Queensland Floods Commission of Inquiry

Statement
of
Robert Anthony
Lawrence
(Century Mine)

September 2011

QFCI
Date: 5 10 11

Exhibit Number: 738

QUEENSLAND FLOODS COMMISSION OF INQUIRY

STATEMENT OF ROBERT (ROB) ANTHONY LAWRENCE

WITH RESPECT TO THE CENTURY MINE

I, ROBERT (ROB) ANTHONY LAWRENCE of c/- 5B Sheridan Street, Cairns in the State of Queensland, Regional Manager, Environmental Services (North Region), Regional Service Delivery, Operations and Environmental Regulator, Department of Environment and Resource Management (DERM), make oath and states as follows:-

Requirement from Queensland Floods Commission of Inquiry

1. I have seen a copy of a letter dated 13 September 2011, which is attachment RAL-01, from the Commissioner, Queensland Floods Commission of Inquiry to me requiring a written statement under oath or affirmation, and which details the topics my statement should cover.

Role

- 2. I am currently Regional Manager Environmental Services, North Region, Regional Service Delivery Division, Operations and Environmental Regulator Business Group, DERM. I am based in Cairns, but my work covers the whole North Region. Attachment RAL-02 is a map showing the regions.
- 3. From 1 Oct 2010 to present my roles were as follows:
 - a. From 1 October 2010 Regional Manager, Mining and Industry, North Region
 - b. On or around 4 April 2011 the role changed to Regional Manager, Environmental Services, North Region due to some internal realignment.
 - Reporting arrangements for a and b above are directly to the Regional Services Director, North Region, Regional Service Delivery Division, DERM.
 - d. I was on leave from DERM from 24 December 2010 until 28 January 2011 and 4 July 2011 until 11 July 2011.
 - e. I acted in the position of Regional Services Director from 8 August 2011 until 19 August 2011.

Item 1: Department of Environment and Resource Management (DERM) activities in respect of the mine's flood preparedness in advance of the 2010/2011

wet season, including whether any particular activities were undertaken as a response to the forecast of an above-average rainfall wet season.

- 4. The Century mine is located approximately 250km north west of Mt Isa. The mine produces lead and zinc concentrates (RAL-CM01-01 excerpt page 9 of Plan of Operations MMG Century).
- 5. DERM has a pre wet season inspection program focusing on mining operations that hold a current environmental authority (EA) issued under the *Environmental Protection Act 1994*. This program aims to inspect the larger level 1 mines with a particular focus on water management prior to the wet season. In addition following the 2008/2009 wet season where a number of discharges occurred, North region developed a Mine Discharge Response Plan which provides a framework for incident management in relation to mine discharges as well as information for responding to a discharge such as site access and land holder contact details. The plan is updated each year prior to the wet season (RAL—CM01-02 mine discharge response plan with Century mine page).
- 6. DERM conducted the annual review of the Mine Discharge Response Plan for North Region in advance of the 2010/2011 wet season (Refer to attachment RAL-CM01-02 above). DERM officers also ensured that sufficient resources were available to respond in the event of a discharge from a mine site.
- 7. Given that above average rainfall was predicted for the 2010/2011 wet season, DERM closely monitored the Bureau of Meteorology(BoM) forecasts both prior to and during the 2010/2011 wet season and maintained contact with MMG Century Limited (MMG) the holder of the EA for Century mine in relation to site specific weather conditions and rainfall during that period.
- 8. DERM officers conducted a compliance inspection at Century mine focussing on water management prior to the 2010/2011 wet season to establish site preparedness.
- 9. I am advised that the compliance inspection identified areas of non compliance with the EA. DERM advised MMG of these issues and required the issues identified during the inspection to be rectified (RAL-CM01-03 DERM letter dated 23 December 2010). MMG responded in writing acknowledging the outcomes of the inspection. (RAL-CM01-04 Letter from MMG January). DERM confirmed the actions to be undertaken by MMG to achieve compliance (RAL-CM-01-05 DERM letter dated 17 January 2011) and MMG responded to each action item at a meeting with DERM officers on 19 January 2011 (RAL-CM-01-06 meeting notes).
- 10. The conditions of the EA for Century mine require that MMG have any high hazard dams containing hazardous waste on site inspected annually before the 1 November each year by a Registered Professional Engineer, Queensland (RPEQ). The 2010 annual report on hazardous storages at Century mine prepared by a RPEQ identified that some minor works were required, which were implemented by MMG prior to the 2010/2011 wet season (RAL-CM01-07 copy of annual dam report).

Item 2: the water management sections of the environmental authority applicable at the mine during the 2010/2011 wet season, including:

- a) Any concerns held by him or the Department of Environment and Resource Management (DERM) regarding its terms and the ability of the mine operator to comply with it
- b) Any terms that the minc operator has indicated it is unable to comply with, or breached
- c) Any terms that had to be amended from the Fitzroy model conditions because the model terms were unsuitable for this mine site
- d) Any terms that he or DERM consider do not adequately promote environmental protection and dam safety.
- 11. The water management sections of the EA in effect during the 2010/2011 wet season are provided at attachment RAL-CM02-01.
- 12. In response to Item 2 (a), as detailed in paragraph 9 above, DERM officers carried out a compliance inspection of Century mine in November 2010 that identified areas of non compliance with the EA. I am advised by those officers that there were no major issues in relation to water management arising from that inspection. DERM and MMG corresponded regarding the outcome of the compliance inspection as referred to at attachments RAL-CM01-03, RAL-CM01-04 and RAL-CM01-05 above.
- 13. In the 2008/2009 wet season a discharge occurred from the Century mine which exceeded limits stipulated in the EA. This matter was formally investigated by DERM and MMG were charged with causing serious environmental harm and for a breach of a condition of their environmental authority. MMG pleaded guilty to the charges and were subsequently fined \$130,000 and costs of \$8686.96. Documentation on the discharge, investigation and prosecution has not been attached as this incident did not occur during the 2010/2011 wet season. However the information can be provided on request.
- 14. As a result of the discharge in 2008/2009 MMG made a range of improvements to their site water management systems in 2009 and 2010 to minimise the risk of future releases (RAL-CM02-02 Letter from MMG 16 September 2010).
- 15. DERM highlighted in correspondence to MMG the need for continuous improvement in water management practices at Century mine to minimise the risk of a discharge (RAL-CM02-03 letter from 2010).
- 16. Based on the available information in the lead up to the 2010/2011 wet season I had no specific concerns regarding the ability of MMG to comply with the EA, recognising the water management improvement works that MMG had already undertaken in 2009 and 2010.

- 17. In response to Item 2 (b), as detailed in paragraph 8 & 9 above, DERM officers carried out a compliance inspection of Century mine in November 2010 that identified areas of non compliance with the EA. I am advised by those officers that there were no major issues in relation to water management arising from that inspection. DERM and MMG corresponded regarding the outcome of the compliance inspection are referred to at attachments RAL-CM01-03, RAL-CM01-04 and RAL-CM01-05 above.
- 18. On 15 March 2010 MMG notified DERM of non compliance with their EA due to a contaminated water discharge. This was confirmed in writing by MMG on 18 March 2010 and included submission of a Program notice of relevant event under section 350 of the *Environmental Protection Act 1994* (RAL-CM02-04 MMG Notification). Submission of a Program notice of relevant event would ordinarily result in the voluntary submission of a draft Transitional Environmental program (TEP). MMG subsequently decided not to proceed with lodging a TEP (RAL-CM02-05).
- 19. In response to Item 2 (c), I was not involved in the development of the Fitzroy model conditions however I understand that they were developed specifically for coal mining operations in Central Queensland. These conditions have not been applied to metalliferous mines in North Queensland. The Fitzroy model conditions were developed by DERM specialists who would be best placed to comment on them.
- 20. The Century mine EA was originally issued in 2001 by the District Manager (Mt Isa) of the former EPA who was the delegate at that time under the *Environmental Protection Act 1994*. The current EA was issued in 2009 following a minor amendment by the then acting Director, Far Northern Region, Environmental Services, of the former EPA, who was the delegate at the time under the *Environmental Protection Act 1994*.
- 21. DERM officers are currently negotiating an amendment to the EA to include contemporary conditions. In relation to the water schedule DERM is proposing amendments based on information contained in studies undertaken by MMG together and with reference to the Australian and New Zealand Environment Conservation Council (2000) (ANZECC 2000) water quality guidelines and the Queensland Water Quality Guidelines 2009.
- 22. While not directly involved in the negotiations with MMG, I am aware that the water schedule has been redrafted to:
 - a. Ensure that any discharges are tied to minimum flow rates in the receiving environment;
 - Ensure that end of pipe and receiving water limits reflect DERM's
 current understanding of the environmental values of the receiving
 environment and take into account studies undertaken by MMG, and
 with reference to the ANZECC 2000 and the Queensland Water
 Quality Guidelines 2009;
 - c. Enhance and formalise environmental monitoring and reporting;

- d. Require both a site water management plan and an erosion and sediment management plan to be developed and maintained;
- e. Reflect the water improvement works that MMG have undertaken on site and place all conditions relating to regulated dams into a dedicated schedule of the EA.
- 23. In response to item 2(d), whilst I am not a dam safety engineer, I am not aware of any conditions in the EA that do not promote dam safety.
- 24. The EA includes conditions in relation to receiving water contaminant limits as well as end of pipe contaminant release limits. These conditions were included to protect the environmental values downstream of the mine.
- 25. As mentioned in paragraphs 20 and 21 above, the Century mine EA was originally issued in 2001 by the District Manager (Mt Isa) of the former EPA who was the delegate at that time under the *Environmental Protection Act 1994*. The current EA was issued in 2009 following a minor amendment by the then acting Director, Far Northern Region, Environmental Services, of the former EPA, who was the delegate at the time under the *Environmental Protection Act 1994*. The wording of the current water schedule of the EA would allow for a discharge when there is no flow in the creeks. While this is not the current practice of MMG permitting such a release does not adequately promote environmental protection.
- 26. DERM officers are currently negotiating an amendment to the EA to include more contemporary conditions and to remedy the issues raised in paragraph 25 above. In relation to the water schedule DERM is proposing amendments based on information contained in studies undertaken by MMG together with the ANZECC 2000 water quality guidelines and the Queensland Water Quality Guidelines 2009.
- 27. While not directly involved in the negotiations with MMG I am advised that the water schedule has been redrafted to:
 - a. Ensure that discharges are tied to minimum flow rates in the receiving environment;
 - b. Ensure that end of pipe and receiving water limits reflect DERM's current understanding of the environmental values of the receiving environment and take into account studies undertaken by MMG, and with reference to the ANZECC 2000 and the Queensland Water Quality Guidelines 2009;
 - c. Enhance and formalise environmental monitoring and reporting;
 - d. Require both a site water management plan and an erosion and sediment management plan to be developed and maintained;
 - e. Reflect the water improvement works that MMG have undertaken on site and place all conditions relating to regulated dams into a dedicated schedule of the EA.

