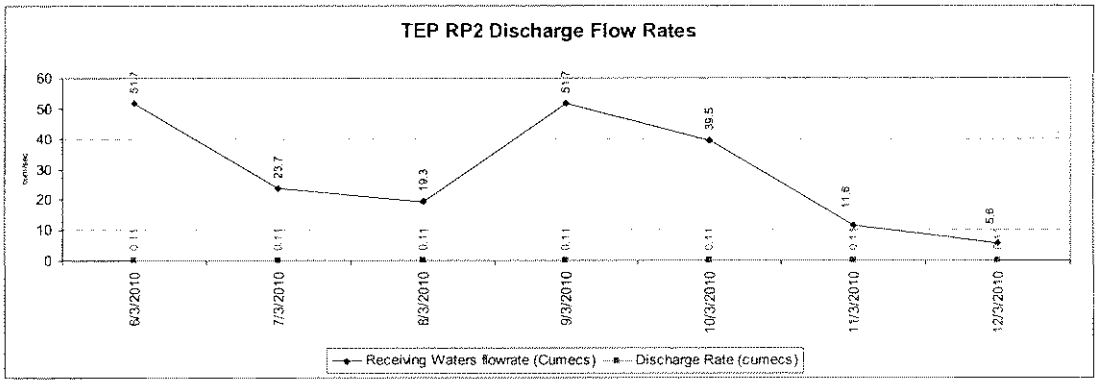


Figure 5: Relative % - Discharge vs Receiving Waters

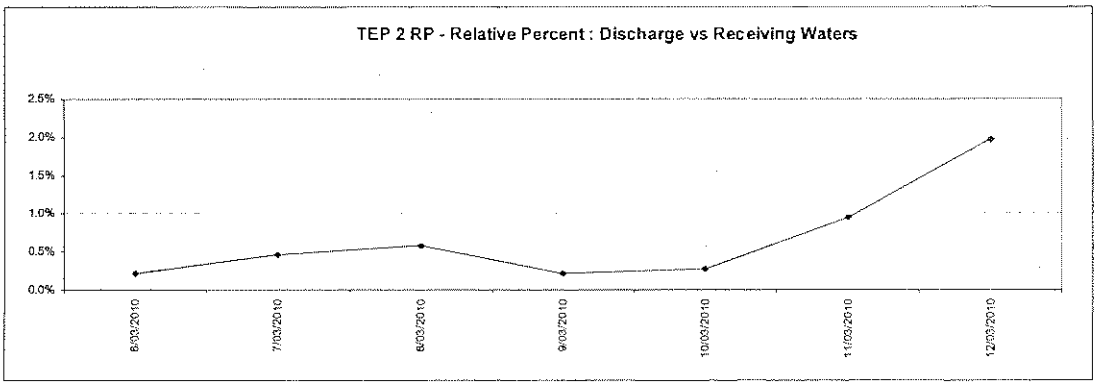


Table 6: Release limits (Table 6 from TEP)

Quality Characteristic	Release Limits	Monitoring frequency
Electrical conductivity (uS/cm)	1500	Daily during release (the first sample within 2 hours of commencement of release)
pH (pH Unit)	6.5 (min) 9.0 (max)	Daily during release (the first sample within 2 hours of commencement of release)
Turbidity (NTU)	NA	Daily during release (first sample within 2 hours of commencement of release)
Suspended Solids (mg/L)	1800	Daily during release (first sample within 2 hours of commencement of release)
Sulphate (SO_4^{2-}) (mg/L)	1000	Daily during release (first sample within 2 hours of commencement of release)

Table 7:Contaminants recorded Bootes Creek Upstream EA MP1 – Condition W18

Date	EC	pH	Suspended Solids	Sulphate
Trigger	315 uS/cm	6.5 - 9.0	1170 mg/L	250 mg/L
6/03/2010	310	8.18	746	3
7/03/2010	355	8.25	2650	3
8/03/2010	297	8.24	2720	2
9/03/2010	330	7.74	273	2
10/03/2010	227	8.0	334	2
11/03/2010	299	8.16	94	3
12/03/2010	366	8.18	59	3

Table 8: Contaminants as recorded TEP RP 2

Date	EC	pH	Suspended Solids	Sulphate
Limits	1500 uS/cm	6.5 - 9.0	1800 mg/L	1000 mg/L
6/03/2010	369	7.71	104	25
7/03/2010	347	8.51	106	26
8/03/2010	412	8.37	139	48
9/03/2010	470	8.47	50	50
10/03/2010	534	8.30	70	57
11/03/2010	582	8.49	98	71
12/03/2010	683	8.54	276	90

Table 9: Contaminants as recorded Bootes Creek Downstream EA MP3 – Condition W18

Date	EC	pH	Suspended Solids	Sulphate
Trigger Levels	500 µS/cm	6.5 – 9.0	1170 mg/L	250mg/L
6/03/2010	206	7.75	151	2
7/03/2010	236	7.82	229	3
8/03/2010	254	7.85	146	3
9/03/2010	131	7.63	409	1
10/03/2010	157	7.99	305	2
11/03/2010	269	8.09	179	5
12/03/2010	280	8.08	998	4

No samples returned results from the TEP 2 RP from Diversion Pit 26 end of pipe sampling in exceedance of release limits, and as such no further work was required.

No results from downstream monitoring exceeded the trigger levels (Condition W19).

Condition 19: If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in Table 7(receiving waters contaminant trigger Levels) during a release event, the environmental authority holder must compare the downstream results to the upstream results in the receiving waters and:

1. *Where the downstream result is the same as the lower value or a lower value than the upstream value for the quality characteristic then no action is to be taken; or*
2. *Where the downstream 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.*

No samples returned exceedances of trigger level results from the Bootes Creek downstream Monitoring Point EA MP3, and as such no further work was required.

Condition 4: Samples were analysed in accordance with EA condition W4 for the elements included below on Table 10., from TEP RP2.

Table 10 : Multi Element Analysis trigger investigation levels

Quality Characteristic	Trigger Levels (ug/l)	Frequency

Aluminumn	650	Within 2 hours of commencement of release and there after weekly
Arsenic	13	
Cadmium	0.2	
Chromium	3	
Copper	13	
Iron	520	
Lead	10	
Mercury	0.2	
Nickel	11	
Boron	370	
Cobalt	90	
Molybdenum	34	
Selenium	10	
Silver	1	
Uranium	1	
Vanadium	10	
Ammonia	900	
Nitrate	1100	
Petroleum hydrocarbons (C6-C9)	20	
Petroleum hydrocarbons (C10 – C36)	100	
Zinc	8	

4. Sample Results

4.1. Sample Results

All these sample were sent to ALS (NATA certified) for processing and reporting which at times has taken up to 2 weeks to receive results. Detailed sample results are included in Appendix B.

In summary, the following table indicates the ranges for each analyses against each sample site. There were no trigger level exceedances which reported downstream and were higher than upstream which required investigation under condition W5.

Table 11: Multi Element Sample results

Location	Date	ALS Sample Number	Quality Characteristic	Bootes Creek MP 1 Upstream (mg/L)	TEP RP 2 Values mg/L	Bootes Creek MP3 Downstream (mg/L)	EA Trigger Level (mg/L)
TEP 2 RP DIV 26 EOP	6/03/2010	EB1004249010	Arsenic	0.00	0.02	0.00	0.013
TEP 2 RP DIV 26 EOP	7/03/2010	EB1004249011	Arsenic	0.00	0.02	0.00	0.013
TEP 2 RP DIV 26 EOP	8/03/2010	EB1004381003	Arsenic	0.00	0.019	0.00	0.013
TEP 2 RP DIV 26 EOP	9/03/2010	EB1004440003	Arsenic	0.00	0.024	0.00	0.013
TEP 2 RP DIV 26 EOP	10/03/2010	EB1004520003	Arsenic	0.00	0.028	0.00	0.013
TEP 2 RP DIV 26 EOP	11/03/2010	EB1004613003	Arsenic	0.00	0.036	0.00	0.013
TEP 2 RP DIV 26 EOP	10/03/2010	EB1004520003	Chromium	0.00	0.004	0.00	0.003
TEP 2 RP DIV 26 EOP	6/03/2010	EB1004249010	Vanadium	0.00	0.02	0.00	0.01
TEP 2 RP DIV 26 EOP	7/03/2010	EB1004249011	Vanadium	0.00	0.03	0.00	0.01
TEP 2 RP DIV 26 EOP	8/03/2010	EB1004381003	Vanadium	0.00	0.03	0.00	0.01
TEP 2 RP DIV 26 EOP	9/03/2010	EB1004440003	Vanadium	0.01	0.03	0.00	0.01
TEP 2 RP DIV 26 EOP	10/03/2010	EB1004520003	Vanadium	0.00	0.04	0.00	0.01
TEP 2 RP DIV 26 EOP	6/03/2010	EB1004249010	Zinc	0.05	0.021	0.01	0.008
TEP 2 RP DIV 26 EOP	7/03/2010	EB1004249011	Zinc	0.01	0.032	0.01	0.008
TEP 2 RP DIV 26 EOP	9/03/2010	EB1004440003	Molybdenum	0.00	0.042	0.00	0.034
TEP 2 RP DIV 26 EOP	10/03/2010	EB1004520003	Molybdenum	0.00	0.066	0.00	0.034
TEP 2 RP DIV 26 EOP	9/03/2010	EB1004440003	Zinc	0.06	0.346	0.00	0.008
TEP 2 RP DIV 26 EOP	11/03/2010	EB1004613003	Selenium	0.00	0.096	0.00	0.01
TEP 2 RP DIV 26 EOP	11/03/2010	EB1004613003	Zinc	0.04	0.04	0.04	0.008
TEP 2 RP DIV 26 EOP	6/03/2010	EB1004249010	Nitrate	0.01	2.15	0.01	1.1
TEP 2 RP DIV 26 EOP	7/03/2010	EB1004249011	Nitrate	0.01	3.39	0.01	1.1
TEP 2 RP DIV 26 EOP	8/03/2010	EB1004381003	Nitrate	0.02	2.75	0.02	1.1
TEP 2 RP DIV 26 EOP	9/03/2010	EB1004440003	Nitrate	0.03	4.8	0.03	1.1
TEP 2 RP DIV 26 EOP	10/03/2010	EB1004520003	Nitrate	0.02	3.1	0.02	1.1
TEP 2 RP DIV 26 EOP	11/03/2010	EB1004613003	Nitrate	0.01	4.72	0.01	1.1

5. Program Action Status

A review of the status of the Program Action Plan for Program Component 2 is included below for reference on Table 11.

Table 12: Program Component 2: Program Action Plan – status review

Objective	Action Plan Item	Performance Indicator	Completion Date	Status / Comment
1	AP 1- Establish Release Point TEP 2 by establishing necessary infrastructure and notify DERM when established.	Necessary infrastructure located and commissioned and notification given to DERM	Within 48 hours of approval of this TEP.	Complete: Release Point established, to DERM. As per the TEP approval MAN9879.
3	AP 2 – Commence first discharge in accordance with TEP and EA MIM800090802.	Discharge occurring	Within 48 hours of approval of this TEP.	Complete: Discharge commenced in accordance with TEP approval MAN 9879 and MIM800090802.
4	AP 3- Notification to DERM of commencement of release event at Release Point TEP RP 2 in accordance with EA Condition W 12.	Notification to DERM.	No later than six (6) hours of having commenced releasing mine affected water to the receiving environment.	Complete: Notification sent to DERM in accordance with the EA Condition W 12. (Attacment)
4	AP 4 – Stakeholder notification and response to inquiries in accordance with section 12 of this TEP	Stakeholder notification occurred.	Initial notification prior to initial discharge. Ongoing notifications and responses to inquiries if required. Final notification at completion of Program Component.	Complete: Notification of stakeholders of commencement of initial discharge Community Reference Group Meeting was provided information in Springsure on the 15 March regarding the management of water at Rolleston Coal Mine. Complete: Final notification of cessation of discharge sent.

Objective	Action Plan Item	Performance Indicator	Completion Date	Status / Comment
2	AP 5 - Monitoring in accordance with EA MIM800090802 .	Daily Monitoring	Daily during discharge	Complete: Monitoring completed daily during discharge in accordance with EAMIM800090802
1 and 6	AP 6 - Cease discharge if an exceedence of Discharge Limit in Table 6 is identified. Discharge may recommence when the relevant water quality characteristic returns to compliance.	Discharge ceases	As soon as practicable after an exceedence is identified. Discharge may recommence when the relevant water quality characteristic returns to compliance	Complete: As and when / if required discharge was ceased when exceedances were identified. No exceedances were recorded.
4	AP 7 - Submit daily summary report during Releases from TEP 2 of the available daily sampling results for water quality characteristics in Table 6 for releases from Release Point TEP 1.	Report submitted to DERM	Each business day during discharge from Release Point TEP 2	Complete: Daily summary reports of water quality characteristics (Table 3) were sent, via email.
4	AP 8- Notification of cessation of release event in accordance with EA condition W13	Notification to DERM	Within 24 hours of cessation of discharge	Complete: Notification of cessation of release event was sent as required (Attachment)
3	AP 9 – Cease discharge at completion of Program Component 2.	Discharge ceases	Final discharge to cease by 28 May 2010	Complete: Final discharge completed by 28 May 2010.
5	AP 10 - Submission to DERM the final report outlining actions undertaken under TEP Program Component 1 and summarizing compliance against TEP and EA MIM800090802 for discharges from Release Point TEP 2	Report submitted to DERM	Within 56 days after cessation of final discharge and no later than 23 July 2010.	Complete: This report.
6	AP 11 – Meet all requirements of EA MIM800090802 in relation to release of contaminants to Bootes Creek (conditions W1-W19) for discharges from Release Point TEP RP 2.	Compliance	At all times during discharge from Release Point TEP RP2	Complete: As reported and discussed in detail below.
7	AP 12 – lodge review of Water Management Plan in accordance with section 11 of the TEP.	Review of Water Management Plan lodged with DERM	31 July 2010	Planned.

6. Summary

Rolleston coal has undertaken a comprehensive monitoring program of releases under the TEP to identify and mitigate potential for harm to the environment as a result of mine affected water introducing contaminants to the environment.

From the results received from sampling at TEP 2 RP. No exceedances of release limits were returned as assessed per the conditions in EA 800090802.

The trigger levels exceedances at TEP RP2 did not require investigation under condition W5. There were no trigger level exceedances at MP3 and noaction was required under condition W19.

As indicated in this report and others[4] the dispersion of contaminants and elevated background elements during intermittent flow regimes and from ephemeral stream flooding is not well understood at present[5].

Rolleston Coal has undertaken a diligent and comprehensive program of monitoring and sampling in accordance with the TEP requirements, and managed the release of mine-affected water in a controlled and responsible manner.

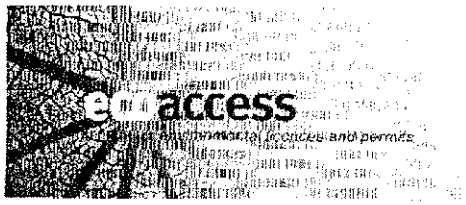
---

[4] Decommissioning Report – Meteor West Pit Release Point – TEP RP 1, Report to DERm, April 21, 2010.

[5] " A Guide to the Application of the ANZECC/ARMCANZ Water Quality Guidelines in the Minerals Industry", G.E.Batley, C.L. Humphrey, S.C. Apte, and J.L. Stauber. ACMER, 2003.

7. Attachments

Attachment 7.1 "TEP Approval Notification"



Environmental Services - Mining

Transitional environmental program certificate of approval number MAN9879

This certificate of approval is issued by the administering authority pursuant to section 335 of the Environmental Protection Act 1994. An 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 defaulting the location to an environmental standard.

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

Xstrata Coal Queensland Pty Ltd
Level 10 Riverside Centre
123 Eagle Street
BRISBANE QLD 4000

ICRA Rolleston Pty Ltd
Level 15
Commonwealth Bank Building of Australia
240 Queen St
BRISBANE QLD 400

Sumisho Coal Australia Pty Ltd
Level 34
Central Plaza One
BRISBANE QLD 4000

approving the draft transitional environmental program; titled Transitional Environmental Program (TEP) Rolleston Coal Mine Meteor West Pit and Diversion Pit 26 (received 5 March 2010) for management of pit dewatering at Rolleston Mine.

The draft transitional environmental program, dated 5 March 2010, was received by this office on 5 March 2010.

The transitional environmental program remains in force until 17 September 2010.

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.

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Queensland Government

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

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Notice

Transitional environmental program certificate of approval

Should you have any queries in relation to this Notice [redacted] of the department on telephone [redacted] would be happy to assist you.

[redacted]
SIGNATURE

5 March 2010
DATE

[redacted]
Delegate of the Administering Authority
Manager – Environmental Services (Mining)
Central West Region

Enquiries:
Department of Environment and Resource Management
PO Box 906
EMERALD QLD 4720
Phone: 4980 6200
Fax: 4982 2568

Attachment 7.2 "Notification of commencement of discharge"

[redacted] (Rolleston - Coal)

From: [redacted] (Rolleston - Coal)
Sent: Saturday, 6 March 2010 8:47 AM
To: [redacted]
Cc: [redacted]
Subject: RE: Rolleston TEP

Hello [redacted]

[redacted] I wish to confirm our discussion last night that discharge has commenced from Release points documented in TEP: MAN9879. Monitoring has commenced, and Rolleston Coal will provide DERM daily notifications of the release each business day as per the TEP.

All stakeholders were advised of this TEP prior to the commencement of the releases.

Regards,

[redacted]
Environment & Community
Rolleston Coal Pty Ltd
Xstrata Coal Queensland
P.O. BOX 11
Springsure QLD 4722

[redacted]

From: [redacted]
Sent: Friday, 5 March 2010 5:15 PM
To: [redacted]
Cc: [redacted]
Subject: Rolleston TEP

Hello Gents

Please see attached the supporting documentation granting approval for the draft TEP submitted today 5 February 2010.

Regards

[redacted]

Manager: Environmental Services Mining

Telephone: [redacted] **Facsimile:** [redacted]

Email: [redacted]

www.derm.qld.gov.au

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Attachment 7.3 "Notificationof cessation of discharge"

[redacted] (Rolleston - Coal)

From: [redacted] (Rolleston - Coal)
Sent: Friday, 19 March 2010 9:55 AM
To: [redacted]
Cc:
Subject: FW: Rolleston Coal TEP

Hello [redacted]

METEOR WEST

Rolleston Coal ceased releasing from Meteor West under the TEP at 18:00 on Thursday the 18th of March due to insufficient volumes to continue discharge. At the time the discharge was stopped Meteor Creek was flowing at 0.60 m upstream (equivalent to 2.9 cumecs). Rolleston Coal was discharging water under TEP 1 at 0.11 cumecs prior to stopping the release. During the 14 days TEP 1 was operational, 232 ML was discharged into Meteor Creek. All in-situ results taken during this discharge were in compliance with the TEP. Rolleston Coal maintained dilution rates of 20% or less for the duration of release. All full suite results are yet to be returned from the laboratory and will be made available to DERM once received. This will be incompliance with Objective 5 of the TEP.

Currently, Rolleston Coal is not discharging any water offsite. Please be advised that the site is prepared for potential rain events that have been forecasted over the following 7 days. In the event that site does receive rain that causes significant pit inflow and results in flow events in the creeks that meet discharge criteria, Rolleston Coal will recommence discharge, both under the EA and current TEP. In the event that this does occur Rolleston Coal will follow all notification requirements as documented in the site EA and TEP.

Regards,

[redacted]
Environment & Community
Rolleston Coal Pty Ltd
Xstrata Coal Queensland
P.O. BOX 11
Springsure QLD 4722

[redacted]

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Appendix A **Transitional Environmental Program (TEP)**

Appendix B **Sample Results**

Transitional Environmental Program (TEP)

Rolleston Coal Mine

Meteor West Pit and Diversion Pit 26

February 2010

ROLLESTON
COAL

Table of Contents

1. Introduction

This Transitional Environmental Program (***TEP***) describes proposed actions necessary for the immediate discharge of flood waters from the Rolleston Coal Mine from temporary additional discharge locations which require DERM authorisation.

Rolleston Coal Mine has experienced exceptionally heavy rainfall over January and February 2010, including the highest February rainfall experienced in the locality since 1954 [1]. As a consequence, a number of urgent actions have been required for the responsive management of overland flow water on site, as previously discussed with DERM [2].

This TEP relates to the proposed discharge of dilute mine affected waters that have built up in pit areas due to a series of heavy rainfall events. The Mine has an increasing volume of water in pit, as the water management system is presently unable to discharge water at a rate consistent with pit inflow. This TEP addresses proposed discharges from two relevant pits:

- from the Meteor West Pit into Meteor Creek, via Sandy Creek; and
- from Diversion Pit 26 into Bootes Creek.

Rolleston Coal voluntarily submits this TEP to seek authorisation under the *Environmental Protection Act 1994* to discharge flood waters from the Meteor West Pit and Diversion Pit 26 from additional discharge points on Bootes Creek and Meteor Creek via Sandy Creek.

This TEP authorises the discharge of water to prevent possible future uncontrolled discharges of water and to prevent the deterioration of water remaining in-situ in the mine pits to transition to a position of being able to achieve compliance with conditions of EA MIM800090802. This TEP proposes the implementation of Action Plans at the completion of which Rolleston Coal will comply with its obligations under EA MIM800090802.

The present high levels of flow in the receiving waters of Bootes Creek and Sandy / Meteor Creeks provide an **immediate** opportunity to discharge water from Meteor West Pit and Diversion Pit 26 while maintaining dilution ratios and contaminant limits that comply with the applicable requirements of Environmental Authority MIM800090802 (other than for suspended solids for Bootes Creek). Rolleston Coal therefore seeks DERM's **urgent consideration** of this application for approval of this TEP.

[1] Neighbours to Rolleston Coal Mine record that for the month of February 1954 Springwood had 547.9ml of rain. For February 2010, so far they have received 548ml, and the month is not yet concluded with continuing rainfall.

[2] Refer to previous correspondence from Rolleston Coal to Michael Rodgerson, DERM, dated 19th of February 2010.

2. Environmental Authority

Xstrata Coal Queensland Pty Ltd, ICRA Rolleston Pty Ltd and Sumisho Coal Australia Pty Limited (***Rolleston Coal***) hold Environmental Authority MIM800090802 to carry out mining activities on ML70307 and MDL227, issued on 30 November 2009.

3. Submission

This TEP is submitted on behalf of Xstrata Coal Queensland Pty Ltd, ICRA Rolleston Pty Ltd and Sumisho Coal Australia Pty Limited by [redacted] General Manager, Southern Region Xstrata Coal Queensland.

[redacted]

Signed

5/03/10

Date

4. Authorisation

This TEP authorises the discharges of water from the Meteor West and Diversion Pit 26 pits on Rolleston Coal Mine at Release Point TEP 1 and Release Point TEP 2 respectively, in accordance with the conditions and requirements of this TEP and Environmental Authority MIM800090802. To the extent there are any inconsistencies between this TEP and Environmental Authority MIM800090802 this TEP prevails.

5. Transition

The environmental protection commitments for the mining activities are enshrined in the Environmental Management Overview Strategy for the mine. This TEP proposes the implementation of Action Plans at the completion of which Rolleston Coal will comply with its obligations under EA MIM800090802.

6. Program Components

This TEP contains two program components involving the pumping and discharge of mine water from the following mine pits:

- Meteor West Pit; and
- Diversion Pit 26.

The flood response activities relating to each of the above pits is a ***Program Component.***

An action plan is included in this TEP for each Program Component which outlines the tasks and/or actions required to achieve the Program Objective for each of the above Program Components.

7. Background

Rolleston Mine has received approximately 450mm of rainfall since 1st January 2010, which has caused significant flooding across the mine and pit inundation.

On the 1st of February 2010 Rolleston Coal commenced discharging mine affected water under Environmental Authority MIM800090802. However the continual rain that has been occurring is increasing volumes of mine affected water in pit, as the current water management system is unable to discharge water at a rate consistent with pit inflow. In accordance with condition W32 of EA MIM800090802 a Water Management Plan had been developed prior to this rainfall event which designated appropriate infrastructure for the proper and effective management of the actual and potential environmental impacts resulting from the mining activity. This plan will be reviewed and the review submitted in accordance with section 11 of this TEP.

Further details of the situation and proposal are set out below.

Meteor West Pit

Meteor West Pit is currently inundated with approximately 190 ML of water. The Pit is surrounded by a levee system designed to divert external overland flow away from the Pit. The levee system performed as designed for this rainfall event, and the water currently in the Pit was collected from rainfall within the localised mining area (ie. inside of the levee system).

Rolleston Coal proposes to discharge mine affected water from Meteor West Pit to the flooded Meteor Creek via overland flow to Sandy Creek. It is also proposed to establish temporary monitoring points upstream and downstream of the confluence of Sandy Creek with Meteor Creek.

The existing release conditions and limits for Meteor Creek prescribed in Environmental Authority MIM800090802 would be applied at the temporary monitoring points.

Diversion Pit 26

Diversion Pit 26 is currently inundated with approximately 149 ML of water. Water management within the Bootes Creek mining area diverts water for collection at a number of locations, including Diversion Pit 26. The water presently within Diversion Pit 26 has been predominantly sourced from within the perimeter levee system which surrounds the Bootes Creek mining area.

Under standard operational conditions, water in Diversion Pit 26 is transferred to the Pit Water Dam prior to being discharged. Rolleston Coal proposes for Diversion Pit 26 to act as a temporary discharge storage facility so as pit pumps can be installed to transfer the water from the pit directly to Bootes Creek. The release point will occur approximately 2 km upstream of licensed Release Point 1. Rolleston Coal would comply with all EA conditions for the discharge of mine affected water to Bootes Creek, including minimum flow height (EA condition W8), dilution ratios (EA condition W9), and water quality parameters and monitoring regime at Release Point RP 1 (with the exception of suspended solids as documented in Section 9.4).

The upstream and downstream grab samplers on Bootes Creek will collect the daily water quality samples whilst Rolleston Coal personnel will collect daily end of pipe sampling. Rolleston Coal does not predict any impact to downstream users as this discharge will be managed so as to comply with the EA requirements for Release Point RP 1.

8. Program Component 1: Discharge from Meteor West Pit

8.1 Program Component

Rolleston Coal proposes to discharge water from Meteor West Pit via overland flow to Sandy Creek, which will then run into Meteor Creek.

The overland flow from the Pit to Sandy Creek will occur in a naturally formed channel that existed prior to mining and which runs for approximately 3 km until it meets Sandy Creek.

The Sandy Creek channel then runs for another approximately 500 m until its confluence with Meteor Creek.

There is approximately 190 ML of mine affected water currently in Meteor West Pit.

In discharging the water Rolleston Coal would comply with the Interim Release Limits in Table 2 of EA MIM800090802 for each quality characteristic (see below at 8.5) for water quality at the Release Point TEP 1 (see below at 8.3).

Rolleston Coal would only release contaminants at Release Point TEP 1 when flow conditions are at 2.5m3/s (2,500 L/s) or greater in Meteor Creek when measured at Monitoring Point 4 as part of this Program Component (see below at 8.6).

Rolleston Coal does not predict any impact to downstream users as this discharge will be managed so as to comply with EA requirements for Release Point RP 2.

8.2 Program Component Objectives

Objective 1
The release of contaminants to waters under this Program Component must only occur from the Release Point TEP 1 specified in Table 1 (Contaminant release points, sources and receiving waters) and depicted in Figure 1.

Objective 2
New Monitoring Points will be established at the locations specified in Table 2 and monitoring will be undertaken in accordance with the requirements of EA MIM800090802.

Objective 3
The release of contaminants to waters under this Program Component must not exceed the release limits in Table 3 when measured at the monitoring point specified in Table 1 for Release Point TEP 1.

Objective 4
Notifications and reporting will comply with requirements under conditions W6, W12, W13, W14 and W15 of EA MIM800090802 in relation to discharges from Release Point TEP 1. Rolleston Coal will lodge a daily (business days only) report which includes a summary of available daily monitoring results for water quality characteristics in Table 3 for releases from Release Point TEP 1. Rolleston Coal will provide stakeholder notification in accordance with section 12 of this TEP.

Objective 5

Rolleston Coal will complete and lodge with DERM a Decommissioning Report outlining actions undertaken under TEP Program Component 1 and summarising compliance against this Program Component and EA MIM800090802 for discharges from Release Point TEP 1 within 56 days of the cessation of the final discharge from Release Point TEP 1.

Objective 6

Rolleston Coal will meet all other requirements of EA MIM800090802 not specifically incorporated into this TEP which are relevant to discharges from Release Point TEP 1 to Meteor Creek (conditions W1-W19). To the extent of any inconsistency with Program Component 1 of this TEP and the conditions of EA MIM800090802 the requirements and conditions of this TEP shall prevail.

Objective 7

Rolleston Coal will review its Water Management Plan to investigate the need, and options, for any water management system upgrades to ensure that proper and effective measures, practices or procedures are in place so that the mine is operated in accordance with conditions of EA MIM800090802.

Rolleston Coal will provide a copy of the review of the Water Management Plan to the DERM by 31 July 2010.

8.3 Release Point

New Release Point TEP 1 will be established as per Table 1 and as depicted on Figure 1.

Table 1.

Release Point (RP)	Easting (GDA94)	Northing (GDA94)	Contaminant Source and Location	Monitoring Point	Receiving waters description
TEP 1	645207	7292541	Meteor West Pit	Sandy Creek above confluence of Sandy Creek and Meteor Creek	Meteor Creek (via Sandy Creek and overland flow)

8.4 Water Quality Monitoring

There are existing monitoring stations (pH, EC, Temperature and flow height) located upstream and downstream of the mining lease on Meteor Creek – refer to locations for Monitoring Points MP2 and MP4 on Figure 1. These existing Monitoring Points have

established automated stations that will continue to operate in accordance with applicable requirements under EA MIM80009080.

In addition, Rolleston Coal will use temporary manual upstream and downstream monitoring points on Meteor Creek which will be sampled daily, in conjunction with sampling of the Release Point in Table 1.

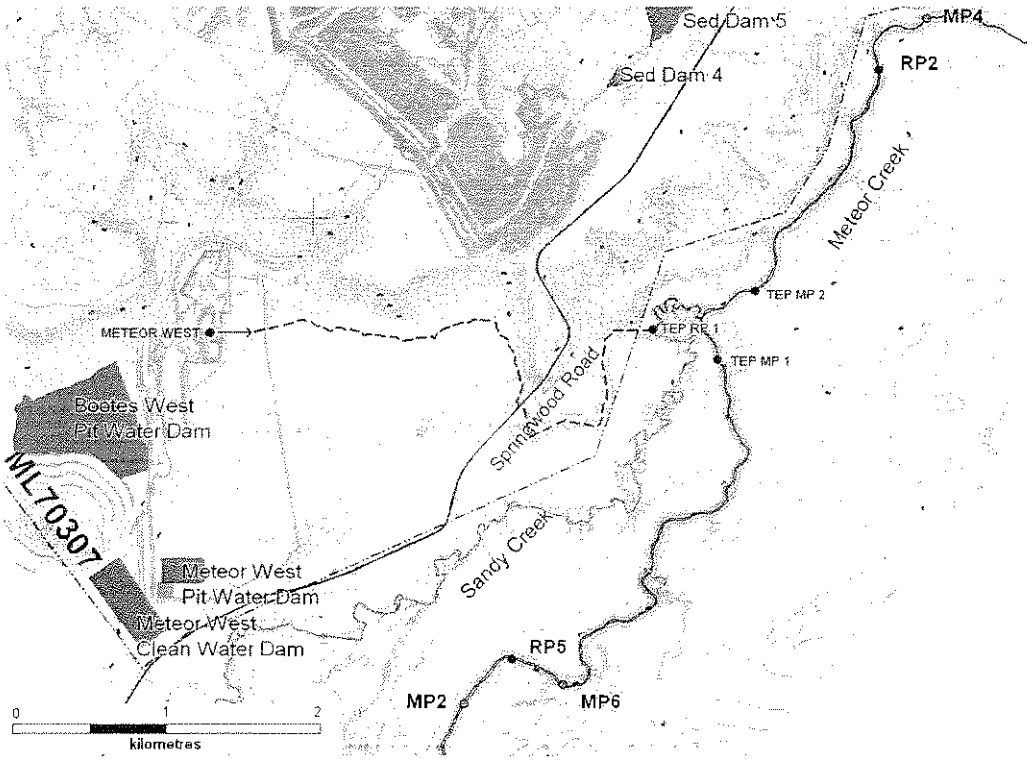
The locations for the temporary monitoring points are detailed in Table 2 and are depicted on Figure 1.

Table 2

Monitoring Point	Receiving Water Description	Easting (GDA94)	Northing (GDA94)
TEP MP 1	Meteor Creek Upstream	645318	7292270
TEP MP 2	Meteor Creek Downstream	645560	7292719

Monitoring at TEP MP1 and TEP MP2 will comply with the conditions of EA MIM800090802 and will be undertaken during any release event at Release Point TEP 1.

Figure 1



8.5 Discharge Limits

The release of contaminants to waters from Release Point TEP 1 must not exceed the release limits in Table 3 when measured at the monitoring point specified in Table 1 for Release Point TEP 1.

Table 3 [3]

Quality Characteristic	Release Limits	Monitoring frequency
Electrical conductivity (uS/cm)	1500	Daily during release (the first sample must be taken within 2 hours of commencement of release)
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	Daily during release (the first sample must be taken within 2 hours of commencement of release)
Turbidity (NTU)	NA	Daily during release (first sample within 2 hours of commencement of release)
Suspended Solids (mg/L)	1200	Daily during release (first sample within 2 hours of commencement of release)
Sulphate (SO_4^{2-}) (mg/L)	1000	Daily during release (first sample within 2 hours of commencement of release)

8.6 Environmental Requirements

Rolleston Coal will meet all other requirements of EA MIM800090802 which are relevant to discharges from Release Point TEP 1 to Meteor Creek (conditions W1-W19). To the extent of any inconsistency with Program Component 1 of this TEP and the conditions of EA MIM800090802, the requirements and conditions of this TEP shall prevail.

These include, but are not limited to, the following:

(a) Quantity of Release

The daily quantity of contaminants released from Release Point TEP 1 must be measured and recorded at Release Point TEP 1 (Condition W10).

(b) Contaminant Flow Rate

The contaminant flow rate must not exceed 20% of the flow rate in Meteor Creek at Monitoring Point 4 (Condition W9).

[3] Taken from Release Limits until 30-NOV-2011 in Table 2 of Environmental Authority MIM800090802.

(c) Minimum Flow requirements of Receiving Waters

The Minimum Flow in Receiving Water for a Release Event is 2.5m3/s (2,500 L/s) in Meteor Creek at Monitoring Point 4 with Continuous flow recording (Condition W8).

(d) Receiving Environment Contaminant Trigger Levels

The water quality of Meteor Creek will be monitored in accordance with condition W18 of EA MIM800090802 and Rolleston Coal will comply with condition W19 during any release events from Release Point TEP 1.

8.7 Risks of Actual Environmental Harm

Rolleston Coal plans to use an existing channel to release overland flow to Sandy Creek. This channel has consolidated over several decades and does not show any signs of erosion from recent natural flow events.

Rolleston Coal will also maintain release rates from end of pipe that will not generate velocities that will incur scouring. The risk of scouring will be minimised by the diffusion of flow from end-of-pipe release by discharging onto a basalt emplacement or similar structure to dissipate the energy as the water runs into the heavily grassed natural channel.

Rolleston Coal is confident there will be minimal potential for contamination from this release. Rolleston Coal does not anticipate any impact to aquatic flora and fauna as the pit inflow is a result of recent rainfall events and the discharge will occur in accordance with condition W9 of EA MIM800090802 at a dilution ratio to minimise the potential for environmental harm. As the overland flow path is heavily vegetated, Rolleston Coal is confident suspended solids will be naturally filtered from the water within the Mining Lease area prior to reaching Sandy Creek. As the release will be occurring to Meteor Creek, which will have a minimum flow of 2,500 L/s, Rolleston Coal is confident that there will be sufficient dilution and blending to eliminate any potential contamination at the downstream TEP monitoring station.

Rolleston Coal is confident that the rate of water released from Meteor West Pit will not incur any increase in flood levels as the channel is appropriately sized to disperse this water. Rolleston Coal has consulted with the adjacent landholder in relation to likely impacts on the useability of local roads.

Impact on stock watering will be negligible as water quality parameters documented in Environmental Authority MIM 800090802 are consistent with those listed in ANZECC guidelines for stock water. Rolleston Coal has consulted with the landowner of Meteor Park in relation to the proposed discharge of mine affected water by overland flow to Meteor Creek via Sandy Creek.

At the completion of discharge of mine affected water from Meteor West Pit to Meteor Creek, Rolleston Coal will utilise water from an adjacent clean water dam to flush the discharge channel. This will also occur in a controlled manner and displace any residual mine affected water from the release.

8.8 Notifications and Reporting

(a) Discharge Notifications

Rolleston Coal will comply with the notification conditions of EA MIM800090802 in relation to releases from Release Point TEP 1 set out at conditions W12 and W13.

(b) Exceedence Notifications

Rolleston Coal will comply with the notification conditions of EA MIM800090802 in relation to releases from Release Point TEP 1 set out at conditions: W6, W14 and W15.

(c) Investigation Notification

If Rolleston Coal is required to complete an investigation in accordance with EA condition W5(2)(b) or W19(2)(b) the investigation report must be submitted to DERM within seven days of completing the report.

(d) Monitoring Results Reporting

During Releases from TEP 1 Rolleston Coal will submit to DERM a daily (business days only) summary report with the available daily sampling results for water quality characteristics in Table 3 from releases from Release Point TEP 1. Total Suspended Solids data will be analysed by an accredited third party laboratory, and are generally available within 10-14 days of being submitted.

(e) Decommissioning Report

Rolleston Coal will complete and lodge with DERM a Decommissioning Report outlining actions undertaken under TEP Program Component 1 and summarising compliance against this TEP and EA MIM800090802 for discharges from Release Point TEP 1 within 56 days of the cessation of the final discharge from Release Point TEP 1.

8.9 Program Action Plan

The above objectives will be achieved in accordance with the Program Action Plan which is set out below at Table 4. The Program Action Plan includes performance indicators and key dates by which actions will be implemented.

Table 4: **Program Component 1 Action Plan**

Objective No	Action Plan Item	Performance Indicator	Completion Date	Responsibility
1	AP 1- Establish Release Point TEP 1 by establishing necessary infrastructure and notify DERM when established.	Necessary infrastructure located and commissioned and notification given to DERM	Within 48 hours of approval of this TEP	Operations Manager in conjunction with Environmental Manager
2	AP 2 -Establish monitoring stations at Monitoring Points TEP 1 and TEP 2 and notify DERM when established.	Monitoring stations established and commissioned and notification given to DERM.	Within 48 hours of approval of this TEP	Environmental Manager
3	AP 3 – Commence first discharge in accordance with TEP and EA MIM800090802.	Discharge occurring	Within 48 hours of approval of this TEP	Operations Manager in conjunction with Environmental Manager
4	AP 4- Notification to DERM of commencement of release event at Release Point TEP 1 in accordance with EA Condition W 12.	Notification to DERM	No later than six (6) hours of having commenced releasing mine affected water to the receiving environment.	Environmental Manager

Objective No	Action Plan Item	Performance Indicator	Completion Date	Responsibility
4	AP 5 – Stakeholder notification and response to inquiries in accordance with section 12 of this TEP	Stakeholder notification occurred.	Initial notification prior to initial discharge. Ongoing notifications and responses to inquiries if required. Final notification at completion of Program Component.	Environmental Manager
2	AP 6 - Monitoring in accordance with EA MIM800090802 .	Daily Monitoring	Daily during discharge	Environmental Manager
1 and 6	AP 7 - Cease discharge if an exceedence of Discharge Limit in Table 3 is identified. Discharge may recommence when the relevant water quality characteristic returns to compliance.	Discharge ceases	As soon as practicable after an exceedence is identified. Discharge may recommence when the relevant water quality characteristic returns to compliance	Environmental Manager & Operations Manager
4	AP – 8 Submit daily summary report during Releases from TEP 1 of the available daily sampling results for water quality characteristics in Table 3 for releases from Release Point TEP 1.	Report submitted to DERM	Business days during discharge from Release Point TEP 1.	Environmental Manager
4	AP 9 - Notification of cessation of release event in accordance with EA condition W13	Notification to DERM	Within 24 hours of cessation of discharge	Environmental Manager

Objective No	Action Plan Item	Performance Indicator	Completion Date	Responsibility
3	AP 10 – Cease discharge at completion of Program Component 1.	Discharge ceases	Final discharge to cease by 28 May 2010[4]	Operations Manager
5	AP 11 - Submission to DERM the final report outlining actions undertaken under TEP Program Component 1 and summarising compliance against TEP and EA MIM800090802 for discharges from Release Point TEP 1.	Report submitted to DERM	Within 56 days after cessation of final discharge and no later than 23 July 2010.	Environmental Manager
6	AP 12 – Meet all requirements of EA MIM800090802 in relation to release of contaminants to Meteor Creek (conditions W1-W19) for discharges from Release Point TEP 1.	Compliance	At all times during discharge from Release Point TEP 1.	Environmental Manager / Operations Manager
7	AP 12 – lodge review of Water Management Plan in accordance with section 11 of this TEP.	Review of Water Management Plan lodged with DERM	31 July 2010	Operations Manager

[4] In the event of continuing rainfall and continued inflows into the pits, Rolleston Coal may approach DERM to approve an amendment to the completion date of this action plan item. The discharge may also be finalised earlier than this date.

9. Program Component 2: Discharge from Diversion Pit 26

9.1 Program Component

Rolleston Coal proposes to pump water directly from Diversion Pit 26 into Bootes Creek approximately 2 kilometres upstream of Release Point RP 1.

All Bootes Creek release conditions and limits would remain consistent with those prescribed in Environmental Authority MIM800090802 (other than suspended solids) in relation to Release Point RP 1, however mine affected water will not be transferred to the Pit Water Dam prior to discharge to Bootes Creek.

9.2 Program Component 2 Objectives

Objective 1

The release of contaminants to waters under this Program Component must only occur from the Release Point TEP 2 specified in Table 5 (Contaminant release points, sources and receiving waters) and depicted in Figure 2.

Objective 2

Monitoring will be undertaken in accordance with the requirements of this Program Component and EA MIM800090802 in relation to the monitoring point specified in Table 5 and at existing Monitoring Points in Bootes Creek (MP 1 and MP 3) under EA MIM800090802 during any release event at Release Point TEP 2.

Objective 3

The release of contaminants to waters under this Program Component must not exceed the release limits in Table 6 when measured at the monitoring point specified in Table 5 for Release Point TEP 2.

Objective 4

Notifications and Reporting will comply with requirements under conditions W6, W12, W13, W14 and W15 of EA MIM800090802 in relation to discharges from Release Point TEP 2. Rolleston Coal will lodge a daily (business days only) report which includes a summary of available daily monitoring results as against water quality characteristics in Table 6 for releases from Release Point TEP 2.

Rolleston Coal will provide stakeholder notification in accordance with section 12 of this TEP.

Objective 5
Rolleston Coal will complete and lodge with DERM a final report outlining actions undertaken under TEP Program Component 2 and summarising compliance against this Program Component and EA MIM800090802 for discharges from Release Point TEP 2 within 56 days of the cessation of the final discharge from Release Point TEP 2.

Objective 6
Rolleston Coal will meet all other requirements of EA MIM800090802 not specifically incorporated into this TEP which are relevant to discharges from Release Point TEP 2 to Bootes Creek (conditions W1-W19). To the extent of any inconsistency with Program Component 2 of this TEP and the conditions of EA MIM800090802, the requirements and conditions of this TEP shall prevail.

Objective 7
Rolleston Coal will review its Water Management Plan to investigate the need, and options, for any water management system upgrades to ensure that proper and effective measures, practices or procedures are in place so that the mine is operated in accordance with conditions of EA MIM800090802 . Rolleston Coal will provide a copy of the review of the Water Management Plan to the DERM by 31 July 2010.

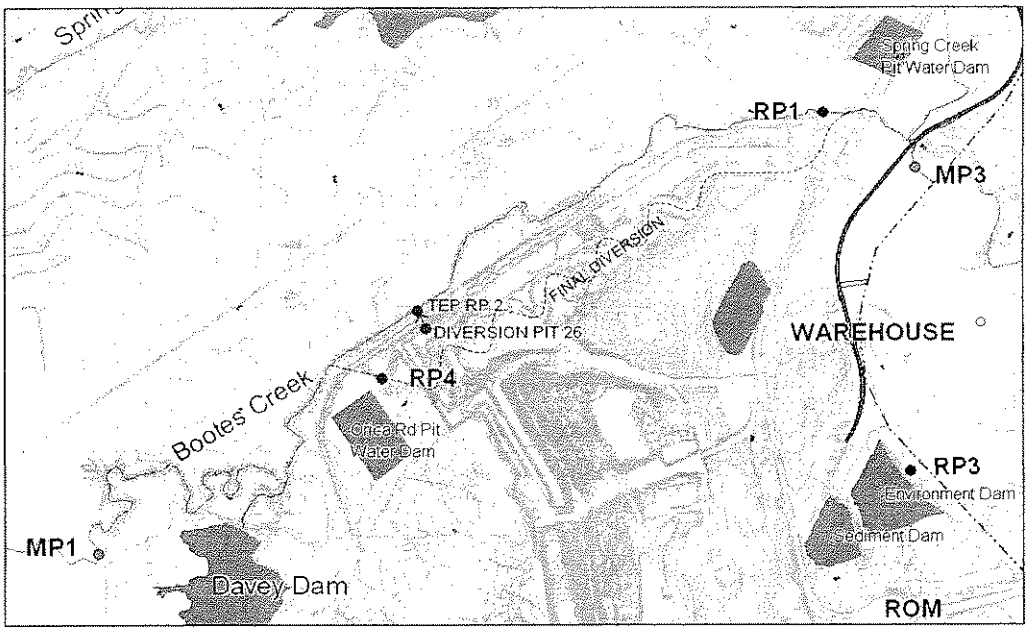
9.3 Release Point

New Release Point TEP 2 will be established at the location identified in Table 5 below and depicted in Figure 2.

Table 5

Release Point (RP)	Easting (GDA94)	Northing (GDA94)	Contaminant Source and Location	Monitoring Point	Receiving waters description
TEP 2	641613	7296708	Diversion Pit 26	End of Pipe	Bootes Creek

Figure 2



9.4 Discharge Limits

The release of contaminants to waters must not exceed the release limits in Table 6 when measured at the monitoring point specified in Table 5 for Release Point TEP 2.

Rolleston Coal requests a temporary amendment to the end of pipe release limit for suspended solids. Typically, the water is transferred to Pit Water Dam, which has been constructed to settle water prior to discharge. Recent sampling of water quality visually indicates the water has settled significantly since the last rainfall events, however Rolleston Coal would like an allowance to increase the limit of end of pipe suspended solids from 1,200 mg/L to a limit of 1800 mg/L (representing 90th percentile of Bootes Creek Upstream data collected since the establishment of the upstream monitoring station in 2005 as calculated by DERM) to account for this temporary change in water management arrangements. The proposed temporary limit is based on historical background data, which indicates that Bootes Creek upstream can exceed 10,000 mg/L with a maximum recorded reading of 17,500 mg/L .

Rolleston Coal will manage the discharge pumps and apply the prescribed dilution factors to reduce the potential for elevated levels of suspended solids at the receiving waters downstream monitoring point.

Table 6 [5]

Quality Characteristic	Release Limits	Monitoring frequency
Electrical conductivity (uS/cm)	1,500	Daily during release (the first sample must be taken within 2 hours of commencement of release)
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	Daily during release (the first sample must be taken within 2 hours of commencement of release)
Turbidity (NTU)	N/A	Daily during release (the first sample must be taken within 2 hours of commencement of release)
Suspended Solids (mg/L)	1,800	Daily during release (the first sample must be taken within 2 hours of commencement of release)
Sulphate (SO_4^{2-}) (mg/L)	1,000	Daily during release (the first sample must be taken within 2 hours of commencement of release)

9.5 Environmental Requirements

Rolleston Coal will meet all other requirements of EA MIM800090802 which are relevant to discharges from Release Point TEP 2 to Bootes Creek (conditions W1-W19). To the extent of any inconsistency with this Program Component 2 of the TEP and the conditions of EA MIM800090802, the requirement of this TEP shall prevail.

These include, but are not limited to, the following:

(a) Quantity of Release

The daily quantity of contaminants released from Release Point TEP 2 must be measured and recorded at Release Point TEP 2.

(b) Contaminant Flow Rate

The contaminant flow rate must not exceed 20% of the flow rate of Bootes Creek which will be calculated at the gauging station at Monitoring Point MP 3.

(c) Minimum Flow requirements of Receiving Waters

The Minimum Flow in Receiving Water for a Release Event from Release Point TEP 2 is 0.75m3/s (750L/s) at the release point, which will be calculated at the gauging station at Monitoring Point MP 3.

[5] Taken from Release Limits until 30-NOV-2011 in Environmental Authority MIM800090802 - other than for suspended solids.

(d) Receiving Environment Contaminant Trigger Levels

The water quality of Bootes Creek will be monitored in accordance with condition W18 of the EA MIM800090802 and Rolleston Coal will comply with EA condition W19 during any release events from Release Point TEP 2.

9.6 Water Quality Monitoring

No new Monitoring Points are proposed in Bootes Creek. The existing Monitoring Point MP3 has an established automated station for monitoring flow heights, electrical conductivity and pH.

Monitoring will comply with EA MIM800090802 during any release event at Release Point TEP 2.

9.7 Risks of Actual Environmental Harm

The largest risk of environmental harm from releasing from Diversion Pit 26 is the potential for increased levels of suspended solids to be discharged to Bootes Creek. Typically the water is transferred to Pit Water Dam, which has been constructed to settle the water prior discharge. However, recent sampling of water quality visually indicates the water has settled significantly since the last rainfall events, and Rolleston Coal will manage the discharge pumps and conduct daily analysis to reduce the potential for elevated levels of suspended solids.

Rolleston Coal is confident there will be minimal potential for contamination from this release. Rolleston Coal does not anticipate any impact to aquatic flora and fauna as the pit inflow is a result of recent rainfall events and the discharge will occur in accordance with condition W9 of EA MIM800090802 at a dilution ratio to minimise the potential for environmental harm.

Release Point TEP 2 will be established such that releases will not cause erosion of the bed and banks of the receiving waters, or cause a material build up of sediment in the receiving waters.

9.8 Notifications and Reporting

(a) Discharge Notifications

Rolleston Coal will comply with the notification conditions of EA MIM800090802 in relation to releases from Release Point TEP 2 set out at conditions W12 and W13.

(b) Exceedence Notifications

Rolleston Coal will comply with the notification conditions of EA MIM800090802 in relation to releases from Release Point TEP 2 set out at conditions: W6, W14 and W15.

(c) Investigation Notification

If Rolleston Coal is required to complete an investigation in accordance with EA condition W5(2)(b) or W19(2)(b) the investigation report must be submitted to DERM within seven days of completing the report.

(d) Monitoring Results Reporting

During Releases from TEP 2 Rolleston Coal will submit to DERM a daily (business days only) summary report with the available daily sampling results for water quality characteristics in Table 6 for releases from Release Point TEP 2. Total Suspended Solids data will be analysed by an accredited third party laboratory, and are generally available within 10-14 days of being submitted.

(e) Decommissioning Report

Rolleston Coal will complete and lodge with DERM a Decommissioning Report outlining actions undertaken under TEP Program Component 2 and summarising compliance against this TEP and EA MIM800090802 for discharges from Release Point TEP 2 within 56 days of the cessation of the final discharge from Release Point TEP 2.

9.9 Program Action Plan

The above objectives will be achieved in accordance with the Program Action Plan which is set out below. The Program Action Plan includes performance indicators and key dates by which actions will be implemented.

Table 7: Program Component 2 Action Plan

Objective No	Action Plan Item	Performance Indicator	Completion Date	Responsibility
1	AP 1- Establish Release Point TEP 2 by establishing necessary infrastructure and notify DERM when established.	Necessary infrastructure located and commissioned and notification given to DERM	Within 48 hours of approval of this TEP	Operations Manager in conjunction with Environmental Manager
3	AP 2 – Commence first discharge in accordance with TEP and EA MIM800090802.	Discharge occurring	Within 48 hours of approval of this TEP	Operations Manager in conjunction with Environmental Manager
4	AP 3 - Notification to DERM of commencement of release event at Release Point TEP 2 in accordance with EA Condition W 12.	Notification to DERM	No later than six (6) hours of having commenced releasing mine affected water to the receiving environment.	Environmental Manager

Objective No	Action Plan Item	Performance Indicator	Completion Date	Responsibility
4	AP 4 – Stakeholder notification and response to inquiries in accordance with section 12 of this TEP	Stakeholder notification occurred.	Initial notification prior to initial discharge. Ongoing notifications and responses to inquiries if required. Final notification at completion of Program Component.	Environmental Manager
2	AP 5 - Monitoring in accordance with EA MIM800090802 .	Daily Monitoring	Daily during discharge	Environmental Manager
1 and 6	AP 6 - Cease discharge if an exceedence of Discharge Limit in Table 6 is identified. Discharge may recommence when the relevant water quality characteristic returns to compliance.	Discharge ceases	As soon as practicable after an exceedence is identified. Discharge may recommence when the relevant water quality characteristic returns to compliance	Environmental Manager & Operations Manager
4	AP 7 – Submit daily summary report during Releases from TEP 2 of the available daily sampling results for water quality characteristics in Table 6 for releases from Release Point TEP 2.	Report submitted to DERM	Each business day during discharge from Release Point TEP 2	Environmental Manager

Objective No	Action Plan Item	Performance Indicator	Completion Date	Responsibility
4	AP 8 - Notification of cessation of release event in accordance with EA condition W13	Notification to DERM	Within 24 hours of cessation of discharge	Environmental Manager
3	AP 9 – Cease discharge at completion of Program Component 2.	Discharge ceases	Final discharge to cease by 28 May 2010[6]	Operations Manager
5	AP 10 - Submission with DERM the final report outlining actions undertaken under TEP Program Component 2 and summarising compliance against TEP and EA MIM800090802 for discharges from Release Point TEP 2.	Report submitted to DERM	Within 56 days after cessation of final discharge and no later than 23 July 2010	Environmental Manager
6	AP 11 – Meet all requirements of EA MIM800090802 in relation to release of contaminants to Bootes Creek (conditions W1-W19) for discharges from Release Point TEP 2 not inconsistent with this TEP.	Compliance	At all times during discharge from Release Point TEP 1	Environmental Manager / Operations Manager
7	AP 12 – lodge review of Water Management Plan in accordance with section 11 of this TEP.	Review of Water Management Plan lodged	31 July 2010	Operations Manager

[6] In the event of continuing rainfall and continued inflows into the pits, Rolleston Coal may approach DERM to approve an amendment to the completion date of this action plan item. The discharge may also be finalised earlier than this date.

10. Receiving Environment Monitoring Program

Rolleston Coal will incorporate results from release at Release Points TEP 1 and TEP 2 in the Receiving Environment Monitoring Program (REMP) in the report to be provided by 1 October 2011 under condition W22 of EA MIM800090802.

11. Water Management Plan

In accordance with condition W32 of EA MIM800090802 a Water Management Plan has been developed prior to the rainfall event described in section 1 of this TEP which designated appropriate infrastructure for the proper and effective management of the actual and potential environmental impacts resulting from the mining activity.

Rolleston Coal will review its Water Management Plan, taking into account the impacts of this rainfall event on water management infrastructure, to investigate the need, and options, for any water management system upgrades to ensure that proper and effective measures, practices or procedures are in place so that the mine is operated in accordance with conditions of EA MIM800090802.

Rolleston Coal will provide a copy of the review of the Water Management Plan to the DERM by 31 July 2010.

12. Stakeholder Notification and Inquiry Response

(a) Prior to undertaking the initial discharge from either the Meteor West Pit or Diversion Pit 26, Rolleston Coal will:

  (i) notify adjoining land holders (including National Parks) and Central Highlands Regional Council of the discharge event where Rolleston Coal considers that the release is likely to impact upon the use of Springwood Road; and

  (ii) notify the owner of "Meteor Park" of the approval of this TEP and the authorisation of discharge of mine affected water to Meteor Creek via Sandy Creek; and

  (iii) provide the stakeholders identified in (i) and (ii) above with the details of Xstrata's community concerns hotline

(b) Once the discharge has commenced, if there is a significant increase in the rate of discharge from either the Meteor West Pit or Diversion Pit 26, Rolleston Coal will:

  (iv) notify adjoining land holders (including National Parks) and Central Highlands Regional Council of the increase in discharge flows where Rolleston Coal considers that the increased flow is likely to impact upon the use of Springwood Road; and

(v) notify the owner of "Meteor Park" of the change in flow rates affecting part of the property within the mining lease boundary where discharges are made to the channel flowing to Sandy Creek.

(c) Rolleston Coal will notify the stakeholders identified in paragraphs (a) and (b) above of the completion of the respective Program Components.

(d) During discharge Rolleston Coal will promptly respond to any inquiries received from stakeholders identified in paragraphs (a) and (b) relating to actions under this TEP.

13. Complaint Response

All complaints received must be recorded including details of complainant, reasons for the complaint, investigations undertaken, conclusions formed and actions taken. This information must be made available for inspection by DERM on request.

14. Term of the TEP

The proposed term for each component of the TEP is as follows:

Program Component	Action Plan Completion Date
1 – Meteor West Pit	56 days after submission of Final Report under Objective 5 and no later than 17 September 2010.
2 – Diversion Pit 26	56 days after submission of Final Report under Objective 5 and no later than 17 September 2010.

15. Further information

For further information contact [redacted]

[redacted]

Rolleston Coal Pty Ltd
Xstrata Coal Queensland
P.O. BOX 11
Springsure QLD 4722

Mobile:

Email [redacted]

Bootes Creek Upstream Monitoring Station					EB1002145001_0_XTAB.XLS	EB1002145002_0_XTAB.XLS	EB1002145003_0_XTAB.XLS	EB1002145004_0_XTAB.XLS	EB1002145005_0_XTAB.XLS
				WORKGROUP	EB1002145001	EB1002145002	EB1002145003	EB1002145004	EB1002145005
Matrix:	WATER			Sample Type:	REG	REG	REG	REG	REG
Workgroup:				ALS Sample number:	EB1002145001	EB1002145002	EB1002145003	EB1002145004	EB1002145005
Project name/number:				Sample date:	31/01/2010 @ 21:26	1/02/2010 @ 10:46	2/02/2010 @ 00:06	02/02/2010 @ 13:26	03/02/2010 @ 02:46
				Client sample ID (1st):	Bootes CK U/S 1	Bootes CK U/S 2	Bootes CK U/S 3	Bootes CK U/S 4	Bootes CK U/S 5
				Client sample ID (2nd):					
				Site:					
				Purchase Order:					
	Analyte grouping/Analyte	CAS Number	Units	LOR					
	EA005P: pH by PC Titrator								
6.5	pH Value		pH Unit	0.01	7.2	7.72	7.64	7.73	7.84
	EA010P: Conductivity by PC Titrator				81	114	119	122	133
315	Electrical Conductivity @ 25°C		µS/cm	1	76	118	128	124	140
	EA015: Total Dissolved Solids								
	Total Dissolved Solids @180°C	GIS-210-010	mg/L	1					
	EA025: Suspended Solids								
1170	Suspended Solids (SS)		mg/L	1	1340	1240	2070	494	336
	EA045: Turbidity								
	Turbidity		NTU	0.1	360	260	370	140	85
	ED037P: Alkalinity by PC Titrator								
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1	<1	<1	<1	<1
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	<1	<1	<1	<1	<1
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	38	60	61	51	64
	Total Alkalinity as CaCO3		mg/L	1	38	60	61	51	64
	ED040F: Dissolved Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1	<1	1	1	1	2
	ED040T: Total Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1					
	ED045G: Chloride Discrete analyser								
	Chloride	16887-00-6	mg/L	1	2	4	4	6	6
	ED045P: Chloride by PC Titrator								
	Chloride	16887-00-6	mg/L	1					
	ED093F: Dissolved Major Cations								
	Calcium	7440-70-2	mg/L	1	5	10	10	10	11
	Magnesium	7439-95-4	mg/L	1	3	5	5	5	6
	Sodium	7440-23-5	mg/L	1	5	5	5	6	7
	Potassium	7440-09-7	mg/L	1	3	3	3	3	3
	EG005F: Dissolved Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG005T: Total Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG020F: Dissolved Metals by ICP-MS								
0.65	Aluminium	7429-90-5	mg/L	0.01	0.37	0.16	0.24	0.34	0.32
0.013	Arsenic	7440-38-2	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.0002	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001
0.003	Chromium	7440-47-3	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.09	Cobalt	7440-48-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.013	Copper	7440-50-8	mg/L	0.001	0.005	0.003	0.003	0.003	0.003
0.01	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	0.003	0.004	0.002	0.006	0.004
0.034	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.011	Nickel	7440-02-0	mg/L	0.001	0.006	0.003	0.003	0.003	0.003
0.01	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0.001	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.001	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.01	Vanadium	7440-62-2	mg/L	0.01	0.01	<0.01	<0.01	<0.01	<0.01
0.008	Zinc	7440-66-6	mg/L	0.005	0.078	0.069	0.066	0.133	0.037
0.37	Boron	7440-42-8	mg/L	0.05	0.06	0.05	0.06	0.05	<0.05
0.52	Iron	7439-89-6	mg/L	0.05	0.31	0.13	0.2	0.27	0.23
	EG020T: Total Metals by ICP-MS								
	Aluminium	7429-90-5	mg/L	0.01	45.3	32.4	35.6	17.9	1.26
	Arsenic	7440-38-2	mg/L	0.001	0.002	0.001	<0.001	0.002	<0.001
	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	0.0003	0.0004	<0.0001	0.0003
	Chromium	7440-47-3	mg/L	0.001	0.069	0.055	0.055	0.035	0.001
	Cobalt	7440-48-4	mg/L	0.001	0.042	0.046	0.054	0.023	0.006
	Copper	7440-50-8	mg/L	0.001	0.055	0.048	0.05	0.026	0.006
	Lead	7439-92-1	mg/L	0.001	0.009	0.011	0.011	0.011	0.001
	Manganese	7439-96-5	mg/L	0.001	0.882	1.01	1.2	0.534	0.18
	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Nickel	7440-02-0	mg/L	0.001	0.119	0.114	0.113	0.068	0.01
	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Vanadium	7440-62-2	mg/L	0.01	0.08	0.06	0.06	0.04	0.01
	Zinc	7440-66-6	mg/L	0.005	0.107	0.089	0.095	0.059	0.009
	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Iron	7439-89-6	mg/L	0.05	52.4	38.6	40.7	25.1	1.13
	EK040P: Fluoride by PC Titrator								
	Fluoride	16984-48-8	mg/L	0.1	<0.1	<0.1	0.1	<0.1	<0.1
	EN055: Ionic Balance								
	Total Anions		meq/L	0.01	0.81	1.35	1.36	1.22	1.5
	Total Cations		meq/L	0.01	0.77	1.2	1.26	1.25	1.4
	Ionic Balance		%	0.01					
	ED093T: Total Major Cations								
	Calcium	7440-70-2	mg/L	1					
	Magnesium	7439-95-4	mg/L	1					
	Sodium	7440-23-5	mg/L	1					
	Potassium	7440-09-7	mg/L	1					
	EK055G: Ammonia as N by Discrete Analyser								
0.9	Ammonia as N	7664-41-7	mg/L	0.01	0.03	0.04	0.1	0.13	0.05
	EK057G: Nitrite as N by Discrete Analyser								
1.1	Nitrite as N		mg/L	0.01	<0.01	0.01	0.01	0.01	<0.01
	EK058G: Nitrate as N by Discrete Analyser								
1.1	Nitrate as N	14797-55-8	mg/L	0.01	<0.01	<0.01	0.02	0.04	<0.01
	EK059G: NOX as N by Discrete Analyser								
1.1	Nitrite + Nitrate as N		mg/L	0.01	<0.01	<0.01	0.04	0.05	<0.01
	EP080/071: Total Petroleum Hydrocarbons								
20	C6 - C9 Fraction		µg/L	20	<20	<20	<20	<20	<20
100	C10 - C14 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C15 - C28 Fraction		µg/L	100	<100	<100	<100	<100	<100
100	C29 - C36 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C10 - C36 Fraction (sum)		µg/L		<50	<50	<50	<50	<50
	EP080S: TPH(V)/BTEX Surrogates								
	1,2-Dichloroethane-D4	17060-07-0	%		102	105	105	104	108
	Toluene-D8	2037-26-5	%		97	97.5	102	102	99.2
	4-Bromofluorobenzene	460-00-4	%		91.5	93	94	95.8	96.1
	EG035T: Total Recoverable Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	EG035F: Dissolved Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

	Bootes Creek Upstream Monitoring Station				EB EB100214500_0_XTAB.XLS	EB100214500_0_XTAB.XLS	EB100214500_0_XTAB.XLS	EB100287100_0_XTAB.XLS	EB100287100_0_XTAB.XLS
	Matrix: WATER			WORKGROUP	EB100214500	EB100214500	EB100214500	EB100287100	EB100287100
				Sample Type:	REG	REG	REG	REG	REG
	Workgroup:			ALS Sample number:	EB1002145006	EB1002145007	EB1002145008	EB1002871001	EB1002871002
	Project name/number:			Sample date:	03/02/2010 @ 16:06	04/02/2010 @ 05:26	04/02/2010 @ 18:46	4/02/2010	05/02/2010 @ 12:33
				Client sample ID (1st):	Bootes CK U/S 6	Bootes CK U/S 7	Bootes CK U/S 8	Bootes CK U/S 1	Bootes CK U/S 2
				Client sample ID (2nd):					
				Site:					
				Purchase Order:					
	Analyte grouping/Analyte	CAS Number	Units	LOR					
	EA005P: pH by PC Titrator								
6.5	pH Value		pH Unit	0.01	7.7	7.79	7.9	7.76	7.9
	EA010P: Conductivity by PC Titrator								
315	Electrical Conductivity @ 25°C		µS/cm	1	139	153	178	132	166
	EA015: Total Dissolved Solids								
	Total Dissolved Solids @180°C	GIS-210-010	mg/L	1					
	EA025: Suspended Solids								
1170	Suspended Solids (SS)		mg/L	1	482	253	191	114	78
	EA045: Turbidity								
	Turbidity		NTU	0.1	260	150	70	65	45
	ED037P: Alkalinity by PC Titrator								
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1	<1	<1	<1	<1
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	<1	<1	<1	<1	<1
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	60	63	74	50	67
	Total Alkalinity as CaCO3		mg/L	1	60	63	74	50	67
	ED040F: Dissolved Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1	2	2	2	1	2
	ED040T: Total Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1					
	ED045G: Chloride Discrete analyser								
	Chloride	16887-00-6	mg/L	1	6	7	9	9	11
	ED045P: Chloride by PC Titrator								
	Chloride	16887-00-6	mg/L	1					
	ED093F: Dissolved Major Cations								
	Calcium	7440-70-2	mg/L	1	11	12	14	11	14
	Magnesium	7439-95-4	mg/L	1	6	6	8	6	7
	Sodium	7440-23-5	mg/L	1	7	8	9	7	9
	Potassium	7440-09-7	mg/L	1	3	4	4	4	4
	EG005F: Dissolved Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG005T: Total Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG020F: Dissolved Metals by ICP-MS								
0.65	Aluminium	7429-90-5	mg/L	0.01	0.38	0.37	0.22	0.12	0.11
0.013	Arsenic	7440-38-2	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.0002	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	0.0001	<0.0001	<0.0001	0.0002
0.003	Chromium	7440-47-3	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.09	Cobalt	7440-48-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.013	Copper	7440-50-8	mg/L	0.001	0.003	0.003	0.002	0.003	0.003
0.01	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	0.004	0.007	0.003	0.002	0.004
0.034	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.011	Nickel	7440-02-0	mg/L	0.001	0.003	0.003	0.003	0.003	0.003
0.01	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0.001	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.001	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.01	Vanadium	7440-62-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0.008	Zinc	7440-66-6	mg/L	0.005	0.046	0.051	0.009	0.005	0.008
0.37	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
0.52	Iron	7439-89-6	mg/L	0.05	0.28	0.23	0.13	0.07	0.07
	EG020T: Total Metals by ICP-MS								
	Aluminium	7429-90-5	mg/L	0.01	1.56	3.1	0.74	2.14	1.94
	Arsenic	7440-38-2	mg/L	0.001	<0.001	0.001	<0.001	<0.001	0.001
	Cadmium	7440-43-9	mg/L	0.0001	0.0002	<0.0001	0.0002	0.0001	0.0003
	Chromium	7440-47-3	mg/L	0.001	0.002	0.007	<0.001	0.003	0.003
	Cobalt	7440-48-4	mg/L	0.001	0.008	0.004	0.003	0.002	0.001
	Copper	7440-50-8	mg/L	0.001	0.007	0.006	0.005	0.004	0.004
	Lead	7439-92-1	mg/L	0.001	0.001	0.001	<0.001	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	0.25	0.108	0.107	0.039	0.032
	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Nickel	7440-02-0	mg/L	0.001	0.011	0.012	0.006	0.007	0.006
	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Vanadium	7440-62-2	mg/L	0.01	0.01	0.01	0.01	0.01	0.01
	Zinc	7440-66-6	mg/L	0.005	0.008	0.01	0.006	0.006	0.006
	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Iron	7439-89-6	mg/L	0.05	1.33	4.1	0.71	2.36	1.71
	EK040P: Fluoride by PC Titrator								
	Fluoride	16984-48-8	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	EN055: Ionic Balance								
	Total Anions		meq/L	0.01	1.41	1.5	1.79	1.29	1.67
	Total Cations		meq/L	0.01	1.41	1.56	1.8	1.39	1.76
	Ionic Balance		%	0.01				3.86	2.63
	ED093T: Total Major Cations								
	Calcium	7440-70-2	mg/L	1					
	Magnesium	7439-95-4	mg/L	1					
	Sodium	7440-23-5	mg/L	1					
	Potassium	7440-09-7	mg/L	1					
	EK055G: Ammonia as N by Discrete Analyser								
0.9	Ammonia as N	7664-41-7	mg/L	0.01	0.13	0.02	0.08	0.12	0.04
	EK057G: Nitrite as N by Discrete Analyser								
1.1	Nitrite as N		mg/L	0.01	<0.01	<0.01	<0.01	0.1	<0.01
	EK058G: Nitrate as N by Discrete Analyser								
1.1	Nitrate as N	14797-55-8	mg/L	0.01	<0.01	<0.01	0.05	<0.01	0.06
	EK059G: NOX as N by Discrete Analyser								
1.1	Nitrite + Nitrate as N		mg/L	0.01	<0.01	<0.01	0.05	0.05	0.06
	EP080/071: Total Petroleum Hydrocarbons								
20	C6 - C9 Fraction		µg/L	20	<20	<20	<20	<20	<20
100	C10 - C14 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C15 - C28 Fraction		µg/L	100	<100	<100	<100	<100	<100
100	C29 - C36 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C10 - C36 Fraction (sum)				<50	<50	<50	<50	<50
	EP080S: TPH(V)/BTEX Surrogates								
	1,2-Dichloroethane-D4	17060-07-0	%		103	99.4	105	104	102
	Toluene-D8	2037-26-5	%		96.4	99.1	95.2	96.4	100
	4-Bromofluorobenzene	460-00-4	%		92	92.3	89.7	99.2	104
	EG035T: Total Recoverable Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	EG035F: Dissolved Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Bootes Creek Upstream Monitoring Station				EB EB100287100_0_XTAB.XLS	EB100287100_0_XTAB.XLS	EB100287100_0_XTAB.XLS	EB100287100_0_XTAB.XLS	EB100287100_0_XTAB.XLS
			WORKGROUP	EB100287100	EB100287100	EB100287100	EB100287100	EB100287100
Matrix: WATER			Sample Type:	REG	REG	REG	REG	REG
Workgroup:			ALS Sample number:	EB1002871003	EB1002871004	EB1002871005	EB1002871006	EB1002871007
Project name/number:			Sample date:	06/02/2010 @ 01:53	6/02/2010 @ 15:13	07/02/2010 @ 04:33	07/02/2010 @ 17:53	08/02/2010 @ 11:40
			Client sample ID (1st):	Bootes CK U/S 3	Bootes CK U/S 4	Bootes CK U/S 5	Bootes CK U/S 6	Bootes CK U/S 7
			Client sample ID (2nd):					
			Site:					
			Purchase Order:					

	Analyte grouping/Analyte	CAS Number	Units	LOR					
	EA005P: pH by PC Titrator								
6.5	pH Value		pH Unit	0.01	7.7	7.61	7.7	8.14	7.85
	EA010P: Conductivity by PC Titrator								
315	Electrical Conductivity @ 25°C		µS/cm	1	176	116	142	159	170
	EA015: Total Dissolved Solids								
	Total Dissolved Solids @180°C	GIS-210-010	mg/L	1					
	EA025: Suspended Solids								
1170	Suspended Solids (SS)		mg/L	1	1300	2940	400	148	111
	EA045: Turbidity								
	Turbidity		NTU	0.1	500	1100	220	18	60
	ED037P: Alkalinity by PC Titrator								
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1	<1	<1	<1	<1
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	<1	<1	<1	<1	<1
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	72	56	59	67	71
	Total Alkalinity as CaCO3		mg/L	1	72	56	59	67	71
	ED040F: Dissolved Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1	2	<1	1	1	1
	ED040T: Total Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1					
	ED045G: Chloride Discrete analyser								
	Chloride	16887-00-6	mg/L	1	11	3	8	10	10
	ED045P: Chloride by PC Titrator								
	Chloride	16887-00-6	mg/L	1					
	ED093F: Dissolved Major Cations								
	Calcium	7440-70-2	mg/L	1	14	10	12	13	14
	Magnesium	7439-95-4	mg/L	1	8	5	6	7	7
	Sodium	7440-23-5	mg/L	1	9	4	7	9	9
	Potassium	7440-09-7	mg/L	1	4	2	4	4	4
	EG005F: Dissolved Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG005T: Total Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG020F: Dissolved Metals by ICP-MS								
0.85	Aluminium	7429-90-5	mg/L	0.01	0.12	0.09	0.1	0.13	0.13
0.013	Arsenic	7440-38-2	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.0002	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	0.0013	<0.0001	<0.0001
0.003	Chromium	7440-47-3	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.09	Cobalt	7440-48-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.013	Copper	7440-50-8	mg/L	0.001	0.004	0.004	0.003	0.003	0.002
0.01	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	0.005	0.003	0.003	0.002	0.002
0.034	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.011	Nickel	7440-02-0	mg/L	0.001	0.005	0.004	0.004	0.003	0.003
0.01	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0.001	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.001	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.01	Vanadium	7440-62-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0.008	Zinc	7440-66-6	mg/L	0.005	<0.005	0.01	0.007	0.005	<0.005
0.37	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
0.52	Iron	7439-89-6	mg/L	0.05	0.1	0.06	0.08	0.08	0.08
	EG020T: Total Metals by ICP-MS								
	Aluminium	7429-90-5	mg/L	0.01	11.7	16.7	9.6	2.91	2.7
	Arsenic	7440-38-2	mg/L	0.001	0.001	0.002	0.002	0.001	0.001
	Cadmium	7440-43-9	mg/L	0.0001	0.0002	0.0004	0.0003	<0.0001	<0.0001
	Chromium	7440-47-3	mg/L	0.001	0.025	0.036	0.02	0.006	0.006
	Cobalt	7440-48-4	mg/L	0.001	0.009	0.018	0.011	0.002	0.003
	Copper	7440-50-8	mg/L	0.001	0.016	0.023	0.014	0.004	0.006
	Lead	7439-92-1	mg/L	0.001	0.002	0.006	0.003	<0.001	0.001
	Manganese	7439-96-5	mg/L	0.001	0.224	0.427	0.27	0.056	0.085
	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Nickel	7440-02-0	mg/L	0.001	0.032	0.054	0.031	0.009	0.011
	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Vanadium	7440-62-2	mg/L	0.01	0.03	0.04	0.03	0.01	0.01
	Zinc	7440-66-6	mg/L	0.005	0.029	0.044	0.031	0.007	0.011
	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Iron	7439-89-6	mg/L	0.05	15.5	24.4	12.9	3.42	4.52
	EK040P: Fluoride by PC Titrator								
	Fluoride	16984-48-8	mg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	EN055: Ionic Balance								
	Total Anions		meq/L	0.01	1.76	1.21	1.44	1.65	1.74
	Total Cations		meq/L	0.01	1.83	1.17	1.49	1.72	1.8
	Ionic Balance		%	0.01	1.53	1.64	1.53	2.16	1.78
	ED093T: Total Major Cations								
	Calcium	7440-70-2	mg/L	1					
	Magnesium	7439-95-4	mg/L	1					
	Sodium	7440-23-5	mg/L	1					
	Potassium	7440-09-7	mg/L	1					
	EK055G: Ammonia as N by Discrete Analyser								
0.9	Ammonia as N	7664-41-7	mg/L	0.01	0.11	0.05	0.06	0.05	0.04
	EK057G: Nitrite as N by Discrete Analyser								
1.1	Nitrite as N		mg/L	0.01	0.03	<0.01	<0.01	<0.01	0.02
	EK058G: Nitrate as N by Discrete Analyser								
1.1	Nitrate as N	14797-55-8	mg/L	0.01	<0.01	0.04	0.02	0.01	<0.01
	EK059G: NOX as N by Discrete Analyser								
1.1	Nitrite + Nitrate as N		mg/L	0.01	0.02	0.04	0.02	0.01	0.01
	EP080/071: Total Petroleum Hydrocarbons								
20	C6 - C9 Fraction		µg/L	20	<20	<20	<20	<20	<20
100	C10 - C14 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C15 - C28 Fraction		µg/L	100	<100	<100	<100	<100	<100
100	C29 - C36 Fraction		µg/L	50	100	<50	<50	<50	<50
100	C10 - C36 Fraction (sum)				100	<50	<50	<50	<50
	EP080S: TPH(V)/BTEX Surrogates								
	1,2-Dichloroethane-D4	17060-07-0	%		104	100	95.2	95.7	82.2
	Toluene-D8	2037-26-5	%		99.3	99.8	97.5	104	95
	4-Bromofluorobenzene	460-00-4	%		101	102	98.1	104	95.1
	EG035T: Total Recoverable Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	EG035F: Dissolved Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

	Bootes Creek Upstream Monitoring Station				EB EB100287100_0_XTAB.XLS	EB100287100_0_XTAB.XLS	EB100286800_0_XTAB.XLS	EB100286800_0_XTAB.XLS	EB100316100_0_XTAB.XLS
	Matrix: WATER			WORKGROUP	EB1002871008	EB1002871009	EB1002868004	EB1002868005	EB1003181001
	Workgroup:			Sample Type:	REG	REG	REG	REG	REG
	Project name/number:			ALS Sample number:	EB1002871008	EB1002871009	EB1002868004	EB1002868005	EB1003181001
				Sample date:	10/02/2010	11/02/2010 @ 13:00	12/02/2010 @ 11:11	13/02/2010 @ 07:03	14/02/2010
				Client sample ID (1st):	Bootes CK U/S 8	Bootes CK U/S 9	Bootes CK US	Bootes CK US	Bootes Creek US 1
				Client sample ID (2nd):					
				Site:					
				Purchase Order:					
	Analyte grouping/Analyte	CAS Number	Units	LOR					
	EA005P: pH by PC Titrator								
6.5	pH Value		pH Unit	0.01	7.41	7.46	6.96	7.27	
					8.14	8.15	8.07	8.1	7.61
	EA010P: Conductivity by PC Titrator								
315	Electrical Conductivity @ 25°C		µS/cm	1	268	271	220	290	
					263	262	238	321	225
	EA015: Total Dissolved Solids								
	Total Dissolved Solids @180°C	GIS-210-010	mg/L	1					
	EA025: Suspended Solids								
1170	Suspended Solids (SS)		mg/L	1	26	20	29	28	804
	EA045: Turbidity								
	Turbidity		NTU	0.1	17	17	65	16	600
	ED037P: Alkalinity by PC Titrator								
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1	<1	<1	<1	
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	<1	<1	<1	<1	
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	118	115	106	139	
	Total Alkalinity as CaCO3		mg/L	1	118	115	106	139	
	ED040F: Dissolved Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1	2	2	2	6	2
	ED040T: Total Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1					
	ED045G: Chloride Discrete analyser								
	Chloride	16887-00-6	mg/L	1	12	12	10	14	
	ED045P: Chloride by PC Titrator								
	Chloride	16887-00-6	mg/L	1					
	ED093F: Dissolved Major Cations								
	Calcium	7440-70-2	mg/L	1	23	22	20	24	
	Magnesium	7439-95-4	mg/L	1	13	12	11	14	
	Sodium	7440-23-5	mg/L	1	13	12	12	19	
	Potassium	7440-09-7	mg/L	1	4	4	4	4	
	EG005F: Dissolved Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG005T: Total Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG020F: Dissolved Metals by ICP-MS								
0.65	Aluminium	7429-90-5	mg/L	0.01	0.14	0.12	0.07	0.29	
0.013	Arsenic	7440-38-2	mg/L	0.001	<0.001	0.002	<0.001	0.002	
0.0002	Cadmium	7440-43-9	mg/L	0.0001	0.0004	0.0001	<0.0001	<0.0001	
0.003	Chromium	7440-47-3	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	
0.09	Cobalt	7440-48-4	mg/L	0.001	<0.001	<0.001	<0.001	0.001	
0.013	Copper	7440-50-8	mg/L	0.001	0.002	0.002	0.003	0.003	
0.01	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	
	Manganese	7439-96-5	mg/L	0.001	0.001	0.001	0.005	0.102	
0.034	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	0.002	
0.011	Nickel	7440-02-0	mg/L	0.001	0.003	0.003	0.003	0.006	
0.01	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	
0.001	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	
0.001	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	
0.01	Vanadium	7440-62-2	mg/L	0.01	0.01	<0.01	0.01	<0.01	
0.008	Zinc	7440-66-6	mg/L	0.005	<0.005	<0.005	0.008	0.009	
0.37	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	
0.52	Iron	7439-89-6	mg/L	0.05	<0.05	0.06	<0.05	0.66	
	EG020T: Total Metals by ICP-MS								
	Aluminium	7429-90-5	mg/L	0.01	23.4	1.13	3.01	1.96	
	Arsenic	7440-38-2	mg/L	0.001	0.001	0.001	<0.001	0.002	
	Cadmium	7440-43-9	mg/L	0.0001	0.0003	<0.0001	0.0001	0.0002	
	Chromium	7440-47-3	mg/L	0.001	0.052	0.002	0.006	0.004	
	Cobalt	7440-48-4	mg/L	0.001	0.016	<0.001	0.002	0.003	
	Copper	7440-50-8	mg/L	0.001	0.024	0.002	0.004	0.003	
	Lead	7439-92-1	mg/L	0.001	0.003	<0.001	<0.001	<0.001	
	Manganese	7439-96-5	mg/L	0.001	0.389	0.016	0.032	0.159	
	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	0.003	
	Nickel	7440-02-0	mg/L	0.001	0.057	0.004	0.008	0.008	
	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	
	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	
	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	
	Vanadium	7440-62-2	mg/L	0.01	0.05	0.01	0.02	<0.01	
	Zinc	7440-66-6	mg/L	0.005	0.059	<0.005	0.007	<0.005	
	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	
	Iron	7439-89-6	mg/L	0.05	30.3	1.09	3.29	2.76	
	EK040P: Fluoride by PC Titrator								
	Fluoride	16984-48-8	mg/L	0.1	0.1	<0.1	0.2	0.1	
	EN055: Ionic Balance								
	Total Anions		meq/L	0.01	2.74	2.67	2.43	3.29	
	Total Cations		meq/L	0.01	2.89	2.75	2.54	3.34	
	Ionic Balance		%	0.01	2.73	1.49	2.18	0.85	
	ED093T: Total Major Cations								
	Calcium	7440-70-2	mg/L	1					
	Magnesium	7439-95-4	mg/L	1					
	Sodium	7440-23-5	mg/L	1					
	Potassium	7440-09-7	mg/L	1					
	EK055G: Ammonia as N by Discrete Analyser								
0.9	Ammonia as N	7664-41-7	mg/L	0.01	0.03	0.02	0.16	0.03	
	EK057G: Nitrite as N by Discrete Analyser								
1.1	Nitrite as N		mg/L	0.01	<0.01	<0.01	<0.01	0.01	
	EK058G: Nitrate as N by Discrete Analyser								
1.1	Nitrate as N	14797-55-8	mg/L	0.01	<0.01	0.02	0.04	<0.01	
	EK059G: NOX as N by Discrete Analyser								
1.1	Nitrite + Nitrate as N		mg/L	0.01	<0.01	0.02	0.04	<0.01	
	EP080/071: Total Petroleum Hydrocarbons								
20	C6 - C9 Fraction		µg/L	20	<20	<20	<20	<20	
100	C10 - C14 Fraction		µg/L	50	<50	<50	<50	<50	
100	C15 - C28 Fraction		µg/L	100	<100	<100	<100	<100	
100	C29 - C36 Fraction		µg/L	50	<50	<50	50	<50	
100	C10 - C36 Fraction (sum)				<50	<50	50	<50	
	EP080S: TPH(V)/BTEX Surrogates								
	1,2-Dichloroethane-D4	17060-07-0	%		88.1	89.8	101	104	
	Toluene-D8	2037-26-5	%		98	99.5	93.5	94.2	
	4-Bromofluorobenzene	460-00-4	%		94.6	99.7	89.3	91.6	
	EG035T: Total Recoverable Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
	EG035F: Dissolved Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	

Bootes Creek Upstream Monitoring Station					EB EB1003181600_0_XTAB.XLS	EB1003181600_0_XTAB.XLS	EB1003181600_0_XTAB.XLS	EB1003181600_0_XTAB.XLS	EB1003181600_0_XTAB.XLS
				WORKGROUP	EB1003181600	EB1003181600	EB1003181600	EB1003181600	EB1003181600
			Matrix:	Sample Type:	REG	REG	REG	REG	REG
			Workgroup:	ALS Sample number:	EB1003181002	EB1003181003	EB1003181004	EB1003181005	EB1003181006
			Project name/number:	Sample date:	15/02/2010	16/02/2010	17/02/2010	18/02/2010	19/02/2010
				Client sample ID (1st):	Bootes Creek US 2	Bootes Creek US 3	Bootes Creek US 4	Bootes Creek US 5	Bootes Creek US 6
				Client sample ID (2nd):					
				Site:					
				Purchase Order:					
	Analyte grouping/Analyte	CAS Number	Units	LOR					
	EA005P: pH by PC Titrator								
6.5	pH Value		pH Unit	0.01	7.16	7.23	7.31	7.33	7.49
	EA010P: Conductivity by PC Titrator								
315	Electrical Conductivity @ 25°C		µS/cm	1	139	101	140	142	120
	EA015: Total Dissolved Solids								
	Total Dissolved Solids @180°C	GIS-210-010	mg/L	1					
	EA025: Suspended Solids								
1170	Suspended Solids (SS)		mg/L	1	1100	1460	1010	1200	582
	EA045: Turbidity								
	Turbidity		NTU	0.1	550	270	550	240	230
	ED037P: Alkalinity by PC Titrator								
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1	<1	<1	<1	<1
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	<1	<1	<1	<1	<1
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	63	48	61	65	52
	Total Alkalinity as CaCO3		mg/L	1	63	48	61	65	52
	ED040F: Dissolved Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1	1	<1	1	1	1
	ED040T: Total Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1					
	ED045G: Chloride Discrete analyser								
	Chloride	16887-00-6	mg/L	1	6	3	5	5	4
	ED045P: Chloride by PC Titrator								
	Chloride	16887-00-6	mg/L	1					
	ED093F: Dissolved Major Cations								
	Calcium	7440-70-2	mg/L	1	10	8	12	12	10
	Magnesium	7439-95-4	mg/L	1	6	4	6	6	5
	Sodium	7440-23-5	mg/L	1	7	4	6	6	5
	Potassium	7440-09-7	mg/L	1	3	3	3	3	3
	EG005F: Dissolved Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG005T: Total Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG020F: Dissolved Metals by ICP-MS								
0.65	Aluminium	7429-90-5	mg/L	0.01	0.27	0.18	0.27	0.26	0.22
0.013	Arsenic	7440-38-2	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.0002	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
0.003	Chromium	7440-47-3	mg/L	0.001	0.002	0.001	0.001	0.001	0.001
0.09	Cobalt	7440-48-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.013	Copper	7440-50-8	mg/L	0.001	0.005	0.004	0.005	0.004	0.002
0.01	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	0.011	0.006	0.008	0.007	0.012
0.034	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.011	Nickel	7440-02-0	mg/L	0.001	0.007	0.004	0.005	0.004	0.003
0.01	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0.001	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.001	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.01	Vanadium	7440-62-2	mg/L	0.01	0.01	<0.01	<0.01	<0.01	<0.01
0.008	Zinc	7440-66-6	mg/L	0.005	0.098	0.086	0.127	0.09	0.057
0.37	Boron	7440-42-8	mg/L	0.05	0.08	0.06	0.07	0.06	<0.05
0.52	Iron	7439-89-6	mg/L	0.05	0.27	0.16	0.32	0.3	0.26
	EG020T: Total Metals by ICP-MS								
	Aluminium	7429-90-5	mg/L	0.01	62.4	63.6	28.8	8.35	10.5
	Arsenic	7440-38-2	mg/L	0.001	0.001	0.002	0.002	<0.001	0.001
	Cadmium	7440-43-9	mg/L	0.0001	0.0004	0.0002	0.0001	0.0002	<0.0001
	Chromium	7440-47-3	mg/L	0.001	0.088	0.086	0.044	0.016	0.022
	Cobalt	7440-48-4	mg/L	0.001	0.079	0.079	0.04	0.007	0.011
	Copper	7440-50-8	mg/L	0.001	0.074	0.076	0.036	0.011	0.013
	Lead	7439-92-1	mg/L	0.001	0.01	0.012	0.007	0.002	0.004
	Manganese	7439-96-5	mg/L	0.001	1.9	1.91	1.02	0.175	0.302
	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Nickel	7440-02-0	mg/L	0.001	0.18	0.165	0.085	0.023	0.036
	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Uranium	7440-61-1	mg/L	0.001	<0.001	0.001	<0.001	<0.001	<0.001
	Vanadium	7440-62-2	mg/L	0.01	0.08	0.09	0.05	0.02	0.02
	Zinc	7440-66-6	mg/L	0.005	0.132	0.132	0.067	0.021	0.027
	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Iron	7439-89-6	mg/L	0.05	72	76.6	35	11.3	16
	EK040P: Fluoride by PC Titrator								
	Fluoride	16984-48-8	mg/L	0.1	0.1	<0.1	<0.1	<0.1	<0.1
	EN055: Ionic Balance								
	Total Anions		meq/L	0.01	1.45	1.05	1.4	1.48	1.18
	Total Cations		meq/L	0.01	1.36	1.03	1.4	1.43	1.19
	Ionic Balance		%	0.01					
	ED093T: Total Major Cations								
	Calcium	7440-70-2	mg/L	1					
	Magnesium	7439-95-4	mg/L	1					
	Sodium	7440-23-5	mg/L	1					
	Potassium	7440-09-7	mg/L	1					
	EK055G: Ammonia as N by Discrete Analyser								
0.9	Ammonia as N	7664-41-7	mg/L	0.01	0.15	0.05	0.02	<0.01	<0.01
	EK057G: Nitrite as N by Discrete Analyser								
1.1	Nitrite as N		mg/L	0.01	0.06	0.02	<0.01	<0.01	<0.01
	EK058G: Nitrate as N by Discrete Analyser								
1.1	Nitrate as N	14797-55-8	mg/L	0.01	0.06	0.1	0.05	0.16	0.11
	EK059G: NOX as N by Discrete Analyser								
1.1	Nitrite + Nitrate as N		mg/L	0.01	0.11	0.12	0.05	0.16	0.11
	EP060/071: Total Petroleum Hydrocarbons								
20	C6 - C9 Fraction		µg/L	20	<20	<20	<20	<20	<20
100	C10 - C14 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C15 - C28 Fraction		µg/L	100	<100	<100	<100	<100	<100
100	C29 - C36 Fraction		µg/L	50	<50	110	<50	<50	<50
100	C10 - C36 Fraction (sum)				<50	110	<50	<50	<50
	EP080S: TPH(V)/BTEX Surrogates								
	1,2-Dichloroethane-D4	17060-07-0	%		91.1	90.3	108	105	110
	Toluene-D8	2037-26-5	%		93.2	97	103	99.2	102
	4-Bromofluorobenzene	460-00-4	%		93.2	98.1	99.3	95.7	98.1
	EG035T: Total Recoverable Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	EG035F: Dissolved Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Bootes Creek Upstream Monitoring Station				EB:EB100346200_0_XTAB.XLS	EB100346200_0_XTAH.XLS	EB100346200_0_XTAB.XLS	EB100346200_0_XTAB.XLS	EB100403700_0_XTAB.XLS
			WORKGROUP	EB100346200	EB100346200	EB100346200	EB100346200	EB100403700
Matrix: WATER			Sample Type:	REG	REG	REG	REG	REG
Workgroup:			ALS Sample number:	EB1003462001	EB1003462002	EB1003462003	EB1003462004	EB1004037001
Project name/number:			Sample date:	20/02/2010	21/02/2010	22/02/2010	23/02/2010	24/02/2010
			Client sample ID (1st):	Bootes CK US	Bootes CK US	Bootes CK US	Bootes CK US	Bootes CK US
			Client sample ID (2nd):					
			Site:					
			Purchase Order:					
Analyte grouping/Analyte	CAS Number	Units	LOR					
EA005P: pH by PC Titrator								
6.5 pH Value		pH Unit	0.01	7.85	8	8.12	8.12	8.35
EA010P: Conductivity by PC Titrator								
315 Electrical Conductivity @ 25°C		µS/cm	1	216	302	339	360	402
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C	GIS-210-010	mg/L	1					
EA025: Suspended Solids								
1170 Suspended Solids (SS)		mg/L	1	272	103	101	117	203
EA045: Turbidity								
Turbidity		NTU	0.1	160	75	75	75	55
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	<1	<1	5	6	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	93	137	151	156	189
Total Alkalinity as CaCO3		mg/L	1	93	137	156	167	189
ED040F: Dissolved Major Anions								
250 Sulphate as SO4 2-	14808-79-8	mg/L	1	1	2	2	2	2
ED040T: Total Major Anions								
250 Sulphate as SO4 2-	14808-79-8	mg/L	1					
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	mg/L	1	8	10	12	12	12
ED045P: Chloride by PC Titrator								
Chloride	16887-00-6	mg/L	1					
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	mg/L	1	17	23	26	28	30
Magnesium	7439-95-4	mg/L	1	10	15	16	19	22
Sodium	7440-23-5	mg/L	1	10	13	14	14	15
Potassium	7440-09-7	mg/L	1	3	3	3	3	3
EG005F: Dissolved Metals by ICP-AES								
Iron	7439-89-6	mg/L	0.05					
EG005T: Total Metals by ICP-AES								
Iron	7439-89-6	mg/L	0.05					
EG020F: Dissolved Metals by ICP-MS								
0.65 Aluminium	7429-90-5	mg/L	0.01	0.25	0.14	0.11	0.1	0.08
0.013 Arsenic	7440-38-2	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.0002 Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
0.003 Chromium	7440-47-3	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.09 Cobalt	7440-48-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.013 Copper	7440-50-8	mg/L	0.001	0.002	0.002	0.002	0.002	0.002
0.01 Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	7439-96-5	mg/L	0.001	0.002	0.002	0.005	0.002	0.003
0.034 Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.011 Nickel	7440-02-0	mg/L	0.001	0.002	0.002	0.002	0.002	0.002
0.01 Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0.001 Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.001 Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.01 Vanadium	7440-62-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	0.01
0.008 Zinc	7440-66-6	mg/L	0.005	0.064	0.078	0.037	0.036	0.054
0.37 Boron	7440-42-8	mg/L	0.05	<0.05	0.05	<0.05	<0.05	<0.05
0.52 Iron	7439-89-6	mg/L	0.05	0.1	0.09	0.06	<0.05	0.05
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	mg/L	0.01	1.81	2.81	1.85	2.16	4.45
Arsenic	7440-38-2	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	mg/L	0.001	0.003	0.005	0.003	0.004	0.01
Cobalt	7440-48-4	mg/L	0.001	0.002	0.002	0.002	0.002	0.006
Copper	7440-50-8	mg/L	0.001	0.004	0.005	0.003	0.004	0.008
Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	0.002
Manganese	7439-96-5	mg/L	0.001	0.042	0.069	0.052	0.05	0.146
Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	mg/L	0.001	0.006	0.009	0.007	0.007	0.017
Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	mg/L	0.01	0.01	0.01	0.01	0.01	0.02
Zinc	7440-66-6	mg/L	0.005	0.005	0.012	0.007	0.006	0.016
Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Iron	7439-89-6	mg/L	0.05	2.26	3.82	2.64	2.66	7.2
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	mg/L	0.1	<0.1	0.1	0.1	0.1	0.2
EN055: Ionic Balance								
Total Anions		meq/L	0.01	2.12	3.04	3.48	3.72	4.15
Total Cations		meq/L	0.01	2.2	3.04	3.45	3.67	4
Ionic Balance		%	0.01		0.14	0.27	0.74	1.87
ED093T: Total Major Cations								
Calcium	7440-70-2	mg/L	1					
Magnesium	7439-95-4	mg/L	1					
Sodium	7440-23-5	mg/L	1					
Potassium	7440-09-7	mg/L	1					
EK055G: Ammonia as N by Discrete Analyser								
0.9 Ammonia as N	7664-41-7	mg/L	0.01	0.01	0.02	0.02	0.01	0.01
EK057G: Nitrite as N by Discrete Analyser								
1.1 Nitrite as N		mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
1.1 Nitrate as N	14797-55-8	mg/L	0.01	0.03	0.07	0.09	0.04	<0.01
EK059G: NOX as N by Discrete Analyser								
1.1 Nitrite + Nitrate as N		mg/L	0.01	0.03	0.07	0.09	0.04	<0.01
EP080/071: Total Petroleum Hydrocarbons								
20 C6 - C9 Fraction		µg/L	20	<20	<20	<20	<20	<20
100 C10 - C14 Fraction		µg/L	50	<50	<50	<50	<50	80
100 C15 - C28 Fraction		µg/L	100	<100	<100	<100	<100	<100
100 C29 - C36 Fraction		µg/L	50	<50	<50	<50	<50	<50
100 C10 - C36 Fraction (sum)				<50	<50	<50	<50	80
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	%		89.9	104	104	100	110
Toluene-D8	2037-26-5	%		94.4	120	99.5	100	97
4-Bromofluorobenzene	460-00-4	%		91.6	95.5	97.7	97.9	100
EG035T: Total Recoverable Mercury by FIMS								
0.0002 Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035F: Dissolved Mercury by FIMS								
0.0002 Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001

	Bootes Creek Upstream Monitoring Station				EB:EB1004037...	EB1004037...	EB1004037...	EB1004037...	EB1004037...
	Matrix: WATER			WORKGROUP	EB1004037...	EB1004037...	EB1004037...	EB1004037...	EB1004037...
	Workgroup:			Sample Type:	REG	REG	REG	REG	REG
	Project name/number:			ALS Sample number:	EB1004037002	EB1004037003	EB1004037004	EB1004037005	EB1004037006
				Sample date:	25/02/2010	26/02/2010	27/02/2010	28/02/2010	01/03/2010
				Client sample ID (1st):	Bootes CK US	Bootes CK US	Bootes CK US	Bootes CK US	Bootes CK US
				Client sample ID (2nd):					
				Site:					
				Purchase Order:					
	Analyte grouping/Analyte	CAS Number	Units	LOR					
	EA005P: pH by PC Titrator								
6.5	pH Value		pH Unit	0.01	8.01	8.19	8.29	8.35	8.03
	EA010P: Conductivity by PC Titrator								
315	Electrical Conductivity @ 25°C		µS/cm	1	210	284	377	409	117
	EA015: Total Dissolved Solids								
	Total Dissolved Solids @180°C	GIS-210-010	mg/L	1					
	EA025: Suspended Solids								
1170	Suspended Solids (SS)		mg/L	1	586	134	80	41	720
	EA045: Turbidity								
	Turbidity		NTU	0.1	200	39	17	7.5	790
	ED037P: Alkalinity by PC Titrator								
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1	<1	<1	<1	<1
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	<1	<1	<1	4	<1
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	93	129	162	181	53
	Total Alkalinity as CaCO3		mg/L	1	93	129	162	185	53
	ED040F: Dissolved Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1	2	2	2	2	<1
	ED041G: Total Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1					
	ED045G: Chloride Discrete analyser								
	Chloride	16887-00-6	mg/L	1	8	10	11	12	3
	ED045P: Chloride by PC Titrator								
	Chloride	16887-00-6	mg/L	1					
	ED093F: Dissolved Major Cations								
	Calcium	7440-70-2	mg/L	1	15	21	26	29	8
	Magnesium	7439-95-4	mg/L	1	10	14	19	22	5
	Sodium	7440-23-5	mg/L	1	8	12	14	16	5
	Potassium	7440-09-7	mg/L	1	3	3	3	3	2
	EG005F: Dissolved Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG005T: Total Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG020F: Dissolved Metals by ICP-MS								
0.65	Aluminium	7429-90-5	mg/L	0.01	0.25	0.14	0.07	0.06	0.28
0.013	Arsenic	7440-38-2	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.0002	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
0.003	Chromium	7440-47-3	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.09	Cobalt	7440-48-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.013	Copper	7440-50-8	mg/L	0.001	0.005	0.003	0.002	0.002	0.005
0.01	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	0.01	0.003	0.002	0.003	0.007
0.034	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.011	Nickel	7440-02-0	mg/L	0.001	0.004	0.002	0.002	0.002	0.003
0.01	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0.001	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.001	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.01	Vanadium	7440-62-2	mg/L	0.01	<0.01	<0.01	<0.01	0.01	<0.01
0.008	Zinc	7440-66-6	mg/L	0.005	0.041	0.046	0.042	0.039	0.018
0.37	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
0.52	Iron	7439-89-6	mg/L	0.05	0.26	0.12	<0.05	<0.05	0.25
	EG020T: Total Metals by ICP-MS								
	Aluminium	7429-90-5	mg/L	0.01	10.6	4.27	1.27	1.41	20.4
	Arsenic	7440-38-2	mg/L	0.001	0.002	0.001	0.001	0.001	<0.001
	Cadmium	7440-43-9	mg/L	0.0001	0.0004	0.0002	<0.0001	<0.0001	<0.0001
	Chromium	7440-47-3	mg/L	0.001	0.024	0.009	0.003	0.003	0.041
	Cobalt	7440-48-4	mg/L	0.001	0.018	0.005	0.002	0.002	0.02
	Copper	7440-50-8	mg/L	0.001	0.02	0.007	0.003	0.004	0.026
	Lead	7439-92-1	mg/L	0.001	0.004	0.002	<0.001	<0.001	0.003
	Manganese	7439-96-5	mg/L	0.001	0.489	0.127	0.04	0.054	0.468
	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Nickel	7440-02-0	mg/L	0.001	0.046	0.015	0.006	0.007	0.055
	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Vanadium	7440-62-2	mg/L	0.01	0.03	0.02	0.01	0.01	0.05
	Zinc	7440-66-6	mg/L	0.005	0.034	0.012	<0.005	0.006	0.044
	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Iron	7439-89-6	mg/L	0.05	17.5	6.49	1.8	1.98	31.8
	EK040P: Fluoride by PC Titrator								
	Fluoride	16984-48-8	mg/L	0.1	0.1	0.1	0.1	0.1	<0.1
	EN055: Ionic Balance								
	Total Anions		meq/L	0.01	2.1	2.91	3.6	4.09	1.15
	Total Cations		meq/L	0.01	2.01	2.81	3.55	4.03	1.08
	Ionic Balance		%	0.01			0.81	0.89	
	ED093T: Total Major Cations								
	Calcium	7440-70-2	mg/L	1					
	Magnesium	7439-95-4	mg/L	1					
	Sodium	7440-23-5	mg/L	1					
	Potassium	7440-09-7	mg/L	1					
	EK055G: Ammonia as N by Discrete Analyser								
0.9	Ammonia as N	7664-41-7	mg/L	0.01	0.04	<0.01	0.05	0.11	0.61
	EK057G: Nitrite as N by Discrete Analyser								
1.1	Nitrite as N		mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	EK058G: Nitrate as N by Discrete Analyser								
1.1	Nitrate as N	14797-55-8	mg/L	0.01	0.07	<0.01	<0.01	<0.01	0.03
	EK059G: NOX as N by Discrete Analyser								
1.1	Nitrite + Nitrate as N		mg/L	0.01	0.07	<0.01	<0.01	<0.01	0.03
	EP080/071: Total Petroleum Hydrocarbons								
20	C6 - C9 Fraction		µg/L	20	<20	<20	<20	<20	<20
100	C10 - C14 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C15 - C28 Fraction		µg/L	100	<100	<100	<100	<100	<100
100	C29 - C36 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C10 - C36 Fraction (sum)				<50	<50	<50	<50	<50
	EP080S: TPH(V)/BTEX Surrogates								
	1,2-Dichloroethane-D4	17060-07-0	%		99.6	98.4	102	101	98.5
	Toluene-D8	2037-26-5	%		97.2	99.8	100	99.8	99.7
	4-Bromofluorobenzene	460-00-4	%		95.8	98.7	99.9	99.6	99.7
	EG035T: Total Recoverable Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.0001
	EG035F: Dissolved Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

	Bootes Creek Upstream Monitoring Station				EB1004037005_0_XTAB.XLS	EB1004383005_0_XTAB.XLS	EB1004383005_0_XTAB.XLS	EB1004383005_0_XTAB.XLS	EB1004383005_0_XTAB.XLS
	Matrix: WATER			WORKGROUP	EB1004037005	EB1004383005	EB1004383005	EB1004383005	EB1004383005
	Workgroup:			Sample Type:	REG	REG	REG	REG	REG
	Project name/number:			ALS Sample number:	EB1004037007	EB1004383001	EB1004383002	EB1004383003	EB1004383004
				Sample date:	02/02/2010	03/03/2010	04/03/2010	05/03/2010	06/03/2010
				Client sample ID (1st):	Bootes CK US	Bootes CK US	Bootes CK US	Bootes CK US	Bootes CK US
				Client sample ID (2nd):					
				Site:					
				Purchase Order:					
	Analyte grouping/Analyte	CAS Number	Units	LOR					
	EA005P: pH by PC Titrator								
6.5	pH Value		pH Unit	0.01	7.31	7.61	8	7.9	8.18
	EA010P: Conductivity by PC Titrator								
315	Electrical Conductivity @ 25°C		pS/cm	1	112	192	254	242	310
	EA015: Total Dissolved Solids								
	Total Dissolved Solids @180°C	GIS-210-010	mg/L	1					
	EA025: Suspended Solids								
1170	Suspended Solids (SS)		mg/L	1	560	566	822	1700	746
	EA045: Turbidity								
	Turbidity		NTU	0.1	610	400	200	600	95
	ED037P: Alkalinity by PC Titrator								
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1	<1	<1	<1	<1
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	<1	<1	<1	<1	<1
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	51	88	102	116	151
	Total Alkalinity as CaCO3		mg/L	1	51	88	102	116	151
	ED040F: Dissolved Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1	1	2	2	2	3
	ED040T: Total Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1					
	ED045G: Chloride Discrete analyser								
	Chloride	16887-00-6	mg/L	1	4	7	7	7	10
	ED045P: Chloride by PC Titrator								
	Chloride	16887-00-6	mg/L	1					
	ED093F: Dissolved Major Cations								
	Calcium	7440-70-2	mg/L	1	8	15	18	19	23
	Magnesium	7439-95-4	mg/L	1	5	9	11	12	18
	Sodium	7440-23-5	mg/L	1	5	8	10	10	13
	Potassium	7440-09-7	mg/L	1	2	3	3	3	3
	EG005F: Dissolved Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG005T: Total Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG020F: Dissolved Metals by ICP-MS								
0.65	Aluminium	7429-90-5	mg/L	0.01	0.08	0.28	0.16	0.16	0.12
0.013	Arsenic	7440-38-2	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.0002	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
0.003	Chromium	7440-47-3	mg/L	0.001	0.001	<0.001	<0.001	<0.001	<0.001
0.09	Cobalt	7440-48-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.013	Copper	7440-50-8	mg/L	0.001	0.004	0.004	0.003	0.003	0.003
0.01	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	0.01	0.005	0.004	0.004	0.003
0.034	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.011	Nickel	7440-02-0	mg/L	0.001	0.003	0.003	0.003	0.003	0.002
0.01	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0.001	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.001	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.01	Vanadium	7440-62-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0.008	Zinc	7440-66-6	mg/L	0.005	0.038	0.012	0.006	0.005	0.005
0.37	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
0.52	Iron	7439-89-6	mg/L	0.05	0.49	0.22	0.15	0.13	0.11
	EG020T: Total Metals by ICP-MS								
	Aluminium	7429-90-5	mg/L	0.01	13.7	5.77	12.9	33	2.23
	Arsenic	7440-38-2	mg/L	0.001	<0.001	<0.001	0.002	0.002	<0.001
	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	0.0003	<0.0001	0.0003	<0.0001
	Chromium	7440-47-3	mg/L	0.001	0.027	0.012	0.028	0.078	0.004
	Cobalt	7440-48-4	mg/L	0.001	0.016	0.005	0.013	0.04	0.004
	Copper	7440-50-8	mg/L	0.001	0.018	0.008	0.018	0.05	0.005
	Lead	7439-92-1	mg/L	0.001	0.004	0.002	0.004	0.01	0.001
	Manganese	7439-96-5	mg/L	0.001	0.424	0.117	0.288	0.827	0.145
	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Nickel	7440-02-0	mg/L	0.001	0.042	0.015	0.038	0.11	0.01
	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Vanadium	7440-62-2	mg/L	0.01	0.04	0.02	0.03	0.07	0.01
	Zinc	7440-66-6	mg/L	0.005	0.03	0.013	0.035	0.094	0.008
	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Iron	7439-89-6	mg/L	0.05	19.4	6.82	16	43.4	2.73
	EK040F: Fluoride by PC Titrator								
	Fluoride	16984-48-8	mg/L	0.1	<0.1	<0.1	0.1	0.1	0.1
	EN055: Ionic Balance								
	Total Anions		meq/L	0.01	1.16	1.99	2.28	2.55	3.35
	Total Cations		meq/L	0.01	1.1	1.98	2.34	2.44	3.31
	Ionic Balance		%	0.01					0.68
	ED093T: Total Major Cations								
	Calcium	7440-70-2	mg/L	1					
	Magnesium	7439-95-4	mg/L	1					
	Sodium	7440-23-5	mg/L	1					
	Potassium	7440-09-7	mg/L	1					
	EK055G: Ammonia as N by Discrete Analyser								
0.9	Ammonia as N	7664-41-7	mg/L	0.01	<0.01	<0.01	<0.01	0.13	<0.01
	EK057G: Nitrite as N by Discrete Analyser								
1.1	Nitrite as N		mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	EK058G: Nitrate as N by Discrete Analyser								
1.1	Nitrate as N	14797-55-8	mg/L	0.01	0.07	<0.01	0.03	0.04	0.01
	EK059G: NOX as N by Discrete Analyser								
1.1	Nitrite + Nitrate as N		mg/L	0.01	0.07	<0.01	0.03	0.04	0.01
	EP080/071: Total Petroleum Hydrocarbons								
20	C6 - C9 Fraction		µg/L	20	<20	<20	<20	<20	<20
100	C10 - C14 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C15 - C28 Fraction		µg/L	100	<100	<100	<100	120	<100
100	C29 - C36 Fraction		µg/L	50	<50	<50	<50	80	<50
100	C10 - C36 Fraction (sum)				<50	<50	<50	180	<50
	EP080S: TPH(V)/BTEX Surrogates								
	1,2-Dichloroethane-D4	17060-07-0	%		101	109	98.8	99.8	97.2
	Toluene-D8	2037-26-5	%		101	96.1	102	96.7	105
	4-Bromofluorobenzene	460-00-4	%		101	87.4	102	96.9	104
	EG035T: Total Recoverable Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	EG035F: Dissolved Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Bootes Creek Upstream Monitoring Station				EB EB1004383006_0_XTAB.XLS:EB1004383006_0_XTAB.XLS:EB1004480900_0_XTAB.XLS:EB1004480900_0_XTAB.XLS:EB1004480900_0_XTAB.XLS				
			WORKGROUP	EB1004383006	EB1004383006	EB1004480900	EB1004480900	EB1004480900
Matrix: WATER			Sample Type:	REG	REG	REG	REG	REG
Workgroup:			ALS Sample number:	EB1004383005	EB1004383006	EB1004809001	EB1004809002	EB1004809003
Project name/number:			Sample date:	07/03/2010	08/03/2010	09/03/2010	10/03/2010	11/03/2010
			Client sample ID (1st):	Bootes CK US	Bootes CK US	Bootes Ck US	Bootes Ck US	Bootes Ck US
			Client sample ID (2nd):					
			Site:					
			Purchase Order:					
Analyte grouping/Analyte	CAS Number	Units	LOR					
EA005P: pH by PC Titrator								
6.5 pH Value		pH Unit	0.01	8.25	8.24	7.74	8	8.16
EA010P: Conductivity by PC Titrator								
315 Electrical Conductivity @ 25°C		µS/cm	1	355	297	330	227	299
EA015: Total Dissolved Solids								
Total Dissolved Solids @180°C	GIS-210-010	mg/L	1					
EA025: Suspended Solids								
1170 Suspended Solids (SS)		mg/L	1	2650	2720	273	334	94
EA045: Turbidity								
Turbidity		NTU	0.1	32	55	750	80	80
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	182	142	158	105	141
Total Alkalinity as CaCO3		mg/L	1	182	142	158	105	141
ED040F: Dissolved Major Anions								
250 Sulphate as SO4 2-	14808-79-8	mg/L	1	3	2	2	2	3
ED040T: Total Major Anions								
250 Sulphate as SO4 2-	14808-79-8	mg/L	1					
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	mg/L	1	11	10	12	11	12
ED045P: Chloride by PC Titrator								
Chloride	16887-00-6	mg/L	1					
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	mg/L	1	29	22	28	20	25
Magnesium	7439-95-4	mg/L	1	21	17	18	12	17
Sodium	7440-23-5	mg/L	1	15	13	15	12	14
Potassium	7440-09-7	mg/L	1	3	3	4	3	3
EG005F: Dissolved Metals by ICP-AES								
Iron	7439-89-6	mg/L	0.05					
EG005T: Total Metals by ICP-AES								
Iron	7439-89-6	mg/L	0.05					
EG020F: Dissolved Metals by ICP-MS								
0.65 Aluminium	7429-90-5	mg/L	0.01	0.11	0.19	0.63	0.2	0.07
0.013 Arsenic	7440-38-2	mg/L	0.001	<0.001	<0.001	<0.001	0.001	0.001
0.0002 Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
0.003 Chromium	7440-47-3	mg/L	0.001	<0.001	<0.001	0.001	<0.001	<0.001
0.09 Cobalt	7440-48-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.013 Copper	7440-50-8	mg/L	0.001	0.002	0.002	0.006	0.004	0.002
0.01 Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	7439-96-5	mg/L	0.001	0.003	0.005	0.004	0.003	0.001
0.034 Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.011 Nickel	7440-02-0	mg/L	0.001	0.002	0.003	0.004	0.003	0.002
0.01 Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0.001 Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.001 Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.01 Vanadium	7440-62-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0.008 Zinc	7440-66-6	mg/L	0.005	0.013	<0.005	0.06	<0.005	0.042
0.37 Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
0.52 Iron	7439-89-6	mg/L	0.05	0.06	0.15	0.53	0.18	<0.05
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	mg/L	0.01	2.7	1.68	9.35	2.47	2.21
Arsenic	7440-38-2	mg/L	0.001	0.001	0.001	0.001	<0.001	0.001
Cadmium	7440-43-9	mg/L	0.0001	0.0001	0.0001	<0.0001	0.0001	<0.0001
Chromium	7440-47-3	mg/L	0.001	0.005	0.003	0.02	0.005	0.005
Cobalt	7440-48-4	mg/L	0.001	0.006	0.002	0.014	0.005	0.003
Copper	7440-50-8	mg/L	0.001	0.006	0.002	0.018	0.007	0.005
Lead	7439-92-1	mg/L	0.001	0.001	<0.001	0.004	0.001	0.001
Manganese	7439-96-5	mg/L	0.001	0.18	0.034	0.365	0.139	0.076
Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	mg/L	0.001	0.013	0.006	0.034	0.012	0.008
Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	mg/L	0.01	0.02	0.01	0.03	0.01	0.01
Zinc	7440-66-6	mg/L	0.005	0.011	<0.005	0.029	0.009	0.008
Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Iron	7439-89-6	mg/L	0.05	3.22	1.98	13	3	2.9
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	mg/L	0.1	0.1	0.1	0.1	0.1	0.2
EN055: Ionic Balance								
Total Anions		meq/L	0.01	4	3.17	3.54	2.46	3.22
Total Cations		meq/L	0.01	3.9	3.14	3.64	2.56	3.32
Ionic Balance		%	0.01	1.22	0.35	1.4		1.82
ED093T: Total Major Cations								
Calcium	7440-70-2	mg/L	1					
Magnesium	7439-95-4	mg/L	1					
Sodium	7440-23-5	mg/L	1					
Potassium	7440-09-7	mg/L	1					
EK055G: Ammonia as N by Discrete Analyser								
0.9 Ammonia as N	7664-41-7	mg/L	0.01	0.02	<0.01	0.03	<0.01	0.01
EK057G: Nitrite as N by Discrete Analyser								
1.1 Nitrite as N		mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
EK059G: Nitrate as N by Discrete Analyser								
1.1 Nitrate as N	14797-55-8	mg/L	0.01	0.01	0.02	0.03	0.02	0.01
EK059G: NOX as N by Discrete Analyser								
1.1 Nitrite + Nitrate as N		mg/L	0.01	0.01	0.02	0.03	0.02	0.01
EP080/071: Total Petroleum Hydrocarbons								
20 C6 - C9 Fraction		µg/L	20	<20	<20	<20	<20	<20
100 C10 - C14 Fraction		µg/L	50	<50	<50	<50	<50	<50
100 C15 - C28 Fraction		µg/L	100	<100	<100	<100	<100	<100
100 C29 - C36 Fraction		µg/L	50	<50	<50	<50	<50	<50
100 C10 - C36 Fraction (sum)				<50	<50	<50	<50	<50
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	%		90.9	94.8	103	104	104
Toluene-D8	2037-26-5	%		95.6	102	96.4	101	96.3
4-Bromofluorobenzene	460-00-4	%		95.4	103	87.9	96.4	92.5
EG035T: Total Recoverable Mercury by FIMS								
0.0002 Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035F: Dissolved Mercury by FIMS								
0.0002 Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

	Bootes Creek Upstream Monitoring Station				EB1004809000_0_XTAB.XLS	EB1004809000_0_XTAB.XLS	EB1005127000_0_XTAB.XLS	EB1005127000_0_XTAB.XLS	EB1005127000_0_XTAB.XLS
	Matrix: WATER			WORKGROUP	EB1004809000	EB1004809000	EB1005127000	EB1005127000	EB1005127000
	Workgroup:			Sample Type:	REG	REG	REG	REG	REG
	Project name/number:			ALS Sample number:	EB1004809004	EB1004809005	EB1005127001	EB1005127002	EB1005127003
				Sample date:	12/03/2010	13/03/2010	14/03/2010	15/03/2010	16/03/2010
				Client sample ID (1st):	Bootes Ck US	Bootes Ck US	Bootes Ck US	Bootes Ck US	Bootes Ck US
				Client sample ID (2nd):					
				Site:					
				Purchase Order:					
	Analyte grouping/Analyte	**CAS Number**	**Units**	**LOR**					
	EA005P: pH by PC Titrator								
6.5	pH Value		pH Unit	0.01	8.16	8.07	8.35	8.41	8.38
	EA010P: Conductivity by PC Titrator								
315	Electrical Conductivity @ 25°C		µS/cm	1	366	386	422	457	500
	EA015: Total Dissolved Solids								
	Total Dissolved Solids @180°C	GIS-210-010	mg/L	1					
	EA025: Suspended Solids								
1170	Suspended Solids (SS)		mg/L	1	59	85	51	26	<1
	EA045: Turbidity								
	Turbidity		NTU	0.1	45	65	18	20	5.1
	ED037P: Alkalinity by PC Titrator								
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1	<1	<1	<1	<1
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	<1	<1	7	16	19
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	176	186	197	209	214
	Total Alkalinity as CaCO3		mg/L	1	176	186	204	225	233
	ED040F: Dissolved Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1	3	3	4	4	4
	ED040T: Total Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1					
	ED045G: Chloride Discrete analyser								
	Chloride	16887-00-6	mg/L	1	14	14	13	13	14
	ED045P: Chloride by PC Titrator								
	Chloride	16887-00-6	mg/L	1					
	ED093F: Dissolved Major Cations								
	Calcium	7440-70-2	mg/L	1	31	32	34	38	40
	Magnesium	7439-95-4	mg/L	1	22	23	25	28	29
	Sodium	7440-23-5	mg/L	1	16	17	18	18	19
	Potassium	7440-09-7	mg/L	1	3	4	3	3	3
	EG005F: Dissolved Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG005T: Total Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG020F: Dissolved Metals by ICP-MS								
0.65	Aluminium	7429-90-5	mg/L	0.01	0.07	0.06	<0.01	<0.01	<0.01
0.013	Arsenic	7440-38-2	mg/L	0.001	0.001	0.001	0.001	0.001	0.001
0.0002	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
0.003	Chromium	7440-47-3	mg/L	0.001	<0.001	<0.001	0.001	0.002	0.002
0.09	Cobalt	7440-48-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.013	Copper	7440-50-8	mg/L	0.001	0.003	0.002	0.001	0.001	0.001
0.01	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	0.002	0.002	<0.001	<0.001	<0.001
0.034	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.011	Nickel	7440-02-0	mg/L	0.001	0.002	0.002	0.002	0.002	0.002
0.01	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0.001	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.001	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.01	Vanadium	7440-62-2	mg/L	0.01	<0.01	<0.01	0.01	0.01	0.01
0.008	Zinc	7440-66-6	mg/L	0.005	0.052	0.046	<0.005	<0.005	<0.005
0.37	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
0.52	Iron	7439-89-6	mg/L	0.05	0.06	<0.05	<0.05	<0.05	<0.05
	EG020T: Total Metals by ICP-MS								
	Aluminium	7429-90-5	mg/L	0.01	1.84	1.42	0.87	0.83	0.26
	Arsenic	7440-38-2	mg/L	0.001	<0.001	<0.001	<0.001	0.001	<0.001
	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001
	Chromium	7440-47-3	mg/L	0.001	0.004	0.003	0.002	0.002	<0.001
	Cobalt	7440-48-4	mg/L	0.001	0.002	0.002	<0.001	0.001	<0.001
	Copper	7440-50-8	mg/L	0.001	0.004	0.003	0.002	0.002	0.002
	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	0.071	0.053	0.022	0.03	0.009
	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Nickel	7440-02-0	mg/L	0.001	0.007	0.005	0.004	0.004	0.002
	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Vanadium	7440-62-2	mg/L	0.01	0.01	0.01	0.01	0.01	<0.01
	Zinc	7440-66-6	mg/L	0.005	0.008	0.008	<0.005	<0.005	<0.005
	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Iron	7439-89-6	mg/L	0.05	2.38	1.82	1.16	1.22	0.3
	EK040P: Fluoride by PC Titrator								
	Fluoride	16984-48-8	mg/L	0.1	0.1	0.1	0.1	0.1	0.1
	EN055: Ionic Balance								
	Total Anions		meq/L	0.01	3.97	4.17	4.52	4.96	5.14
	Total Cations		meq/L	0.01	4.11	4.31	4.64	5.07	5.33
	Ionic Balance		%	0.01	1.71	1.66	1.34	1.06	1.83
	ED093T: Total Major Cations								
	Calcium	7440-70-2	mg/L	1					
	Magnesium	7439-95-4	mg/L	1					
	Sodium	7440-23-5	mg/L	1					
	Potassium	7440-09-7	mg/L	1					
	EK055G: Ammonia as N by Discrete Analyser								
0.9	Ammonia as N	7664-41-7	mg/L	0.01	<0.01	0.02	0.04	0.03	0.03
	EK057G: Nitrite as N by Discrete Analyser								
1.1	Nitrite as N		mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	EK058G: Nitrate as N by Discrete Analyser								
1.1	Nitrate as N	14797-55-8	mg/L	0.01	0.02	0.01	0.03	0.02	0.02
	EK059G: NOX as N by Discrete Analyser								
1.1	Nitrite + Nitrate as N		mg/L	0.01	0.02	0.01	0.03	0.02	0.02
	EP080/071: Total Petroleum Hydrocarbons								
20	C6 - C9 Fraction		µg/L	20	<20	<20	<20	<20	<20
100	C10 - C14 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C15 - C28 Fraction		µg/L	100	<100	<100	<100	<100	<100
100	C29 - C36 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C10 - C36 Fraction (sum)				<50	<50	<50	<50	<50
	EP080S: TPH(V)/BTEX Surrogates								
	1,2-Dichloroethane-D4	17060-07-0	%		85.2	88.4	102	97.7	126
	Toluene-D8	2037-26-5	%		91.8	98.1	98.3	96.6	99.6
	4-Bromofluorobenzene	460-00-4	%		90.9	96.2	95.9	95.2	95.4
	EG035T: Total Recoverable Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	EG035F: Dissolved Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

	Bootes Creek Upstream Monitoring Station				EB100512600_0_XTAB.XLS	EB100512600_0_XTAB.XLS				
				WORKGROUP	EB100512600	EB100512600	EB100532000_0	EB100532000_0	EB100532000_0	EB100532000_0
	Matrix: WATER			Sample Type:	REG	REG	REG	REG	REG	REG
	Workgroup:			ALS Sample number:	EB1005126003	EB1005126004	EB1005320001	EB1005320002	EB1005320003	EB1005320004
	Project name/number:			Sample date:	17/03/2010	18/03/2010	19/03/2010	20/03/2010	21/03/2010	22/03/2010
				Client sample ID (1st):	Bootes Ck US	Bootes Ck US	Bootes CK US	Bootes CK US	Bootes CK US	Bootes CK US
				Client sample ID (2nd):						
				Site:						
				Purchase Order:						
	Analyte grouping/Analyte	CAS Number	Units	LOR						
	EA005P: pH by PC Titrator									
6.5	pH Value		pH Unit	0.01	8.26	8.42	8.55	8.56	8.48	8.29
	EA010P: Conductivity by PC Titrator									
315	Electrical Conductivity @ 25°C		µS/cm	1	525	538	565	573	569	433
	EA015: Total Dissolved Solids									
	Total Dissolved Solids @180°C	GIS-210-010	mg/L	1						
	EA025: Suspended Solids									
1170	Suspended Solids (SS)		mg/L	1	27	39	10	6	8	46
	EA045: Turbidity									
	Turbidity		NTU	0.1	5.9	11	5.2	7.4	10	55
	ED037P: Alkalinity by PC Titrator									
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1	<1	<1	<1	<1	<1
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	15	26	21	25	22	4
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	229	222	240	248	245	185
	Total Alkalinity as CaCO3		mg/L	1	244	248	261	273	267	189
	ED040F: Dissolved Major Anions									
250	Sulphate as SO4 2-	14808-79-8	mg/L	1	5	5	5	6	5	4
	ED040T: Total Major Anions									
250	Sulphate as SO4 2-	14808-79-8	mg/L	1						
	ED045G: Chloride Discrete analyser									
	Chloride	16887-00-6	mg/L	1	16	16	17	23	25	15
	ED045P: Chloride by PC Titrator									
	Chloride	16887-00-6	mg/L	1						
	ED093F: Dissolved Major Cations									
	Calcium	7440-70-2	mg/L	1	43	43	45	45	46	32
	Magnesium	7439-95-4	mg/L	1	31	32	33	34	34	23
	Sodium	7440-23-5	mg/L	1	18	19	22	22	22	18
	Potassium	7440-09-7	mg/L	1	3	3	3	3	3	3
	EG005F: Dissolved Metals by ICP-AES									
	Iron	7439-89-6	mg/L	0.05						
	EG005T: Total Metals by ICP-AES									
	Iron	7439-89-6	mg/L	0.05						
	EG020F: Dissolved Metals by ICP-MS									
0.65	Aluminium	7429-90-5	mg/L	0.01	<0.01	<0.01	0.01	<0.01	0.03	0.06
0.013	Arsenic	7440-38-2	mg/L	0.001	0.001	0.001	<0.001	0.001	0.001	<0.001
0.0002	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
0.003	Chromium	7440-47-3	mg/L	0.001	0.002	0.002	<0.001	<0.001	<0.001	<0.001
0.09	Cobalt	7440-48-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.013	Copper	7440-50-8	mg/L	0.001	0.001	<0.001	0.002	0.002	0.002	0.002
0.01	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.003
0.034	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.011	Nickel	7440-02-0	mg/L	0.001	0.002	0.002	0.002	0.001	0.002	0.002
0.01	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0.001	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.001	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.01	Vanadium	7440-62-2	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.008	Zinc	7440-66-6	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	0.006	<0.005
0.37	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
0.52	Iron	7439-89-6	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	EG020T: Total Metals by ICP-MS									
	Aluminium	7429-90-5	mg/L	0.01	0.17	0.08	0.37	0.29	0.28	2.21
	Arsenic	7440-38-2	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Chromium	7440-47-3	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005
	Cobalt	7440-48-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002
	Copper	7440-50-8	mg/L	0.001	0.001	0.001	0.002	0.002	0.002	0.004
	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	0.009	0.005	0.009	0.007	0.007	0.057
	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Nickel	7440-02-0	mg/L	0.001	0.002	0.002	0.002	0.002	0.002	0.007
	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Vanadium	7440-62-2	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.03
	Zinc	7440-66-6	mg/L	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006
	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Iron	7439-89-6	mg/L	0.05	0.18	0.1	0.43	0.31	0.26	2.96
	EK040P: Fluoride by PC Titrator									
	Fluoride	16984-48-8	mg/L	0.1	0.2	0.2	0.2	0.2	0.2	0.1
	EN055: Ionic Balance									
	Total Anions		meq/L	0.01	5.41	5.52	5.81	6.23	6.14	4.28
	Total Cations		meq/L	0.01	5.6	5.65	6.01	6.1	6.09	4.37
	Ionic Balance		%	0.01	1.7	1.23	1.71	1.06	0.42	1
	ED093T: Total Major Cations									
	Calcium	7440-70-2	mg/L	1						
	Magnesium	7439-95-4	mg/L	1						
	Sodium	7440-23-5	mg/L	1						
	Potassium	7440-09-7	mg/L	1						
	EK055G: Ammonia as N by Discrete Analyser									
0.9	Ammonia as N	7664-41-7	mg/L	0.01	0.17	0.03	0.04	<0.01	<0.01	0.01
	EK057G: Nitrite as N by Discrete Analyser									
1.1	Nitrite as N		mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	EK058G: Nitrate as N by Discrete Analyser									
1.1	Nitrate as N	14797-55-8	mg/L	0.01	0.05	0.05	0.03	0.01	<0.01	0.02
	EK059G: NOx as N by Discrete Analyser									
1.1	Nitrite + Nitrate as N		mg/L	0.01	0.05	0.05	0.03	0.01	<0.01	0.02
	EP060/071: Total Petroleum Hydrocarbons									
20	C6 - C9 Fraction		µg/L	20	<20	<20	<20	<20	<20	<20
100	C10 - C14 Fraction		µg/L	50	<50	<50	<50	<50	<50	<50
100	C15 - C28 Fraction		µg/L	100	<100	<100	<100	<100	<100	<100
100	C29 - C36 Fraction		µg/L	50	<50	<50	<50	<50	<50	<50
100	C10 - C36 Fraction (sum)				<50	<50	<50	<50	<50	<50
	EP080S: TPH(V)/BTEX Surrogates									
	1,2-Dichloroethane-D4	17060-07-0	%		127	119	104	108	102	101
	Toluene-D8	2037-26-5	%		97.2	93.6	102	100	100	100
	4-Bromofluorobenzene	460-00-4	%		94.5	88.7	93.2	95.1	96.5	93.3
	EG035T: Total Recoverable Mercury by FIMS									
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	EG035F: Dissolved Mercury by FIMS									
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

	Bootes Creek Upstream Monitoring Station					EB: EB100532000_0_XTAB.XLS
					WORKGROUP	EB100532000
		Matrix: WATER			Sample Type:	REG
		Workgroup:			ALS Sample number:	EB1005320005
		Project name/number:			Sample date:	23/03/2010
					Client sample ID (1st):	Bootes CK US
					Client sample ID (2nd):	
					Site:	
					Purchase Order:	

	Analyte grouping/Analyte	CAS Number	Units	LOR	
	EA005P: pH by PC Titrator				
6.5	pH Value		pH Unit	0.01	8.47
	EA010P: Conductivity by PC Titrator				
315	Electrical Conductivity @ 25°C		µS/cm	1	460
	EA015: Total Dissolved Solids				
	Total Dissolved Solids @180°C	GIS-210-010	mg/L	1	
	EA025: Suspended Solids				
1170	Suspended Solids (SS)		mg/L	1	9
	EA045: Turbidity				
	Turbidity		NTU	0.1	18
	ED037P: Alkalinity by PC Titrator				
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	16
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	201
	Total Alkalinity as CaCO3		mg/L	1	217
	ED040F: Dissolved Major Anions				
250	Sulphate as SO4 2-	14808-79-8	mg/L	1	2390
	ED040T: Total Major Anions				
250	Sulphate as SO4 2-	14808-79-8	mg/L	1	
	ED045G: Chloride Discrete analyser				
	Chloride	16887-00-6	mg/L	1	15300
	ED045P: Chloride by PC Titrator				
	Chloride	16887-00-6	mg/L	1	
	ED093F: Dissolved Major Cations				
	Calcium	7440-70-2	mg/L	1	323
	Magnesium	7439-95-4	mg/L	1	1060
	Sodium	7440-23-5	mg/L	1	8470
	Potassium	7440-09-7	mg/L	1	400
	EG005F: Dissolved Metals by ICP-AES				
	Iron	7439-89-6	mg/L	0.05	
	EG005T: Total Metals by ICP-AES				
	Iron	7439-89-6	mg/L	0.05	
	EG020F: Dissolved Metals by ICP-MS				
0.65	Aluminium	7429-90-5	mg/L	0.01	0.07
0.013	Arsenic	7440-38-2	mg/L	0.001	0.001
0.0002	Cadmium	7440-43-9	mg/L	0.0001	<0.0001
0.003	Chromium	7440-47-3	mg/L	0.001	<0.001
0.09	Cobalt	7440-48-4	mg/L	0.001	<0.001
0.013	Copper	7440-50-8	mg/L	0.001	0.002
0.01	Lead	7439-92-1	mg/L	0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	0.006
0.034	Molybdenum	7439-98-7	mg/L	0.001	<0.001
0.011	Nickel	7440-02-0	mg/L	0.001	0.002
0.01	Selenium	7782-49-2	mg/L	0.01	<0.01
0.001	Silver	7440-22-4	mg/L	0.001	<0.001
0.001	Uranium	7440-61-1	mg/L	0.001	<0.001
0.01	Vanadium	7440-62-2	mg/L	0.01	<0.01
0.008	Zinc	7440-66-6	mg/L	0.005	<0.005
0.37	Boron	7440-42-8	mg/L	0.05	<0.05
0.52	Iron	7439-89-6	mg/L	0.05	0.05
	EG020T: Total Metals by ICP-MS				
	Aluminium	7429-90-5	mg/L	0.01	0.71
	Arsenic	7440-38-2	mg/L	0.001	<0.001
	Cadmium	7440-43-9	mg/L	0.0001	0.0004
	Chromium	7440-47-3	mg/L	0.001	0.002
	Cobalt	7440-48-4	mg/L	0.001	<0.001
	Copper	7440-50-8	mg/L	0.001	0.002
	Lead	7439-92-1	mg/L	0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	0.019
	Molybdenum	7439-98-7	mg/L	0.001	<0.001
	Nickel	7440-02-0	mg/L	0.001	0.003
	Selenium	7782-49-2	mg/L	0.01	<0.01
	Silver	7440-22-4	mg/L	0.001	<0.001
	Uranium	7440-61-1	mg/L	0.001	<0.001
	Vanadium	7440-62-2	mg/L	0.01	0.01
	Zinc	7440-66-6	mg/L	0.005	0.008
	Boron	7440-42-8	mg/L	0.05	<0.05
	Iron	7439-89-6	mg/L	0.05	0.81
	EK040P: Fluoride by PC Titrator				
	Fluoride	16984-48-8	mg/L	0.1	0.1
	EN055: Ionic Balance				
	Total Anions		meq/L	0.01	486
	Total Cations		meq/L	0.01	484
	Ionic Balance		%	0.01	0.23
	ED093T: Total Major Cations				
	Calcium	7440-70-2	mg/L	1	
	Magnesium	7439-95-4	mg/L	1	
	Sodium	7440-23-5	mg/L	1	
	Potassium	7440-09-7	mg/L	1	
	EK059G: Ammonia as N by Discrete Analyser				
0.9	Ammonia as N	7664-41-7	mg/L	0.01	0.02
	EK057G: Nitrite as N by Discrete Analyser				
1.1	Nitrite as N		mg/L	0.01	<0.01
	EK058G: Nitrate as N by Discrete Analyser				
1.1	Nitrate as N	14797-55-8	mg/L	0.01	0.04
	EK059G: NOX as N by Discrete Analyser				
1.1	Nitrite + Nitrate as N		mg/L	0.01	0.04
	EP080/071: Total Petroleum Hydrocarbons				
20	C6 - C9 Fraction		µg/L	20	<20
100	C10 - C14 Fraction		µg/L	50	<50
100	C15 - C28 Fraction		µg/L	100	<100
100	C29 - C36 Fraction		µg/L	50	<50
100	C10 - C36 Fraction (sum)				<50
	EP080S: TPH(V)/BTEX Surrogates				
	1,2-Dichloroethane-D4	17060-07-0	%		107
	Toluene-D8	2037-26-5	%		99.8
	4-Bromofluorobenzene	460-00-4	%		90.7
	EG035T: Total Recoverable Mercury by FIMS				
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001
	EG035F: Dissolved Mercury by FIMS				
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001

Diversion 26					EB1004249000_D_XTAB.XLS	EB1004249000_D_XTAB.XLS	EB1004381000_D_XTAB.XLS	EB1004440000_D_XTAB.XLS	EB1004520000_D_XTAB.XLS	EB1004613000_D_XTAB.XLS	EB1004814000_D_XTAB.XLS
				WORKGROUP	EB1004249000	EB1004249000	EB1004381000	EB1004440000	EB1004520000	EB1004613000	EB1004814000
Matrix:	WATER			Sample Type	REG	REG	REG	REG	REG	REG	REG
Workgroup:				ALS Sample number	EB1004249010	EB1004249011	EB1004381003	EB1004440003	EB1004520003	EB1004613003	EB1004814004
Project name/number:				Sample date	06/03/2010	07/03/2010	08/03/2010	09/03/2010	10/03/2010	11/03/2010	12/03/2010
				Client sample ID (1st)	Div 26 end pipe	Div 26 end pipe	Div 26	Div 26	Div 26	Div 26	Div 26
				Client sample ID (2nd)							
				Site							
				Purchase Order							
Analyte grouping/Analyte	**CAS Number**	**Units**	**LOR**								
EA000P: pH by PC Titrator					7.71	8.51	8.37	8.47	8.3	9.49	8.54
pH Value		pH Unit	0.01		8.55	8.41	8.52	8.64	8.63	8.58	8.57
EA010P: Conductivity by PC Titrator					330	347	412	479	534	665	693
Electrical Conductivity @ 25°C		µS/cm	1		325	336	436	493	568	628	738
EA015: Total Dissolved Solids											
Total Dissolved Solids @180°C	GIS-210-010	mg/L	1								
EA025: Suspended Solids											
Suspended Solids (SS)		mg/L	1		104	106	139	50	70	98	276
EA045: Turbidity											
Turbidity		NTU	0.1		500	390	270	210	240	180	380
ED037P: Alkalinity by PC Titrator											
Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1		<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1		5	5	2	5	13	<1	18
Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1		102	105	133	145	151	204	201
Total Alkalinity as CaCO3		mg/L	1		107	110	135	150	164	204	219
ED040F: Dissolved Major Anions											
Sulphate as SO4 2-	14808-79-8	mg/L	1		25	26	48	50	57	71	90
ED040T: Total Major Anions											
Sulphate as SO4 2-	14808-79-8	mg/L	1								
ED045G: Chloride Discrete analyser											
Chloride	16887-00-6	mg/L	1		17	17	15	19	17	21	23
ED045P: Chloride by PC Titrator											
Chloride	16887-00-6	mg/L	1								
ED093F: Dissolved Major Cations											
Calcium	7440-70-2	mg/L	1		4	4	4	4	4	4	5
Magnesium	7439-95-4	mg/L	1		2	2	3	2	2	2	3
Sodium	7440-23-5	mg/L	1		63	65	83	99	108	135	160
Potassium	7440-09-7	mg/L	1		2	2	2	2	2	2	2
EG005F: Dissolved Metals by ICP-AES											
Iron	7439-89-6	mg/L	0.05								
EG005T: Total Metals by ICP-AES											
Iron	7439-89-6	mg/L	0.05								
EG020F: Dissolved Metals by ICP-MS											
Aluminium	7429-90-5	mg/L	0.01		0.21	0.21	0.28	0.51	0.4	[illegible]	1.56
Arsenic	7440-38-2	mg/L	0.001		0.02	0.02	0.019	0.024	0.028	[illegible]	0.032
Cadmium	7440-43-9	mg/L	0.0001		<0.0001	<0.0001	<0.0001	0.0001	<0.0001	[illegible]	<0.0001
Chromium	7440-47-3	mg/L	0.001		<0.001	<0.001	<0.001	0.001	0.004	[illegible]	0.002
Cobalt	7440-48-4	mg/L	0.001		<0.001	<0.001	<0.001	0.001	<0.001	[illegible]	<0.001
Copper	7440-50-8	mg/L	0.001		0.004	0.004	0.006	0.009	0.006	[illegible]	0.007
Lead	7439-92-1	mg/L	0.001		<0.001	<0.001	<0.001	0.002	<0.001	[illegible]	<0.001
Manganese	7439-96-5	mg/L	0.001		0.004	0.004	0.007	0.038	0.015	[illegible]	0.006
Molybdenum	7439-98-7	mg/L	0.001		0.018	0.019	0.028	0.042	0.066	[illegible]	0.106
Nickel	7440-02-0	mg/L	0.001		0.002	0.002	0.003	0.004	0.004	[illegible]	0.004
Selenium	7782-49-2	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	[illegible]	<0.01
Silver	7440-22-4	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	[illegible]	<0.001
Uranium	7440-61-1	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	0.001	[illegible]	0.002
Vanadium	7440-62-2	mg/L	0.01		0.02	0.03	0.03	0.03	0.04	[illegible]	0.04
Zinc	7440-66-6	mg/L	0.005		0.021	0.032	0.008	0.346	<0.005	[illegible]	0.028
Boron	7440-42-8	mg/L	0.05		0.07	0.13	0.05	0.16	0.09	[illegible]	0.18
Iron	7439-89-6	mg/L	0.05		0.18	0.19	0.3	0.4	0.47	[illegible]	0.99
EG020T: Total Metals by ICP-MS											
Aluminium	7429-90-5	mg/L	0.01		11.4	9.72	8.36	6.83	7.01	9.87	8.45
Arsenic	7440-38-2	mg/L	0.001		0.02	0.021	0.022	0.026	0.031	0.032	0.034
Cadmium	7440-43-9	mg/L	0.0001		<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	0.0002
Chromium	7440-47-3	mg/L	0.001		0.015	0.013	0.015	0.01	0.011	0.01	0.013
Cobalt	7440-48-4	mg/L	0.001		0.005	0.004	0.005	0.005	0.004	0.005	0.006
Copper	7440-50-8	mg/L	0.001		0.015	0.012	0.012	0.013	0.01	0.013	0.015
Lead	7439-92-1	mg/L	0.001		0.006	0.005	0.005	0.005	0.005	0.004	0.006
Manganese	7439-96-5	mg/L	0.001		0.095	0.077	0.077	0.087	0.08	0.078	0.113
Molybdenum	7439-98-7	mg/L	0.001		0.018	0.02	0.032	0.053	0.067	0.087	0.113
Nickel	7440-02-0	mg/L	0.001		0.016	0.016	0.016	0.018	0.017	0.016	0.02
Selenium	7782-49-2	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	mg/L	0.001		0.001	0.001	0.001	0.002	0.002	0.002	0.003
Vanadium	7440-62-2	mg/L	0.01		0.05	0.04	0.05	0.05	0.05	0.05	0.05
Zinc	7440-66-6	mg/L	0.005		0.054	0.021	0.028	0.024	0.02	0.018	0.022
Boron	7440-42-8	mg/L	0.05		0.06	0.06	0.07	0.08	0.09	0.11	0.15
Iron	7439-89-6	mg/L	0.05		10.6	8.76	9.74	8.47	8.89	7.56	10
EK040P: Fluoride by PC Titrator											
Fluoride	16984-48-8	mg/L	0.1		0.2	0.2	0.2	0.3	0.3	0.2	0.3
EN055: Ionic Balance											
Total Anions		meq/L	0.01		3.16	3.23	4.11	4.56	4.94	6.13	7.38
Total Cations		meq/L	0.01		3.14	3.24	4.15	4.73	5.13	6.31	7.53
Ionic Balance		%	0.01		0.07	0.18	0.44	1.61	1.81	1.39	1.01
ED093T: Total Major Cations											
Calcium	7440-70-2	mg/L	1								
Magnesium	7439-95-4	mg/L	1								
Sodium	7440-23-5	mg/L	1								
Potassium	7440-09-7	mg/L	1								
EK055G: Ammonia as N by Discrete Analyser											
Ammonia as N	7664-41-7	mg/L	0.01		0.05	0.06	0.04	0.06	0.04	0.05	0.04
EK057G: Nitrite as N by Discrete Analyser											
Nitrite as N		mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser											
Nitrate as N	14797-55-8	mg/L	0.01		2.15	3.39	2.75	4.8	3.1	4.72	6.69
EK059G: NOX as N by Discrete Analyser											
Nitrite + Nitrate as N		mg/L	0.01		2.15	3.39	2.75	4.8	3.1	4.72	6.69
EP080/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction		µg/L	20	<	<20	<20	<20	<20	<20	<20	<20
C10 - C14 Fraction		µg/L	50	<	<50	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction		µg/L	100	<	<100	<100	<100	<100	<100	<100	<100
C29 - C36 Fraction		µg/L	50	<	<50	<50	<50	<50	<50	<50	<50
C10 - C36 Fraction (sum)				<	<50	<50	<50	<50	<50	<50	<50
EP080S: TPH(V)/BTEX Surrogates											
1,2-Dichloroethane-D4	17060-07-0	%			91.1	115	85.3	95.4	109	103	88
Toluene-D8	2037-26-5	%			94.4	97.2	94.2	101	106	104	91.6
4-Bromofluorobenzene	460-00-4	%			93.5	96.6	94.5	101	97.9	105	92.8
EG035T: Total Recoverable Mercury by FIMS											
Mercury	7439-97-6	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001
EG035F: Dissolved Mercury by FIMS											
Mercury	7439-97-6	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

	Bootes Creek Downstream Monitoring Station				EB1002142001_0_XTAB.XLS	EB1002142002_0_XTAB.XLS	EB1002142003_0_XTAB.XLS	EB1002142004_0_XTAB.XLS	EB1002142005_0_XTAB.XLS
				WORKGROUP	EB1002142001	EB1002142002	EB1002142003	EB1002142004	EB1002142005
	Matrix: WATER			Sample Type:	REG	REG	REG	REG	REG
	Workgroup:			ALS Sample number:	EB1002142001	EB1002142002	EB1002142003	EB1002142004	EB1002142005
	Project name/number:			Sample date:	02/2010 @ 1:06:00 AM	02/2010 @ 2:26:00 PM	02/2010 @ 3:46:00 AM	02/02/2010 @ 17:06	02/2010 @ 6:26:00 AM
				Client sample ID (1st):	Bootes CK D/S 1	Bootes CK D/S 2	Bootes CK D/S 3	Bootes CK D/S 4	Bootes CK D/S 5
				Client sample ID (2nd):					
				Site:					
				Purchase Order:					
	Analyte grouping/Analyte	**CAS Number**	**Units**	**LOR**					
	EA005P: pH by PC Titrator								
6.5	pH Value		pH Unit	0.01	7.68	7.56	7.55	7.57	7.65
	EA010P: Conductivity by PC Titrator								
315	Electrical Conductivity @ 25°C		µS/cm	1	228	126	138	144	176
	EA015: Total Dissolved Solids								
	Total Dissolved Solids @180°C	GTS-210-010	mg/L	1					
	EA025: Suspended Solids								
1170	Suspended Solids (SS)		mg/L	1	4420	1340	1410	634	391
	EA045: Turbidity								
	Turbidity		NTU	0.1	700	600	550	550	270
	ED037P: Alkalinity by PC Titrator								
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1	<1	<1	<1	<1
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	<1	<1	<1	<1	<1
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	105	61	63	65	85
	Total Alkalinity as CaCO3		mg/L	1	105	61	63	65	85
	ED040F: Dissolved Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1	3	1	2	2	3
	ED040T: Total Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1					
	ED045G: Chloride Discrete analyser								
	Chloride	16887-00-6	mg/L	1	6	5	5	5	7
	ED045P: Chloride by PC Titrator								
	Chloride	16887-00-6	mg/L	1					
	ED093F: Dissolved Major Cations								
	Calcium	7440-70-2	mg/L	1	12	8	9	9	10
	Magnesium	7439-95-4	mg/L	1	6	5	6	6	6
	Sodium	7440-23-5	mg/L	1	21	8	10	11	15
	Potassium	7440-09-7	mg/L	1	3	3	3	3	3
	EG005F: Dissolved Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG005T: Total Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG020F: Dissolved Metals by ICP-MS								
0.65	Aluminium	7429-90-5	mg/L	0.01	0.14	0.12	0.16	0.17	0.12
0.013	Arsenic	7440-38-2	mg/L	0.001	<0.001	0.001	<0.001	<0.001	<0.001
0.0002	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
0.003	Chromium	7440-47-3	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.09	Cobalt	7440-48-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.013	Copper	7440-50-8	mg/L	0.001	0.004	0.004	0.003	0.003	0.003
0.01	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	0.002	0.003	0.005	0.002	0.002
0.034	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.011	Nickel	7440-02-0	mg/L	0.001	0.005	0.004	0.004	0.004	0.003
0.01	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0.001	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.001	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.01	Vanadium	7440-62-2	mg/L	0.01	0.01	0.01	0.01	0.01	0.01
0.008	Zinc	7440-66-6	mg/L	0.005	0.049	0.083	0.075	0.086	0.06
0.37	Boron	7440-42-8	mg/L	0.05	0.14	0.13	0.08	0.08	0.05
0.52	Iron	7439-89-6	mg/L	0.05	0.1	0.07	0.15	0.14	0.09
	EG020T: Total Metals by ICP-MS								
	Aluminium	7429-90-5	mg/L	0.01	52.8	33.3	32.4	29.3	31.3
	Arsenic	7440-38-2	mg/L	0.001	0.001	0.001	<0.001	<0.001	0.002
	Cadmium	7440-43-9	mg/L	0.0001	0.0002	0.0003	0.0004	0.0002	<0.0001
	Chromium	7440-47-3	mg/L	0.001	0.089	0.057	0.054	0.052	0.054
	Cobalt	7440-48-4	mg/L	0.001	0.043	0.035	0.027	0.02	0.019
	Copper	7440-50-8	mg/L	0.001	0.054	0.037	0.034	0.028	0.028
	Lead	7439-92-1	mg/L	0.001	0.007	0.005	0.005	0.004	0.004
	Manganese	7439-96-5	mg/L	0.001	0.909	0.826	0.631	0.459	0.4
	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Nickel	7440-02-0	mg/L	0.001	0.116	0.08	0.079	0.065	0.068
	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Vanadium	7440-62-2	mg/L	0.01	0.09	0.07	0.06	0.05	0.05
	Zinc	7440-66-6	mg/L	0.005	0.138	0.098	0.088	0.074	0.078
	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Iron	7439-89-6	mg/L	0.05	54.9	32.8	35.9	31.7	35.4
	EK040P: Fluoride by PC Titrator								
	Fluoride	16984-48-8	mg/L	0.1	0.2	0.1	0.2	0.1	0.1
	EN055: Ionic Balance								
	Total Anions		meq/L	0.01	2.34	1.39	1.43	1.49	1.96
	Total Cations		meq/L	0.01	2.27	1.31	1.42	1.47	1.76
	Ionic Balance		%	0.01					
	ED093T: Total Major Cations								
	Calcium	7440-70-2	mg/L	1					
	Magnesium	7439-95-4	mg/L	1					
	Sodium	7440-23-5	mg/L	1					
	Potassium	7440-09-7	mg/L	1					
	EK055G: Ammonia as N by Discrete Analyser								
0.9	Ammonia as N	7664-41-7	mg/L	0.01	0.1	0.04	0.06	0.03	0.11
	EK057G: Nitrite as N by Discrete Analyser								
1.1	Nitrite as N		mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	EK058G: Nitrate as N by Discrete Analyser								
1.1	Nitrate as N	14797-55-8	mg/L	0.01	0.02	<0.01	0.01	<0.01	<0.01
	EK059G: NOX as N by Discrete Analyser								
1.1	Nitrite + Nitrate as N		mg/L	0.01	0.02	<0.01	0.01	<0.01	<0.01
	EP080/071: Total Petroleum Hydrocarbons								
20	C6 - C9 Fraction		µg/L	20	<20	<20	<20	<20	<20
100	C10 - C14 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C15 - C28 Fraction		µg/L	100	<100	<100	<100	<100	<100
100	C29 - C36 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C10 - C36 Fraction (sum)				<50	<50	<50	<50	<50
	EP080S: TPH(V)/BTEX Surrogates								
	1,2-Dichloroethane-D4	17060-07-0	%		104	103	101	107	104
	Toluene-D8	2037-26-5	%		102	105	100	101	103
	4-Bromofluorobenzene	460-00-4	%		95.3	94.6	90.9	96.2	94.6
	EG035T: Total Recoverable Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	EG035F: Dissolved Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Bootes Creek Downstream Monitoring Station

EB100214200_0_XTAB.XLS:EB100214200_0_XTAB.XLS:EB100214200_0_XTAB.XLS:EB100287000_0_XTAB.XLS:EB100287000_0_XTAB.XLS

					WORKGROUP	EB100214200	EB100214200	EB100214200	EB100287000	EB100287000
					Sample Type:	REG	REG	REG	REG	REG
			Matrix:	WATER	ALS Sample number:	EB100142006	EB100142007	EB100142008	EB100287000	EB100287002
			Workgroup:		Sample date:	/02/2010 @ 7:46:00 PM	02/2010 @ 9:06:00 AM	02/2010 @ 10:26:00 P	05/02/2010 @ 1613	06/02/2010 @ 0533
			Project name/number:		Client sample ID (1st):	Bootes CK D/S 6	Bootes CK D/S 7	Bootes CK D/S 8	Bootes CK D/S 1	Bootes CK D/S 2
					Client sample ID (2nd):					
					Site:					
					Purchase Order:					
	Analyte grouping/Analyte	CAS Number	Units	LOR						
	EA005P: pH by PC Titrator				7.89	8	8.06		
6.5	pH Value		pH Unit	0.01	7.68	7.81	7.91	7.98	8.17
	EA010P: Conductivity by PC Titrator				177	289	267		
315	Electrical Conductivity @ 25°C		µS/cm	1	169	220	275	275	347
	EA015: Total Dissolved Solids								
	Total Dissolved Solids @180°C	GIS-210-010	mg/L	1					
	EA025: Suspended Solids								
1170	Suspended Solids (SS)		mg/L	1	462	426	702	445	436
	EA045: Turbidity								
	Turbidity		NTU	0.1	220	150	210	260	330
	ED037P: Alkalinity by PC Titrator								
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1	<1	<1	<1	<1
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	<1	<1	<1	<1	<1
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	81	92	112	112	143
	Total Alkalinity as CaCO3		mg/L	1	81	92	112	112	143
	ED040F: Dissolved Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1	3	4	5	7	10
	ED040T: Total Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1					
	ED045G: Chloride Discrete analyser								
	Chloride	16887-00-6	mg/L	1	7	9	12	16	20
	ED045P: Chloride by PC Titrator								
	Chloride	16887-00-6	mg/L	1					
	ED093F: Dissolved Major Cations								
	Calcium	7440-70-2	mg/L	1	10	11	13	11	13
	Magnesium	7439-95-4	mg/L	1	7	6	9	6	10
	Sodium	7440-23-5	mg/L	1	13	22	30	35	49
	Potassium	7440-09-7	mg/L	1	3	3	3	3	3
	EG005F: Dissolved Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG005T: Total Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG020F: Dissolved Metals by ICP-MS								
0.65	Aluminium	7429-90-5	mg/L	0.01	0.15	0.05	0.06	0.17	0.05
0.013	Arsenic	7440-38-2	mg/L	0.001	0.002	0.002	0.003	0.002	0.004
0.0002	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
0.003	Chromium	7440-47-3	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.09	Cobalt	7440-48-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.013	Copper	7440-50-8	mg/L	0.001	0.003	0.003	0.003	0.004	0.003
0.01	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	0.002	0.001	0.001	0.011	0.002
0.034	Molybdenum	7439-98-7	mg/L	0.001	<0.001	0.002	0.002	0.002	0.004
0.011	Nickel	7440-02-0	mg/L	0.001	0.004	0.004	0.003	0.004	0.003
0.01	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0.001	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.001	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.01	Vanadium	7440-62-2	mg/L	0.01	0.01	0.02	0.02	0.01	0.02
0.008	Zinc	7440-66-6	mg/L	0.005	0.018	0.01	0.008	0.008	<0.005
0.37	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	0.05	<0.05	0.06
0.52	Iron	7439-89-6	mg/L	0.05	0.13	<0.05	<0.05	0.12	<0.05
	EG020T: Total Metals by ICP-MS								
	Aluminium	7429-90-5	mg/L	0.01	11.8	23.1	14.5	12.8	15
	Arsenic	7440-38-2	mg/L	0.001	0.002	0.003	0.003	0.003	0.005
	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	0.0002	0.0002	0.0003	0.0002
	Chromium	7440-47-3	mg/L	0.001	0.023	0.045	0.029	0.028	0.033
	Cobalt	7440-48-4	mg/L	0.001	0.009	0.018	0.014	0.01	0.014
	Copper	7440-50-8	mg/L	0.001	0.013	0.025	0.019	0.016	0.02
	Lead	7439-92-1	mg/L	0.001	0.003	0.004	0.003	0.003	0.004
	Manganese	7439-96-5	mg/L	0.001	0.216	0.399	0.327	0.213	0.302
	Molybdenum	7439-98-7	mg/L	0.001	<0.001	0.001	0.002	0.001	0.002
	Nickel	7440-02-0	mg/L	0.001	0.03	0.058	0.044	0.035	0.046
	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Vanadium	7440-62-2	mg/L	0.01	0.03	0.05	0.04	0.03	0.04
	Zinc	7440-66-6	mg/L	0.005	0.035	0.052	0.043	0.037	0.046
	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	0.05	<0.05	0.06
	Iron	7439-89-6	mg/L	0.05	14.1	26.4	17.9	17.6	21.1
	EK040P: Fluoride by PC Titrator								
	Fluoride	16984-48-8	mg/L	0.1	0.1	0.1	0.1	0.1	0.2
	EN055: Ionic Balance								
	Total Anions		meq/L	0.01	1.86	2.19	2.68	2.82	3.64
	Total Cations		meq/L	0.01	1.71	2.24	2.76	2.88	3.71
	Ionic Balance		%	0.01				1.06	1.01
	ED093T: Total Major Cations								
	Calcium	7440-70-2	mg/L	1					
	Magnesium	7439-95-4	mg/L	1					
	Sodium	7440-23-5	mg/L	1					
	Potassium	7440-09-7	mg/L	1					
	EK055G: Ammonia as N by Discrete Analyser								
0.9	Ammonia as N	7664-41-7	mg/L	0.01	0.04	0.08	0.04	0.16	0.07
	EK057G: Nitrite as N by Discrete Analyser								
1.1	Nitrite as N		mg/L	0.01	<0.01	<0.01	<0.01	0.13	0.1
	EK058G: Nitrate as N by Discrete Analyser								
1.1	Nitrate as N	14797-55-8	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	0.07
	EK059G: NOX as N by Discrete Analyser								
1.1	Nitrite + Nitrate as N		mg/L	0.01	<0.01	<0.01	<0.01	0.11	0.17
	EP080/071: Total Petroleum Hydrocarbons								
20	C6 - C9 Fraction		µg/L	20	<20	<20	<20	<20	<20
100	C10 - C14 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C15 - C28 Fraction		µg/L	100	<100	<100	<100	<100	<100
100	C29 - C36 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C10 - C36 Fraction (sum)				<50	<50	<50	<50	<50
	EP080S: TPH(V)/BTEX Surrogates								
	1,2-Dichloroethane-D4	17060-07-0	%		101	102	105	104	100
	Toluene-D8	2037-26-5	%		98.2	95.8	99.5	102	101
	4-Bromofluorobenzene	460-00-4	%		93.3	91.5	91.6	102	104
	EG035T: Total Recoverable Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	EG035F: Dissolved Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

	Bootes Creek Downstream Monitoring Station				EE EB100287000_0_XTAB.XLS	EB100287000_0_XTAB.XLS	EB100287000_0_XTAB.XLS	EB100287000_0_XTAB.XLS	EB100287000_0_XTAB.XLS
				WORKGROUP	EB100287000	EB100287000	EB100287000	EB100287000	EB100287000
	Matrix:	WATER		Sample Type:	REG	REG	REG	REG	REG
	Workgroup:			ALS Sample number:	EB1002870003	EB1002870004	EB1002870005	EB1002870006	EB1002870007
	Project name/number:			Sample date:	06/02/2010 @ 1853	07/02/2010 @ 0613	07/02/2010 @ 2133	08/02/2010 @ 1053	09/02/2010 @ 0013
				Client sample ID (1st):	Bootes CK D/S 3	Bootes CK D/S 4	Bootes CK D/S 5	Bootes CK D/S 6	Bootes CK D/S 7
				Client sample ID (2nd):					
				Site:					
				Purchase Order:					
	Analyte grouping/Analyte	CAS Number	Units	LOR					
	EA005P: pH by PC Titrator								
6.5	pH Value		pH Unit	0.01	8.1	7.61	7.6	7.65	7.7
	EA010P: Conductivity by PC Titrator								
315	Electrical Conductivity @ 25°C		µS/cm	1	330	129	154	153	172
	EA015: Total Dissolved Solids								
	Total Dissolved Solids @180°C	GIS-210-010	mg/L	1					
	EA025: Suspended Solids								
1170	Suspended Solids (SS)		mg/L	1	864	2480	1260	816	446
	EA045: Turbidity								
	Turbidity		NTU	0.1	400	1600	1000	1000	640
	ED037P: Alkalinity by PC Titrator								
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1	<1	<1	<1	<1
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	<1	<1	<1	<1	<1
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	137	64	74	74	83
	Total Alkalinity as CaCO3		mg/L	1	137	64	74	74	83
	ED040F: Dissolved Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1	9	1	1	2	2
	ED040T: Total Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1					
	ED045G: Chloride Discrete analyser								
	Chloride	16887-00-6	mg/L	1	19	4	4	5	6
	ED045P: Chloride by PC Titrator								
	Chloride	16887-00-6	mg/L	1					
	ED093F: Dissolved Major Cations								
	Calcium	7440-70-2	mg/L	1	12	9	10	10	10
	Magnesium	7439-95-4	mg/L	1	10	6	6	6	6
	Sodium	7440-23-5	mg/L	1	45	8	11	12	17
	Potassium	7440-09-7	mg/L	1	3	2	2	2	2
	EG005F: Dissolved Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG005T: Total Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG020F: Dissolved Metals by ICP-MS								
0.65	Aluminium	7429-90-5	mg/L	0.01	0.05	0.11	0.15	0.09	0.1
0.013	Arsenic	7440-38-2	mg/L	0.001	0.005	<0.001	<0.001	<0.001	<0.001
0.0002	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
0.003	Chromium	7440-47-3	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.09	Cobalt	7440-48-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.013	Copper	7440-50-8	mg/L	0.001	0.004	0.003	0.005	0.005	0.004
0.01	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	0.002	0.004	0.007	0.004	0.004
0.034	Molybdenum	7439-98-7	mg/L	0.001	0.005	<0.001	0.01	0.001	<0.001
0.011	Nickel	7440-02-0	mg/L	0.001	0.003	0.003	0.005	0.004	0.003
0.01	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0.001	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.001	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.01	Vanadium	7440-62-2	mg/L	0.01	0.02	0.01	0.01	0.01	0.01
0.008	Zinc	7440-66-6	mg/L	0.005	0.008	<0.005	0.093	0.104	0.101
0.37	Boron	7440-42-8	mg/L	0.05	0.07	<0.05	0.1	0.12	0.13
0.52	Iron	7439-89-6	mg/L	0.05	<0.05	0.1	0.1	0.07	0.06
	EG020T: Total Metals by ICP-MS								
	Aluminium	7429-90-5	mg/L	0.01	16	35.6	28	29.6	28
	Arsenic	7440-38-2	mg/L	0.001	0.006	<0.001	0.001	0.001	0.002
	Cadmium	7440-43-9	mg/L	0.0001	0.0002	0.0004	0.0002	0.0002	0.0002
	Chromium	7440-47-3	mg/L	0.001	0.034	0.071	0.057	0.062	0.061
	Cobalt	7440-48-4	mg/L	0.001	0.014	0.044	0.027	0.028	0.025
	Copper	7440-50-8	mg/L	0.001	0.02	0.05	0.037	0.035	0.033
	Lead	7439-92-1	mg/L	0.001	0.004	0.006	0.004	0.004	0.004
	Manganese	7439-96-5	mg/L	0.001	0.304	1.01	0.617	0.626	0.584
	Molybdenum	7439-98-7	mg/L	0.001	0.003	<0.001	<0.001	<0.001	<0.001
	Nickel	7440-02-0	mg/L	0.001	0.047	0.109	0.08	0.082	0.078
	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Vanadium	7440-62-2	mg/L	0.01	0.04	0.07	0.06	0.06	0.06
	Zinc	7440-66-6	mg/L	0.005	0.048	0.113	0.085	0.084	0.079
	Boron	7440-42-8	mg/L	0.05	0.07	<0.05	<0.05	<0.05	<0.05
	Iron	7439-89-6	mg/L	0.05	21.8	56.8	40.2	42.8	39.6
	EK040P: Fluoride by PC Titrator								
	Fluoride	16984-48-8	mg/L	0.1	0.2	0.1	0.1	0.1	0.2
	EN055: Ionic Balance								
	Total Anions		meq/L	0.01	3.45	1.4	1.63	1.66	1.88
	Total Cations		meq/L	0.01	3.48	1.33	1.59	1.58	1.84
	Ionic Balance		%	0.01	0.09	2.55	1.22	2.3	1.36
	ED093T: Total Major Cations								
	Calcium	7440-70-2	mg/L	1					
	Magnesium	7439-95-4	mg/L	1					
	Sodium	7440-23-5	mg/L	1					
	Potassium	7440-09-7	mg/L	1					
	EK055G: Ammonia as N by Discrete Analyser								
0.9	Ammonia as N	7664-41-7	mg/L	0.01	0.17	0.08	0.11	0.05	0.1
	EK057G: Nitrite as N by Discrete Analyser								
1.1	Nitrite as N		mg/L	0.01	0.06	<0.01	<0.01	<0.01	<0.01
	EK058G: Nitrate as N by Discrete Analyser								
1.1	Nitrate as N	14797-55-8	mg/L	0.01	0.13	0.21	0.15	0.11	0.12
	EK059G: NOX as N by Discrete Analyser								
1.1	Nitrite + Nitrate as N		mg/L	0.01	0.19	0.21	0.15	0.11	0.12
	EP080/071: Total Petroleum Hydrocarbons								
20	C6 - C9 Fraction		µg/L	20	<20	<20	<20	<20	<20
100	C10 - C14 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C15 - C28 Fraction		µg/L	100	<100	<100	<100	<100	<100
100	C29 - C36 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C10 - C36 Fraction (sum)				<50	<50	<50	<50	<50
	EP080S: TPH(V)/BTEX Surrogates								
	1,2-Dichloroethane-D4	17060-07-0	%		103	102	99.4	105	98.4
	Toluene-D8	2037-26-5	%		101	100	95.6	98.3	99.8
	4-Bromofluorobenzene	460-00-4	%		104	103	96.4	98.2	102
	EG035T: Total Recoverable Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	EG035F: Dissolved Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