Item 3: any transitional environmental program (TEP) issued or refused or any emergency direction (ED) given or considered regarding either mine

during the period 1 October 2010 to 30 July 2011 related to water management, and for each, the following:

- a) Information received from the mine operator
- b) Any relevant dam safety issues
- c) Relevant correspondence with the mine operator and other stakeholders
- d) Whether and, if so, how DERM consulted with stakeholders
- e) What considerations DERM took into account in making the decision
- f) Whether, and if so, how DERM balanced environmental considerations and conomic consequences of mines being non-operational
- g) Whether, and if so how, DERM took account of downstream effects, including cumulative effects
- h) The terms of the TEP issued or ED given
- i) What actions were taken by DERM to advise emergency management personnel, including local and regional disaster management groups and local residents downstream of the dam about the TEP and any discharges or effects
- j) Reasons for the decision given to the mine operator
- k) Any breaches of the TEP or ED by the mine operator and DERM's response
- 28. I can confirm that no TEP was issued or refused by DERM in relation to water management at the Century mine during the period of 1 October 2010 to 30 July 2011.
- 29. I can confirm that no ED was given in relation to water management at the Century mine during the period of 1 October 2010 to 30 July 2011.
- 30. I am aware that a TEP was approved by DERM on 29 August 2011 to permit the construction of a stormwater diversion channel to divert clean stormwater away from an evaporation dam on the mine site. Documents relating to the application, assessment and decision can be provided on request. A brief was provided to update the Minister for Environment, on Century mine water management issues (RAL-CM03-01 copy of brief to Minister).

Item 4: the effects on the environment, drinking water quality and public health downstream of each of the mine sites (as far as the Great Barrier Reef Marine Park) as a result of discharges of water from the mine during the period 1 October 2010 to 30 July 2011.

- 31. The Century mine is located in the Gregory River catchment which discharges into the Gulf of Carpentaria therefore there is no discharge to the Great Barrier Reef Marine Park. There are five (5) ephemeral creeks surrounding the mine which can receive discharges from the mine site. These creeks are not used for drinking water or recreational purposes.
- 32. During the period 1 October 2010 to 30 July 2011 Century mine discharged from multiple locations on the mine site. With the exception of the discharge event mentioned in paragraph 18 above, all of these discharges were compliant with EA release limits (RAL-CM04-01 emails from MMG).

- 33. During the non-compliant discharge mentioned in item 18 above, DERM officers undertook sampling on 15 and 16 March 2011. DERM officers have reviewed the results of the samples and have advised that the discharge event resulted in exceedances of the Australian and New Zealand Environment Conservation Council (2000) (ANZECC 2000) water quality guideline trigger values for the protection of ecosystems for heavy metals and electrical conductivity.
- 34. In relation to the effects on drinking water and public health it should be noted that the none of the five (5) creeks are used for this purpose, however sample results indicate that the Australian Drinking Water Guidelines were exceeded specifically for heavy metals, and sulphate. In addition the recommended recreational water quality for primary contact was exceeded for heavy metals.
- 35. DERM officers have undertaken a formal investigation in relation to non compliance with the EA and the potential for environmental harm in the receiving environment as a result of the discharge event in March 2011. A brief of evidence has been prepared by DERM's Compliance and Investigations Branch into the release in March 2011. I am advised that this brief of evidence is currently with DERM's Litigation unit for review to provide advice and recommendations on potential prosecution. I have not been directly involved in that investigation and as this matter may be placed before the courts, a copy of the brief of evidence has not been attached. A copy may be made available on request. A briefing note on the investigations is however attached (refer to RAL-CM03-01 above Ministerial brief).
- 36. Following the 2011 wet season discharges MMG committed to carryout further studies downstream of the mine site to ascertain the extent of impacts on the receiving environment (if any). This report has not yet been submitted to DERM.

Item 5: any actions taken by DERM in response to any effect of discharges from the mine falling into 4, above, during the period 1 October 2010 and 30 July 2011.

- 37. I refer to my comments at paragraphs 35 and 36 above.
- 38. The notification of discharge provided to DERM by MMG confirmed that downstream landholders had been notified of the release. DERM officers notified the Burke Shire Council of the discharge (RAL-CM05-01 record of conversation CEO, Burke Shire Council).
- 39. In addition DERM officers have continued to engage with MMG, as well as attending the Century Environment Committee (CEC) meetings with MMG and interested stakeholders.
- 40. DERM will review the report being prepared by MMG into the March 2011 discharge when it is received.

Item 6: any briefing (written or oral) given to any Minister or Director-General regarding a TEP or ED related to water management or non-compliance with the water management provisions of the environmental authority at the mine and the reason for that briefing.

- 41. For the purpose of this question I have assumed the period 1 October 2010 to 30 July 2011 applies.
- 42. I can confirm that no TEP was issued or refused by DERM and no ED was given by DERM in relation to water management at the Century mine during the period of 1 October 2010 to 30 July 2011.
- 43. As detailed in paragraph 30 above I am aware that a TEP was approved by DERM on 29 August 2011 to permit the construction of a stormwater diversion channel to divert clean stormwater away from an evaporation dam on the mine site. Documents relating to the application, assessment and decision have not been attached however, such documents can be provided on request. (Refer to Attachment RAL-CM03-01 above copy of brief to Minister).

Item 7: details of any flood preparedness activities planned to precede the 2011/2012 wet season

- 44. DERM are currently finalising the annual review of the Mine Discharge Response Plan for North region in advance of the 2011/12 wet season. Regional staff will also ensure sufficient resources are available to respond in the event of a discharge during the wet season. (Refer to RAL-CM01-02 mine discharge response plan).
- 45. DERM has a pre wet season inspection program focusing on mining operations that hold a current EA issued under the *Environmental Protection Act 1994*. This program aims to inspect the larger level 1 mines with a particular focus on water management prior to the wet season. The Century mine is included in that program.
- 46. DERM officers will closely monitor meteorological observations and forecasts prior to and during the upcoming wet season to maximise operational preparedness. DERM will also maintain contact with MMG during the wet season.

Item 8: details of how the new Fitzroy Model Conditions negotiated during 2011, or any other discussions with DERM, will resolve any issue raised above in 1, 2, 3, or 4

and

Item 9: an explanation as to whether the new Fitzroy Model Conditions negotiated during 2011 are advantageous or disadvantageous to the mine operator in the management of water at the mine, the downstream environment and safety issues

- 47. I was not involved in the development of the Fitzroy model conditions however I understand that they were developed specifically for coal mining operations in Central Queensland. These conditions have not been applied to metalliferous mines in North Queensland. The Fitzroy model conditions were developed by DERM specialists who would be best placed to comment on them.
- 48. In regard to the Century mine in North Queensland DERM officers are currently negotiating an amendment to the EA to include more contemporary conditions. In relation to the water schedule DERM is proposing amendments based on information contained in studies undertaken by MMG together with the ANZECC 2000 water quality guidelines and the Queensland Water Quality Guidelines 2009.
- 49. While not directly involved in the negotiations with MMG I am advised that the water schedule has been redrafted to:
 - a. Ensure that any discharges are tied to minimum flow rates in the receiving environment;
 - Ensure that end of pipe and receiving water limits reflect DERM's
 current understanding of the environmental values of the receiving
 environment and take into account studies undertaken by MMG, and
 with reference to the ANZECC 2000 and the Queensland Water
 Quality Guidelines 2009;
 - c. Enhance and formalise environmental monitoring and reporting;
 - d. Require both a site water management plan and an erosion and sediment management plan to be developed and maintained;
 - e. Reflect the water improvement works that MMG have undertaken on site and place all conditions relating to regulated dams into a dedicated schedule of the EA.

Item 10: DERM's opinion as to whether the mine operator should be managing water at the Mine other than by storing it in dams or ponds, including by using desalination plants, purification procedures or any other means

- 50. I am not a technical expert in mine water treatment however I am aware that the treatment of contaminated water at metalliferous mines can be challenging due to the water properties such as very low pH, high sulphate and high dissolved metals content. While each mine site is different, the treatment of contaminated water for potential release may well be a useful strategy for mine operators to adopt in appropriate circumstances.
- 51. Water management at Century mine should focus on minimising the volume of contaminated water generated and stored on site therefore reducing the risk of discharge. This can involve separation of clean and contaminated water, minimising areas of contamination/disturbance and progressive closure of these areas.
- 52. Additionally the mine should explore opportunities to treat and recycle contaminated water including for example reuse of contaminated water through the mining operation.

If treatment and recycling does not reduce contaminated water sufficiently then the mine should look to:

- a. the release of contaminated water during flow events;
- b. the treatment of contaminated water (if possible) and release; and
- c. evaporation during the dry season.

Item 11: An explanation of that which is involved in managing water at the Mine other than by storing it in dams or ponds, including by using desalination plants, purification procedures or any other means

- 53. DERM officers have advised me that water management at the Century mine currently incorporates;
 - a. the segregation of clean and contaminated waters;
 - b. the transfer of contaminated water using pumping and transfer systems;
 - c. the evaporation of contaminated water from storages;
 - d. reuse of contaminated waters in mining activities eg: dust suppression; and
 - e. minimising contaminated water generation through progressive closure of areas that produce contaminated water, such as waste rock dumps.
- 54. I understand that the Century mine currently do not utilise purification procedures or desalination plants for contaminated water management.

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

Signed

Robert Anthony Lawrence

Taken and declared before me, at Caims this 27th day of September 2011

Solicitor/Barrister/Justice of the Peace/Gommissioner for Declarations-

QUALIFIED.

Our ref: Doc 1712526

13 September 2011

Assistant Crown Solicitor Crown Law GPO Box 5221 BRISBANE QLD 4001



Department of Environment and Resources - Mining Dams

Please find enclosed a Requirement to Provide Statement to the Commission addressed to the following:

- Mr Andrew Brier, General Manager, Strategic Implementation, Coal & CSG Operations, Regional Service Delivery, Operations and Environmental Regulator, directed to the regulation by the Department of Environment and Resource Management of Hail Creek Mine, Dawson Mine, Callide Power Station, Rolleston Coal Mine and Moranbah CSG Project.
- Mr Rob Lawrence, Director, Environmental Services (North Region), Regional Service Delivery, Operations and Environmental Regulator, directed to the regulation by the Department of Environment and Resource Management of Century Mine

The material from Mr Brier and Mr Lawrence is returnable to the Commission no later than 5 pm, Monday, 26 September 2011.

If you require further information or assistance, please contact Ms Susan Hedge on telephone

We thank you for your assistance.

Yours sincerely

Jane Moynihan

Executive Director

Our ref: Doc 1712484

13 September 2011

Mr Andrew Brier
General Manager, Strategic Implementation, Coal & CSG Operations,
Regional Service Delivery, Operations and Environmental Regulator
Department of Environment and Resource Management
Level 13, 400 George Street
BRISBANE QLD 4001

REQUIREMENT TO PROVIDE STATEMENT TO COMMISSION OF INQUIRY

I, Justice Catherine E Holmes, Commissioner of Inquiry, pursuant to section 5(1)(d) of the *Commissions of Inquiry Act 1950* (Qld), require Mr Andrew Brier of the Department of Environment and Resource Management to provide a written statement, under oath or affirmation, to the Queensland Floods Commission of Inquiry, in which the said Mr Brier gives an account of the following topics.

With respect to the Hail Creek Mine, Dawson Mine, Callide Power Station, Rolleston Coal Mine and Moranbah CSG Project:

- Department of Environment and Resource Management (DERM) activities in respect of each mine's flood preparedness in advance of the 2010/2011 wet season, including whether any particular activities were undertaken as a response to the forecast of an above-average rainfall wet season
- 2. the water management sections of the environmental authority applicable at the mines during the 2010/2011 wet season, including:
 - any concerns held by him or DERM regarding its terms and the ability of the mine operator to comply with it
 - any terms that the mine operator has indicated it is unable to comply with, or breached
 - any terms that had to be amended from the Fitzroy model conditions because the model terms were unsuitable for this mine site
 - d. any terms that he or DERM consider do not adequately promote environmental protection and dam safety
- any transitional environmental program (TEP) issued or refused or any emergency direction (ED) given or considered regarding any of the mines during the period 1 October 2010 to 30 July 2011 related to water management, and for each, the following:
 - a. information received from the mine operator

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- b. any relevant dam safety issues
- c. relevant correspondence with the mine operator and other stakeholders
- d. whether and, if so how, DERM consulted with stakeholders
- e. what considerations DERM took into account in making the decision
- f. whether, and if so how, DERM balanced environmental considerations and economic consequences of mines being non-operational
- g. whether, and if so how, DERM took account of downstream effects, including cumulative effects
- h. the terms of the TEP issued or ED given
- i. what actions were taken by DERM to advise emergency management personnel, including local and regional disaster management groups and local residents downstream of the dam about the TEP and any discharges or effects
- j. reasons for the decision given to the mine operator
- k. any breaches of the TEP or ED by the mine operator and DERM's response
- 4. the effects on the environment, drinking water quality and public health downstream of each of the mine sites (as far as the Great Barrier Reef Marine Park) as a result of discharges of water under a TEP or ED
- 5. details of how the new Fitzroy Model Conditions negotiated during 2011, or any other discussions with DERM, will resolve any issue raised above in 1, 2, 3, or 4
- 6. an explanation as to whether the new Fitzroy Model Conditions negotiated during 2011 are advantageous or disadvantageous to the mine operator in the management of water at the mines, the downstream environment and safety issues
- 7. any briefing (written or oral) given to any Minister or Director-General regarding a TEP or ED related to water management or non-compliance with an environmental authority at the mine and the reason for that briefing
- 8. DERM's opinion as to whether the mine operator should be managing water at the Mine other than by storing it in dams or ponds, including by using desalination plants, purification procedures or any other means
- an explanation of that which is involved in managing water at the Mine other than by storing it in dams or ponds, including by using desalination plants, purification procedures or any other means

With respect to the Callide Power Station only:

- 10. to the knowledge of DERM, the effects on the environment, drinking water quality and public health downstream of each of the Power Station sites (as far as the Great Barrier Reef Marine Park) as a result of discharges from Ash Dam B between 1 October 2010 and 30 July 2011
- 11. a description of the concerns surrounding Ash Dam B during the period 1 October 2010 to 30 July 2011, including:
 - a. water level

- b. dam safety
- c. uncontrolled discharge
- d. contaminants and hazardous waste in the contents of the dam

With respect to the Moranbah CSG Project only:

- 12. a description of any concerns regarding the potential for pond overtopping at the site between 1 October 2010 and 30 July 2011
- 13. an explanation of how the risks to the environment, drinking water quality and public health posed by the discharge of water from coal seam gas operations are different to those risks posed by the discharge of water from coal, gold or copper mining
- 14. an explanation of how the process of DERM assessing and deciding whether to grant a TEP is different for coal seam gas projects as compared to mines
- 15. an explanation of how consideration taken into account by DERM in assessing and deciding whether to grant TEP or ED is different for coal seam gas projects as compared to mines

Mr Brier should attach to his statement:

- the water management sections of the environmental authority in force during the 2010/2011 wet season for the mines
- all relevant TEP or ED documentation, including internal working documents, assessment report, policy documents used, expert reports, notes of any conference, meeting or teleconference, reasons given to mine operators, notice of decision, correspondence with the mine operator and other stakeholders
- any new environmental authority issued in response to the 2011 amendments to the Fitzroy Model Conditions
- any internal reports regarding the Ensham Coal Mine de-watering between 2008 and 2011

In addressing these matters, Mr Brier is to:

- provide all information in his possession and identify the source or sources of that information;
- make commentary and provide opinions he is qualified to give as to the appropriateness
 of particular actions or decisions and the basis of that commentary or opinion.

Mr Brier may also address other topics relevant to the Terms of Reference of the Commission in the statement, if he wishes.

The statement is to be provided to the Queensland Floods Commission of Inquiry by 5 pm, Monday 26 September 2011.

The statement can be provided by post, email or by arranging delivery to the Commission by emailing info@floodcommission.qld.gov.au.

Commissioner

Justice C E Holmes

Our ref: Doc 1712531

13 September 2011

Mr Rob Lawrence
Director, Environmental Services (North Region), Regional Service Delivery, Operations and
Environmental Regulator
Department of Environment and Resource Management
Level 13, 400 George Street
BRISBANE QLD 4001

REQUIREMENT TO PROVIDE STATEMENT TO COMMISSION OF INQUIRY

I, Justice Catherine E Holmes, Commissioner of Inquiry, pursuant to section 5(1)(d) of the *Commissions of Inquiry Act 1950* (Qld), require Mr Rob Lawrence of the Department of Environment and Resource Management to provide a written statement, under oath or affirmation, to the Queensland Floods Commission of Inquiry, in which the said Mr Lawrence gives an account of the following topics.

With respect to the Century Mine:

- Department of Environment and Resource Management (DERM) activities in respect of the mine's flood preparedness in advance of the 2010/2011 wet season, including whether any particular activities were undertaken as a response to the forecast of an above-average rainfall wet season
- 2. the water management sections of the environmental authority applicable at the mine during the 2010/2011 wet season, including:
 - any concerns held by him or the Department of Environment and Resource Management (DERM) regarding its terms and the ability of the mine operator to comply with it
 - any terms that the mine operator has indicated it is unable to comply with, or breached
 - any terms that had to be amended from the Fitzroy model conditions because the model terms were unsuitable for this mine site
 - d. any terms that he or DERM consider do not adequately promote environmental protection and dam safety
- 3. any transitional environmental program (TEP) issued or refused or any emergency direction (ED) given or considered regarding either mine during the period 1 October 2010 to 30 July 2011 related to water management, and for each, the following:
 - a. information received from the mine operator

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- b. any relevant dam safety issues
- c. relevant correspondence with the mine operator and other stakeholders
- d. whether and, if so how, DERM consulted with stakeholders
- e. what considerations DERM took into account in making the decision
- f. whether, and if so how, DERM balanced environmental considerations and economic consequences of mines being non-operational
- whether, and if so how, DERM took account of downstream effects, including cumulative effects
- h. the terms of the TEP issued or ED given
- i. what actions were taken by DERM to advise emergency management personnel, including local and regional disaster management groups and local residents downstream of the dam about the TEP and any discharges or effects
- j. reasons for the decision given to the mine operator
- k. any breaches of the TEP or ED by the mine operator and DERM's response
- 4. the effects on the environment, drinking water quality and public health downstream of each of the mine sites (as far as the Great Barrier Reef Marine Park) as a result of discharges of water from the mine during the period 1 October 2010 to 30 July 2011
- 5. any actions taken by DERM in response to any effect of discharges from the mine falling into 4, above, during the period 1 October 2010 to 30 July 2011
- 6. any briefing (written or oral) given to any Minister or Director-General regarding a TEP or ED related to water management or non-compliance with the water management provisions of the environmental authority at the mine and the reason for that briefing
- 7. details of any flood preparedness activities planned to precede the 2011/2012 wet season
- 8. details of how the new Fitzroy Model Conditions negotiated during 2011, or any other discussions with DERM, will resolve any issue raised above in 1, 2, 3, or 4
- an explanation as to whether the new Fitzroy Model Conditions negotiated during 2011 are advantageous or disadvantageous to the mine operator in the management of water at the mine, the downstream environment and safety issues
- 10. DERM's opinion as to whether the mine operator should be managing water at the Mine other than by storing it in dams or ponds, including by using desalination plants, purification procedures or any other means
- 11. An explanation of that which is involved in managing water at the Mine other than by storing it in dams or ponds, including by using desalination plants, purification procedures or any other means

Mr Lawrence should attach to his statement:

 the water management sections of the environmental authority in force during the 2010/2011 wet season for the mine

- all relevant TEP or ED documentation, including internal working documents, assessment report, policy documents used, expert reports, notes of any conference, meeting or teleconference, reasons given to the mine operator, notice of decision, correspondence with the mine operator and other stakeholders
- any new environmental authority issued in response to the 2011 amendments to the Fitzroy Model Conditions

In addressing these matters, Mr Lawrence is to:

- provide all information in his possession and identify the source or sources of that information;
- make commentary and provide opinions he is qualified to give as to the appropriateness
 of particular actions or decisions and the basis of that commentary or opinion.

Mr Lawrence may also address other topics relevant to the Terms of Reference of the Commission in the statement, if he wishes.

The statement is to be provided to the Queensland Floods Commission of Inquiry by 5 pm, Monday 26 September 2011.