	Bootes Creek Downstream Monitoring Station				EE:EB1002870000_0_XTAB.XLS	EB1002870000_0_XTAB.XLS	EB1003004000_0_XTAB.XLS	EB1003004000_0_XTAB.XLS	EB1003004000_0_XTAB.XLS
				WORKGROUP	EB1002870000	EB1002870000	EB1003004000	EB1003004000	EB1003004000
	Matrix: WATER			Sample Type:	REG	REG	REG	REG	REG
	Workgroup:			ALS Sample number:	EB1002870006	EB1002870009	EB1003004001	EB1003004002	EB1003004003
	Project name/number:			Sample date:	09/02/2010 @ 1800	10/02/2010	11/02/2010	12/02/2010	12/02/2010
				Client sample ID (1st):	Bootes CK D/S 6	Bootes CK D/S 9	Bootes CK D/S 1	Bootes CK D/S 2	Bootes CK D/S 3
				Client sample ID (2nd):					
				Site:					
				Purchase Order:					
	Analyte grouping/Analyte	CAS Number	Units	LOR					
	EA005P: pH by PC Titrator								
6.5	pH Value		pH Unit	0.01	7.78	7.75	7.98	8.02	7.99
	EA010P: Conductivity by PC Titrator								
316	Electrical Conductivity @ 25°C		µS/cm	1	198	216	244	252	259
	EA015: Total Dissolved Solids								
	Total Dissolved Solids @180°C	GIS-210-010	mg/L	1					
	EA025: Suspended Solids								
1170	Suspended Solids (SS)		mg/L	1	424	81	133	90	104
	EA045: Turbidity								
	Turbidity		NTU	0.1	630	200	200	170	170
	ED037P: Alkalinity by PC Titrator								
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1	<1	<1	<1	<1
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	<1	<1	<1	<1	<1
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	87	95	104	104	107
	Total Alkalinity as CaCO3		mg/L	1	87	95	104	104	107
	ED040F: Dissolved Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1	3	4	7	8	8
	ED040T: Total Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1					
	ED045G: Chloride Discrete Analyser								
	Chloride	16887-00-6	mg/L	1	7	8	9	9	9
	ED045P: Chloride by PC Titrator								
	Chloride	16887-00-6	mg/L	1					
	ED093F: Dissolved Major Cations								
	Calcium	7440-70-2	mg/L	1	11	11	11	11	11
	Magnesium	7439-95-4	mg/L	1	7	7	7	8	8
	Sodium	7440-23-5	mg/L	1	20	24	28	31	32
	Potassium	7440-09-7	mg/L	1	2	2	2	2	2
	EG005F: Dissolved Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG005T: Total Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG020F: Dissolved Metals by ICP-MS								
0.65	Aluminium	7429-90-5	mg/L	0.01	0.19	0.05	2.2	0.42	0.41
0.013	Arsenic	7440-38-2	mg/L	0.001	<0.001	0.001	0.002	0.001	0.002
0.0002	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001
0.003	Chromium	7440-47-3	mg/L	0.001	<0.001	<0.001	0.003	<0.001	0.002
0.09	Cobalt	7440-48-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.013	Copper	7440-50-8	mg/L	0.001	0.004	0.003	0.006	0.004	0.004
0.01	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	0.01	0.003	0.018	0.004	0.003
0.034	Molybdenum	7439-98-7	mg/L	0.001	0.005	0.002	0.003	0.004	0.005
0.011	Nickel	7440-02-0	mg/L	0.001	0.004	0.004	0.007	0.004	0.004
0.01	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0.001	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.001	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.01	Vanadium	7440-62-2	mg/L	0.01	0.02	0.01	0.02	0.01	0.02
0.008	Zinc	7440-66-6	mg/L	0.005	0.048	0.116	0.01	0.059	0.061
0.37	Boron	7440-42-8	mg/L	0.05	0.07	0.06	<0.05	0.08	0.09
0.52	Iron	7439-89-6	mg/L	0.05	0.11	<0.05	2.14	0.38	0.37
	EG020T: Total Metals by ICP-MS								
	Aluminium	7429-90-5	mg/L	0.01	21.8	10.8	16.7	9.33	7.79
	Arsenic	7440-38-2	mg/L	0.001	0.002	0.002	0.002	0.002	0.002
	Cadmium	7440-43-9	mg/L	0.0001	0.0003	0.0002	0.0001	<0.0001	<0.0001
	Chromium	7440-47-3	mg/L	0.001	0.047	0.022	0.032	0.022	0.018
	Cobalt	7440-48-4	mg/L	0.001	0.016	0.005	0.009	0.005	0.004
	Copper	7440-50-8	mg/L	0.001	0.023	0.01	0.022	0.01	0.009
	Lead	7439-92-1	mg/L	0.001	0.003	<0.001	0.002	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	0.381	0.126	0.228	0.143	0.118
	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	0.002	0.002	0.003
	Nickel	7440-02-0	mg/L	0.001	0.054	0.023	0.033	0.022	0.018
	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Vanadium	7440-62-2	mg/L	0.01	0.04	0.03	0.04	0.03	0.03
	Zinc	7440-66-6	mg/L	0.005	0.056	0.018	0.039	0.022	0.018
	Boron	7440-42-8	mg/L	0.05	<0.05	0.05	<0.05	<0.05	<0.05
	Iron	7439-89-6	mg/L	0.05	27.8	11.8	16.5	10.5	8.59
	EK040P: Fluoride by PC Titrator								
	Fluoride	16984-48-8	mg/L	0.1	0.2	0.2	0.2	0.2	0.2
	EN055: Ionic Balance								
	Total Anions		meq/L	0.01	2.01	2.21	2.48	2.48	2.57
	Total Cations		meq/L	0.01	2.07	2.26	2.47	2.59	2.69
	Ionic Balance		%	0.01	1.56	1.13			
	ED093T: Total Major Cations								
	Calcium	7440-70-2	mg/L	1					
	Magnesium	7439-95-4	mg/L	1					
	Sodium	7440-23-5	mg/L	1					
	Potassium	7440-09-7	mg/L	1					
	EK055G: Ammonia as N by Discrete Analyser								
0.9	Ammonia as N	7664-41-7	mg/L	0.01	0.11	0.02	0.04	0.06	0.06
	EK057G: Nitrite as N by Discrete Analyser								
1.1	Nitrite as N		mg/L	0.01	<0.01	<0.01	0.08	0.05	0.05
	EK058G: Nitrate as N by Discrete Analyser								
1.1	Nitrate as N	14797-55-8	mg/L	0.01	0.14	0.14	0.46	0.54	0.57
	EK059G: NOX as N by Discrete Analyser								
1.1	Nitrite + Nitrate as N		mg/L	0.01	0.14	0.14	0.54	0.59	0.62
	EP080/071: Total Petroleum Hydrocarbons								
20	C6 - C9 Fraction		µg/L	20	<20	<20	<20	<20	<20
100	C10 - C14 Fraction		µg/L	50	<50	<50	<50	<50	60
100	C15 - C28 Fraction		µg/L	100	<100	<100	130	110	160
100	C29 - C36 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C10 - C36 Fraction (sum)				<50	<50	130	110	220
	EP080S: TPH(V)/BTEX Surrogates								
	1,2-Dichloroethane-D4	17060-07-0	%		94.4	106	88.1	91.3	114
	Toluene-D8	2037-26-5	%		96.2	101	98.6	98.2	105
	4-Bromofluorobenzene	460-00-4	%		98.4	105	100	98.9	105
	EG035T: Total Recoverable Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	EG035F: Dissolved Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

	Bootes Creek Downstream Monitoring Station				EEEB1003004000_0_XTAB.XLS	EB1003004000_0_XTAB.XLS	EB1003004000_0_XTAB.XLS	EB1003004000_0_XTAB.XLS	EB1003004000_0_XTAB.XLS
				WORKGROUP	EB1003004000	EB1003004000	EB1003004000	EB1003004000	EB1003004000
	Matrix: WATER			Sample Type:	REG	REG	REG	REG	REG
	Workgroup:			ALS Sample number:	EB1003004004	EB1003004005	EB1003004006	EB1003004007	EB1003004008
	Project name/number:			Sample date:	13/02/2010	13/02/2010	14/02/2010	14/02/2010	15/02/2010
				Client sample ID (1st):	Bootes CK D/S 4	Bootes CK D/S 5	Bootes CK D/S 6	Bootes CK D/S 7	Bootes CK D/S 8
				Client sample ID (2nd):					
				Site:					
				Purchase Order:					
	Analyte grouping/Analyte	CAS Number	Units	LOR					
	EA005P: pH by PC Titrator								
6.5	pH Value		pH Unit	0.01	7.99	7.97	7.92	7.76	7.76
	EA010P: Conductivity by PC Titrator								
315	Electrical Conductivity @ 25°C		µS/cm	1	268	242	219	195	174
	EA015: Total Dissolved Solids								
	Total Dissolved Solids @180°C	GIS-210-010	mg/L	1					
	EA025: Suspended Solids								
1170	Suspended Solids (SS)		mg/L	1	122	86	82	750	1410
	EA045: Turbidity								
	Turbidity		NTU	0.1	140	120	100	750	950
	ED037P: Alkalinity by PC Titrator								
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1	<1	<1	<1	<1
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	<1	<1	<1	<1	<1
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	107	103	98	87	74
	Total Alkalinity as CaCO3		mg/L	1	107	103	98	89	74
	ED040F: Dissolved Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1	10	6	2	2	4
	ED040T: Total Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1					
	ED045G: Chloride Discrete analyser								
	Chloride	16887-00-6	mg/L	1	9	7	6	6	6
	ED045P: Chloride by PC Titrator								
	Chloride	16887-00-6	mg/L	1					
	ED093F: Dissolved Major Cations								
	Calcium	7440-70-2	mg/L	1	12	12	13	13	10
	Magnesium	7439-95-4	mg/L	1	8	8	8	8	6
	Sodium	7440-23-5	mg/L	1	33	26	19	15	14
	Potassium	7440-09-7	mg/L	1	2	3	3	3	3
	EG005F: Dissolved Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG005T: Total Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG020F: Dissolved Metals by ICP-MS							Retested	
0.65	Aluminium	7429-90-5	mg/L	0.01	0.38	0.36	0.29	1.4	1.21
0.013	Arsenic	7440-38-2	mg/L	0.001	0.002	0.002	<0.001	<0.001	0.001
0.0002	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
0.003	Chromium	7440-47-3	mg/L	0.001	<0.001	<0.001	<0.001	0.001	0.004
0.09	Cobalt	7440-48-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.013	Copper	7440-50-8	mg/L	0.001	0.004	0.003	0.003	0.003	0.006
0.01	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	0.003	0.003	0.002	0.001	0.008
0.034	Molybdenum	7439-98-7	mg/L	0.001	0.007	0.004	0.002	0.002	0.005
0.011	Nickel	7440-02-0	mg/L	0.001	0.004	0.004	0.004	0.003	0.006
0.01	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0.001	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.001	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.01	Vanadium	7440-62-2	mg/L	0.01	0.01	0.01	<0.01	0.01	0.02
0.008	Zinc	7440-66-6	mg/L	0.005	0.06	0.068	0.056	0.01	0.076
0.37	Boron	7440-42-8	mg/L	0.05	0.08	0.07	0.06	0.05	0.12
0.52	Iron	7439-89-6	mg/L	0.05	0.39	0.39	0.29	1.4	1.09
	EG020T: Total Metals by ICP-MS								
	Aluminium	7429-90-5	mg/L	0.01	6.75	5.81	10	30.6	60.3
	Arsenic	7440-38-2	mg/L	0.001	0.002	0.001	<0.001	0.001	0.002
	Cadmium	7440-43-9	mg/L	0.0001	0.0004	<0.0001	0.0001	0.0001	0.0002
	Chromium	7440-47-3	mg/L	0.001	0.015	0.013	0.023	0.06	0.099
	Cobalt	7440-48-4	mg/L	0.001	0.004	0.004	0.009	0.02	0.046
	Copper	7440-50-8	mg/L	0.001	0.008	0.008	0.011	0.03	0.062
	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	0.001	0.004	0.01
	Manganese	7439-96-5	mg/L	0.001	0.131	0.158	0.384	0.508	1.09
	Molybdenum	7439-98-7	mg/L	0.001	0.003	0.002	<0.001	<0.001	<0.001
	Nickel	7440-02-0	mg/L	0.001	0.017	0.016	0.027	0.071	0.143
	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Vanadium	7440-62-2	mg/L	0.01	0.02	0.02	0.02	0.05	0.09
	Zinc	7440-66-6	mg/L	0.005	0.018	0.016	0.032	0.066	0.124
	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Iron	7439-89-6	mg/L	0.05	7.68	6.71	12.3	34.6	65.7
	EK040P: Fluoride by PC Titrator								
	Fluoride	16984-48-8	mg/L	0.1	0.2	0.2	0.2	0.2	0.1
	EM055: Ionic Balance								
	Total Anions		meq/L	0.01	2.59	2.38	2.18	1.98	1.74
	Total Cations		meq/L	0.01	2.74	2.47	2.22	1.99	1.72
	Ionic Balance		%	0.01					
	ED093T: Total Major Cations								
	Calcium	7440-70-2	mg/L	1					
	Magnesium	7439-95-4	mg/L	1					
	Sodium	7440-23-5	mg/L	1					
	Potassium	7440-09-7	mg/L	1					
	EK055G: Ammonia as N by Discrete Analyser								
0.9	Ammonia as N	7664-41-7	mg/L	0.01	0.08	0.09	0.08	0.06	0.04
	EK057G: Nitrite as N by Discrete Analyser								
1.1	Nitrite as N		mg/L	0.01	0.02	0.02	0.02	0.02	0.02
	EK058G: Nitrate as N by Discrete Analyser								
1.1	Nitrate as N	14797-55-8	mg/L	0.01	0.72	0.35	0.12	0.18	0.32
	EK059G: NOX as N by Discrete Analyser								
1.1	Nitrite + Nitrate as N		mg/L	0.01	0.74	0.36	0.13	0.20	0.34
	EP080/071: Total Petroleum Hydrocarbons								
20	C6 - C9 Fraction		µg/L	20	<20	<20	<20	<20	<20
100	C10 - C14 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C15 - C28 Fraction		µg/L	100	<100	<100	<100	<100	<100
100	C29 - C36 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C10 - C36 Fraction (sum)				<50	<50	<50	<50	<50
	EP080S: TPH(V)/BTEX Surrogates								
	1,2-Dichloroethane-D4	17060-07-0	%		107	102	103	106	102
	Toluene-D8	2037-26-5	%		94.2	96.7	96.3	99.8	96.2
	4-Bromofluorobenzene	460-00-4	%		97.0	97.7	99.6	101	91.3
	EG035T: Total Recoverable Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	EG035F: Dissolved Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Bootes Creek Downstream Monitoring Station

EEEB1003004000_0_XTAB.XLS EB1003213000_0_XTAB.XLS EB1003213000_0_XTAB.XLS EB1003213000_0_XTAB.XLS EB1003213000_0_XTAB.XLS

				Matrix:	WATER				
				Workgroup:					
				Project name/number:					
				WORKGROUP	EB1003004000	EB1003213000	EB1003213000	EB1003213000	EB1003213000
				Sample Type:	REG	REG	REG	REG	REG
				ALS Sample number:	EB1003004009	EB1003213001	EB1003213002	EB1003213003	EB1003213004
				Sample date:	15/02/2010	16/02/2010	17/02/2010	18/02/2010	19/02/2010
				Client sample ID (1st):	Bootes CK D/S 9	BOOTES CREEK DS 1	BOOTES CREEK DS 2	BOOTES CREEK DS 3	BOOTES CREEK DS 4
				Client sample ID (2nd):					
				Site:					
				Purchase Order:					
	Analyte grouping/Analyte	CAS Number	Units	LOR					
	EA005P: pH by PC Titrator								
6.5	pH Value		pH Unit	0.01	7.78	7.74	7.74	7.77	7.74
	EA010P: Conductivity by PC Titrator								
315	Electrical Conductivity @ 25°C		µS/cm	1	121	137	151	163	160
	EA015: Total Dissolved Solids								
	Total Dissolved Solids @180°C	GfS-210-010	mg/L	1					
	EA025: Suspended Solids								
1170	Suspended Solids (SS)		mg/L	1	572	566	798	264	214
	EA045: Turbidity								
	Turbidity		NTU	0.1	850	850	650	550	400
	ED037P: Alkalinity by PC Titrator								
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1	<1	<1	<1	<1
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	<1	<1	<1	<1	<1
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	55	59	65	71	69
	Total Alkalinity as CaCO3		mg/L	1	55	59	65	71	69
	ED040F: Dissolved Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1	1	2	2	1	1
	ED040T: Total Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1					
	ED045G: Chloride Discrete analyser								
	Chloride	16887-00-6	mg/L	1	4	5	5	5	5
	ED045P: Chloride by PC Titrator								
	Chloride	16887-00-6	mg/L	1					
	ED093F: Dissolved Major Cations								
	Calcium	7440-70-2	mg/L	1	8	9	10	10	10
	Magnesium	7439-95-4	mg/L	1	5	5	6	6	6
	Sodium	7440-23-5	mg/L	1	9	9	12	14	14
	Potassium	7440-09-7	mg/L	1	2	3	2	2	2
	EG005F: Dissolved Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG005T: Total Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG020F: Dissolved Metals by ICP-MS				Retested				
0.65	Aluminium	7429-90-5	mg/L	0.01	<0.01	0.13	0.12	0.09	0.08
0.013	Arsenic	7440-38-2	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.0002	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
0.003	Chromium	7440-47-3	mg/L	0.001	<0.001	0.001	0.002	0.001	<0.001
0.09	Cobalt	7440-48-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.013	Copper	7440-50-8	mg/L	0.001	<0.001	0.003	0.004	0.003	0.003
0.01	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	<0.001	0.004	0.004	0.002	0.002
0.034	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.011	Nickel	7440-02-0	mg/L	0.001	<0.001	0.003	0.004	0.003	0.003
0.01	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0.001	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.001	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.01	Vanadium	7440-62-2	mg/L	0.01	<0.01	0.01	0.01	0.02	0.01
0.008	Zinc	7440-66-6	mg/L	0.005	<0.005	0.084	0.118	0.086	0.134
0.37	Boron	7440-42-8	mg/L	0.05	<0.05	0.11	0.1	0.1	0.08
0.52	Iron	7439-89-6	mg/L	0.05	<0.05	0.13	0.14	0.09	0.08
	EG020T: Total Metals by ICP-MS								
	Aluminium	7429-90-5	mg/L	0.01	34.5	29.5	17.1	28.2	20
	Arsenic	7440-38-2	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	0.001
	Cadmium	7440-43-9	mg/L	0.0001	0.0003	0.0001	<0.0001	<0.0001	0.0002
	Chromium	7440-47-3	mg/L	0.001	0.058	0.053	0.03	0.057	0.042
	Cobalt	7440-48-4	mg/L	0.001	0.021	0.017	0.013	0.019	0.011
	Copper	7440-50-8	mg/L	0.001	0.03	0.026	0.017	0.026	0.018
	Lead	7439-92-1	mg/L	0.001	0.004	0.003	0.003	0.003	0.002
	Manganese	7439-96-5	mg/L	0.001	0.467	0.37	0.296	0.427	0.248
	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Nickel	7440-02-0	mg/L	0.001	0.068	0.057	0.042	0.061	0.041
	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Vanadium	7440-62-2	mg/L	0.01	0.06	0.05	0.04	0.06	0.04
	Zinc	7440-66-6	mg/L	0.005	0.059	0.066	0.042	0.059	0.047
	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Iron	7439-89-6	mg/L	0.05	37.7	31.7	19.7	29.6	21.2
	EK040P: Fluoride by PC Titrator								
	Fluoride	16984-48-8	mg/L	0.1	0.1	0.1	0.1	0.2	0.2
	EN055: Ionic Balance								
	Total Anions		meq/L	0.01	1.24	1.36	1.48	1.6	1.55
	Total Cations		meq/L	0.01	1.25	1.36	1.53	1.64	1.64
	Ionic Balance		%	0.01		0.82	1.63	1.4	2.66
	ED093T: Total Major Cations								
	Calcium	7440-70-2	mg/L	1					
	Magnesium	7439-95-4	mg/L	1					
	Sodium	7440-23-5	mg/L	1					
	Potassium	7440-09-7	mg/L	1					
	EK055G: Ammonia as N by Discrete Analyser								
0.9	Ammonia as N	7664-41-7	mg/L	0.01	0.06	<0.01	<0.01	0.01	<0.01
	EK057G: Nitrite as N by Discrete Analyser								
1.1	Nitrite as N		mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	EK058G: Nitrate as N by Discrete Analyser								
1.1	Nitrate as N	14797-55-8	mg/L	0.01	0.14	0.18	0.21	0.23	0.16
	EK059G: NOX as N by Discrete Analyser								
1.1	Nitrite + Nitrate as N		mg/L	0.01	0.14	0.18	0.21	0.23	0.16
	EP080/071: Total Petroleum Hydrocarbons								
20	C6 - C9 Fraction		µg/L	20	<20	<20	<20	<20	<20
100	C10 - C14 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C15 - C28 Fraction		µg/L	100	<100	<100	<100	<100	<100
100	C29 - C36 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C10 - C36 Fraction (sum)				<50	<50	<50	<50	<50
	EP080S: TPH(V)/BTEX Surrogates								
	1,2-Dichloroethane-D4	17060-07-0	%		104	106	112	111	103
	Toluene-D8	2037-26-5	%		96.0	104	110	111	100
	4-Bromofluorobenzene	460-00-4	%		92.6	103	110	109	99.6
	EG035T: Total Recoverable Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	EG035F: Dissolved Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Bootes Creek Downstream Monitoring Station

EEEB100321300_0_XTAB.XLS-EB100321300_0_XTAB.XLS-EB100346100_0_XTAB.XLS-EB100346100_0_XTAB.XLS-EB100346100_0_XTAB.XLS

					WORKGROUP	EB100321300	EB100321300	EB100346100	EB100346100	EB100346100
				Matrix:	WATER	REG	REG	REG	REG	REG
				Workgroup:		EB1003213005	EB1003213006	EB1003461001	EB1003461002	EB1003461003
				Project name/number:		20/02/2010	21/02/2010	22/02/2010	23/02/2010	24/02/2010
				Sample date:		BOOTES CREEK DS 5	BOOTES CREEK DS 6	Bootes Ck DS	Bootes Ck DS	Bootes Ck DS
				Client sample ID (1st):						
				Client sample ID (2nd):						
				Site:						
				Purchase Order:						
	Analyte grouping/Analyte	CAS Number	Units	LOR						
	EA005P: pH by PC Titrator									
6.5	pH Value		pH Unit	0.01		7.8	7.89	7.42	7.85	7.86
	EA010P: Conductivity by PC Titrator									
315	Electrical Conductivity @ 25°C		µS/cm	1		191	210	251	285	292
	EA015: Total Dissolved Solids									
	Total Dissolved Solids @180°C	GIS-210-010	mg/L	1						
	EA025: Suspended Solids									
1170	Suspended Solids (SS)		mg/L	1		56	178	353	270	181
	EA045: Turbidity									
	Turbidity		NTU	0.1		320	270	460	270	210
	ED037P: Alkalinity by PC Titrator									
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1		<1	<1	<1	<1	<1
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1		<1	<1	<1	<1	<1
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1		82	88	110	126	130
	Total Alkalinity as CaCO3		mg/L	1		82	88	110	126	130
	ED040F: Dissolved Major Anions									
250	Sulphate as SO4 2-	14808-79-8	mg/L	1		2	2	2	3	3
	ED040T: Total Major Anions									
250	Sulphate as SO4 2-	14808-79-8	mg/L	1						
	ED045G: Chloride Discrete analyser									
	Chloride	16887-00-6	mg/L	1		8	8	10	11	9
	ED045P: Chloride by PC Titrator									
	Chloride	16887-00-6	mg/L	1						
	ED093F: Dissolved Major Cations									
	Calcium	7440-70-2	mg/L	1		11	12	16	18	19
	Magnesium	7439-95-4	mg/L	1		7	8	10	11	12
	Sodium	7440-23-5	mg/L	1		17	18	20	22	22
	Potassium	7440-09-7	mg/L	1		2	2	2	2	2
	EG005F: Dissolved Metals by ICP-AES									
	Iron	7439-89-6	mg/L	0.05						
	EG005T: Total Metals by ICP-AES									
	Iron	7439-89-6	mg/L	0.05						
	EG020F: Dissolved Metals by ICP-MS									
0.65	Aluminium	7429-90-5	mg/L	0.01		0.08	0.14	0.09	0.1	0.08
0.013	Arsenic	7440-38-2	mg/L	0.001		<0.001	<0.001	0.001	0.002	0.002
0.0002	Cadmium	7440-43-9	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
0.003	Chromium	7440-47-3	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
0.09	Cobalt	7440-48-4	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
0.013	Copper	7440-50-8	mg/L	0.001		0.003	0.003	0.002	0.002	0.003
0.01	Lead	7439-92-1	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001		0.002	0.002	0.001	0.002	0.002
0.034	Molybdenum	7439-98-7	mg/L	0.001		<0.001	<0.001	<0.001	0.001	0.002
0.011	Nickel	7440-02-0	mg/L	0.001		0.003	0.003	0.002	0.003	0.003
0.01	Selenium	7782-49-2	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
0.001	Silver	7440-22-4	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
0.001	Uranium	7440-61-1	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
0.01	Vanadium	7440-62-2	mg/L	0.01		0.02	0.02	0.02	0.01	0.01
0.008	Zinc	7440-66-6	mg/L	0.005		0.11	0.116	0.048	0.066	0.031
0.37	Boron	7440-42-8	mg/L	0.05		0.09	0.08	0.05	0.06	<0.05
0.52	Iron	7439-89-6	mg/L	0.05		0.09	0.15	0.07	0.06	<0.05
	EG020T: Total Metals by ICP-MS									
	Aluminium	7429-90-5	mg/L	0.01		17.2	16.9	9.74	10.9	9.05
	Arsenic	7440-38-2	mg/L	0.001		<0.001	0.001	0.001	0.001	0.003
	Cadmium	7440-43-9	mg/L	0.0001		0.0002	<0.0001	<0.0001	<0.0001	<0.0001
	Chromium	7440-47-3	mg/L	0.001		0.034	0.036	0.02	0.021	0.016
	Cobalt	7440-48-4	mg/L	0.001		0.01	0.01	0.006	0.007	0.005
	Copper	7440-50-8	mg/L	0.001		0.015	0.016	0.01	0.012	0.01
	Lead	7439-92-1	mg/L	0.001		0.002	0.002	0.001	0.002	0.001
	Manganese	7439-96-5	mg/L	0.001		0.223	0.231	0.137	0.194	0.133
	Molybdenum	7439-98-7	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	0.001
	Nickel	7440-02-0	mg/L	0.001		0.038	0.035	0.023	0.028	0.022
	Selenium	7782-49-2	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
	Silver	7440-22-4	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
	Uranium	7440-61-1	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
	Vanadium	7440-62-2	mg/L	0.01		0.04	0.04	0.03	0.03	0.03
	Zinc	7440-66-6	mg/L	0.005		0.048	0.035	0.023	0.027	0.024
	Boron	7440-42-8	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
	Iron	7439-89-6	mg/L	0.05		19	18.2	11.5	14	11.3
	EK040P: Fluoride by PC Titrator									
	Fluoride	16984-48-8	mg/L	0.1		0.2	0.2	0.2	0.2	0.2
	EN055: Ionic Balance									
	Total Anions		meq/L	0.01		1.9	2.03	2.53	2.9	2.93
	Total Cations		meq/L	0.01		1.95	2.12	2.52	2.86	2.96
	Ionic Balance		%	0.01		1.21	1.94			
	ED093T: Total Major Cations									
	Calcium	7440-70-2	mg/L	1						
	Magnesium	7439-95-4	mg/L	1						
	Sodium	7440-23-5	mg/L	1						
	Potassium	7440-09-7	mg/L	1						
	EK055G: Ammonia as N by Discrete Analyser									
0.9	Ammonia as N	7664-41-7	mg/L	0.01		<0.01	<0.01	0.06	0.02	0.02
	EK057G: Nitrite as N by Discrete Analyser									
1.1	Nitrite as N		mg/L	0.01		0.01	<0.01	<0.01	<0.01	<0.01
	EK059G: Nitrate as N by Discrete Analyser									
1.1	Nitrate as N	14797-55-8	mg/L	0.01		0.12	0.14	0.09	0.18	0.24
	EK059G: NOX as N by Discrete Analyser									
1.1	Nitrite + Nitrate as N		mg/L	0.01		0.13	0.14	0.09	0.18	0.24
	EP080/071: Total Petroleum Hydrocarbons									
20	C6 - C9 Fraction		µg/L	20		<20	<20	<20	<20	<20
100	C10 - C14 Fraction		µg/L	50		<50	<50	<50	<50	<50
100	C15 - C28 Fraction		µg/L	100		<100	<100	<100	<100	<100
100	C29 - C36 Fraction		µg/L	50		<50	<50	<50	<50	<50
100	C10 - C36 Fraction (sum)					<50	<50	<50	<50	<50
	EP080S: TPH(V)/BTEX Surrogates									
	1,2-Dichloroethane-D4	17060-07-0	%			105	104	100	95.8	93.6
	Toluene-D8	2037-26-5	%			102	102	96.4	100	96.6
	4-Bromofluorobenzene	460-00-4	%			100	99.8	92.3	97.9	93.1
	EG035T: Total Recoverable Mercury by FIMS									
0.0002	Mercury	7439-97-6	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	EG035F: Dissolved Mercury by FIMS									
0.0002	Mercury	7439-97-6	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Bootes Creek Downstream Monitoring Station

EE EB100346100_0_XTAB.XLS, EB1004035000_0_XTAB.XLS, EB1004035001_0_XTAB.XLS, EB1004035002_0_XTAB.XLS, EB1004035003_0_XTAB.XLS, EB1004035004_0_XTAB.XLS

					Matrix:	WATER				
					Workgroup:					
					Project name/number:					
					WORKGROUP	EB1003461004	EB1004035001	EB1004035002	EB1004035003	EB1004035004
					Sample Type:	REG	REG	REG	REG	REG
					ALS Sample number:	EB1003461004	EB1004035001	EB1004035002	EB1004035003	EB1004035004
					Sample date:	25/02/2010	26/02/2010	27/02/2010	28/02/2010	01/03/2010
					Client sample ID (1st):	Bootes Ck DS	Bootes CK DS	Bootes CK DS	Bootes CK DS	Bootes CK DS
					Client sample ID (2nd):					
					Site:					
					Purchase Order:					
	Analyte grouping/Analyte	CAS Number	Units	LOR						
	EA005P: pH by PC Titrator									
6.5	pH Value		pH Unit	0.01		7.66	7.86	8.03	8.05	7.84
	EA010P: Conductivity by PC Titrator									
315	Electrical Conductivity @ 25°C		µS/cm	1		165	238	255	270	190
	EA015: Total Dissolved Solids									
	Total Dissolved Solids @180°C	GIS-210-010	mg/L	1						
	EA025: Suspended Solids									
1170	Suspended Solids (SS)		mg/L	1		736	312	153	128	880
	EA045: Turbidity									
	Turbidity		NTU	0.1		700	390	230	190	304
	ED037P: Alkalinity by PC Titrator									
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1		<1	<1	<1	<1	<1
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1		<1	<1	<1	<1	<1
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1		73	97	108	112	85
	Total Alkalinity as CaCO3		mg/L	1		73	97	108	112	85
	ED040F: Dissolved Major Anions									
250	Sulphate as SO4 2-	14808-79-8	mg/L	1		2	3	4	4	2
	ED040T: Total Major Anions									
250	Sulphate as SO4 2-	14808-79-8	mg/L	1						
	ED045G: Chloride Discrete analyser									
	Chloride	16887-00-6	mg/L	1		6	11	12	13	8
	ED045P: Chloride by PC Titrator									
	Chloride	16887-00-6	mg/L	1						
	ED093F: Dissolved Major Cations									
	Calcium	7440-70-2	mg/L	1		11	11	11	11	10
	Magnesium	7439-95-4	mg/L	1		7	7	7	8	6
	Sodium	7440-23-5	mg/L	1		12	26	30	31	17
	Potassium	7440-09-7	mg/L	1		2	2	2	2	2
	EG005F: Dissolved Metals by ICP-AES									
	Iron	7439-89-6	mg/L	0.05						
	EG005T: Total Metals by ICP-AES									
	Iron	7439-89-6	mg/L	0.05						
	EG020F: Dissolved Metals by ICP-MS									
0.65	Aluminium	7429-90-5	mg/L	0.01		0.33	0.14	0.09	0.07	0.12
0.013	Arsenic	7440-38-2	mg/L	0.001		<0.001	0.001	0.002	0.003	0.001
0.0002	Cadmium	7440-43-9	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
0.003	Chromium	7440-47-3	mg/L	0.001		0.001	<0.001	<0.001	<0.001	0.001
0.09	Cobalt	7440-48-4	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
0.013	Copper	7440-50-8	mg/L	0.001		0.003	0.008	0.003	0.002	0.004
0.01	Lead	7439-92-1	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001		0.005	0.005	0.004	0.002	0.005
0.034	Molybdenum	7439-98-7	mg/L	0.001		<0.001	<0.001	0.002	0.002	0.001
0.011	Nickel	7440-02-0	mg/L	0.001		0.003	0.004	0.003	0.003	0.003
0.01	Selenium	7782-49-2	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
0.001	Silver	7440-22-4	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
0.001	Uranium	7440-61-1	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
0.01	Vanadium	7440-62-2	mg/L	0.01		<0.01	0.02	0.02	0.02	0.02
0.008	Zinc	7440-66-6	mg/L	0.005		0.07	0.035	0.042	0.047	0.021
0.37	Boron	7440-42-8	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
0.52	Iron	7439-89-6	mg/L	0.05		0.24	0.13	0.1	0.07	0.1
	EG020T: Total Metals by ICP-MS									
	Aluminium	7429-90-5	mg/L	0.01		55.1	11.6	9.56	7.94	12
	Arsenic	7440-38-2	mg/L	0.001		0.004	0.003	0.002	0.003	0.001
	Cadmium	7440-43-9	mg/L	0.0001		0.0002	<0.0001	<0.0001	<0.0001	<0.0001
	Chromium	7440-47-3	mg/L	0.001		0.088	0.026	0.022	0.018	0.026
	Cobalt	7440-48-4	mg/L	0.001		0.056	0.009	0.007	0.005	0.013
	Copper	7440-50-8	mg/L	0.001		0.068	0.016	0.012	0.01	0.017
	Lead	7439-92-1	mg/L	0.001		0.017	0.003	0.002	0.002	0.002
	Manganese	7439-96-5	mg/L	0.001		1.54	0.216	0.149	0.119	0.317
	Molybdenum	7439-98-7	mg/L	0.001		<0.001	<0.001	0.001	0.002	<0.001
	Nickel	7440-02-0	mg/L	0.001		0.181	0.032	0.024	0.02	0.035
	Selenium	7782-49-2	mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
	Silver	7440-22-4	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001
	Uranium	7440-61-1	mg/L	0.001		0.001	<0.001	<0.001	<0.001	<0.001
	Vanadium	7440-62-2	mg/L	0.01		0.09	0.04	0.04	0.04	0.04
	Zinc	7440-66-6	mg/L	0.005		0.146	0.031	0.023	0.021	0.034
	Boron	7440-42-8	mg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05
	Iron	7439-89-6	mg/L	0.05		88.3	16.4	12.8	10.3	17.2
	EK040P: Fluoride by PC Titrator									
	Fluoride	16984-48-8	mg/L	0.1		0.1	0.2	0.2	0.2	0.2
	EN055: Ionic Balance									
	Total Anions		meq/L	0.01		1.66	2.31	2.59	2.69	1.96
	Total Cations		meq/L	0.01		1.7	2.29	2.5	2.61	1.83
	Ionic Balance		%	0.01						
	ED093T: Total Major Cations									
	Calcium	7440-70-2	mg/L	1						
	Magnesium	7439-95-4	mg/L	1						
	Sodium	7440-23-5	mg/L	1						
	Potassium	7440-09-7	mg/L	1						
	EK055G: Ammonia as N by Discrete Analyser									
0.9	Ammonia as N	7664-41-7	mg/L	0.01		0.02	0.03	0.04	0.05	0.07
	EK057G: Nitrite as N by Discrete Analyser									
1.1	Nitrite as N		mg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01
	EK058G: Nitrate as N by Discrete Analyser									
1.1	Nitrate as N	14797-55-8	mg/L	0.01		0.14	0.14	0.15	0.18	0.12
	EK059G: NOX as N by Discrete Analyser									
1.1	Nitrite + Nitrate as N		mg/L	0.01		0.14	0.14	0.15	0.18	0.12
	EP080/071: Total Petroleum Hydrocarbons									
20	C6 - C9 Fraction		µg/L	20		<20	<20	<20	<20	<20
100	C10 - C14 Fraction		µg/L	50		<50	<50	<50	<50	<50
100	C15 - C28 Fraction		µg/L	100		<100	<100	<100	<100	<100
100	C29 - C36 Fraction		µg/L	50		<50	<50	<50	<50	<50
100	C10 - C36 Fraction (sum)					<50	<50	<50	<50	<50
	EP080S: TPH(V)/BTEX Surrogates									
	1,2-Dichloroethane-D4	17060-07-0	%			106	102	102	102	100
	Toluene-D8	2037-26-5	%			102	99.5	99.5	98.6	97
	4-Bromofluorobenzene	460-00-4	%			97	99.8	98.1	98.3	95.6
	EG035T: Total Recoverable Mercury by FIMS									
0.0002	Mercury	7439-97-6	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	EG035F: Dissolved Mercury by FIMS									
0.0002	Mercury	7439-97-6	mg/L	0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

	Bootes Creek Downstream_Monitoring Station				EEEB1004035000_0_XTAB.XLS EB1004035000_0_XTAB.XLS EB1004043800_0_XTAB.XLS EB1004043800_0_XTAB.XLS EB1004043800_0_XTAB.XLS				
	Matrix: WATER			WORKGROUP	EB1004035000	EB1004035000	EB1004043800	EB1004043800	EB1004043800
	Workgroup:			Sample Type:	REG	REG	REG	REG	REG
	Project name/number:			ALS Sample number:	EB1004035005	EB1004035006	EB1004043801	EB1004043802	EB1004043803
				Sample date:	02/03/2010	03/03/2010	04/03/2010	05/03/2010	06/03/2010
				Client sample ID (1st):	Bootes CK DS	Bootes CK DS	Bootes CK DS	Bootes CK DS	Bootes CK DS
				Client sample ID (2nd):					
				Site:					
				Purchase Order:					
	Analyte grouping/Analyte	CAS Number	Units	LOR					
	EA005P: pH by PC Titrator								
6.5	pH Value		pH Unit	0.01	7.93	7.81	7.69	7.72	7.75
	EA010P: Conductivity by PC Titrator								
315	Electrical Conductivity @ 25°C		µS/cm	1	180	176	210	216	206
	EA015: Total Dissolved Solids								
	Total Dissolved Solids @180°C	GIS-210-010	mg/L	1					
	EA025: Suspended Solids								
1170	Suspended Solids (SS)		mg/L	1	292	256	137	184	151
	EA045: Turbidity								
	Turbidity		NTU	0.1	331	240	260	260	190
	ED037P: Alkalinity by PC Titrator								
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1	<1	<1	<1	<1
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	<1	<1	<1	<1	<1
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	81	79	84	105	96
	Total Alkalinity as CaCO3		mg/L	1	81	79	84	105	96
	ED040F: Dissolved Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1	2	2	2	3	2
	ED040T: Total Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1					
	ED045G: Chloride Discrete analyser								
	Chloride	16887-00-6	mg/L	1	8	8	7	8	7
	ED045P: Chloride by PC Titrator								
	Chloride	16887-00-6	mg/L	1					
	ED093F: Dissolved Major Cations								
	Calcium	7440-70-2	mg/L	1	6	9	11	13	13
	Magnesium	7439-95-4	mg/L	1	4	6	7	8	8
	Sodium	7440-23-5	mg/L	1	25	17	16	20	16
	Potassium	7440-09-7	mg/L	1	2	2	2	2	2
	EG005F: Dissolved Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG005T: Total Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG020F: Dissolved Metals by ICP-MS								
0.65	Aluminium	7429-90-5	mg/L	0.01	0.17	0.15	0.11	0.11	0.13
0.013	Arsenic	7440-38-2	mg/L	0.001	0.001	<0.001	0.001	<0.001	0.001
0.0002	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
0.003	Chromium	7440-47-3	mg/L	0.001	0.001	0.001	<0.001	<0.001	<0.001
0.09	Cobalt	7440-48-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.013	Copper	7440-50-8	mg/L	0.001	0.006	0.005	0.003	0.002	0.003
0.01	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	0.005	0.006	0.003	0.003	0.004
0.034	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	0.001
0.011	Nickel	7440-02-0	mg/L	0.001	0.003	0.004	0.003	0.003	0.003
0.01	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0.001	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.001	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
0.01	Vanadium	7440-62-2	mg/L	0.01	0.02	0.02	0.01	0.01	0.01
0.008	Zinc	7440-66-6	mg/L	0.005	0.023	0.028	0.056	0.056	0.049
0.37	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
0.52	Iron	7439-89-6	mg/L	0.05	0.17	0.13	0.08	0.09	0.09
	EG020T: Total Metals by ICP-MS								
	Aluminium	7429-90-5	mg/L	0.01	11.2	9.85	11.2	15.6	8.76
	Arsenic	7440-38-2	mg/L	0.001	0.002	<0.001	<0.001	<0.001	0.001
	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Chromium	7440-47-3	mg/L	0.001	0.024	0.022	0.025	0.027	0.02
	Cobalt	7440-48-4	mg/L	0.001	0.01	0.008	0.008	0.011	0.006
	Copper	7440-50-8	mg/L	0.001	0.014	0.012	0.011	0.014	0.009
	Lead	7439-92-1	mg/L	0.001	0.003	0.002	0.004	0.002	0.001
	Manganese	7439-96-5	mg/L	0.001	0.216	0.186	0.194	0.255	0.147
	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Nickel	7440-02-0	mg/L	0.001	0.031	0.025	0.029	0.034	0.022
	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Vanadium	7440-62-2	mg/L	0.01	0.04	0.03	0.03	0.03	0.03
	Zinc	7440-66-6	mg/L	0.005	0.025	0.026	0.025	0.03	0.021
	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Iron	7439-89-6	mg/L	0.05	16.4	12.9	14.2	17.8	11.1
	EK040P: Fluoride by PC Titrator								
	Fluoride	16984-48-8	mg/L	0.1	0.2	0.2	0.2	0.2	0.2
	EN055: Ionic Balance								
	Total Anions		meq/L	0.01	1.88	1.85	1.93	2.39	2.18
	Total Cations		meq/L	0.01	1.74	1.72	1.94	2.27	2.12
	Ionic Balance		%	0.01					
	ED093T: Total Major Cations								
	Calcium	7440-70-2	mg/L	1					
	Magnesium	7439-95-4	mg/L	1					
	Sodium	7440-23-5	mg/L	1					
	Potassium	7440-09-7	mg/L	1					
	EK055G: Ammonia as N by Discrete Analyser								
0.9	Ammonia as N	7664-41-7	mg/L	0.01	0.12	0.07	0.02	0.08	0.06
	EK057G: Nitrite as N by Discrete Analyser								
1.1	Nitrite as N		mg/L	0.01	<0.01	<0.01	0.01	<0.01	<0.01
	EK058G: Nitrate as N by Discrete Analyser								
1.1	Nitrate as N	14797-55-8	mg/L	0.01	<0.01	0.07	0.22	0.14	0.16
	EK059G: NOX as N by Discrete Analyser								
1.1	Nitrite + Nitrate as N		mg/L	0.01	<0.01	0.07	0.24	0.14	0.16
	EP080/071: Total Petroleum Hydrocarbons								
20	C6 - C9 Fraction		µg/L	20	<20	<20	<20	<20	<20
100	C10 - C14 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C15 - C28 Fraction		µg/L	100	<100	<100	<100	<100	<100
100	C29 - C36 Fraction		µg/L	50	<50	<50	<50	<50	<50
100	C10 - C36 Fraction (sum)				<50	<50	<50	<50	<50
	EP080S: TPH(V)/BTEX Surrogates								
	1,2-Dichloroethane-D4	17060-07-0	%		105	107	100	82.1	90
	Toluene-D8	2037-26-5	%		100	98.3	100	104	102
	4-Bromofluorobenzene	460-00-4	%		97.6	96.8	99	110	102
	EG035T: Total Recoverable Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	0.0013	<0.0001	<0.0001	<0.0001
	EG035F: Dissolved Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	0.0006	<0.0001	<0.0001	<0.0001

Bootes Creek Downstream Monitoring Station

EEEB100443800_0_XTAB.XLS EB100443800_0_XTAB.XLS EB100443800_0_XTAB.XLS EB100470900_0_XTAB.XLS EB100470900_0_XTAB.XLS

				WORKGROUP	EB100443800	EB100443800	EB100443800	EB100470900	EB100470900
			Matrix:	Sample Type:	REG	REG	REG	REG	REG
			Workgroup:	ALS Sample number:	EB1004438004	EB1004438005	EB1004438006	EB1004709001	EB1004709002
			Project name/number:	Sample date:	07/03/2010	08/03/2010	09/03/2010	10/03/2010	11/03/2010
				Client sample ID (1st):	Bootes CK DS	Bootes CK DS	Bootes CK DS	Bootes CK DS	Bootes CK DS
				Client sample ID (2nd):					
				Site:					
				Purchase Order:					
	Analyte grouping/Analyte	CAS Number	Units	LOR					
	EA005P: pH by PC Titrator								
6.5	pH Value		pH Unit	0.01	7.82	7.85	7.63	7.99	8.09
	EA010P: Conductivity by PC Titrator								
315	Electrical Conductivity @ 25°C		µS/cm	1	236	264	131	157	269
	EA015: Total Dissolved Solids								
	Total Dissolved Solids @180°C	GIS-210-010	mg/L	1					
	EA025: Suspended Solids								
1170	Suspended Solids (SS)		mg/L	1	229	146	409	305	179
	EA045: Turbidity								
	Turbidity		NTU	0.1	200	170	380	220	210
	ED037P: Alkalinity by PC Titrator								
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1		<1	<1	<1
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	<1		<1	<1	<1
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	108		62	83	125
	Total Alkalinity as CaCO3		mg/L	1	108		62	83	125
	ED040F: Dissolved Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1	3	3	1	2	5
	ED040T: Total Major Anions								
250	Sulphate as SO4 2-	14808-79-8	mg/L	1					
	ED045G: Chloride Discrete analyser								
	Chloride	16887-00-6	mg/L	1	8		5	6	9
	ED045P: Chloride by PC Titrator								
	Chloride	16887-00-6	mg/L	1					
	ED093F: Dissolved Major Cations								
	Calcium	7440-70-2	mg/L	1	14		9	11	17
	Magnesium	7439-95-4	mg/L	1	9		5	7	10
	Sodium	7440-23-5	mg/L	1	19		8	12	20
	Potassium	7440-09-7	mg/L	1	2		2	2	2
	EG005F: Dissolved Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG005T: Total Metals by ICP-AES								
	Iron	7439-89-6	mg/L	0.05					
	EG020F: Dissolved Metals by ICP-MS								
0.65	Aluminium	7429-90-5	mg/L	0.01	0.08		0.56	0.66	0.24
0.013	Arsenic	7440-38-2	mg/L	0.001	0.002		<0.001	<0.001	0.002
0.0002	Cadmium	7440-43-9	mg/L	0.0001	<0.0001		<0.0001	<0.0001	<0.0001
0.003	Chromium	7440-47-3	mg/L	0.001	<0.001		<0.001	0.002	<0.001
0.09	Cobalt	7440-48-4	mg/L	0.001	<0.001		0.008	0.001	<0.001
0.013	Copper	7440-50-8	mg/L	0.001	0.003		0.006	0.004	0.002
0.01	Lead	7439-92-1	mg/L	0.001	<0.001		0.001	<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001	0.003		0.251	0.036	0.012
0.034	Molybdenum	7439-98-7	mg/L	0.001	0.004		<0.001	<0.001	0.002
0.011	Nickel	7440-02-0	mg/L	0.001	0.003		0.009	0.005	0.003
0.01	Selenium	7782-49-2	mg/L	0.01	<0.01		<0.01	<0.01	<0.01
0.001	Silver	7440-22-4	mg/L	0.001	<0.001		<0.001	<0.001	<0.001
0.001	Uranium	7440-61-1	mg/L	0.001	<0.001		<0.001	<0.001	<0.001
0.01	Vanadium	7440-62-2	mg/L	0.01	0.01		0.02	0.01	0.01
0.008	Zinc	7440-66-6	mg/L	0.005	0.04		0.248	0.006	<0.005
0.37	Boron	7440-42-8	mg/L	0.05	<0.05		0.09	<0.05	<0.05
0.52	Iron	7439-89-6	mg/L	0.05	0.06		0.38	0.59	0.23
	EG020T: Total Metals by ICP-MS								
	Aluminium	7429-90-5	mg/L	0.01	8.32		11.2	8.02	7.32
	Arsenic	7440-38-2	mg/L	0.001	0.002		<0.001	0.001	0.002
	Cadmium	7440-43-9	mg/L	0.0001	<0.0001		<0.0001	<0.0001	<0.0001
	Chromium	7440-47-3	mg/L	0.001	0.018		0.023	0.017	0.016
	Cobalt	7440-48-4	mg/L	0.001	0.006		0.009	0.006	0.006
	Copper	7440-50-8	mg/L	0.001	0.01		0.012	0.009	0.008
	Lead	7439-92-1	mg/L	0.001	0.002		0.002	0.001	0.001
	Manganese	7439-96-5	mg/L	0.001	0.152		0.222	0.16	0.135
	Molybdenum	7439-98-7	mg/L	0.001	<0.001		<0.001	<0.001	0.003
	Nickel	7440-02-0	mg/L	0.001	0.024		0.028	0.02	0.02
	Selenium	7782-49-2	mg/L	0.01	<0.01		<0.01	<0.01	<0.01
	Silver	7440-22-4	mg/L	0.001	<0.001		<0.001	<0.001	<0.001
	Uranium	7440-61-1	mg/L	0.001	<0.001		<0.001	<0.001	<0.001
	Vanadium	7440-62-2	mg/L	0.01	0.03		0.03	0.03	0.03
	Zinc	7440-66-6	mg/L	0.005	0.02		0.027	0.018	0.016
	Boron	7440-42-8	mg/L	0.05	<0.05		<0.05	<0.05	<0.05
	Iron	7439-89-6	mg/L	0.05	10.4		15.2	10.4	9.56
	EK040P: Fluoride by PC Titrator								
	Fluoride	16984-48-8	mg/L	0.1	0.2		0.1	0.1	0.2
	EN055: Ionic Balance								
	Total Anions		meq/L	0.01	2.46		1.4	1.86	2.84
	Total Cations		meq/L	0.01	2.38		1.34	1.7	2.65
	Ionic Balance		%	0.01					
	ED093T: Total Major Cations								
	Calcium	7440-70-2	mg/L	1					
	Magnesium	7439-95-4	mg/L	1					
	Sodium	7440-23-5	mg/L	1					
	Potassium	7440-09-7	mg/L	1					
	EK055G: Ammonia as N by Discrete Analyser								
0.9	Ammonia as N	7664-41-7	mg/L	0.01	0.05		0.05	0.02	0.02
	EK057G: Nitrite as N by Discrete Analyser								
1.1	Nitrite as N		mg/L	0.01	<0.01		<0.01	<0.01	<0.01
	EK058G: Nitrate as N by Discrete Analyser								
1.1	Nitrate as N	14797-55-8	mg/L	0.01	0.18		0.08	0.14	0.23
	EK059G: NOX as N by Discrete Analyser								
1.1	Nitrite + Nitrate as N		mg/L	0.01	0.18		0.08	0.14	0.23
	EP080/071: Total Petroleum Hydrocarbons								
20	C6 - C9 Fraction		µg/L	20	<20		<20	<20	<20
100	C10 - C14 Fraction		µg/L	50	<50		<50	<50	<50
100	C15 - C28 Fraction		µg/L	100	<100		<100	<100	<100
100	C29 - C36 Fraction		µg/L	50	<50		<50	<50	<50
100	C10 - C36 Fraction (sum)				<50		<50	<50	<50
	EP080S: TPH(V)/BTEX Surrogates								
	1,2-Dichloroethane-D4	17060-07-0	%		102		89.8	101	104
	Toluene-D8	2037-26-5	%		105		102	101	101
	4-Bromofluorobenzene	460-00-4	%		106		101	98.7	98.4
	EG035T: Total Recoverable Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001		<0.0001	<0.0001	<0.0001
	EG035F: Dissolved Mercury by FIMS								
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001		<0.0001	<0.0001	<0.0001

	Bootes Creek Downstream Monitoring Station				EB100470900_0_XTAB.XLS	EB100470900_0_XTAB.XLS	EB100470900_0_XTAB.XLS	EB100515200_0_XTAB.XLS	EB100515200_0_XTAB.XLS	EB100515200_0_XTAB.XLS
	Matrix: WATER			WORKGROUP	EB100470900	EB100470900	EB100470900	EB100515200	EB100515200	EB100515200
	Workgroup:			Sample Type:	REG	REG	REG	REG	REG	REG
	Project name/number:			ALS Sample number:	EB1004709003	EB1004709004	EB1004709005	EB1005152001	EB1005152002	EB1005152003
				Sample date:	12/03/2010	13/03/2010	14/03/2010	15/03/2010	16/03/2010	17/03/2010
				Client sample ID (1st):	Bootes CK DS	Bootes CK DS	Bootes CK DS	BOOTES CK DS	BOOTES CK DS	BOOTES CK DS
				Client sample ID (2nd):						
				Site:						
				Purchase Order:						
	Analyte grouping/Analyte	CAS Number	Units	LOR						
	EA005P: pH by PC Titrator									
6.6	pH Value		pH Unit	0.01	8.08	8.01	7.94	8.14	8.12	8.07
	EA010P: Conductivity by PC Titrator									
315	Electrical Conductivity @ 25°C		µS/cm	1	280	265	266	311	289	292
	EA015: Total Dissolved Solids									
	Total Dissolved Solids @180°C	GIS-210-010	mg/L	1						
	EA025: Suspended Solids									
1170	Suspended Solids (SS)		mg/L	1	998	101	84	84	80	74
	EA045: Turbidity									
	Turbidity		NTU	0.1	180	130	140	90	100	110
	ED037P: Alkalinity by PC Titrator									
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1	<1	<1	<1	<1	
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	<1	<1	<1	<1	<1	
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	134	132	133	136	135	134
	Total Alkalinity as CaCO3		mg/L	1	134	132	133	136	135	134
	ED040F: Dissolved Major Anions									
250	Sulphate as SO4 2-	14808-79-8	mg/L	1	4	2	2	3	3	3
	ED040T: Total Major Anions									
250	Sulphate as SO4 2-	14808-79-8	mg/L	1						
	ED045G: Chloride Discrete analyser									
	Chloride	16887-00-6	mg/L	1	16	9	9	10	9	9
	ED045P: Chloride by PC Titrator									
	Chloride	16887-00-6	mg/L	1						
	ED093F: Dissolved Major Cations									
	Calcium	7440-70-2	mg/L	1	19	19	19	20	18	18
	Magnesium	7439-95-4	mg/L	1	12	12	13	14	12	12
	Sodium	7440-23-5	mg/L	1	25	19	21	21	22	23
	Potassium	7440-09-7	mg/L	1	2	2	2	2	2	2
	EG005F: Dissolved Metals by ICP-AES									
	Iron	7439-89-6	mg/L	0.05						
	EG005T: Total Metals by ICP-AES									
	Iron	7439-89-6	mg/L	0.05						
	EG020F: Dissolved Metals by ICP-MS									
0.65	Aluminium	7429-90-5	mg/L	0.01	0.2	0.14	0.35	0.19	0.18	0.21
0.013	Arsenic	7440-38-2	mg/L	0.001	0.004	0.002	<0.001	<0.001	0.001	0.001
0.0002	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
0.003	Chromium	7440-47-3	mg/L	0.001	0.001	<0.001	0.001	<0.001	<0.001	
0.09	Cobalt	7440-48-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
0.013	Copper	7440-50-8	mg/L	0.001	0.004	0.002	0.003	0.002	0.003	0.003
0.01	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
	Manganese	7439-96-5	mg/L	0.001	0.012	0.007	0.019	0.01	0.01	0.017
0.034	Molybdenum	7439-98-7	mg/L	0.001	0.007	0.003	<0.001	<0.001		0.002
0.011	Nickel	7440-02-0	mg/L	0.001	0.004	0.003	0.004	0.003	0.003	0.003
0.01	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
0.001	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
0.001	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
0.01	Vanadium	7440-62-2	mg/L	0.01	0.01	0.01	0.02	0.02	0.02	0.02
0.008	Zinc	7440-66-6	mg/L	0.005	<0.005	<0.005	0.014	<0.005	<0.005	
0.37	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
0.52	Iron	7439-89-6	mg/L	0.05	0.23	0.16	0.33	0.15	0.13	0.21
	EG020T: Total Metals by ICP-MS									
	Aluminium	7429-90-5	mg/L	0.01	44.8	6.64	4.39	4.35	4	5.36
	Arsenic	7440-38-2	mg/L	0.001	0.011	0.003	0.001	<0.001	0.001	0.002
	Cadmium	7440-43-9	mg/L	0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Chromium	7440-47-3	mg/L	0.001	0.048	0.014	0.01	0.01	0.01	0.012
	Cobalt	7440-48-4	mg/L	0.001	0.03	0.005	0.003	0.002	0.002	0.003
	Copper	7440-50-8	mg/L	0.001	0.054	0.009	0.006	0.005	0.005	0.006
	Lead	7439-92-1	mg/L	0.001	0.027	0.002	<0.001	<0.001	<0.001	
	Manganese	7439-96-5	mg/L	0.001	0.773	0.14	0.086	0.051	0.053	0.076
	Molybdenum	7439-98-7	mg/L	0.001	0.002	0.001	<0.001	<0.001		0.002
	Nickel	7440-02-0	mg/L	0.001	0.082	0.018	0.012	0.011	0.01	0.012
	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
	Uranium	7440-61-1	mg/L	0.001	0.002	<0.001	<0.001	<0.001	<0.001	
	Vanadium	7440-62-2	mg/L	0.01	0.07	0.02	0.02	0.02	0.02	0.02
	Zinc	7440-66-6	mg/L	0.005	0.112	0.017	0.01	0.01	0.006	0.011
	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Iron	7439-89-6	mg/L	0.05	44.2	8.57	5.26	4.71	4.27	5.76
	EK040P: Fluoride by PC Titrator									
	Fluoride	16984-48-8	mg/L	0.1	0.2	0.2	0.2	0.2	0.2	0.2
	EN055: Ionic Balance									
	Total Anions		meq/L	0.01	3.2	2.94	2.96	3.05	3.02	2.99
	Total Cations		meq/L	0.01	3.11	2.85	3.02	3.14	2.94	2.97
	Ionic Balance		%	0.01	1.32			1.48	1.32	
	ED093T: Total Major Cations									
	Calcium	7440-70-2	mg/L	1						
	Magnesium	7439-95-4	mg/L	1						
	Sodium	7440-23-5	mg/L	1						
	Potassium	7440-09-7	mg/L	1						
	EK055G: Ammonia as N by Discrete Analyser									
0.9	Ammonia as N	7664-41-7	mg/L	0.01	0.08	0.03	0.06	0.04	0.03	0.02
	EK057G: Nitrite as N by Discrete Analyser									
1.1	Nitrite as N		mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	EK058G: Nitrate as N by Discrete Analyser									
1.1	Nitrate as N	14797-55-8	mg/L	0.01	0.28	0.14	0.1	0.22	0.14	0.47
	EK059G: NOX as N by Discrete Analyser									
1.1	Nitrite + Nitrate as N		mg/L	0.01	0.28	0.14	0.1	0.22	0.14	0.47
	EP080/071: Total Petroleum Hydrocarbons									
20	C6 - C9 Fraction		µg/L	20	<20	<20	<20	<20	<20	<20
100	C10 - C14 Fraction		µg/L	50	<50	<50	<50	<50	<50	
100	C15 - C28 Fraction		µg/L	100	<100	<100	<100	<100	<100	
100	C29 - C36 Fraction		µg/L	50	<50	<50	<50	<50	<50	
100	C10 - C36 Fraction (sum)				<50	<50	<50	<50	<50	
	EP080S: TPH(V)/BTEX Surrogates									
	1,2-Dichloroethane-D4	17060-07-0	%		101	102	108	100	120	125
	Toluene-D8	2037-26-5	%		101	104	109	98.8	98.1	93.4
	4-Bromofluorobenzene	460-00-4	%		98.4	101	107	96.3	94.2	89.9
	EG035T: Total Recoverable Mercury by FIMS									
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	EG035F: Dissolved Mercury by FIMS									
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Bootes Creek Downstream Monitoring Station

Matrix: WATER
Workgroup:
Project name/number:

					EB1005152200_0_XTAB.XLS	EB1005152200_0_XTAB.XLS	EB1005545500_0_XTAB.XLS	EB1005545500_0_XTAB.XLS	EB1005545500_0_XTAB.XLS	
				WORKGROUP	EB1005152200	EB1005152200	EB1005545500	EB1005545500	EB1005545500	
				Sample Type:	REG	REG	REG	REG	REG	
				ALS Sample number:	EB1005152004	EB1005152005	EB1005545001	EB1005545002	EB1005545003	
				Sample date:	18/03/2010	19/03/2010	20/03/2010	21/03/2010	22/03/2010	
				Client sample ID (1st):	BOOTES CK DS	BOOTES CK DS	Bootes CK DS	Bootes CK DS	Bootes CK DS	
				Client sample ID (2nd):						
				Site:						
				Purchase Order:						
	Analyte grouping/Analyte	CAS Number	Units	LOR						
	EA005P: pH by PC Titrator									
6.5	pH Value		pH Unit	0.01	7.93	7.84	7.97	7.97	8.03	
	EA010P: Conductivity by PC Titrator									
315	Electrical Conductivity @ 25°C		µS/cm	1	283	285	300	3080	338	
	EA015: Total Dissolved Solids									
	Total Dissolved Solids @180°C	GIS-210-010	mg/L	1						
	EA025: Suspended Solids									
1170	Suspended Solids (SS)		mg/L	1	71	45	75	71	129	
	EA045: Turbidity									
	Turbidity		NTU	0.1	100	110	120	110	150	
	ED037P: Alkalinity by PC Titrator									
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1	<1	<1	<1	<1	<1	
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1	<1	4	<1	<1	<1	
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1	128	128	135	136	155	
	Total Alkalinity as CaCO3		mg/L	1	128	132	135	136	155	
	ED040F: Dissolved Major Anions									
250	Sulphate as SO4 2-	14808-79-8	mg/L	1	3	3	3	3	3	
	ED040T: Total Major Anions									
250	Sulphate as SO4 2-	14808-79-8	mg/L	1						
	ED045G: Chloride Discrete analyser									
	Chloride	16887-00-6	mg/L	1	9	9	10	10	12	
	ED045P: Chloride by PC Titrator									
	Chloride	16887-00-6	mg/L	1						
	ED093F: Dissolved Major Cations									
	Calcium	7440-70-2	mg/L	1	19	19	19	20	24	
	Magnesium	7439-95-4	mg/L	1	12	13	13	13	16	
	Sodium	7440-23-5	mg/L	1	22	22	22	21	20	
	Potassium	7440-09-7	mg/L	1	2	2	2	2	2	
	EG005F: Dissolved Metals by ICP-AES									
	Iron	7439-89-6	mg/L	0.05						
	EG005T: Total Metals by ICP-AES									
	Iron	7439-89-6	mg/L	0.05						
	EG020F: Dissolved Metals by ICP-MS									
0.65	Aluminium	7429-90-5	mg/L	0.01	0.31	0.14	0.29	0.17	0.13	
0.013	Arsenic	7440-38-2	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
0.0002	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
0.003	Chromium	7440-47-3	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
0.09	Cobalt	7440-48-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
0.013	Copper	7440-50-8	mg/L	0.001	0.004	0.002	0.005	0.006	0.003	
0.01	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
	Manganese	7439-96-5	mg/L	0.001	0.024	0.008	0.007	0.009	0.007	
0.034	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
0.011	Nickel	7440-02-0	mg/L	0.001	0.004	0.003	0.004	0.004	0.003	
0.01	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
0.001	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
0.001	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
0.01	Vanadium	7440-62-2	mg/L	0.01	0.02	0.02	0.02	0.01	0.01	
0.008	Zinc	7440-66-6	mg/L	0.005	<0.005	<0.005	0.007	0.009	<0.005	
0.37	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
0.52	Iron	7439-89-6	mg/L	0.05	0.27	0.11	0.24	0.17	0.15	
	EG020T: Total Metals by ICP-MS									
	Aluminium	7429-90-5	mg/L	0.01	4.44	4.11	4.36	3.82	3.05	
	Arsenic	7440-38-2	mg/L	0.001	0.001	0.001	<0.001	<0.001	0.001	
	Cadmium	7440-43-9	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
	Chromium	7440-47-3	mg/L	0.001	0.011	0.01	0.01	0.009	0.007	
	Cobalt	7440-48-4	mg/L	0.001	0.002	0.002	0.002	0.002	0.002	
	Copper	7440-50-8	mg/L	0.001	0.005	0.005	0.005	0.005	0.004	
	Lead	7439-92-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
	Manganese	7439-96-5	mg/L	0.001	0.062	0.061	0.047	0.05	0.042	
	Molybdenum	7439-98-7	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
	Nickel	7440-02-0	mg/L	0.001	0.011	0.011	0.011	0.01	0.009	
	Selenium	7782-49-2	mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
	Silver	7440-22-4	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
	Uranium	7440-61-1	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
	Vanadium	7440-62-2	mg/L	0.01	0.02	0.02	0.02	0.02	0.02	
	Zinc	7440-66-6	mg/L	0.005	0.01	0.007	0.014	0.009	0.012	
	Boron	7440-42-8	mg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
	Iron	7439-89-6	mg/L	0.05	4.72	4.39	5.15	4.66	3.72	
	EK040P: Fluoride by PC Titrator									
	Fluoride	16984-48-8	mg/L	0.1	0.2	0.2	0.2	0.2	0.2	
	EN055: Ionic Balance									
	Total Anions		meq/L	0.01	2.87	2.64	3.04	3.06	3.5	
	Total Cations		meq/L	0.01	2.95	3.02	3.01	3.02	3.45	
	Ionic Balance		%	0.01			0.48	0.72	0.74	
	ED093T: Total Major Cations									
	Calcium	7440-70-2	mg/L	1						
	Magnesium	7439-95-4	mg/L	1						
	Sodium	7440-23-5	mg/L	1						
	Potassium	7440-09-7	mg/L	1						
	EK055G: Ammonia as N by Discrete Analyser									
0.9	Ammonia as N	7664-41-7	mg/L	0.01	0.02	0.03	<0.01	0.01	0.01	
	EK057G: Nitrite as N by Discrete Analyser									
1.1	Nitrite as N		mg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
	EK058G: Nitrate as N by Discrete Analyser									
1.1	Nitrate as N	14797-55-8	mg/L	0.01	0.09	0.11	0.15	0.15	0.12	
	EK059G: NOX as N by Discrete Analyser									
1.1	Nitrite + Nitrate as N		mg/L	0.01	0.09	0.11	0.15	0.15	0.12	
	EP080/071: Total Petroleum Hydrocarbons									
20	C6 - C9 Fraction		µg/L	20	<20	<20	<20	<20	<20	
100	C10 - C14 Fraction		µg/L	50	<50	<50	50	43100	45200	
100	C15 - C28 Fraction		µg/L	100	<100	<100	210	202000	276000	
100	C29 - C36 Fraction		µg/L	50	<50	<50	<50	5180	8450	
100	C10 - C36 Fraction (sum)				<50	<50	260	250000	330000	
	EP080S: TPH(V)/BTEX Surrogates									
	1,2-Dichloroethane-D4	17060-07-0	%		120	128	104	105	106	
	Toluene-D8	2037-26-5	%		96.8	97.6	97	97.1	104	
	4-Bromofluorobenzene	460-00-4	%		92.2	92.6	90.5	88.5	91.5	
	EG035T: Total Recoverable Mercury by FIMS									
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
	EG035F: Dissolved Mercury by FIMS									
0.0002	Mercury	7439-97-6	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	

	Bootes Creek Downstream Monitoring Station				EB100554500_0_XTAB.XLS: EB100554500_0_XTAB.XLS		
					WORKGROUP	EB100554500	EB100554500
	Matrix:	WATER			Sample Type:	REG	REG
	Workgroup:				ALS Sample number:	EB1005545004	EB1005545005
	Project name/number:				Sample date:	23/03/2010	24/03/2010
					Client sample ID (1st):	Bootes CK DS	Bootes CK DS
					Client sample ID (2nd):		
					Site:		
					Purchase Order:		
	Analyte grouping/Analyte	CAS Number	Units	LOR			
	EA005P: pH by PC Titrator						
6.5	pH Value		pH Unit	0.01		7.94	7.75
	EA010P: Conductivity by PC Titrator						
315	Electrical Conductivity @ 25°C		µS/cm	1		304	275
	EA015: Total Dissolved Solids						
	Total Dissolved Solids @180°C	GIS-210-010	mg/L	1			
	EA025: Suspended Solids						
1170	Suspended Solids (SS)		mg/L	1		122	93
	EA045: Turbidity						
	Turbidity		NTU	0.1		130	110
	ED037P: Alkalinity by PC Titrator						
	Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	1		<1	<1
	Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	1		<1	<1
	Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	1		137	123
	Total Alkalinity as CaCO3		mg/L	1		137	123
	ED040F: Dissolved Major Anions						
250	Sulphate as SO4 2-	14808-79-8	mg/L	1		2	2
	ED040T: Total Major Anions						
250	Sulphate as SO4 2-	14808-79-8	mg/L	1			
	ED045G: Chloride Discrete analyser						
	Chloride	16887-00-6	mg/L	1		11	10
	ED045P: Chloride by PC Titrator						
	Chloride	16887-00-6	mg/L	1			
	ED093F: Dissolved Major Cations						
	Calcium	7440-70-2	mg/L	1		20	17
	Magnesium	7439-95-4	mg/L	1		14	11
	Sodium	7440-23-5	mg/L	1		20	21
	Potassium	7440-09-7	mg/L	1		2	2
	EG005F: Dissolved Metals by ICP-AES						
	Iron	7439-89-6	mg/L	0.05			
	EG005T: Total Metals by ICP-AES						
	Iron	7439-89-6	mg/L	0.05			
	EG020F: Dissolved Metals by ICP-MS						
0.65	Aluminium	7429-90-5	mg/L	0.01		0.09	0.08
0.013	Arsenic	7440-38-2	mg/L	0.001		<0.001	<0.001
0.0002	Cadmium	7440-43-9	mg/L	0.0001		<0.0001	<0.0001
0.003	Chromium	7440-47-3	mg/L	0.001		<0.001	<0.001
0.09	Cobalt	7440-48-4	mg/L	0.001		<0.001	<0.001
0.013	Copper	7440-50-8	mg/L	0.001		0.002	0.003
0.01	Lead	7439-92-1	mg/L	0.001		<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001		0.004	0.005
0.034	Molybdenum	7439-98-7	mg/L	0.001		<0.001	<0.001
0.011	Nickel	7440-02-0	mg/L	0.001		0.003	0.004
0.01	Selenium	7782-49-2	mg/L	0.01		<0.01	<0.01
0.001	Silver	7440-22-4	mg/L	0.001		<0.001	<0.001
0.001	Uranium	7440-61-1	mg/L	0.001		<0.001	<0.001
0.01	Vanadium	7440-62-2	mg/L	0.01		0.01	0.01
0.008	Zinc	7440-66-6	mg/L	0.005		0.023	<0.005
0.37	Boron	7440-42-8	mg/L	0.05		<0.05	<0.05
0.52	Iron	7439-89-6	mg/L	0.05		0.11	0.1
	EG020T: Total Metals by ICP-MS						
	Aluminium	7429-90-5	mg/L	0.01		3.46	3.9
	Arsenic	7440-38-2	mg/L	0.001		<0.001	0.001
	Cadmium	7440-43-9	mg/L	0.0001		<0.0001	<0.0001
	Chromium	7440-47-3	mg/L	0.001		0.008	0.002
	Cobalt	7440-48-4	mg/L	0.001		0.002	0.002
	Copper	7440-50-8	mg/L	0.001		0.005	0.005
	Lead	7439-92-1	mg/L	0.001		<0.001	<0.001
	Manganese	7439-96-5	mg/L	0.001		0.046	0.047
	Molybdenum	7439-98-7	mg/L	0.001		<0.001	<0.001
	Nickel	7440-02-0	mg/L	0.001		0.01	0.01
	Selenium	7782-49-2	mg/L	0.01		<0.01	<0.01
	Silver	7440-22-4	mg/L	0.001		<0.001	<0.001
	Uranium	7440-61-1	mg/L	0.001		<0.001	<0.001
	Vanadium	7440-62-2	mg/L	0.01		0.02	0.02
	Zinc	7440-66-6	mg/L	0.005		0.011	0.006
	Boron	7440-42-8	mg/L	0.05		<0.05	<0.05
	Iron	7439-89-6	mg/L	0.05		4.09	4.58
	EK040P: Fluoride by PC Titrator						
	Fluoride	16984-48-8	mg/L	0.1		0.2	0.2
	EN055: Ionic Balance						
	Total Anions		meq/L	0.01		3.09	2.78
	Total Cations		meq/L	0.01		3.11	2.74
	Ionic Balance		%	0.01		0.3	
	ED093T: Total Major Cations						
	Calcium	7440-70-2	mg/L	1			
	Magnesium	7439-95-4	mg/L	1			
	Sodium	7440-23-5	mg/L	1			
	Potassium	7440-09-7	mg/L	1			
	EK055G: Ammonia as N by Discrete Analyser						
0.9	Ammonia as N	7664-41-7	mg/L	0.01		<0.01	<0.01
	EK057G: Nitrite as N by Discrete Analyser						
1.1	Nitrite as N		mg/L	0.01		<0.01	<0.01
	EK058G: Nitrate as N by Discrete Analyser						
1.1	Nitrate as N	14797-55-8	mg/L	0.01		0.1	0.12
	EK059G: NOX as N by Discrete Analyser						
1.1	Nitrite + Nitrate as N		mg/L	0.01		0.1	0.12
	EP080/071: Total Petroleum Hydrocarbons						
20	C6 - C9 Fraction		µg/L	20		<20	<20
100	C10 - C14 Fraction		µg/L	50		280000	<50
100	C15 - C28 Fraction		µg/L	100		1160000	<100
100	C29 - C36 Fraction		µg/L	50		27800	<50
100	C10 - C36 Fraction (sum)					1470000	<50
	EP080S: TPH(V)/BTEX Surrogates						
	1,2-Dichloroethane-D4	17060-07-0	%			108	96.8
	Toluene-D8	2037-26-5	%			99	91.8
	4-Bromofluorobenzene	460-00-4	%			92.9	91.1
	EG035T: Total Recoverable Mercury by FIMS						
0.0002	Mercury	7439-97-6	mg/L	0.0001		<0.0001	<0.0001
	EG035F: Dissolved Mercury by FIMS						
0.0002	Mercury	7439-97-6	mg/L	0.0001		<0.0001	<0.0001

2.6 TEP Application – 27 May 2010

eco access
environmental licences and permits

Statutory declaration

Environmental Operations

For an transitional environmental program

A statutory declaration is a written statement of facts that is sworn or declared under the Oaths Act 1867. *In accordance with section 556 of the* Environmental Protection Act 1994, *this statutory declaration must be completed and submitted with an transitional environmental program (TEP) and/or any additional information about an TEP that is requested by the administering authority.*

Oaths Act 1867

QUEENSLAND
TO WIT

I [redacted]

Insert the name of the person making this declaration

of C/- Dawson Highway, Rolleston QLD 4702

Insert the street address of the person making this declaration

in the State of Queensland do solemnly and sincerely declare that in relation to the submission of the transitional environmental program entitled Rolleston Coal Mine - Spring Creek Dam Water Storage

Insert title of TEP

for Pumping of water at Spring Creek Pit to Spring Creek Dam

Insert reason for TEP — Insert location of activity TEP relates to

and in accordance with section 556 of the *Environmental Protection Act 1994*, I have:

Environmental Protection Agency
www.epa.qld.gov.au ABN 87 221 158 786

Queensland Government
Environmental Protection Agency
Queensland Parks and Wildlife Service

- not knowingly given any false or misleading information, and
- given all relevant information

in relation to:

(tick applicable box)

☒ the preparation of the transitional environmental program, or

☐ a request by the administering authority for additional information about the transitional environmental program.

And I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of the *Oaths Act 1867*.

Taken and declared before me, at Brisbane

Insert location

this 27th day of May in the year 2010

Insert day (e.g. 18th) Insert month Insert year

[redacted]

Signed

(Person making this declaration)

[redacted]

Signed

(Delete whichever is not applicable — Justice of the Peace / Commissioner for Declarations / Solicitor / Barrister)

Printed name and registration number (if applicable)

ROLLESTON
COAL

Rolleston Coal Mine

Transitional Environmental Program (TEP)

SPRING CREEK DAM WATER STORAGE

May 2010

xstrata

Rolleston Coal Pty Ltd ABN 73 106 690 037
Dawson Highway, Via Rolleston, PO Box 11, Springsure QLD 4722
Telephone 07 4988 9100 Facsimile 07 4988 9151 Internet www.xstrata.com

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Table of Contents

1. Introduction

This **Transitional Environmental Program** (***TEP***) describes the proposed actions to transfer mine affected water from Spring Creek Pit to Spring Creek Dam (also known as Lake McDonald)

This will result in the water quality of Spring Creek Dam, as defined in the **Environmental Management Plan 2009** (***EM Plan***), changing. Under Section 8.3.5 of the Rolleston Coal EM Plan, there are three types of catchments based on water quality: 'clean'; 'dirty'; and 'contaminated'. Spring Creek Dam is classified as a "clean" catchment dam.

The Rolleston Coal **Water Management Plan (XCQROL-ENV-PLN-04)** identifies the function of Spring Creek Dam as the potable water and backup mine water supply.

The district flooding was the result of exceptional rainfall between December 2009 and March 2010.[1] This resulted in the failure of Naroo Dam (a pastoral dam) and a subsequent overtopping release from Spring Creek Dam. The resultant surge of surface water flows resulted in Spring Creek Pit being inundated. Subsequently Spring Creek Pit was used to moderate the flow of water, and minimize off-site release where possible.

Spring Creek Pit is now estimated to contain around 4.4 GL of water.

Spring Creek Dam is now estimated to have a capacity of approximately 6.1GL after repair works have been undertaken. To ensure that Spring Creek Dam will not receive any overland flows from Spring Creek, a diversion bank is currently under construction to prevent inflows.

Rolleston Coal voluntarily submits this TEP to seek authorisation by the administering authority under the *Environmental Protection Act 1994* to pump mine affected water from the Spring Creek Pit to Spring Creek Dam, thereby reassigning the water quality status of Spring Creek Dam from 'clean' to 'dirty'.

Spring Creek dam is intended to be maintained for a short duration as a Pit Water Dam for future mining operations.

Rolleston Coal subsequently intends to pump water from Spring Creek Dam to one or more of the water storage locations described in Table 5 of Environmental Authority (***EA***) MIM800090802 or otherwise deal with the water in accordance with EA MIM 80090802 as part of ongoing water management on the site.

This TEP proposes the implementation of an Action Plan showing how the objectives of this TEP are to be achieved and the timetable in which they are to be achieved.

---

[1] Rolleston Coal Mine experienced exceptionally heavy rainfall over January, February and March 2010, including the highest February rainfall experienced in the locality since 1954. 623mm of rain has been recorded YTD.

Rolleston Coal intends to comply with its existing obligations under EA MIM800090802.

Rolleston Coal seeks DERM's **urgent consideration** of this application for approval of this TEP.

2. Environmental Authority

Xstrata Coal Queensland Pty Ltd, ICRA Rolleston Pty Ltd and Sumisho Coal Australia Pty Limited (***Rolleston Coal***) hold Environmental Authority MIM800090802 to carry out mining activities on ML70307 and MDL227, issued on 30 November 2009.

Prior to the expiration of this TEP, an application for amendment of the EA will be made incorporating the activities authorized by the TEP.

3. Submission

This Transitional Environmental Program (TEP) 2010/02 is submitted on behalf of Xstrata Coal Queensland Pty Ltd, ICRA Rolleston Pty Ltd and Sumisho Coal Australia Pty Limited by Bill McKinstrey, General Manager, Southern Region Xstrata Coal Queensland.

[redacted] 27/05/10

Signed Date

4. Authorisation

This TEP authorises the pumping of mine affected water from Spring Creek Pit to Spring Creek Dam. This will result in Spring Creek Dam being a water storage associated with release points and the conversion of the dam's status under the EM Plan from 'clean' to 'dirty'. Monitoring of water storage quality will be undertaken in accordance with the conditions and requirements of this TEP and EA MIM800090802. Ongoing water management will be in accordance with Rolleston Coal's Water Management Strategy which will be modified to take into account the change in status of Spring Creek Dam.

To the extent there are any inconsistencies between this TEP and EA MIM800090802 and any other operational documents, this TEP prevails.

5. Program

5.1. Design of Spring Creek Dam

Appendix A contains design drawings for the Spring Creek Dam, the construction of which has been monitored by appropriately skilled engineers. "As built" plans will be provided to DERM in the completion report (Action Plan item 9).

5.2. Water Transfer

It is proposed to transfer 3.5GL – 4.0GL from Spring Creek Pit to Spring Creek Dam and/or other water storages identified in Table 5 of EA MIM 800090802. This will require approximately 90 days of pumping.

An initial water volume of approximately 1.4GL will be pumped prior to completion of the Spring Creek diversion bank. During construction of the diversion bank, sufficient capacity will be maintained in the dam to enable the capture and storage of potential surface flows based on long-term average winter rainfall data (refer to section 5.6).

5.3. Program Objectives

Objective 1:
Prepare for transfer the water in the Spring Creek Pit to Spring Creek Dam, including conducting a test for the water quality characteristics specified in Table 6 of EA MIM800090802 at the monitoring locations within Spring Creek Pit prior to dewatering as outlined in Table 1 of this TEP.

Objective 2: Transfer the water in the Spring Creek Pit to Spring Creek Dam and the water storages listed in Table 5 of EA MIM800090802.

Objective 3: Manage Spring Creek Dam as part of Rolleston Coal's water storages which are associated with the release points under EA MIM800090802 in accordance with the procedures set out in Section 5.4 and Table 1 of this TEP.

Objective 4: Rolleston Coal will complete and lodge with DERM a Completion Report outlining actions undertaken under this TEP and summarising compliance against this TEP, and the results of the Spring Creek Pit water sampling, within 56 days of the completion of pumping of water from Spring Creek Pit to Spring Creek Dam.

Objective 5: Rolleston Coal will review its Water Management Plan to incorporate Spring Creek Dam change in status from 'clean' water dam to 'dirty' water dam and to investigate the need and options, for any water management system upgrades to ensure that proper and effective measures, practices or procedures are in place so that the mine is operated in accordance with conditions of EA MIM800090802. Rolleston Coal will provide a copy of the review of the Water Management Plan to DERM by 1 November 2010.

5.4. Surface Storage Water Quality

(a) Sampling of Spring Creek Pit water will be undertaken at the location and frequency specified in Table 1 below, and for the water quality characteristics specified in Table 6 of EA MIM 800090802 (onsite water storage contaminant limits);

(b) Sampling of Spring Creek Pit water will be in accordance with the site sampling procedures and analysis will be conducted with NATA certified laboratories;

(c) Sampling of Spring Creek Dam water will be undertaken using calibrated field equipment at the location and frequency specified in Table 1 below. Analyses will include PH, Electrical Conductivity and temperature; and

(d) In the event that water storages defined in Table 1 exceed the contaminant limits defined in Table 6 of EA MIM 800090802 (onsite water storage contaminant limits), Rolleston Coal will implement measures, where practicable, to prevent access to waters by all livestock.

Table 1: Water Storage Monitoring

Water storage description	Easting +/- 50m	Northing +/- 50m	Monitoring Location	Frequency of Monitoring*
Spring Creek Pit	x	x	Multiple sites on water	Sampling of the Spring Creek Pit waters will be undertaken as a discrete event by 30th May 2010
Spring Creek Dam	~642400	~7299000	Embankment	Monthly during pumping of water from Spring Creek Pit to Spring Creek Dam Quarterly following completion of pumping from Spring Creek Pit to Spring Creek Dam

5.5. Volume of Spring Creek Pit water

Regular estimates of water volumes remaining in Spring Creek Pit will be undertaken, by survey pickup of the RL on water during the period in which water is pumped from Spring Creek Pit.

5.6. Volume of transferred water

Measurement of water volume transferred from Spring Creek Pit to Spring Creek Dam will be undertaken daily. Volume will be measured by the Spring Creek Dam RL, which when it reaches 231.6m RL will have approximately 1.4GL transferred leaving about 4.8m of freeboard to full supply level (236.4m RL) and 4.7GL of storage capacity. Spring Creek dam has a total storage capacity of 6.1GL. The bywash facility is at 236.4m RL.

The area of Spring Creek catchment upstream of the proposed diversion is approximately 62km^2. Rolleston's long term rainfall records indicate average monthly

rainfall for June to September varies from 23 to 34 mm. With a maximum runoff co-efficient of 0.6 (for cultivated farming land), the maximum anticipated yield for any of these four months is 1.265GL even if the monthly average fell in a single rainfall event. There would therefore still be a buffer of over 3.4GL even after the initial 1.4GL is transferred.

5.7. Risk of Environmental Harm

Rolleston Coal is confident that the program will not increase potential for environmental harm in the area, as the program involves a relocation of water from a recently mined open pit to a dedicated storage area. The proposed monitoring regime will identify water quality on an ongoing basis and change to the potential for environmental harm. All program activity under this TEP is within the current Mining area (ML70307 and MDL227).

In the event of a pumping failure, ground contours (Appendix B) predict water will flow to either the Spring Creek Pit or Spring Creek Dam.

Consistent with the EM Plan, the long term mining sequence will eventually require the dam area to be mined.