The statement can be provided by post, email or by arranging delivery to the Commission by emailing info@floodcommission.qld.gov.au.

Commissioner

Justice C E Holmes

P. Nolmes





2 Description of Project

The Century Project is situated in the north-west Queensland minerals province and includes the Lawn Hill Mine Site (located adjacent to Boodjamulla National Park, 250km north northwest of Mount Isa) and a dewatering plant and port facility located at the Port of Karumba on the Gulf of Carpentaria (**Figure 1**). A 304 kilometre slurry pipeline (to transport the zinc and lead concentrates) links the two operational facilities. The slurry pipeline is licensed as a Transport Corridor under the Queensland Transport Infrastructure Act (1994).

The activities described within this Plan of Operations occur at the Lawn Hill Mine Site (the mine site). A Plan of Operations only relates to planned activities on a relevant mining lease. Therefore activities at the Century port facility located at Karumba are not included in this Plan of Operations.

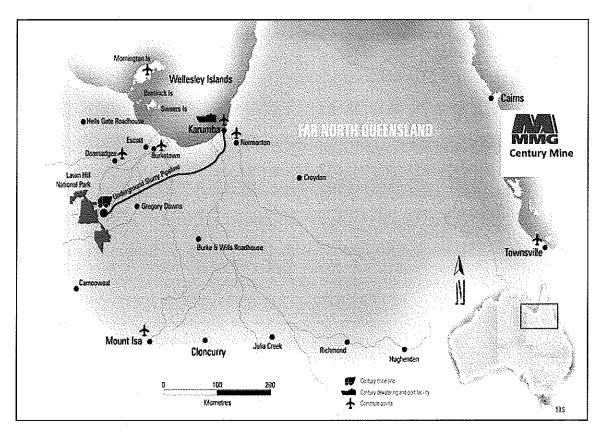


Figure 1 - MMG Century Project Location Map

MINE DISCHARGE RESPONSE PLAN

Regional Service Delivery North Region



Department of Environment And Resource Management

Mine Discharge Response Plan – Contents

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MINE DISCHARGE RESPONSE PLAN

Regional Services - North Region - DERM

SITUATION

The Department of Environment and Resource Management administers the Environmental Protection Act 1994 and has a responsibility to address environmental issues associated with that legislation.

The North Region encompasses a broad range of industrial operations that include heavy industry and large mining operations each of which can be located in or near populated areas or in the more remote areas of the state. The conduct of the mining operations may result in environmental issues that require urgent actions by departmental staff.

Seasonal factors such as excessive rainfall often place a higher risk on the potentiality of mine releases / discharges.

Mine discharge situations may occur at any time and therefore a plan is required to ensure a 24 hour response capability by this division.

To determine whether the response to a contamination event triggers this plan, the criteria for a Mine Contamination Event (MCE) are outlined in **Action 4** in execution.

The criteria under the MCE will determine whether this Mine Discharge Response Plan is activated. If activated the response to the MCE will be in accordance with Mine Discharge Response Plan.

Area of operation:

The area of the North Region includes the Mount Isa, Cairns, and Townsville Districts which incorporates Cape York, North Queensland Coastline, Gulf Areas and North West Queensland – **Appendix A.**

Staffing:

Regional Services Division has staff based at Townsville, Cairns and Mt Isa. A full contact list including each person's role / expertise is attached as **Appendix B**

Own Resources:

The primary response staff are:

- Regional Manager, Regional Services, North Region
- Manager (Mining)
- 3 Team Leaders (Mining) across Townsville, Cairns, and Mount Isa
- An On Call Environmental Officer/ Project Officer is available to provide initial response to calls 24 hours a day. On call roster is attached as Appendix C.
- A list of emergency contacts for internal departmental teams as well as key external stakeholders is also detailed in Appendix C.
- The Mining and Heavy Industry team have staff in Townsville, Cairns and Mount Isa available to respond to incidents





MISSION

To ensure a professional, consistent and timely initial response by the Department of Environment and Resource Management to major contamination events resulting from mines in North Queensland.

EXECUTION

The response to any situation of reported mine contamination event / discharge shall be executed as outlined hereunder.

This document sets out the roles and responsibilities when responding to a contamination event. These roles may be altered based on operational requirements. Additionally, several roles may be undertaken by a single officer.

Action 1: Initial information/ First notification (Duty of Receiving Officer)

- Obtain particulars of informant:-
 - Name
 - o Contact details (phone, address)
 - o Determine role of informant (employee/ manager/ witness etc)
- Obtain all available information about environmental issue from informant:-
 - Refer to prompt sheet Appendix D.
 - What other agencies / stakeholders have been alerted
- Obtain from the informant details of other:-
 - Witnesses
 - o Persons involved
 - Assistance available (human and physical resources)
 - o On site expertise that is present
 - Action that has taken place since the incident to rectify/ address the matter

Action 2: Information / Communications search (Duty of Receiving Officer)

Confirm initial information along with the following where practicable:-

- Other Government agencies involved
- Company / persons directly involved (operators)
- Witnesses (to confirm their observations, involvement and details)

Note: If situation has the potential for immediate serious harm, and on scene resources and urgent actions can avoid or reduce the harm, take immediate reasonable steps to implement those actions. — Advise manager as soon as practicable of actions.





Action 3: Notify Management of Mine Discharge (Duty of Receiving Officer)

 Brief the Team Leader (Mining), Manager (Mining) and Regional Manager on situation (Management Team)

Action 4: Assess information against criteria for Mine Contamination Event (MCE) (Duty of Management Team)

Determine whether the incident meets the criteria for an MCE considering the information from:-

- · The information received from the initial informant
- The additional information from other agencies and witnesses
- · The records, files and local knowledge within the Department

Note: While an event may not initially meet the criteria to activate this plan, as further information becomes available, it may be appropriate to revisit the MCE. The plan may be activated at any time.

Mine Contamination Event Criteria (MCE Criteria)

For a contamination event to trigger a response under this plan, the event must meet the following criteria:

- 1. Originate from an active or abandoned mining activity; and
- 2. Have an actual or potential impact footprint outside of the mine's boundaries; and
- 3. There is actual or potential risk to human health, property, livestock, an environmental value, or a community value; and
- 4. Response to the event under the Department's Standard Operating Procedures is not sufficient to manage the event.

When considering the applicability of MCE criteria 4, the following may trigger the criteria:

- a) The scale of the impact is excessive; or
- b) The concentration of the contamination is high; or
- c) The event involves hazardous substances or dangerous goods; or
- d) Contamination events have occurred across several mines requiring a coordinated approach; or
- e) The receiving environment is highly sensitive.

Action 5: Activation of Mine Discharge Response Plan

(Duty of Regional Manager)

 Regional Manager may immediately or at any time in the response to the incident, active the Mine Discharge Response Plan if the MCE criteria is met



Mine CRP Activation Procedures

- 1. Regional Manager to be briefed on situation.
- 2. Regional Manager to determine incident should be dealt with under Mine Discharge Response Plan
- 3. Regional Manager to Activate Response Plan
- 4. Regional Manager to advise Regional Service Director in writing (e.g. email) of Mine Discharge Response Plan Activation
- 5. Regional Manager to meet with Management Team (Mining Team Leaders and Mining Manager) to form Incident Management Team (IMT).

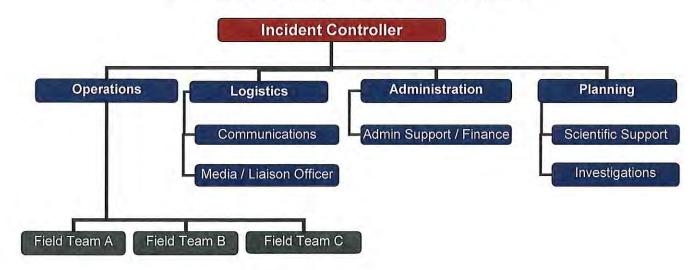
Action 6: Form Incident Management Team (Duty of Regional Manager)

- Upon activation of the Mine Discharge Response Plan, the Regional Manager will then appoint an incident controller (which can be any staff member including the Regional Manager).
- 2. The Incident Controller will then form an Incident Management Team (IMT) in consultation with the Regional Manager.

Note: the IMT may consist of as many or as few staff as required by the Incident Controller, largely dependant on the scale and nature of the MCE. Additionally, one officer may conduct more than one functional role.

The IMT (shown in blue) may consist of any officers, but it is recommended that Team Leaders and/or Managers are involved in the IMT.

Incident Management Team Structural Command







Action 7: Develop Action Plan (Duty of Incident Management Team)

- IMT to develop Action Plan
- Action Plan may include Sampling Plan
- IMT to appoint Field Team(s) as required
- Action Plan to be carried out / reviewed / amended in accordance with structural command.
- Refer to Action Plan Template Appendix H

Action 8: Implementation of the plan (Duty of all Personnel)

The Field Team(s) shall be responsible for the implementation of the plan on site and report to Operations Commander.

This responsibility will include:-

PRIOR TO TRAVEL:-

- Liaising with IMT on required actions and briefing rest of field response team
- Organising response kit / field equipment (Refer to check list **Appendix E**)
- Organizing flights / transport to and from the site for staff and equipment. (In conjunction with Administration and Logistics teams in IMT)
- Organizing accommodation where required (In conjunction with Administration and Logistics teams in IMT)

ON SITE:-

- Evaluate the situation determine the extent of the issue
- Brief on ground staff allocate specific duties
- Ensure Staff Safety (WPH&S)
- Provide regular Sit Reps to Manager as previously arranged Appendix I
- Exercising of provisions under the Environmental Protection Act 1994 refer to Appendix F – Field guide.
- Record Keeping notes/records/ photographs/ logs. (running sheet -Appendix G)
- Sampling Appendix J Sampling point guides

Action 9: Review of Action Plan and Situation Report

(Duty of Incident Management Team)

- IMT to review Situation Reports provided by Field Team(s) to determine if Action Plan is achieving prescribed outcomes.
- IMT to amend Action Plan if planned outcomes are not achieved
- If outcomes not achieved IMT to refer back to Action 7.
- If outcomes are achieved, IMT to continue to Action 10.

Action 10: Deactivation (Duty of Incident Management Team)

- Regional Manager may deactivate the plan if:
 - (a) The incident no longer meets the 4 MCE criteria; or
 - (b) The initial response phase to the incident is completed.