5.8. Notification and Reporting

Rolleston Coal will:

1. Notify DERM of commencement of pumping from Spring Creek Pit and location of pump outlet into Spring Creek Dam ;
2. Notify DERM, within 21 days of completion of pumping of water from Spring Creek Pit to Spring Creek Dam, the following;
    a. pumping completion date;
    b. results on water quality testing under this TEP;
    c. volume of water transferred to Spring Creek Dam from Spring Creek Pit; and
    d. complete and lodge with DERM a completion report outlining actions taken under this TEP within 56 days of completion of pumping of water from Spring Creek Pit to Spring Creek Dam summarizing sampling, results, observations, and other relevant details.
3. A proposed format (TOC) for the completion report is provided in Appendix C.

5.9. Action Plan

The key actions planned and scheduled are set out below in Table 2.

Table 2 : Action Plan

Action Plan item	Objective No.	Performance Indicator	Completion date	Responsibility
AP -1. Submission of Design Plans for Spring Creek Dam	1	Plans submitted to DERM	Upon submission of TEP	Operations Manager in conjunction with Environmental Manager
AP - 2. Establish pump discharge outlet in Spring Creek Dam	1	Pump discharge location established	Within 7 days of approval of TEP	Operations Manager in conjunction with Environmental Manager
AP – 3. Monitor in accordance with with TEP and EA MIM800090802 prior to pumping	1	Sampling of Spring Creek Pit completed	Prior to commencement of pumping (approximately 28 May 2010)	Environmental Manager
AP - 4. Commence Pumping of water from Spring Creek Pit to Spring Creek Dam	2	Pumping occurring	As soon as practicable after completion of AP-2 above	Operations Manager in conjunction with Environmental Manager
AP - 5. Notification to DERM of commencement of pumping to Spring Creek Dam	2 & 3	DERM notified of commencement GPS coordinates of pump discharge outlet location	Within 2 business days of commencing pumping	Environmental Manager
AP - 6. Monitoring in accordance with TEP and EA MIM800090802 during pumping	3	Sampling of Spring Creek Pit and Spring Creek Dam completed	Prior to cessation of pumping	Environmental Manager

Action Plan Item	Objective No.	Performance Indicator	Completion date	Responsibility
AP - 7. Cease pumping of water from Spring Creek Pit to Spring Creek Dam	2 & 3	Pumping ceases	Final pumping to cease by 1 March 2011.	Operations Manager
AP - 8. Notification to DERM of cessation of pumping of water from Spring Creek Pit to Spring Creek Dam	3	Notification to DERM occurs	Within 2 business days of cessation of pumping of water from Spring Creek Pit to Spring Creek Dam	Environmental Manager
AP – 9. Submission of EA amendment application to DERM.	4	Amendment application lodged.	31 December 2010	Environmental Manager
AP - 10. Submission to DERM of completion report.	4	Report submitted to DERM, inclusion of as built plans for Spring Creek Dam.	Within 56 days after cessation of pumping of water from Spring Creek Pit to Spring Creek Dam at completion of Program	Environmental Manager
AP - 11. Lodge review of Plan of Operations in accordance with section 9 of this TEP	5	Review of Plan of Operations lodged with DERM	30 October 2010	Environmental Manager
AP - 12. Lodge review of Water Management Plan in accordance with section 66 of this TEP	5	Review of Water Management Plan lodged with DERM	1 November 2010	Environmental Manager
AP – 13. Lodge review of EM Plan in accordance with section 9 of this TEP	5	Review of EM Plan lodged with DERM	1 December 2010	Environmental Manager

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6. Water Management Plan

The Rolleston Coal Water Management Plan will be updated to reflect changes as a result of this program.

The updated water Management Plan will be lodged with DERM by 1 November 2010.

7. Water Regulation

Following consultation by Rolleston Coal with Scott Stevens of DERM's water division, it is confirmed that the proposed actions raise no issues from a water regulatory perspective.

8. Term of the Transitional Environmental Program

This TEP will be current until 1 March 2011.

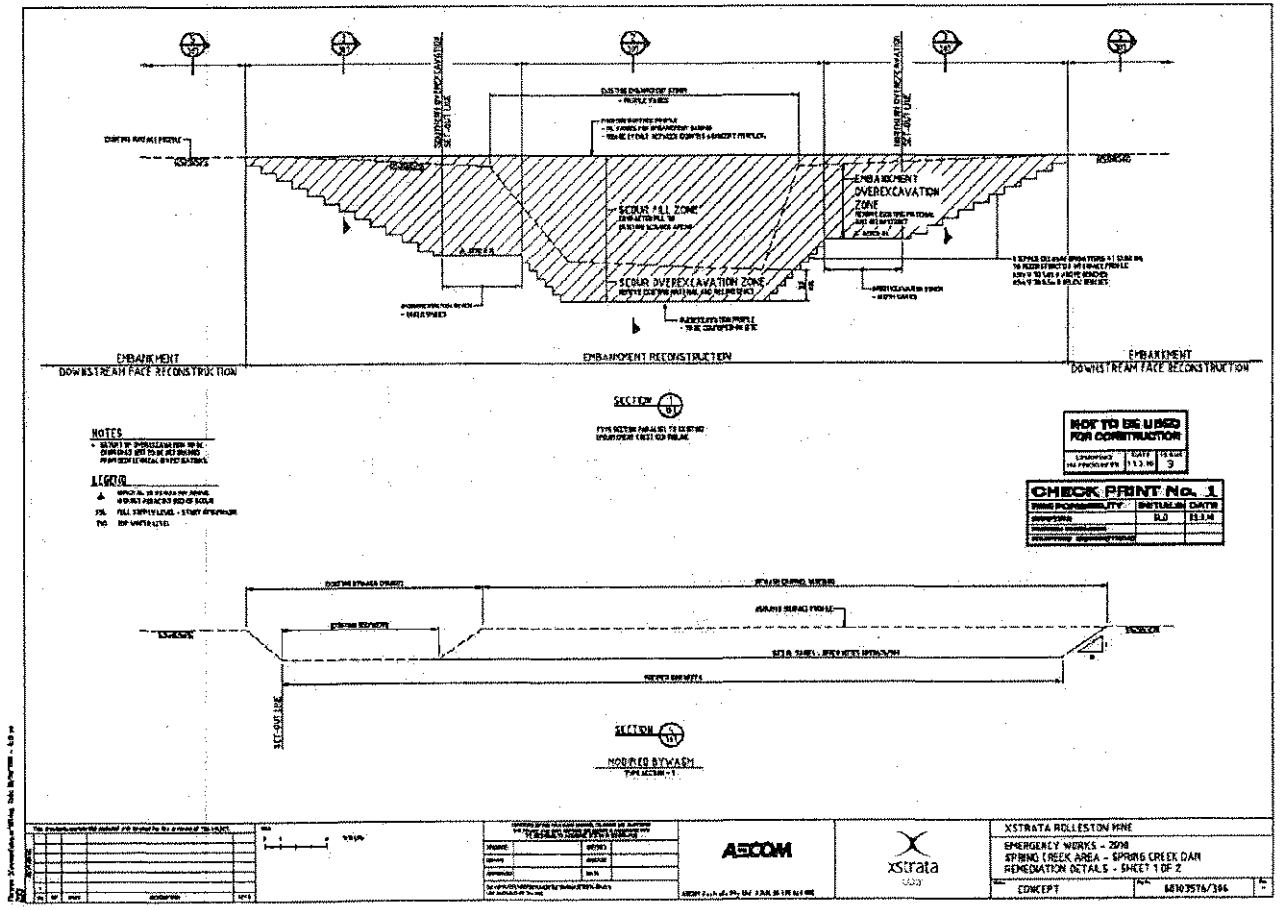
9. Transition to Compliance

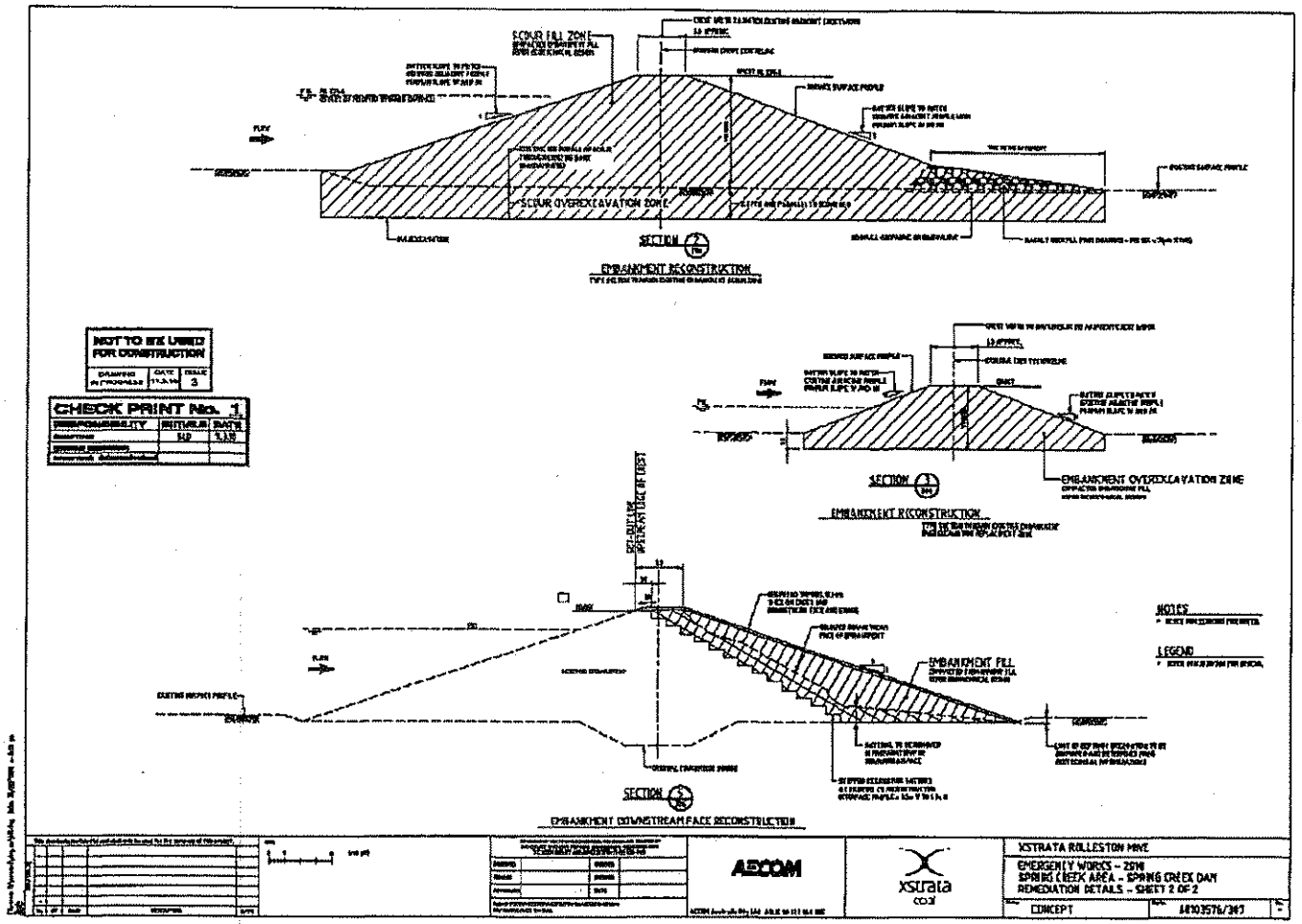
To ensure a "transition" to compliance:

- There will be an addendum to the Environmental Management Plan detailing changes to water management as a result of this TEP (completed by 1 December 2010);
- An update of the Water Management Plan (completed by 1 November 2010)
- An amendment to the EA (in conjunction with other proposed amendments) to reflect changes as a result of this TEP (to be submitted by 31 December 2010); and
- A revision of the Plan of Operations to include changes as a result of this TEP (completed by 30 October 2010).

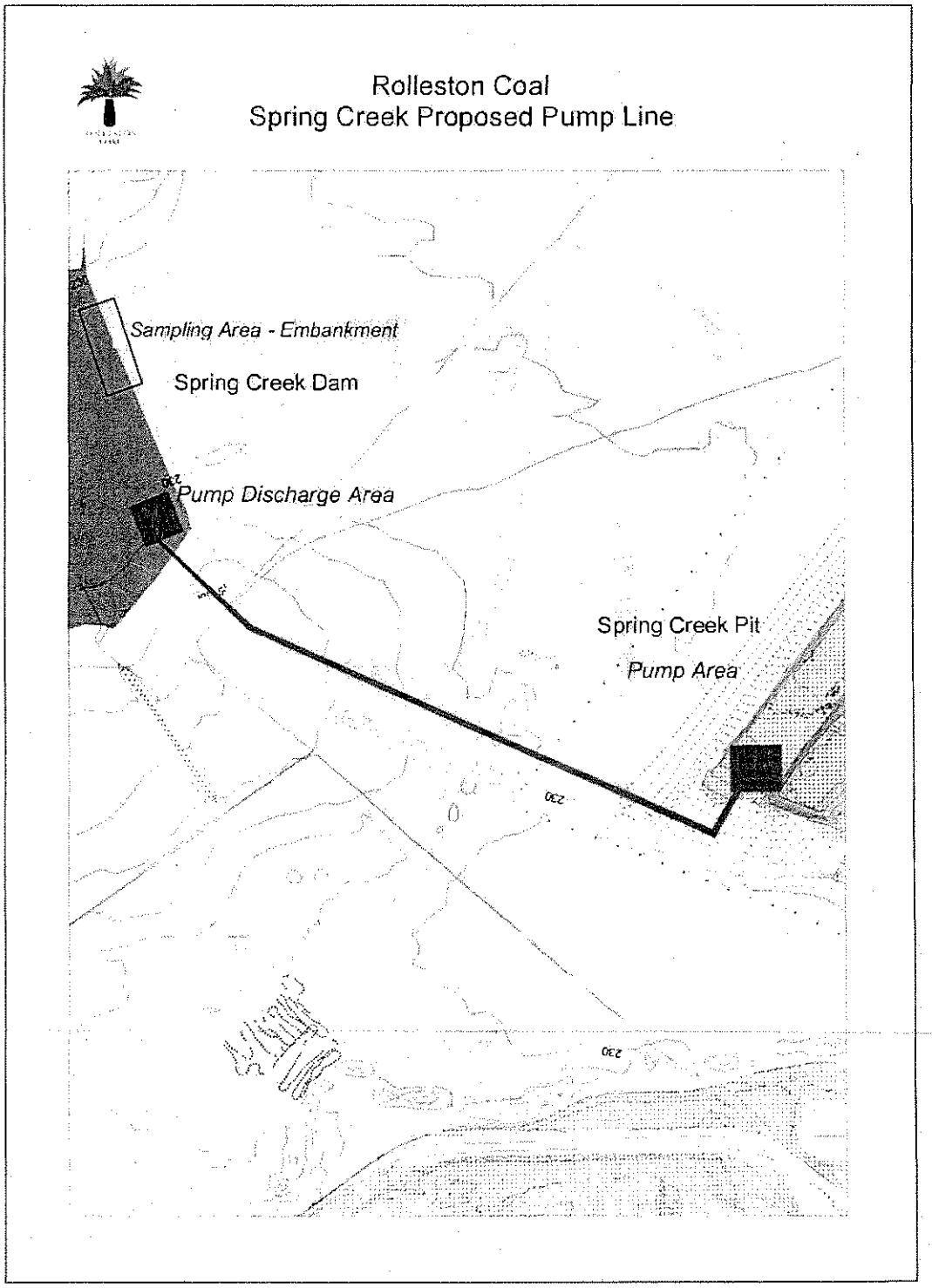
xstrata

Appendix A *Design Plans Spring Creek Dam*




SCOUR FILL ZONE
SCOUR OVEREXCAVATION ZONE
SECTION
EMBANKMENT RECONSTRUCTION
NOT TO BE USED FOR CONSTRUCTION
CHECK PRINT No. 1
EMBANKMENT OVEREXCAVATION ZONE
SECTION
EMBANKMENT RECONSTRUCTION
EMBANKMENT FILL
NOTES
LEGEND
SECTION
EMBANKMENT DOWNSTREAM FACE RECONSTRUCTION
AECOM
xstrata coal
XSTRATA ROLLESTON MINE
EMERGENCY WORKS - 2010
SPRING CREEK AREA - SPRING CREEK DAM
REMEDIATION DETAILS - SHEET 2 OF 2
CONCEPT

Appendix B *Pumping Path to Spring Creek Dam*



Appendix C *Completion Report – Proposed Contents*

Completion Report

Transitional Environmental Program Spring Creek Dam

1. Covering Letter
2. Summary Table of Program Statistics
    a. Volume of water transferred to Spring Creek Dam
    b. Days of pumping, Pumping rate averages
    c. Other relevant Data
3. Summary Tables of Sample results
    a. Spring Creek Pit water quality
    b. Other results and Observations
4. Conclusions
    a. Overall water quality status in Spring Creek Dam.
    b. Compliance with Transitional Environmental Program
5. APPENDICES

2.7 TEP Approval MAN10239 – 1 June 2010

Notice

Environmental Services - Mining

Decision to grant an approval for a draft transitional environmental program

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

[redacted]
Senior Site Manager and SSE
Rolleston Coal Mine
PO Box 11
SPRINGSURE QLD 4722

[redacted]
Xstrata Coal QLD
PO Box 11
SPRINGSURE QLD 4722

Your reference: Transitional Environmental Program (TEP) Rolleston Coal Mine – Spring Creek Dam Water Storage – 27 May 2010

Our reference : EMD866:MAN10239

Attention: Mr [redacted]

Re: Application for an approval for a transitional environmental program for Spring Creek Pit water management at Rolleston Coal Mine.

Thank you for your application for an approval for a transitional environmental program. This application has been issued with the Certificate Approval number: MAN10239 (attached to this notice).

Your application, which was received by this office on 27 May 2010, has been approved with one additional condition as outlined below.

"Results of all water quality monitoring conducted during May 2010 in Spring Ck Pit must be provided to the administering authority in a summary report. This report must be received by the administering authority within 28 days of the receipt of the laboratory results by Rolleston Coal Mine personnel "

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 **$1758.00** is payable.

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

Notice

Decision notice regarding a transitional environmental program

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

Should you have any queries in relation to this notice [redacted] of the department on telephone [redacted] would be happy to assist you.

[redacted]

SIGNATURE

1 June 2010

DATE

Mark Evans
Regional Manager (Environmental Services - Mining)
Central West Region
Delegate of the Administering Authority
Environmental Protection Act 1994

Enquiries:
Department of Environment and Resource Management
PO Box 906
EMERALD QLD 4720
Phone: 4980 6200
Fax: 4982 2568

Environmental Services - Mining

Transitional environmental program certificate of approval number MAN10239

This certificate of approval is issued by the administering authority pursuant to section 339 of the Environmental Protection Act 1994. *An 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:

Xstrata Coal Queensland Pty Ltd
Level 10 Riverside Centre
123 Eagle Street
BRISBANE QLD 4000

ICRA Rolleston Pty Ltd
Level 15
Commonwealth Bank Building of Australia
240 Queen St
BRISBANE QLD 400

Sumisho Coal Australia Pty Ltd
Level 34
Central Plaza One
BRISBANE QLD 4000

approving the draft transitional environmental program; titled Rolleston Coal Mine – Spring Creek Dam Water Storage for management of Spring Creek Pit Dewatering at Rolleston Coal Mine.

The draft transitional environmental program, dated 27 May 2010, was received by this office on 27 May 2010.

The transitional environmental program remains in force until 1 March 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.

Queensland Government

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

ecoaccess
environmental licences and permits

Notice

Transitional environmental program certificate of approval

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 [redacted] of the department on telephone [redacted] would be happy to assist you.

[redacted]
SIGNATURE

1 June 2010
DATE

Mark Evans
Delegate of the Administering Authority
Regional Manager (Environmental Services - Mining)
Central West Region

Enquiries:
Department of Environment and Resource Management
PO Box 906
EMERALD QLD 4720
Phone: 4980 6200
Fax: 4982 2568

2.8 TEP Amendment Application – 30 June 2010

Statutory declaration

Environmental Operations

For an transitional environmental program

A statutory declaration is a written statement of facts that is sworn or declared under the Oaths Act 1867. *In accordance with section 556 of the* Environmental Protection Act 1994, *this statutory declaration must be completed and submitted with an transitional environmental program (TEP) and/or any additional information about an TEP that is requested by the administering authority.*

Oaths Act 1867

QUEENSLAND
TO WIT

I [redacted]

Insert the name of the person making this declaration

of C/- Dawson Highway, Rolleston QLD 4702

Insert the street address of the person making this declaration

in the State of Queensland do solemnly and sincerely declare that in relation to the submission of the transitional environmental program entitled Rolleston Coal Mine - Spring Creek Dam Water Storage

Insert title of TEP

for Pumping of water at Spring Creek Pit to Spring Creek Dam

Insert reason for TEP — Insert location of activity TEP relates to

and in accordance with section 556 of the *Environmental Protection Act 1994*, I have:

Environmental Protection Agency
www.epa.qld.gov.au ABN 87 221 158 786

Queensland Government
Environmental Protection Agency
Queensland Parks and Wildlife Service

- not knowingly given any false or misleading information, and
- given all relevant information

in relation to:

(tick applicable box)

☒ the preparation of the transitional environmental program, or

☐ a request by the administering authority for additional information about the transitional environmental program.

And I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of the *Oaths Act 1867*.

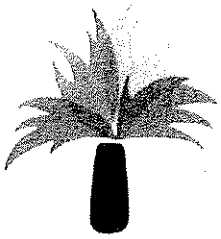
Taken and declared before me, at Rolleston
Insert location

this 30th day of June in the year 2010
Insert day (e.g. 18th) Insert month Insert year

[redacted]
Signed
(Person making this declaration)

[redacted]
Signed
(Delete whichever is not applicable — Justice of the Peace / Commissioner for Declarations / Solicitor / Barrister)

[redacted]
Printed name and registration number (if applicable)



Rolleston Coal Mine

Transitional Environmental Program (TEP) Amendment

SPRING CREEK DAM WATER STORAGE

30 June 2010

Rolleston Coal Pty Ltd ABN 73 106 690 037
Dawson Highway, Via Rolleston, PO Box 11, Springsure QLD 4722
Telephone 07 4988 9100 Facsimile 07 4988 9151 Internet www.xstrata.com

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Table of Contents

Our Reference: Transitional Environmental Program (TEP) Rolleston Coal Mine – Spring Creek Dam Water Storage – 27 May 2010

Your Reference: EMD866:MAN10239

1.0 Introduction

This document seeks to amend the above mentioned TEP which was approved on 1st June 2010. In short, the current TEP covers actions relating to the proposed transfer of mine affected water from Spring Creek Pit to Spring Creek Dam. Section 5.2 of the TEP nominates a volume of 1.4 GL to be pumped prior to the completion of the Spring Creek diversion bank. Section 5.6 of the TEP outlines the justification of this volume (1.4GL) as well as how it will be measured "in-field". The figures used derived from a range of conservative assumptions, given the absence of detailed water quality data.

Subsequent to the TEP's approval (and in accordance with the TEP), sampling and analysis of water quality in Spring Creek Pit have been completed. Further broad level analysis of Spring Creek catchment hydrology has also been undertaken. These analyses have highlighted that the initial proposal to limit pumping to 1.4GL (prior to the completion of the Spring Creek diversion bank) was very conservative and that there is additional capacity within Spring Creek Dam to accept water from Spring Creek Pit prior to the completion of the Spring Creek diversion bank.

Water samples were also recently taken from the Spring Creek Pit in accordance with the approved TEP. Analysis of the samples suggests that the water quality of Spring Creek Pit is generally at levels below the limit for releases to the environment under Rolleston Coal's Environmental Authority (EA).

It is therefore requested that the following amendment to the TEP be approved:

- The volume of water transferred prior to the completion of the Spring Creek diversion bank be increased to between 3.2 – 4.5GL (refer to section 3.0)

The requested change will be integrated and managed in accordance with the terms of the Environmental Authority (MIM800090802) and approved TEP relating to the site. The requested amendment will not result in an extension of the timeframe of the TEP or the Action Plan steps.

Further, Rolleston Coal considers that the changes requested will not significantly increase the nature of the risk of environmental harm being caused by the activity.

If approved, the measures outlined in this amendment are to prevail where there is any inconsistency with the currently approved TEP.

As outlined in previous correspondence, it is Rolleston Coal's intention to seek at a later stage, approval to release from the site, up to two gigalitres of water stored in Spring Creek Dam. This proposal to release water from site does not form part of this application.

2.0 Submission

This amendment to Transitional Environmental Program (TEP) EMD866:MAN10239 is submitted on behalf of Xstrata Coal Queensland Pty Ltd, ICRA Rolleston Pty Ltd and Sumisho Coal Australia Pty Limited by Bill McKinstrey, General Manager, Southern Region Xstrata Coal Queensland.

Signed

30/06/10

Date

3.0 Volume of water transferred

3.1 Calculation under current approved TEP

The currently approved volume of water to be transferred into Spring Creek Dam prior to completion of the Spring Creek diversion bank is limited to 1.4GL. This figure was primarily based on the current Environmental Authority (Permit Number: MIM800090802) which allows the release of water at a flow rate not exceeding 20% of the receiving stream flow rate. The limiting of discharge to 20% of flow rate ensures sufficient dilution so that receiving environment waters are not adversely affected by mine discharges.

Spring Creek Dam storage capacity is approximately 6.1GL; 1.4GL is around 23% of total storage volume. At the time that the limit of 1.4GL was proposed in the TEP application, there was less detailed analysis of the quality of Spring Creek Pit water. This figure was adopted because it was considered conservative in that if the dam overflowed prior to completion of the diversion bank (however unlikely), there would be adequate dilution to significantly reduce potential impacts on the receiving environment.

3.2 Long-term rainfall records and catchment hydrology

Table 1 highlights long-term rainfall records for June to September. These figures indicate a low likelihood of significant runoff during the period.

The Spring Creek catchment is approximately 62km^2 with around 10% of the catchment cultivated with the balance being developed to grazing. Using worst case scenario runoff coefficients of 0.6 for

cultivation and 0.4 for timbered or pastured land, and assuming the average rainfall for each month occurs in single rainfall events, the maximum anticipated yields for each month have been shown in Table 1.

Table 1. Average rainfall runoff for Spring Creek catchment for June to September

Month	Rolleston long-term average rainfall (mm)	Maximum expected runoff if rainfall fell in single event (GL)
June	34	0.89
July	29	0.76
August	23	0.60
September	25	0.65
TOTAL	111	2.9

3.3 Calculation of amended volume to be pumped into Spring Creek Dam

Spring Creek Dam has a capacity of 6.1 GL. Even if the unlikely maximum anticipated rainfall yield of 2.9 GL as shown in Table 1 is adopted, Spring Creek Dam would still retain a storage capacity of 3.2GL. Further, this calculation imports a further degree of conservatism as it makes no allowance for evaporation or catchment antecedent moisture content, the effects of which further reduce the likelihood of rainfall runoff, particularly given that in April - May 2010 the site received only 22% of average rainfall for that time of year.

3.4 Water quality results

The analysis of water quality in Spring Creek Pit was undertaken as part of the current approved TEP. A range of samples were taken at various depths and locations around Spring Creek Dam. Generally, fewer samples were taken as depth increased as there were comparatively fewer deep regions in Spring Creek Pit. A summary of results is included in Appendix 1.

Rolleston Coal's Environmental Authority (MIM800090802) outlines contaminant release limits (Table 2 in EA) as well as trigger investigation levels (Table 3 in EA). Data from water quality testing indicate that Spring Creek Pit water is well within the prescribed limits with many of the metals having not been detected. There was however, a single sample at 27.5m depth in which the aluminium concentration exceeded the EA limit.

4.0 Risk of environmental harm

As evidenced by the water quality results summarised in Appendix 1, as well as the analysis of long-term rainfall records and catchment hydrology (section 3.0), there is negligible risk of environmental

impact if the volume able to be pumped prior to completion of the diversion bank is increased to between 3.2 – 4.5GL.

Further, Rolleston Coal will take a conservative approach by not pumping water at or below 27.5m in depth to Spring Creek Dam, given the elevated aluminium results. Consideration will be given as to how to deal with this water at a later time.

Rolleston Coal is also eager to ensure that all of the associated earthworks, pumping and mud removal from the Spring Creek pit area are completed well in advance of the next wet season.

In the event of an overflow from Spring Creek Dam, all monitoring and sample analysis conditions of EA MIM800090902 relevant to Release Points 1 to 5 will apply to this release.

5.0 Construction of Spring Creek diversion bank

Rolleston Coal is committed to the completion of the Spring Creek diversion as outlined in the approved TEP (EMD866:MAN10239) as soon as possible. Additional earthmoving contractors have been employed to expedite this outcome. This application to increase the volume that can be pumped into Spring Creek Dam during the interim period prior to its completion will avoid a time lag of approximately two months where pumping from Spring Creek Pit would otherwise need to cease.

6.0 Program

7.1 Program Objectives

Objective 1: Prepare for transfer of the water in the Spring Creek Pit to Spring Creek Dam, including conducting a test for the water quality characteristics specified in Table 6 of EA MIM800090802 at the monitoring locations within Spring Creek Pit prior to dewatering as outlined in Table 1 of the TEP.

Objective 2: Transfer the water in the Spring Creek Pit to Spring Creek Dam and the water storages listed in Table 5 of EA MIM800090802.

Objective 3: Establish a diversion bank to prevent significant overland flows from entering Spring Creek Dam. The diversion bank is to be completed and operational by 18 September 2010 (prior to the timing of the traditional wet season).

Objective 4: Manage Spring Creek Dam as part of Rolleston Coal's water storages which are associated with the release points under EA MIM800090802 in accordance with the procedures set out in Section 5.4 and Table 1 of the approved TEP.

Objective 5: Rolleston Coal will complete and lodge with DERM a Completion Report outlining actions undertaken under the TEP and summarising compliance against the TEP, and the results of the Spring Creek Pit water sampling, within 56 days of the completion of pumping of water from Spring Creek Pit

Creek Pit water sampling, within 56 days of the completion of pumping of water from Spring Creek Pit to Spring Creek Dam.

Objective 6: Rolleston Coal will review its Water Management Plan to incorporate Spring Creek Dam change in status from 'clean' water dam to 'dirty' water dam and to investigate the need and options, for any water management system upgrades to ensure that proper and effective measures, practices or procedures are in place so that the mine is operated in accordance with conditions of EA MIM800090802. Rolleston Coal will provide a copy of the review of the Water Management Plan to the DERM by 1 November 2010.

6.2 Action plan

The key actions planned and scheduled are set out below in Table 2.

Table 2: Action plan

Action Plan item	Objective No.	Performance Indicator	Completion date	Responsibility
AP -1. Submission of Design Plans for Spring Creek Dam	1	Plans submitted to DERM	Upon submission of TEP	Operations Manager in conjunction with Environmental Manager
AP - 2. Establish pump discharge outlet in Spring Creek Dam	1	Pump discharge location established	Within 7 days of approval of TEP	Operations Manager in conjunction with Environmental Manager
AP – 3. Monitor in accordance with TEP and EA MIM800090802 prior to pumping	1	Sampling of Spring Creek Pit completed	Prior to commencement of pumping (approximately 28 May 2010)	Environmental Manager
AP - 4. Commence Pumping of water from Spring Creek Pit to Spring Creek Dam	2	Pumping occurring	As soon as practicable after completion of AP-2 above	Operations Manager in conjunction with Environmental Manager
AP - 5. Notification to DERM of commencement of pumping to Spring Creek Dam	2 & 4	DERM notified of commencement GPS coordinates of pump discharge outlet location	Within 2 business days of commencing pumping	Environmental Manager
AP - 6. Monitoring in accordance with TEP and EA MIM800090802 during pumping.	4	Sampling of Spring Creek Pit, Spring Creek Dam completed	Prior to cessation of pumping	Environmental Manager
AP – 7. Completion of diversion bank to divert water from Spring Creek Dam.	3	Completion of diversion bank	18 September 2010	Operations Manager
AP - 8. Cease pumping of water from Spring Creek Pit to Spring Creek Dam	2 & 4	Pumping ceases	Final pumping to cease by 1 March 2011.	Operations Manager

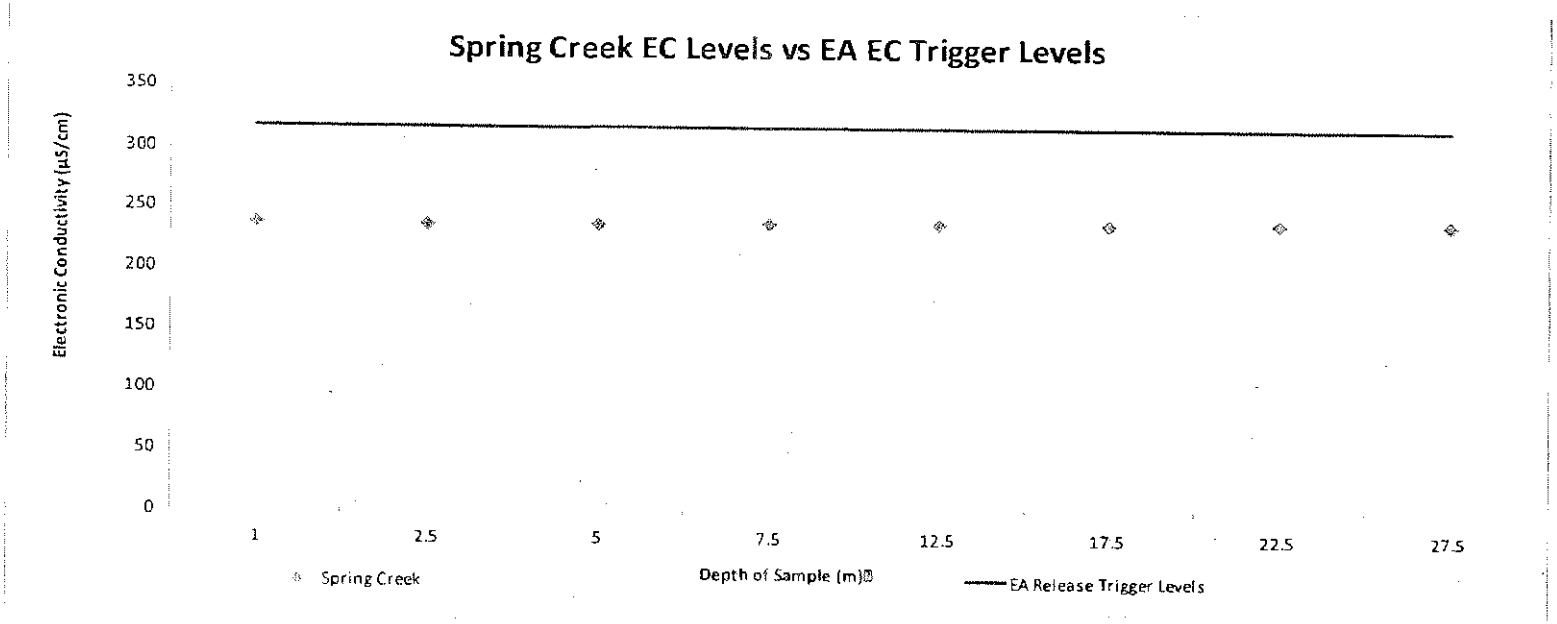
Action Plan item	Objective No.	Performance Indicator	Completion date	Responsibility
AP – 9. Notification to DERM of cessation of pumping of water from Spring Creek Pit to Spring Creek Dam	5	Notification to DERM occurs	Within 2 business days of cessation of pumping of water from Spring Creek Pit to Spring Creek Dam	Environmental Manager
AP – 10. Submission of EA amendment application to DERM.	5	Amendment application lodged.	31 December 2010	Environmental Manager
AP - 11. Submission to DERM of completion report.	5	Report submitted to DERM, inclusion of as built plans for Spring Creek Dam.	Within 56 days after cessation of pumping of water from Spring Creek Pit to Spring Creek Dam at completion of Program	Environmental Manager
AP - 12. Lodge review of Plan of Operations in accordance with section 9 of the TEP	6	Review of Plan of Operations lodged with DERM	30 October 2010	Environmental Manager
AP - 13. Lodge review of Water Management Plan in accordance with sections 6 and 9 of the TEP	6	Review of Water Management Plan lodged with DERM	1 November 2010	Environmental Manager
AP – 14. Lodge review of EM Plan in accordance with section 9 of the TEP	6	Review of EM Plan lodged with DERM	1 December 2010	Environmental Manager

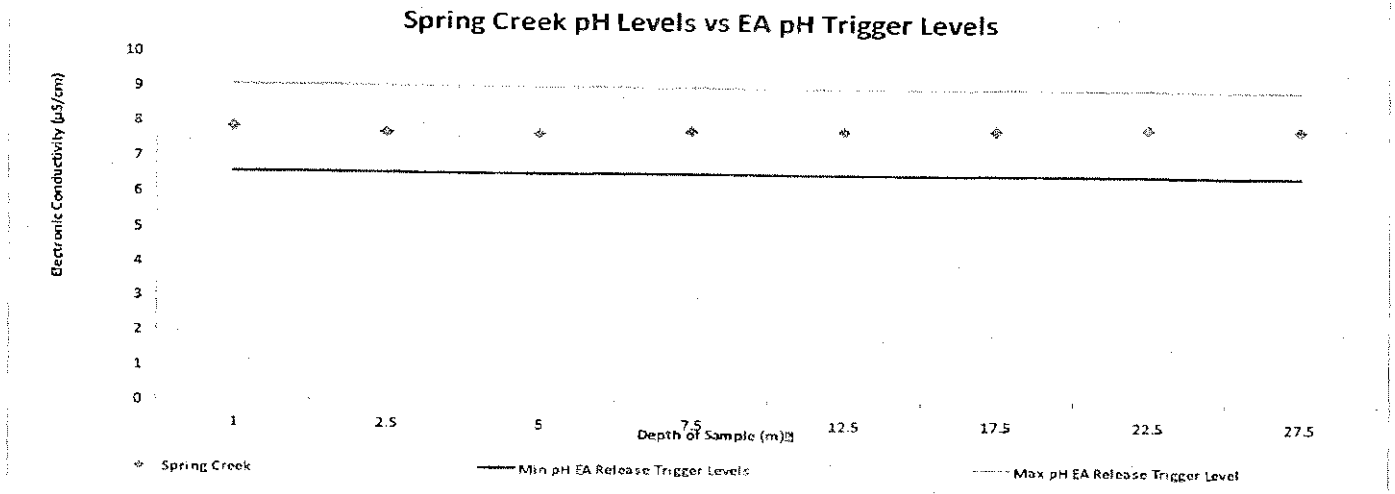
Appendix 1 Water quality results from Spring Creek pit

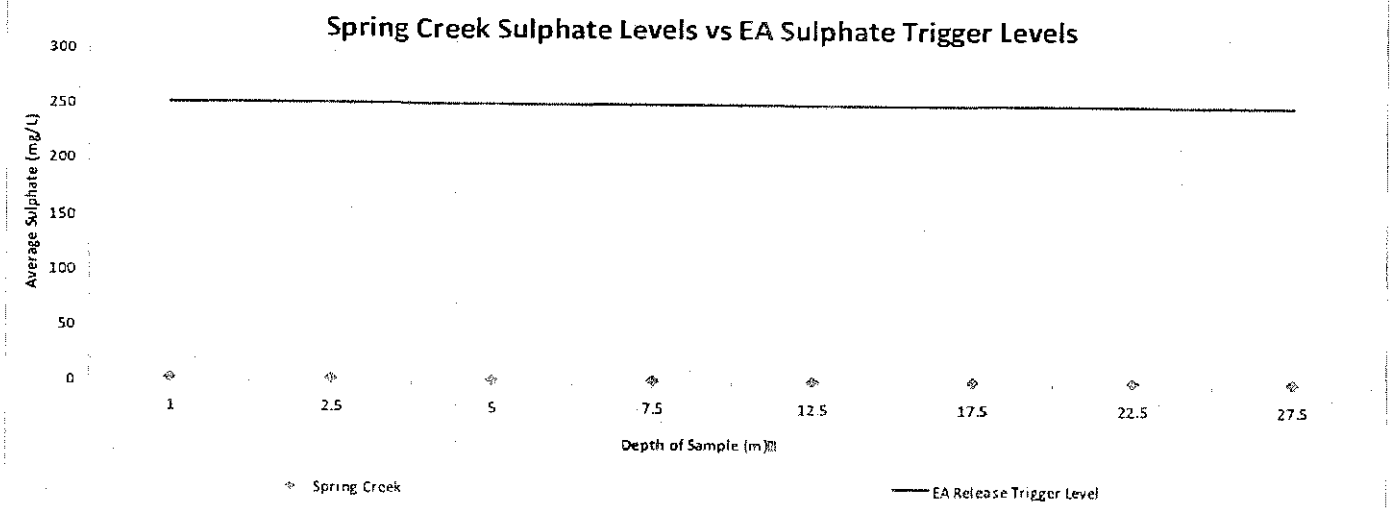
A condition of the current TEP approval is that "*Results of all water quality monitoring conducted during May 2010 in Spring Creek Pit must be provided to the administering authority in a summary report. The report must be received by the administering authority within 28 days of the receipt of the laboratory results by Rolleston Coal Mine personnel*".

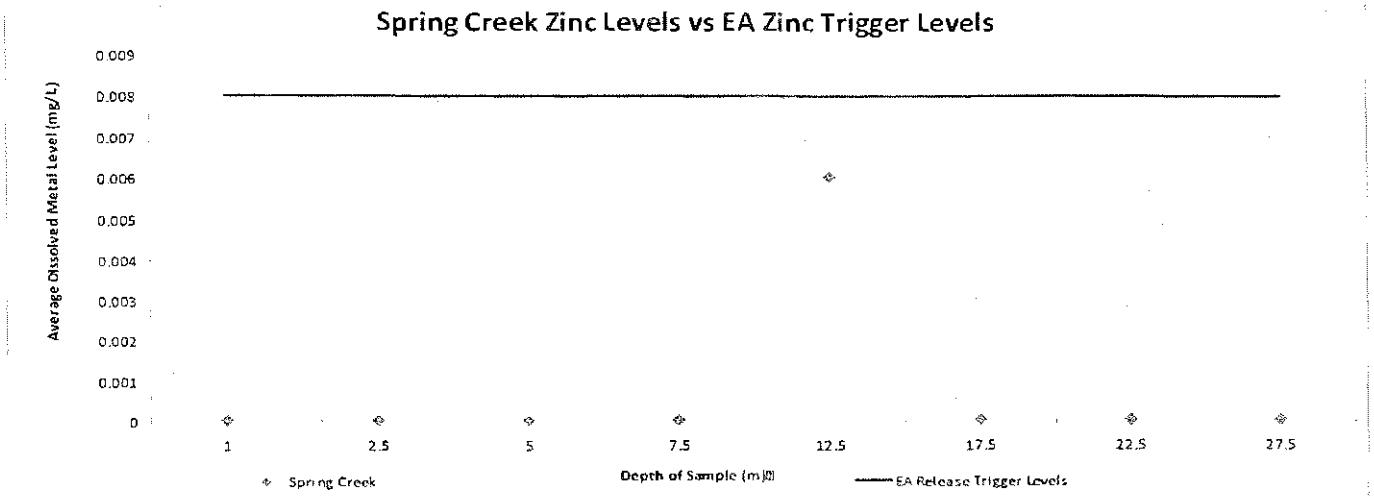
As outlined in Action Plan item 6 (AP – 6), water sampling of Spring Creek Pit was undertaken on 26 May 2010. The following graphs summarise water quality analysis results. Samples were taken by consultants ALS Environmental (Water Resources Group) using a Hydrolab multi-probe water quality meter and van doorn grab sampler.

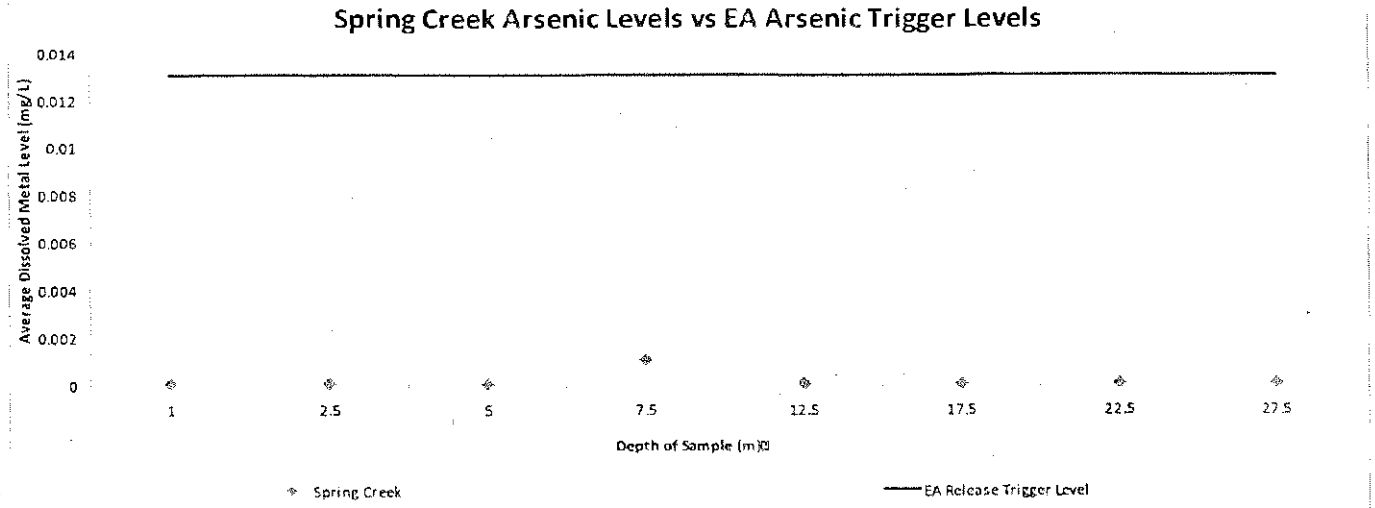
Analysis was made of the characteristics outlined in Rolleston Coals' current Environmental Authority (Permit Number: MIM800090802) for contaminant release limits (Table 2 in EA) and trigger investigation levels (Table 3 in EA).

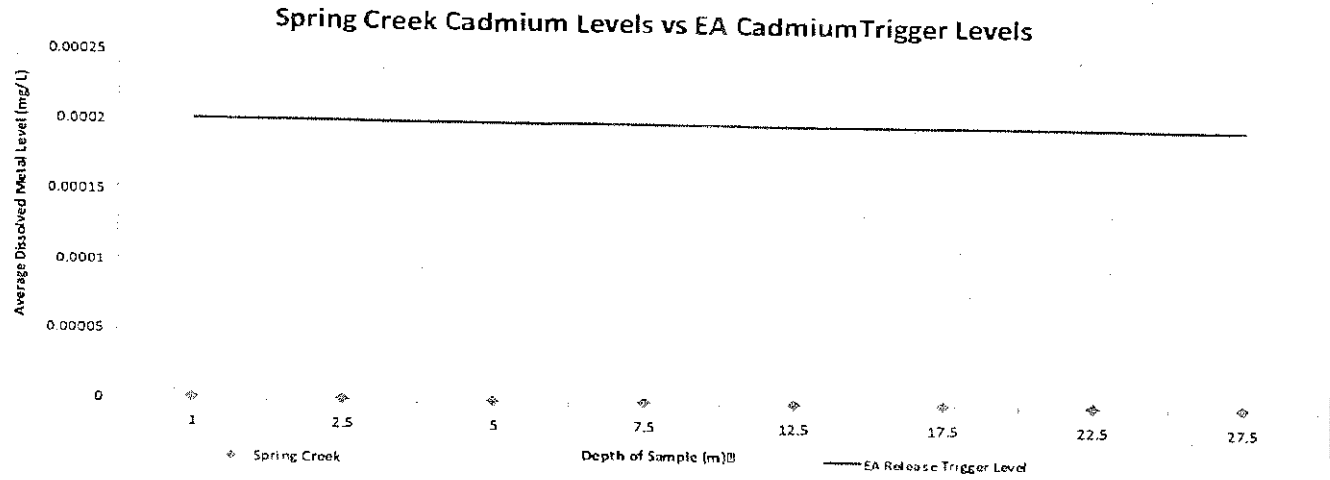


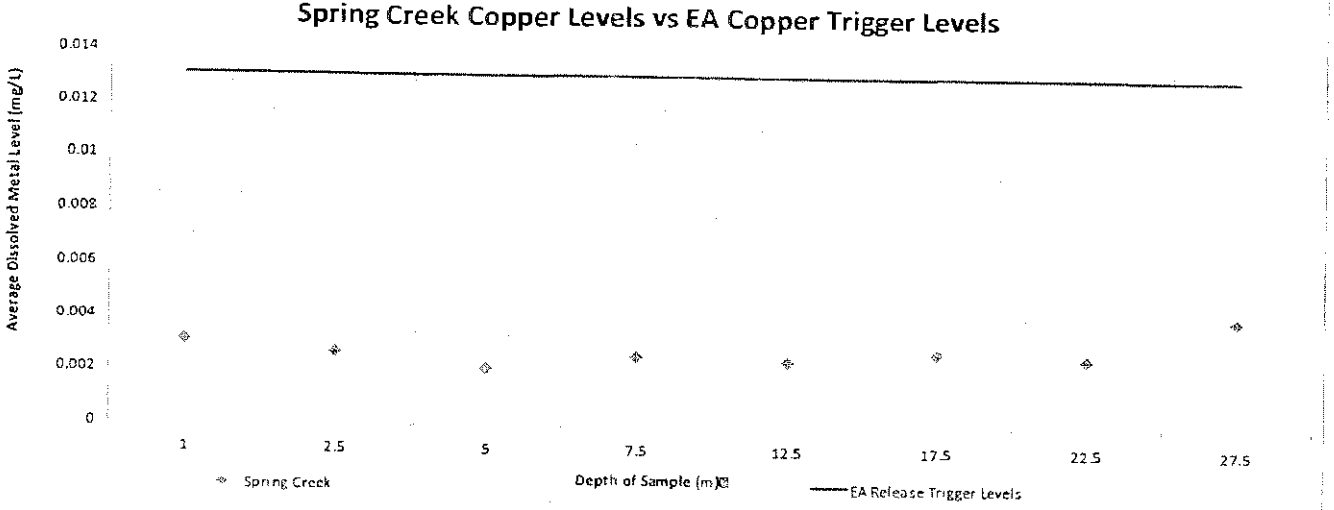

Spring Creek pH Levels vs EA pH Trigger Levels
Electronic Conductivity (µS/cm)
10
9
8
7
6
5
4
3
2
1
0
1
2.5
5
7.5
12.5
17.5
22.5
27.5
Depth of Sample (m)
Spring Creek
Min pH EA Release Trigger Levels
Max pH EA Release Trigger Level

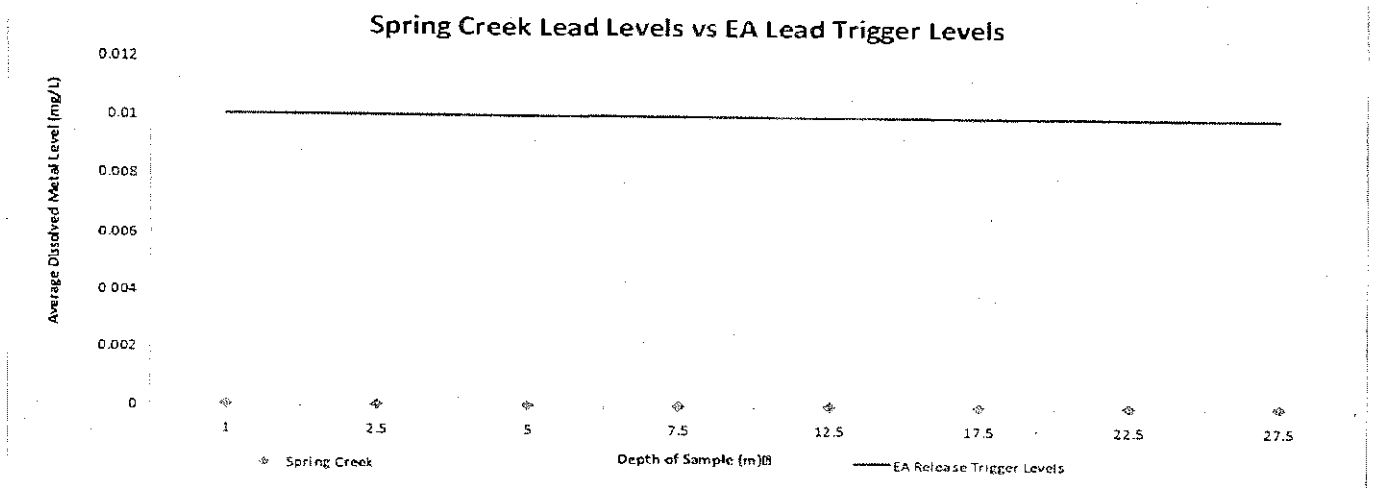

Spring Creek Sulphate Levels vs EA Sulphate Trigger Levels
Average Sulphate (mg/L)
300
250
200
150
100
50
0
1
2.5
5
7.5
12.5
17.5
22.5
27.5
Depth of Sample (m)
Spring Creek
EA Release Trigger Level

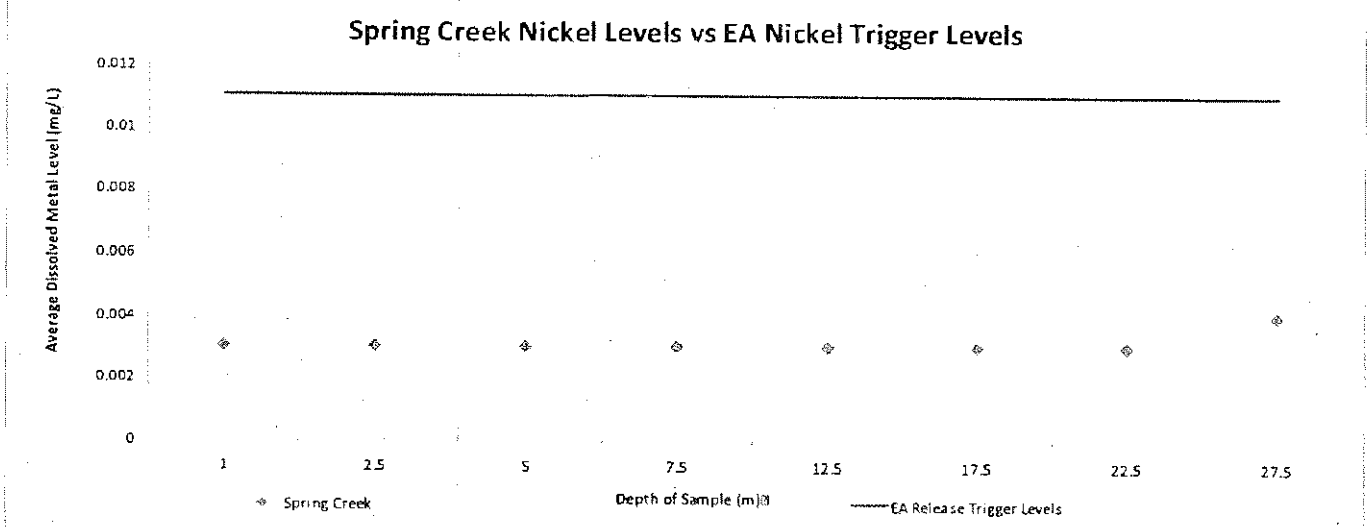

Spring Creek Zinc Levels vs EA Zinc Trigger Levels
Average Dissolved Metal Level (mg/L)
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
1
2.5
5
7.5
12.5
17.5
22.5
27.5
Depth of Sample (m)
Spring Creek
EA Release Trigger Levels

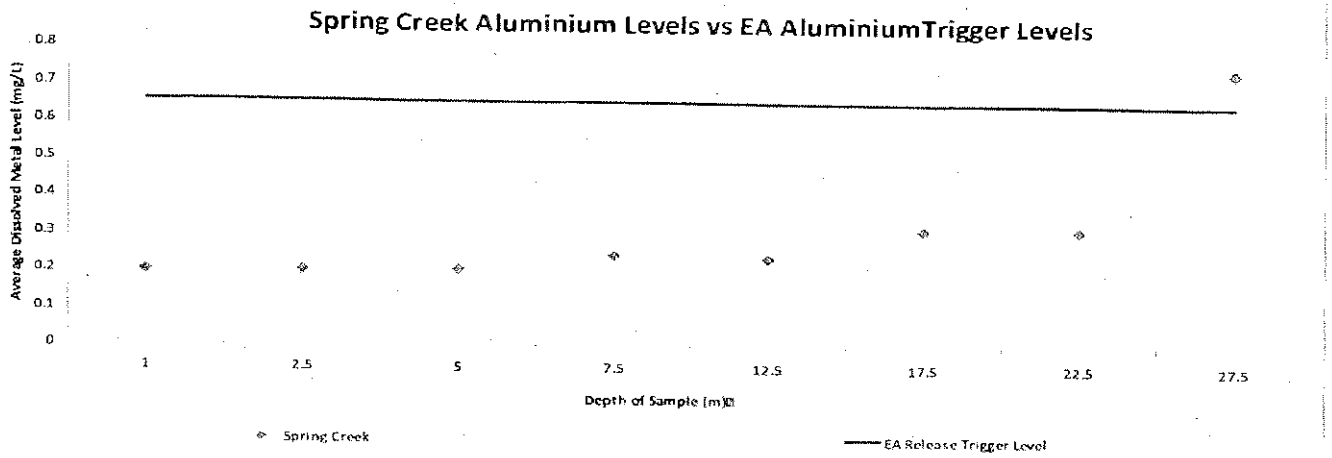

Spring Creek Arsenic Levels vs EA Arsenic Trigger Levels
Average Dissolved Metal Level (mg/L)
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
1
2.5
5
7.5
12.5
17.5
22.5
27.5
Depth of Sample (m)
Spring Creek
EA Release Trigger Level

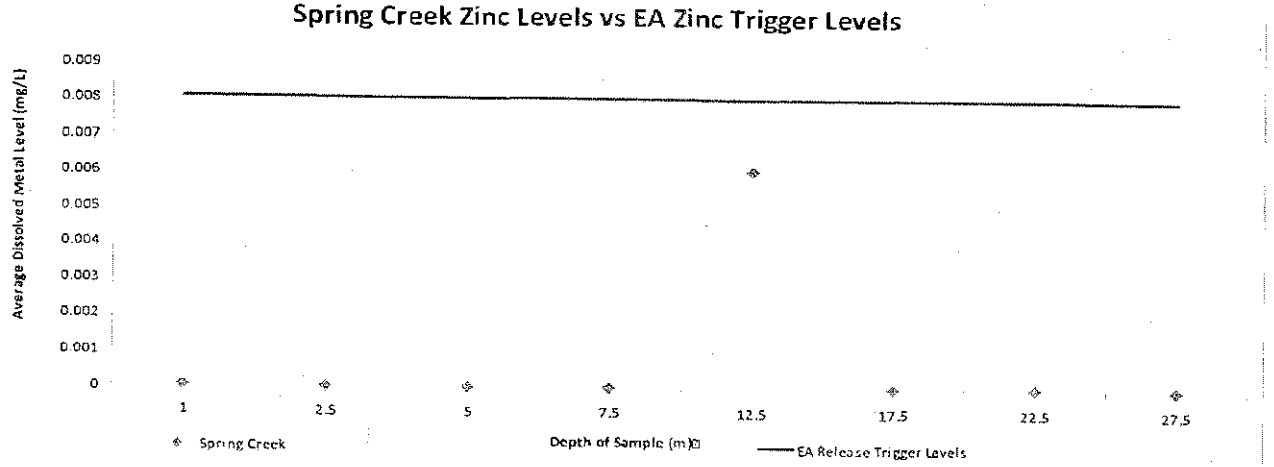

Spring Creek Cadmium Levels vs EA CadmiumTrigger Levels
Average Dissolved Metal Level (mg/L)
0.00025
0.0002
0.00015
0.0001
0.00005
0
1
2.5
5
7.5
12.5
17.5
22.5
27.5
Spring Creek
Depth of Sample (m)
EA Release Trigger Level


Spring Creek Copper Levels vs EA Copper Trigger Levels
Average Dissolved Metal Level (mg/L)
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
1
2.5
5
7.5
12.5
17.5
22.5
27.5
Spring Creek
Depth of Sample (m)
EA Release Trigger Levels


Spring Creek Lead Levels vs EA Lead Trigger Levels
Average Dissolved Metal Level (mg/L)
0.012
0.01
0.008
0.006
0.004
0.002
0
1
2.5
5
7.5
12.5
17.5
22.5
27.5
Depth of Sample (m)
Spring Creek
EA Release Trigger Levels


Spring Creek Nickel Levels vs EA Nickel Trigger Levels
Average Dissolved Metal Level (mg/L)
0.012
0.01
0.008
0.006
0.004
0.002
0
1
2.5
5
7.5
12.5
17.5
22.5
27.5
Depth of Sample (m)
Spring Creek
EA Release Trigger Levels


Spring Creek Aluminium Levels vs EA AluminiumTrigger Levels
Average Dissolved Metal Level (mg/L)
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1
2.5
5
7.5
12.5
17.5
22.5
27.5
Depth of Sample (m)
Spring Creek
EA Release Trigger Level


Spring Creek Zinc Levels vs EA Zinc Trigger Levels
Average Dissolved Metal Level (mg/L)
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
1
2.5
5
7.5
12.5
17.5
22.5
27.5
Depth of Sample (m)
Spring Creek
EA Release Trigger Levels

2.9 Amendment to TEP MAN10239 Approval – 5 July 2010

Queensland Government

File/Ref EMD866
MIM800090802

Department of
Environment and Resource Management

5 July 2010

[redacted]
General Manager
Rolleston Coal Mine
PO Box 11
Springsure Qld 4722

cc/[redacted]
Environment and Community
Xstrata Coal Qld Pty Ltd
C/-Rolleston Coal Mine
PO Box 11
Springsure Qld 4722

Attention: [redacted] – Environment and Community Manager

Dear [redacted],

The Department of Environment and Resource Management refers to the Transitional Environmental Program (TEP) certificate of approval number MAN10239 issued to Xstrata Coal Qld Pty Ltd on 1 June 2010 under section s339 of the *Environmental Protection Act 1994* (EP Act). The certificate authorised the TEP titled *Rolleston Coal Mine – Spring Creek Dam Water Storage*, dated 27 May 2010.

Please be advised that the amendment to the above TEP, received on 1 July 2010, titled *Transitional Environmental Program (TEP) amendment – 30 June 2010*, has been granted. Therefore, the TEP now consists of both TEP documents listed above.

Please note that as per the TEP amendment document, the measures outlined in the amendment are to prevail where there is any inconsistency with the TEP document date 27 May 2010.

Please find attached the amended TEP certificate of approval MAN10239 for this project as per the TEP amendment outlined above.

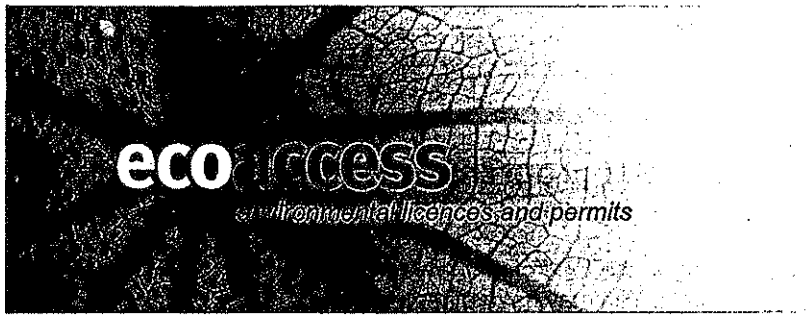
PO Box 906
99 Hospital Rd
EMERALD
Queensland 4720 Australia
Telephone + 61 7 4980 6200
Facsimile + 61 7 4982 2568
Website www.derm.qld.gov.au
ABN 46 640 294 485

Should you have any further enquiries, please do not hesitate to contact [redacted] of the department on [redacted].

Yours sincerely

[redacted]

Manager (Environmental Services - Mining)
Central West Region



Environmental Services - Mining

Transitional environmental program certificate of approval number MAN10239

This certificate of approval is issued by the administering authority pursuant to section 339 of the Environmental Protection Act 1994. *An 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:

Xstrata Coal Queensland Pty Ltd
Level 10 Riverside Centre
123 Eagle Street
BRISBANE QLD 4000

ICRA Rolleston Pty Ltd
Level 15
Commonwealth Bank Building of Australia
240 Queen St
BRISBANE QLD 400

Sumisho Coal Australia Pty Ltd
Level 34
Central Plaza One
BRISBANE QLD 4000

approving:

- the draft transitional environmental program (TEP); titled *Rolleston Coal Mine Transitional Environmental Program (TEP) – Spring Creek Dam Water Storage* for management of Spring Creek Pit Dewatering at Rolleston Coal Mine, received by this office on 27 May 2010; and

- the amended TEP titled *Rolleston Coal Mine Transitional Environmental Program (TEP) amendment – Spring Creek Dam Water Storage* received on 1 July 2010.

The TEP remains in force until 1 March 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.

Queensland Government

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

ecoaccess
environmental licences and permits

Notice

Transitional environmental program certificate of approval

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, [redacted] of the department on telephone [redacted] would be happy to assist you.

[redacted]
SIGNATURE

5 July 2010
DATE

[redacted]
Delegate of the administering authority
Manager (Environmental Services - Mining)
Central West Region

Enquiries:
Department of Environment and Resource Management
PO Box 906
Emerald QLD 4720
Phone: 4980 6200
Fax: 4982 2568

Encl. Info sheet - Internal review (DERM), and appeal to Planning and Environment Court

Annexure GB3

3.1 TEP Application – 29 September 2010

Statutory declaration

Environmental Operations

For an transitional environmental program

A statutory declaration is a written statement of facts that is sworn or declared under the Oaths Act 1867. *In accordance with section 556 of the* Environmental Protection Act 1994, *this statutory declaration must be completed and submitted with an transitional environmental program (TEP) and/or any additional information about an TEP that is requested by the administering authority.*

Oaths Act 1867

QUEENSLAND
TO WIT

I [redacted]

Insert the name of the person making this declaration

of Xstrata Coal Queensland Pty Ltd

Insert the street address of the person making this declaration

C/- Dawson Highway, Rolleston QLD 4702

in the State of Queensland do solemnly and sincerely declare that in relation to the submission of the transitional environmental program entitled Spring Creek Dam Water Release into Bootes Creek

Insert title of TEP

for Release of Water

Insert reason for TEP

at Spring Creek Dam, Rolleston Coal, Rolleston.

Insert location of activity TEP relates to

and in accordance with section 556 of the *Environmental Protection Act 1994,* I have:

Environmental Protection Agency
www.epa.qld.gov.au ABN 87 221 158 786

Queensland Government
Environmental Protection Agency
Queensland Parks and Wildlife Service

Statutory declaration

For an environmental management program

- not knowingly given any false or misleading information, and
- given all relevant information

in relation to:

(tick applicable box)

☒ the preparation of the transitional environmental program, or

☐ a request by the administering authority for additional information about the transitional environmental program.

And I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of the *Oaths Act 1867.*

Taken and declared before me, at Springsure

Insert location

this 29th day of September in the year 2010

Insert day (e.g. 18th) | Insert month | Insert year

[redacted]

Signed

(Person making this declaration)

[redacted]

Signed

(Delete whichever is not applicable — Justice of the Peace / Commissioner for Declarations / ~~Solicitor~~ / ~~Barrister~~)

[redacted]

Printed name and registration number (if applicable)

ROLLESTON
COAL

Rolleston Coal Mine

Transitional Environmental Program (TEP)

SPRING CREEK DAM WATER RELEASE INTO BOOTES CREEK

September 2010

Managed by
xstrata

Rolleston Coal Pty Ltd ABN 73 106 690 037
Dawson Highway, Via Rolleston, PO Box 11, Springsure QLD 4722
Telephone 07 4988 9100 Facsimile 07 4988 9151 Internet www.xstrata.com

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Table of Contents

1. Introduction

This **Transitional Environmental Program** (***TEP***) describes the proposed actions to release up to 4GL of water from Spring Creek Dam into Bootes Creek outside of flow conditions outlined in Table 4 of Rolleston Coal's Environment Authority (EA) MIM800090802.

Spring Creek Dam is a water storage which may contain water which has been in contact with mining areas. This is in accordance with approved TEP MAN10239. As such the quality of any water stored in Spring Creek Dam must be monitored quarterly for a wide range of potential contaminants. Water analysis is also required during any controlled releases from the storage.

District flooding resulting from exceptional rainfall between December 2009 and March 2010[1] resulted in the failure of Naroo Dam (a pastoral dam) and a subsequent overtopping release from Spring Creek Dam. The resultant surge of surface water flows resulted in Spring Creek Pit being inundated. Subsequently Spring Creek Pit was used to moderate the flow of water, and minimize off-site release where possible. The majority of this water (in excess of 4GL) from Spring Creek Pit has now been pumped into Spring Creek Dam (in accordance with the approved TEP MAN10239). Water quality was monitored as the water was pumped from Spring Creek Pit back into Spring Creek Dam (see Appendices D & E). At no stage were contamination release limits or investigation trigger levels outlined in Tables 2 and 3 of the EA exceeded.

As at Sunday 26th September 2010 Spring Creek Dam had a remaining storage capacity of approximately 600ML. Spring Creek Pit is now estimated to contain around 700ML of water with repeated inflows from localised gullies draining into the pit. Rolleston Coal has been unable to complete the installation of diversion structures to protect the pit from localised inflows and inflows from the Albinia National Park as a result of protracted rainfall impeding access. As soon as weather conditions permit, the completion of the this diversion will become Rolleston Coal's top priority.

Since major flooding in the first quarter of 2010 and prior to August and September rainfall, construction of additional flood mitigation infrastructure was complete, that is all major storages, levees and diversions. This infrastructure will be detailed in Rolleston Coal's amended Water Management Plan due for submission to DERM by November 1st 2010.

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[1] On top of the exceptionally high rainfall that Rolleston Coal Mine experienced over January, February and March 2010, August and in particular September rainfall has exceed all records since rainfall recording commenced in the late 1800's. 1036mm of rain has been recorded for the nine months YTD with 199mm falling in September.

To ensure that Spring Creek Dam will not receive any overland flows from Spring Creek, a diversion bank has been constructed to prevent inflows. Despite this, water levels in Spring Creek Dam have continued to rise in recent weeks due to runoff from residual catchment areas not affected by the diversion bank, rain falling directly into the storage as well as water suspected to be seeping from basalt outcrops.

The traditional "wet season" for Central Queensland is from December through to March. Rolleston Coal needs to maintain sufficient storage capacity in the water impoundments prior to the commencement of the wet season, in order to avoid uncontrolled discharges. The unseasonal, protracted and record breaking rainfall in recent months has significantly impacted Rolleston Coal's water storage balance on site.

Rolleston Coal voluntarily submits this TEP to seek authorisation by the administering authority under the *Environmental Protection Act 1994* to discharge 4.0GL of water from Spring Creek Dam into Bootes Creek at the rate of approximately 100ML per day irrespective of water flow in Bootes Creek, provided water quality complies with the criteria stipulated by this TEP.

This TEP proposes the implementation of an Action Plan showing how the objectives of this TEP are to be achieved and the timetable in which they are to be achieved. Rolleston Coal intends to comply with its existing obligations under EA MIM800090802.

Rolleston Coal seeks DERM's **timely consideration** of this application for approval of this TEP.

2. Environmental Authority

Xstrata Coal Queensland Pty Ltd, ICRA Rolleston Pty Ltd and Sumisho Coal Australia Pty Limited (***Rolleston Coal***) hold Environmental Authority MIM800090802 to carry out mining activities on ML70307 and MDL227, issued on 30 November 2009.

3. Submission

This Transitional Environmental Program (TEP) 2010/03 is submitted on behalf of Xstrata Coal Queensland Pty Ltd, ICRA Rolleston Pty Ltd and Sumisho Coal Australia Pty Limited by Bill McKinstrey, General Manager, Southern Region Xstrata Coal Queensland.

[redacted] 29/09/10

Signed Date

4. Authorisation

This TEP authorises the controlled release of up to 4.0GL of mine affected water from Spring Creek Dam into Bootes Creek at a discharge rate of up to 100ML per day, provided water quality complies with the criteria stipulated by this TEP. Spring Creek Dam water storage can discharge water to Release Point 1 (RP1) as identified in EA MIM800090802. Monitoring of discharge water will be undertaken in accordance with the conditions and requirements of this TEP and the EA. Ongoing water management will be in accordance with Rolleston Coal's Water Management Plan which is currently being updated by consultancy firm AECOM for submission to DERM by 1 November 2010.

To the extent there are any inconsistencies between this TEP and EA MIM800090802 and any other operational documents, this TEP prevails.

5. Program

5.1. Design of Spring Creek Dam

Appendix A contains design drawings for the Spring Creek Dam, the construction of which has been monitored by appropriately skilled engineers. "As built" plans have been provided to DERM.

5.2. Water Transfer

It is proposed to undertake a controlled release of up to 4.0GL from Spring Creek Dam into Bootes Creek at the rate of up to 100ML per day.

5.3. Program Objectives

Objective 1: Prepare for the controlled release of water from Spring Creek Dam, including testing for the water quality characteristics specified in Table 2 and 3 of EA MIM800090802.

Objective 2: Discharge water from Spring Creek Dam via Release Point 1 as identified in EA MIM800090802 in accordance with the procedures set out in Section 5.4 and Table 1 of this TEP.

Objective 3: Rolleston Coal will complete and lodge with DERM a Completion Report outlining actions undertaken under this TEP and summarising compliance against this TEP, and the results of the Spring Creek Dam discharge water sampling, within 56 days of the completion of the controlled release of water from Spring Creek Dam.

Objective 4: Rolleston Coal will ensure its Water Management Plan incorporates the on-going management requirements for Spring Creek Dam and will investigate the need and options, for any water management system upgrades to ensure that proper and effective measures, practices or procedures are in place so that the mine is operated in accordance with conditions of EA MIM800090802.

5.4. Water Quality

(a) Sampling of water being discharged from Spring Creek Dam will be undertaken at the location and frequency specified in Table 1 below;

(b) Sampling of water discharged from Spring Creek Dam will be in accordance with the site sampling procedures and analysis will be conducted with NATA certified laboratories;

(c) Sampling of water discharged from Spring Creek Dam will be undertaken using calibrated field equipment at the location and frequency specified in Table 1 below. Analyses will include pH, electrical conductivity and temperature; and

(d) In the event that water analysis results (as outlined in Table 1) exceed the contaminant limits defined in Table 2 (contaminant release limits) or Table 3 (release contaminant trigger investigation levels) of EA MIM 800090802 Rolleston Coal will cease discharging.

Table 1: Monitoring of discharge water

Water storage description	Easting +/- 50m	Northing +/- 50m	Monitoring Location	Frequency of Monitoring*
Spring Creek Dam	643688	7297724	Release Point 1	Daily during discharge in accordance with Table 2 of the EA. Weekly during discharge in accordance with Table 3 of the EA.

5.5. Volume of water discharged

Weekly estimates of water volume remaining in Spring Creek Dam will be undertaken, by survey pickup of the RL on water during the period in which water is released.

5.6. Rate of water discharge

In order to calculate discharge rates, the consultancy firm AECOM have prepared discharge curves (Appendix C) using a broad crested weir design.

5.7. Risk of Environmental Harm

Rolleston Coal is confident that the program will not significantly increase the potential for environmental harm in the area. Weekly water quality sampling in Spring Creek Dam over the last 3 months has met all criteria specified in Tables 2

and 3 of Rolleston Coal's EA (see Appendices D & E). Rolleston Coal also proposes additional sampling of the water before it is discharged and will discharge only if the water is within acceptable levels, as stipulated by this TEP. During release water will be subject to monitoring at the release point and at locations upstream and downstream of the release point, in accordance with the EA.

Furthermore Rolleston Coal believes that by implementing this TEP and having sufficient capacity in Spring Creek Dam at the commencement of the "wet season" the potential risk of environmental harm is minimized as no uncontrolled discharges would occur.

The proposed monitoring regime will identify water quality throughout the discharge event. Discharge would cease if water quality parameters stipulated by this TEP were exceeded.

Though this TEP seeks the controlled discharge of water irrespective of minimum flow conditions outlined in the EA, it is anticipated that there will be times when Bootes Creek will be flowing. During September there have been five flow events in Bootes Creek where the minimum flow requirement in the receiving water (Bootes Creek) has provided opportunity for controlled discharge. Current weather forecasts suggest strong "La Nina" conditions with well above average rainfall. Any natural flows in Bootes Creek will have a dilution effect thereby further reducing potential downstream impact.

Rolleston Coal does not predict any impact to downstream users as this discharge will be managed so as to comply with the water quality parameters outlined in Tables 2 & 3 of the EA. There are existing monitoring stations (pH, EC, temperature and flow height) located upstream and downstream of Release Point 1 where this discharge will occur (refer to Appendix B). These existing monitoring stations have established automated stations that will continue to operate in accordance with applicable requirements under EA MIM80009080.

Rolleston Coal is confident that the rate of water released from Spring Creek Dam will not incur any increase in downstream flood levels as the channel is sufficient to accommodate very large volumes of water. Rolleston Coal will consult with the adjacent landholder in relation to likely impacts on the usability of local roads.

Impact on stock watering will be negligible as water quality parameters documented in the EA are consistent with those listed in ANZECC guidelines for stock water.

5.8. Notification and Reporting

Rolleston Coal will:

1. Notify DERM of commencement of discharge from Spring Creek Dam into Bootes Creek;
2. Notify DERM, within 21 days of completion of discharge from Spring Creek Dam into Bootes Creek, the following;
    a. controlled release completion date;

b. results on water quality testing under this TEP;

c. volume of water transferred released from Spring Creek Dam into Bootes Creek; and

d. complete and lodge with DERM a completion report outlining actions taken under this TEP within 56 days of completion of discharging of water from Spring Creek Dam into Bootes Creek summarising sampling, results, observations, and other relevant details.

3. A proposed format (TOC) for the completion report is provided in Appendix E.

5.9. Action Plan

The key actions planned and scheduled are set out below in Table 2.

Table 2 : Action Plan

Action Plan item	Objective No.	Performance Indicator	Completion date	Responsibility
AP – 1. Monitor in accordance with with TEP and EA MIM800090802 prior to pumping	1	Sampling of Spring Creek Dam completed	Prior to commencement of discharge	Environmental Manager
AP - 2. Commence discharging water from Spring Creek Dam into Bootes Creek via Release Point 1	2	Controlled discharging occurring	As soon as practicable after completion of AP-2 above	Operations Manager in conjunction with Environmental Manager
AP - 3. Notification to DERM of commencement of discharging from Spring Creek Dam into Bootes Creek via Release Point 1	2 & 3	DERM notified of commencement of discharge	Within 2 business days of commencing pumping	Environmental Manager
AP - 4. Monitoring in accordance with TEP and EA MIM800090802 during discharge	1 & 3	Sampling of Spring Creek Dam water	Prior to cessation of pumping	Environmental Manager
AP - 5. Cease discharging from Spring Creek Dam	3	Pumping ceases	Final discharging to cease when 4.0GL has been released or by 31 March 2010, whichever is the sooner.	Operations Manager
AP - 6. Notification to DERM of cessation of discharging from Spring Creek Dam into Bootes Creek via	3	Notification to DERM occurs	Within 2 business days of cessation of pumping of water from Spring Creek Pit to Spring	Environmental Manager

Action Plan item	Objective No.	Performance Indicator	Completion date	Responsibility
Release Point 1 under this TEP			Creek Dam	
AP - 7. Submission to DERM of completion report.	3	Report submitted to DERM	Within 56 days after cessation of discharging from Spring Creek Dam into Bootes Creek via Release Point 1 under this TEP	Environmental Manager
AP - **8.** Update of Water Management Plan	4	Water Management Plan is updated to include consideration of this TEP.	1 November 2010	Environmental Manager
AP - 9. Investigation of whether upgrades to water management system required	4	Actions to commence investigations into further requirements for upgrades to water management system commenced	31 March 2011	Environmental Manager

6. Term of the Transitional Environmental Program

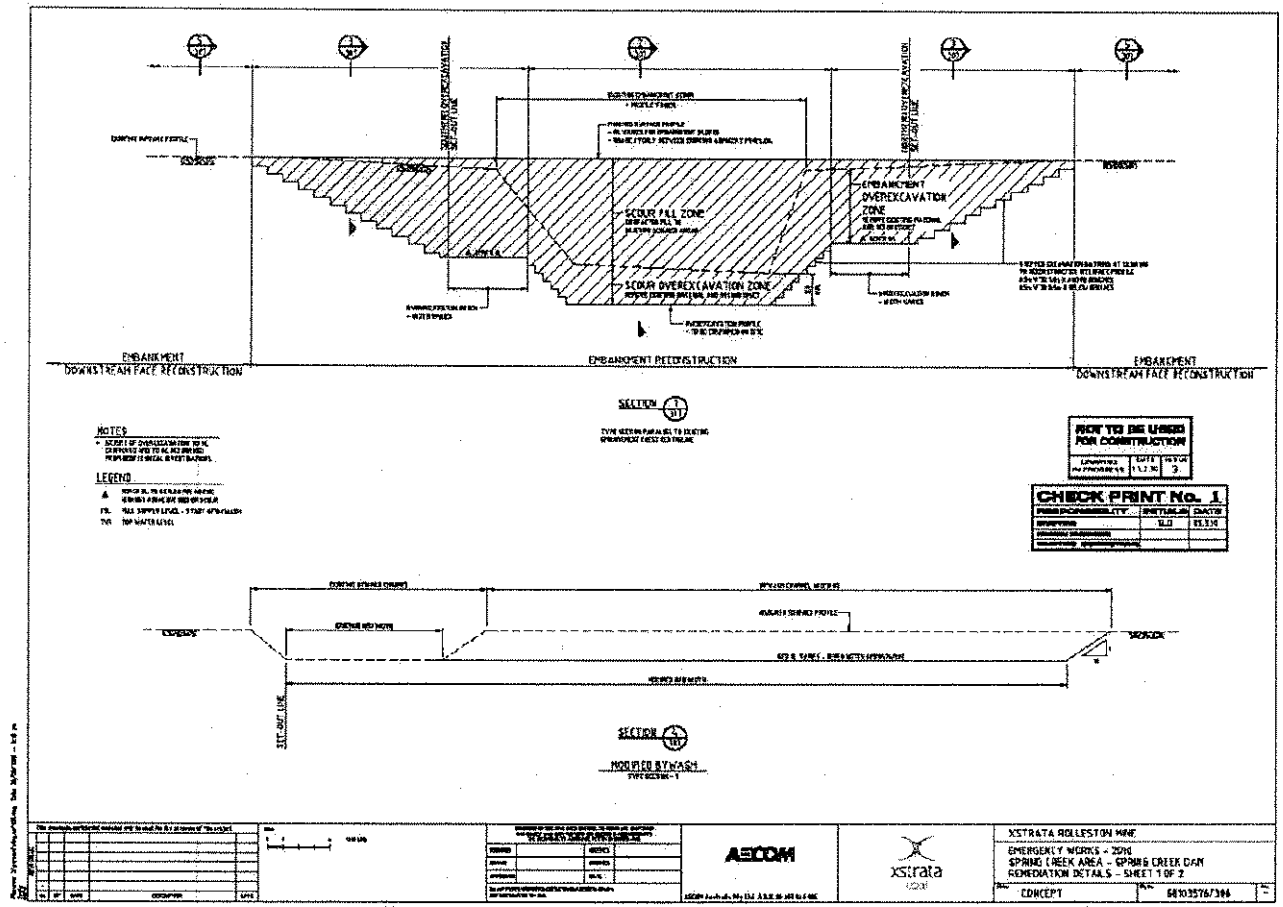
This TEP will be current until 31 March 2011.

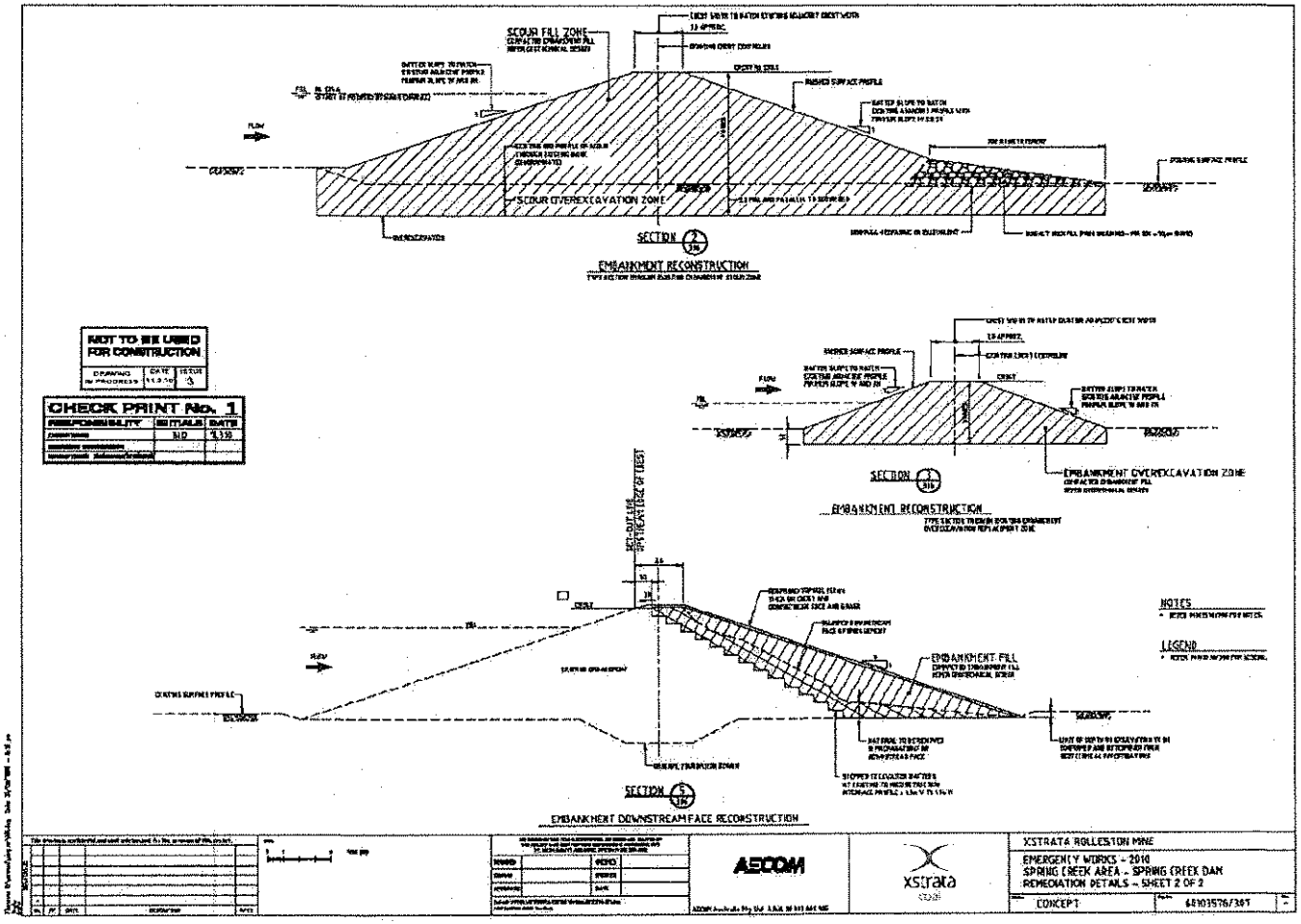
7. Transition to Compliance

To ensure a "transition" to compliance:

- Updated Water Management Plan (completed by 1 November 2010)

Appendix A *Design Plans Spring Creek Dam*

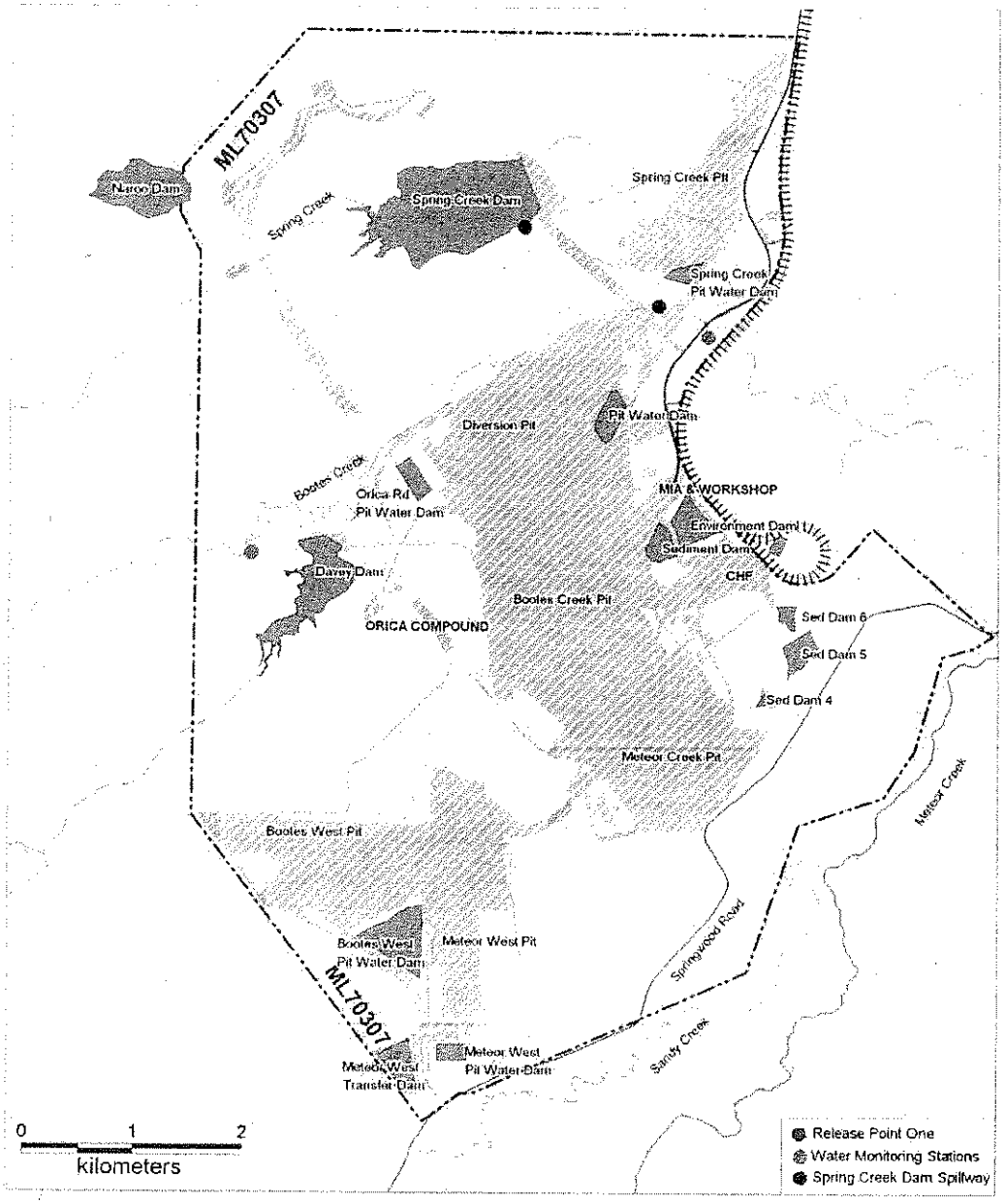



SCOUR FILL ZONE
SCOUR OVEREXCAVATION ZONE
SECTION
EMBANKMENT RECONSTRUCTION
NOT TO BE USED FOR CONSTRUCTION
CHECK PRINT No. 1
EMBANKMENT OVEREXCAVATION ZONE
EMBANKMENT RECONSTRUCTION
EMBANKMENT FILL
NOTES
LEGEND
EMBANKMENT DOWNSTREAM FACE RECONSTRUCTION
AECOM
XSTRATA ROLLESTON MINE
EMERGENCY WORKS - 2010
SPRING CREEK AREA - SPRING CREEK DAM
REMEDIATION DETAILS - SHEET 2 OF 2
CONCEPT

Appendix B *Spring Creek Dam discharge & release point 1*

ROLLESTON COAL

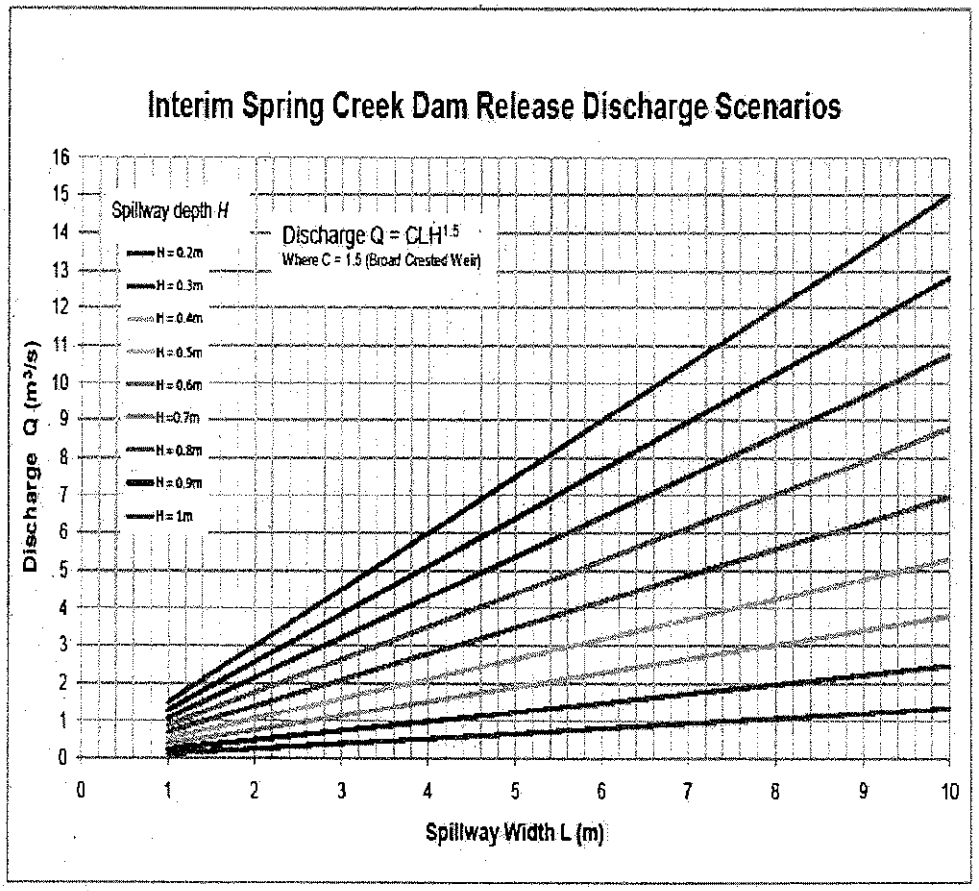
Rolleston Coal Spring Creek Dam Discharge and Release Points



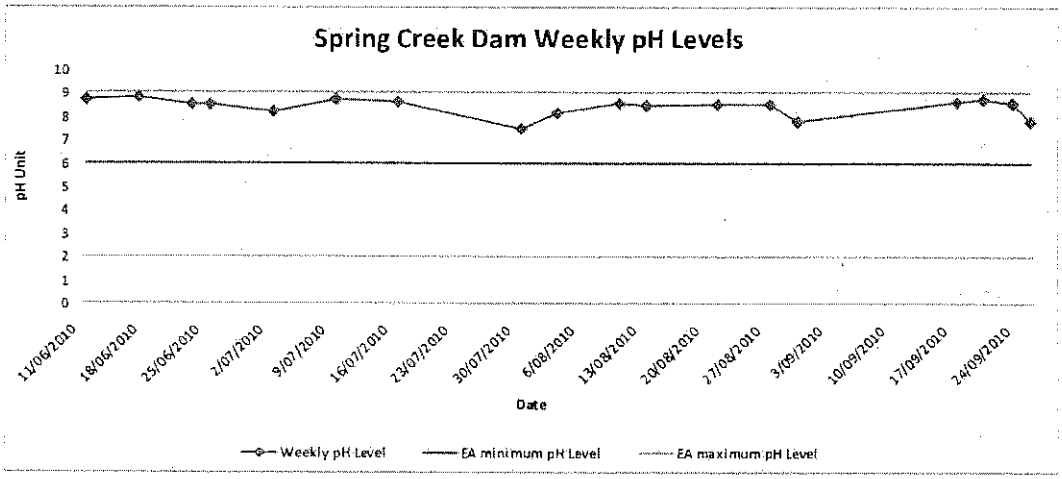
xstrata

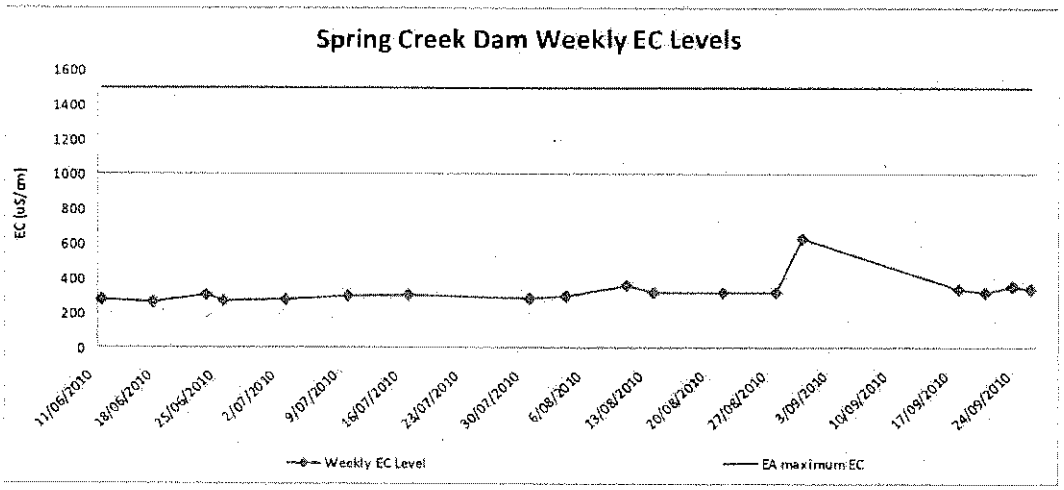
Rolleston Coal Pty Ltd ABN 73 106 690 037
Dawson Highway, Via Rolleston, PO Box 11, Springsure QLD 4722
Telephone 07 4988 9100 Facsimile 07 4988 9151 Internet www.xstrata.com

Appendix C *Discharge rating curves for Spring Creek Dam spillway*



Appendix D *Water quality in Spring Creek Dam*





Appendix E *Laboratory analysis of Spring Creek Dam water*

Sample Date:	04/08/2010
Analyte grouping/Analyte	
EA005P: pH by PC Titrator	
pH Value	8.05
EA010P: Conductivity by PC Titrator	
Electrical Conductivity @ 25°C	310 µs/cm
EA015: Total Dissolved Solids	
Total Dissolved Solids @180°C	201 mg/L
EA025: Suspended Solids	
Suspended Solids (SS)	5 mg/L
EA045: Turbidity	
Turbidity	
ED037P: Alkalinity by PC Titrator	
Hydroxide Alkalinity as CaCO3	<1
Carbonate Alkalinity as CaCO3	<1
Bicarbonate Alkalinity as CaCO3	150
Total Alkalinity as CaCO3	150
ED040F: Dissolved Major Anions	
Sulphate as SO4 2-	2 mg/L
ED040T: Total Major Anions	
Sulphate as SO4 2-	
ED045G: Chloride Discrete analyser	
Chloride	12
ED045P: Chloride by PC Titrator	
Chloride	
ED093F: Dissolved Major Cations	
Calcium	17

Magnesium	12
Sodium	35
Potassium	2
EG005F: Dissolved Metals by ICP-AES	
Iron	
EG005T: Total Metals by ICP-AES	
Iron	
EG020F: Dissolved Metals by ICP-MS (µg/L)	
Aluminium	0.01
Arsenic	<0.001
Cadmium	<0.0001
Chromium	<0.001
Cobalt	<0.001
Copper	0.003
Lead	<0.001
Manganese	0.005
Molybdenum	<0.001
Nickel	0.004
Selenium	<0.01
Silver	<0.001
Uranium	<0.001
Vanadium	0.01
Zinc	<0.005
Boron	0.1
Iron	<0.05
EG020T: Total Metals by ICP-MS (µg/L)	
Aluminium	0.42
Arsenic	0.001
Cadmium	<0.0001
Chromium	<0.001
Cobalt	<0.001
Copper	0.003
Lead	<0.001
Manganese	0.026
Molybdenum	<0.001
Nickel	0.005
Selenium	<0.01
Silver	<0.001
Uranium	<0.001

Vanadium	0.02
Zinc	<0.005
Boron	0.15
Iron	0.4
EK040P: Fluoride by PC Titrator (µg/L)	
Fluoride	0.2
EN055: Ionic Balance (meq/L)	
Total Anions	3.37
Total Cations	3.48
Ionic Balance (%)	1.57
ED093T: Total Major Cations (mg/L)	
Calcium	
Magnesium	
Sodium	
Potassium	
EK055G: Ammonia as N by Discrete Analyser (µg/L)	
Ammonia as N	0.14
EK057G: Nitrite as N by Discrete Analyser (µg/L)	
Nitrite as N	<0.01
EK058G: Nitrate as N by Discrete Analyser (µg/L)	
Nitrate as N	0.02
EK059G: NOX as N by Discrete Analyse (µg/L)r	
Nitrite + Nitrate as N	0.02
EP080/071: Total Petroleum Hydrocarbons (µg/L)	
C6 - C9 Fraction	<20
C10 - C14 Fraction	<50
C15 - C28 Fraction	<100
C29 - C36 Fraction	<50
C10 - C36 Fraction (sum)	<50
EP080S: TPH(V)/BTEX Surrogates (µg/L)	
1.2-Dichloroethane-D4	133
Toluene-D8	110

4-Bromofluorobenzene	102
EG035T: Total Recoverable Mercury by FIMS (µg/L)	
Mercury	<0.0001
EG035F: Dissolved Mercury by FIMS (µg/L)	
Mercury	<0.0001
EK025G: Free cyanide by Discrete Analyser (µg/L)	
Free Cyanide	<0.004
EK026G: Total Cyanide By Discrete Analyser (µg/L)	
Total Cyanide	<0.004

Appendix F *Completion Report – Proposed Contents*

Completion Report

Transitional Environmental Program Spring Creek Dam Water Release

1. Covering Letter
2. Summary Table of Program Statistics
    a. Volume of water discharged from Spring Creek Dam
    b. Days of pumping, Pumping rate averages
    c. Other relevant Data
3. Summary Tables of Sample results
    a. Spring Creek Dam water quality
    b. Other results and Observations
4. Conclusions
    a. Overall water quality status in discharged water.
    b. Compliance with Transitional Environmental Program
5. APPENDICES

3.2 Amended TEP Application – 18 October 2010

Statutory declaration

Environmental Operations

For an transitional environmental program

A statutory declaration is a written statement of facts that is sworn or declared under the Oaths Act 1867. *In accordance with section 556 of the* Environmental Protection Act 1994, *this statutory declaration must be completed and submitted with an transitional environmental program (TEP) and/or any additional information about an TEP that is requested by the administering authority.*

Oaths Act 1867

QUEENSLAND
TO WIT

I [redacted]

Insert the name of the person making this declaration

of Xstrata Coal Queensland Pty Ltd

Insert the street address of the person making this declaration

C/- Dawson Highway, Rolleston QLD 4702

in the State of Queensland do solemnly and sincerely declare that in relation to the submission of the transitional environmental program entitled Spring Creek Dam Water Release into Bootes Creek

Insert title of TEP

for Release of Water at Spring Creek Dam, Rolleston Coal, Rolleston.

Insert reason for TEP — Insert location of activity TEP relates to

and in accordance with section 556 of the *Environmental Protection Act 1994*, I have:

Environmental Protection Agency
www.epa.qld.gov.au ABN 87 221 158 786

Queensland Government
Environmental Protection Agency
Queensland Parks and Wildlife Service

- not knowingly given any false or misleading information, and
- given all relevant information

in relation to:

(tick applicable box)

☒ the preparation of the transitional environmental program, or

☐ a request by the administering authority for additional information about the transitional environmental program.

And I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of the *Oaths Act 1867*.

Taken and declared before me, at Rolleston

Insert location

this 18th day of October in the year 2010

Insert day (e.g. 18th) Insert month Insert year

[redacted]

Signed

(Person making this declaration)

[redacted]

(Delete whichever is not applicable — ~~Justice of the Peace~~ / Commissioner for Declarations / ~~Solicitor~~ / ~~Barrister~~)

[redacted]

Printed name and registration number (if applicable)

COMMISSIONER FOR DEC...
DEPA... OF JUSTICE QUEE...
Reg.No. [redacted]

ROLLESTON
COAL

Rolleston Coal Mine

Transitional Environmental Program (TEP)

SPRING CREEK DAM WATER RELEASE INTO BOOTES CREEK

October 2010

xstrata

Rolleston Coal Pty Ltd ABN 73 106 690 037
Dawson Highway, Via Rolleston, PO Box 11, Springsure QLD 4722
Telephone 07 4988 9100 Facsimile 07 4988 9151 Internet www.xstrata.com

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Table of Contents

1. Introduction

This **Transitional Environmental Program** (***TEP***) describes the proposed actions to release up to 4GL of water from Spring Creek Dam into Bootes Creek outside of Rolleston Coal's Environmental Authority (EA) MIM800090802 flow conditions for the relevant release point outlined in Table 1 below.

Table 1 Contaminant release during flow events

Receiving water description	Release Point	Gauging station description	Easting (GDA94)	Northing (GDA94)	Minimum Flow in Receiving Water Required for a Release Event	Flow recording Frequency
Bootes Creek	RP 1	Bootes Creek Discharge Point 1	643688	7297724	0.75m^3/s (750L/s)	Continuous (minimum daily)

Spring Creek Dam is a water storage which may contain water which has been in contact with mining areas. This is in accordance with approved TEP MAN10239. As such the quality of any water stored in Spring Creek Dam must be monitored quarterly for a wide range of potential contaminants. Water analysis is also required during any controlled releases from the storage.

District flooding resulting from exceptional rainfall between December 2009 and March 2010[1] resulted in the failure of Naroo Dam (a pastoral dam) and a subsequent overtopping release from Spring Creek Dam. The resultant surge of surface water flows resulted in Spring Creek Mining Pit being inundated. Subsequently Spring Creek Pit was used to moderate the flow of water, and minimize off-site release where possible. The majority of this water (in excess of 4GL) from Spring Creek Pit has now been pumped into Spring Creek Dam (in accordance with the approved TEP MAN10239).

Despite being in contact with mining areas, the quality of the water moved into Spring Creek Dam was good from the perspectives of human and stock consumption and in comparison with local streams. Water quality was monitored as it was pumped from Spring Creek Pit back into Spring Creek Dam (see Appendices D & E). At no stage were EA contamination release limits or investigation trigger levels exceeded during the transfer (see Appendices F & G).

Though the water quality in Spring Creek Dam remains good, the Dam's present capacity to account for heavy rainfall in the impending "wet season" is reduced. Rolleston Coal considers that the controlled release of 4GL now (thereby increasing available storage capacity) will minimise the risk of potential future environmental

[1] On top of the exceptionally high rainfall that Rolleston Coal Mine experienced over January, February and March 2010, August and in particular September rainfall has exceed all records since rainfall recording commenced in the late 1800's. 1036mm of rain has been recorded for the nine months YTD with 199mm falling in September.

issues that might arise in the event of an uncontrolled discharge. As at Tuesday 13th October 2010 Spring Creek Dam had a remaining storage capacity of approximately 800ML.

Spring Creek Pit is now estimated to contain around 450ML following repeated inflows in September from localised gullies draining into the pit. As a result of protracted rainfall impeding access, Rolleston Coal was unable to complete prior to these rain events the installation of a diversion structure to protect the pit from localised inflows and inflows from the Albinia National Park. The diversion structures were completed in early October thereby preventing any further inflows.

Since major flooding in the first quarter of 2010 and prior to August and September rainfall, construction of additional flood mitigation infrastructure was complete, that is all major storages, levees and diversions. This infrastructure will be detailed in Rolleston Coal's amended Water Management Plan due for submission to DERM by November 1st 2010 as required under the approved TEP MAN10239.

To ensure that Spring Creek Dam will not receive any overland flows from Spring Creek, a diversion bank has been constructed to prevent inflows. Despite this, water levels in Spring Creek Dam rose in September due to runoff from residual catchment areas not affected by the diversion bank, rain falling directly into the storage as well as groundwater suspected to be seeping from basalt outcrops.

The traditional "wet season" for Central Queensland is from December through to March. Rolleston Coal needs to maintain sufficient storage capacity in the water impoundments prior to the commencement of the wet season, in order to avoid uncontrolled discharges. The unseasonal, protracted and record-breaking rainfall in recent months has significantly impacted Rolleston Coal's water storage balance on site.

Rolleston Coal voluntarily submits this TEP to seek authorisation by the administering authority under the *Environmental Protection Act 1994* to discharge 4.0GL of water from Spring Creek Dam into Bootes Creek at the rate of approximately 100ML per day irrespective of water flow in Bootes Creek, provided water quality complies with the criteria stipulated by this TEP.

This TEP proposes the implementation of an Action Plan showing how the objectives of this TEP are to be achieved and the timetable in which they are to be achieved. Rolleston Coal will implement the Action Plan in addition to continued compliance with its existing obligations under EA MIM800090802.

Furthermore Rolleston Coal believes that by implementing this TEP and having sufficient capacity in Spring Creek Dam at the commencement of the "wet season" the potential risk of environmental harm is minimized as the likelihood of any uncontrolled discharges is significantly reduced.

2. Environmental Authority

Xstrata Coal Queensland Pty Ltd, ICRA Rolleston Pty Ltd and Sumisho Coal Australia Pty Limited (***Rolleston Coal***) hold Environmental Authority MIM800090802 to carry out mining activities on ML70307 and MDL227, issued on 30 November 2009.

3. Submission

This Transitional Environmental Program (TEP) 2010/03 is voluntarily submitted on behalf of Xstrata Coal Queensland Pty Ltd, ICRA Rolleston Pty Ltd and Sumisho Coal Australia Pty Limited by [redacted] General Manager, Southern Region, Xstrata Coal Queensland.

[redacted] 18/10/10

Signed Date

4. Authorisation

When approved, this TEP will authorise the controlled release of up to 4.0GL of mine affected water from Spring Creek Dam into Bootes Creek at a discharge rate of up to 100ML per day, provided water quality complies with the criteria stipulated by this TEP. Spring Creek Dam water storage can discharge water to Release Point 1 (RP1) as identified in EA MIM800090802. Monitoring of discharge water will be undertaken in accordance with the conditions and requirements of this TEP. Ongoing water management will be in accordance with Rolleston Coal's Water Management Plan which is currently being updated for submission to DERM by 1 November 2010 in accordance with TEP MAN10239.

To the extent there are any inconsistencies between this TEP and EA MIM800090802 and any other operational documents, this TEP prevails.

5. Program

5.1. Design of Spring Creek Dam

Appendix A contains design drawings for the Spring Creek Dam, the construction of which has been monitored by appropriately skilled engineers. "As built" plans have been provided to DERM.

5.2. Water Transfer

It is proposed to undertake a controlled release of up to 4.0GL from Spring Creek Dam into Bootes Creek at the rate of up to 100ML per day.

5.3. Program Objectives

Objective 1: Prior to discharge commencing Rolleston Coal will continue to operate the site in accordance with conditions of EA MIM800090802 and TEP MAN10239.

Objective 2: Present DERM with the results from water quality testing of water from Spring Creek Dam, for the water quality characteristics specified Appendices F & G.

Objective 3: Discharge water from Spring Creek Dam via Release Point 1 as identified in EA MIM800090802 in accordance with the commitments set out in Section 5 of this TEP.

Objective 4: Rolleston Coal will complete and lodge with DERM a Completion Report outlining actions undertaken under this TEP and summarising compliance against this TEP, and the results of the Spring Creek Dam discharge water sampling, within 40 business days of the completion of the controlled release of water from Spring Creek Dam.

5.4. Water Quality

The quality of the water in Spring Creek Dam has been closely scrutinized in line with approved TEP MAN10239. Detailed results have been provided in Appendices D & E. Table 2 provides a comparison of average water quality (50^{th} percentile) relative to EA discharge contaminant limits. Analyses of results indicate consistently high water quality.

Table 2: Spring Creek Dam water quality relative to EA discharge limits

Water quality characteristic	EA discharge limit	Spring Creek Dam level (50th percentile)
Electrical Conductivity (µS/cm)	1500	326
pH	6.5 – 9.0	8.4
Turbidity (ntu)	n/a	33
Suspended solids (mg/L)	1200	44
Sulphate (mg/L)	1000	2.2
Aluminium (µg/L)	650	18
Arsenic (µg/L)	13	<1
Cadmium (µg/L)	0.2	<0.1
Chromium (µg/L)	3	<1
Copper (µg/L)	13	1.8
Iron (µg/L)	520	50
Lead (µg/L)	10	<1
Mercury (µg/L)	0.2	<0.1
Nickel (µg/L)	11	3
Boron (µg/L)	370	50
Cobalt (µg/L)	90	0.8
Molybdenum (µg/L)	34	2.4
Selenium (µg/L)	10	4.5
Silver (µg/L)	1	<1
Uranium (µg/L)	1	<1
Vanadium (µg/L)	10	10
Ammonia (µg/L)	900	82
Nitrate (µg/L)	1100	52
Petroleum hydrocarbons (C6-C9) (µg/L)	20	<20
Petroleum hydrocarbons (C10-C36) (µg/L)	100	<50
Zinc (µg/L)	8	3.75

Monitoring discharges in this TEP will be conducted as follows:

- Sampling of water being discharged from Spring Creek Dam will be undertaken at the location and frequency specified in Table 3 below;
- Sampling of water discharged from Spring Creek Dam will be undertaken using calibrated field equipment for the parameters outlined in Table 4;
- Monthly analysis for the parameters outlined in Appendix F will be conducted by NATA certified laboratories;
- In the event that water analysis results exceed the defined contaminant limits (as outlined in Table 4) Rolleston Coal will cease discharging;
- In the event that water analysis results exceed the defined contaminant limits (as outlined in Appendix F) Rolleston Coal will investigate the reason for the exceedence in accordance with the procedures in Condition W5 of the EA.

Table 3: Discharge water monitoring location

Water storage description	Easting +/- 50m	Northing +/- 50m	Monitoring Location	Frequency of Monitoring
Spring Creek Dam	642472	7298442	Spring Creek dam spillway (which drains to RP1 in EA)	Daily during discharge for the parameters listed in Table 4. Monthly during discharge for the parameters listed in Appendix F.

Table 4: Water sampling parameters and upper limits

Parameter	Units	Maximum	Notes
Electrical Conductivity (EC)	µS/cm	483	90th percentile of Bootes Creek upstream monitoring*
pH	n/a	9.0	In accord with EA conditions
Turbidity	NTU	290	80th percentile of Bootes Creek upstream monitoring*
Volume released	Megalitres/ day	100	

*Taken from 55 samples from Bootes Creek upstream water monitoring station in February and March 2010, the timeframe when the flooding of Spring Creek Pit occurred. Data has been supplied to DERM.

5.5. Volume of water discharged

In addition to daily calculations of volumes released, weekly estimates of water volume remaining in Spring Creek Dam will be undertaken, by survey pickup of the RL on water during the period in which water is released.

5.6. Rate of water discharge

In order to calculate discharge rates, the consultancy firm AECOM have prepared discharge curves (Appendix C) using a broad crested weir design which will enable variation to flow rates by adjusting either the height or width of the spillway..

5.7. Risk of Environmental Harm

Water Quality

Rolleston Coal is confident that the program will not significantly increase the potential for environmental harm in the area. Weekly water quality sampling in Spring Creek Dam over the last 3 months has met all criteria specified in Tables 2 and 3 of Rolleston Coal's EA (see Appendices D & E). Rolleston Coal also proposes additional sampling of the water before it is discharged and will discharge only if the water is within acceptable levels, as stipulated by this TEP. During release water will be subject to monitoring at the dam spillway.

Furthermore Rolleston Coal believes that by implementing this TEP and having sufficient capacity in Spring Creek Dam at the commencement of the "wet season" the potential risk of environmental harm is minimized as the likelihood of uncontrolled discharges is reduced.

The proposed monitoring regime will assess water quality throughout the discharge event. Discharge will cease if water quality parameters stipulated by this TEP were exceeded.

Though this TEP seeks the controlled discharge of water irrespective of minimum flow conditions outlined in the EA, it is anticipated that there will be times when Bootes Creek will be flowing. During September there have been five flow events in Bootes Creek where the minimum flow requirement in the receiving water (Bootes Creek) has provided opportunity for controlled discharge. Current weather forecasts suggest strong "La Nina" conditions with well above average rainfall. Any natural flows in Bootes Creek will have a dilution effect thereby further reducing potential downstream impact.

Impacts on Downstream Landholders

Rolleston Coal does not predict any impact to downstream users as this discharge will be managed so as to comply with the water quality parameters outlined in Table 4. There are existing monitoring stations (pH, EC, temperature and flow height) located upstream and downstream of Release Point 1 where this discharge will occur (refer to Appendix B). These established automated monitoring stations will continue to operate in accordance with applicable requirements under EA MIM80009080.

Rolleston Coal predicts that the impact on stock watering will be negligible as water quality parameters documented in the EA are consistent with those listed in ANZECC guidelines for stock water.

Rolleston Coal is confident that the rate of water released from Spring Creek Dam will not incur any increase in downstream flood levels as the creek system capacity is sufficient to accommodate very large volumes of water. Rolleston Coal will consult with the Ranger in Charge of the Albinia National Park as well as the adjacent landholder in relation to likely impacts on the usability of Springwood road.

Erosion Potential

Rolleston Coal is also confident that the rate of water released from Spring Creek Dam will not result in downstream erosion as the creek system has sufficient capacity to accommodate very large volumes of water. Additionally the water being released has to traverse large areas of swamp prior to reaching Meteor Creek. Rolleston Coal will undertake weekly visual inspections of the riparian area immediately downstream of Spring Creek Dam. If erosion is evident a reduced discharge rate will be adopted to ensure maintenance of stream bank integrity.

5.8. Notification and Reporting

Rolleston Coal will:

1. Notify DERM of commencement of discharge from Spring Creek Dam into Bootes Creek within 2 business days of commencement;
2. Notify DERM, within 21 days of completion of discharge from Spring Creek Dam into Bootes Creek, the following;
   a. controlled release completion date;
   b. raw results on water quality testing under this TEP; and
   c. volume of water transferred released from Spring Creek Dam into Bootes Creek; and
3. Complete and lodge with DERM a completion report outlining actions taken under this TEP within 40 business days of completion of discharging of water from Spring Creek Dam into Bootes Creek summarising sampling, results, observations, and other relevant details. A proposed format (TOC) for the completion report is provided in Appendix E

5.9. Action Plan

The key actions planned and scheduled are set out below in Table 5.

Table 5: Action Plan

Action Plan item	Objective No.	Performance Indicator	Completion date	Responsibility
AP – 1. Monitor in accordance with with TEP and EA MIM800090802 prior to pumping	1	Sampling of Spring Creek Dam completed	Prior to commencement of discharge	Environmental Manager
AP - 2. Collate the sampling results of Spring Creek Dam and provide to DERM with and in support of this TEP	2	Data provided to DERM	Upon approval of this TEP	Environmental Manager
AP - 3. Commence discharging water from Spring Creek Dam into Bootes Creek via Release Point 1	3	Controlled discharging occurring	As soon as practicable after completion of AP-2 above	Operations Manager in conjunction with Environmental Manager
AP - 4. Notify DERM of commencement of discharging from Spring Creek Dam into Bootes Creek via Release Point 1	3	DERM notified of commencement of discharge	Within 2 business days of commencing pumping	Environmental Manager
AP - 5. Monitor in accordance with TEP and EA MIM800090802 during discharge	3	Sampling of Spring Creek Dam water Visually monitor the impact of erosion downstream of RP1 on a weekly basis during discharge and take remedial action as required	Prior to cessation of pumping Upon cessation of pumping	Environmental Manager

Action Plan item	Objective No.	Performance Indicator	Completion date	Responsibility
		Visually monitor the condition of roads downstream of RP1 on a weekly basis during discharge, and liaise with landholders as required	Upon cessation of pumping	
AP - 6. Cease discharging from Spring Creek Dam	3	Pumping ceases	Final discharging to cease when 4.0GL has been released or by 1 March 2011, whichever is the sooner.	Operations Manager
AP - 7. Notify DERM of the following under this TEP; • Controlled release completion date • Raw results on water quality testing under this TEP; and • Volume of water released from Spring Creek dam into Bootes Creek	3	Notification to DERM occurs	Within 21 business days of cessation of pumping of water from Spring Creek Dam into Bootes Creek via Release Point 1	Environmental Manager
AP - 8. Submit completion report to DERM.	3	Report submitted to DERM in a form consistent with that outlined in Appendix H	Within 40 business days after cessation of discharging from Spring Creek Dam into Bootes Creek via Release Point 1 under this TEP	Environmental Manager

6. Term of the Transitional Environmental Program

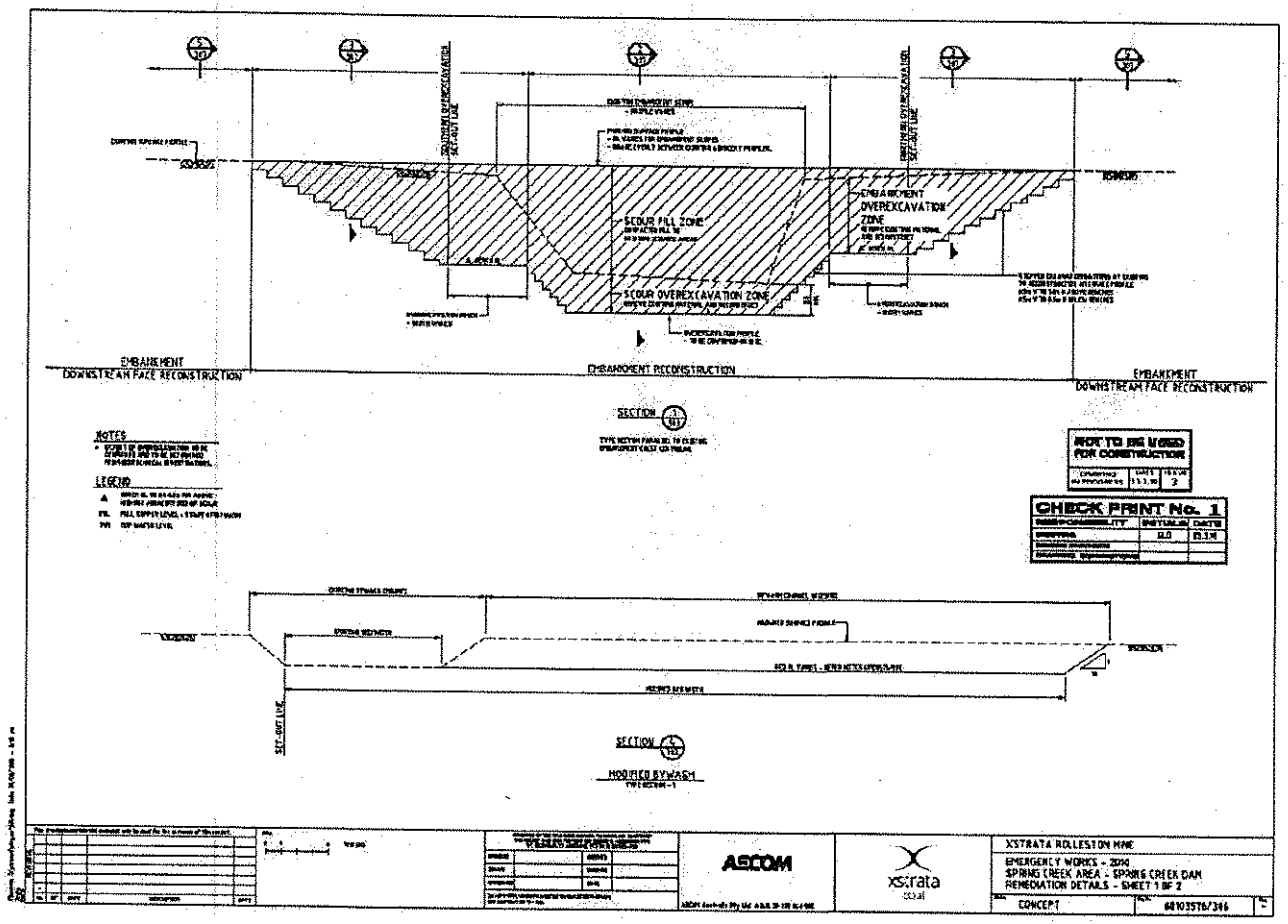
This TEP will be current until 1 March 2011.

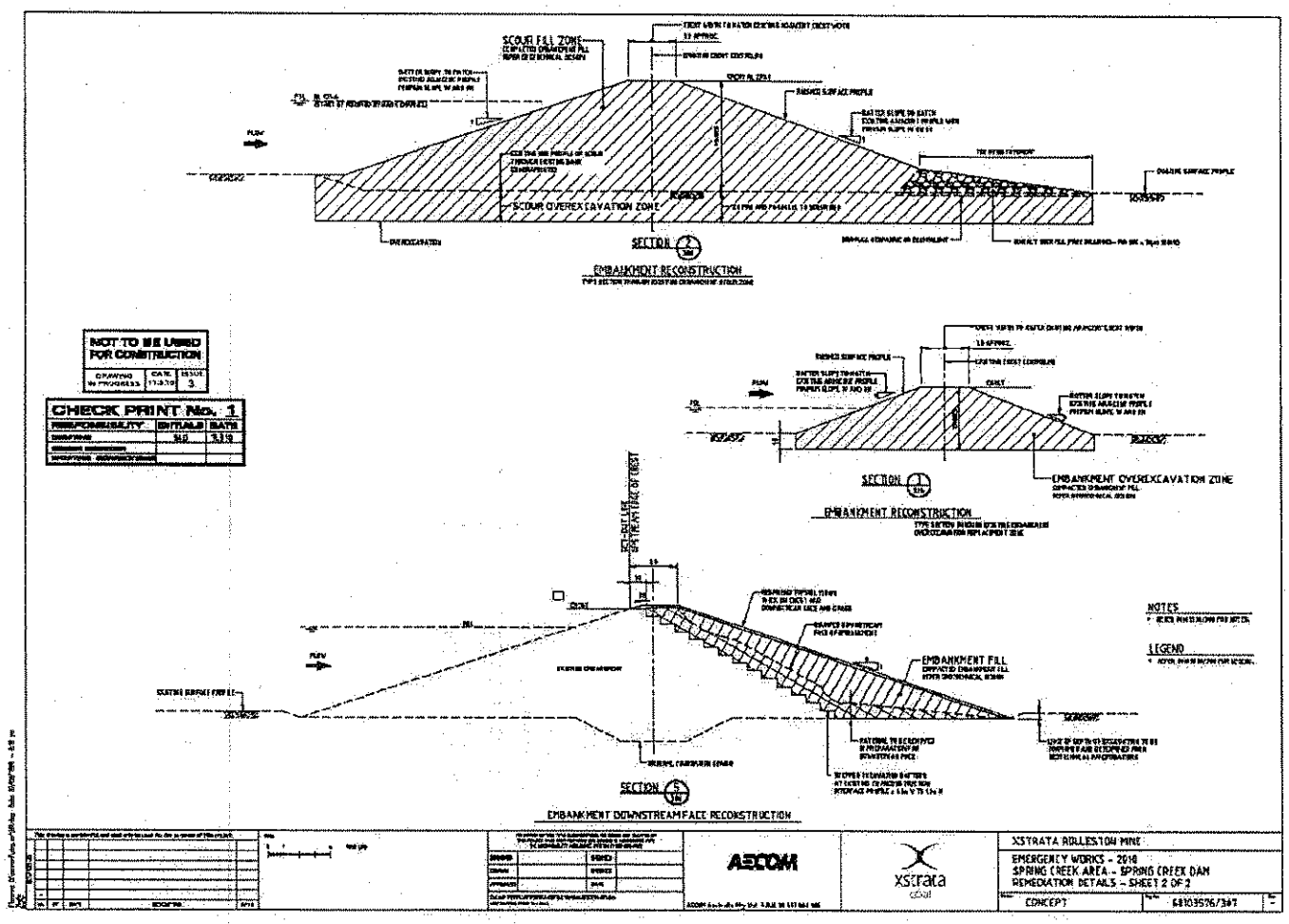
7. Transition to Compliance

The outcome of this TEP is considered integral to the site's "transition" to compliance which will be reflected by the:

- Updated Water Management Plan (which is to be completed by 1 November 2010 in accordance with TEP MAN10239)

Appendix A *Design Plans Spring Creek Dam*

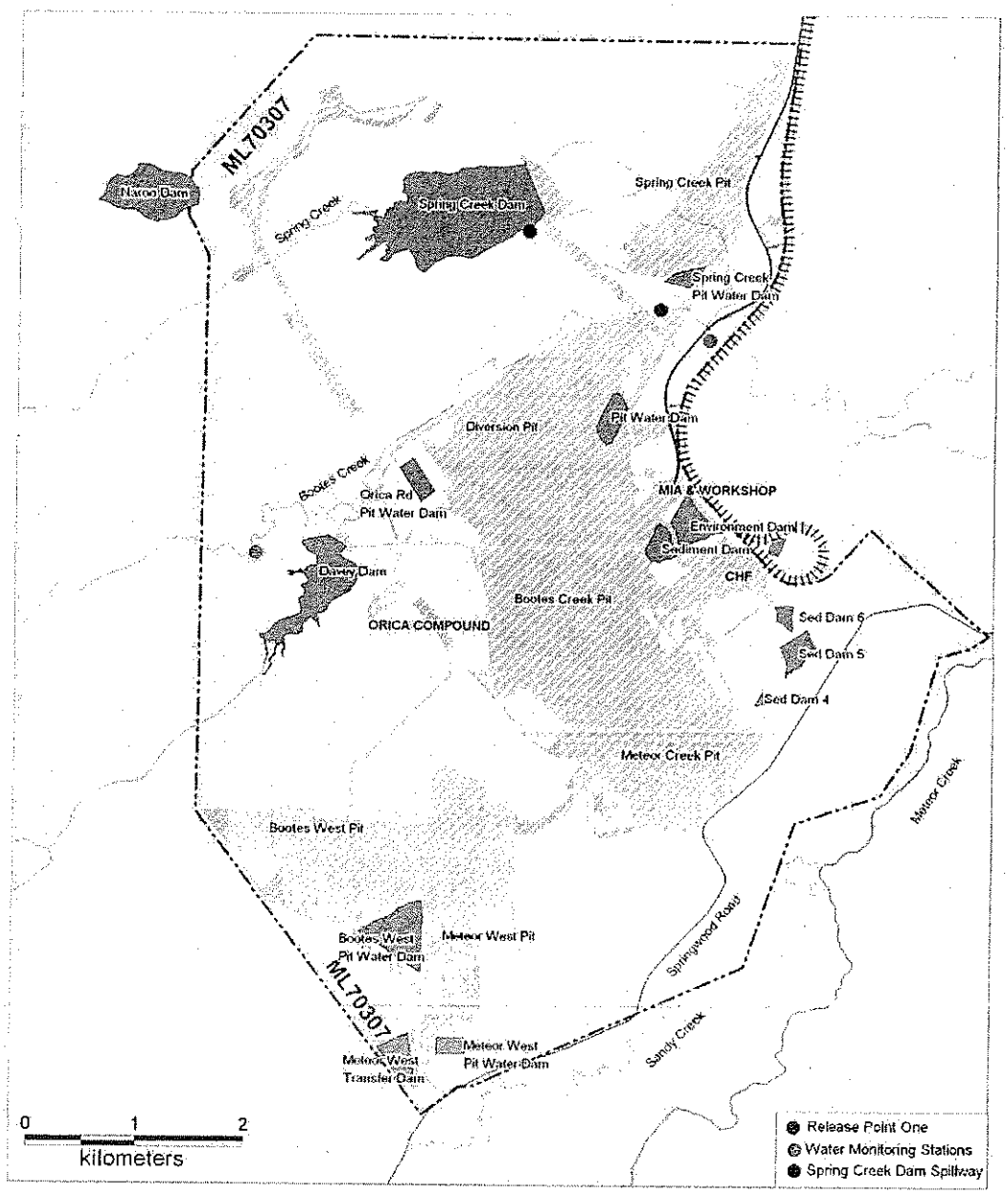



SCOUR FILL ZONE
SCOUR OVEREXCAVATION ZONE
SECTION
EMBANKMENT RECONSTRUCTION
NOT TO BE USED FOR CONSTRUCTION
CHECK PRINT No. 1
EMBANKMENT OVEREXCAVATION ZONE
EMBANKMENT RECONSTRUCTION
EMBANKMENT FILL
NOTES
LEGEND
SECTION
EMBANKMENT DOWNSTREAM FACE RECONSTRUCTION
AECOM
xstrata coal
XSTRATA ROLLESTON MINE
EMERGENCY WORKS - 2010
SPRING CREEK AREA - SPRING CREEK DAM
REMEDIATION DETAILS - SHEET 2 OF 2
CONCEPT

Appendix B *Spring Creek Dam discharge & release point 1*

ROLLESTON COAL

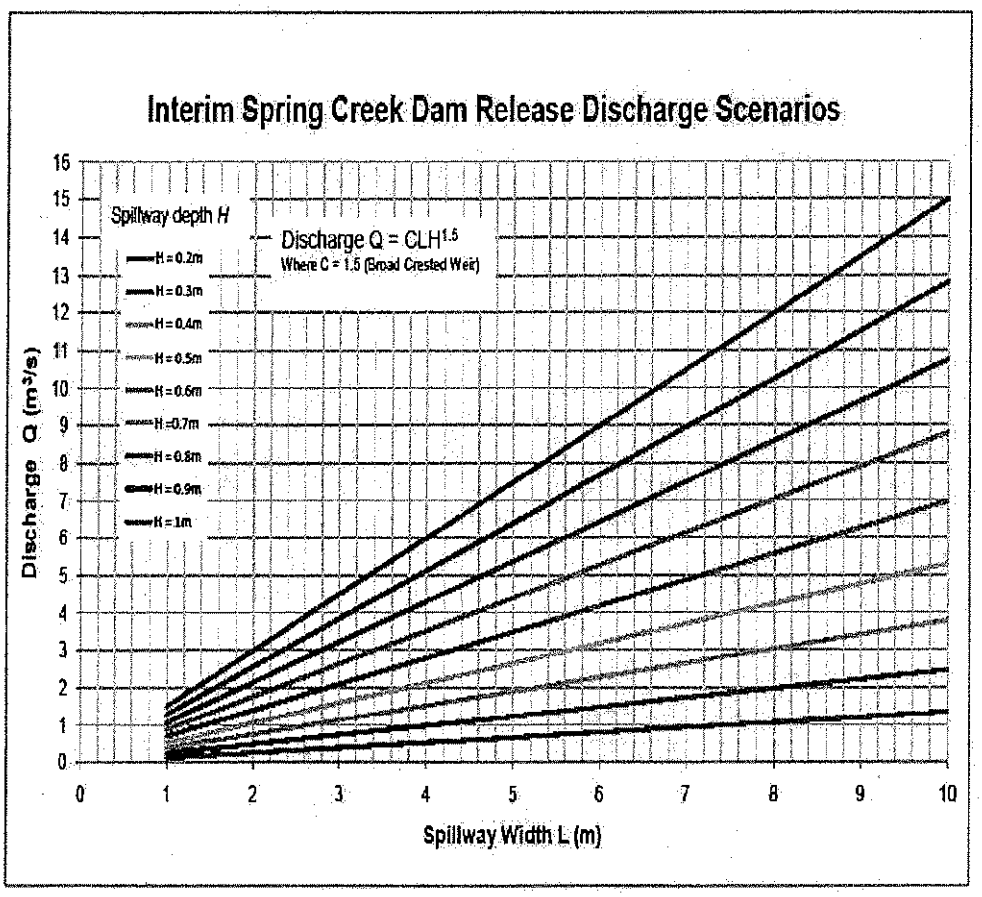
Rolleston Coal Spring Creek Dam Discharge and Release Points



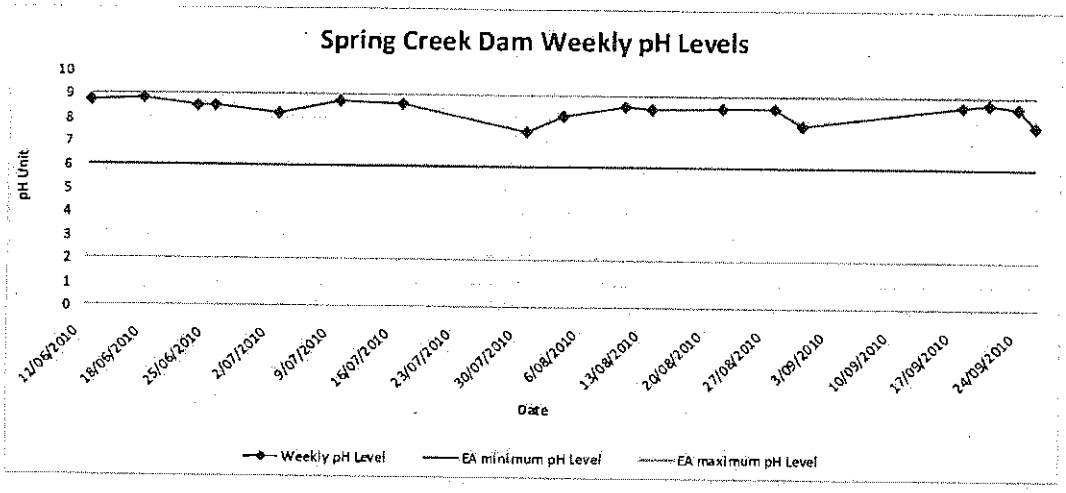
xstrata

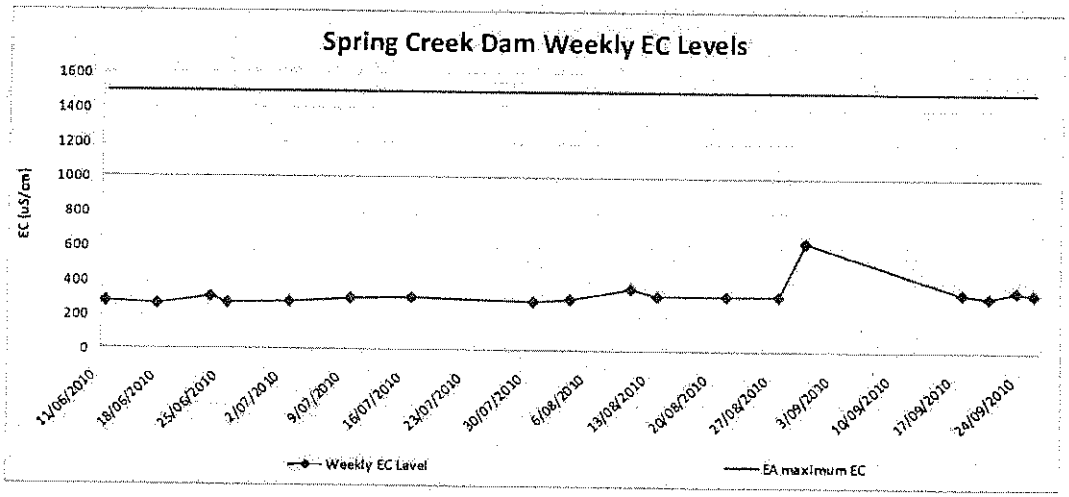
Rolleston Coal Pty Ltd ABN 73 106 690 037
Dawson Highway, Via Rolleston, PO Box 11, Springsure QLD 4722
Telephone 07 4988 9100 Facsimile 07 4988 9151 Internet www.xstrata.com

Appendix C *Discharge rating curves for Spring Creek Dam spillway*



Appendix D *Water quality in Spring Creek Dam*





Appendix E *Laboratory analysis of Spring Creek Dam water*

Sample Date:	04/08/2010
Analyte grouping/Analyte	
EA005P: pH by PC Titrator	
pH Value	8.05
EA010P: Conductivity by PC Titrator (µs/cm)	
Electrical Conductivity @ 25°C	310
EA015: Total Dissolved Solids (mg/L)	
Total Dissolved Solids @180°C	201
EA025: Suspended Solids (mg/L)	
Suspended Solids (SS)	5
EA045: Turbidity	
Turbidity	
ED037P: Alkalinity by PC Titrator (mg/L)	
Hydroxide Alkalinity as CaCO3	<1
Carbonate Alkalinity as CaCO3	<1
Bicarbonate Alkalinity as CaCO3	150
Total Alkalinity as CaCO3	150
ED040F: Dissolved Major Anions (mg/L)	
Sulphate as SO4 2-	2
ED040T: Total Major Anions	
Sulphate as SO4 2-	
ED045G: Chloride Discrete analyser (mg/L)	
Chloride	12
ED045P: Chloride by PC Titrator	
Chloride	
ED093F: Dissolved Major Cations (mg/L)	

Calcium	17
Magnesium	12
Sodium	35
Potassium	2
EG005F: Dissolved Metals by ICP-AES	
Iron	
EG005T: Total Metals by ICP-AES	
Iron	
EG020F: Dissolved Metals by ICP-MS *(mg/L)*	
Aluminium	0.01
Arsenic	<0.001
Cadmium	<0.0001
Chromium	<0.001
Cobalt	<0.001
Copper	0.003
Lead	<0.001
Manganese	0.005
Molybdenum	<0.001
Nickel	0.004
Selenium	<0.01
Silver	<0.001
Uranium	<0.001
Vanadium	0.01
Zinc	<0.005
Boron	0.1
Iron	<0.05
EG020T: Total Metals by ICP-MS *(mg/L)*	
Aluminium	0.42
Arsenic	0.001
Cadmium	<0.0001
Chromium	<0.001
Cobalt	<0.001
Copper	0.003
Lead	<0.001
Manganese	0.026
Molybdenum	<0.001
Nickel	0.005
Selenium	<0.01
Silver	<0.001

Uranium	<0.001
Vanadium	0.02
Zinc	<0.005
Boron	0.15
Iron	0.4
EK040P: Fluoride by PC Titrator *(mg/L)*	
Fluoride	0.2
EN055: Ionic Balance *(meq/L)*	
Total Anions	3.37
Total Cations	3.48
Ionic Balance (%)	1.57
ED093T: Total Major Cations *(mg/L)*	
Calcium	
Magnesium	
Sodium	
Potassium	
EK055G: Ammonia as N by Discrete Analyser *(mg/L)*	
Ammonia as N	0.14
EK057G: Nitrite as N by Discrete Analyser *(mg/L)*	
Nitrite as N	<0.01
EK058G: Nitrate as N by Discrete Analyser *(mg/L)*	
Nitrate as N	0.02
EK059G: NOX as N by Discrete Analyse *(mg/L)r*	
Nitrite + Nitrate as N	0.02
EP080/071: Total Petroleum Hydrocarbons *(µg/L)*	
C6 - C9 Fraction	<20
C10 - C14 Fraction	<50
C15 - C28 Fraction	<100
C29 - C36 Fraction	<50
C10 - C36 Fraction (sum)	<50
EP080S: TPH(V)/BTEX Surrogates *(%)*	
1.2-Dichloroethane-D4	133

Toluene-D8	110
4-Bromofluorobenzene	102
EG035T: Total Recoverable Mercury by FIMS *(mg/L)*	
Mercury	<0.0001
EG035F: Dissolved Mercury by FIMS *(mg/L)*	
Mercury	<0.0001

Appendix F *Water release contaminant trigger investigation levels in EA*

Quality Characteristic	Trigger Levels (µg/L)
Aluminium	650
Arsenic	13
Cadmium	0.2
Chromium	3
Copper	13
Iron	520
Lead	10
Mercury	0.2
Nickel	11
Boron	370
Cobalt	90
Molybdenum	34
Selenium	10
Silver	1
Uranium	1
Vanadium	10
Ammonia	900
Nitrate	1100
Petroleum hydrocarbons (C6-C9)	20
Petroleum hydrocarbons (C10-C36)	100
Zinc	8

Appendix G *Water contaminant release limits in EA*

Quality Characteristic	Interim Release Limits until 30-NOV-2011
Electrical conductivity (uS/cm)	1500
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)
Turbidity (NTU)	NA*
Suspended Solids (mg/L)	1200
Sulphate (SO_4^{2-}) (mg/L)	1000

Appendix H *Completion Report – Proposed Contents*

Completion Report

Transitional Environmental Program Spring Creek Dam Water Release

1. Covering Letter
2. Summary Table of Program Statistics
    a. Volume of water discharged from Spring Creek Dam
    b. Days of pumping, Pumping rate averages
    c. Other relevant Data
3. Summary Tables of Sample results
    a. Spring Creek Dam water quality
    b. Other results and Observations
4. Conclusions
    a. Overall water quality status in discharged water.
    b. Compliance with Transitional Environmental Program
5. APPENDICES

3.3 TEP Approval MAN10919 – 28 October 2010

Department of Environment and Resource Management

Notice

Environmental Protection Act

Decision to grant an approval for a draft transitional environmental program

This statutory notice is issued by the administering authority pursuant to section 339 of the Environmental Protection Act 1994, *to advise you of a decision or action.*

Your reference : MAN10919
Our reference : EMD866

[redacted]
Senior Site Manager and SSE
Rolleston Coal Mine
PO Box 11
Springsure Qld 4722

Cc:
[redacted]
Environment and Community Manager
Xstrata Coal QLD
PO Box 11
Springsure Qld 4722

[redacted]
Environment and Community Manager
Xstrata Coal QLD
PO Box 2245
North Mackay Qld 4740

Attention: [redacted] (Environment and Community Manager),

Re: Application for an approval for a transitional environmental program for Spring Creek Dam Water Release into Bootes Creek at Rolleston Coal Mine .

Thank you for your application for an approval for a transitional environmental program. This application has been issued the certificate of approval number MAN10919.

Your application, which was received by this office on 30 September 2010, has been approved with conditions.

A copy of the certificate of approval, which includes the schedule of conditions, is attached.

The reasons for the decision are:
This Transitional Environmental Program adequately addresses strategies to minimise and reduce the risk of environmental harm and achieve a safe water balance at Rolleston Coal Mine. By reducing the water volume in Rolleston Coal Mine's Spring Creek dam, the probability of an uncontrolled discharge occurring during the upcoming wet season is decreased.

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

Notice

Decision notice regarding a transitional environmental program

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 **$5 625.90** 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

Should you have any queries in relation to this notice, Glen Wright, Principal Environmental Officer, of the Department of Environment and Resource Management on telephone (07) 4980 6200 would be happy to assist you.

[redacted]

SIGNATURE

28 October 2010

DATE

[redacted]
Manager Environmental Services - Mining
Central West Region
Delegate
Environmental Protection Act 1994

Enquiries:
Department of Environment and Resource Management
PO Box 19
Emerald Qld 4720
99 Hospital Road
Emerald Qld 4720
Phone: 4980 6200
Fax: 4982 2568

3.4 Bundle of email correspondence between RCM and DERM regarding negotiation of TEP

From: [redacted]
Sent: Wednesday, 13 October 2010 9:47 AM
To: [redacted] (Rolleston - Coal); [redacted]
Subject: RE: TEP proposal comments

[redacted]

Thanks for the feedback.

Can you please select limits that you think you can stay under at the designated monitoring location, if discharging from Spring Creek Dam?

pH top limit?
pH bottom limit?
EC limit?
TSS limit?

TSS/T:
Point number 9: Rebecca has just show me a recent discharge notification from Rolleston Mine with Turbidity data.

You don't have a TSS meter or Turbidity meter ? Can you acquire one? Borrow one?

How about just EC, pH, TSS or T, temperature, and volume?

Another discussion has just occurred in our office in regards to your sampling/monitoring location. In the TEP it is stated as Release Point 1 (correct?). On the map in the TEP it appears to be quite a distance from the dam (correct?). Do you think the water's journey from the dam to release point 1 is going to change the quality of the water for the better/worse/not at all? Particularly TSS/T?

If there is an undisturbed swamp in between the dam and the release point, it may improve the water quality coming out the bottom before release point 1.. However, if the water is going to pass over disturbed soil between the dam and the monitoring point, the TSS and other parameters may change at the monitoring point.

Have you considered this aspect?

Cheers,
[redacted]

From: [redacted]
Sent: Wednesday, 13 October 2010 7:17 AM
To: [redacted]
Cc: [redacted]
Subject: RE: TEP proposal comments

[redacted]

Thanks for promptly getting back to us with feedback.

Before I start with making the suggested changes to the TEP I just need to question some of [redacted] recommendations. [redacted] recommends more stringent limits closer to ambient WQ. This is a fair call however some of the suggested limits are unrealistic and anything but close to the ambient WQ levels.

[redacted]ecommends:

- EC limits 340-510 µS/cm (75^{th} -90^{th} percentile). Quite reasonable.
- pH 8.5 max. This will often be difficult to achieve as the local environment is very alkaline with soil and water pH generally in excess of 8. The last water quality analysis of Spring Creek dam water (taken 29/09/10) had the pH at 8.71.
- suspended solids 10-20mg/L. This one may be considered unrealistic. The EA limit for discharge water is 1200mg/L. Upstream Bootes Creek water quality analysis has the background suspended load at 228mg/L for the 50^{th} percentile and 1270mg/L for the 90^{th} percentile. A limit of 10-20mg/L is completely unreasonable.
- Using ntu's as a surrogate to determine suspended loads is unreliable often with a poor and/or inconsistent correlation. To use ntu's is a high risk option as when lab analyses come back there is a reasonable probability that exceedences of suspended loads will occur. If you choose to go with ntu's you will need to be happy with field recordings and no lab analysis or TSS.

Point number 9 refers to page 8 and requests a statement in the TEP indicating sample frequency. [redacted] has suggested daily sampling AND report the main (EC, pH, TSS, T, volume) on a daily basis. Presumably T = turbidity. If so there is not much point if TSS is being reported. Also it is not possible to report TSS on a daily basis as it requires sending off for lab analysis. My suggestion is the do something similar to the previous TEP for pumping the water from Spring Creek Pit to Spring Creek dam where we sampled in-situ for EC, pH and temp. The first TEP had us doing this weekly though in this instance I would suggest we did it daily. Accompanying this we could take up Rebecca's suggestion to undertake and report monthly on water discharge quality (all parameters) during the life of the TEP.

Thanks again for the feedback
Regards

[redacted]

Environment & Community Manager
Rolleston Coal
Xstrata Coal Queensland
PO Box 11
Springsure QLD 4722

☎ [redacted]

[redacted]

From: [redacted]
Sent: Tuesday, 12 October 2010 2:37 PM
To: [redacted] (Rolleston - Coal)
Subject: TEP proposal comments

[redacted]

Comments on the latest TEP proposal are attached.

Your EA is also attached for cut and pasting (see comments about that).

Please call me if any comments don't make sense.

Good luck with the edits.

[redacted]

From: [redacted]
Sent: Wednesday, 13 October 2010 9:30 AM
To: [redacted] (Rolleston - Coal)
Cc: [redacted]
Subject: RE: Rolleston TEP
Importance: High

Hi [redacted]

I am in meeting much of today but I had a quick look at the data you provided.

I think it would expedite things if you were able to propose/summarise the limits for the TEP that you desire to release the water and you believe won't cause any environmental harm. Given you want to discharge continuously I suggest the limits would be more stringent than the current EA. A summary of how these were derived would assist with the decision (you should also provide the raw data/calculations). I would focus mainly on the indicators that have limits in your current EA.

The reference based approach for environmental assessment is to derive the 80th percentile from the upstream sites (obviously you have to do the best with the data you have but you should state the date range and number of samples use) for all indicators except EC for which you use 75th percentile. You may suggest using a turbidity limit instead of SS limit for regulation for ease of assessment – I don't believe this will be a major problem for you in terms of compliance looking at the data. The pH may be more of an issue given the upstream site 80th percentile will probably be around 8. If you need a higher limit, you should look at a higher percentile to justify. Also please confirm that the upstream water is not mine affected.

I hope this assists. Please include Terry and Clancy in any correspondence because ultimately it will be their decision to approve any TEP.

Cheers,

[redacted]
Chief Scientist
Water Quality & Aquatic Ecosystem Health
Department of Environment & Resource Management
EPA Building, 80 Meiers Road
Indooroopilly Q 4068

Phone [redacted]
Mobile [redacted]
Fax [redacted]

From: [redacted]
Sent: Wednesday, 13 October 2010 8:18 AM
To: [redacted]
Cc: [redacted]

Subject:

Hi [redacted]

By way of introduction, I am the Environment and Community Manager at Rolleston Coal.

I've read your comments on the TEP submitted to DERM's Emerald office seeking permission to release impounded water into Bootes Creek, a tributary to Meteor Creek and eventually the Comet River.
I am aware that your comments were based on just the one set of analytical data contained in the TEP application. Attached is a more complete set of data for both Spring Creek dam as well as Spring Creek Pit which is where the water in the dam has come from.

Also attached is all the ambient water quality data for Bootes and Meteor creeks taken in 2010. This should provide useful background information for making recommendations for release limits associated with the TEP. Given the suggestions you've already made were, I believe, in absence of the complete picture of ambient water quality I am requesting that you review your recommendations particularly in relation to suspended solids and pH.

This is a high priority issue for Rolleston Coal due to the high water levels in Spring Creek dam and the seasonal forecast for La Nina weather conditions.

If required [redacted] and I could come and discuss this with you tomorrow or Friday.

Thanks for you time and consideration.

Regards

[redacted]

Environment & Community Manager
Rolleston Coal
Xstrata Coal Queensland
PO Box 11
Springsure QLD 4722

☎ [redacted]

From: [redacted]
Sent: Thursday, 14 October 2010 12:35 PM
To: [redacted] (Rolleston - Coal)
Subject: Latest TEP proposal

Hi [redacted],

I hope the rewrite is progressing well for you.

One comment from Clancy Mackaway on your draft TEP was that it would be good if the draft TEP included a statement that states that Rolleston Mine will notify any affected people and land managers immediately downstream that an unnatural flow event is coming their way.

I am thinking limit this action statement to those on Bootes and Meteor Creeks.

How does that sound?

Regards,

[redacted]

Senior Environmental Officer

Environmental Services (Mining)

Telephone: [redacted] Facsimile: [redacted]

Email: [redacted]

www.derm.qld.gov.au

Department of Environment and Resource Management

99 Hospital Road, Emerald, Q 4720

PO Box 19, Emerald Q 4720

Think B4U Print

1 ream of paper = 6% of a tree and 5.4kg CO2 in the atmosphere

3 sheets of A4 paper = 1 litre of water

+----------+

From: [redacted]
Sent: Monday, 25 October 2010 2:46 PM
To: [redacted] (Rolleston - Coal)
Subject: How does this sound?

Hi [redacted]

Is the statement below feasible from your operational perspective?

On the last day of the proposed TEP discharge;

- if Bootes creek does not have a natural water flow occurring at the place where the TEP discharge from Spring Creek dam enters Bootes Creek, and
- if the quality of water in Davey's Dam is of a better quality than water in Spring Creek Dam at this point in time,
- Rolleston Mine will release 25 ML of natural (mine-unaffected) water from Davey's Dam into Bootes creek, over a period of five days at a rate of no more than 5 ML per day.

Any problems with it?

Regards,

[redacted]

Senior Environmental Officer

Environmental Services (Mining)

Telephone: [redacted] Facsimile [redacted]

Email: [redacted]

www.derm.qld.gov.au

Department of Environment and Resource Management

99 Hospital Road, Emerald, Q 4720

PO Box 19, Emerald Q 4720

+--+

Think B4U Print

1 ream of paper = 6% of a tree and 5.4kg CO2 in the atmosphere

3 sheets of A4 paper = 1 litre of water

+--+

From: [redacted]
Sent: [redacted] October 2010 10:26 AM
To: [redacted] (Rolleston - Coal)
Cc: [redacted]
Subject: FW: Rolleston TEP: water release from Spring Creek dam into Bootes Creek

[redacted]

Following on from this morning's phone call, an email below.

[redacted]

From: [redacted]
Sent: Friday, 29 October 2010 9:42 AM
To: [redacted]
Cc: [redacted]
Subject: RE: Rolleston TEP: water release from Spring Creek dam into Bootes Creek

[redacted]

Please call [redacted]

[redacted] has spoken with Ian Burnett of AgForce to discuss details of the TEP. [redacted] has asked that [redacted] contact him and ensure that all landholders downstream of Bootes Creek are notified of the discharge. The landholders should be identified, up until where Bootes and related tributaries meet the Comet River.

Please refer to condition 6.

From: [redacted]
Sent: Friday, 29 October 2010 8:59 AM
To: [redacted]
Cc: Mackaway Clancy
Subject: Rolleston TEP: water release from Spring Creek dam into Bootes Creek

Hi [redacted]

Scanner is working again.

Your TEP has been approved by the delegate (Clancy Mackaway), with conditions.

I will call soon and talk you through the conditions, if any questions.

The delegate's decision letter and the TEP certificate are attached.

<< File: 101029 dec lttr Rolleston TEP MAN10919.pdf >> << File: 101029 cert Rolleston TEP MAN10919.pdf >>

Regards,

[redacted]

Senior Environmental Officer

Environmental Services (Mining)

Telephone: [redacted] Facsimile: [redacted]

Email [redacted]

www.derm.qld.gov.au

Department of Environment and Resource Management

99 Hospital Road, Emerald, Q 4720

PO Box 19, Emerald Q 4720

3.5 Spring Creek Dam and Spring Creek Pit Water Quality Results

ROLLESTON
COAL

Rolleston Coal Mine

Spring Creek Dam and Spring Creek Pit Water Quality Results

May - September 2010

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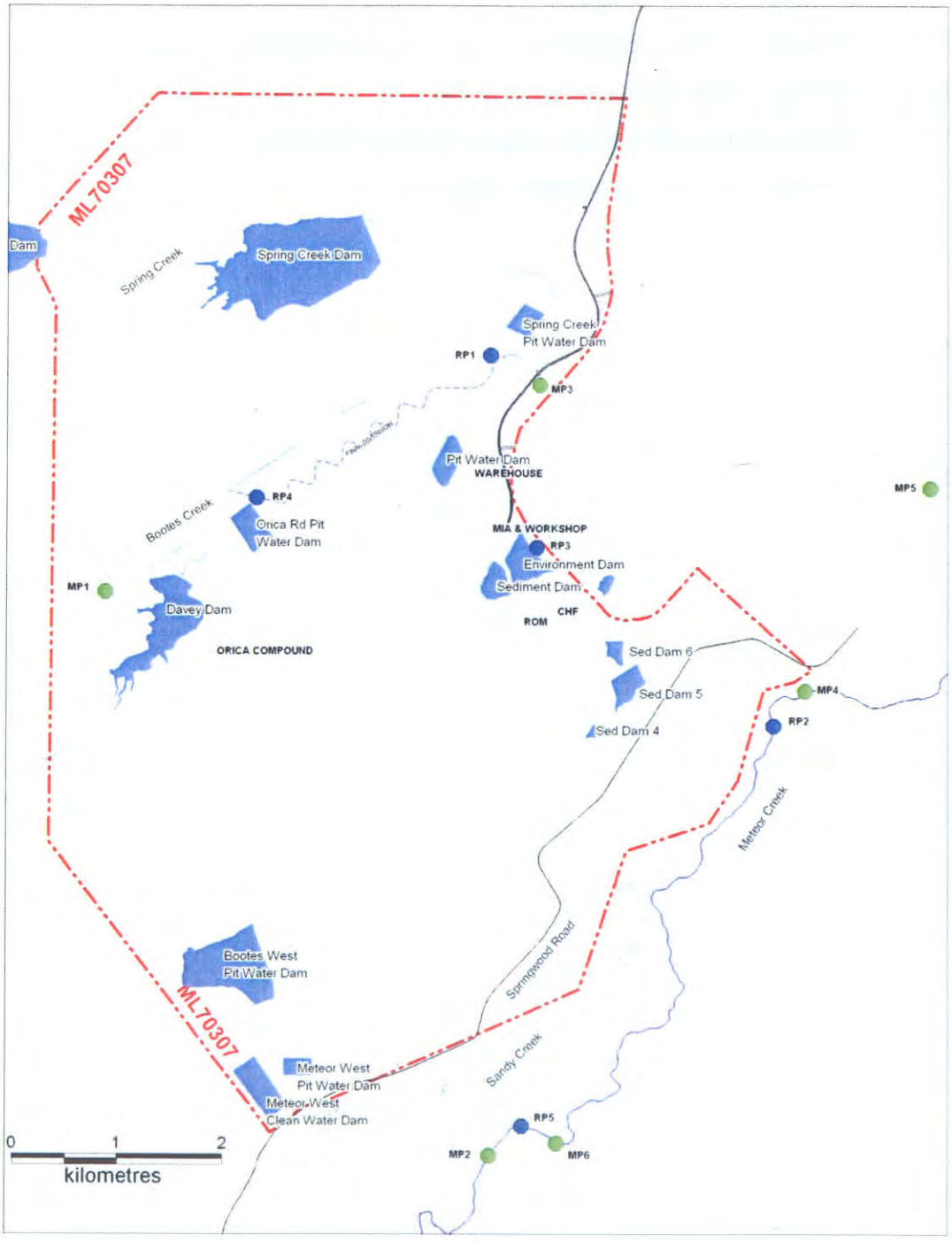
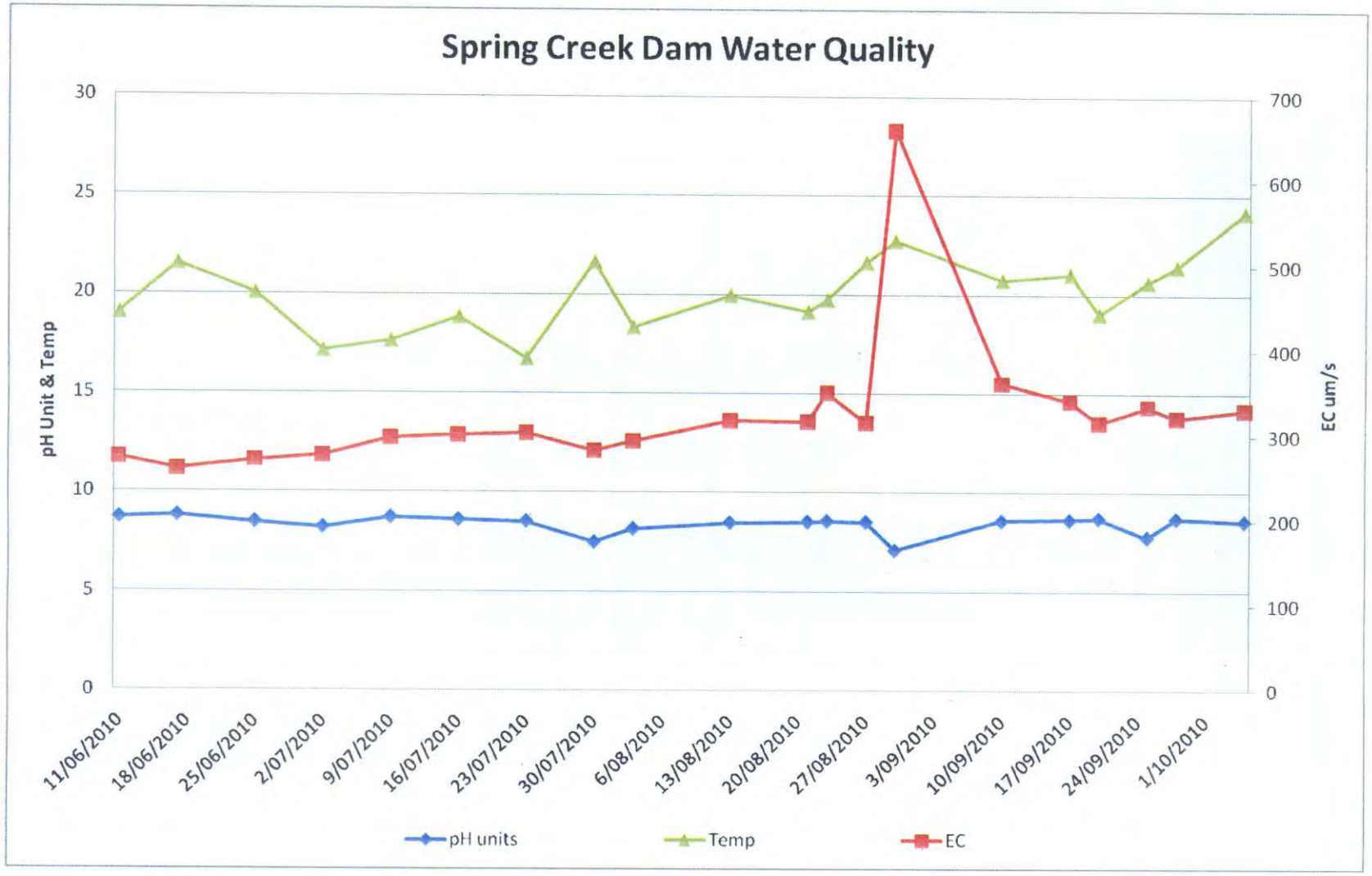
Table of Contents

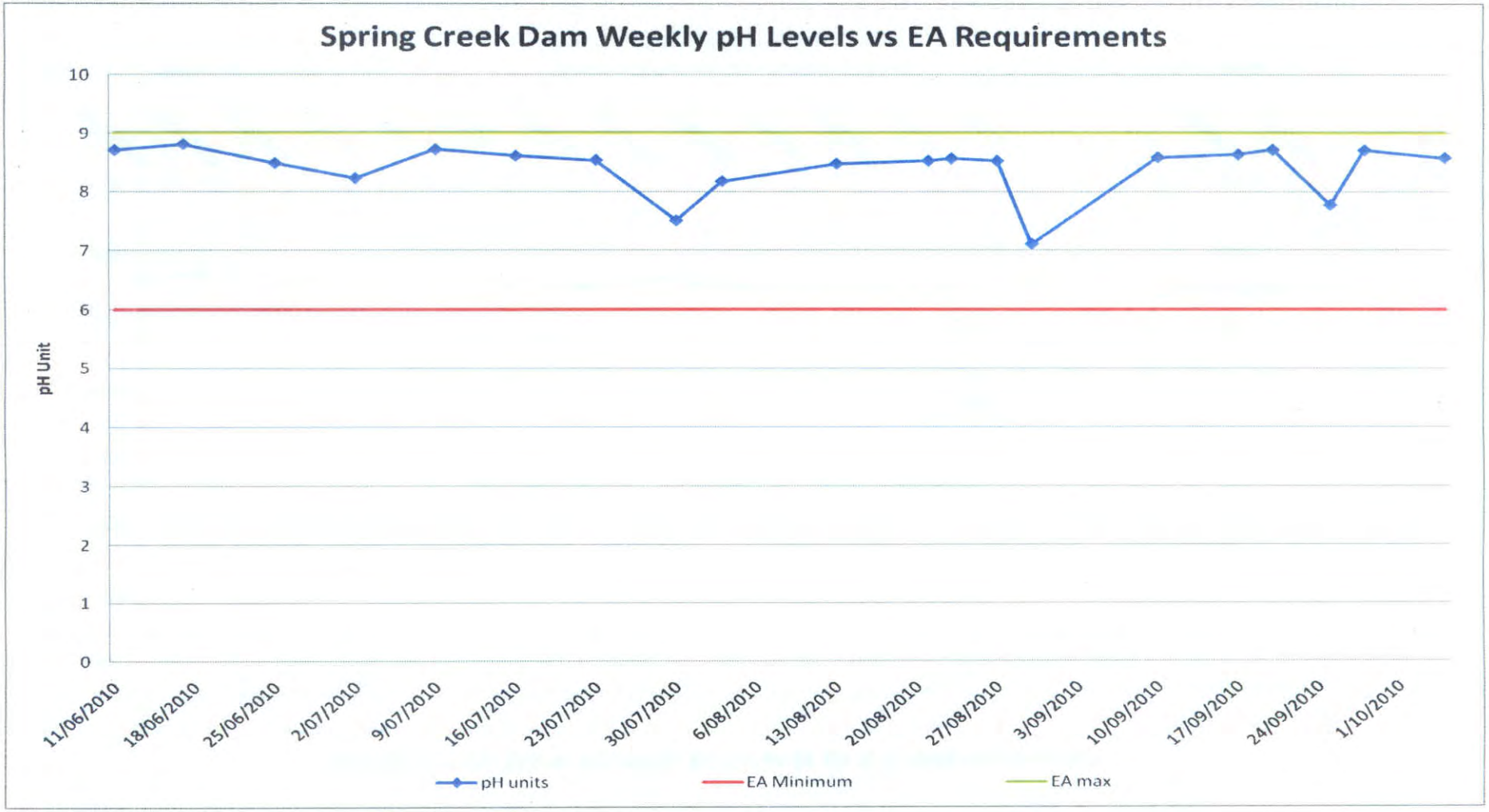
1. Rolleston Coal EA Monitoring and Release Points