Mine Discharge Response Plan Deactivation Procedures

- Regional Manager to be briefed on implementation of action plan and success of response
- 2. Regional Manager to assess whether the goals of the action plan were achieved and whether the Department's immediate response has concluded.
- 3. Regional Manager to Deactivate Response Plan
- 4. Regional Manager to advise Regional Service Director in writing (e.g. email) of Mine Discharge Response Plan Deactivation
- 6. Team Leader (Mining) advised on Deactivation and to coordinate remaining response and investigations as per standard Departmental procedures.

Action 11: Demobilisation and Debrief

- Field Team(s) to liaise with Operations of demobilisation from the field
- Operations to liaise with logistics and administration on:
 - o re-stocking used equipment;
 - o sending samples to lab;
 - o cleaning and calibration of equipment.
- Incident Controller to hold a debrief within 5 working days of the Mine Discharge Response Plan being deactivated. The debrief should address:
 - Success of initial response;
 - Identification of further actions / response required (e.g. Med-Long term response plans / remediation plans);
 - Identification of responsible officer(s) / team(s) for management of the response / incident following the deactivation of the Mine Discharge Response Plan.
 - Nomination of officer(s) / team(s) responsible for ensuring that the actions under the Mine Discharge Response Plan are appropriately documented.



ADMINISTRATION AND LOGISTICS

Administration -

Staffing:

The selection of staffing to respond to a matter shall be the responsibility of the Incident Controller and IMT. The approval to recall staff back to duty will lie with the Regional Manager.

Expenditure approvals:

All expenditure must be approved by the Regional Manager prior to purchase unless circumstances exist that would make the approval unreasonable at the time.

Travel:

All travel must be approved by the Manager or Regional Manager prior to commencement unless circumstances exist that would make the approval unreasonable at the time. In that case the Team leader may provide initial approval.

Equipment and vehicle use:

All users must hold the relevant qualifications, training and approvals to operate the equipment and vehicles used by them.

Flights/ Air Travel:

All flights must be approved by the Manager or Regional Manager prior to commencement. Refer to Logistics Section for arrangement details.

Work Hours:

Work hours shall be conducted in line with the award and response needs. Weekend work and work after 6pm and before 6am will be with the approval of the Regional Manager.

On Call staff:

An on-call officer shall be available to respond to phone calls 24 hours a day as per existing on-call regional arrangements.

Logistics

Vehicles:

Remote Area 4WD vehicles are available in Cairns, Townsville and Mount Isa. Cairns and Townsville have available an on call vehicle with remote field equipment for response. Mount Isa has 2 vehicles equipped with remote area field equipment and mining safety equipment. Sargents (1800 077 353) hire vehicles with mine site equipment in case Departmental vehicles are unavailable.

Air Travel:

- Domestic Travel is to be arranged through the Travel Management System during Business Hours on 1300 729 912 and After Hours on 1300 474 287
- Other flights (Helicopter) to be arranged by the Travel Management System

Remote operations:

Remote travel requires the possession and use of equipment designed to support this type of operation – Car Kits and Field Kits are to be utilised.





Field Equipment:

Field equipment and safety equipment is available for use, located at Cairns, Townsville and Mt Isa offices. Each office must prepare and maintain field equipment ready for use during the wet season.

Sampling Equipment:

Sampling equipment is located at Cairns, Townville and Mt Isa Offices.

* It is the responsibility of the Team Leader (Mining) to ensure that their office have equipped vehicles, safety kits, and mine discharge response kits available and up to date prior to the wet season.



COMMAND AND COMMUNICATIONS

Command

INCIDENT CONTROLLER

- Overall Incident Command and lead the IMT
- > Approve action plans
- > Primary Decision Maker

OPERATIONS

- > Responsible for carrying out approved action plans
- > Brief Incident Controller
- Coordinate actions of Field Team(s)

Field Teams

- > Responsible for carrying out action plan on ground
- Brief Operations
- > Sampling and evidence collection as detailed in action plan
- > Provide situation reports on regular basis

LOGISTICS

- > Responsible for providing logistical support to carry out action plan
- > Brief Incident Controller
- Coordinate transport, food, equipment and accommodation for Field Team(s)
- ➤ Responsible for communication systems between Field Team(s), Incident Management Team and other stakeholders
- > Notification of incident to appropriate stakeholders and government departments
- Coordinate Media responses

Communications

- Establish lines of communication between field teams, mining operators, IMT, stakeholders and within the Department
- > Record and track communications and develop / track briefings

Media / Liaison

- Engage with stakeholders external to the IMT and provide briefings to stakeholders
- Operate as a single point of contact for all incoming enquires from external stakeholders
- Liaise with Media Unit on development of media releases and response to media enquires
- > Brief Regional Services Director





ADMINISTRATION

- Brief Incident Controller
- Track expenditures
- Provide support to operations, logistics and planning
- Track staff movements and administer call-in safety procedures

Admin Support / Finance

- Support administration and IMT through provision of documents, record keeping etc.
- > Track expenditures and liaise with finance department as appropriate.

PLANNING

- Responsible for development of action plan
- Brief Incident Controller
- > Coordinate support from sciences, investigations, litigation as required
- Arrange mobilisation / demobilisation of Field Team(s)

Scientific Support

Provide scientific advice on the nature of the incident, sampling plan development or remediation

Investigations

Provide advice on powers of officers, or how to ensure evidence collection is appropriate in the event of offences being investigated under the *Environmental Protection Act* 1994.

Communications

Primary communications:-

Telephone: - Use of telephone for the receipt and relay of information will be the primary means of communication between the parties where face to face capability does not exist. A full list of phone numbers is provided on **Appendix B**.

Secondary Communications:-

Email and Fax: - Shall be used as Secondary means of communications only and a response from the receiver should be requested to ensure receipt of information. A list of email addresses and Fax numbers are listed in **Appendix B**.

Satellite Telephones:-

Sat Phones may be the only source of communications in remote areas. The Field Response Coordinator will ensure the serviceable operation of the phone prior to departure. Ensure the contact number is advised on the Response Plan. Sat Phone Numbers also listed on **Appendix B.**

Reporting Requirements - Field Operations

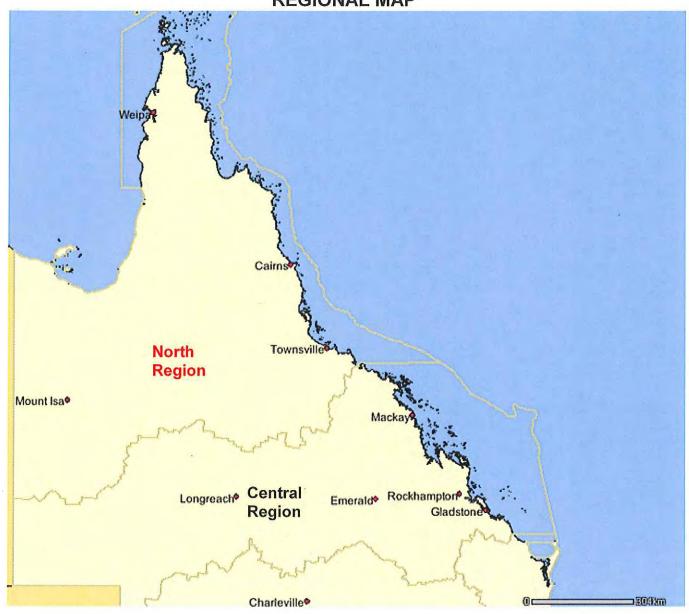
Reporting times, Sit Reps and protocols will be adhered to whilst conducting the field response. The reporting times will be as per policy and incorporated as part of the Response Plan. The Field Team(s) will ensure reporting times and procedures are adhered to.





APPENDIX A - MAPS

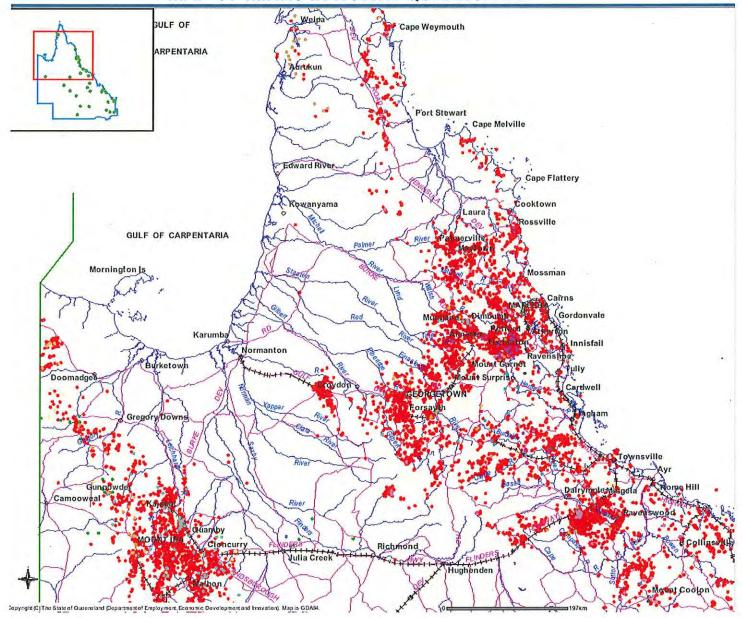
REGIONAL MAP







MAP OF MINES IN NORTH QUEENSLAND





APPENDIX B - EMERGENCY CONTACT LIST

The following information has been edited to remove confidential and personal contact information. In the event of a Mine Discharge, Contact the Department of Environment and Resource Management's 24 hour pollution hotline on **1300 130 372.**

Key Discharge Stakeholder Contacts

The following information has been edited to remove confidential and personal contact information. In the event of a Mine Discharge, Contact the Department of Environment and Resource Management's 24 hour pollution hotline on **1300 130 372**.

Additional Internal and External Contacts

Table 1.1	DERM -	Pollution	Hotline
-----------	--------	-----------	---------

CONTACT	POSITION	NUMBER
Pollution Hotline	(24 hours)	1300 130 372

Table 1.2: DERM - Regional Service Delivery (Environmental Services)

CONTACT	POSITION	OFFICE	MOBILE
NORTH REGION			
CENTRAL WEST RE	GION		
SOUTH WEST REGI	ON		
SOUTH EAST REGIO	ON - NORTH		
SOUTH EAST REGIO	ON - SOUTH		

Table 1.3: DERM - Incident Response Unit

CONTACT	POSITION	OFFICE	MOBILE	SATELLITE PHONE	

Table 1.4: DERM - State Incident Response Network (SIRN)

CONTACT	POSITION	OFFICE	MOBILE	HOME	ı
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Table 1.5: DERM - Specialist Areas (Environment)

CONTACT	POSITION	OFFICE	MOBILE
001117101	1 00111011	011102	10.00

Table 1.7: DERM - Environment and Natural Resource Regulation

CONTACT	POSITION	OFFICE	MOBILE

Table 1.8: DERM - Regional Service Directors

CONTACT	POSITION	OFFICE	MOBILE
NOV. 2-10.0 DE 101-101			

CONTACT POSITION

Table 1.9: DERM - Technical Operations

Table 1 10: DEDM Env	ironment and Descurce Sciences	

Table 1.10: DERIM – Environment and Resource Sciences

CONTACT	POSITION	OFFICE	MOBILE	
				_



MOBILE

Table 1.11: DERM - General Contacts (Environment)

CONTACT	POSITION	OFFICE	MOBILE	

Table 1.12: DERM - QPWS Division

Part of the last o			
CONTACT	POSITION	OFFICE	MOBILE

Table 2.1: State Government Contacts - General

AGENCY	SECTION/ISSUE (state Govt – General)	B/H	A/H	

Table 2.2: Authorities

AGENCY	SECTION/ISSUE (Qld Authorities)	B/H	A/H	
PORT AUTHORITIES				
Brisbane			3258 4601	
Bundaberg		4	1159 4233	
Gladstone		4976 1333		
Mackay		4955 5107		
Townsville		4781 1684		
Cairns		4051 2558		
PORTS CORP QLD				
WATER AUTHORITIES				
SEQ Water	(QLD Bulk Water Assn)	3229 3399	- A	
NQ Water		4759 4759	-	

Table 3: Federal Government Contacts

AGENCY	SECTION/ISSUE (Federal Govt)	B/H	A/H
AMSA			
Australian Maritime Safety Authority	Major oil spills and shipping emergencies		00 641 792
GREAT BARR	IER REEF MARINE PARK AUTHORITY		
AQIS			
AQIS	Australian Quarantine and Inspection Service	18	00 020 504
FEDERAL POL	LICE		
AIRCRAFT			
Air Services Australia	Aircraft noise enquiries	1300 301 120	
CASA	Civil Aviation Safety Authority	131 757 131 757	
WEATHER			
Bureau of	Queensland Regional Office (Brisbane 24hrs)	hrs)	
Meteorology	Field Meteorology Office – Cairns	4035 9777	Her
	Field Meteorology Office – Charleville	4654 1033	
	Field Meteorology Office – Longreach	4658 1783	
	Field Meteorology Office – Mackay	4955 1355	
	Field Meteorology Office – Mount Isa	4743 3382	
	Field Meteorology Office – Rockhampton	4922 3597	
	Field Meteorology Office – Townsville (RAAF)	4779 5999	
	Field Meteorology Office – Weipa	4069 7059	
	DoT / MSQ Maritime weather service Qld / Marine / SEQ	1300 36	0 426 / 427 / 428

Table 4: Local Government Contacts

Table 5: Interstate Environmental Science Coordinators (ESCs)

STATE	ESC	B/H	A/H
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Table 6: Other Contacts





AGENCY	SECTION/ISSUE	B/H	A/H
LABORATORIES			
ELECTRICITY	***		
Energex		131 253	131 253
CAR BREAKDOWN			
RACQ		131 111	131 111
TELECOMMUNICATIO	NS ·		
Optus	Directory Assistance Service	124 937	124 937
REGULATED WASTE	TRANSPORTERS		
REGULATED WASTE I	DISPOSAL		
PETROLEUM COMPAN	NIES		
HIRE COMPANIES			
QLD GOVERNMENT -	CHARTERING AIRCRAFT POLICY		
HELICOPTERS			
CHARTER PLANES			



VERSION 2 (NOVEMBER 2010) – PUBLIC COPY APPENDIX C – ON CALL ROSTER

Wet Season On-Call Officers and Availability (Dec 2010 - Apr 2011)

	3			Officers Unavailable / On Leave		
Week Beginning	On-Call Officer (CNS)	On-Call Officer (TVS)	Cairns	Townsville	Mount Isa	
3/12/2010						
10/12/2010						
17/12/2010						
24/12/2010						
7/01/2011						
14/01/2011						
21/01/2011						
28/01/2011						
4/02/2011						
11/02/2011						
18/02/2011						
25/02/2011						
4/03/2011						
11/03/2011						
18/03/2011						
25/03/2011						
1/04/2011					NEW AND	
8/04/2011						

VERSION 2 (NOVEMBER 2010) – PUBLIC COPY APPENDIX D – RESPONSE NOTIFICATION PROMPT SHEET

Time and Location of discharge	
϶, position, and contact number of the person ing of the incident	
is the cause of the discharge (if known)?	
discharge ongoing?	
we access the discharge site, mine site and ving environment?	
is the company involved? Who is the opriate contact person and his/her details?	
actions have the mine taken to date?	
nere any Safety Hazards?	
is the quantity of material discharged?	
type of material was discharged (e.g. oil, ge, concentrate, stormwater)?	
Creeks / Rivers / Watercourses have been :ed or have potential to be affected?	
re any drinking, recreational or livestock points downstream?	
are the environmental values of the receiving onment? Are there any sensitive downstream s?	
are the potentially impacted landholders or holders?	
hese landholders / stakeholders been ed? What are their contact details?	
immediate actions are proposed by the ?	

VERSION 2 (NOVEMBER 2010) – PUBLIC COPY APPENDIX E – INITIAL RESPONSE KIT

Minimum Personal Protective Equipment

- Hard Hat
- High Visibility Vest
- Steel Cap Boots
- Qld Government Long Sleeve Shirt and Trousers

Minimum Safety Equipment

- UHF Radios
- Satellite Phone
- Emergency Beacon
- 4WD vehicle
- GPS
- Fresh Water
- Batteries
- Orange Flashing Light
- Torch
- Camera
- Pens
- Official Notebook
- Paper / Maps

Basic Sampling Equipment Kit

- Sampling Pole
- TPS / YSI (in-situ field measurements)
- pH strips
- Minimum 1L of Distilled Water
- 10 x sediment jars
- 10 x metal analysis bottles (water quality)
- 10 x standard physical unpreserved bottles (water quality)
- 2 x oil / grease / hydrocarbon bottles
- 2 x Ammonia / Nitrogen / phosphorous bottles (sewage)
- 1 x box gloves
- 20 x syringes
- 1 x box of 0.45 µm syringe filters

VERSION 2 (NOVEMBER 2010) – PUBLIC COPY APPENDIX F - COMPLIANCE ACTIVITY FIELD GUIDE

Preface: This field guide is formulated to provide basic information to field officers in relation to assessing activities for compliance and to provide information on procedures to follow when making inquiries or investigation into suspected non-compliance.

This guide relates to the provisions of the *Environmental Protection Act 1994*. Field Officers must be familiar of the provisions of the *Environmental Protection Act 1994* (the 'Act') so that they can carry out their duties effectively and lawfully.

Whilst the enforceable provisions of the Act for the mining activities are primarily focused on Chapter 5 of the *Environmental Protection Act 1994* the field staff will be designated as Authorised Persons under the Act and therefore knowledge of their obligations and the provisions of the Act is crucial.

Topics covered by this guide:

Part 1.	Authorised Per	sons - Section	445 Envir	onmental Prop	tection Act 1994
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Part 2.	F1	of Authorised	Property facilities for the	01 L 0
Parr	PAWARE	AT AUTHORISEA	Perenne -	L nanter 4
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Part 3.	Offences that relate to the powers of Authorised Person
I alt J.	, Offerices that relate to the powers of Authorised relati

- Part 4. Records and Record Keeping requirements
- Part 5. Exhibit Handling- Sect's 461-462
- Part 6. Interviewing/ Witness Statements
- Part 7. Field Equipment Types and Use
- Part 8. Flow Charts Compliance Management Guide/ Compliance Actions

PART 1 AUTHORISED PERSONS

All field staff will be required to be appointed as an Authorised Person under the provisions of Section 445 of the *Environmental Protection Act 1994*. To exercise any of the powers under the legislation the person must be an Authorised Person in possession of an Identity Card.

PART 2. POWERS OF AUTHORISED PERSONS

Chapter 9 of the Environmental Protection Act 1994, Investigation and Enforcement.

This chapter outlines the general powers of authorised persons and all field staff should be familiar with the contents of that chapter of the legislation.

Section 449 Production of identity card.

- (1) An authorised person may exercise a power in relation to someone else only if the authorised person—
- (a) first produces his or her identity card for the person's inspection; or
- (b) has his or her identity card displayed so that it is clearly visible to the person.
- (2) If, for any reason, it is not practicable to comply with subsection (1), the authorised person must produce the identity card for inspection by the person at the first reasonable opportunity.

Section 452 Entry of place—general

- (1) An authorised person may enter a place if—
- (a) its occupier consents to the entry and, if the entry is for exercising a power under chapter 7, part 5B or 8, its owner consents; or
- (b) it is a public place and the entry is made when the place is open to the public; or
- (ca) it is a place to which an Agricultural ERA, a registration certificate, a development approval subject to a development condition or a code of environmental compliance relates and the entry is made when—
- (i) the chapter 4 activity to which the certificate, approval or code relates is being carried out; or
- (ii) the place is open for conduct of business; or
- (iii) the place is otherwise open for entry; or

Note: In relation to the Environmental Services staff it is expected that entry to places will be primarily conducted as outlined in Section 452(1)(a) with the <u>owner / occupier</u> having knowledge of the visit and providing consent for the visit.

Where consent is given, consideration should be given to obtaining confirmation of that consent either in writing from the owner/ occupier of by corroboration of such consent. Section 485 refers to content of consent form.

Section 455 Entry of land for access

- (1) This section applies if—
- (a) an authorised person may enter land (the primary land) under section 452 or 454; and
- (b) it is necessary or desirable to cross other land (the access land) to enter the primary land.

Note: This section provides for the access across other property to obtain entry into the primary land. There is provision for such access with consent of the <u>occupier</u> and this would be the preferred method. The section further outlines the actions required if that consent is not obtained.

Sections 456 and 457 relate to the authority to apply for Warrants and how applications may be made. It should be noted that any application and subsequent entry via the execution of a Warrant should only be done with the approval of the Manager of the Reef Unit and under the control of staff from the Regional Investigation Unit.

Section 458 Order to enter land to conduct investigation or conduct work

This section states that an authorised person may apply to a magistrate for an order to enter land to carry out work on the land to secure compliance with an accredited ERMP. Application for any order under this section should only be done with the approval of the Manager of the Reef Unit.