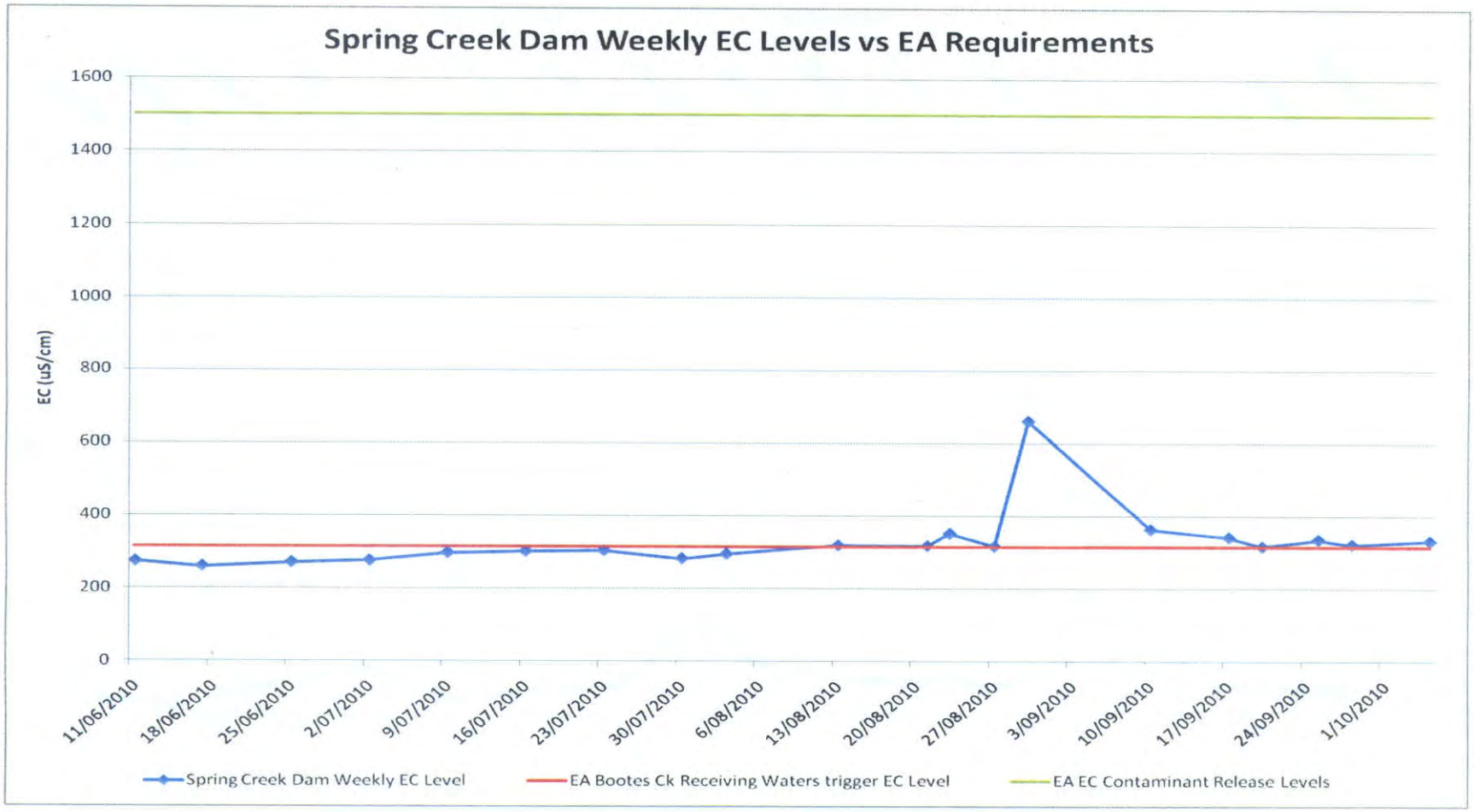


2. Weekly Spring Creek Dam Water Quality Results

Spring Creek Dam Water Quality				
	pH	EC	Temp	Turbidity
Date	pH units	uS/cm	^{0}C	
11/06/2010	8.7	274	19	
17/06/2010	8.8	260	21.5	
25/06/2010	8.48	271	20	
2/07/2010	8.22	276	17.1	
9/07/2010	8.71	297	17.6	
16/07/2010	8.6	301	18.8	
23/07/2010	8.53	303	16.7	
30/07/2010	7.5	282	21.6	
3/08/2010	8.17	294	18.3	
13/08/2010	8.47	318	19.9	
21/08/2010	8.52	317	19.1	
27/08/2010	8.52	316	21.6	
30/08/2010	7.1	660	22.7	
10/09/2010	8.58	362	20.7	
17/09/2010	8.63	341	21	
20/09/2010	8.71	316	19	
23/092010	8.56	351	19.7	85.6
25/09/2010	7.77	335	20.6	60.7
28/09/2010	8.7	322	21.4	30.2
5/10/2010	8.57	331	24.14	14.5


Spring Creek Dam Water Quality
pH Unit & Temp
EC um/s
30
25
20
15
10
5
0
700
600
500
400
300
200
100
0
11/06/2010
18/06/2010
25/06/2010
2/07/2010
9/07/2010
16/07/2010
23/07/2010
30/07/2010
6/08/2010
13/08/2010
20/08/2010
27/08/2010
3/09/2010
10/09/2010
17/09/2010
24/09/2010
1/10/2010
pH units
Temp
EC


Spring Creek Dam Weekly pH Levels vs EA Requirements
pH Unit
10
9
8
7
6
5
4
3
2
1
0
11/06/2010
18/06/2010
25/06/2010
2/07/2010
9/07/2010
16/07/2010
23/07/2010
30/07/2010
6/08/2010
13/08/2010
20/08/2010
27/08/2010
3/09/2010
10/09/2010
17/09/2010
24/09/2010
1/10/2010
pH units
EA Minimum
EA max


Spring Creek Dam Weekly EC Levels vs EA Requirements
EC (uS/cm)
1600
1400
1200
1000
800
600
400
200
0
11/06/2010
18/06/2010
25/06/2010
2/07/2010
9/07/2010
16/07/2010
23/07/2010
30/07/2010
6/08/2010
13/08/2010
20/08/2010
27/08/2010
3/09/2010
10/09/2010
17/09/2010
24/09/2010
1/10/2010
Spring Creek Dam Weekly EC Level
EA Bootes Ck Receiving Waters trigger EC Level
EA EC Contaminant Release Levels

3. Spring Creek Dam Laboratory Results

Spring Creek Dam (Lake McDonald)

Red values are insitu results

Red Cells indicate EA Exceedences

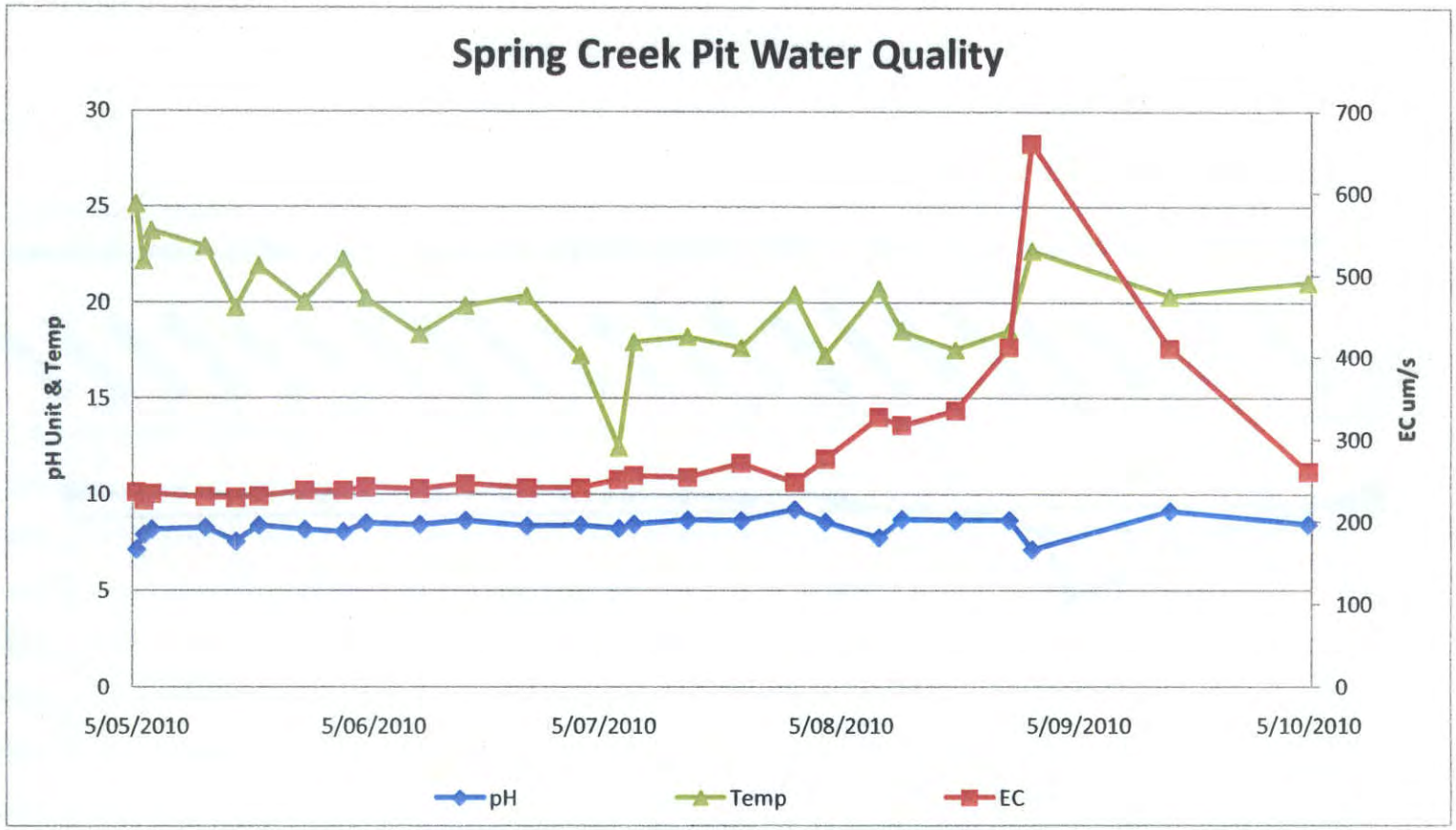
Workgroup: WATER

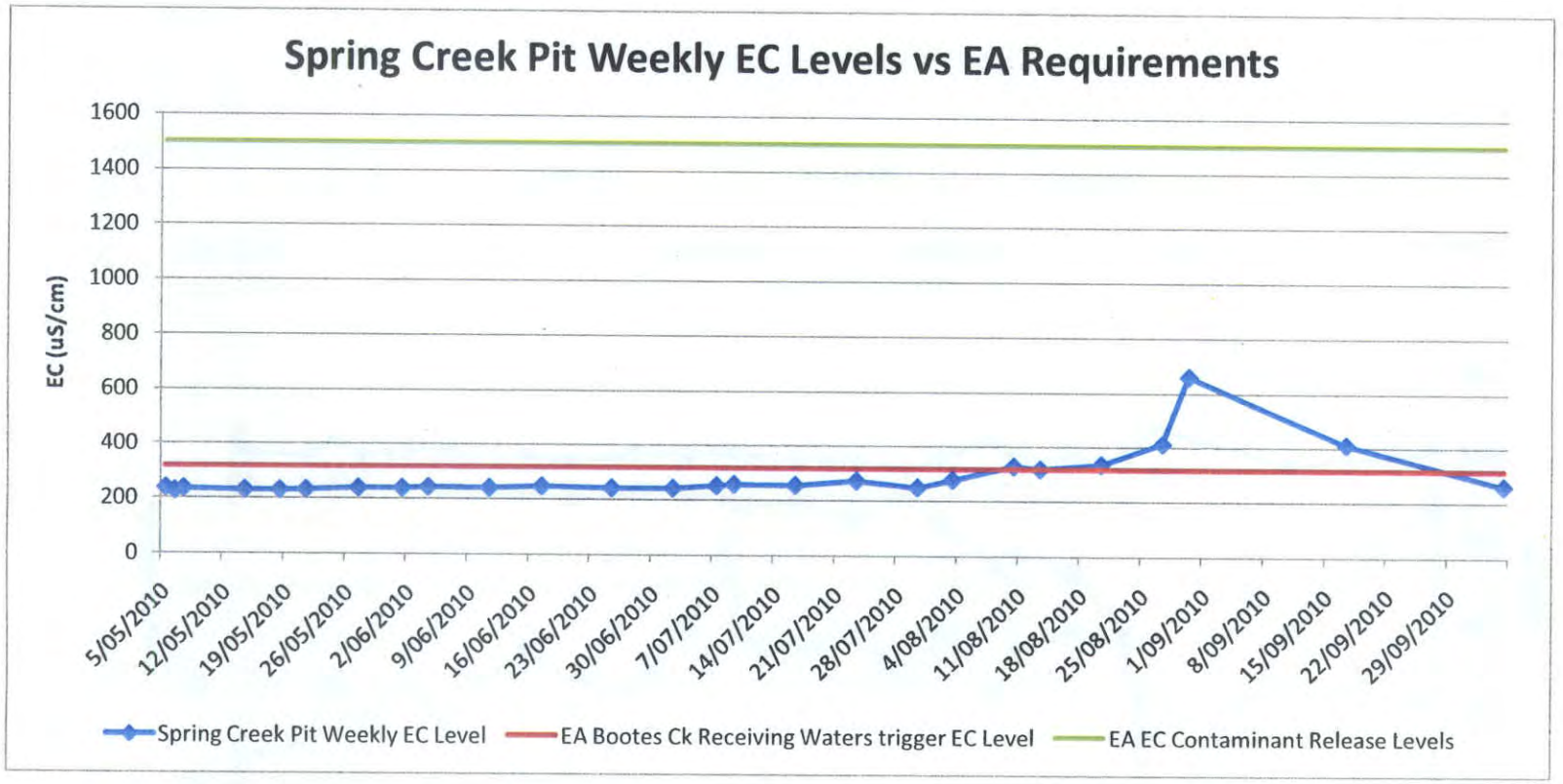
Project name/number:

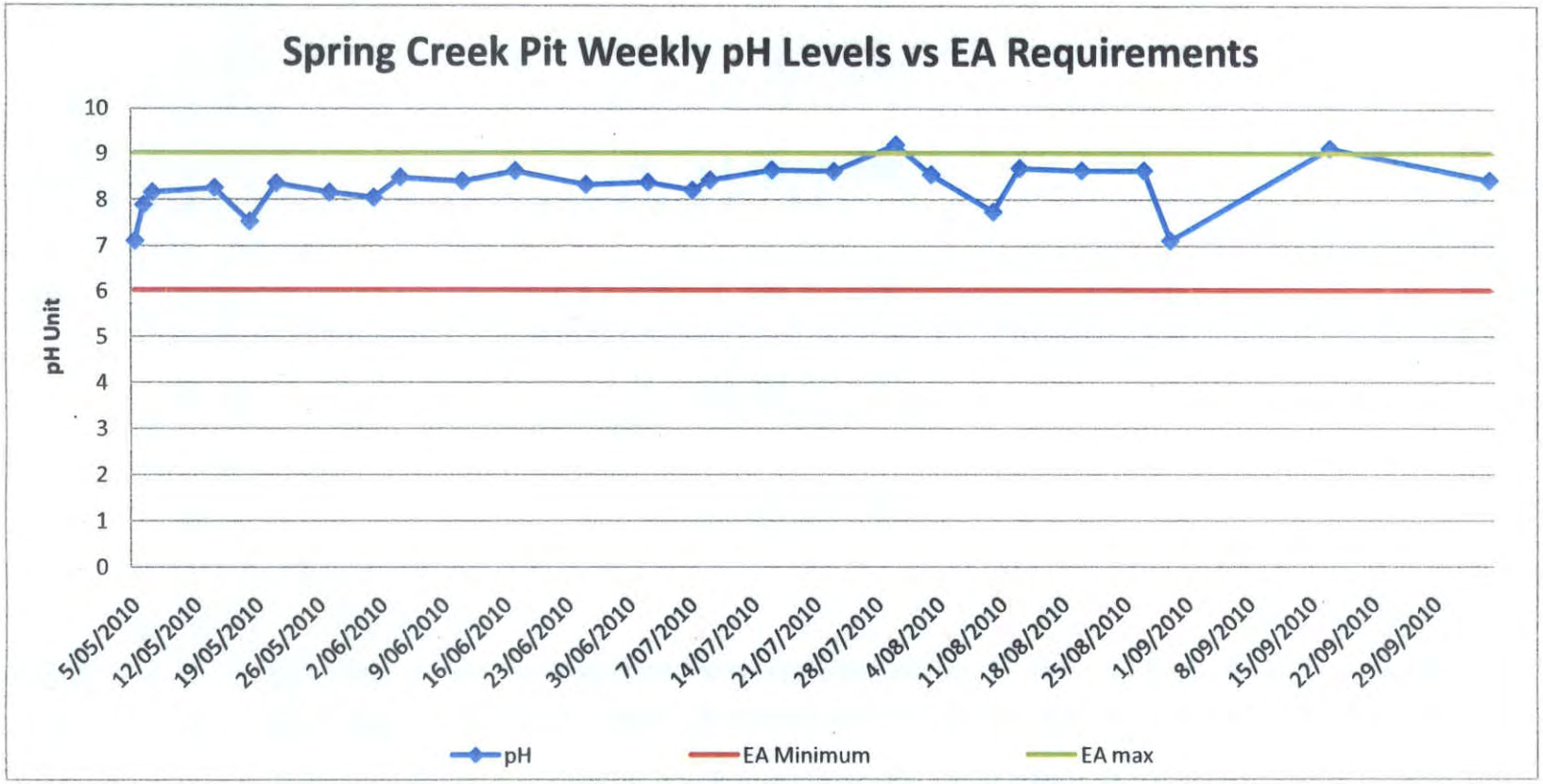
				WORKGROUP	EB1013771_0_XTAB.XLS	EB1016367_0_XTAB.XLS	EB1016850_0_XTAB.XLS	EB1017073_0_XTAB.XLS	EB1017221_0_XTAB.XLS	EB1017238_0_XTAB.XLS	
					EB1013771	EB1016367	EB1016850	EB1017073	EB1017221	EB1017238	
					REG	REG	REG	REG	REG	REG	
					EB1013771001	EB1016367001	EB1016850001	EB1017073003	EB1017221004	EB1017238005	
					04/08/2010	14/09/2010	20/09/2010	23/09/2010	25/09/2010	28/09/2010	
					Spring Dam	SPRING DAM	Spring Ck Dam End Pipe	Spring Ck Dam End Pipe	Spring Ck Dam	Spring Ck Dam	
Analyte grouping/Analyte	CAS Number	Units	Units								
EA005P: pH by PC Titrator											
pH Value		pH Unit	pH Unit		8.17	8.47	8.71	8.56	7.77	8.7	
					8.05		8.39	8.47	8.49	8.71	
EA010P: Conductivity by PC Titrator											
Electrical Conductivity @ 25°C		µS/cm	µS/cm		294	316	316	351	335	322	
					310		386	355	366	332	
EA015: Total Dissolved Solids											
Total Dissolved Solids @180°C	GIS-210-010	mg/L	mg/L		201	297					
EA025: Suspended Solids											
Suspended Solids (SS)		mg/L	mg/L		5	44	24	144	20	25	
EA045: Turbidity							360	85.6	60.7	30.2	
Turbidity		NTU	NTU		5.4		21	100	21	19	
ED037P: Alkalinity by PC Titrator											
Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	mg/L		<1	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	mg/L		<1		8	4	3	3	16
Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	mg/L			150	143	147	145	147	131
Total Alkalinity as CaCO3		mg/L	mg/L			150	151	151	148	150	146
ED040F: Dissolved Major Anions											
Sulphate as SO4 2-	14808-79-8	mg/L	mg/L			2	3	2	2	2	2
ED040T: Total Major Anions											
Sulphate as SO4 2-	14808-79-8	mg/L	mg/L								
ED045G: Chloride Discrete analyser											
Chloride	16887-00-6	mg/L	mg/L			12	24	18	17	16	16
ED045P: Chloride by PC Titrator											
Chloride	16887-00-6	mg/L	mg/L								
ED093F: Dissolved Major Cations											
Calcium	7440-70-2	mg/L	mg/L			17	17	18	16	18	18
Magnesium	7439-95-4	mg/L	mg/L			12	11	12	11	12	12
Sodium	7440-23-5	mg/L	mg/L			35	45	38	40	37	35
Potassium	7440-09-7	mg/L	mg/L			2	2	2	2	2	2
EG005F: Dissolved Metals by ICP-AES											
Iron	7439-89-6	mg/L	mg/L								
EG005T: Total Metals by ICP-AES											
Iron	7439-89-6	mg/L	mg/L								
EG020F: Dissolved Metals by ICP-MS											
Aluminium	7429-90-5	mg/L	mg/L			0.01	0.03	0.02	0.02	0.02	<0.01
Arsenic	7440-38-2	mg/L	mg/L		<0.001		0.001	0.001	0.001	0.001	0.001
Cadmium	7440-43-9	mg/L	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	mg/L	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	mg/L	mg/L		<0.001	<0.001		0.002	<0.001	<0.001	
Copper	7440-50-8	mg/L	mg/L			0.003	0.002	<0.001	0.002	0.001	0.002
Lead	7439-92-1	mg/L	mg/L		<0.001	<0.001		0.003	<0.001	<0.001	
Manganese	7439-96-5	mg/L	mg/L			0.005	0.002	<0.001	0.001	0.001	0.001
Molybdenum	7439-98-7	mg/L	mg/L		<0.001		0.002	0.007	0.002	0.001	0.002
Nickel	7440-02-0	mg/L	mg/L			0.004	0.003	0.002	0.003	0.003	0.003
Selenium	7782-49-2	mg/L	mg/L		<0.01	<0.01		0.002	<0.01	<0.01	
Silver	7440-22-4	mg/L	mg/L		<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	
Uranium	7440-61-1	mg/L	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Vanadium	7440-62-2	mg/L	mg/L			0.01	0.02	<0.001	0.01	0.01	0.01
Zinc	7440-66-6	mg/L	mg/L		<0.005	<0.005		0.01	<0.005	<0.005	
Boron	7440-42-8	mg/L	mg/L			0.1	0.05	0.05	0.05	<0.05	
Iron	7439-89-6	mg/L	mg/L		<0.05		0.05	<0.05	<0.05	<0.05	
EG020T: Total Metals by ICP-MS											
Aluminium	7429-90-5	mg/L	mg/L			0.42	2.56	0.71	3.7	0.8	0.37
Arsenic	7440-38-2	mg/L	mg/L			0.001	0.001	0.001	0.001	0.001	0.002
Cadmium	7440-43-9	mg/L	mg/L		<0.0001	<0.0001	<0.0001		0.0002	<0.0001	<0.0001
Chromium	7440-47-3	mg/L	mg/L		<0.001		0.005	0.002	0.008	0.001	<0.001
Cobalt	7440-48-4	mg/L	mg/L		<0.001		0.001	0.002	0.002	<0.001	<0.001
Copper	7440-50-8	mg/L	mg/L			0.003	0.004	<0.001	0.006	0.002	0.002
Lead	7439-92-1	mg/L	mg/L		<0.001	<0.001		0.005	0.002	<0.001	<0.001
Manganese	7439-96-5	mg/L	mg/L			0.026	0.026	<0.001	0.04	0.018	0.007
Molybdenum	7439-98-7	mg/L	mg/L		<0.001		0.002	<0.005	0.001	0.001	0.002
Nickel	7440-02-0	mg/L	mg/L			0.005	0.008	0.024	0.009	0.005	0.004
Selenium	7782-49-2	mg/L	mg/L		<0.01	<0.01		0.002	<0.01	<0.01	
Silver	7440-22-4	mg/L	mg/L		<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	
Uranium	7440-61-1	mg/L	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Vanadium	7440-62-2	mg/L	mg/L			0.02	0.02	<0.001	0.02	0.01	0.01
Zinc	7440-66-6	mg/L	mg/L		<0.005		0.009	0.01	0.006	<0.005	
Boron	7440-42-8	mg/L	mg/L			0.15	0.08	0.05	0.05	0.05	0.06
Iron	7439-89-6	mg/L	mg/L			0.4	2.41	0.71	3.58	0.8	0.36
EK040P: Fluoride by PC Titrator											
Fluoride	16984-48-8	mg/L	mg/L			0.2	0.3	0.3	0.2	0.2	0.2
EN055: Ionic Balance											
Total Anions		meq/L	meq/L			3.37	3.78	3.56	3.48	3.5	3.41
Total Cations		meq/L	meq/L			3.48	3.78	3.64	3.53	3.52	3.41
Ionic Balance		%	%			1.57	0.05	1.14	0.61	0.25	0.03
ED093T: Total Major Cations											
Calcium	7440-70-2	mg/L	mg/L								
Magnesium	7439-95-4	mg/L	mg/L								
Sodium	7440-23-5	mg/L	mg/L								
Potassium	7440-09-7	mg/L	mg/L								
EK055G: Ammonia as N by Discrete Analyser											
Ammonia as N	7664-41-7	mg/L	mg/L			0.14	0.02	0.03	0.01	0.2	0.09
EK057G: Nitrite as N by Discrete Analyser											
Nitrite as N		mg/L	mg/L		<0.01		0.02				
EK058G: Nitrate as N by Discrete Analyser											
Nitrate as N	14797-55-8	mg/L	mg/L			0.02	0.17	0.02	0.04	0.05	0.01
EK059G: NOX as N by Discrete Analyser											
Nitrite + Nitrate as N		mg/L	mg/L			0.02	0.18				
EP060/071: Total Petroleum Hydrocarbons											
C6 - C9 Fraction		µg/L	µg/L		<20	<20	<20	<20	<20	<20	
C10 - C14 Fraction		µg/L	µg/L		<50	<50	<50	<50	<50	<50	
C15 - C28 Fraction		µg/L	µg/L		<100	<100	<100	<100	<100	<100	
C29 - C36 Fraction		µg/L	µg/L		<50	<50	<50	<50	<50	<50	
C10 - C36 Fraction (sum)					<50	<50	<50	<50	<50	<50	
EP080S: TPH(V)/BTEX Surrogates											
1,2-Dichloroethane-D4	17060-07-0	%	%			133	97.6	128	100	128	102
Toluene-D8	2037-26-5	%	%			110	95.2	136	95.1	140	98.4
4-Bromofluorobenzene	460-00-4	%	%			102	92.2	144	93	138	97.9
EG035T: Total Recoverable Mercury by FIMS											
Mercury	7439-97-6	mg/L	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	
EG035F: Dissolved Mercury by FIMS											
Mercury	7439-97-6	mg/L	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	

4. Spring Creek Pit Weekly Water Quality Results

Spring Creek Pit Surface Water Quality				
	pH	EC	Temp	Turbidity
Date	pH units	uS/cm	^{0}C	
5/05/2010	7.09	235	25.1	
6/05/2010	7.87	225	22.13	31.4
7/05/2010	8.14	233	23.7	
14/05/2010	8.24	229	22.9	
18/05/2010	7.51	228	19.7	
21/05/2010	8.34	230	21.9	
27/05/2010	8.14	237	20	
1/06/2010	8.03	237	22.23	20.6
4/06/2010	8.47	241	20.2	
11/06/2010	8.39	239	18.3	
17/06/2010	8.61	245	19.8	
25/06/2010	8.31	240	20.3	
2/07/2010	8.36	240	17.2	
7/07/2010	8.19	250	12.4	22
9/07/2010	8.41	255	17.9	
16/07/2010	8.63	253	18.2	
23/07/2010	8.6	270	17.6	
30/07/2010	9.18	247	20.4	
3/08/2010	8.53	275	17.2	
13/08/2010	8.67	316	18.5	
20/08/2010	8.62	334	17.5	
27/08/2010	8.62	411	18.5	
30/08/2010	7.1	660	22.7	
10/08/2010	7.72	326	20.7	
17/09/2010	9.1	410	20.3	
5/10/2010	8.41	260	21.01	651


Spring Creek Pit Water Quality
pH Unit & Temp
EC um/s
30
25
20
15
10
5
0
700
600
500
400
300
200
100
0
5/05/2010
5/06/2010
5/07/2010
5/08/2010
5/09/2010
5/10/2010
pH
Temp
EC


Spring Creek Pit Weekly EC Levels vs EA Requirements
EC (uS/cm)
1600
1400
1200
1000
800
600
400
200
0
5/05/2010
12/05/2010
19/05/2010
26/05/2010
2/06/2010
9/06/2010
16/06/2010
23/06/2010
30/06/2010
7/07/2010
14/07/2010
21/07/2010
28/07/2010
4/08/2010
11/08/2010
18/08/2010
25/08/2010
1/09/2010
8/09/2010
15/09/2010
22/09/2010
29/09/2010
Spring Creek Pit Weekly EC Level
EA Bootes Ck Receiving Waters trigger EC Level
EA EC Contaminant Release Levels


Spring Creek Pit Weekly pH Levels vs EA Requirements
pH Unit
10
9
8
7
6
5
4
3
2
1
0
5/05/2010
12/05/2010
19/05/2010
26/05/2010
2/06/2010
9/06/2010
16/06/2010
23/06/2010
30/06/2010
7/07/2010
14/07/2010
21/07/2010
28/07/2010
4/08/2010
11/08/2010
18/08/2010
25/08/2010
1/09/2010
8/09/2010
15/09/2010
22/09/2010
29/09/2010
pH
EA Minimum
EA max

5. Spring Creek Pit Laboratory Results

Spring Creek Pit

Red values are insitu results

Red Cells indicate EA Exceedances

WATER

Workgroup:

Project name/number:

WORKGROUP

Analyte grouping/Analyte	CAS Number	Units	Units	EB1007992_0_XTAB.XLS	EB1009702_0_XTAB	EB1011863_0_XTAB.xls	EB1013771_0_XTAB.XLS	EB1015689_0_XTAB.XLS	1016367_0_XTAB.;	
				EB1007992	EB1009702	EB1011863	EB1013771	EB1015689	EB1016367	
				REG	REG	REG	REG	REG	REG	
				EB1007992001	EB1009702001	EB1011863001	EB1013771007	EB1015689003	EB1016367010	
				06/05/2010	01/06/2010	07/07/2010	04/08/2010	02/09/2010	14/09/2010	
				SPRING PIT	SPRING PIT	SPRING PIT	SPRING PIT	Spring Creek Pit	SPRING PIT	
Temperature					22.13	22.23	12.4	15.68		
EA005P: pH by PC Titrator										
pH Value		pH Unit	pH Unit		7.87	8.05	8.19	8.03	8.73	
EA010P: Conductivity by PC Titrator										
Electrical Conductivity @ 25°C		µS/cm	µS/cm		225	237	250	281	396	
EA015: Total Dissolved Solids										
Total Dissolved Solids @180°C	GIS-210-010	mg/L	mg/L		139	195	156	181		362
EA025: Suspended Solids										
Suspended Solids (SS)		mg/L	mg/L		26	17	15	36	165	35
EA045: Turbidity										
Turbidity		NTU	NTU					45.4	100	
ED037P: Alkalinity by PC Titrator										
Hydroxide Alkalinity as CaCO3	DMO-210-001	mg/L	mg/L	<1	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	mg/L	mg/L	<1	<1	<1		4	15	26
Bicarbonate Alkalinity as CaCO3	71-52-3	mg/L	mg/L		100	113	127	124	135	125
Total Alkalinity as CaCO3		mg/L	mg/L		100	113	127	128	150	151
ED040F: Dissolved Major Anions										
Sulphate as SO4 2-	14808-79-8	mg/L	mg/L		2	1	3	2	12	10
ED040T: Total Major Anions										
Sulphate as SO4 2-	14808-79-8	mg/L	mg/L							
ED045G: Chloride Discrete analyser										
Chloride	16887-00-6	mg/L	mg/L		8	7	9	10	21	30
ED045P: Chloride by PC Titrator										
Chloride	16887-00-6	mg/L	mg/L							
ED093F: Dissolved Major Cations										
Calcium	7440-70-2	mg/L	mg/L		12	13	12	10	9	10
Magnesium	7439-95-4	mg/L	mg/L		8	9	9	10	9	9
Sodium	7440-23-5	mg/L	mg/L		26	28	32	39	61	65
Potassium	7440-09-7	mg/L	mg/L		2	2	1	1	<1	
EG005F: Dissolved Metals by ICP-AES										
Iron	7439-89-6	mg/L	mg/L							
EG005T: Total Metals by ICP-AES										
Iron	7439-89-6	mg/L	mg/L							
EG020F: Dissolved Metals by ICP-MS										
Aluminium	7429-90-5	mg/L	mg/L		0.01	0.01	0.04	0.01	<0.01	0.02
Arsenic	7440-38-2	mg/L	mg/L	<0.001	<0.001	<0.001	<0.001		0.002	0.003
Cadmium	7440-43-9	mg/L	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	mg/L	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Cobalt	7440-48-4	mg/L	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Copper	7440-50-8	mg/L	mg/L		0.002	0.002	0.004	0.003	0.002	0.002
Lead	7439-92-1	mg/L	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	mg/L	mg/L		0.004	<0.001	0.005	<0.001	0.012	<0.001
Molybdenum	7439-98-7	mg/L	mg/L	<0.001	<0.001	<0.001		0.002	0.003	0.004
Nickel	7440-02-0	mg/L	mg/L		0.002	0.002	0.003	0.002	0.002	0.002
Selenium	7782-49-2	mg/L	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Silver	7440-22-4	mg/L	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Uranium	7440-61-1	mg/L	mg/L	<0.001	<0.001	<0.001	<0.001		0.001	0.001
Vanadium	7440-62-2	mg/L	mg/L		0.02	0.02	0.02	0.02	0.03	0.03
Zinc	7440-66-6	mg/L	mg/L		0.031	<0.005	0.055	<0.005	<0.005	
Boron	7440-42-8	mg/L	mg/L	<0.05	<0.05	<0.05		0.06	0.07	0.07
Iron	7439-89-6	mg/L	mg/L	<0.05	<0.05		0.06	<0.05	<0.05	
EG020T: Total Metals by ICP-MS										
Aluminium	7429-90-5	mg/L	mg/L		1.49	0.87	0.77	1.82	5.08	1.27
Arsenic	7440-38-2	mg/L	mg/L	<0.001	<0.001	<0.001	<0.001		0.002	0.003
Cadmium	7440-43-9	mg/L	mg/L		0.0002	<0.0001	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	mg/L	mg/L		0.004	0.002	0.002	0.003	0.012	0.004
Cobalt	7440-48-4	mg/L	mg/L		0.001	<0.001	<0.001		0.003	0.001
Copper	7440-50-8	mg/L	mg/L		0.004	0.003	0.005	0.004	0.007	0.004
Lead	7439-92-1	mg/L	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Manganese	7439-96-5	mg/L	mg/L		0.035	0.009	0.009	0.017	0.068	0.034
Molybdenum	7439-98-7	mg/L	mg/L		0.001	<0.001	<0.001	0.001	0.002	0.004
Nickel	7440-02-0	mg/L	mg/L		0.006	0.004	0.004	0.005	0.012	0.004
Selenium	7782-49-2	mg/L	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Silver	7440-22-4	mg/L	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Uranium	7440-61-1	mg/L	mg/L	<0.001	<0.001	<0.001	<0.001		0.001	0.001
Vanadium	7440-62-2	mg/L	mg/L		0.02	0.02	0.02	0.03	0.04	0.03
Zinc	7440-66-6	mg/L	mg/L	<0.005	<0.005		0.074	<0.005	0.009	0.006
Boron	7440-42-8	mg/L	mg/L	<0.05	<0.05	<0.05		0.06	0.06	0.08
Iron	7439-89-6	mg/L	mg/L		1.7	0.95	0.88	1.87	5.2	1.31
EK040P: Fluoride by PC Titrator										
Fluoride	16984-48-8	mg/L	mg/L		0.3	0.2	0.2	0.2	0.3	0.3
EN055: Ionic Balance										
Total Anions		meq/L	meq/L		2.26	2.5	2.84	2.89	3.85	4.06
Total Cations		meq/L	meq/L		2.41	2.7	2.8	3.02	3.85	4.06
Ionic Balance		%	%						0.06	<0.01
ED093T: Total Major Cations										
Calcium	7440-70-2	mg/L	mg/L							
Magnesium	7439-95-4	mg/L	mg/L							
Sodium	7440-23-5	mg/L	mg/L							
Potassium	7440-09-7	mg/L	mg/L							
EK055G: Ammonia as N by Discrete Analyser										
Ammonia as N	7664-41-7	mg/L	mg/L		0.04	<0.01	<0.01	0.03	<0.01	<0.01
EK057G: Nitrite as N by Discrete Analyser										
Nitrite as N		mg/L	mg/L	<0.01	<0.01		0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete Analyser										
Nitrate as N	14797-55-8	mg/L	mg/L		0.25	0.16	0.16	0.06	0.03	0.02
EK059G: NOX as N by Discrete Analyser										
Nitrite + Nitrate as N		mg/L	mg/L		0.25	0.16	0.16	0.06	0.03	0.02
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction		µg/L	µg/L	<20	<20	<20	<20	<20	<20	
C10 - C14 Fraction		µg/L	µg/L	<50	<50	<50	<50	<50	<50	
C15 - C28 Fraction		µg/L	µg/L	<100	<100	<100	<100	<100	<100	
C29 - C36 Fraction		µg/L	µg/L	<50	<50	<50	<50	<50	<50	
C10 - C36 Fraction (sum)				<50	<50	<50	<50	<50	<50	
EP080S: TPH(V)/BTEX Surrogates										
1,2-Dichloroethane-D4	17060-07-0	%	%		101	97.5	114	99.9	103	95.6
Toluene-D8	2037-26-5	%	%		104	108	110	99.7	106	95.4
4-Bromofluorobenzene	460-00-4	%	%		89.2	109	96.2	88.9	102	93.3
EG035T: Total Recoverable Mercury by FIMS										
Mercury	7439-97-6	mg/L	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EG035F: Dissolved Mercury by FIMS										
Mercury	7439-97-6	mg/L	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	

Annexure GB4

4.1 Amendment Application for TEP MAN10919 – 18 November 2010

ROLLESTON
COAL

Rolleston Coal Mine

AMENDMENT APPLICATION FOR APPROVED TRANSITIONAL ENVIRONMENTAL PROGRAM (TEP):

SPRING CREEK DAM WATER RELEASE INTO BOOTES CREEK

TEP REFERENCE: MAN10919

November 2010

xstrata

Rolleston Coal Pty Ltd ABN 73 106 690 037
Dawson Highway, Via Rolleston, PO Box 11, Springsure QLD 4722
Telephone 07 4988 9100 Facsimile 07 4988 9151 Internet www.xstrata.com

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Table of Contents

1. Introduction

This amendment application relates to approved **Transitional Environmental Program** (***TEP***) MAN10919, which authorises the discharge of up to 4GL of mine affected water from Spring Creek Dam into Bootes Creek at a discharge rate of up to 100ML per day, provided water quality complies with the criteria stipulated by the TEP and the approval conditions stated by DERM on 28 October 2010.

TEP MAN10919 is required to ensure that Rolleston Coal's water storage at Spring Creek Dam has sufficient capacity at the commencement of the "wet season" so as to reduce the potential for uncontrolled discharges as a result of heavy rain, thereby reducing the potential risk of causing environmental harm.

2. Current condition of approval

TEP MAN10919 was approved by DERM on 28 October 2010, subject to six conditions.

Condition 1 imposed by DERM states:

> Water discharged from Spring Creek Dam under MAN10919 must:
>
> a) remain under a five-day rolling median pH of 8.75; and
>
> b) immediately cease if the discharged water has a pH of 9.0 or above on any given day.

This condition has been interpreted by Rolleston Coal as being measured at the spillway to the dam.

Condition 1 is the subject of this amendment application.

3. Discharge Monitoring Data

Monitoring at the Spillway

Rolleston Coal commenced discharging in accordance with TEP MAN10919 on 30 October 2010.

Given Rolleston Coal's understanding of the water quality within Spring Creek Dam, Rolleston Coal has concerns that it will not be able to continually comply with the five-day rolling median of pH 8.75 at the spillway.

Rolleston Coal ceased discharging on 11 November 2010 in order to approach DERM to discuss this amendment application.

It should be noted that monitoring has showed that discharged water has not exceeded a pH of 9.0 when measured on any given day at the spillway.

Monitoring Downstream

Additional monitoring to that required by TEP MAN10919 was conducted by Rolleston Coal at locations downstream of the Spring Creek Dam spillway. This monitoring was conducted to further assess the water quality released from Spring Creek Dam. These locations are known as:

- MP3 – located near RP1 (to where Spring Creek Dam is discharged to Bootes Creek) and approximately 150m from the mining lease boundary;
- MP5 which is located in the Albinia National Park and approximately 5km from the lease boundary; and

This monitoring showed that the discharged water does comply with the water quality standards stated in Rolleston Coal's EA at each location.

A summary of the monitoring data is shown in Appendix A.

4. Proposed change to approval condition

Rolleston Coal requests that Condition 1 imposed by DERM is amended to read:

> Water discharged from Spring Creek Dam under MAN10919 must:
>
> a) remain under a five-day rolling mean pH of 8.5 (as measured at MP3); and
>
> b) immediately cease if the discharged water has a pH of 9.0 or above on any given day (as measured at the Spring Creek Dam spillway).

No changes are requested to the TEP MAN10919.

All other imposed conditions are intended to remain in place, including scaling back the discharge volumes towards the end of the discharge period as well as releasing mine-unaffected water from Davey's Dam immediately following the cessation of discharge from Spring Creek Dam.

In considering this request to amend TEP MAN10919, Rolleston Coal notes:

- further discharge from Spring Creek Dam is required in order to reduce the potential for uncontrolled discharge from site during the upcoming wet season;
- continued discharge in accordance with TEP MAN10919 is considered unlikely to be possible unless this amendment application is granted;
- on site and off site monitoring of waters discharged to date in accordance with TEP MAN10919, show that the water quality parameters are consistent with Rolleston Coal's EA discharge limits and are not considered to result in a significant increase of environmental harm; and
- the proposed amendment will not require an extension to the approved TEP end date of 1 March 2010.

5. Environmental Authority

Xstrata Coal Queensland Pty Ltd, ICRA Rolleston Pty Ltd and Sumisho Coal Australia Pty Limited (***Rolleston Coal***) hold Environmental Authority MIM800090802 to carry out mining activities on ML70307 and MDL227, issued on 30 November 2009.

6. Submission

This request is to amend approval Condition 1 of Transitional Environmental Program (TEP) MAN10919. This amendment request is voluntarily submitted on behalf of Xstrata Coal Queensland Pty Ltd, ICRA Rolleston Pty Ltd and Sumisho Coal Australia Pty Limited by Glenn Burlinson, Senior Site Executive, Rolleston Coal, Xstrata Coal Queensland.

[redacted]

Signed

18/11/2010

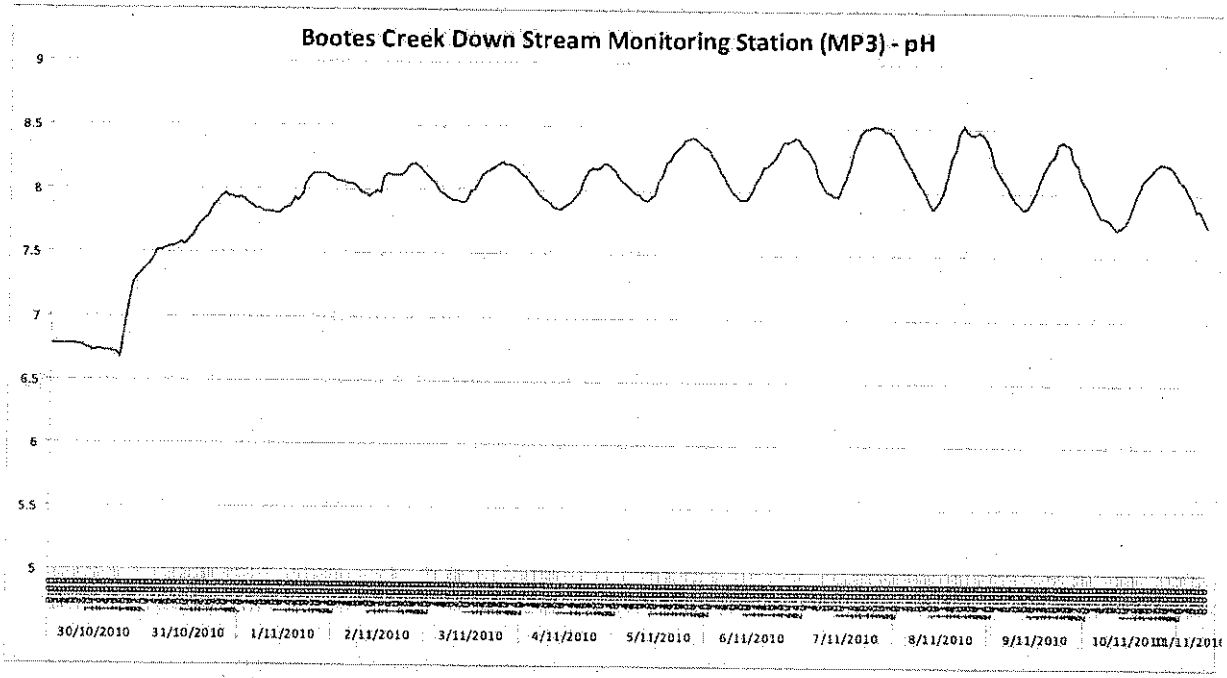
Date

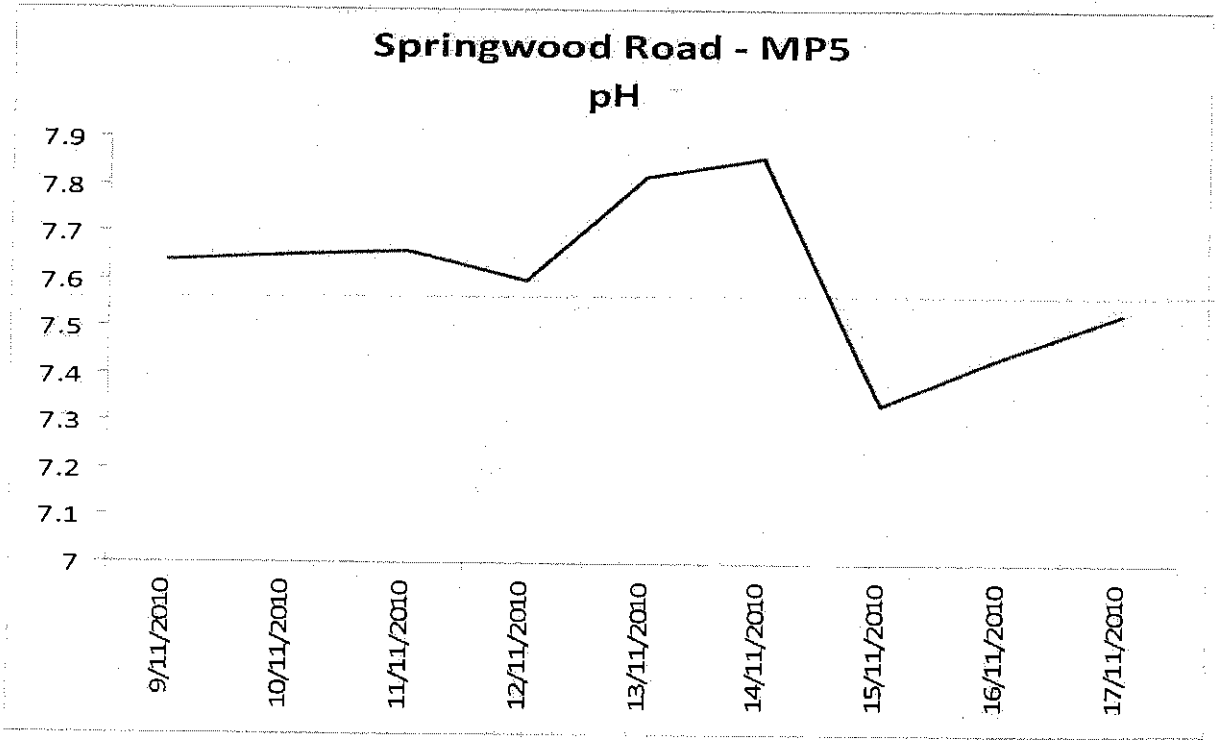
7. Authorisation

When approved, this TEP amendment will amend imposed Condition 1 and authorise the continued controlled release of up to 4.0GL of mine affected water from Spring Creek Dam into Bootes Creek at a discharge rate of up to 100ML per day, provided water quality complies with the criteria stipulated in approved TEP MAN10919 and in any approval conditions. Spring Creek Dam water storage can discharge water to Release Point 1 (RP1) as identified in EA MIM800090802.

Monitoring of discharge water will be undertaken in accordance with the conditions and requirements of the TEP and any approval conditions. Ongoing water management will be in accordance with Rolleston Coal's Water Management Plan which is currently being finalised for submission to DERM by 1 December 2010.

8. Appendix A: pH recordings for Bootes Creek downstream monitoring points MP3 and MP5





4.2 Amended TEP Approval MAN10919 – 29 November 2010

Notice

Environmental Services - Mining

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

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

Mr [redacted]
Senior Site Manager and SSE
Rolleston Coal Mine
PO Box 11
Springsure Qld 4722

Mr [redacted]
Xstrata Coal QLD
PO Box 11
Springsure Qld 4722

Your reference: Transitional Environmental Program (TEP) Rolleston Coal Mine MAN10919

Our reference : EMD866:MAN11099

Attention: Mr [redacted]

Re: Application for the amendment of an approval for a transitional environmental program for Rolleston Coal Mine – Amendment Application for Approved Transitional Environmental Program (TEP): Spring Creek Dam Water Release into Bootes Creek.

Thank you for your application for an approval for a transitional environmental program. This application has been issued with the Certificate Approval number: MAN11099 (attached to this notice).

Your application, which was received by this office on 18 November 2010 has been approved with additional conditions as described in the Certificate of Approval MAN11099.

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

A fee of **$180.40** is payable.

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

ecoaccess
environmental licences and permits

Notice

Decision notice regarding a transitional environmental program

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

Should you have any queries in relation to this notice, [redacted] of the department on telephone ([redacted] would be happy to assist you.

[redacted]
SIGNATURE

29 November 2010
DATE

Chris Loveday
Manager (Environmental Services - Mining)
Central West Region
Delegate of the Administering Authority
Environmental Protection Act 1994

Enquiries:
Department of Environment and Resource Management
PO Box 19
EMERALD QLD 4720
Phone: 4980 6200
Fax: 4982 2568

Transitional environmental program certificate of approval number MAN10919

This certificate of approval is issued by the administering authority pursuant to section 339 of the Environmental Protection Act 1994. *An 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:

Xstrata Coal Queensland Pty Ltd
Level 10 Riverside Centre
123 Eagle Street
Brisbane Qld 4000

ICRA Rolleston Pty Ltd
Level 15, Commonwealth Bank Building of Australia
240 Queen St
Brisbane Qld 4000

Sumisho Coal Australia Pty Ltd
Level 34, Central Plaza One
Brisbane Qld 4000

approving the amendment to transitional environmental program MAN10919; titled *Rolleston Coal Mine – Amendment Application for Approved Transitional Environmental Program (TEP): Spring Creek Dam Water Release into Bootes Creek* (November 2010).

The application to amend transitional environmental program (TEP) MAN10919 was received by this office on 18 November 2010. The amendment to TEP MAN10919 is approved, subject to the following approval conditions. Please note the amendment has generated new TEP reference number (MAN11099) and is to be used in subsequent communications.

1. Water discharged from Spring Creek Dam under MAN11099 must:
   a) cease if the pH measured at MP3 exceeds 8.5 for a duration period 12 hrs on any given day; and
   b) immediately cease if the discharged water has a pH of 9.0 or above on any given day (measured at Spring Creek Dam Spillway);

2. Discharge from Spring Creek Dam may recommence after 24 hours in accordance with approval condition 1.

3. The discharge volume from Spring Creek dam under MAN11099 must be reduced gradually at the end of the discharge period in the following manner:
   a) three days out from end of the discharge period, daily discharge volume must be reduced to 50 ML or less;
   b) two days out from end of the discharge period, discharge volume must be reduced to 25 ML or less; and
   c) on the last day of the planned discharge, discharge volume must be reduced to 10 ML or less.

4. If on the last day of the proposed TEP MAN11099 water discharge:

a) Bootes creek does not have a natural water flow occurring where water discharged from Spring Creek dam enters Bootes Creek; and
b) the water quality in Davey's Dam is of significantly better quality than water in Spring Creek Dam, as it was recorded in September and October 2010 in the "Rolleston Coal Mine: Spring Creek Dam and Spring Creek Pit Water Quality Results; May – September 2010" document;
Rolleston Coal Mine will immediately release 25 ML of natural (mine-unaffected) water from Davey's Dam into Bootes creek, at a rate of 5 ML per day, over a period of five days.

5. Rolleston Coal Mine 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) natural flow rate in receiving water; and
   c) any other matters that are pertinent to the water release event.

6. The authority holder must notify the administering authority as soon as practicable, (nominally within twenty-four (24) hours of cessation of a release) of the cessation of a release. Notification must include the submission of written verification to the administering authority of the following information:
   a) release cessation date/time;
   b) natural flow rate in receiving water; and
   c) any other matters that are pertinent to the water release event.

7. Rolleston Coal Mine will notify the Ranger-in-Charge of the Albinia National Park, Central Highlands Regional Council and any other relevant/potentially effected users/landholders downstream of the discharge under TEP MAN10919, prior to the discharge taking place. The notification process must be documented and include:
   - written documentation of notification including dates, contact persons and any pertinent comments
   - details of discharge information provided to stakeholders

   A report detailing this notification process must be submitted to the Department of Environment and Resource Management prior to initial discharge commencing.

This transitional environmental program remains in force until 1 March 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, [redacted] of the department on telephone [redacted] would be happy to assist you.

[redacted]

SIGNATURE

29 November 2010

DATE

Chris Loveday
Delegate of the Administering Authority
Manager (Environmental Services - Mining)
Central West Region

Enquiries:
Department of Environment and Resource Management
PO Box 19
EMERALD QLD 4720
Phone: 4980 6200
Fax: 4982 2568

Annexure GB5

Application for Program Notice – 30 December 2010

From: [redacted]
Sent: Thursday, 30 December 2010 2:37 PM
To: [redacted]
Cc:
Subject: Program Notice - Rolleston Coal
Attachments: Program notice - Rolleston Coal.pdf

Dear Sir/ Madam

Please find attached program notice under section 350 of the *Environmental Protection Act 1994* hereby submitted by Rolleston Coal. A hard copy has been mailed to the Permit and Licence Management Implementation Support Unit.

Regards

[redacted]

Environment & Community Manager
Rolleston Coal
Xstrata Coal Queensland
PO Box 11
Springsure QLD 4722

[redacted]

Department of Environment and Resource Management

Application form

Environmental Protection Act

OFFICIAL USE ONLY

DATE RECEIVED

FILE REF

PROJECT REF

COMPLETE FORM ☐ CORRECT AA ☐

ENTERED BY [SIGNATURE]

DATE

Program notice of relevant event

This form is to be used where a person wishes to provide a program notice under section 350 of the *Environmental Protection Act 1994* of an act or omission that has caused or threatened environmental harm.

Program notice details

1. Provider of program notice of relevant event

Xstrata Coal Queensland

2. Responsible person

[redacted]

3. Current registration certificate or environmental authority number (if applicable)

MIM800090802

A relevant event is an act or omission that has caused or threatened environmental harm in the carrying out of an activity by the person, and is lawful apart from the *Environmental Protection Act 1994*.

4. When did the relevant event occur?

It commenced 30th December 2010

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

Queensland Government

For example, you might provide details of the general activities that you were undertaking at the time, the act or omission and how it occurred, and any further action that was taken.

5. Description of the relevant event

Due to significant widespread rain and the risk of uncontrolled discharges, Rolleston Coal Mine urgently needs to discharge mine affected water offsite. Discharging is currently occurring under the EA however to avoid overtopping of storages containing mine affected water Rolleston Coal will commence discharging from Bootes West Pit Water Dam and Meteor West Pit Water Dam into Sandy Creek. Discharge into Sandy Creek has been included in the draft EA submitted to DERM in August 2010. The statutory timeframe for assessment of the draft EA finishes in January 2011. As the infrastructure to deliver discharge water to Sandy Creek as described in the draft EA has not yet been installed ie pipes, water delivery will be via the same natural drainage depression used for discharging earlier in 2010 under TEP MAN9879. The temporary release point will be just above the confluence of Sandy and Meteor Creeks (E645207, N7292541).

Additional water release is required via the already approved release point 4 (RP4). The original intent of RP4 was to release water into the Bootes Creek permanent diversion. Final licensing of this diversion has not yet occurred however, as it requires the aforementioned EA to be approved (due for completion in January 2011). Using this same release point discharge water will be directed to the Bootes Creek tempoary diversion (Water Licence 407879).

6. Location of relevant event

NAME OR TYPE OF PLACE	Sandy Creek and Bootes Creek
STREET ADDRESS	via Dawson highway
LOT(S)	1
PLAN(S)	SP164061
LOCAL GOVERNMENT	Central Highlands Regional Council

For example, you might provide details of the proximity of the relevant event to sensitive places (e.g. parks or nearby waterways).

7. Description of the nature and extent of environmental harm caused or threatened as a direct or indirect result of the relevant event

Rolleston Coal predicts no environmental harm will occur as a result of these actions. Potential environmental harm will be avoided by reducing the risk of uncontrolled discharges.

All discharges (current plus the two additional release points) will be performed under the environmental conditions outlined in the current EA. That is, all water quality conditions, monitoring requirements as well as rate of discharge will be accordance with the current EA.

All water discharged into Bootes Creek will be assessed against the flow rates and receiving water contaminant trigger levels outlined in the EA. Water discharged into Sandy Creek, will be assessed against the flow rates and receiving water contaminant trigger levels for Meteor Creek (as outlined in the draft EA currently with DERM due for decision in January 2011). There are existing upstream and downstream gauging stations on meteor creek which also record pH and Electrical Conductivity.

8. What action has been taken to contain, clean up, rehabilitate and restore the environmental impact in relation to the relevant event?

Rolleston Coal does not predict any adverse environmental outcomes from these actions. Once assessment and approval of the draft EA currently with DERM is complete, Investment in the construction of the required infrastructure for implementation can occur. This will avoid the necessity for a similar repeat program notice in the future.

9. Declaration

Note: If you have not told the truth in this application you may be liable for prosecution under the relevant Acts or Regulations.

- I am aware that section 351 of the *Environmental Protection Act 1994* states:

  "(1) If the relevant event stated in the program notice constitutes an offence against this Act (the "original offence"), the giving of the program notice, the program notice and any documents submitted with it are not admissible in evidence against the person in a prosecution for the original offence.

  "(2) Subsection (1) does not prevent other evidence obtained because of the giving of the program notice, the program notice or any documents submitted with it being admitted in any legal proceeding against the person."

- I will prepare and submit to the administering authority a transitional environmental program in accordance with section 333 of the *Environmental Protection Act 1994* for the relevant event.
- I do solemnly and sincerely declare that the information provided is true and correct to the best of my knowledge. I understand that it is an offence under s480 of the EP Act to give to the administering authority or an authorised person a document containing information that I know is false, misleading or incomplete in a material particular.
- I understand that all information supplied on or with this application form may be disclosed publicly in accordance with the *Right to Information Act 2009* and the *Evidence Act 1977*.

APPLICANTS SIGNATURE	
[redacted]	
APPLICANTS NAME [redacted]	DATE 30/12/2010

10. Provider checklist

- ☐ Notice completed and signed
- ☐ Supporting information attached (if applicable), including
  - ☐ Reports
  - ☐ Analysis and monitoring results

Please return your completed application to:

Permit and Licence Management
Implementation Support Unit
Department of Environment and Resource Management
GPO Box 2454
Brisbane Queensland 4001.

Enquiries: **1300 130 372**
Facsimile: (07) 3896 3342
Email: palm@derm.qld.gov.au

Annexure GB6

Diary Note of K Dixon – 20 January 2011

January
WEEK 3

November 2010						
M	1	8	15	22	29	
T	2	9	16	23	30	
W	3	10	17	24		
T	4	11	18	25		
F	5	12	19	26		
S	6	13	20	27		
S	7	14	21	28		

December 2010						
M		6	13	20	27	
T		7	14	21	28	
W	1	8	15	22	29	
T	2	9	16	23	30	
F	3	10	17	24	31	
S	4	11	18	25		
S	5	12	19	26		

January 2011						
M	31	3	10	17	24	
T		4	11	18	25	
W		5	12	19	26	
T		6	13	20	27	
F		7	14	21	28	
S	1	8	15	22	29	
S	2	9	16	23	30	

3.6mm rain

20 Thursday 020/345

8.00 am [redacted] to find NSERC template prepared by

8.30 [redacted], then ring [redacted]

9.00 ~~Wed 26th~~ Thurs. 27th
Wed 26th - book accom.

9.30 [redacted]

10.00 Ozmaflow

10.30 MC US 1.265m max disch. ~2850 l/s
BC US 0.218m

11.00
SED - pH 7.89 (no release)

11.30 10 Meg - pH 8.77

Noon Meteor RP => no release yet, resample once pump starts.

12.30
TEP Ammendment - integrate into current TEP

1.00
Program Notice - prepare new TEP with/for Meteor Ck discharge.

1.30 Provided DEHM with Meteor Ck discharged quantities & in-situ WQ results since the discharge commenced

2.00

2.30

3.00

3.30

4.00

4.30

5.00

Annexure GB7

Email exchange between K Dixon and DERM – 20 January 2011

From: [redacted]
Sent: Thursday, 20 January 2011 11:53 AM
To: [redacted] (Rolleston - Coal)
Subject: Program Notice information

Hi [redacted]

As discussed, I have attached some info relating to the dept's response to the program notice. Hope this clarifies.

Please find attached a notice regarding the 'program notice' submitted by Xstrata Coal Queensland on 30 December 2010 and received by the department on 4 January 2011. Please be aware that the submitted program notice does not meet the requirements of section 350 of the *Environmental Protection Act 1994* (EP Act) as the application form referred to an event which had not yet occurred. Section 350 of the EP Act provides the opportunity for a person to lodge a program notice once an event has occurred which has caused or threatened environmental harm

If Xstrata Coal Queensland still wishes to undertake a Transitional Environmental Program to authorise the release of mine effected waters to Sandy Creek, a TEP can be voluntarily submitted under section 333 of the EP Act, without the lodgement of a program notice.

Also as discussed if you could provide a summary of water quality, volumes & est. flow rate into Sandy Creek to date that would be appreciated.

Regards

[redacted]

Senior Environmental Officer, Environmental Services - Mining

Telephone: [redacted] **Fax:** [redacted]
Email: [redacted]

www.derm.qld.gov.au

Department of Environment & Resource Management

99 Hospital Road, Emerald, Qld, 4720

PO Box 19, Emerald, Qld, 4720

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+-----------------------------------------------------------------+

Think B4U Print

1 ream of paper = 6% of a tree and 5.4kg CO2 in the atmosphere

3 sheets of A4 paper = 1 litre of water

+-----------------------------------------------------------------+
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From: [redacted] (Rolleston - Coal)
Sent: Thursday, 20 January 2011 1:38 PM
To: [redacted]
Cc: [redacted] (Rolleston - Coal); [redacted] (Brisbane - Coal)
Subject: RE: Program Notice information

Hi [redacted]
Please find attached the details for the discharge into Meteor via Sandy creek. Some of the pumping rates need to be confirmed especially for the last couple of days.

First tab is the water quality
Second tab – discharge flow rates vs creek flow rates

Cheers
[redacted]

From: [redacted]
Sent: Thursday, 20 January 2011 11:53 AM
To: [redacted] (Rolleston - Coal)
Subject: Program Notice information

Hi [redacted]

As discussed, I have attached some info relating to the dept's response to the program notice. Hope this clarifies.

Please find attached a notice regarding the 'program notice' submitted by Xstrata Coal Queensland on 30 December 2010 and received by the department on 4 January 2011. Please be aware that the submitted program notice does not meet the requirements of section 350 of the *Environmental Protection Act 1994* (EP Act) as the application form referred to an event which had not yet occurred. Section 350 of the EP Act provides the opportunity for a person to lodge a program notice once an event has occurred which has caused or threatened environmental harm

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Also as discussed if you could provide a summary of water quality, volumes & est. flow rate into Sandy Creek to date that would be appreciated.

Regards

[redacted]

Senior Environmental Officer, Environmental Services - Mining

Telephone: [redacted] **Fax:** [redacted]
Email [redacted]

www.derm.qld.gov.au

Department of Environment & Resource Management

99 Hospital Road, Emerald, Qld, 4720

PO Box 19, Emerald, Qld, 4720

Meteor Creek

	Meteor Creek Up Stream						Meteor Release Point				
Date	Time	pH	EC	Temp	Turbidity	Samples	Time	pH	EC	Temp	Turbidity
30/12/2010							2:35PM	8.45	333	28.8	29.8
31/12/2010	9:55AM	7.96	403	25.6	311	Full suite	8:30AM	8.45	346	26.7	33.4
1/01/2011							7:25AM	8.88	344	27	29.2
2/01/2011							8:10AM	8.97	349	28.4	37.4
3/01/2011							6:55AM	8.77	346	27.7	27.4
4/01/2011	10:30AM	7.86	206	24.9	2234	Full suite	7:30AM	8.53	351	27.5	14.4
5/01/2011							6:45AM	8.58	346	27.6	23.2
6/01/2011							6:45AM	8.05	348	27.2	38.8
7/01/2011							7:00am	8.32	381	26.6	44.1
8/01/2011							7:45am	8.75	410	25.8	44
9/01/2011							7.00am	8.94	435	26.9	117
10/01/2011							6:10am	8.86	486	26.1	35.1
11/01/2011	10:30AM	8.17	520	27.6	-	Full suite	6:10AM	8.97	415	26.5	849
12/01/2011							6:50am	8.78	618	28.1	38.7
13/01/2011							5:55am	8.56	638	28.7	50.3
14/01/2011							6:10am	8.67	640	27.9	26.2
15/01/2011							5:45am	8.73	606	29	29.3
16/01/2011							5:20am	8.28	619	29.4	48.6
17/01/2011	7:30am	8.19	585	27.3	28.3	Full suite	5:50am	8.85	604	29.7	33.1
18/01/2011							5:45am	8.79	621	28	40.7
19/01/2011							5:35am	8.98	625	27.4	72
20/01/2011											

	Meteor Creek Down Stream					
Samples	Time	pH	EC	Temp	Turbidity	Samples
Full suite						
Daily	10:10AM	7.93	389	25.9	293	Full suite
Daily	9:30AM	7.85	402	26.4	264	Daily
Daily	9:20AM	7.87	446	27.2	174	Daily
Full suite	9:15AM	7.85	454	27.1	590	Full suite
Daily	8:40AM	7.78	271	25.2	1564	Daily
Daily	9:20AM	7.56	280	25.4	634	Daily
Daily	10:25AM	7.78	306	25.6	318	Daily
Daily	8:30am	7.94	383	25.2	172	Daily
Daily	5.30am	7.92	382	25.3	141	Daily
Daily	9.40am	8.02	432	26.5	96.3	Daily
Full suite	8:20am	8.01	454	26	178	Full suite
Daily	7:10AM	8.02	455	26.8	95.7	Daily
Full suite	7:30am	8.05	494	27	72.7	Daily
Daily	6:25am	8.08	508	27.5	98.2	Daily
Daily	6:45am	8.1	537	26.6	77.8	Daily
Daily	6:15am	8.06	542	26.7	64.5	Daily
Daily	6:00am	8.04	551	26.9	47.8	Daily
Full suite	6:30am	8.1	554	26.9	64.5	Full suite
Daily	6:30am	8.11	565	27.5	61.7	Daily
Full suite	6:25AM	8.18	568	28	39.5	Daily
	6:40am	8.17	570	27.7	98.9	Daily

Release event 30 December 2010 -

Meteor Creek

Date	Time	Bootes West Pit Water Dam Rate (L/s)	Bootes West Pit Water Dam Volume (m3/hr)	Ramp 6 Rate (L/s)	Ramp 6 Volume (m3/hr)	Meteor West PWD Rate (L/s)	Meteor West PWD Volume (m3/hr)	Total Discharge per second L/sec	Discharge rate per hour ML/hr	Creek Flow Rate m3/sec	Creek Flow Rate per hour ML/hr	%
30/12/2010	18:00	180	648	0	0	0	0	180	0.648	1101.34	3964.824	0%
	19:00	180	648	0	0	0	0	180	0.648	1101.34	3964.824	0%
	20:00	180	648	0	0	0	0	180	0.648	1101.34	3964.824	0%
	21:00	180	648	0	0	0	0	180	0.648	1101.34	3964.824	0%
	22:00	180	648	0	0	0	0	180	0.648	1101.34	3964.824	0%
	23:00	180	648	0	0	0	0	180	0.648	1101.34	3964.824	0%
31/12/2010	0:00	180	648	0	0	0	0	180	0.648	1101.34	3964.824	0%
	1:00	180	648	0	0	0	0	180	0.648	1101.34	3964.824	0%
	2:00	180	648	0	0	0	0	180	0.648	1101.34	3964.824	0%
	3:00	180	648	0	0	0	0	180	0.648	1101.34	3964.824	0%
	4:00	180	648	0	0	0	0	180	0.648	1101.34	3964.824	0%
	5:00	180	648	0	0	0	0	180	0.648	1101.34	3964.824	0%
	6:00	180	648	0	0	0	0	180	0.648	1101.34	3964.824	0%
	7:00	180	648	0	0	0	0	180	0.648	1101.34	3964.824	0%
	8:00	180	648	0	0	0	0	180	0.648	1101.34	3964.824	0%
	9:00	180	648	0	0	0	0	180	0.648	1094.61	3940.596	0%
	10:00	180	648	0	0	0	0	180	0.648	1069.56	3850.416	0%
	11:00	180	648	0	0	0	0	180	0.648	995.81	3584.916	0%
	12:00	180	648	0	0	0	0	180	0.648	916.61	3299.796	0%
	13:00	180	648	0	0	0	0	180	0.648	811.8	2922.48	0%
	14:00	180	648	0	0	0	0	180	0.648	732.46	2636.856	0%
	15:00	180	648	0	0	0	0	180	0.648	655.66	2360.376	0%
	16:00	180	648	0	0	0	0	180	0.648	576.43	2075.148	0%
	17:00	180	648	0	0	0	0	180	0.648	520.83	1874.988	0%

	18:00	180	648	0	0	0	0	180	0.648	468.91	1688.076	0%
	19:00	180	648	0	0	0	0	180	0.648	425.06	1530.216	0%
	20:00	180	648	0	0	0	0	180	0.648	296.07	1065.852	0%
	21:00	180	648	0	0	0	0	180	0.648	370.2	1332.72	0%
	22:00	180	648	0	0	0	0	180	0.648	345.44	1243.584	0%
	23:00	180	648	0	0	0	0	180	0.648	333.47	1200.492	0%
1/01/2011	0:00	180	648	0	0	0	0	180	0.648	310.21	1116.756	0%
	1:00	180	648	0	0	0	0	180	0.648	287.44	1034.784	0%
	2:00	180	648	0	0	0	0	180	0.648	276.41	995.076	0%
	3:00	180	648	0	0	0	0	180	0.648	255.09	918.324	0%
	4:00	180	648	0	0	0	0	180	0.648	244.79	881.244	0%
	5:00	180	648	0	0	0	0	180	0.648	234.73	845.028	0%
	6:00	180	648	0	0	0	0	180	0.648	215.33	775.188	0%
	7:00	180	648	0	0	0	0	180	0.648	215.33	775.188	0%
	8:00	180	648	0	0	0	0	180	0.648	206	741.6	0%
	9:00	180	648	0	0	0	0	180	0.648	188.04	676.944	0%
	10:00	330	1188	0	0	0	0	330	1.188	179.4	645.84	0%
	11:00	330	1188	0	0	0	0	330	1.188	179.4	645.84	0%
	12:00	330	1188	0	0	0	0	330	1.188	170.99	615.564	0%
	13:00	330	1188	0	0	0	0	330	1.188	162.8	586.08	0%
	14:00	330	1188	0	0	0	0	330	1.188	154.84	557.424	0%
	15:00	330	1188	0	0	0	0	330	1.188	154.84	557.424	0%
	16:00	330	1188	0	0	0	0	330	1.188	147.1	529.56	0%
	17:00	330	1188	0	0	0	0	330	1.188	140.27	504.972	0%
	18:00	330	1188	0	0	0	0	330	1.188	140.27	504.972	0%
	19:00	330	1188	0	0	0	0	330	1.188	134.1	482.76	0%
	20:00	330	1188	0	0	0	0	330	1.188	134.1	482.76	0%
	21:00	330	1188	0	0	0	0	330	1.188	128.29	461.844	0%
	22:00	330	1188	0	0	0	0	330	1.188	128.29	461.844	0%
	23:00	330	1188	0	0	0	0	330	1.188	122.8	442.08	0%
2/01/2011	0:00	330	1188	0	0	0	0	330	1.188	122.8	442.08	0%

	1:00	330	1188	0	0	0	0	330	1.188	122.8	442.08	0%
	2:00	330	1188	0	0	0	0	330	1.188	122.8	442.08	0%
	3:00	330	1188	0	0	0	0	330	1.188	118.62	427.032	0%
	4:00	330	1188	0	0	0	0	330	1.188	118.62	427.032	0%
	5:00	330	1188	0	0	0	0	330	1.188	118.62	427.032	0%
	6:00	330	1188	0	0	0	0	330	1.188	118.62	427.032	0%
	7:00	330	1188	0	0	0	0	330	1.188	112.71	405.756	0%
	8:00	330	1188	0	0	0	0	330	1.188	112.71	405.756	0%
	9:00	330	1188	0	0	0	0	330	1.188	108.08	389.088	0%
	10:00	330	1188	0	0	0	0	330	1.188	108.08	389.088	0%
	11:00	330	1188	0	0	0	0	330	1.188	108.08	389.088	0%
	12:00	330	1188	0	0	0	0	330	1.188	102.6	369.36	0%
	13:00	330	1188	0	0	0	0	330	1.188	102.6	369.36	0%
	14:00	330	1188	0	0	0	0	330	1.188	97.12	349.632	0%
	15:00	330	1188	0	0	0	0	330	1.188	97.12	349.632	0%
	16:00	330	1188	0	0	0	0	330	1.188	97.12	349.632	0%
	17:00	330	1188	0	0	0	0	330	1.188	91.82	330.552	0%
	18:00	510	1836	0	0	0	0	510	1.836	91.82	330.552	1%
	19:00	510	1836	0	0	0	0	510	1.836	91.82	330.552	1%
	20:00	510	1836	0	0	0	0	510	1.836	91.82	330.552	1%
	21:00	510	1836	0	0	0	0	510	1.836	86.69	312.084	1%
	22:00	510	1836	0	0	0	0	510	1.836	86.69	312.084	1%
	23:00	510	1836	0	0	0	0	510	1.836	86.69	312.084	1%
3/01/2011	0:00	510	1836	0	0	0	0	510	1.836	86.69	312.084	1%
	1:00	510	1836	0	0	0	0	510	1.836	86.69	312.084	1%
	2:00	510	1836	0	0	0	0	510	1.836	81.73	294.228	1%
	3:00	510	1836	0	0	0	0	510	1.836	81.73	294.228	1%
	4:00	510	1836	0	0	0	0	510	1.836	81.73	294.228	1%
	5:00	510	1836	0	0	0	0	510	1.836	76.93	276.948	1%
	6:00	510	1836	0	0	0	0	510	1.836	76.93	276.948	1%
	7:00	510	1836	0	0	0	0	510	1.836	72.31	260.316	1%

	8:00	510	1836	0	0	0	0	510	1.836	72.31	260.316	1%
	9:00	510	1836	0	0	0	0	510	1.836	72.31	260.316	1%
	10:00	510	1836	0	0	0	0	510	1.836	67.84	244.224	1%
	11:00	510	1836	0	0	0	0	510	1.836	67.84	244.224	1%
	12:00	510	1836	0	0	0	0	510	1.836	67.84	244.224	1%
	13:00	510	1836	0	0	0	0	510	1.836	67.84	244.224	1%
	14:00	510	1836	0	0	0	0	510	1.836	63.54	228.744	1%
	15:00	510	1836	0	0	0	0	510	1.836	63.54	228.744	1%
	16:00	510	1836	0	0	0	0	510	1.836	63.54	228.744	1%
	17:00	510	1836	0	0	0	0	510	1.836	63.54	228.744	1%
	18:00	510	1836	0	0	0	0	510	1.836	59.39	213.804	1%
	19:00	510	1836	0	0	0	0	510	1.836	59.39	213.804	1%
	20:00	510	1836	0	0	0	0	510	1.836	59.39	213.804	1%
	21:00	510	1836	0	0	0	0	510	1.836	59.39	213.804	1%
	22:00	510	1836	0	0	0	0	510	1.836	59.39	213.804	1%
	23:00	510	1836	0	0	0	0	510	1.836	55.54	199.944	1%
4/01/2011	0:00	510	1836	0	0	0	0	510	1.836	55.54	199.944	1%
	1:00	510	1836	0	0	0	0	510	1.836	55.54	199.944	1%
	2:00	510	1836	0	0	0	0	510	1.836	55.54	199.944	1%
	3:00	510	1836	0	0	0	0	510	1.836	55.54	199.944	1%
	4:00	510	1836	0	0	0	0	510	1.836	55.54	199.944	1%
	5:00	510	1836	0	0	0	0	510	1.836	52.05	187.38	1%
	6:00	510	1836	0	0	0	0	510	1.836	52.05	187.38	1%
	7:00	510	1836	0	0	0	0	510	1.836	52.05	187.38	1%
	8:00	510	1836	0	0	0	0	510	1.836	52.05	187.38	1%
	9:00	510	1836	0	0	0	0	510	1.836	52.05	187.38	1%
	10:00	510	1836	0	0	0	0	510	1.836	48.73	175.428	1%
	11:00	510	1836	0	0	0	0	510	1.836	48.73	175.428	1%
	12:00	510	1836	0	0	0	0	510	1.836	48.73	175.428	1%
	13:00	510	1836	0	0	0	0	510	1.836	48.73	175.428	1%
	14:00	510	1836	0	0	0	0	510	1.836	48.73	175.428	1%

	15:00	510	1836	0	0	0	0	510	1.836	45.58	164.088	1%
	16:00	510	1836	0	0	0	0	510	1.836	45.58	164.088	1%
	17:00	510	1836	0	0	0	0	510	1.836	45.58	164.088	1%
	18:00	510	1836	0	0	0	0	510	1.836	45.58	164.088	1%
	19:00	510	1836	0	0	0	0	510	1.836	45.58	164.088	1%
	20:00	510	1836	0	0	0	0	510	1.836	45.58	164.088	1%
	21:00	510	1836	0	0	0	0	510	1.836	45.58	164.088	1%
	22:00	510	1836	0	0	0	0	510	1.836	45.58	164.088	1%
	23:00	510	1836	0	0	0	0	510	1.836	45.58	164.088	1%
5/01/2011	0:00	510	1836	0	0	0	0	510	1.836	45.58	164.088	1%
	1:00	510	1836	0	0	0	0	510	1.836	42.64	153.504	1%
	2:00	510	1836	0	0	0	0	510	1.836	42.64	153.504	1%
	3:00	510	1836	0	0	0	0	510	1.836	42.64	153.504	1%
	4:00	510	1836	0	0	0	0	510	1.836	42.64	153.504	1%
	5:00	510	1836	0	0	0	0	510	1.836	42.64	153.504	1%
	6:00	510	1836	0	0	0	0	510	1.836	42.64	153.504	1%
	7:00	510	1836	0	0	0	0	510	1.836	42.64	153.504	1%
	8:00	510	1836	0	0	0	0	510	1.836	39.39	141.804	1%
	9:00	510	1836	0	0	0	0	510	1.836	39.39	141.804	1%
	10:00	510	1836	0	0	0	0	510	1.836	39.39	141.804	1%
	11:00	510	1836	0	0	0	0	510	1.836	39.39	141.804	1%
	12:00	510	1836	0	0	0	0	510	1.836	39.39	141.804	1%
	13:00	510	1836	0	0	0	0	510	1.836	39.39	141.804	1%
	14:00	510	1836	0	0	0	0	510	1.836	39.39	141.804	1%
	15:00	510	1836	0	0	0	0	510	1.836	39.39	141.804	1%
	16:00	510	1836	0	0	0	0	510	1.836	39.39	141.804	1%
	17:00	510	1836	0	0	0	0	510	1.836	39.39	141.804	1%
	18:00	510	1836	0	0	0	0	510	1.836	36.2	130.32	1%
	19:00	510	1836	0	0	0	0	510	1.836	36.2	130.32	1%
	20:00	510	1836	0	0	0	0	510	1.836	36.2	130.32	1%
	21:00	510	1836	0	0	0	0	510	1.836	36.2	130.32	1%

	22:00	510	1836	0	0	0	0	510	1.836	36.2	130.32	1%
	23:00	510	1836	0	0	0	0	510	1.836	36.2	130.32	1%
6/01/2011	0:00	510	1836	0	0	0	0	510	1.836	36.2	130.32	1%
	1:00	510	1836	0	0	0	0	510	1.836	36.2	130.32	1%
	2:00	510	1836	0	0	0	0	510	1.836	36.2	130.32	1%
	3:00	510	1836	0	0	0	0	510	1.836	36.2	130.32	1%
	4:00	510	1836	0	0	0	0	510	1.836	36.2	130.32	1%
	5:00	510	1836	0	0	0	0	510	1.836	33.14	119.304	2%
	6:00	510	1836	0	0	0	0	510	1.836	33.14	119.304	2%
	7:00	510	1836	0	0	0	0	510	1.836	33.14	119.304	2%
	8:00	510	1836	0	0	0	0	510	1.836	33.14	119.304	2%
	9:00	510	1836	0	0	0	0	510	1.836	36.2	130.32	1%
	10:00	510	1836	0	0	0	0	510	1.836	36.2	130.32	1%
	11:00	510	1836	0	0	0	0	510	1.836	36.2	130.32	1%
	12:00	510	1836	0	0	0	0	510	1.836	36.2	130.32	1%
	13:00	510	1836	0	0	0	0	510	1.836	36.2	130.32	1%
	14:00	510	1836	0	0	0	0	510	1.836	39.39	141.804	1%
	15:00	510	1836	0	0	0	0	510	1.836	45.58	164.088	1%
	16:00	510	1836	0	0	0	0	510	1.836	91.82	330.552	1%
	17:00	510	1836	0	0	0	0	510	1.836	188.04	676.944	0%
	18:00	510	1836	0	0	0	0	510	1.836	265.63	956.268	0%
	19:00	510	1836	0	0	0	0	510	1.836	276.41	995.076	0%
	20:00	510	1836	0	0	0	0	510	1.836	255.09	918.324	0%
	21:00	510	1836	0	0	0	0	510	1.836	215.33	775.188	0%
	22:00	510	1836	0	0	0	0	510	1.836	170.99	615.564	0%
	23:00	510	1836	0	0	0	0	510	1.836	134.1	482.76	0%
7/01/2011	0:00	510	1836	0	0	0	0	510	1.836	112.71	405.756	0%
	1:00	510	1836	0	0	0	0	510	1.836	91.82	330.552	1%
	2:00	510	1836	0	0	0	0	510	1.836	76.93	276.948	1%
	3:00	510	1836	0	0	0	0	510	1.836	72.31	260.316	1%
	4:00	510	1836	0	0	0	0	510	1.836	63.54	228.744	1%

	5:00	510	1836	0	0	0	0	510	1.836	59.39	213.804	1%
	6:00	510	1836	0	0	0	0	510	1.836	55.54	199.944	1%
	7:00	510	1836	0	0	0	0	510	1.836	52.05	187.38	1%
	8:00	510	1836	0	0	0	0	510	1.836	48.73	175.428	1%
	9:00	510	1836	0	0	0	0	510	1.836	48.73	175.428	1%
	10:00	510	1836	0	0	0	0	510	1.836	45.58	164.088	1%
	11:00	510	1836	0	0	0	0	510	1.836	45.58	164.088	1%
	12:00	510	1836	0	0	0	0	510	1.836	76.93	276.948	1%
	13:00	510	1836	0	0	0	0	510	1.836	162.8	586.08	0%
	14:00	510	1836	0	0	0	0	510	1.836	265.63	956.268	0%
	15:00	510	1836	0	0	0	0	510	1.836	310.21	1116.756	0%
	16:00	510	1836	0	0	0	0	510	1.836	310.21	1116.756	0%
	17:00	510	1836	0	0	0	0	510	1.836	287.44	1034.784	0%
	18:00	510	1836	0	0	0	0	510	1.836	244.79	881.244	0%
	19:00	510	1836	0	0	0	0	510	1.836	196.9	708.84	0%
	20:00	510	1836	0	0	0	0	510	1.836	162.8	586.08	0%
	21:00	510	1836	0	0	0	0	510	1.836	134.1	482.76	0%
	22:00	510	1836	0	0	0	0	510	1.836	112.71	405.756	0%
	23:00	510	1836	0	0	0	0	510	1.836	97.12	349.632	1%
8/01/2011	0:00	230	828	0	0	0	0	230	0.828	86.69	312.084	0%
	1:00	230	828	0	0	0	0	230	0.828	76.93	276.948	0%
	2:00	230	828	0	0	0	0	230	0.828	72.31	260.316	0%
	3:00	230	828	0	0	0	0	230	0.828	63.54	228.744	0%
	4:00	230	828	0	0	0	0	230	0.828	59.39	213.804	0%
	5:00	230	828	0	0	0	0	230	0.828	59.39	213.804	0%
	6:00	230	828	0	0	0	0	230	0.828	55.54	199.944	0%
	7:00	230	828	0	0	0	0	230	0.828	55.54	199.944	0%
	8:00	230	828	0	0	0	0	230	0.828	59.39	213.804	0%
	9:00	230	828	0	0	0	0	230	0.828	59.39	213.804	0%
	10:00	230	828	0	0	0	0	230	0.828	59.39	213.804	0%
	11:00	230	828	0	0	0	0	230	0.828	55.54	199.944	0%
	12:00	230	828	0	0	0	0	230	0.828	48.73	175.428	0%