Section 459 Entry or boarding of vehicles

- (1) An authorised person may enter or board a vehicle if the authorised person has reasonable grounds for suspecting—
- (a) the vehicle is being, or has been, used in the commission of an offence against this Act; or
- (b) the vehicle, or a thing in or on the vehicle, may provide evidence of the commission of an offence against this Act; or
- (2) If the vehicle is moving or about to move, the authorised person may signal the person in control of the vehicle to stop the vehicle or not to move it.
- (3) To enable the vehicle to be entered or boarded, the authorised person may—

- (a) act with necessary and reasonable help and force; and
- (b) require the person in control of the vehicle to give reasonable help to the authorised person.

Section 471 creates the offence for failing to comply with a signal under section 459(2) to stop or not to move a vehicle.

Note: The power outlined in Section 459(2) and (3) should be carried out with care taking into account the options available to achieve the same outcome. Consider the assistance of Police where the vehicle is not on the occupiers/ owners property or on a roadway and the need exists to stop the vehicle.

Section 460 General powers for places and vehicles

This section provides broad powers to Authorised Persons who lawfully enters a place or boards a vehicle to conduct their duties.

Authorised Persons should be familiar with the content of this section as the powers apply to all entries and boarding's and are not confined only to enforcement actions

Section 461 Power to seize evidence

This Section applies to the power to seize evidence where lawful entry has been gained with the intent of seizing evidence to a place either with warrant or by occupiers consent.

Any entry done with the intent of seizing evidence should be carried out as per this section and with the assistance of an investigator and/or supervisor where practicable.

Approval for such entry and seizure should, where practicable, be approved by the manager of the Reef Unit.

Section 462 Procedure after seizure of evidence

Outlines the requirement that an authorised person must give a receipt for a thing seized to the person from whom it was seized.

The section also outlines the procedure and associated requirements for dealing with the receipt and seized property. Subsections 5 to 7 relates to the retention of the seized material/ item and the return of it to the owner.

Any material or item seized should be dealt with as an exhibit. Refer to Compliance Investigations Manual Chapter 8 which refers to Exhibit Management.

Section 464 Power to require name and address

- (1) An authorised person may require a person to state the person's name and address if the authorised person—
- (a) finds the person committing an offence against this Act; or
- (b) finds the person in circumstances that lead, or has information that leads, the authorised person to suspect on reasonable grounds that the person has committed an offence against this Act.
- (2) When making the requirement, the authorised person must warn the person that it is an offence against this Act to fail to state the person's name and address, unless the person has a reasonable excuse.
- (3) The authorised person may require the person to give evidence of the correctness of the person's name or address if the authorised person suspects on reasonable grounds that the name or address given is false.

Section 475 creates the offence for failing to comply with name and address requirement.

Section 465 Power to require answers to questions

- (1) This section applies if an authorised person suspects, on reasonable grounds, that—
- (a) an offence against this Act has happened; and
- (b) a person may be able to give information about the offence.
- (2) The authorised person may require the person to answer a question about the offence.
- (3) When making the requirement, the authorised person must warn the person it is an offence to fail to comply with the requirement, unless the person has a reasonable excuse.

Section 476 creates the offence for failure to comply with requirement under Section 465.

Section 466 Power to require production of documents

- (1) An authorised person may require a person to produce to the authorised person for inspection a document required to be held or kept under this Act or a development condition of a development approval.
- (2) The authorised person may keep a produced document to take an extract from, or make a copy of, the document.
- (3) The authorised person must return the document to the person as soon as practicable after taking the extract or making the copy.

VERSION 2 (NOVEMBER 2010) – PUBLIC COPY PART 3. OFFENCES THAT RELATE TO THE POWERS OF AUTHORISED PERSONS

Part 5 of the *Environmental Protection Act1994* deals with multiple offences that relate to the compliance powers of Authorised Persons. Appropriate offences are outlined hereunder.

Note: The provisions mentioned in this guide are limited and referral to the Act should occur and assistance sought where suspicion of non compliance occurs.

Section 471 Failure to comply with signal

This section provides an offence for failing to obey a signal under section 459(2) to stop or not to move a vehicle, unless the person has a reasonable excuse for not obeying the signal. Defences apply (E.g. safety, first opportunity)

Section 475 Failure to give name and address etc.

This section relates to where a person is required by an authorised person under section 464(1) to state the person's name or address or is required by an authorised person under section 464(3) to give evidence of the correctness of a name fails to comply with the requirement, unless the person has a reasonable excuse for not complying with it.

Subsection (3) states; The person does not commit an offence against this section if—

- (a) the authorised person required the person to state the person's name and address on suspicion of the person having committed an offence against this Act; and
- (b) the person is not proved to have committed the offence.

476 Failure to answer questions

This section applies if an authorised person requires a person under section 465 to answer a question, the person must comply with the requirement unless the person has a reasonable excuse for not complying with it.

Reasonable excuse - "might tend to incriminate the person".

No offence committed if the information sought by the authorised person is not in fact relevant to the offence.

477 Failure to produce document

This section creates the offence for a person who was required under section 466 to produce a document and failed to comply with the requirement, unless the person had a reasonable excuse for not complying with it.

482 Obstruction of authorised persons

This section creates the offence for a person who obstructs an authorised person in the exercise of a power under this chapter, unless the person has a reasonable excuse for obstructing the authorised person. In this section *authorised person* includes a person who is—

- (a) acting under an authorised person's direction under section 363K; or
- (b) authorised by an authorised person to take action under section 467(2)(b); or
- (c) helping an authorised person under this chapter.

PART 4 RECORDS and RECORD KEEPING

Environmental Services staff are required to keep accurate records to ensure monitoring of progress against Service Delivery requirements is achievable and the content is of a standard that would pass judicial review.

Records are for two purposes;

- Compliance Monitoring and Service Delivery
- Compliance Enforcement

Compliance Monitoring and Service Delivery

Records for this purpose will be kept for;

- Statistics
- Performance delivery
- Service delivery
- · Enforcement/ compliance actions

Records for this purpose will be by way of;

- Diary Entries
- Field Inspection reports
- Ecotrack data entry

Compliance Enforcement

Records for this purpose will be kept for;

- Statistics
- Compliance History
- · Investigation process
- Court Proceedings
- Evidence

Records for this purpose will be by way of;

- Diary entries
- Official Note Book entries
- Field Inspection reports
- Ecotrack data entry

PART 5 EXHIBIT HANDLING – (Including Sections 461 and 462(EPA))

(Includes extracts from Departmental Compliance Investigation Manual)

Introduction

Failure to control an exhibit lawfully may result in the exclusion of the exhibits as evidence and jeopardize the final outcome of the prosecution case, and subsequent repercussions to the investigator personally.

Continuity of Evidence

Continuity of possession is required to ensure any material that may be used as evidence is kept in a manner that ensures originality. This includes the need to keep the material secure, ensure no alterations area made and to have a record of the place kept and in whose possession it has been. The Compliance Investigation Manual Chapter 8 refers to Exhibit Management.

Property Receipt

If a thing is taken or seized, a property receipt must immediately be given to the person in control of the thing (normally the owner or custodian of the thing). If it is impossible to immediately give the person a property receipt then it must be given as soon as practicable after the seizure or the receipt may be left at the place of seizure in a conspicuous and reasonably secure place.

The following information must also be completed on the property receipt:

- name and address of the person from whom the property was seized or taken.
- Authorised Officer's name name of the investigator's taking or seizing the property;
- the location the exhibit was taken from this also includes a description of the location within the property from where it was seized or taken.
- a brief description of the exhibit including any serial number and/or identification marks;
- · comment on its condition and value (if known) at the time of seizure;
- · date and time taken; and
- CIRaM number (If known).

The property receipt is to have the following distribution:

- Investigator's brief/ Reef Unit File Original
- Person from whom thing taken or seized Copy 1
- Attached to the thing Copy 2
- Remaining in book Copy 3

Exhibit Registers

The Exhibit Register is an official and auditable document in which all physical exhibits (other than original documents) that cannot be satisfactorily controlled by the investigator are to be entered. It records all ingress and egress of exhibits at property point, and identifies the custodian of the exhibit should it be removed from the property point for analysis or further investigation purposes. Each exhibit must be labelled securely so that the label will not become detached in packing or handling. Details of the exhibit must be recorded in an exhibit register so its whereabouts can be tracked. The exhibit itself should be appropriately secured.

PART 6 INTERVIEWING/ WITNESS STATEMENTS

(Includes extracts from Departmental Compliance Investigation Manual)

Interviews

Whilst the following information primarily relates to interviews associated with suspected offences, the day to day field inquiries may wish to adopt the general standard so that progression to enforcement actions is supported by previous field records and practices.

Chapter 9 of the Compliance Investigation Manual provides detail for Interviewing.

A Record of Interview with a suspected offender should be conducted using electronic recording devices (Video/ Audio). Where practicable assistance should be sought from supervisors and/or investigators prior to conducting this type of interview.

Interviews should be conducted in a courteous and sensitive manner with an emphasis on portraying a professional image of the investigator and the Department.

Location

The location chosen to conduct an interview may set the tone for an interview. Whilst it is best practice to conduct any interview in a private area free from distractions and interruptions, it is recognised that some interviewees may request or insist on the interview occurring at a location set by themselves (e.g. in their home or at their workplace)

For any interview consider interference factors including interjection by other persons, machinery or electronic noises and comfort.

Witness Statements

As part of day to day field operation staff will become involved with potential witnesses and also be witnesses to offences.

As a result field staff should be familiar with the process of taking or making a statement to a standard that is suitable for production in a criminal proceeding. Seek assistance from a supervisor or investigator if necessary.

Chapter 9 of the Compliance Investigation Manual provides detail for Statement taking and making

A statement may be made;

In an Official Notebook
Handwritten on paper
Typewritten (Most preferred for court)
Electronic Recording (Audio/ Video)

If requested to obtain or make a formal statement the following should occur;

- Seek advice from the Supervisor/ Manager
- Gather all known facts relevant to the incident.
- Understand the elements to be proved regarding the offences alleged to have been committed,
- · Identify the best venue to interview the witness,
- Identify what information the witness may be able to provide and remember the 'who, what, where, when and how' questions that underpin an interview
- Preliminary inquiries with the witness will determine what the person knows about the incident.
- Evaluate this information to determine if it is relevant to the investigation.
- Record the information formally as a statement.