	13:00	230	828	0	0	0	0	230	0.828	48.73	175.428	0%
	14:00	230	828	0	0	0	0	230	0.828	45.58	164.088	1%
	15:00	230	828	0	0	0	0	230	0.828	45.58	164.088	1%
	16:00	230	828	0	0	0	0	230	0.828	42.64	153.504	1%
	17:00	180	648	0	0	0	0	180	0.648	42.64	153.504	0%
	18:00	360	1296	0	0	0	0	360	1.296	39.39	141.804	1%
	19:00	360	1296	0	0	0	0	360	1.296	39.39	141.804	1%
	20:00	360	1296	0	0	0	0	360	1.296	39.39	141.804	1%
	21:00	360	1296	0	0	0	0	360	1.296	39.39	141.804	1%
	22:00	360	1296	0	0	0	0	360	1.296	39.39	141.804	1%
	23:00	360	1296	0	0	0	0	360	1.296	36.2	130.32	1%
9/01/2011	0:00	360	1296	0	0	0	0	360	1.296	36.2	130.32	1%
	1:00	360	1296	0	0	0	0	360	1.296	36.2	130.32	1%
	2:00	360	1296	0	0	0	0	360	1.296	36.2	130.32	1%
	3:00	360	1296	0	0	0	0	360	1.296	36.2	130.32	1%
	4:00	360	1296	0	0	0	0	360	1.296	33.14	119.304	1%
	5:00	360	1296	0	0	0	0	360	1.296	33.14	119.304	1%
	6:00	360	1296	0	0	0	0	360	1.296	33.14	119.304	1%
	7:00	360	1296	0	0	0	0	360	1.296	33.14	119.304	1%
	8:00	360	1296	0	0	0	0	360	1.296	33.14	119.304	1%
	9:00	360	1296	0	0	0	0	360	1.296	33.14	119.304	1%
	10:00	360	1296	0	0	0	0	360	1.296	36.2	130.32	1%
	11:00	360	1296	0	0	0	0	360	1.296	36.2	130.32	1%
	12:00	360	1296	0	0	0	0	360	1.296	36.2	130.32	1%
	13:00	360	1296	0	0	0	0	360	1.296	36.2	130.32	1%
	14:00	360	1296	0	0	0	0	360	1.296	36.2	130.32	1%
	15:00	360	1296	0	0	0	0	360	1.296	39.39	141.804	1%
	16:00	360	1296	0	0	0	0	360	1.296	39.39	141.804	1%
	17:00	360	1296	0	0	0	0	360	1.296	39.39	141.804	1%
	18:00	360	1296	0	0	0	0	360	1.296	36.2	130.32	1%
	19:00	360	1296	0	0	0	0	360	1.296	36.2	130.32	1%

	20:00	360	1296	0	0	0	0	360	1.296	36.2	130.32	1%
	21:00	360	1296	0	0	0	0	360	1.296	36.2	130.32	1%
	22:00	360	1296	0	0	0	0	360	1.296	42.64	153.504	1%
	23:00	360	1296	0	0	0	0	360	1.296	45.58	164.088	1%
10/01/2011	0:00	360	1296	0	0	0	0	360	1.296	48.73	175.428	1%
	1:00	360	1296	0	0	0	0	360	1.296	48.73	175.428	1%
	2:00	360	1296	0	0	0	0	360	1.296	45.58	164.088	1%
	3:00	360	1296	0	0	0	0	360	1.296	45.58	164.088	1%
	4:00	360	1296	0	0	0	0	360	1.296	42.64	153.504	1%
	5:00	360	1296	0	0	0	0	360	1.296	39.39	141.804	1%
	6:00	360	1296	0	0	0	0	360	1.296	39.39	141.804	1%
	7:00	360	1296	0	0	0	0	360	1.296	36.2	130.32	1%
	8:00	360	1296	0	0	0	0	360	1.296	36.2	130.32	1%
	9:00	360	1296	0	0	0	0	360	1.296	36.2	130.32	1%
	10:00	360	1296	0	0	0	0	360	1.296	33.14	119.304	1%
	11:00	360	1296	0	0	0	0	360	1.296	33.14	119.304	1%
	12:00	360	1296	0	0	0	0	360	1.296	33.14	119.304	1%
	13:00	360	1296	0	0	0	0	360	1.296	30.21	108.756	1%
	14:00	100	360	0	0	0	0	100	0.36	30.21	108.756	0%
	15:00	100	360	0	0	0	0	100	0.36	30.21	108.756	0%
	16:00	100	360	0	0	0	0	100	0.36	30.21	108.756	0%
	17:00	100	360	0	0	0	0	100	0.36	30.21	108.756	0%
	18:00	100	360	0	0	0	0	100	0.36	30.21	108.756	0%
	19:00	100	360	0	0	0	0	100	0.36	27.39	98.604	0%
	20:00	100	360	0	0	0	0	100	0.36	27.39	98.604	0%
	21:00	100	360	0	0	0	0	100	0.36	27.39	98.604	0%
	22:00	100	360	0	0	0	0	100	0.36	27.39	98.604	0%
	23:00	100	360	0	0	0	0	100	0.36	27.39	98.604	0%
11/01/2011	0:00	100	360	0	0	0	0	100	0.36	27.39	98.604	0%
	1:00	100	360	0	0	0	0	100	0.36	27.39	98.604	0%
	2:00	100	360	0	0	0	0	100	0.36	27.39	98.604	0%

	3:00	100	360	0	0	0	0	100	0.36	24.71	88.956	0%
	4:00	100	360	0	0	0	0	100	0.36	24.71	88.956	0%
	5:00	100	360	0	0	0	0	100	0.36	24.71	88.956	0%
	6:00	100	360	0	0	0	0	100	0.36	24.71	88.956	0%
	7:00	100	360	0	0	0	0	100	0.36	24.71	88.956	0%
	8:00	100	360	0	0	0	0	100	0.36	24.71	88.956	0%
	9:00	100	360	0	0	0	0	100	0.36	24.71	88.956	0%
	10:00	100	360	0	0	0	0	100	0.36	24.71	88.956	0%
	11:00	100	360	0	0	0	0	100	0.36	24.71	88.956	0%
	12:00	100	360	0	0	0	0	100	0.36	24.71	88.956	0%
	13:00	100	360	0	0	0	0	100	0.36	24.71	88.956	0%
	14:00	100	360	0	0	0	0	100	0.36	24.71	88.956	0%
	15:00	100	360	0	0	0	0	100	0.36	24.71	88.956	0%
	16:00	100	360	0	0	0	0	100	0.36	22.14	79.704	0%
	17:00	100	360	0	0	0	0	100	0.36	22.14	79.704	0%
	18:00	100	360	0	0	0	0	100	0.36	22.14	79.704	0%
	19:00	100	360	0	0	0	0	100	0.36	22.14	79.704	0%
	20:00	100	360	0	0	0	0	100	0.36	22.14	79.704	0%
	21:00	100	360	0	0	0	0	100	0.36	22.14	79.704	0%
	22:00	100	360	0	0	0	0	100	0.36	22.14	79.704	0%
	23:00	100	360	0	0	0	0	100	0.36	22.14	79.704	0%
12/01/2011	0:00	100	360	0	0	0	0	100	0.36	22.14	79.704	0%
	1:00	100	360	0	0	0	0	100	0.36	22.14	79.704	0%
	2:00	100	360	0	0	0	0	100	0.36	22.14	79.704	0%
	3:00	100	360	0	0	0	0	100	0.36	22.14	79.704	0%
	4:00	100	360	0	0	0	0	100	0.36	22.14	79.704	0%
	5:00	100	360	0	0	0	0	100	0.36	22.14	79.704	0%
	6:00	100	360	0	0	0	0	100	0.36	22.14	79.704	0%
	7:00	100	360	0	0	0	0	100	0.36	22.14	79.704	0%
	8:00	100	360	0	0	0	0	100	0.36	22.14	79.704	0%
	9:00	100	360	0	0	0	0	100	0.36	19.71	70.956	1%
	10:00	100	360	0	0	0	0	100	0.36	19.71	70.956	1%

	11:00	100	360	0	0	0	0	100	0.36	19.71	70.956	1%
	12:00	100	360	0	0	0	0	100	0.36	19.71	70.956	1%
	13:00	100	360	0	0	0	0	100	0.36	19.71	70.956	1%
	14:00	100	360	0	0	0	0	100	0.36	19.71	70.956	1%
	15:00	100	360	100	360	0	0	200	0.72	19.71	70.956	1%
	16:00	100	360	100	360	0	0	200	0.72	19.71	70.956	1%
	17:00	100	360	100	360	0	0	200	0.72	19.71	70.956	1%
	18:00	100	360	100	360	0	0	200	0.72	19.71	70.956	1%
	19:00	0	0	100	360	0	0	100	0.36	19.71	70.956	1%
	20:00	0	0	100	360	0	0	100	0.36	19.71	70.956	1%
	21:00	0	0	100	360	0	0	100	0.36	19.71	70.956	1%
	22:00	0	0	100	360	0	0	100	0.36	19.71	70.956	1%
	23:00	0	0	100	360	0	0	100	0.36	19.71	70.956	1%
13/01/2011	0:00	0	0	100	360	0	0	100	0.36	19.71	70.956	1%
	1:00	0	0	100	360	0	0	100	0.36	19.71	70.956	1%
	2:00	0	0	100	360	0	0	100	0.36	19.71	70.956	1%
	3:00	0	0	100	360	0	0	100	0.36	19.71	70.956	1%
	4:00	0	0	100	360	0	0	100	0.36	19.71	70.956	1%
	5:00	0	0	100	360	0	0	100	0.36	19.71	70.956	1%
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15/01/2011	0:00	0	0	100	360	0	0	100	0.36	15.21	54.756	1%
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16/01/2011	0:00	0	0	100	360	0	0	100	0.36	15.21	54.756	1%
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	3:00	0	0	100	360	0	0	100	0.36	15.21	54.756	1%
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	9:00	0	0	100	360	0	0	100	0.36	15.21	54.756	1%
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	23:00	0	0	100	360	0	0	100	0.36	13.15	47.34	1%
17/01/2011	0:00	0	0	100	360	0	0	100	0.36	13.15	47.34	1%
	1:00	0	0	100	360	0	0	100	0.36	13.15	47.34	1%
	2:00	0	0	100	360	0	0	100	0.36	13.15	47.34	1%
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	4:00	0	0	100	360	0	0	100	0.36	13.15	47.34	1%
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	6:00	0	0	100	360	0	0	100	0.36	13.15	47.34	1%
	7:00	0	0	100	360	0	0	100	0.36	13.15	47.34	1%
	8:00	100	360	100	360	0	0	200	0.72	13.15	47.34	2%
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	10:00	100	360	100	360	0	0	200	0.72	13.15	47.34	2%
	11:00	100	360	100	360	0	0	200	0.72	13.15	47.34	2%
	12:00	100	360	100	360	0	0	200	0.72	13.15	47.34	2%
	13:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
	14:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
	15:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
	16:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
	17:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
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	19:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
	20:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
	21:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
	22:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%

	23:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
18/01/2011	0:00	100	360	100	360	0	0	200	0.72	13.15	47.34	2%
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	2:00	100	360	100	360	0	0	200	0.72	13.15	47.34	2%
	3:00	100	360	100	360	0	0	200	0.72	13.15	47.34	2%
	4:00	100	360	100	360	0	0	200	0.72	13.15	47.34	2%
	5:00	100	360	100	360	0	0	200	0.72	13.15	47.34	2%
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	8:00	100	360	100	360	0	0	200	0.72	13.15	47.34	2%
	9:00	100	360	100	360	0	0	200	0.72	13.15	47.34	2%
	10:00	100	360	100	360	0	0	200	0.72	13.15	47.34	2%
	11:00	100	360	100	360	0	0	200	0.72	13.15	47.34	2%
	12:00	100	360	100	360	0	0	200	0.72	13.15	47.34	2%
	13:00	100	360	100	360	0	0	200	0.72	13.15	47.34	2%
	14:00	100	360	100	360	0	0	200	0.72	13.15	47.34	2%
	15:00	100	360	100	360	0	0	200	0.72	13.15	47.34	2%
	16:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
	17:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
	18:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
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	20:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
	21:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
	22:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
	23:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
19/01/2011	0:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
	1:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
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	3:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
	4:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
	5:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
	6:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
	7:00	100	360	100	360	70	252	270	0.79	11.21	40.356	2%

	8:00	100	360	100	360	70	252	270	0.79	11.21	40.356	2%
	9:00	100	360	100	360	70	252	270	0.79	13.15	47.34	2%
	10:00	100	360	100	360	70	252	270	0.79	11.21	40.356	2%
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	13:00	100	360	100	360	70	252	270	0.79	11.21	40.356	2%
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	19:00	100	360	100	360	70	252	270	0.79	11.21	40.356	2%
	20:00	100	360	100	360	70	252	270	0.79	11.21	40.356	2%
	21:00	100	360	100	360	70	252	270	0.79	11.21	40.356	2%
	22:00	100	360	100	360	70	252	270	0.79	11.21	40.356	2%
	23:00	100	360	100	360	70	252	270	0.79	11.21	40.356	2%
20/01/2011	0:00	100	360	100	360	70	252	270	0.79	11.21	40.356	2%
	1:00	100	360	0	0	70	252	170	0.43	13.15	47.34	1%
	2:00	100	360	0	0	70	252	170	0.43	11.21	40.356	1%
	3:00	100	360	0	0	70	252	170	0.43	11.21	40.356	1%
	4:00	100	360	0	0	0	0	100	0.36	13.15	47.34	1%
	5:00	0	0	0	0	0	0	0	0	13.15	47.34	0%
	6:00	0	0	0	0	0	0	0	0	11.21	40.356	0%
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	10:00	100	360	0	0		0	100	0.36	11.21	40.356	1%
	11:00	100	360	0	0		0	100	0.36	11.21	40.356	1%
	12:00	100	360	0	0		0	100	0.36	11.21	40.356	1%

TOTAL	**412**	**64**	**12**	**480**	**176397**	0%

From [redacted]
Sent: Thursday, 20 January 2011 2:26 PM
To [redacted] (Rolleston - Coal)
Subject: RE: Program Notice information

Received, thank-you.

[redacted]
Senior Environmental Officer, Environmental Services - Mining
Telephone: [redacted] **Fax:** [redacted]
Email: [redacted]
www.derm.qld.gov.au
Department of Environment & Resource Management
99 Hospital Road, Emerald, Qld, 4720
PO Box 19, Emerald, Qld, 4720

From: [redacted]
Sent: Thursday, 20 January 2011 1:38 PM
To [redacted]
Cc: [redacted]
Subject: RE: Program Notice information

Hi [redacted]
Please find attached the details for the discharge into Meteor via Sandy creek. Some of the pumping rates need to be confirmed especially for the last couple of days.

First tab is the water quality
Second tab – discharge flow rates vs creek flow rates

Cheers
[redacted]

From: [redacted]
Sent: Thursday, 20 January 2011 11:53 AM
To: [redacted] (Rolleston - Coal)
Subject: Program Notice information

Hi [redacted]

As discussed, I have attached some info relating to the dept's response to the program notice. Hope this clarifies.

Please find attached a notice regarding the 'program notice' submitted by Xstrata Coal

Queensland on 30 December 2010 and received by the department on 4 January 2011. Please be aware that the submitted program notice does not meet the requirements of section 350 of the *Environmental Protection Act 1994* (EP Act) as the application form referred to an event which had not yet occurred. Section 350 of the EP Act provides the opportunity for a person to lodge a program notice once an event has occurred which has caused or threatened environmental harm

If Xstrata Coal Queensland still wishes to undertake a Transitional Environmental Program to authorise the release of mine effected waters to Sandy Creek, a TEP can be voluntarily submitted under section 333 of the EP Act, without the lodgement of a program notice.

Also as discussed if you could provide a summary of water quality, volumes & est. flow rate into Sandy Creek to date that would be appreciated.

Regards

[redacted]

Senior Environmental Officer, Environmental Services - Mining

Telephone: [redacted] **Fax:** [redacted]
Email [redacted]

www.derm.qld.gov.au

Department of Environment & Resource Management

99 Hospital Road, Emerald, Qld, 4720

PO Box 19, Emerald, Qld, 4720

8.1 Application for TEP – 27 January 2011

Statutory declaration

Environmental Operations

For an transitional environmental program

A statutory declaration is a written statement of facts that is sworn or declared under the Oaths Act 1867. *In accordance with section 556 of the* Environmental Protection Act 1994, *this statutory declaration must be completed and submitted with an transitional environmental program (TEP) and/or any additional information about an TEP that is requested by the administering authority.*

Oaths Act 1867

QUEENSLAND
TO WIT

I [redacted]

Insert the name of the person making this declaration

of C/- Dawson Highway, Rolleston QLD 4702

Insert the street address of the person making this declaration

in the State of Queensland do solemnly and sincerely declare that in relation to the submission of the transitional environmental program entitled Rolleston Coal Mine - Discharge into Meteor Creek via Sandy Creek

Insert title of TEP

for release of water at Meteor Creek via Sandy Creek

Insert reason for TEP — Insert location of activity TEP relates to

and in accordance with section 556 of the *Environmental Protection Act 1994*, I have:

Environmental Protection Agency
www.epa.qld.gov.au ABN 87 221 158 786

Queensland Government
Environmental Protection Agency
Queensland Parks and Wildlife Service

- not knowingly given any false or misleading information, and
- given all relevant information

in relation to:

(tick applicable box)

☒ the preparation of the transitional environmental program, or

☐ a request by the administering authority for additional information about the transitional environmental program.

And I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of the *Oaths Act 1867*.

Taken and declared before me, at Rolleston

Insert location

this 27th day of January in the year 2011

Insert day (e.g. 18th) Insert month Insert year

[redacted]

Signed

(Person making this declaration)

[redacted]

Signed

(Delete whichever is not applicable — Justice of the Peace / ~~Commissioner for Declarations / Solicitor / Barrister~~)

[redacted]

Printed name and registration number (if applicable)

JUSTICE OF THE PEACE (QUALIFIED) DEPT. OF JUSTICE & ATTORNEY-GENERAL Reg No. [redacted]

J.P QUALIFIED

Transitional Environmental Program (TEP)

Rolleston Coal Mine

Discharge into Meteor Creek via Sandy Creek

January 2011

ROLLESTON
COAL

Table of Contents

1. Introduction

This Transitional Environmental Program (***TEP***) describes proposed actions necessary for the discharge of dilute mine affected waters from the Rolleston Coal Mine from an interim additional discharge location during the term of the TEP. It is anticipated that Rolleston Coal's draft Environmental Authority will be approved during this period.

Rolleston Coal Mine has received exceptionally large amounts of rainfall over the last four months of 2010, including the highest September and December rainfall experienced in the locality since rainfall records commenced. As a consequence, a number of urgent actions have been required for the responsible management of water on site.

Rolleston Coal has prepared a detailed Water Management Plan (a copy of which was submitted to DERM in November 2010). This plan has been progressively implemented during 2010 and has included the construction of a number of levees and diversions designed to allow overland flow water to bypass mine working areas prior to exiting the mining lease. The Water Management Plan also details existing and proposed water storages and release points for mine affected water as the mine progresses.

A draft Environmental Authority (EA) was submitted to DERM for assessment in August 2010. It included the majority of the proposed water storages and release points for mine affected water identified in the Water Management Plan. Assessment of the EA was suspended by DERM under Section 231 of the *Environmental Protection Act 1994* pending amendments to Rolleston Coal's Environmental Management Plan (EMP) to reflect the changes in the draft EA. The amended EMP together with additional supporting information regarding one of the release points was provided to DERM on 1st December 2010. The assessment period for the EMP finishes in mid January 2011 with completion of the EA assessment period shortly after.

This TEP relates to the discharge of dilute mine affected waters that have accumulated in water storages and pit areas due to a series of heavy rainfall events. The capacity to discharge water from the southern parts of the Mine is currently limited. An additional discharge point into Meteor Creek via Sandy Creek (RP5) has been proposed as part of the aforementioned draft EA currently being assessed by DERM. Accordingly, until such time as the additional discharge point is recognised in the EA, Rolleston Coal will require this TEP to authorise the proposed discharges from temporary release point TEP RP1 in the southern part of ML 70307 as shown in Table 1.

Rolleston Coal voluntarily submits this TEP to seek authorisation under the *Environmental Protection Act 1994* to discharge water into Meteor Creek via Sandy Creek from a temporary discharge point on Sandy Creek.

Once approved, this TEP authorises the discharge of water to prevent potential uncontrolled discharges and to avoid the deterioration of water quality remaining in-situ. It also describes a process to transition to compliance with conditions of EA MIM800090802.

Should approval of the draft EA currently being assessed by DERM occur prior to the completion date of this TEP, actions will focus on transitioning toward compliance with the new EA. This TEP proposes the implementation of the stated Action Plan, at the completion of which Rolleston Coal will comply with its obligations under the relevant Environmental Authority.

The current sustained flows in the receiving waters of Meteor Creek provide an **immediate** opportunity to discharge water while maintaining dilution ratios and contaminant limits compliant with EA MIM800090802.

2. Environmental Authority

Xstrata Coal Queensland Pty Ltd, ICRA Rolleston Pty Ltd and Sumisho Coal Australia Pty Limited (***Rolleston Coal***) hold Environmental Authority MIM800090802 to carry out mining activities on ML70307 and MDL227, issued on 30 November 2009.

3. Submission

This TEP is submitted on behalf of Xstrata Coal Queensland Pty Ltd, ICRA Rolleston Pty Ltd and Sumisho Coal Australia Pty Limited by Glenn Burlinson, Site Senior Executive, Rolleston Coal Pty Ltd.

_____ _____

Signed Date

4. Authorisation

This TEP authorises the discharge of water via temporary Release Point TEP RP1. Monitoring of discharge water will be undertaken in accordance with the conditions and requirements of this TEP and EA MIM800090802. Ongoing water management will be in accordance with Rolleston Coal's Water Management Plan (and is consistent with the draft EA currently being assessed by DERM).

To the extent there are any inconsistencies between this TEP and Environmental Authority MIM800090802 this TEP prevails.

5. Background

Rolleston Mine received approximately 778mm of rainfall from September to December 2010, which despite the construction during 2010 of numerous levees and diversions has resulted in significant water accumulation across the mine.

Rolleston Coal has on a number of occasions in recent months been able to discharge water under EA MIM800090802. Continued extreme rainfall events however have increased volumes of mine affected water in pits and storages, such that the current water management system is unable to discharge water at a rate consistent with pit inflow. The discharge location of this TEP (and draft EA once approved) will enhance the ability to move quantities of water in accordance with the EA. As outlined in the Introduction, in accordance with condition W32 of EA MIM800090802 a detailed Water Management Plan has been prepared and provided to DERM. The implementation of the Water Management Plan though well advanced, is reliant on the ability to discharge water into Meteor Creek via Sandy Creek. This proposal is generally consistent with previous TEP MAN9879 and the amended EA currently being assessed by DERM.

Across the Mining Lease there is an estimated 4000ML of mine affected water either in designated water storages or in pits and ramps. The water storages and disturbed areas are surrounded by a system of levees and diversions designed to divert external overland flow away from mining infrastructure. The levee system performed as designed for the recent rainfall events, and the water currently in the pits and ramps was collected from rainfall within the localised mining area (ie. inside of the levee system).

Rolleston Coal proposes to discharge mine affected water from the storages in the southern parts of the Mining Lease to the currently flowing Meteor Creek via overland flow to Sandy Creek. Existing monitoring points MP2 and MP4 as identified in EA MIM800090802 will be used to gauge stream flows as well as for water sampling. MP2 and MP4 are located upstream and downstream of the confluence of Sandy Creek with Meteor Creek. Monitoring of the discharge water will be undertaken at Release Point TEP RP1.

The existing release conditions and limits for Meteor Creek prescribed in EA MIM800090802 will be applied.

6. Discharge into Meteor Creek via Sandy Creek

6.1 Program

Rolleston Coal proposes to discharge water into Meteor Creek via Sandy Creek using a natural drainage depression used for discharging mine affected water to Meteor Creek via Sandy Creek early in 2010 in accordance with TEP MAN9879.

In discharging the water, Rolleston Coal will comply with the release limits, monitoring and flow conditions for Meteor Creek in EA MIM800090802. Existing upstream and downstream gauging stations will monitor receiving water flow rates, Electrical Conductivity (EC) and pH.

Rolleston Coal will only release contaminants at Release Point TEP RP1 when flow conditions are at 2.5m3/s (2,500 L/s) or greater in Meteor Creek when measured at Monitoring Point 2.

Rolleston Coal does not predict any impact to downstream users as this discharge will be managed so as to comply with current EA requirements for Release Point RP 2 (in Meteor Creek).

6.2 Program Objectives

Objective 1
The release of mine affected water must only occur from the Release Point TEP RP1 specified in Table 1 and depicted in Figure 1.

Objective 2
Monitoring Points identified in EA MIM800090802 as MP2 and MP4 will be used to monitor water quality upstream and downstream of the confluence of Sandy and Meteor Creeks. Manual grab samples will be taken at MP2 and MP4 for laboratory analysis. Refer to Figure 2.

Objective 3
The release of contaminants to waters under this TEP must not exceed the release limits in Table 3 when measured at the monitoring point specified in Table 1 for Release Point TEP RP1.

Objective 4
Notifications and reporting will comply with requirements under conditions W6, W13, W14 and W15 of EA MIM800090802 in relation to discharges from Release Point TEP RP1. As discharges under this TEP will be occurring simultaneously with discharges from other release points under EA MIM800090802, Rolleston Coal's reporting to DERM under condition W13 will include all discharges ie under the EA plus this TEP.

Objective 5

In addition to reporting to DERM under condition W13 of EA MIM800090802, Rolleston Coal will complete and lodge a Completion Report, outlining actions undertaken under this TEP and summarising compliance against EA MIM800090802 for discharges from Release Point TEP RP1, within 40 business of cessation of discharging under this TEP.

Objective 6

Rolleston Coal will meet all other requirements of EA MIM800090802 not specifically incorporated into this TEP which are relevant to discharges from Release Point TEP RP1 to Meteor Creek (conditions W1-W19). To the extent of any inconsistency between this TEP and the conditions of EA MIM800090802, the requirements and conditions of this TEP shall prevail.

6.3 Release Point

Interim Release Point TEP RP1 will be established as per Table 1 and as depicted on Figure 1. (This location is the same as previously used in accordance with TEP MAN9879.)

Table 1: Interim water release point

Release Point (RP)	Easting (GDA94)	Northing (GDA94)	Monitoring Point	Receiving waters description
TEP RP1	645207	7292541	Sandy Creek above confluence of Sandy Creek and Meteor Creek	Meteor Creek (via Sandy Creek)

6.4 Water Quality Monitoring

There are existing monitoring stations (pH, EC, Temperature and flow height) located upstream and downstream of the mining lease on Meteor Creek – refer to locations for Monitoring Points MP2 and MP4 on Figure 1. These existing Monitoring Points have established automated stations that will continue to operate in accordance with applicable requirements under EA MIM80009080.

Rolleston Coal will manually sample upstream and downstream monitoring points on Meteor Creek. The downstream monitoring point (MP4) will be sampled daily, in conjunction with end of pipe sampling. During major flooding the upstream monitoring point (MP2) is unable to be accessed via motor vehicle or on foot and will be sampled at least once per week dependant on helicopter availability and safety issues.

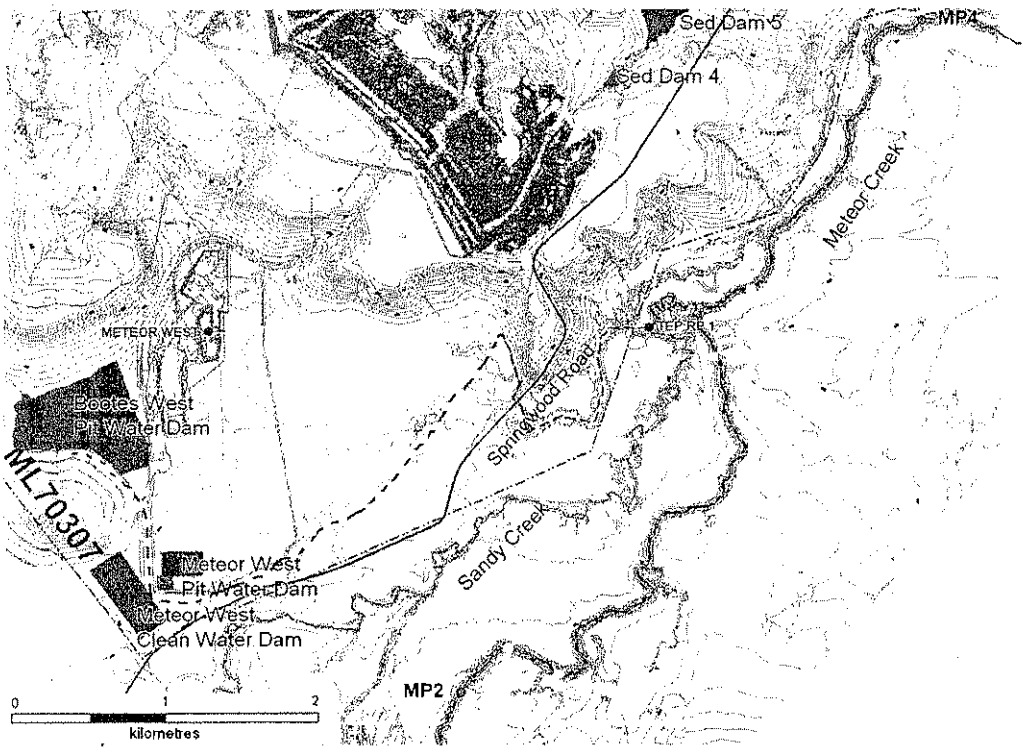
The monitoring point locations are detailed in Table 2 and depicted on Figure 1.

Table 2

Monitoring Point	Receiving Water Description	Easting (GDA94)	Northing (GDA94)
MP 2	Meteor Creek Upstream	643665	7290040
MP 4	Meteor Creek Downstream	646677	7294504

Monitoring at MP2 and MP4 will comply with the conditions of EA MIM800090802 and will be undertaken during any release event at Release Point TEP RP1.

Figure 1 Location of interim release point and upstream and downstream monitoring points



6.5 Discharge Limits

The release of contaminants to receiving waters must not exceed the release limits in Table 3 when measured at the monitoring point specified in Table 1 for Release Point TEP RP1.

Table 3 Contaminant release limits [1]

Quality Characteristic	Release Limits
Electrical conductivity (uS/cm)	1500
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)
Turbidity (NTU)	NA
Suspended Solids (mg/L)	1200
Sulphate (SO_4^{2-}) (mg/L)	1000

6.6 Environmental Requirements

Rolleston Coal will meet all other requirements of EA MIM800090802 which are relevant to discharges to Meteor Creek (conditions W1-W19). To the extent of any inconsistency of this TEP and the conditions of EA MIM800090802, the requirements and conditions of this TEP shall prevail.

These include, but are not limited to, the following:

(a) Quantity of Release

The daily quantity of contaminants released from Release Point TEP RP1 must be measured and recorded at Release Point TEP RP1 (Condition W10).

(b) Contaminant Flow Rate

The contaminant flow rate must not exceed 20% of the flow rate in Meteor Creek at Monitoring Point 2 (Condition W9).

(c) Minimum Flow requirements of Receiving Waters

The Minimum Flow in Receiving Water for a Release Event is 2.5m^3/s (2,500 L/s) in Meteor Creek at Monitoring Point 2 with Continuous flow recording (Condition W8).

[1] Taken from Release Limits until 30-NOV-2011 in Table 2 of Environmental Authority MIM800090802.

(d) Receiving Environment Contaminant Trigger Levels

The water quality of Meteor Creek will be monitored in accordance with condition W18 of EA MIM800090802 and Rolleston Coal will comply with condition W19 during any release events into Meteor Creek.

6.7 Risks of Actual Environmental Harm

Rolleston Coal's release of water to Meteor Creek via Sandy Creek takes advantage of a naturally formed drainage line consolidated over many years showing no signs of erosion despite recent high rainfall and very large natural flows. This drainage line has been used previously for the discharge of mine affected water under TEP MAN9879.

Rolleston Coal will maintain release rates from end of pipe that will not generate velocities that will incur scouring.

Rolleston Coal is confident there will be minimal potential for contamination from this release. No impact is anticipated to aquatic flora and fauna as water being discharged is a result of recent rainfall events and the discharge will occur in accordance with condition W9 of EA MIM800090802 at a dilution ratio to minimise the potential for environmental harm. As the overland flow path is heavily vegetated, Rolleston Coal is confident suspended solids will be naturally filtered from the water within the Mining Lease area prior to reaching Sandy Creek. As releases to Meteor Creek will have a minimum receiving water stream flow of 2,500 L/s, Rolleston Coal is confident that there will be sufficient dilution and blending to eliminate any potential contamination at the downstream monitoring point (MP4).

Rolleston Coal is confident that the rate of water released will not result in increased flood levels as the channel is appropriately sized to accommodate this water.

6.8 Notifications and Reporting

(a) Discharge Notifications

Rolleston Coal will comply with the notification conditions of EA MIM800090802 in relation to releases to Meteor Creek as set out in condition W13. Additionally Rolleston Coal has notified DERM via a Program Notice under section 350 of the *Environmental Act 1994.*

(b) Exceedence and Investigation Notifications

Rolleston Coal will comply with the notification conditions of EA MIM800090802 in relation to releases as set out at conditions: W5, W6, W14 W15 and W19.

(c) Monitoring Results Reporting

During releases to Meteor Creek, Rolleston Coal will undertake daily sampling of water being discharged for the water quality characteristics outlined in Table 3. Total Suspended Solids data will be analysed by an accredited laboratory, and is generally available within 14 days of being submitted.

(d) Completion Report

Rolleston Coal will complete and lodge with DERM a Completion Report, outlining actions undertaken under this TEP and summarising compliance against this TEP and EA MIM800090802 for discharges to Meteor Creek, within 40 business days of the cessation of the final discharge to Meteor Creek.

6.9 Program Action Plan

The above objectives will be achieved in accordance with the Program Action Plan which is set out below at Table 4. The Program Action Plan includes performance indicators and key dates by which actions will be implemented.

Table 4: Action Plan

Objective No	Action Plan Item	Performance Indicator	Completion Date	Responsibility
1	AP 1 – Notify DERM of discharge occurring in accordance with this TEP.	Notification to DERM.	Within 24 hours of approval of this TEP.	Operations Manager
2	AP 2 - Monitoring in accordance with EA MIM800090802.	Daily Monitoring	Daily during discharge	Environmental Manager
1 and 3	AP 3 - Cease discharge if an exceedence of Discharge Limit in Table 3 is identified. Discharge may recommence when the relevant water quality characteristic returns to compliance.	Discharge ceases	As soon as practicable after an exceedence is identified. Discharge may recommence when the relevant water quality characteristic returns to compliance	Environmental Manager & Operations Manager
4 and 5	AP 4 – Notification to DERM of cessation of release event in accordance with EA condition W13.	Notification to DERM	Within 24 hours of cessation of discharge	Environmental Manager
3	AP 5 – Cease discharge	Discharge ceases	Final discharge under this TEP to cease by 30 June 2011.	Operations Manager
5	AP 6 – Prepare and submit to DERM the Completion Report.	Completion Report submitted to DERM	Within 40 business days after cessation of final	Environmental Manager

Objective No	Action Plan Item		Performance Indicator	Completion Date	Responsibility
				discharge.	
6	AP 7 – Meet all requirements of EA MIM800090802 in relation to release of contaminants to Meteor Creek (conditions W1-W19) for discharges from Release Point TEP RP1.		Compliance	At all times during discharge from Release Point TEP RP1.	Environmental Manager / Operations Manager

7. Term of the TEP

The proposed term of the TEP is to 30 June 2011.

(It is anticipated that the draft Environmental Authority currently under assessment by DERM will be approved prior to the expiry of this TEP, at which time the TEP will become redundant.)

8. Further information

For further information contact [redacted]

[redacted]

Rolleston Coal Pty Ltd
Xstrata Coal Queensland
P.O. BOX 11
Springsure QLD 4722

Mobile:

Email [redacted]

8.2 TEP Approval MAN12019 – 23 February 2011

Department of Environment and Resource Management

Notice

Environmental Protection Act

Decision to an approval of a transitional environmental program

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

Your reference : MAN12019, EA MIN101140410
Our reference : MAN12019, EMD252

Xstrata Coal Queensland Pty Ltd
Level 10 Riverside Centre
123 Eagle Street
Brisbane Qld 4000

ICRA Rolleston Pty Ltd
Level 15, Commonwealth Bank Building of Australia
240 Queen St
Brisbane Qld 4000

Sumisho Coal Australia Pty Ltd
Level 34, Central Plaza One
Brisbane Qld 4000

Attention: [redacted]

Re: Application for an approval of a transitional environmental program for Rolleston Coal Mine – Application for Approved Transitional Environmental Porgram (TEP): Discharge into Meteor Creek via Sandy Creek.

Thank you for your application for an approval of a transitional environmental program - certificate of approval number MAN12019.

Your application, which was received by this office on 1 January 2011, has been approved with conditions.

A copy of the amended certificate of approval, which includes the schedule of conditions, 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 $3984.40 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

Department of Environment and Resource Management

Notice

Should you have any queries in relation to this notice, Tenille Nielsen of the Department of Environment and Resource Management on telephone (07) 4980 6200 would be happy to assist you.

[redacted]

SIGNATURE

23.2.2011

DATE

[redacted]
Delegate of the Administering Authority
Regional Manager (Environmental Services - Mining)
Central West Region

Enquiries:
Department of Environment and Resource Management
PO Box 19
Emerald Qld 4720
Phone: (07) 4980 6200
Fax: (07) 4982 2568

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

Queensland Government

Department of Environment and Resource Management

Environmental Protection Act

Transitional environmental program certificate of approval number MAN12019

This certificate of approval is issued by the administering authority pursuant to section 339 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:

Xstrata Coal Queensland Pty Ltd
Level 10 Riverside Centre
123 Eagle Street
Brisbane Qld 4000

ICRA Rolleston Pty Ltd
Level 15, Commonwealth Bank Building of Australia
240 Queen St
Brisbane Qld 4000

Sumisho Coal Australia Pty Ltd
Level 34, Central Plaza One
Brisbane Qld 4000

approving the draft transitional environmental program; titled Rolleston Coal Mine Transitional Environmental Program (TEP) Discharge into Meteor Creek via Sandy Creek.

The draft transitional environmental program, dated 16 February 2011, was originally received by this office on 1 February 2011. This transitional environmental program remains in force until 29 August 2011.

The draft transitional environmental program is approved subject to the following conditions:

In carrying out this Transitional Environmental Program, 'Rolleston Coal Pty Ltd' will undertake all activities in accordance with the following conditions:

Undertaking the release of mine affected water

1 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*.

2 The release of contaminants to waters must only occur from the release point specified in Table 1 of this Transitional Environmental Program – Certificate of Approval.

3 The release of contaminants to waters must not exceed the release limits stated in Table 3 at the monitoring points specified in Table 1 and Table 2 of this Transitional Environmental Program – Certificate of Approval.

4 The release of contaminants to waters from the release points must be monitored at the locations specified in Table 1, Table 2 and Table 6 for each quality characteristic and at the frequency specified in Table 3 and Table 4 of this Transitional Environmental Program – Certificate of Approval.

5 If quality characteristics of the release exceed any of the trigger levels specified in Table 4 during a release event, the Transitional Environmental Program holder must compare the downstream results in the receiving waters identified in Table 6 to the trigger values specified in Table 4 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 4 for any quality characteristic, compare the results of the downstream site to the data from background monitoring sites and

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

ii) 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

1) details of the investigations carried out

2) actions taken to prevent environmental harm.

6 If an exceedance in accordance with condition 5(a)(ii)(2) is identified, the holder of the Transitional Environmental Program must notify the administering authority within 24 hours of receiving the result. The notification must include written verification of the exceedance forwarded to the administering authority either via facsimile ((07) 4982 2568) or email to Manager.MiningCWR@derm.qld.gov.au.

Table 1 Contaminant release points, sources and receiving waters

TEP MP1	645207	7292541	Sandy Creek above confluence of Sandy Creek and Meteor Creek	MP2 MP4	Meteor Creek via Sandy Creek

Table 2 Contaminant release monitoring points

Monitoring Point (MP)	Easting (GDA94)	Northing (GDA94)	Contaminant Source and Location	Monitoring Point	Receiving waters description
TEP MP1	645207	7292541	Meteor Creek via Sandy Creek	End of pipe	Meteor Creek (via Sandy Creek)
MP4	646677	7294504	Meteor Creek via Sandy Creek	Downstream	Meteor Creek

Table 3 Contaminant release limits

Quality Characteristic	Interim Release Limits until 30-NOV-2011	Future Release Limits from 1-DEC-2011	Monitoring frequency
Electrical conductivity (uS/cm)	1500	1000	Daily during release (the first sample must be taken within 2 hours of commencement of release)
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	6.5 (minimum) 9.0 (maximum)	Daily during release (the first sample must be taken within 2 hours of commencement of release)
Turbidity (NTU)	NA*	NA*	Daily during release* (first sample within 2 hours of commencement of release)
Suspended Solids (mg/L)	1200	Limit to be determined based on receiving water reference data and achievable best practice sedimentation control and treatment	Daily during release* (first sample within 2 hours of commencement of release)
Sulphate (SO_4^{2-}) (mg/L)	1000	1000	Daily during release* (first sample within 2 hours of commencement of release)

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

Table 4 Release contaminant trigger investigation levels

Quality Characteristic	Trigger Levels (µg/L)	Monitoring Frequency
Aluminium	650	Within 2 hours of commencement of release and there after weekly during release
Arsenic	13	
Cadmium	0.2	
Chromium	3	
Copper	13	
Iron	520	
Lead	10	
Mercury	0.2	
Nickel	11	
Boron	370	
Cobalt	90	
Molybdenum	34	
Selenium	10	
Silver	1	
Uranium	1	
Vanadium	10	
Ammonia	900	

Nitrate	1100	
Petroleum hydrocarbons (C6-C9)	20	
Petroleum hydrocarbons (C10-C36)	100	
Zinc	8	

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 3 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 3.

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.

Table 5 Contaminant release during flow events

Receiving water description	Release Point	Gauging station description	Easting (GDA94)	Northing (GDA94)	Minimum Flow in Receiving Water Required for a Release Event	Flow recording Frequency
Meteor Creek (via Sandy Creek)	TEP RP1	Meteor Creek MP2	643665	7290040	2.5m^3/s (2500L/s)	Continuous (Minimum daily)

Table 6 Receiving water monitoring point locations

Monitoring Point (MP)	Receiving Waters Location Description	Easting (GDA94)	Northing (GDA94)
MP 4	Meteor Creek Downstream	646677	7294504

Contaminant Release Events

7 Notwithstanding any other condition of this Transitional Environmental Program, the release of contaminants to waters must only take place during periods of natural flow events specified as minimum flow in Table 5 for the contaminant release point(s) specified in Table 1.

8 The cumulative contaminant release flow rate into Meteor Creek must not exceed 20% of the receiving water flow rate.

9 The daily quantity of contaminants released from each release point must be measured and recorded at the monitoring points in Table 1.

Notification of Release Events

10 The Transitional Environmental Program holder must notify the administering authority within 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 ((07) 4982 2568) 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)
e) receiving water/s including the natural flow rate
f) any details (including available data) regarding likely impacts on the receiving water(s).

11 The Transitional Environmental Program holder must submit a report to the administering authority daily during the release of contaminants under this Transitional Environmental Program (either via facsimile ((07) 4982 2568) or email to Manager.MiningCWR@derm.qld.gov.au) detailing the following information:
a) all in situ monitoring data for that day
b) the receiving water flow rate
c) the release flow rate.

12 The Transitional Environmental Program holder must notify the administering authority in writing within 24 hours after ceasing a release of contaminants under this Transitional Environmental Program, detailing:
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
f) any other matters pertinent to the water release event.

Notification of release event exceedence

13 If the release limits defined in Table 3 are exceeded, the holder of the Transitional Environmental Program must notify the administering authority within 24 hours of receiving the results.

14 The Transitional Environmental Program holder must, within 28 days of a release that exceeds the conditions of this Transitional Environmental Program – Certificate of Approval, provide a report to the administering authority detailing:
a) the reason for the release
a) the location of the release
b) all water quality monitoring results
c) any general observations
d) all calculations
e) any other matters pertinent to the water release event.

Erosions and Sediment Control

15 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.

16 Erosion protection must be designed, installed and maintained at each release point authorised by this Transitional Environmental Program and must:

a) designed and constructed by a suitably qualified and experienced person, and

b) be inspected by a suitably qualified and experienced person

1. prior to the commencement of dewatering operations; and
2. following the cessation of release in accordance with the conditions of this Transitional Environmental Program – Certificate of Approval.

17 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.

Requirements to cease the release of mine affected water

18 The release of mine affected waters must cease immediately if any water quality limit as specified in Table 3 is exceeded.

19 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.

20 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.

21 The release of mine affected waters authorised under this Transitional Environmental Program must cease by **30 June 2011**.

Monitoring Requirements

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

23 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

24 As soon as practicable after becoming aware of any emergency or incident which 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.

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

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.

26 Not more than fourteen 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

27 The holder of this Transitional Environmental Program certificate must submit a report to the administering authority on the fifth 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, and
c) how the Transitional Environmental Program holder has complied with all conditions contained within the Transitional Environmental Program – Certificate of Approval.

28 The holder of the Transitional Environmental Program certificate must submit a report to the administering authority by **28 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:

   i. the best practice environmental management for the activity, and

   ii. 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 issued for the Rolleston Coal Mine, located at ML70307 and MDL227and the *Environmental Protection Act 1994*.

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, [redacted] of the Department of Environment and Resource Management on telephone [redacted] would be happy to assist you.

[redacted]

Signature

23.2.2011

Date

[redacted]

Delegate of the Administering Authority
Regional Manager (Environmental Services – Mining)
Department of Environment and Resource Management

Enquiries:
Department of Environment and Resource Management
PO Box 19
Emerald Qld 4720
Phone: (07) 4980 6200
Fax: (07) 4982 2568

8.3 Bundle of email correspondence between RCM and DERM

From: [redacted]
Sent: Wednesday, 9 February 2011 3:07 PM
To: [redacted] (Rolleston - Coal)
Subject: RE: Rolleston TEP - Sandy Creek Comments

Hello [redacted]
The department has reviewed the Rolleston Coal Mine TEP for the discharge of mine affected water into Meteor Creek via Sandy Creek. The Sandy Creek TEP application has also been compared with the newly approved EA that takes effect from 4 February 2011.

DERM has provided the following comments on the Sandy Creek TEP in relation to issues that need further clarification.

- As per our phone discussion today, you advised that although the new EA for Rolleston Coal has been approved allowing discharges into Meteor Creek via Sandy Creek (RP5), the Sandy Creek TEP will still be required to discharge from TEP RP1 until such time as the construction of associated infrastructure has been completed to enable discharges to take place as per the new EA.

- You advised that the TEP and the new EA will not be used together as RP1 will only be used for discharging water until Rolleston is able to commence discharging under the new EA. However, can you please specify in the TEP document that in the event that water is discharged from both TEP RP1 and RP5 that the combined release volume into Meteor Creek and Meteor Creek via Sandy Creek does not exceed 20%. We will also include this as a condition in the certificate of approval.

- The TEP states that water will be discharged from the storages in the southern part of the mining lease into Meteor Creek via Sandy Creek. Can you please provide more information on how will the water get from the storages to RP1?

- Where the TEP refers to conditions of EA MIM800090802, those conditions need to be detailed in full within the TEP itself instead of making reference to a document that is subject to change.

- Timeframes need to be included within the TEP document that show that discharge will cease on 30th June 2011, the final report is due 28th July 2011 (20 business days after cessation of discharge into Meteor Creek) and TEP ends on 29th August 2011. These dates are in line with those outlined in the TEP MAN11779 Certificate of Approval for the Spring Creek water release into Bootes Creek.

- It is requested that DERM is notified of a discharge occurring under the TEP within 12 hours (not 24 hours) as agreed to in previous TEP.

I have attached a template that DERM has prepared to assist mining companies with the preparation of TEP documents that you may wish to use as a guide for future submissions.

If you wish to discuss the above comments, don't hesitate to give me a call.

I look forward to receiving a response from you and in the meantime I will continue working on my assessment report for the TEP application for Sandy Creek.

Cheers.

[redacted]
Senior Environmental Officer, Environmental Services - Mining
Telephone: [redacted] **Facsimilie:** [redacted] **Email:** [redacted]
www.derm.qld.gov.au

Department of Environment and Resource Management
99 Hospital Road, Emerald Qld 4720
PO Box 19, Emerald Qld 4720

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+------------------------------------------------------------------------+

Think B4U Print

1 ream of paper = 6% of a tree and 5.4kg CO2 in the atmosphere

3 sheets of A4 paper = 1 litre of water

+------------------------------------------------------------------------+
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DRAFT TRANSITIONAL ENVIRONMENTAL PROGRAM UNDER SECTION 333 OF THE *ENVIRONMENTAL PROTECTION ACT 1994*

Principal Holder: XXXXXXXX
XXXXXXXX
XXXXXXXX

EA Number: XXXXXXXX

Title: XXXXXXXXXXXXXXX

Date: XXXXXXXX

Finish Date: *NOTE: The 'End Date' should be approximately 2 months after the lodgement date of the completion report.*

BACKGROUND

Explains why a TEP is required, as a result of an incident, breach, emergency. i.e. what went wrong – keep the submission and the discharge plan to a scale, based on the company's immediate and urgent priorities, that will allow timely consideration.
NOTE: Include relevant reporting requirements, monitoring locations and discharge limits from EA conditions, rainfall data, pits and water management structures affected, quantity of water proposed to be discharged, pumping/discharge rates and locations, creeks/rivers to be discharged to, whether creeks/rivers are still flowing naturally, water quality monitoring locations and downstream limits in creeks/rivers during discharge, results of previous sampling, ongoing reporting requirements to the administering authority, downstream water uses and affected properties. Also include contingency plans for possibility of having to cease discharge due to poor water quality or significant flow path erosion etc. Include whether there are other permits involved and status of the applications.

SUPPORTING INFORMATION

The *Environmental Protection Regulation 2008* commenced on 1 January 2009. The regulation consolidated considerations that must be made when making a range of decisions including TEPs into Chapter 4 of the regulation. This has resulted in making the range of matters to be considered clearer to decision makers. These include, but are not limited to:

s51(1) (a) requires the consideration of the management hierarchy, environmental values, quality objectives and management intent specified in an EPP. The *Environmental Protection (Water) Policy 2009* lists a range of values that includes the biological integrity, the agricultural value, the drinking water value, the recreation value and the value for industrial purposes. If these values are correctly identified, the 'beneficial uses' of the waterway will be identified.
s51(1) (d) requires consideration of the impact of the release of contaminants on the environment including the cumulative impact
s51(1) (f) the order of occupancy between the person carrying out the activity and the affected person
s51(1) (g) the remaining capacity of the receiving environment to accept contaminants while protecting the environmental values.
s52(1) (a) requires consideration of imposing a condition requiring the implementation of a system for managing risks to the environment
S52(1) (g) requires consideration of imposing a condition on the way in which contaminants are released for example a condition restricting the release of a contaminant at a particular temperature, velocity or rate or during particular meteorological conditions or water flows.
s53(1) requires consideration of whether to impose monitoring conditions about the release
s56 (2) requires consideration of any available toxicity data relevant to the release and the receiving environment.

Note: Section 330 of the EP Act defines a TEP as:

A transitional environmental program is a specific program that, when approved, achieves compliance with this Act for the matters dealt with by the program by:
(a) reducing environmental harm; or
(b) detailing the transition to an environmental standard.

OBJECTIVES

NOTE: As required under section 331 the transitional environmental program must state the objectives to be achieved and maintained under the program.

The objectives of the TEP must relate to the time frames for mines returning to operation in accordance with / compliance with the EA conditions, and must also include the prevention or re-occurrence in the short, medium and long term of the situation that gave rise to the approval of an TEP

HOW OBJECTIVES ARE TO BE ACHIEVED

NOTE: As required under section 331 the TEP must state how the objectives are to be achieved, and provide a timetable to achieve the objectives, taking into account the application of best practice environmental management and the risks of environmental harm being caused by the activity. The timetable must state appropriate performance indicators that can be measured at various intervals.

As an approved TEP can protect the holder from enforcement action for non-compliances with the Act, the commitments or terms of the TEP made by the client need to be clearly drafted, unambiguous and easily auditable. Please note that a failure to comply with the terms of a TEP is an offence so the terms outlined within the document act in a similar way to conditions contained within an EA.

Table 1 – achieving TEP objectives

OBJECTIVE	ACTION	RESPONSIBILITY	TIME FRAME	PERFORMANCE INDICATOR
XXXXX		Nominate officer/person responsible for fulfilling objective.		
XXXXX				
XXXXX				
XXXXX				

If the table above is not sufficient in size please use in the landscape format.
If the table is insufficient due to the quantity of detail required utilise subheadings e.g. objective, action, responsibility, timeframe and performance indicator with detailed information included below each heading. This information can then be modified in the reporting for successes, issues, incidents and failures.

MONITORING

NOTE: As required under section 331 –
Also include specific upstream and downstream monitoring locations and detailed supporting aerial photographs and maps defining discharge points and monitoring locations.

The following tables are provided as an example on providing the required data and how to apply varying limits to different monitoring points. If you are proposing to meet a specific water quality downstream (i.e. as a compliance point, approximately 500m is acceptable – receiving water monitoring locations should not be utilised), compliance will need to be monitored at both the 'end of pipe' location and the 'compliance point'. Justification of the discharge actions proposed need to be provided in the documentation, considering Chapter 4 of the Environmental Protection Regulation 2008.

Table 2 - Contaminant release points, sources and receiving waters

Release point (TEP RP)	Easting (GDA94)	Northing (GDA94)	Contaminant source and location	Monitoring point	Receiving waters
TEP RP 1	xxxx	xxxx	xxxx	TEP MP 1	xxxx
TEP RP 2	xxxx	xxxx	xxxx	TEP MP 2	xxxx
				TEP MP 3	

Table 3 - Contaminant release monitoring points

Monitoring point (TEP MP)	Easting (GDA94)	Northing (GDA94)	Contaminant source and location	Monitoring point location	Receiving waters
TEP MP 1	xxxx	xxxx	xxxx	xxx dam spillway	xxxx
TEP MP 2	xxxx	xxxx	xxxx	xxx dam spillway	xxxx
TEP MP 3	xxxx	xxxx	xxxx	500m downstream of junction of xxx dam spillway on the xxx receiving waters	xxxx

Table 4 - Contaminant release limits

Quality characteristic	Release Limit	Monitoring Frequency	Sample Type	Monitoring Point
Electrical conductivity (uS/cm)	xxxx (e.g. 1500)	Daily during release (the first sample must be taken within 2 hours of commencement of release)	*In situ*[1]	TEP MP 1
				TEP MP 3
			Samples require laboratory analysis[2]	TEP MP 1
				TEP MP 3
	xxxx (e.g. 3000)	Daily during release (the first sample must be taken within 2 hours of commencement of release)	*In situ*[1]	TEP MP 2
			Samples require laboratory analysis[2]	TEP MP 2
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)	Daily during release (the first sample must be taken within 2	*In situ*[1]	TEP MP 1
				TEP MP 2

		hours of commencement of release)		TEP MP 3
			Samples require laboratory analysis[2]	TEP MP 1
				TEP MP 2
				TEP MP 3
Turbidity (NTU)	xxxxx	Daily during release (the first sample must be taken within 2 hours of commencement of release)	*In situ*[1]	TEP MP 1
				TEP MP 2
				TEP MP 3
			Samples require laboratory analysis[2]	TEP MP 1
				TEP MP 2
				TEP MP 3
Sulphate (SO_4^{2-}) (mg/L)	xxxxx	Daily during release (the first sample must be taken within 2 hours of commencement of release)	*In situ*[1]	TEP MP 1
				TEP MP 2
				TEP MP 3
			Samples require laboratory analysis[2]	TEP MP 1
				TEP MP 2
				TEP MP 3

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

Table 5 - Release contaminant trigger investigation levels

Quality characteristic	Trigger levels (µg/L)	Monitoring frequency	Monitoring Point
Aluminium	55	Commencement of release and thereafter weekly during release	TEP MP 1 TEP MP 2
Arsenic	13		
Cadmium	0.2		
Chromium	1.0		
Copper	2.0		

Iron	300		
Lead	10		
Mercury	0.2		
Nickel	11		
Zinc	8.0		
Boron	370		
Cobalt	90		
Manganese	1900		
Molybdenum	34		
Selenium	10		
Silver	1.0		
Uranium	1.0		
Vanadium	10		
Ammonia	900		
Nitrate	1100		
Petroleum hydrocarbons (C6-C9)	20		
Petroleum hydrocarbons (C10-C36)	100		
Fluoride (total)	2000		

Table 6 - Contaminant release during flow events

Receiving waters	Release point (TEP RP)	Gauging station description	Easting (GDA94)	Northing (GDA94)	Minimum flow in receiving water required for a release event	Flow recording frequency
XXXX Creek	TEP RP1	WX	XXXXX	XXXXX	=> XXm^3/sec	Continuous (minimum daily)
XXXX Creek	TEP RP2	WX	XXXXX	XXXXX	=> XXm^3/sec	Continuous (minimum daily)

Table 7 - Receiving water downstream monitoring points

Monitoring points (TEP MP)	Receiving waters location description	Easting (GDA94)	Northing (GDA94)
TEP MP X	CX – XXXX Creek XXX metres downstream of RP X	XXXX	XXXX
TEP MP X	CX - XXXX Gully XXXX metres downstream of RP X	XXXX	XXXX

REPORTING

NOTE: The department will require daily reporting of insitu water quality parameters.

Progress reports will be required to be submitted to the department (i.e. monthly, can be stated as the 5th business day of each month) describing activities and issues from previous month and proposed activities for next month and a final report defining how the objectives of the TEP have been achieved.

A final report is required to be submitted to the report upon completion of all actions, and at least 2 months prior to the end date of the TEP.

CONDITIONS

NOTE: the TEP applicant should outline the rules they will follow in undertaking the proposed actions. Where the action results in a variation of the EA conditions, the rules should be set with the proposed variation. Example below:

In carrying out this Transitional Environmental Program, 'Client Name (i.e. principal EA holder)' will undertake all activities in accordance with the following conditions.

Undertaking the release of mine affected water

1. 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.*
2. The release of contaminants to waters must only occur from the release points specified in Table 2 and depicted in Figure 1 attached to this Transitional Environmental Program.
3. The release of contaminants to waters must not exceed the release limits stated in Table 4 at the monitoring points specified in Table 2 and Table 3 of this Transitional Environmental Program.
4. The release of contaminants to waters from the release points must be monitored at the locations specified in Table 2 and Table 3 for each quality characteristic and at the frequency specified in Table 4 and Table 5 of this Transitional Environmental Program.
5. If quality characteristics of the release exceed any of the trigger levels specified in Table 5 during a release event, the Transitional Environmental Program holder must compare the downstream results in the receiving waters identified in Table 7 to the trigger values specified in Table 5 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 5 for any quality characteristic, compare the results of the downstream site to the data from background monitoring sites and
      i) if the result is less than the background monitoring site data, then no action is to be taken or
      ii) 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
         1) details of the investigations carried out
         2) actions taken to prevent environmental harm.
6. If an exceedance in accordance with condition 5(a)(ii)(2) is identified, the holder of the Transitional Environmental Program must notify the administering authority within 24 hours of receiving the result. The notification must include written verification of the exceedance forwarded to the administering authority either via facsimile (INSERT LOCAL OFFICE NUMBER) or email to Manager.MiningCWR@derm.qld.gov.au.

Contaminant Release Events

7. The Transitional Environmental Program 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 specified in Table 2 for any receiving waters into which a release occurs.

8 Notwithstanding any other condition of this Transitional Environmental Program, the release of contaminants to waters must only take place during periods of natural flow events specified as minimum flow in Table 6 for the contaminant release point(s) specified in Table 2.

9 Contaminant release flow rate must not exceed XXX% of receiving water flow rate.

10 The daily quantity of contaminants released from each release point must be measured and recorded at the monitoring points in Table 2.

Erosions and Sediment Control

11 eleases 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.

12 Erosion protection must be designed, installed and maintained at each release point authorised by this Transitional Environmental Program and must:
   a) designed and constructed by a suitably qualified and experienced person, and
   b) be inspected by a suitably qualified and experienced person
      1. prior to the commencement of dewatering operations; and
      2. following the cessation of release in accordance with the conditions of this Transitional Environmental Program – Certificate of Approval.

13 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

14 The Transitional Environmental Program holder must notify the administering authority within XXX 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 (INSERT LOCAL OFFICE NUMBER) 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)
   e) receiving water/s including the natural flow rate
   f) any details (including available data) regarding likely impacts on the receiving water(s).

15 The Transitional Environmental Program holder must provide the administering authority daily during the release of mine affected water, in writing (either via facsimile (INSERT LOCAL OFFICE NUMBER) or email to Manager.MiningCWR@derm.qld.gov.au) of the following information:
   a) all in situ monitoring data for that day
   b) the receiving water flow rate
   c) the release flow rate.

16 The Transitional Environmental Program holder must notify the administering authority as soon as practicable, (no later than within 24 hours after cessation of a release) of the cessation of a release notified under condition 14 and within 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
f) any other matters pertinent to the water release event.

Notification of release event exceedence

17 If the release limits defined in Table 3 are exceeded, the holder of the Transitional Environmental Program must notify the administering authority within 24 hours of receiving the results.

18 The Transitional Environmental Program holder must, within 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
f) any other matters pertinent to the water release event.

Requirements to cease the release of mine affected water

19 The release of mine affected waters must cease immediately if any water quality limit as specified in Table 2 is exceeded.

20 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.

21 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.

22 The release of mine affected waters authorised under this Transitional Environmental Program must cease by **DATE** *(i.e. the last action date for discharges in Table 1).*

Monitoring Requirements

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

24 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

25 As soon as practicable after becoming aware of any emergency or incident which 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.

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

27 Not more than fourteen 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.

Any other conditions that require a response, contingency for matters under this TEP, i.e. if constructing a new regulated structure, design plans will be required to be submitted to the administering authority for approval prior to construction.

NOTES FOR THE CLIENT

These regulatory requirements of Chapter 4 of the *Environmental Protection Regulation 2008*, the Standard Criteria and the requirements of EP Act.

In deciding to accept or refuse a TEP the administering authority is required to consider section 338 of the EP Act, which states:

338 Criteria for deciding draft program

(1) In deciding whether to approve or refuse to approve the draft program or the conditions (if any) of the approval, the administering authority—
(a) must comply with any relevant regulatory requirement; and
(b) subject to paragraph (a), must also consider the following—
(i) the standard criteria;

- *The principles of ecological sustainable development as set out in the 'National Strategy for Ecologically Sustainable Development'.*
- *Any applicable environmental protection policy.*
- *Any applicable Commonwealth, State or local government plans, standards, agreements or requirements.*
- *Any applicable environmental impact study, assessment or report.*
- *The character, resilience and values of the receiving environment.*
- *All submissions made by the applicant and submitters.*
- *The best practice environmental management for activities under any relevant instrument, or proposed instrument, as follows – a transitional environmental program.*
- *The financial implications of the requirements under an instrument, or proposed instrument, mentioned in paragraph (g) (above) as they would relate to the type of activity or industry carried out, or proposed to be carried out, under the instrument.*
- *The public interest.*
- *Any applicable site management plan.*
- *Any relevant integrated environmental management system or proposed integrated environmental management system.*
- *Any other matter prescribed under a regulation.*

(ii) additional information given in relation to the draft program;
(iii) the views expressed at a conference held in relation to the draft program.

As has been demonstrated a significant consideration for the draft TEP is for the standard criteria. Recommendations in relation to a submission of a draft TEP in line with section 338 and the standard criteria are:

- Provide all relevant stakeholders, which may included Local Government and potentially affected landholders, with a copy of the draft TEP, and allow sufficient time for relevant stakeholders to provide comment for consideration.
- The applicant is required to consider Environmental Protection Policies, the character, resilience and values of the receiving environment, any applicable plans and standards, such as ANECC (aquatic ecosystem guidelines), the Queensland Water Quality Guidelines and 'A study of the cumulative impacts on water quality of mining activities in the Fitzroy River Basin'.

In accordance with the legislation, the submitted TEP must adequately address methods to reduce environmental harm (Section 330) and must meet the content requirements detailed in section 331.

From: [redacted]
Sent: Wednesday, 16 February 2011 9:08 AM
To [redacted] (Rolleston - Coal)
Subject: RE: Rolleston TEP - Sandy Creek Comments

Hi [redacted]

The revised draft TEP you emailed me on 10 February 2011 still refers to the EA as currently being assessed by DERM.

Could you please email me a copy of the draft TEP that is updated to include the fact that the new EA has been approved. Throughout the document it is stated that the draft TEP is working toward compliance with EA MIM800090802, which refers to the superseded EA document. The draft TEP needs to make reference to the recently approved EA which has permit number MIN101140410.

My apologies for the inconvenience, however I have completed my assessment report for the Rolleston Sandy Creek TEP and I am hoping to submit it for decision as soon as I get a copy of an updated draft TEP from you.

Thanks.

[redacted]
Senior Environmental Officer, Environmental Services - Mining
Telephone: [redacted] **Facsimilie:** [redacted] **Email:** [redacted]
www.derm.qld.gov.au

Department of Environment and Resource Management
99 Hospital Road, Emerald Qld 4720
PO Box 19, Emerald Qld 4720

From: [redacted]
Sent: Thursday, 10 February 2011 4:05 PM
To: [redacted]
Subject: RE: Rolleston TEP - Sandy Creek Comments

Hi [redacted]
Please find attached updated copy of TEP with your suggestions included. Hopefully they cover off on all of your dot points below.
Cheers
[redacted]

[redacted]
Environment & Community Manager
Rolleston Coal

Xstrata Coal Queensland
PO Box 11
Springsure QLD 4722

[redacted]

From: [redacted]
Sent: Wednesday, 9 February 2011 3:07 PM
To: [redacted] (Rolleston - Coal)
Subject: RE: Rolleston TEP - Sandy Creek Comments

Hello [redacted],
The department has reviewed the Rolleston Coal Mine TEP for the discharge of mine affected water into Meteor Creek via Sandy Creek. The Sandy Creek TEP application has also been compared with the newly approved EA that takes effect from 4 February 2011.

DERM has provided the following comments on the Sandy Creek TEP in relation to issues that need further clarification.

- As per our phone discussion today, you advised that although the new EA for Rolleston Coal has been approved allowing discharges into Meteor Creek via Sandy Creek (RP5), the Sandy Creek TEP will still be required to discharge from TEP RP1 until such time as the construction of associated infrastructure has been completed to enable discharges to take place as per the new EA.

- You advised that the TEP and the new EA will not be used together as RP1 will only be used for discharging water until Rolleston is able to commence discharging under the new EA. However, can you please specify in the TEP document that in the event that water is discharged from both TEP RP1 and RP5 that the combined release volume into Meteor Creek and Meteor Creek via Sandy Creek does not exceed 20%. We will also include this as a condition in the certificate of approval.

- The TEP states that water will be discharged from the storages in the southern part of the mining lease into Meteor Creek via Sandy Creek. Can you please provide more information on how will the water get from the storages to RP1?

- Where the TEP refers to conditions of EA MIM800090802, those conditions need to be detailed in full within the TEP itself instead of making reference to a document that is subject to change.

- Timeframes need to be included within the TEP document that show that discharge will cease on 30th June 2011, the final report is due 28th July 2011 (20 business days after cessation of discharge into Meteor Creek) and TEP ends on 29th August 2011. These dates are in line with those outlined in the TEP MAN11779 Certificate of Approval for the Spring Creek water release into Bootes Creek.

- It is requested that DERM is notified of a discharge occurring under the TEP within 12 hours (not 24 hours) as agreed to in previous TEP.

I have attached a template that DERM has prepared to assist mining companies with the preparation of TEP documents that you may wish to use as a guide for future submissions.

If you wish to discuss the above comments, don't hesitate to give me a call.

I look forward to receiving a response from you and in the meantime I will continue working on my assessment report for the TEP application for Sandy Creek.

Cheers.

[redacted]
Senior Environmental Officer, Environmental Services - Mining
Telephone: [redacted] **Facsimilie:** [redacted] **Email:** [redacted]
www.derm.qld.gov.au

Department of Environment and Resource Management
99 Hospital Road, Emerald Qld 4720
PO Box 19, Emerald Qld 4720

Annexure GB9

Letter to DERM regarding Program Notice Discharges – 21 March 2011

ROLLESTON
COAL

21th March 2011

Ecoaccess
Central West Region
Department of Environment and Resource Management
PO Box 19
Emerald, Queensland 4720

Attention:

Program Notice - Meteor Creek Discharge
30th December 2010 – 4th February 2011

As a commitment under its program notice, Rolleston Coal provides the DERM with the following information with respect to a controlled discharge event which occurred from site from the 30th December 2010 – 4th February 2011. All water release, volumes, receiving water flow rates and water monitoring was in alignment with EA MIM800090802

a) Release cessation date and time
The discharge commenced at 6:00pm on the 30th December 2010 and ceased on 4th February 2011 at 3:00 pm.

b) Natural flow volume in receiving water
The natural flow in Meteor Creek during the period of discharge was calculated to be **189,668 ML**.

c) Volume of water released
The calculated volume of water released from all storages was **638 ML**.

This equates to around **0.3%** of the natural flow in Meteor Creek as measured at the upstream monitoring station. This is below the 20% contaminant discharge rate.

d) Details regarding the compliance of the release with the conditions of Agency Interest: (ie contamination limits, natural flow, discharge volume)

Contamination limits
All releases complied with the contamination limits for Meteor Creek as defined in the Rolleston Coal EA MIM800090802.

Natural flow
Natural flow at Meteor Creek upstream monitoring station (MP2) was calculated to be **189,668 ML** over the thirty-seven (37) days of the discharge.

Discharge volume
Discharge volume was calculated to be **638 ML** or **0.3%** of the natural flow past Meteor Creek upstream monitoring point.

Appendix 1 tabulates the natural flow in Meteor Creek as well as the volumes discharged over the thirty-seven (37) days.

e) All in-situ water quality monitoring results,
Details on daily monitoring are summarised in *Appendix 2*.

They include in-situ monitoring for pH, EC and turbidity as well as laboratory analyses for suspended solids and sulphate.

Table 1 – Summary of Anomalous Results Daily Water Quality Sampling

Date	Location	Parameter	Result	Comment
3/11/2011	Meteor Down Stream	Total Suspended Solids	2400 mg/L	Not related to discharges
4/11/2011	Meteor Upstream	Total Suspended Solids	2690 mg/L	Not related to discharges
	Meteor Down Stream	Total Suspended Solids	1820 mg/L	Not related to discharges
5/1/2011	Meteor Down Stream	Total Suspended Solids	1220 mg/L	Not related to discharges
11/1/11	Meteor release point	Total Suspended Solids	2520 mg/L	Short duration. Related to sediment from bottom of storage. Ceased on detection of high turbidity until pump could be relocated. Elevated levels not detected downstream. Exceedance notification and report submitted to DERM 4th March 2011.

Results in relation to contaminants of release waters are contained in *Appendix 3.* Table 2 provides a summary of anomalous results.

Table 2 – Summary of Anomalous Results Contaminants of Release Waters

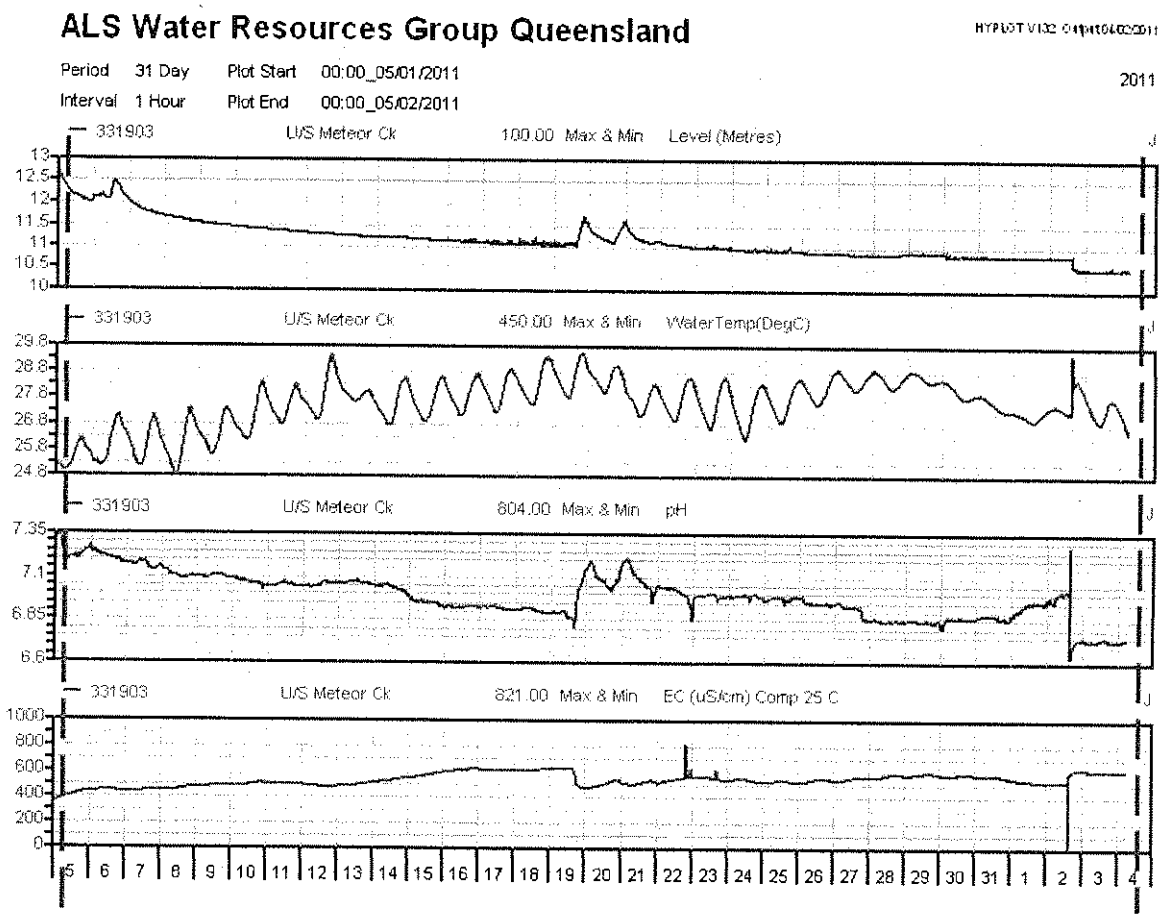
Date	Location	Parameter	Result	Comment
10/1/11	Meteor Release Point	Nitrate	3.13 mg/L	Not found in excess of trigger point down stream – no further action required.
19/1/11	Meteor Release Point	Vanadium	0.02 mg/L	Just over threshold level at release point. Not found in excess of trigger point down stream – no further action required.
31/1/11	Meteor Release Point	Arsenic Molybdenum Uranium Vanadium	0.015 mg/L 0.055 mg/L 0.004 mg/L 0.02 mg/L	Not found in excess of trigger point down stream – no further action required.

Three (3) samples returned results inexcess of trigger levels however corresponding downstream monitoring results were not in-excess of trigger investigation levels. Thus in accordance with section W5 (1) of the Environmental Authority EA MIM800090802 no further action is required.

Monitoring Stations

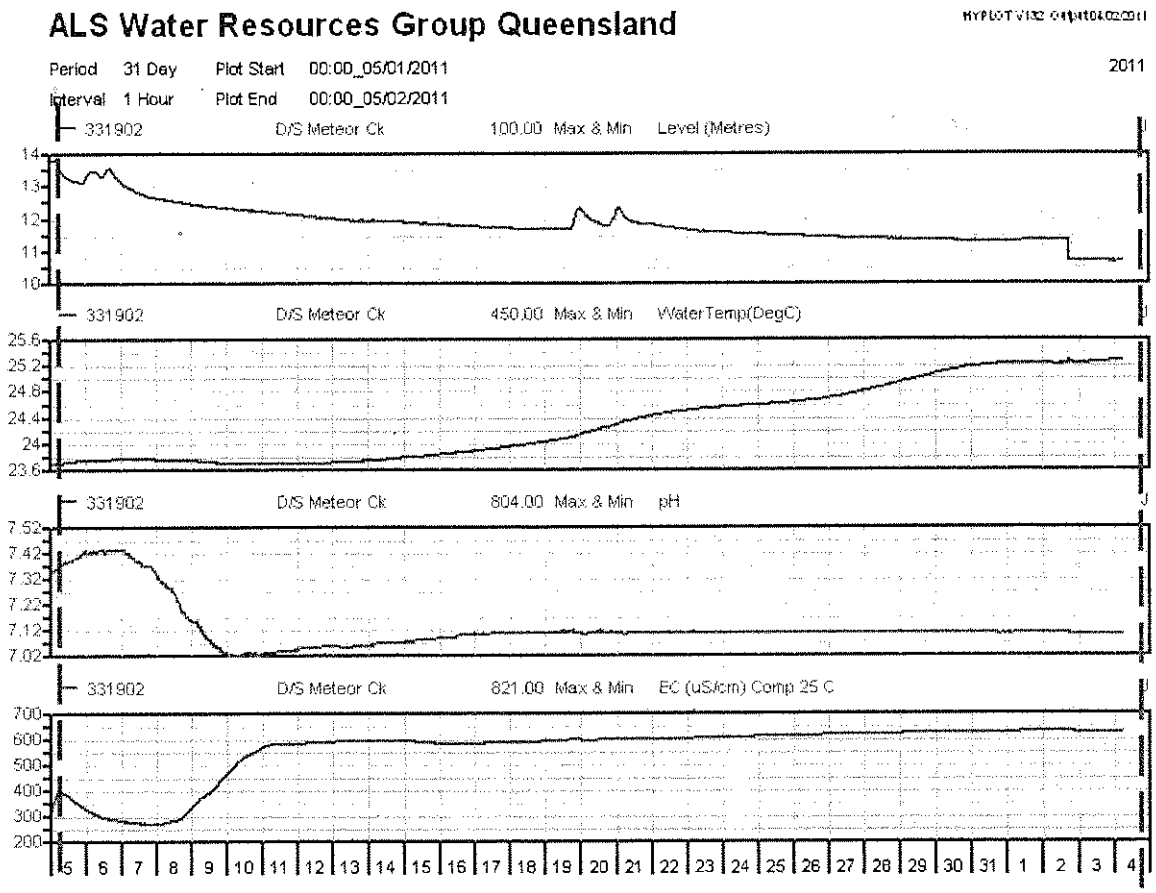
Figures 1 and 2 show the real-time water quality measurements for Meteor Creek Upstream and Downstream monitoring stations between 5th January and the 4th February 2011.

Figure 1 - Meteor Creek Upstream Water Quality



Note- An arbitrary value of 10 metres is nominated as the stream bed of Meteor Creek. Therefore a flow height reading of 10.5m on the above graphs equals 0.5m depth of flow.

Figure 2 - Meteor Creek Downstream Water Quality



Note- An arbitrary value of 10 metres is nominated as the stream bed of Meteor Creek. Therefore a flow height reading of 10.5m on the above graphs equals 0.5m depth of flow.

As demonstrated in Figures 1 & 2 parameters for receiving waters relating to pH, EC and flow rates were met during the period of discharge.

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

At <0.3% ration of discharge water to stream flow rates remained well within the 20% threshold.

Summary

With the exception of one anomalous sample, water analysis and monitoring in Rolleston Coal storages and Meteor Creek during the release period demonstrates the release of water from Rolleston Coal complied with water quality and flow rates as prescribed under EA MIM800090802.

Should further information on this matter be required, please do not hesitate to contact me on [redacted].

Yours faithfully,

[redacted]

Environment & Community Manager

Annexure GB10

10.1 Application for TEP – 21 January 2011

From: [redacted]
Sent: Friday, 21 January 2011 1:11 PM
To: [redacted]
Cc:

Subject: Rolleston Coal amended TEP11099

Attachments: 20110121_Rolleston Coal_amendedTEP_water release via Spring Creek Dam.pdf; 20110118_Rolleston Coal_amendedTEP_water release via Spring Creek Dam_(with tracked changes).doc

Hi [redacted]

Please find attached pdf file of amended TEP11099. As requested the word doc with the tracked changes from the original is also attached. It may assist you in your assessment. In summary the changes include:

- Incorporation of the previous approval conditions
- Changing of the TEP completion date to 30 June 2011
- Removal of the volumetric limit that can be discharged

A signed hard copy has been sent by mail.

Any questions please give me a call.

Regards

[redacted]

Environment & Community Manager
Rolleston Coal
Xstrata Coal Queensland
PO Box 11
Springsure QLD 4722

[redacted]

ROLLESTON
COAL

Rolleston Coal Mine

Transitional Environmental Program (TEP)

SPRING CREEK DAM WATER RELEASE INTO BOOTES CREEK

AMENDED TEP MAN11099

January 2010

xstrata

Rolleston Coal Pty Ltd ABN 73 106 690 037
Dawson Highway, Via Rolleston, PO Box 11, Springsure QLD 4722
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Table of Contents

1. Introduction

This **Transitional Environmental Program** (***TEP***) describes the proposed actions to release water from Spring Creek Dam into Bootes Creek outside of Rolleston Coal's Environmental Authority (EA) MIM800090802 flow conditions for the relevant release point outlined in Table 1 below.

Table 1 Contaminant release during flow events

Receiving water description	Release Point	Gauging station description	Easting (GDA94)	Northing (GDA94)	Minimum Flow in Receiving Water Required for a Release Event	Flow recording Frequency
Bootes Creek	RP 1	Bootes Creek Discharge Point 1	643688	7297724	0.75m^3/s (750L/s)	Continuous (minimum daily)

Spring Creek Dam is a water storage which may contain water which has been in contact with mining areas. This is in accordance with approved TEP MAN10239. As such the quality of any water stored in Spring Creek Dam must be monitored quarterly for a wide range of potential contaminants. Water analysis is also required during any controlled releases from the storage.

District flooding resulting from exceptional rainfall between December 2009 and March 2010[1] resulted in the failure of Naroo Dam (a pastoral dam) and a subsequent overtopping release from Spring Creek Dam. The resultant surge of surface water flows resulted in Spring Creek Mining Pit being inundated. Subsequently Spring Creek Pit was used to moderate the flow of water, and minimize off-site release where possible. The majority of this water (in excess of 4GL) from Spring Creek Pit was pumped into Spring Creek Dam (in accordance with the approved TEP MAN10239).

November and particularly December of 2010 again saw record breaking levels of rainfall. See Appendix I for a comparison of long term average monthly rainfall for the Rolleston township verses the Rolleston Coals 2010 rainfall figures.

Despite being in contact with mining areas, the quality of the water moved into Spring Creek Dam was good from the perspectives of human and stock consumption and in comparison with local streams. Water quality was monitored as it was pumped from Spring Creek Pit back into Spring Creek Dam (see Appendices D & E). At no stage were EA contamination release limits or investigation trigger levels exceeded during the transfer (see Appendices F & G).

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[1] On top of the exceptionally high rainfall that Rolleston Coal Mine experienced over January, February and March 2010, August and in particular September and December rainfall exceeded all records since rainfall recording commenced in the late 1800's. 1533mm of rain was recorded at Rolleston Coal for 2010 with 199mm falling in September and 414mm in December.

Though the general quality of water on site remains good, the mine's present capacity to account for heavy rainfall throughout the "wet season" is reduced. Rolleston Coal considers that the controlled release mine affected water will minimise the risk of potential future environmental issues that might arise in the event of an uncontrolled discharge. As at Sunday 16th January 2011 Rolleston Coal had approximately 3600ML of potentially mine affected water and a remaining storage capacity of approximately 900 ML.

Following major flooding in the first quarter of 2010 and prior to August and September rainfall, construction of additional flood mitigation infrastructure was complete, that is all major storages, levees and diversions. This infrastructure has been detailed in Rolleston Coal's Water Management Plan submitted to DERM in November 2010 as required under the approved TEP MAN10239.

To ensure that Spring Creek Dam did not receive any overland flows from Spring Creek, a diversion bank was constructed to prevent inflows. Despite this, water levels in Spring Creek Dam had significant inflows in November and December of 2010 due to runoff from residual catchment areas not affected by the diversion bank, rain falling directly into the storage as well as groundwater suspected to be seeping from basalt outcrops.

The traditional "wet season" for Central Queensland is from December through to March. Rolleston Coal needs to maintain sufficient storage capacity in the water impoundments in order to avoid uncontrolled discharges. The unseasonal, protracted and record-breaking rainfall in recent months has significantly impacted Rolleston Coal's water storage balance on site.

Rolleston Coal voluntarily submits this TEP to seek authorisation by the administering authority under the *Environmental Protection Act 1994* to discharge water via Spring Creek Dam into Bootes Creek at the rate of approximately 100ML per day irrespective of water flow in Bootes Creek, provided water quality complies with the criteria stipulated by this TEP.

This TEP proposes the implementation of an Action Plan showing how the objectives of this TEP are to be achieved and the timetable in which they are to be achieved. Rolleston Coal will implement the Action Plan in addition to continued compliance with its existing obligations under EA MIM800090802.

Furthermore Rolleston Coal believes that by implementing this TEP and having sufficient capacity in on site water storages throughout the "wet season" the potential risk of environmental harm is minimized as the likelihood of any uncontrolled discharges is significantly reduced.

2. Environmental Authority

Xstrata Coal Queensland Pty Ltd, ICRA Rolleston Pty Ltd and Sumisho Coal Australia Pty Limited (***Rolleston Coal***) hold Environmental Authority MIM800090802 to carry out mining activities on ML70307 and MDL227, issued on 30 November 2009.

3. Submission

This Transitional Environmental Program (TEP) is voluntarily submitted on behalf of Xstrata Coal Queensland Pty Ltd, ICRA Rolleston Pty Ltd and Sumisho Coal Australia Pty Limited by Glenn Burlinson, Site Senior Executive, Southern Region, Xstrata Coal Queensland.

_____ _____

Signed Date

4. Authorisation

When approved, this TEP will authorise the controlled release of mine affected water from Spring Creek Dam into Bootes Creek at a discharge rate of up to 100ML per day, provided water quality complies with the criteria stipulated by this TEP. Spring Creek Dam water storage can discharge water to Release Point 1 (RP1) as identified in EA MIM800090802. Monitoring of discharge water will be undertaken in accordance with the conditions and requirements of this TEP. Ongoing water management will be in accordance with Rolleston Coal's Water Management Plan which has been updated and submitted to DERM in November 2010 in accordance with TEP MAN10239.

To the extent there are any inconsistencies between this TEP and EA MIM800090802 and any other operational documents, this TEP prevails.

5. Program

5.1. Design of Spring Creek Dam

Appendix A contains design drawings for the Spring Creek Dam, the construction of which has been monitored by appropriately skilled engineers. "As built" plans have been provided to DERM.

5.2. Water Transfer

It is proposed to undertake controlled release of water via Spring Creek Dam into Bootes Creek at the rate of up to 100ML per day.

5.3. Program Objectives

Objective 1: Prior to discharge commencing Rolleston Coal will continue to operate the site in accordance with conditions of EA MIM800090802 and TEP MAN10239.

Objective 2: Present DERM with the results from water quality testing of water from Spring Creek Dam, for the water quality characteristics specified Appendices F & G.

Objective 3: Discharge water from Spring Creek Dam via Release Point 1 as identified in EA MIM800090802 in accordance with the commitments set out in Section 5 of this TEP.

Objective 4: Rolleston Coal will complete and lodge with DERM a Completion Report outlining actions undertaken under this TEP and summarising compliance against this TEP, and the results of the Spring Creek Dam discharge water sampling, within 40 business days of the completion of the controlled release of water from Spring Creek Dam.

5.4. Water Quality

The quality of the water in Spring Creek Dam has been closely scrutinized in line with approved TEP MAN10239. Detailed results have been provided in Appendices D & E. Table 3 provides a comparison of average water quality (50^{th} percentile) relative to EA discharge contaminant limits. Analyses of results indicate consistently high water quality.

Additionally mine affected water from other storages identified in Rolleston Coal's water management plan may be pumped into Spring Creek Dam for blending with the existing water

prior to being released via RP1. The most recent insitu water quality results as well as volumes of stored water from these additional storages has been included in Table 2.

Table 2; In-situ water quality monitoring

Water Storage	Date of last in-situ water quality sample	pH	Electrical Conductivity (µs/cm)	Turbidity (ntu)	Current volume reporting to storage (ML)
Environment Dam	11/1/11	8.5	726	167	90
Pit Water Dam	18/1/11	8.95	777	125	240
Sed Dam 6	11/1/11	8.78	448	42.4	420
Orica Rd PWD	11/1/11	8.23	338	101	580
Spring Creek10 Meg PWD	19/01/11	8.83	275	151	60
Bootes West PWD2	18/01/11	8.72	519	41.2	560
Spring Creek Dam	18/01/11	7.86	269	30.5	1650
MP5	11/1/11	7.84	310	46.4	n/a
TOTAL					**3600 ML**

Table 3: Spring Creek Dam water quality relative to EA discharge limits

Water quality characteristic	EA discharge limit	Spring Creek Dam level (50th percentile)
Electrical Conductivity (µS/cm)	1500	326
pH	6.5 – 9.0	8.4
Turbidity (ntu)	n/a	33
Suspended solids (mg/L)	1200	44
Sulphate (mg/L)	1000	2.2
Aluminium (µg/L)	650	18
Arsenic (µg/L)	13	<1
Cadmium (µg/L)	0.2	<0.1
Chromium (µg/L)	3	<1
Copper (µg/L)	13	1.8

Iron (µg/L)	520	50
Lead (µg/L)	10	<1
Mercury (µg/L)	0.2	<0.1
Nickel (µg/L)	11	3
Boron (µg/L)	370	50
Cobalt (µg/L)	90	0.8
Molybdenum (µg/L)	34	2.4
Selenium (µg/L)	10	4.5
Silver (µg/L)	1	<1
Uranium (µg/L)	1	<1
Vanadium (µg/L)	10	10
Ammonia (µg/L)	900	82
Nitrate (µg/L)	1100	52
Petroleum hydrocarbons (C6-C9) (µg/L)	20	<20
Petroleum hydrocarbons (C10-C36) (µg/L)	100	<50
Zinc (µg/L)	8	3.75

Monitoring discharges in this TEP will be conducted as follows:

- Sampling of water being discharged via Spring Creek Dam will be undertaken at the location and frequency specified in Table 4 below;
- Sampling of water discharged will be undertaken using calibrated field equipment for the parameters outlined in Table 5;
- Monthly analysis for the parameters outlined in Appendix F will be conducted by NATA certified laboratories;
- In the event that water analysis results exceed the defined contaminant limits (as outlined in Table 5) Rolleston Coal will cease discharging;
- In the event that water analysis results exceed the defined contaminant limits (as outlined in Appendix F) Rolleston Coal will investigate the reason for the exceedence in accordance with the procedures in Condition W5 of the EA.

Table 4: Discharge water monitoring location

Water storage description	Easting +/- 50m	Northing +/- 50m	Monitoring Location	Frequency of Monitoring
Spring Creek Dam	642472	7298442	Spring Creek dam spillway (which drains to RP1 in EA)	Daily during discharge for the parameters listed in Table 5. Monthly during discharge for the parameters listed in Appendix F.

Table 5: Water sampling parameters and upper limits

Parameter	Units	Maximum	Notes
Electrical Conductivity (EC)	µS/cm	483	90th percentile of Bootes Creek upstream monitoring*
pH	n/a	9.0	In accord with EA conditions. Measured at Spring Creek Dam
pH	n/a	8.5 for a sustained 12 hour period	Measured at the Bootes Creek downstream monitoring station MP3
Turbidity	NTU	290	80th percentile of Bootes Creek upstream monitoring*
Volume released	Megalitres/ day	100	

*Taken from 55 samples from Bootes Creek upstream water monitoring station in February and March 2010, the timeframe when the flooding of Spring Creek Pit occurred. Data has been supplied to DERM.

5.5. Volume of water discharged

Calculation of volumes released will be undertaken daily and will be provided in the TEP closure report.

5.6. Rate of water discharge

In order to calculate discharge rates, the consultancy firm AECOM have prepared discharge curves (Appendix C) using a broad crested weir design which enables variation to flow rates by adjusting either the height or width of the spillway.

5.7. Risk of Environmental Harm

Water Quality

Rolleston Coal is confident that the program will not significantly increase the potential for environmental harm in the area. Water quality sampling in Spring Creek Dam as well as the other storages which may potentially be discharged via Spring Creek Dam have have met all criteria specified in Tables 2 and 3 of Rolleston Coal's EA (see Appendices D & E). Rolleston Coal also propose additional sampling of the water before it is discharged and will discharge only if the water is within acceptable levels, as stipulated by this TEP. During release water will be subject to monitoring at the dam spillway as well as at the Bootes Creek downstream monitoing station (MP3).

Furthermore Rolleston Coal believes that by implementing this TEP and having sufficient capacity in water storages om-site throughout the "wet season" the potential risk of environmental harm is minimized as the likelihood of uncontrolled discharges is reduced.

The proposed monitoring regime will assess water quality throughout the discharge event. Discharge will cease if water quality parameters stipulated by this TEP are exceeded.

Though this TEP seeks the controlled discharge of water irrespective of minimum flow conditions outlined in the EA, it is anticipated that there will be times when Bootes Creek will be flowing. During recent months there have been a number of flow events in Bootes Creek where the minimum flow requirement in the receiving water (Bootes Creek) has provided opportunity for controlled discharge. Current weather forecasts suggest strong "La Nina" conditions with well above average rainfall. Any natural flows in Bootes Creek will have a dilution effect thereby further reducing potential downstream impact.

Discharge volume under this TEP will be reduced gradually at the end of the discharge period in the following manner:

- Three days out from the end of the discharge period, daily discharge volume will be reduced to 50ML or less;

- Two days out from the end of the discharge period, discharge volume will be reduced to 25ML or less; and
- On the last day of the discharge period discharge volume will be reduced to 10ML or less.

If on the last day of discharge:

- Bootes Creek does not have a natural flow occurring where water discharged from Spring Creek Dam enters Bootes Creek; and
- The water quality in Davet Dam is of significantly better quality than water in Spring Creek Dam as recorded in September and October 2010 in the "Rolleston Coal Mine: Spring Creek Dam and Spring Creek Pit Water Quality Results; May – September 2010" document previously supplied to DERM;

  Rolleston Coal Mine will immediately release 25 ML of clean (mine un-affected) water from Davey Dam into Bootes Creek, at the rate of 5ML per day for a period of five days.

Impacts on Downstream Landholders

Rolleston Coal does not predict any impact to downstream users as this discharge will be managed so as to comply with the water quality parameters outlined in Table 5. There are existing monitoring stations (pH, EC, temperature and flow height) located upstream and downstream of Release Point 1 where this discharge will occur (refer to Appendix B). These established automated monitoring stations will continue to operate in accordance with applicable requirements under EA MIM80009080. Should a pH level greater than 8.5 be recorded over a sustained 12 hour period Rolleston Coal will cease discharging until the water quality parameters are met.

Rolleston Coal predicts that the impact on stock watering will be negligible as water quality parameters documented in the EA are consistent with those listed in ANZECC guidelines for stock water.

Rolleston Coal is confident that the rate of water released from Spring Creek Dam will not incur any increase in downstream flood levels as the creek system capacity is sufficient to accommodate very large volumes of water. Rolleston Coal has consulted with the Ranger in Charge of the Albinia National Park as well as the adjacent landholders in relation to likely impacts on the usability of Springwood road.

Erosion Potential

Rolleston Coal is also confident that the rate of water released from Spring Creek Dam will not result in downstream erosion as the creek system has sufficient capacity to accommodate very large volumes of water. Additionally the water being released has to traverse large areas of swamp prior to reaching Meteor Creek. Rolleston Coal will undertake weekly visual inspections of the riparian area immediately downstream of Spring Creek Dam. If erosion is evident a reduced discharge rate will be adopted to ensure maintenance of stream bank integrity.

5.8. Notification and Reporting

Rolleston Coal will:

1. Notify DERM of commencement of discharge from Spring Creek Dam into Bootes Creek within 2 business days of commencement;
2. Notify DERM, within 21 days of completion of discharge from Spring Creek Dam into Bootes Creek, the following;
    a. controlled release completion date;
    b. raw results on water quality testing under this TEP; and
    c. volume of water transferred released from Spring Creek Dam into Bootes Creek; and
3. Complete and lodge with DERM a completion report outlining actions taken under this TEP within 40 business days of completion of discharging of water from Spring Creek Dam into Bootes Creek summarising sampling, results, observations, and other relevant details. A proposed format (TOC) for the completion report is provided in Appendix E

5.9. Action Plan

The key actions planned and scheduled are set out below in Table 6.

Table 6: Action Plan

Action Plan item	Objective No.	Performance Indicator	Completion date	Responsibility
AP – 1. Monitor in accordance with with TEP and EA MIM800090802 prior to pumping	1	Sampling of Spring Creek Dam completed	Prior to commencement of discharge	Environmental Manager
AP - 2. Collate the sampling results of Spring Creek Dam and provide to DERM with and in support of this TEP	2	Data provided to DERM	Upon approval of this TEP	Environmental Manager
AP - 3. Commence discharging water from Spring Creek Dam into Bootes Creek via Release Point 1	3	Controlled discharging occurring	As soon as practicable after completion of AP-2 above	Operations Manager in conjunction with Environmental Manager
AP - 4. Notify DERM of commencement of discharging from Spring Creek Dam into Bootes Creek via Release Point 1	3	DERM notified of commencement of discharge	Within 2 business days of commencing pumping	Environmental Manager
AP - 5. Monitor in accordance with TEP and EA MIM800090802 during discharge	3	Sampling of Spring Creek Dam water Visually monitor the impact of erosion downstream of RP1 on a weekly basis during discharge and take remedial action as required	Prior to cessation of pumping Upon cessation of pumping	Environmental Manager

Action Plan item	Objective No.	Performance Indicator	Completion date	Responsibility
		Visually monitor the condition of roads downstream of RP1 on a weekly basis during discharge, and liaise with landholders as required	Upon cessation of pumping	
AP - 6. Cease discharging from Spring Creek Dam	3	Pumping ceases	Final discharging to cease by 30 June 2011.	Operations Manager
AP - 7. Notify DERM of the following under this TEP; • Controlled release completion date • Raw results on water quality testing under this TEP; and • Volume of water released via Spring Creek dam into Bootes Creek	3	Notification to DERM occurs	Within 21 business days of cessation of pumping of water from Spring Creek Dam into Bootes Creek via Release Point 1	Environmental Manager
AP - 8. Submit completion report to DERM.	3	Report submitted to DERM in a form consistent with that outlined in Appendix H	Within 40 business days after cessation of discharging from Spring Creek Dam into Bootes Creek via Release Point 1 under this TEP	Environmental Manager

6. Term of the Transitional Environmental Program

This TEP will be current until 30 June 2011.

7. Transition to Compliance

The outcome of this TEP is considered integral to the site's "transition" to compliance which will be reflected by the:

- The implementation of the site's updated Water Management Plan (which has been provided to DERM in November 2010 in accordance with TEP MAN10239). It includes the:
    - decommissioning of Spring Creek Dam,
    - construction of evaporation dams with a capacity totaling 770ML and
    - construction of a 300ML enclosed Pit Water Dam for Spring Creek Pit.

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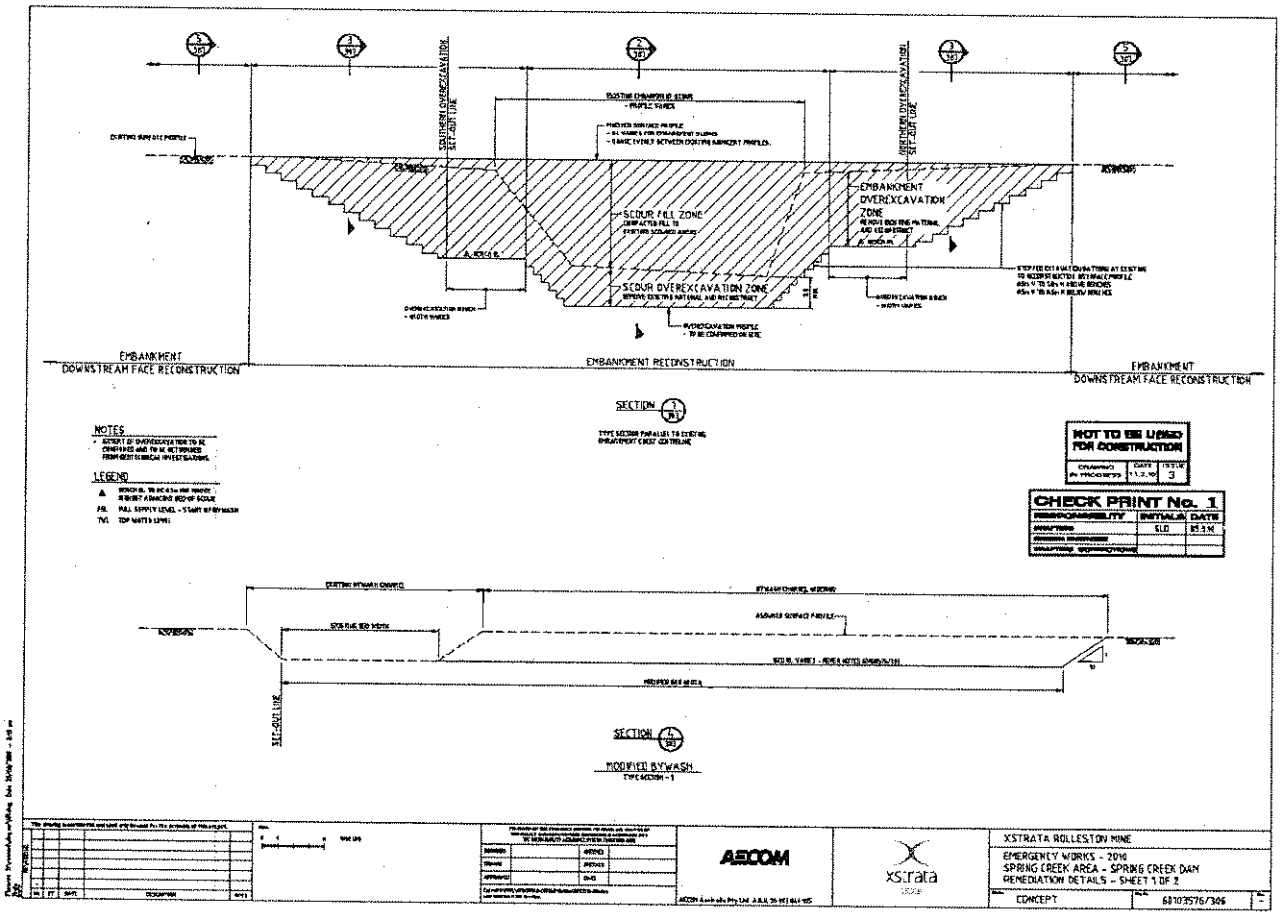
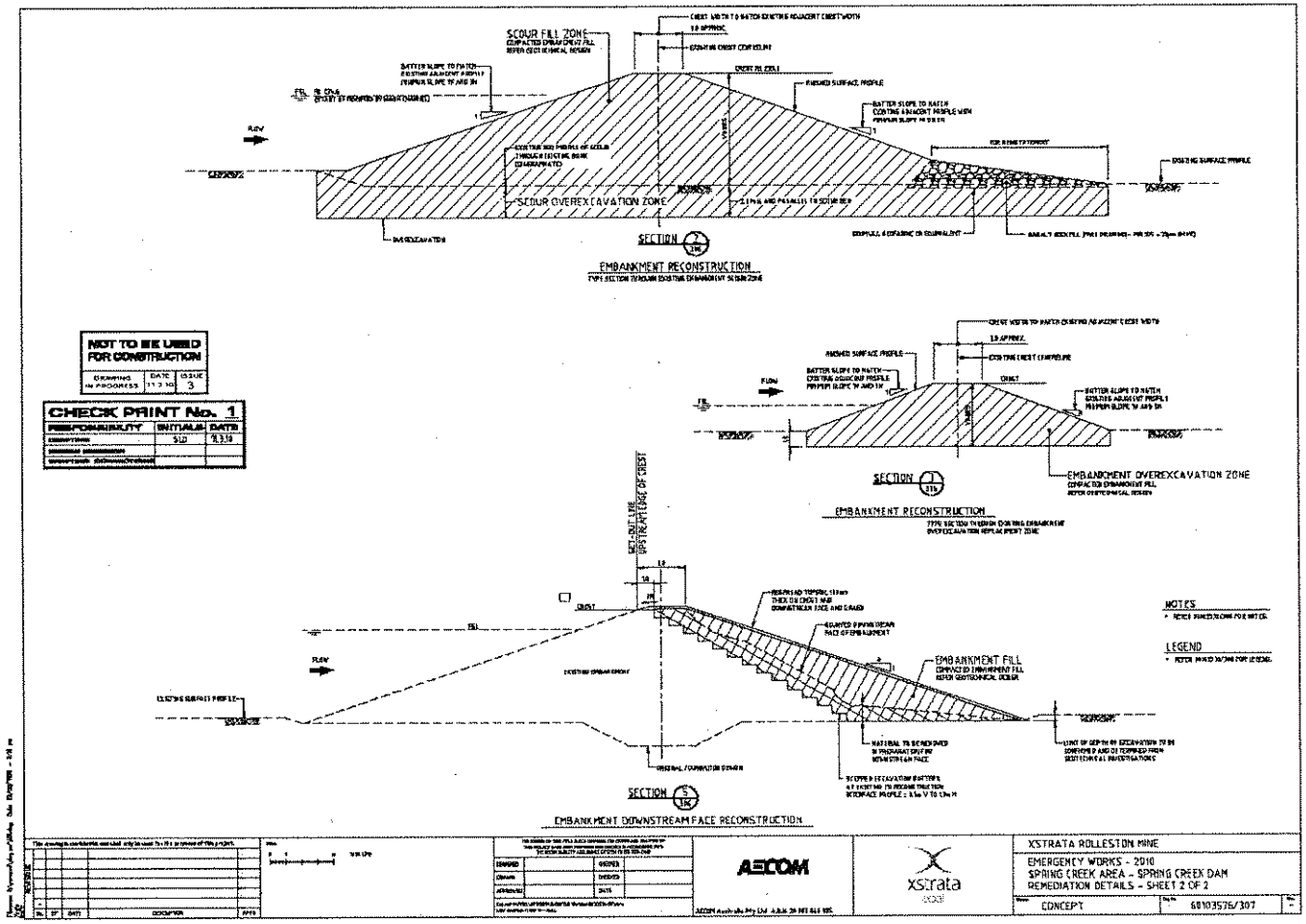
Appendix A *Design Plans Spring Creek Dam*




SCOUR FILL ZONE
SCOUR OVEREXCAVATION ZONE
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EMBANKMENT RECONSTRUCTION
NOT TO BE USED FOR CONSTRUCTION
CHECK PRINT No. 1
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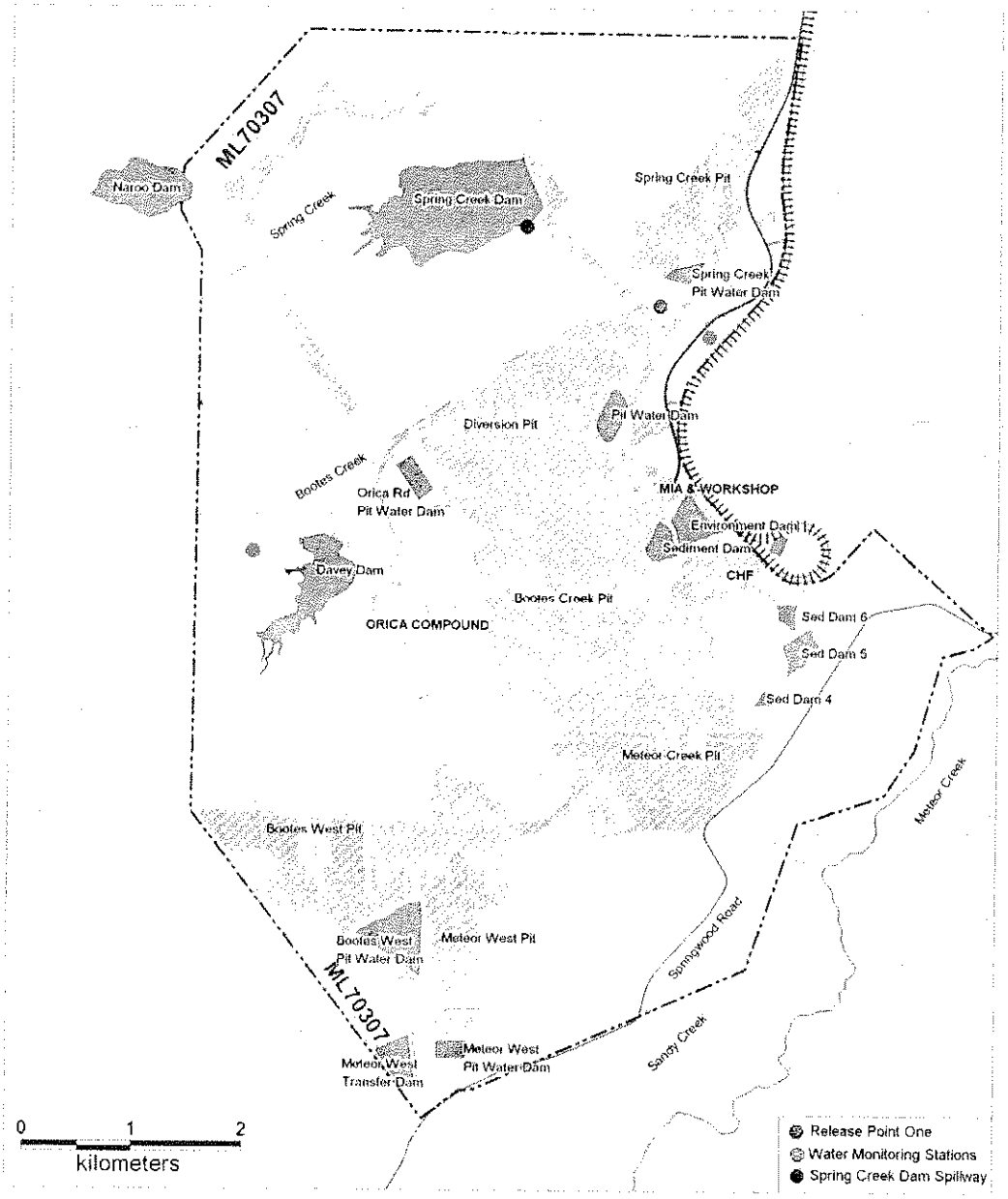
SECTION
EMBANKMENT RECONSTRUCTION
CREST
EMBANKMENT FILL
SECTION
EMBANKMENT DOWNSTREAM FACE RECONSTRUCTION
NOTES
LEGEND
AECOM
XSTRATA
XSTRATA ROLLESTON MINE
EMERGENCY WORKS - 2010
SPRING CREEK AREA - SPRING CREEK DAM
REMEDIATION DETAILS - SHEET 2 OF 2
CONCEPT
60103576/307

Appendix B *Spring Creek Dam discharge & release point 1*

Rolleston Coal Spring Creek Dam Discharge and Release Points



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Dawson Highway, Via Rolleston, PO Box 11, Springsure QLD 4722
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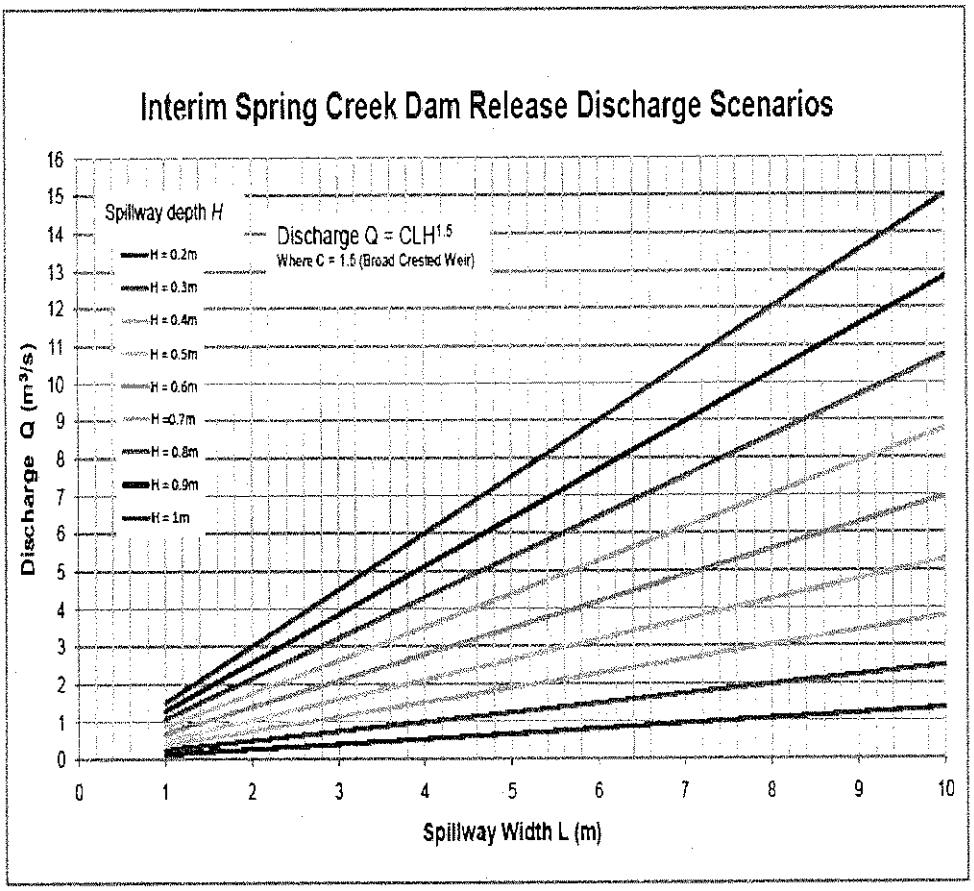
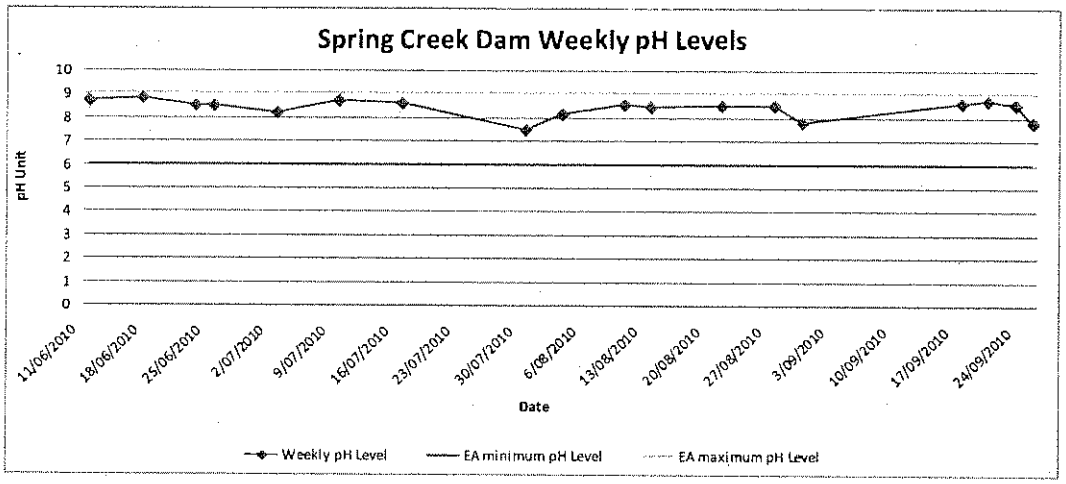
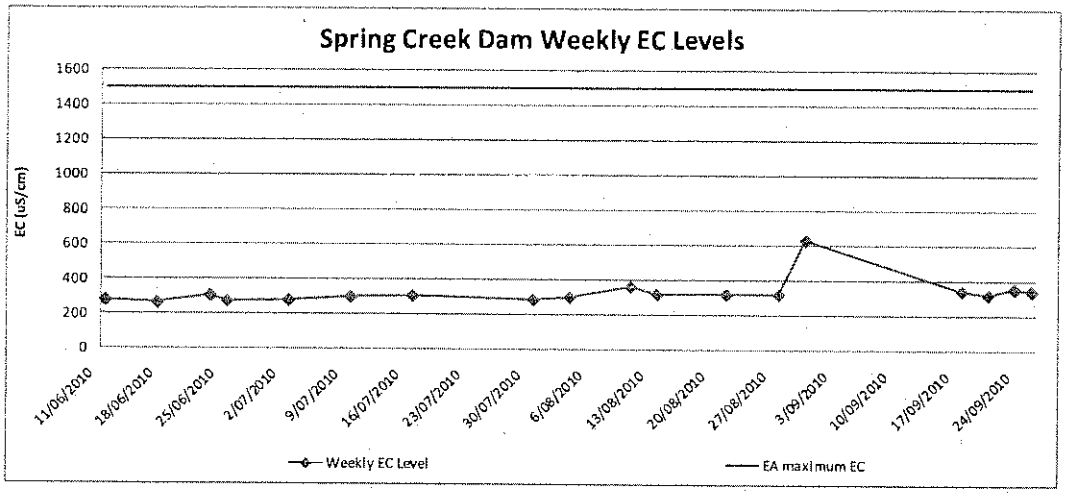
Appendix C *Discharge rating curves for Spring Creek Dam spillway*



Appendix D *Water quality in Spring Creek Dam*





Appendix E *Laboratory analysis of Spring Creek Dam water*

Sample Date:	04/08/2010
Analyte grouping/Analyte	
EA005P: pH by PC Titrator	
pH Value	8.05
EA010P: Conductivity by PC Titrator (µs/cm)	
Electrical Conductivity @ 25°C	310
EA015: Total Dissolved Solids (mg/L)	
Total Dissolved Solids @180°C	201
EA025: Suspended Solids (mg/L)	
Suspended Solids (SS)	5
EA045: Turbidity	
Turbidity	
ED037P: Alkalinity by PC Titrator (mg/L)	
Hydroxide Alkalinity as CaCO3	<1
Carbonate Alkalinity as CaCO3	<1
Bicarbonate Alkalinity as CaCO3	150
Total Alkalinity as CaCO3	150
ED040F: Dissolved Major Anions (mg/L)	
Sulphate as SO4 2-	2
ED040T: Total Major Anions	
Sulphate as SO4 2-	
ED045G: Chloride Discrete analyser (mg/L)	
Chloride	12
ED045P: Chloride by PC Titrator	
Chloride	
ED093F: Dissolved Major Cations (mg/L)	

Calcium	17
Magnesium	12
Sodium	35
Potassium	2
EG005F: Dissolved Metals by ICP-AES	
Iron	
EG005T: Total Metals by ICP-AES	
Iron	
EG020F: Dissolved Metals by ICP-MS *(mg/L)*	
Aluminium	0.01
Arsenic	<0.001
Cadmium	<0.0001
Chromium	<0.001
Cobalt	<0.001
Copper	0.003
Lead	<0.001
Manganese	0.005
Molybdenum	<0.001
Nickel	0.004
Selenium	<0.01
Silver	<0.001
Uranium	<0.001
Vanadium	0.01
Zinc	<0.005
Boron	0.1
Iron	<0.05
EG020T: Total Metals by ICP-MS *(mg/L)*	
Aluminium	0.42
Arsenic	0.001
Cadmium	<0.0001
Chromium	<0.001
Cobalt	<0.001
Copper	0.003
Lead	<0.001
Manganese	0.026
Molybdenum	<0.001
Nickel	0.005
Selenium	<0.01
Silver	<0.001

Uranium	<0.001
Vanadium	0.02
Zinc	<0.005
Boron	0.15
Iron	0.4
EK040P: Fluoride by PC Titrator *(mg/L)*	
Fluoride	0.2
EN055: Ionic Balance *(meq/L)*	
Total Anions	3.37
Total Cations	3.48
Ionic Balance (%)	1.57
ED093T: Total Major Cations *(mg/L)*	
Calcium	
Magnesium	
Sodium	
Potassium	
EK055G: Ammonia as N by Discrete Analyser *(mg/L)*	
Ammonia as N	0.14
EK057G: Nitrite as N by Discrete Analyser *(mg/L)*	
Nitrite as N	<0.01
EK058G: Nitrate as N by Discrete Analyser *(mg/L)*	
Nitrate as N	0.02
EK059G: NOX as N by Discrete Analyse *(mg/L)**r***	
Nitrite + Nitrate as N	0.02
EP080/071: Total Petroleum Hydrocarbons *(µg/L)*	
C6 - C9 Fraction	<20
C10 - C14 Fraction	<50
C15 - C28 Fraction	<100
C29 - C36 Fraction	<50
C10 - C36 Fraction (sum)	<50
EP080S: TPH(V)/BTEX Surrogates *(%)*	
1.2-Dichloroethane-D4	133

Toluene-D8	110
4-Bromofluorobenzene	102
EG035T: Total Recoverable Mercury by FIMS *(mg/L)*	
Mercury	<0.0001
EG035F: Dissolved Mercury by FIMS *(mg/L)*	
Mercury	<0.0001

Appendix F *Water release contaminant trigger investigation levels in EA*

Quality Characteristic	Trigger Levels (µg/L)
Aluminium	650
Arsenic	13
Cadmium	0.2
Chromium	3
Copper	13
Iron	520
Lead	10
Mercury	0.2
Nickel	11
Boron	370
Cobalt	90
Molybdenum	34
Selenium	10
Silver	1
Uranium	1
Vanadium	10
Ammonia	900
Nitrate	1100
Petroleum hydrocarbons (C6-C9)	20
Petroleum hydrocarbons (C10-C36)	100
Zinc	8

Appendix G *Water contaminant release limits in EA*

Quality Characteristic	Interim Release Limits until 30-NOV-2011
Electrical conductivity (uS/cm)	1500
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)
Turbidity (NTU)	NA*
Suspended Solids (mg/L)	1200
Sulphate (SO_4^{2-}) (mg/L)	1000

ROLLESTON
COAL

Rolleston Coal Mine

Transitional Environmental Program (TEP)

SPRING CREEK DAM WATER RELEASE INTO BOOTES CREEK

AMENDED TEP MAN11099

January 2010

Rolleston Coal Pty Ltd ABN 73 106 690 037
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Table of Contents

1. Introduction

This **Transitional Environmental Program** (***TEP***) describes the proposed actions to release ~~up to 4GL of~~ water from Spring Creek Dam into Bootes Creek outside of Rolleston Coal's Environmental Authority (EA) MIM800090802 flow conditions for the relevant release point outlined in Table 1 below.

Table 1 Contaminant release during flow events

Receiving water description	Release Point	Gauging station description	Easting (GDA94)	Northing (GDA94)	Minimum Flow in Receiving Water Required for a Release Event	Flow recording Frequency
Bootes Creek	RP 1	Bootes Creek Discharge Point 1	643688	7297724	0.75m^3/s (750L/s)	Continuous (minimum daily)

Spring Creek Dam is a water storage which may contain water which has been in contact with mining areas. This is in accordance with approved TEP MAN10239. As such the quality of any water stored in Spring Creek Dam must be monitored quarterly for a wide range of potential contaminants. Water analysis is also required during any controlled releases from the storage.

District flooding resulting from exceptional rainfall between December 2009 and March 2010[1] resulted in the failure of Naroo Dam (a pastoral dam) and a subsequent overtopping release from Spring Creek Dam. The resultant surge of surface water flows resulted in Spring Creek Mining Pit being inundated. Subsequently Spring Creek Pit was used to moderate the flow of water, and minimize off-site release where possible. The majority of this water (in excess of 4GL) from Spring Creek Pit ~~has now been~~was pumped into Spring Creek Dam (in accordance with the approved TEP MAN10239).

November and particularly December of 2010 again saw record breaking levels of rainfall. See Appendix I for a comparison of long term average monthly rainfall for the Rolleston township verses the Rolleston Coals 2010 rainfall figures.

Despite being in contact with mining areas, the quality of the water moved into Spring Creek Dam was good from the perspectives of human and stock consumption and in comparison with local streams. Water quality was monitored as it was pumped from Spring Creek Pit back into Spring Creek Dam (see Appendices D & E). At no stage were EA contamination release limits or investigation trigger levels exceeded during the transfer (see Appendices F & G).

---

[1] On top of the exceptionally high rainfall that Rolleston Coal Mine experienced over January, February and March 2010, August and in particular September and December rainfall ~~has~~ exceeded all records since rainfall recording commenced in the late 1800's. 1533036mm of rain ~~h~~was ~~been~~ recorded at Rolleston Coal for 2010~~the nine months YTD~~ with 199mm falling in September and 414mm in December.

Though the general ~~water~~ quality of water on site ~~in Spring Creek Dam~~ remains good, the ~~Dam's~~ mine's present capacity to account for heavy rainfall ~~in~~ throughout the ~~impending~~ "wet season" is reduced. Rolleston Coal considers that the controlled release ~~of 4GL now (thereby increasing available storage capacity)~~ mine affected water will minimise the risk of potential future environmental issues that might arise in the event of an uncontrolled discharge. As at ~~Tuesday~~ Sunday ~~13th~~ 16th January~~October~~ 2010~~1~~ Rolleston Coal had approximately 3600ML of potentially mine affected water ~~Spring Creek Dam had~~ and a remaining storage capacity of approximately ~~800~~900 ML.

~~Spring Creek Pit is now estimated to contain around 450ML following repeated inflows in September from localised gullies draining into the pit. As a result of protracted rainfall impeding access, Rolleston Coal was unable to complete prior to these rain events the installation of a diversion structure to protect the pit from localised inflows and inflows from the Albinia National Park. The diversion structures were completed in early October thereby preventing any further inflows.~~

~~Since~~ Following major flooding in the first quarter of 2010 and prior to August and September rainfall, construction of additional flood mitigation infrastructure was complete, that is all major storages, levees and diversions. This infrastructure has been ~~will be~~ detailed in Rolleston Coal's ~~amended~~ Water Management Plan ~~due for~~ submitted~~ssion~~ to DERM ~~by~~ in November ~~1st~~ 2010 as required under the approved TEP MAN10239.

To ensure that Spring Creek Dam ~~will~~ did not receive any overland flows from Spring Creek, a diversion bank ~~has been~~was constructed to prevent inflows. Despite this, water levels in Spring Creek Dam had significant inflows in November and December of 2010 ~~rose in September~~ due to runoff from residual catchment areas not affected by the diversion bank, rain falling directly into the storage as well as groundwater suspected to be seeping from basalt outcrops.

The traditional "wet season" for Central Queensland is from December through to March. Rolleston Coal needs to maintain sufficient storage capacity in the water impoundments ~~prior to the commencement of the wet season,~~ in order to avoid uncontrolled discharges. The unseasonal, protracted and record-breaking rainfall in recent months has significantly impacted Rolleston Coal's water storage balance on site.

Rolleston Coal voluntarily submits this TEP to seek authorisation by the administering authority under the *Environmental Protection Act 1994* to discharge ~~4.0GL of~~ water ~~from~~ via Spring Creek Dam into Bootes Creek at the rate of approximately 100ML per day irrespective of water flow in Bootes Creek, provided water quality complies with the criteria stipulated by this TEP.

This TEP proposes the implementation of an Action Plan showing how the objectives of this TEP are to be achieved and the timetable in which they are to be achieved. Rolleston Coal will implement the Action Plan in addition to continued compliance with its existing obligations under EA MIM800090802.

Furthermore Rolleston Coal believes that by implementing this TEP and having sufficient capacity in on site water storages throughout ~~Spring Creek Dam at the commencement of~~ the "wet season" the potential risk of environmental harm is minimized as the likelihood of any uncontrolled discharges is significantly reduced.

2. Environmental Authority

Xstrata Coal Queensland Pty Ltd, ICRA Rolleston Pty Ltd and Sumisho Coal Australia Pty Limited (***Rolleston Coal***) hold Environmental Authority MIM800090802 to carry out mining activities on ML70307 and MDL227, issued on 30 November 2009.

3. Submission

This Transitional Environmental Program (TEP) ~~2010/03~~ is voluntarily submitted on behalf of Xstrata Coal Queensland ~~Pty Ltd, ICRA Rolleston Pty Ltd~~ and Sumisho Coal Australia Pty Limited by [redacted] Site Senior Executive~~General Manager~~, Southern Region, Xstrata Coal Queensland.

Signed _____ Date _____

4. Authorisation

When approved, this TEP will authorise the controlled release of ~~up to 4.0GL of~~ mine affected water from Spring Creek Dam into Bootes Creek at a discharge rate of up to 100ML per day, provided water quality complies with the criteria stipulated by this TEP. Spring Creek Dam water storage can discharge water to Release Point 1 (RP1) as identified in EA MIM800090802. Monitoring of discharge water will be undertaken in accordance with the conditions and requirements of this TEP. Ongoing water management will be in accordance with Rolleston Coal's Water Management Plan which has been ~~is currently being~~ updated and submitted~~for submission~~ to DERM in~~by 1~~ November 2010 in accordance with TEP MAN10239.

To the extent there are any inconsistencies between this TEP and EA MIM800090802 and any other operational documents, this TEP prevails.

5. Program

5.1. Design of Spring Creek Dam

Appendix A contains design drawings for the Spring Creek Dam, the construction of which has been monitored by appropriately skilled engineers. "As built" plans have been provided to DERM.

5.2. Water Transfer

It is proposed to undertake ~~a~~ controlled release of water~~up to 4.0GL from~~ via Spring Creek Dam into Bootes Creek at the rate of up to 100ML per day.

5.3. Program Objectives

Objective 1: Prior to discharge commencing Rolleston Coal will continue to operate the site in accordance with conditions of EA MIM800090802 and TEP MAN10239.

Objective 2: Present DERM with the results from water quality testing of water from Spring Creek Dam, for the water quality characteristics specified Appendices F & G.

Objective 3: Discharge water from Spring Creek Dam via Release Point 1 as identified in EA MIM800090802 in accordance with the commitments set out in Section 5 of this TEP.

Objective 4: Rolleston Coal will complete and lodge with DERM a Completion Report outlining actions undertaken under this TEP and summarising compliance against this TEP, and the results of the Spring Creek Dam discharge water sampling, within 40 business days of the completion of the controlled release of water from Spring Creek Dam.

5.4. Water Quality

The quality of the water in Spring Creek Dam has been closely scrutinized in line with approved TEP MAN10239. Detailed results have been provided in Appendices D & E. Table ~~2~~ 3 provides a comparison of average water quality (50th percentile) relative to EA discharge contaminant limits. Analyses of results indicate consistently high water quality.

Additionally mine affected water from other storages identified in Rolleston Coal's water management plan may be pumped into Spring Creek Dam for blending with the existing water

prior to being released via RP1. The most recent insitu water quality results as well as volumes of stored water from these additional storages has been included in Table 2.

Table 2: In-situ water quality monitoring

Water Storage	Date of last in-situ water quality sample	pH	Electrical Conductivity (µs/cm)	Turbidity (ntu)	Current volume reporting to storage (ML)
Environment Dam	11/1/11	8.5	726	167	90
Pit Water Dam	18/1/11	8.95	777	125	240
Sed Dam 6	11/1/11	8.78	448	42.4	420
Orica Rd PWD	11/1/11	8.23	338	101	580
Spring Creek10 Meg PWD	19/01/11	8.83	275	151	60
Bootes West PWD2	18/01/11	8.72	519	41.2	560
Spring Creek Dam	18/01/11	7.86	269	30.5	1650
MP5	11/1/11	7.84	310	46.4	n/a
TOTAL					**3600 ML**

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Table 23: Spring Creek Dam water quality relative to EA discharge limits

Water quality characteristic	EA discharge limit	Spring Creek Dam level (50th percentile)
Electrical Conductivity (µS/cm)	1500	326
pH	6.5 – 9.0	8.4
Turbidity (ntu)	n/a	33
Suspended solids (mg/L)	1200	44
Sulphate (mg/L)	1000	2.2
Aluminium (µg/L)	650	18
Arsenic (µg/L)	13	<1
Cadmium (µg/L)	0.2	<0.1
Chromium (µg/L)	3	<1
Copper (µg/L)	13	1.8

Iron (µg/L)	520	50
Lead (µg/L)	10	<1
Mercury (µg/L)	0.2	<0.1
Nickel (µg/L)	11	3
Boron (µg/L)	370	50
Cobalt (µg/L)	90	0.8
Molybdenum (µg/L)	34	2.4
Selenium (µg/L)	10	4.5
Silver (µg/L)	1	<1
Uranium (µg/L)	1	<1
Vanadium (µg/L)	10	10
Ammonia (µg/L)	900	82
Nitrate (µg/L)	1100	52
Petroleum hydrocarbons (C6-C9) (µg/L)	20	<20
Petroleum hydrocarbons (C10-C36) (µg/L)	100	<50
Zinc (µg/L)	8	3.75

Monitoring discharges in this TEP will be conducted as follows:

- Sampling of water being discharged ~~from~~ via Spring Creek Dam will be undertaken at the location and frequency specified in Table ~~3~~ 4 below;
- Sampling of water discharged ~~from Spring Creek Dam~~ will be undertaken using calibrated field equipment for the parameters outlined in Table 45;
- Monthly analysis for the parameters outlined in Appendix F will be conducted by NATA certified laboratories;
- In the event that water analysis results exceed the defined contaminant limits (as outlined in Table 45) Rolleston Coal will cease discharging;
- In the event that water analysis results exceed the defined contaminant limits (as outlined in Appendix F) Rolleston Coal will investigate the reason for the exceedence in accordance with the procedures in Condition W5 of the EA.

Table ~~3~~4: Discharge water monitoring location

Water storage description	Easting +/- 50m	Northing +/- 50m	Monitoring Location	Frequency of Monitoring
Spring Creek Dam	642472	7298442	Spring Creek dam spillway (which drains to RP1 in EA)	Daily during discharge for the parameters listed in Table 45. Monthly during discharge for the parameters listed in Appendix F.

Table 45: Water sampling parameters and upper limits

Parameter	Units	Maximum	Notes
Electrical Conductivity (EC)	µS/cm	483	90th percentile of Bootes Creek upstream monitoring*
pH	n/a	9.0	In accord with EA conditions. Measured at Spring Creek Dam
pH	n/a	8.5 for a sustained 12 hour period	Measured at the Bootes Creek downstream monitoring station MP3
Turbidity	NTU	290	80th percentile of Bootes Creek upstream monitoring*
Volume released	Megalitres/ day	100	

*Taken from 55 samples from Bootes Creek upstream water monitoring station in February and March 2010, the timeframe when the flooding of Spring Creek Pit occurred. Data has been supplied to DERM.

5.5. Volume of water discharged

~~In addition to daily~~ cCalculations of volumes released will be undertaken daily and will be provided in the TEP closure report. ~~, weekly estimates of water volume remaining in Spring Creek Dam will be undertaken, by survey pickup of the RL on water during the period in which water is released.~~

5.6. Rate of water discharge

In order to calculate discharge rates, the consultancy firm AECOM have prepared discharge curves (Appendix C) using a broad crested weir design which ~~will~~ enables variation to flow rates by adjusting either the height or width of the spillway.

5.7. Risk of Environmental Harm

Water Quality

Rolleston Coal is confident that the program will not significantly increase the potential for environmental harm in the area. ~~Weekly w~~Water quality sampling in Spring Creek Dam as well as the other storages which may potentially be discharged via Spring Creek Dam have ~~over the last 3 months~~ haves met all criteria specified in Tables 2 and 3 of Rolleston Coal's EA (see Appendices D & E). Rolleston Coal also proposes additional sampling of the water before it is discharged and will discharge only if the water is within acceptable levels, as stipulated by this TEP. During release water will be subject to monitoring at the dam spillway as well as at the Bootes Creek downstream monitoing station (MP3).

Furthermore Rolleston Coal believes that by implementing this TEP and having sufficient capacity in water storages om-site throughout ~~Spring Creek Dam at the commencement of~~ the "wet season" the potential risk of environmental harm is minimized as the likelihood of uncontrolled discharges is reduced.

The proposed monitoring regime will assess water quality throughout the discharge event. Discharge will cease if water quality parameters stipulated by this TEP ~~were~~ are exceeded.

Though this TEP seeks the controlled discharge of water irrespective of minimum flow conditions outlined in the EA, it is anticipated that there will be times when Bootes Creek will be flowing. During recent months ~~September~~ there have been a number of~~five~~ flow events in Bootes Creek where the minimum flow requirement in the receiving water (Bootes Creek) has provided opportunity for controlled discharge. Current weather forecasts suggest strong "La Nina" conditions with well above average rainfall. Any natural flows in Bootes Creek will have a dilution effect thereby further reducing potential downstream impact.

Discharge volume under this TEP will be reduced gradually at the end of the discharge period in the following manner:

- Three days out from the end of the discharge period, daily discharge volume will be reduced to 50ML or less;

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- Two days out from the end of the discharge period, discharge volume will be reduced to 25ML or less; and
- On the last day of the discharge period discharge volume will be reduced to 10ML or less.

If on the last day of discharge:

- Bootes Creek does not have a natural flow occurring where water discharged from Spring Creek Dam enters Bootes Creek; and
- The water quality in Davet Dam is of significantly better quality than water in Spring Creek Dam as recorded in September and October 2010 in the "Rolleston Coal Mine: Spring Creek Dam and Spring Creek Pit Water Quality Results: May – September 2010" document previously supplied to DERM;

  Rolleston Coal Mine will immediately release 25 ML of clean (mine un-affected) water from Davey Dam into Bootes Creek, at the rate of 5ML per day for a period of five days.

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Impacts on Downstream Landholders

Rolleston Coal does not predict any impact to downstream users as this discharge will be managed so as to comply with the water quality parameters outlined in Table 45. There are existing monitoring stations (pH, EC, temperature and flow height) located upstream and downstream of Release Point 1 where this discharge will occur (refer to Appendix B). These established automated monitoring stations will continue to operate in accordance with applicable requirements under EA MIM80009080. Should a pH level greater than 8.5 be recorded over a sustained 12 hour period Rolleston Coal will cease discharging until the water quality parameters are met.

Rolleston Coal predicts that the impact on stock watering will be negligible as water quality parameters documented in the EA are consistent with those listed in ANZECC guidelines for stock water.

Rolleston Coal is confident that the rate of water released from Spring Creek Dam will not incur any increase in downstream flood levels as the creek system capacity is sufficient to accommodate very large volumes of water. Rolleston Coal ~~will~~ has consulted with the Ranger in Charge of the Albinia National Park as well as the adjacent landholders in relation to likely impacts on the usability of Springwood road.

Erosion Potential

Rolleston Coal is also confident that the rate of water released from Spring Creek Dam will not result in downstream erosion as the creek system has sufficient capacity to accommodate very large volumes of water. Additionally the water being released has to traverse large areas of swamp prior to reaching Meteor Creek. Rolleston Coal will undertake weekly visual inspections of the riparian area immediately downstream of Spring Creek Dam. If erosion is evident a reduced discharge rate will be adopted to ensure maintenance of stream bank integrity.

5.8. Notification and Reporting

Rolleston Coal will:

1. Notify DERM of commencement of discharge from Spring Creek Dam into Bootes Creek within 2 business days of commencement;
2. Notify DERM, within 21 days of completion of discharge from Spring Creek Dam into Bootes Creek, the following;
   a. controlled release completion date;
   b. raw results on water quality testing under this TEP; and
   c. volume of water transferred released from Spring Creek Dam into Bootes Creek; and
3. Complete and lodge with DERM a completion report outlining actions taken under this TEP within 40 business days of completion of discharging of water from Spring Creek Dam into Bootes Creek summarising sampling, results, observations, and other relevant details. A proposed format (TOC) for the completion report is provided in Appendix E

5.9. Action Plan

The key actions planned and scheduled are set out below in Table 56.

Table 56: Action Plan

Action Plan Item	Objective No.	Performance Indicator	Completion date	Responsibility
AP – 1. Monitor in accordance with with TEP and EA MIM800090802 prior to pumping	1	Sampling of Spring Creek Dam completed	Prior to commencement of discharge	Environmental Manager
AP - 2. Collate the sampling results of Spring Creek Dam and provide to DERM with and in support of this TEP	2	Data provided to DERM	Upon approval of this TEP	Environmental Manager
AP - 3. Commence discharging water from Spring Creek Dam into Bootes Creek via Release Point 1	3	Controlled discharging occurring	As soon as practicable after completion of AP-2 above	Operations Manager in conjunction with Environmental Manager
AP - 4. Notify DERM of commencement of discharging from Spring Creek Dam into Bootes Creek via Release Point 1	3	DERM notified of commencement of discharge	Within 2 business days of commencing pumping	Environmental Manager
AP - 5. Monitor in accordance with TEP and EA MIM800090802 during discharge	3	Sampling of Spring Creek Dam water Visually monitor the impact of erosion downstream of RP1 on a weekly basis during discharge and take remedial action as required	Prior to cessation of pumping Upon cessation of pumping	Environmental Manager

Action Plan item	Objective No.	Performance Indicator	Completion date	Responsibility
		Visually monitor the condition of roads downstream of RP1 on a weekly basis during discharge, and liaise with landholders as required	Upon cessation of pumping	
AP - 6. Cease discharging from Spring Creek Dam	3	Pumping ceases	Final discharging to cease ~~when 4.0GL has been released or~~ by 30~~1 March~~June 2011~~, whichever is the sooner~~.	Operations Manager
AP - 7. Notify DERM of the following under this TEP; • Controlled release completion date • Raw results on water quality testing under this TEP; and • Volume of water released ~~from~~ via Spring Creek dam into Bootes Creek	3	Notification to DERM occurs	Within 21 business days of cessation of pumping of water from Spring Creek Dam into Bootes Creek via Release Point 1	Environmental Manager
AP - 8. Submit completion report to DERM.	3	Report submitted to DERM in a form consistent with that outlined in Appendix H	Within 40 business days after cessation of discharging from Spring Creek Dam into Bootes Creek via Release Point 1 under this TEP	Environmental Manager

6. Term of the Transitional Environmental Program

This TEP will be current until ~~1 March~~30 June 2011.

7. Transition to Compliance

The outcome of this TEP is considered integral to the site's "transition" to compliance which will be reflected by the:

- The implementation of the site's ~~U~~updated Water Management Plan (which has been provided to DERM in ~~is to be completed by 1~~ November 2010 in accordance with TEP MAN10239). It includes the:
    - decommissioning of Spring Creek Dam,
    - construction of evaporation dams with a capacity totaling 770ML and
    - construction of a 300ML enclosed Pit Water Dam for Spring Creek Pit.

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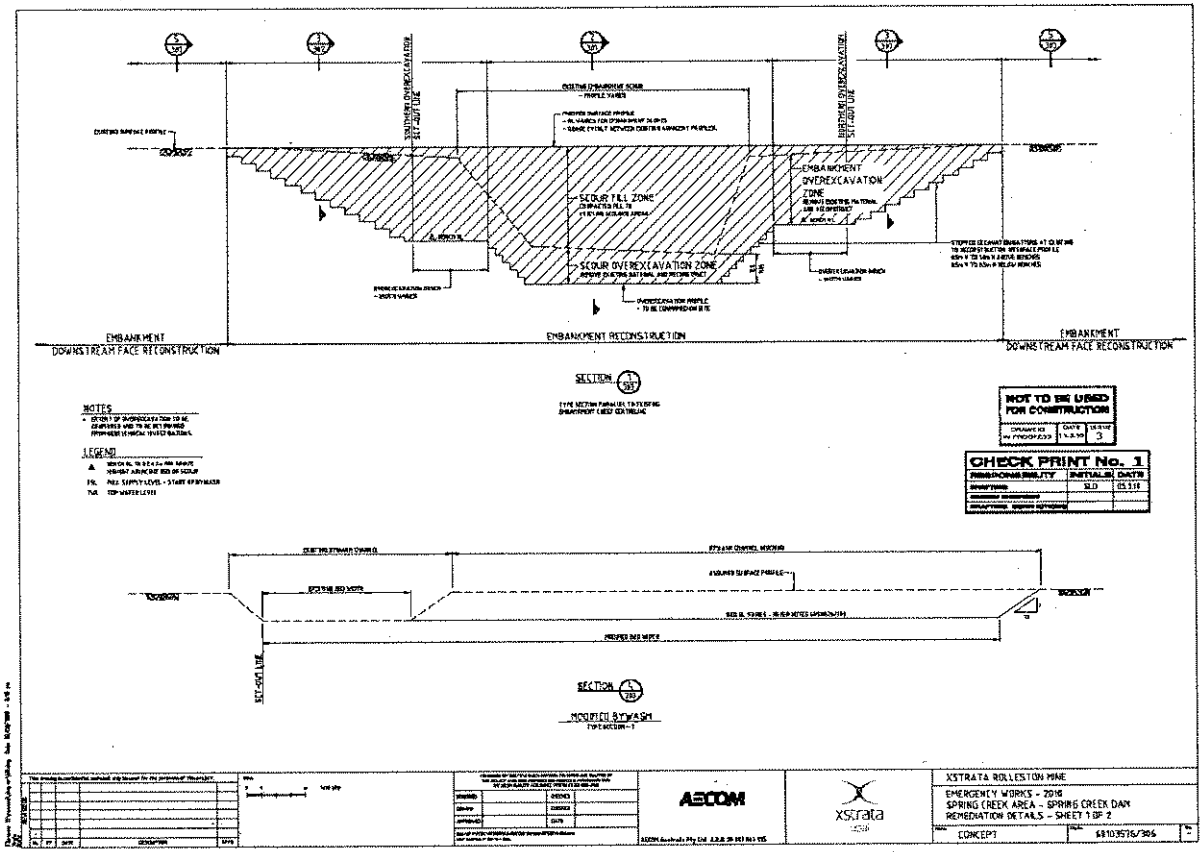
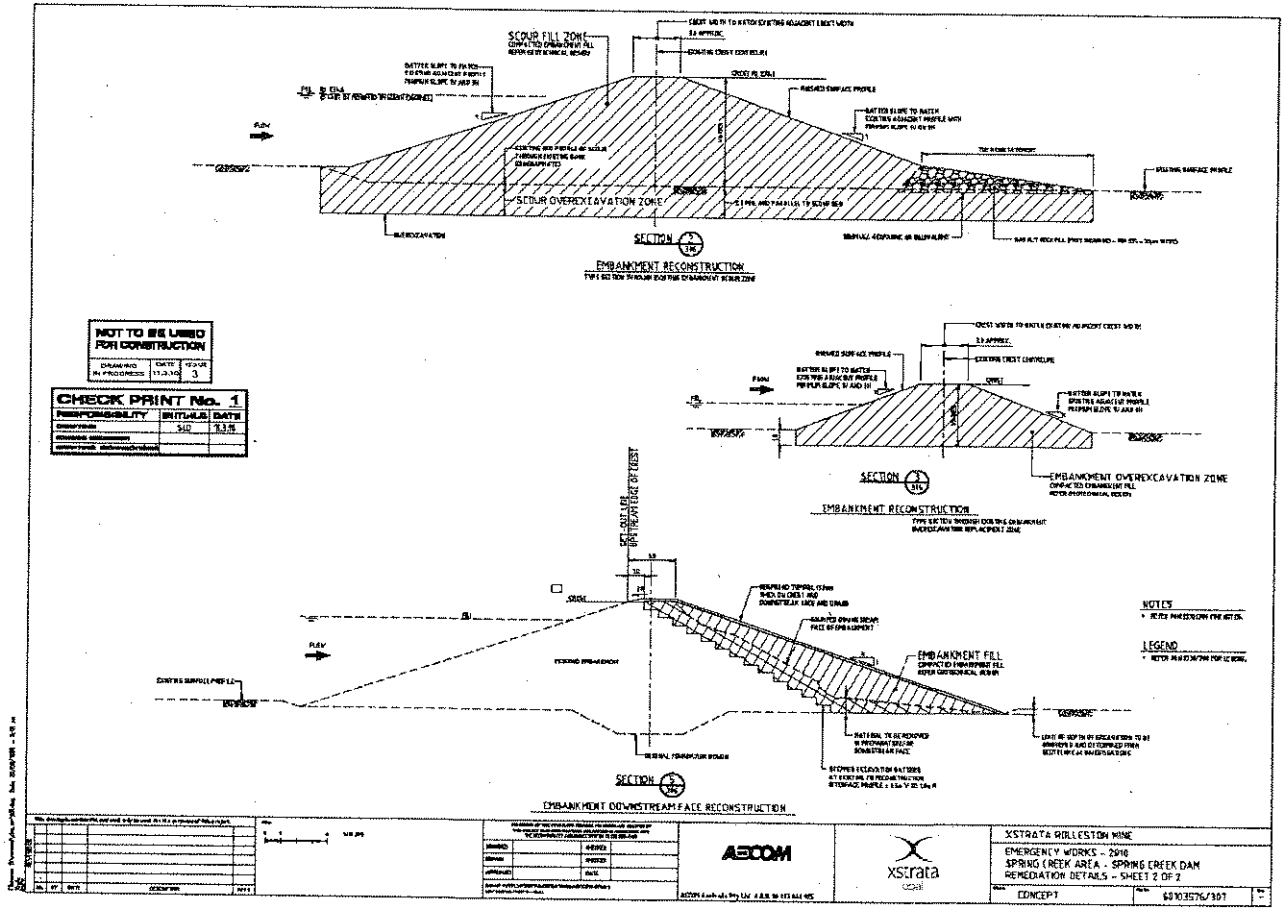
Telephone 07 4988 9100 Facsimile 07 4988 9151 Internet www.xstrata.com

Appendix A *Design Plans Spring Creek Dam*

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SCOUR OVEREXCAVATION ZONE
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NOT TO BE USED FOR CONSTRUCTION
CHECK PRINT No. 1
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EMBANKMENT RECONSTRUCTION
EMBANKMENT FILL
NOTES
LEGEND
EMBANKMENT DOWNSTREAM FACE RECONSTRUCTION
AECOM
xstrata coal
XSTRATA RIDLESTON MINE
EMERGENCY WORKS - 2010
SPRING CREEK AREA - SPRING CREEK DAM
REMEDIATION DETAILS - SHEET 2 OF 2
CONCEPT

Appendix B *Spring Creek Dam discharge & release point 1*

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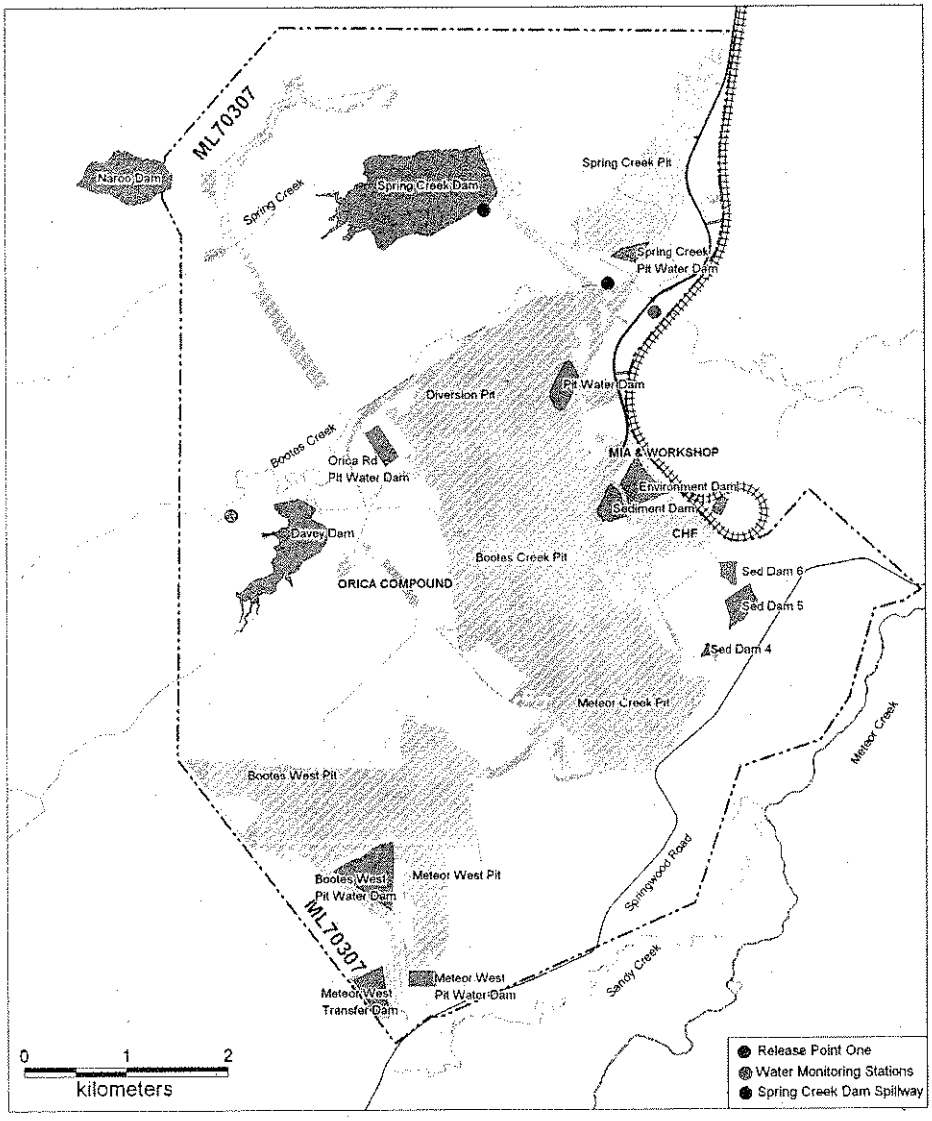
Rolleston Coal Spring Creek Dam Discharge and Release Points



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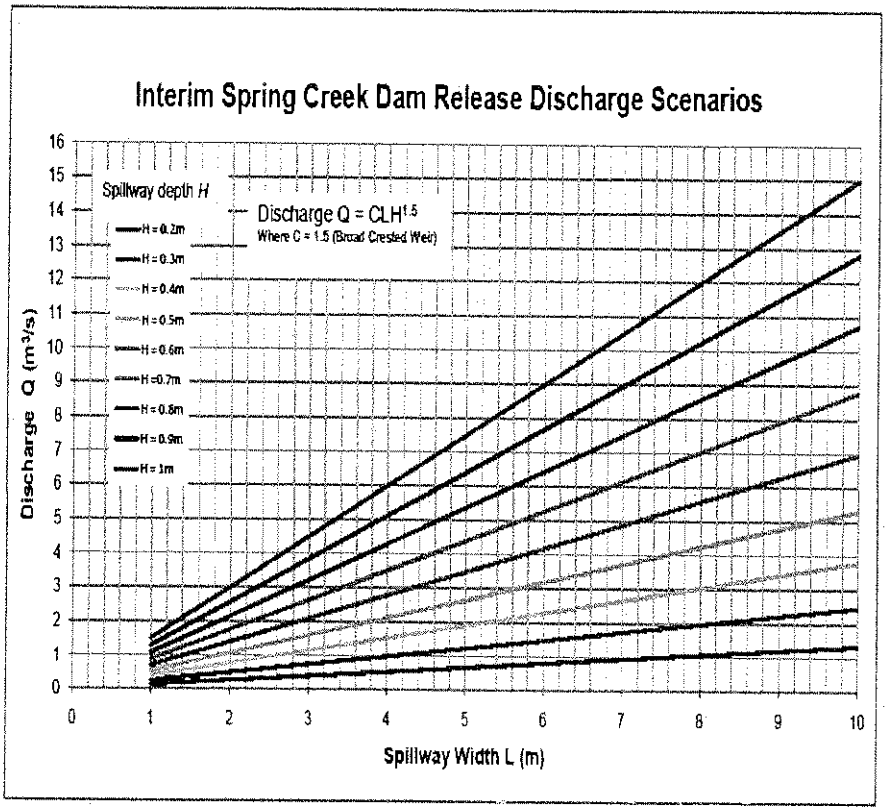
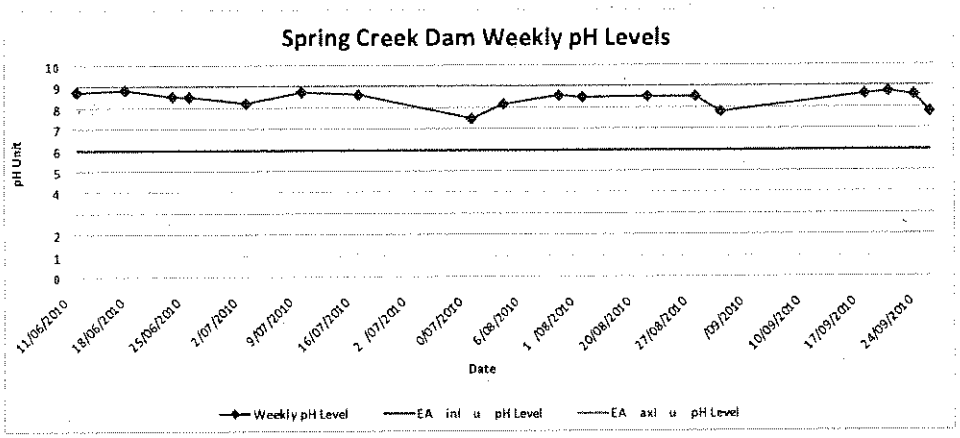
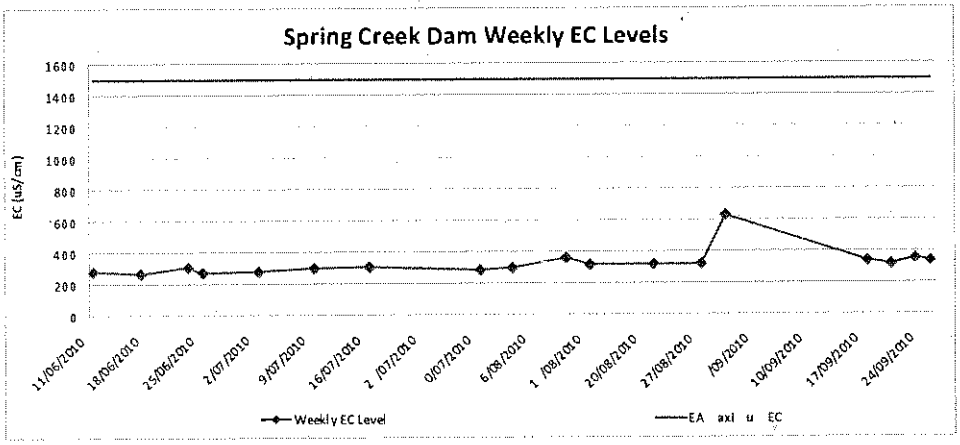
Appendix C *Discharge rating curves for Spring Creek Dam spillway*



Appendix D *Water quality in Spring Creek Dam*





Appendix E *Laboratory analysis of Spring Creek Dam water*

Sample Date:	04/08/2010
Analyte grouping/Analyte	
EA005P: pH by PC Titrator	
pH Value	8.05
EA010P: Conductivity by PC Titrator (µs/cm)	
Electrical Conductivity @ 25°C	310
EA015: Total Dissolved Solids (mg/L)	
Total Dissolved Solids @180°C	201
EA025: Suspended Solids (mg/L)	
Suspended Solids (SS)	5
EA045: Turbidity	
Turbidity	
ED037P: Alkalinity by PC Titrator (mg/L)	
Hydroxide Alkalinity as CaCO3	<1
Carbonate Alkalinity as CaCO3	<1
Bicarbonate Alkalinity as CaCO3	150
Total Alkalinity as CaCO3	150
ED040F: Dissolved Major Anions (mg/L)	
Sulphate as SO4 2-	2
ED040T: Total Major Anions	
Sulphate as SO4 2-	
ED045G: Chloride Discrete analyser (mg/L)	
Chloride	12
ED045P: Chloride by PC Titrator	
Chloride	
ED093F: Dissolved Major Cations (mg/L)	

Toluene-D8	110
4-Bromofluorobenzene	102
EG035T: Total Recoverable Mercury by FIMS (mg/L)	
Mercury	<0.0001
EG035F: Dissolved Mercury by FIMS (mg/L)	
Mercury	<0.0001

Appendix F *Water release contaminant trigger investigation levels in EA*

Quality Characteristic	Trigger Levels (µg/L)
Aluminium	650
Arsenic	13
Cadmium	0.2
Chromium	3
Copper	13
Iron	520
Lead	10
Mercury	0.2
Nickel	11
Boron	370
Cobalt	90
Molybdenum	34
Selenium	10
Silver	1
Uranium	1
Vanadium	10
Ammonia	900
Nitrate	1100
Petroleum hydrocarbons (C6-C9)	20
Petroleum hydrocarbons (C10-C36)	100
Zinc	8

Appendix G *Water contaminant release limits in EA*

Quality Characteristic	Interim Release Limits until 30-NOV-2011
Electrical conductivity (uS/cm)	1500
pH (pH Unit)	6.5 (minimum) 9.0 (maximum)
Turbidity (NTU)	NA*
Suspended Solids (mg/L)	1200
Sulphate (SO_4^{2-}) (mg/L)	1000

Appendix H *Completion Report – Proposed Contents*

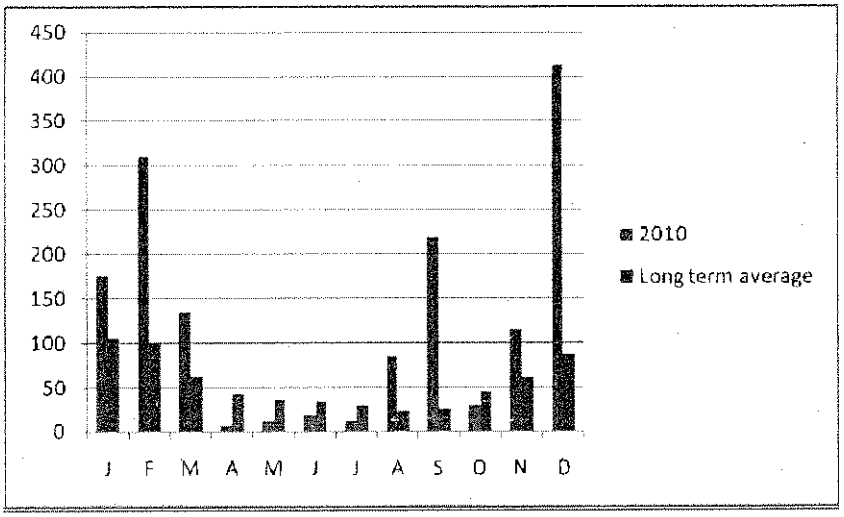
Completion Report

Transitional Environmental Program Spring Creek Dam Water Release

1. Covering Letter
2. Summary Table of Program Statistics
    a. Volume of water discharged ~~from~~ via Spring Creek Dam
    b. Days of pumping, Pumping rate averages
    c. Other relevant Data
3. Summary Tables of Sample results
    a. Spring Creek Dam discharge water quality
    b. Other results and Observations
4. Conclusions
    a. Overall water quality status in discharged water.
    b. Compliance with Transitional Environmental Program
5. APPENDICES

Appendix I *Rolleston Coal 2010 rainfall verses long term average monthly rainfall for Rolleston township*

Formatted: Appendix 1, Outline numbered + Level: 1 + Numbering Style: A, B, C, … + Start at: 1 + Alignment: Left + Aligned at: 2 cm + Tab after: 6 cm + Indent at: 6 cm



10.2 TEP Approval MAN11779 – 1 February 2011

From: [redacted]
Sent: Tuesday, 1 February 2011 4:14 PM
To: [redacted] Rolleston - Coal)
Cc: [redacted]
Subject: TEP approval

[redacted]

Please find the certificate of approval and decision notice for Rolleston Coal TEP MAN11779.

Please take note of the full set of conditions outlined in the Certificate of Approval.

Originals will be sent out in tomorrows post.

Regards,

[redacted]

<<110201_certificate of approval.pdf>> <<110201_decision notice.pdf>>

Andrea Hewitt | Senior Environmental Officer | Environmental Services (Mining)

P: [redacted]

E: [redacted] | www.derm.qld.gov.au

DERM Department of Environment & Resource Management

99 Hospital Road, Emerald QLD 4720 | PO Box 906, Emerald QLD 4720

Department of Environment and Resource Management

Environmental Protection Act

Transitional environmental program certificate of approval number MAN11779

This certificate of approval is issued by the administering authority pursuant to section 339 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 amended certificate of approval is hereby granted to:

Xstrata Coal Queensland Pty Ltd
Level 10 Riverside Centre
123 Eagle Street
Brisbane Qld 4000

ICRA Rolleston Pty Ltd
Level 15, Commonwealth Bank Building of Australia
240 Queen St
Brisbane Qld 4000

Sumisho Coal Australia Pty Ltd
Level 34, Central Plaza One
Brisbane Qld 4000

approving the draft transitional environmental program; titled Rolleston Coal Mine Transitional Environmental Program (TEP) Spring Creek Dam Water Release into Bootes Creek Amended TEP MAN11779 for management of mine affected water at Rolleston Coal Mine.

The draft transitional environmental program, dated January 2010, was received by this office on 19 January 2011.

The draft transitional environmental program is approved subject to the following conditions:

In carrying out this Transitional Environmental Program, 'Rolleston Coal Pty Ltd' will undertake all activities in accordance with the following conditions.

1. The discharge volume from Spring Creek dam under this draft TEP MAN11779 must be reduced gradually at the end of the discharge period in the following manner:
    a) three days out from end of the discharge period, daily discharge volume must be reduced to 50 ML or less;
    b) two days out from end of the discharge period, discharge volume must be reduced to 25 ML or less; and
    c) on the last day of the planned discharge, discharge volume must be reduced to 10 ML or less.
2. If on the last day of the proposed draft TEP MAN11779 water discharge:
    a) Bootes creek does not have a natural water flow occurring where water discharged from Spring Creek dam enters Bootes Creek; and

b) the water quality in Davey's Dam is of significantly better quality than water in Spring Creek Dam, as it was recorded in September and October 2010 in the "Rolleston Coal Mine: Spring Creek Dam and Spring Creek Pit Water Quality Results; May – September 2010" document;

Rolleston Coal Mine will immediately release 25 ML of natural (mine-unaffected) water from Davey's Dam into Bootes creek, at a rate of 5 ML per day, over a period of five days.

Notification of Release Events

3. The Transitional Environmental Program holder must notify the administering authority within 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 by facsimile (07 4982 2568) 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)
   e) receiving water/s including the natural flow rate
   f) any details (including available data) regarding likely impacts on the receiving water(s).

4. The Transitional Environmental Program holder must notify the administering authority as soon as practicable, (nominally within twenty-four (24) hours of cessation of a release) of the cessation of a release. Notification must include the submission of written verification to the administering authority of the following information:
   a) release cessation date/time;
   b) natural flow rate in receiving water; and
   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
   f) any other matters pertinent to the water release event.

5. Rolleston Coal Mine will notify the Ranger-in-Charge of the Albinia National Park, Central Highlands Regional Council and any other relevant/potentially effected users/landholders downstream of the discharge under this draft TEP, prior to the discharge taking place. The notification process must be documented and include:
   - written documentation of notification including dates, contact persons and any pertinent comments
   - details of discharge information provided to stakeholders

A report detailing this notification process must be submitted to the Department of Environment and Resource Management prior to initial discharge commencing.

6. The Transitional Environmental Program holder must, within 28 days of a release that exceeds the conditions of this Transitional Environmental Program, must 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

   f. Any other matters pertinent to the water release event

Requirement to cease the release of mine affected water

7. Water discharged from Spring Creek Dam under this draft TEP must:

   a. cease if the pH measured at MP3 exceeds 8.5 for a duration period 12 hrs on any given day; and

   b. immediately cease if the discharged water has a pH of 9.0 or above on any given day (measured at Spring Creek Dam Spillway);

8. Discharge from Spring Creek Dam may recommence after 24 hours in accordance with approval condition 9.

9. The release of mine affected waters must cease immediately if identified that 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

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

Monitoring requirements

11. Sampling of water being discharged via Spring Creek Dam will be undertaken at the location and frequency specified in Table 4.

12. Sampling of water discharged will be undertaken using calibrated field equipment for the parameters outlined in Table 5.

13. Monthly analysis for the parameters outlined in Appendix F will be conducted by NATA certified laboratories;

14. In the event that water analysis results exceed the defined contaminant limits (as outlined in Table 5) Rolleston Coal will cease discharging

15. In the event that water analysis results exceed the defined contaminant limits (as outlined in Appendix F) Rolleston Coal will investigate the reason for the exceedence in accordance with the procedures in Condition W5 of the EA.

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

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

Notification of Emergencies, Incidents and Exceptions

18. As soon as practicable after becoming aware of any emergency or incident which 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 (07 4980 6200), facsimile (07 4982 2568 or email (Manager.MiningCWR@derm.qld.gov.au).

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

    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 and further release and mitigate any environmental harm caused by the release..

20. Not more than fourteen 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 minimize environmental harm.

The transitional environmental program remains in force until 29 August 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, Andrea Hewitt of the Department of Environment and Resource Management on telephone 07 4980 6200 would be happy to assist you.

[redacted]

Signature

01/02/11

Date

Christopher Loveday
Manager Environmental Services (Mining)
Department of Environment and Resource Management

Enquiries:
Department of Environment and Resource Management
PO Box 19
EMERALD QLD 4720
Phone: 4980 6200
Fax: 4982 2568

Department of Environment and Resource Management

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 section 340 of the Environmental Protection Act 1994, *to advise you of a decision or action.*

Your reference : MAN11099
Our reference : EMD886, MAN11779

Xstrata Coal Queensland Pty Ltd
Level 10 Riverside Centre
123 Eagle Street
Brisbane Qld 4000

ICRA Rolleston Pty Ltd
Level 15, Commonwealth Bank Building of Australia
240 Queen St
Brisbane Qld 4000

Sumisho Coal Australia Pty Ltd
Level 34, Central Plaza One
Brisbane Qld 4000

Attention: [redacted]

Re: Application for the amendment of an approval for a transitional environmental program for Rolleston Coal Mine – Amendment Application for Approved Transitional Environmental Porgram (TEP): Spring Creek Dam Water Release into Bootes Creek.

Thank you for your application for the amendment of an approval for a transitional environmental program — certificate of approval number MAN11779.

Your application, which was received by this office on 19 January 2011, has been approved with conditions.

A copy of the amended certificate of approval, which includes the schedule of conditions, 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

Department of Environment and Resource Management

Notice

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

[redacted]

SIGNATURE

07/02/11

DATE

Christopher Loveday
Delegate of the Administering Authority
Manager (Environmental Services - Mining)
Central West Region

Enquiries:
Department of Environment and Resource Management
PO Box 19
EMERALD QLD 4720
Phone: 4980 6200
Fax: 4982 2568

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

Queensland Government