Guide to Validating Witness' Observations

A witness' observations may be critical in describing an offence or proving a particular element of an offence. To assist in assessing a witness' observations the ADVOKATE acronym is valuable:

- A Amount of time the witness observed the incident or offender
- D Distance between the offence and witness
- V Visibility including atmospheric conditions, lighting etc
- O Obstructions to the witness' line of sight
- K Knowledge with regard to the witness having previously known the offender

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 A Any special reason for the witness to remember the incident or offender

 T Time lapse between the incident and when the witness made their statement
- E Errors or discrepancies

PART 7 FIELD EQUIPMENT

To ensure continuity of evidence and quality of evidence it is necessary to have personalised field equipment.

Equipment to be carried

Camera- Digital

Voice Recorder- digital

Diary

Official Note Book

Field forms

Receipt Book.

Bags and Containers

Note: Personal issue allows users to maintain the equipment to a high standard and also provides a high standard of knowledge of use.

Procedures when working with field equipment.

Note: All records made and kept by this department may be subject to audit, public access or production in court.

Camera.

For evidence purposes the person who takes the photo should be the person who downloads the photo and subsequently prints the photo or copies the photo to another medium. The person who takes the photo must be the person who produces the photo (exhibit) to a court.

Voice Recorder

For evidence purposes the person who makes the recording should be the person who downloads the recording and subsequently copies the recording to another medium.

The person who makes the recording must be the person who produces the recording (exhibit) to a court.

Diary

To be used for day to day compliance monitoring and management. Records should briefly include;

Dates and times (in and out)

Place visited

Persons Spoken to

Outline of matters discussed

Observations including positive matters

Non Compliance activities

Note: This record may be subpoenaed for court or be required to be produced under RTI legislation. Avoid opinion or derogatory statements.

Official Note Book

To record any official information regarding compliance activities. Records should include;

- Dates, times
- Place
- Details of suspects and witnesses
- · Observations of suspected non compliance
- Corroborators endorsements
- Witness statements
- Details of actions taken.

Note: These notes are primarily made with consideration that they may be produced in a court proceeding. Notes should be factual and should not include irrelevant information and opinion.

Field Forms

To be completed for every field inspection in relation to Level A and B inspections.

These are notes made at the time and should be signed by the person making the entries and adoption sought by initial from the property occupier/ owner.

Receipt Book

Section 462 Environmental Protection Act 1994- Procedure after seizure of evidence

Outlines the requirement that an authorised person <u>must give a receipt</u> for a thing seized to the person from whom it was seized.

\Uustice\Data\Home\DPP\floromj\Redactions\LAWRENCE, ROBERT\Publication\JAG-#1744106-v1-QFCI_Century_RAL-CM01-02_Mine_Discharge_Response_Plan_Public_2010_Century_Mine.DOC Printed: 6/10/2011

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Where property / documents are voluntarily provided by the owner/ occupier in relation to monitoring day to day compliance, consideration should be given to making a record in the Official Note Book and have the owner/ occupier acknowledge the supply and return of the items in that book. A receipt may be issued from the Receipt Book and an acknowledgement (Indemnity Receipt) of the items return should be kept in that book or other place of record.

Bags and Containers

- Preservation of all items and material taken into the possession of DERM staff is required to ensure;
- The item is identifiable.
- The item can be returned to the owner in the condition that it was taken.
- The item is maintained in its condition for court purposes.
- The item is not contaminated when taken for further tests/ examination.
- The item is properly identified without the need to mark the actual item.

Examples of use;

- · Plastic envelopes to preserve documents- can be marked with details
- Plastic Bags to preserve items from external contamination- identified and sealed
- Plastic bags and containers suitable to hold soil/chemicals for further testing. (Of a kind that does not affect the contents) Can be identified and sealed.
- Boxes/ Larger Containers- To house large items or to maintain all items in one location.

VERSION 2 (NOVEMBER 2010) – PUBLIC COPY APPENDIX G – FIELD TEAM RUNNING SHEET

DER			
Mine / Incid			
Date	Time	Action	Next Action
-			
0 1			
		>	

APPENDIX H - ACTION PLAN TEMPLATE

VERSION 2 (NOVEMBER 2010) - PUBLIC COPY Mine Discharge Incident Date Incident Controller Operations Officer Field Team Safety Assessment Completed Details Field Response Required Details Remote Area Trip sheet Supplied **Travel Arrangements** Details **Accommodation Required** Details Risk to Drinking, recreational or livestock Details water

Immediate Preventative Actions Required	Details	
		*
Immediate Enforcement Action	Details	
Evidence Collection / Sampling Plan	Details	
	2	
Notification to Stakeholders	Details	
		"
Remediation Required	Details	
8	 	
Notification to Investigators	Details	

VERSION 2 (NOVEMBER 2010) - PUBLIC COPY **Details of Action Plan**

VERSION 2 (NOVEMBER 2010) – PUBLIC COPY SAMPLING PLAN

c	osystems potentia	ally impacted \Box	Tal	ke Filtered Samples	
V	estock drinking w	ater potentially in	n pacted Tal	ke unfiltered Samples	
iol	d Mine with Cyan	ide present 🛚	Do NOT use Nitric	Acid as preservative	
ec	liment Sampling	Conside	r taking composite	mixed samples	
		I w		Checklist	To real or a large
g	Water Sampling Metals Filtered	Water Sampling General	Water Sampling – Specific analyte	Sediment Samples (Grab samples)	Sediment Samples (Composite samples)
í	Reference Sites				
I	Point Source Re	elease Sites / Disc	harge Points		
l	Impacted Sites				

VERSION 2 (NOVEMBER 2010) – PUBLIC COPY Details of Sampling Plan / Map

Cost Analysis

PLE DESCRIPTION	COST PER SAMPLE (A\$)	NUMBER OF SAMPLES FOR ANALYSIS	TOTAL COST (A\$)
	Water Quality – F	ield Filtered	
s 8			
	Water Quality -	Unfiltered	
ate			
de			
nd Hydrocarbons			
	Sediment (Quality	
s 8			
le Size Distribution			
	Othe	r	
	TOTAL COST (A\$)		

			The second second
Justification a	and R	acamman	dations
Justilication (allu iv	CCCOIIIIICII	Jauvijo

APPROVALS

Recommended By:	Endorsed By:	Approved By:	
	Operations	Incident Controller	

VERSION 2 (NOVEMBER 2010) – PUBLIC COPY APPENDIX I – SITUATION REPORT

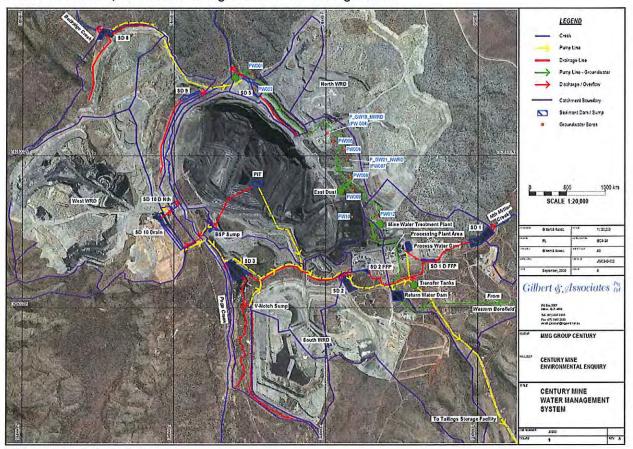
Mine Discharge In	cident		
Date	-		
Time			
Field Response C	oordinator		
Sit Rep To:			
Current Envi	ronmental Risk		
□ N/A	☐ Low	☐ Medium	☐ High
Details			
Actions Take	en to Date		
		**	

Proposed Actions	N 2010) - PUBLIC COPT
Recommendation:	
Operations Officer:	
Signed:	
Date:	
Comment and Recommendation:	
Incident Controller:	
Signed:	
Date:	

APPENDIX J – MINE SITE RESPONSE SHEETS

VERSION 2 (NOVEMBER 2010) – PUBLIC COPY CENTURY MINE

Site Water Movements, On-site Monitoring Locations & Discharge Points



Regional Water Sample Locations

VERSION 2 (NOVEMBER 2010) - PUBLIC COPY SWI-A MSP6 MSP9 MSP8 MSP 1 Water Quality and Sediment Sample Locations (Century Mine) Onsite Storage Monitoring Points Receiving Waters Minor Road -- Track Riverine Drainage Lines Mining Lease Status
GRAN Kilometres Version; 091119_A4_RAP Includes material copyright CNES 2005, reproduced under licence from Spot imagery and Raytheon Australia, all rights reserved

VERSION 2 (NOVEMBER 2010) – PUBLIC COPY MINE CONTACTS

Century Mine

Mine Site Address:

Century Mine LAWN HILL QLD 4825 Registered Business Address:

MMG Century Limited Level 23 28 Southbank Boulevard

SOUTHBANK VIC 3006

Landowners

Postal Address:

MMG Century Limited PO Box 8016 Garbutt QLD 4814

WATER QUALITY & SEDIMENT SAMPLING LOCATIONS (GDA94)

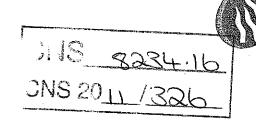
(GDA94 comparable with WGS84 on handheld GPS)

Monitoring point	Lat	Long	Monitoring point	
Receiving Waters			Reference Sites	
Page Creek P_SW03_REC	S18.70504	E138.59820	None Specified in EA	
Mitton Creek NM_SW04_REC	S18.72665	E138.65729	Licensed Release Points	
Little Archie Creek A_SW01_REC	S18.69715	E138.61684	None Specified in EA	
Bull Ridge Creek B_SW01_REC	S18.66407	E138.56237		
Coglan Creek C_SW08_REC	S18 76971	F138 72427	·	

Onsite Storage Monitoring Points	Lat	Long
MSP1	S18.73139	E138.63196
MSP3	S18.73553	E138.59848
MSP5	S18.71293	E138.60079
MSP6	S18.69816	E138.61792
MSP8	S18.71671	E138.59343
MSP9	S18.70663	E138.58140
Coglan Creek	S18.79068	E138.67369

Enquiries Telephone Our reference





Queensland Government

Department of Environment and Resource Management

/ CARMS

23 December 2010

Karl Spaleck General Manager MMG Century Limited PO Box 8016 GARBUTT BC QLD 4814

Dear Sir

Compliance inspection of Century Mine, Environmental Authority MIN100737008

As you are aware, officers from the Department of Environment and Resource Management (the department) conducted a compliance inspection at the MMG Century Limited (MMG) Century Mine on 23-24 November 2010 to assess compliance with MIN100737008.

The purpose of this letter is to discuss the non-compliance issues and areas of concern arising from the compliance inspection and to further reiterate the importance of preparing for the upcoming wet season.

Compliance issues

At the time of the inspection there were three areas of non-compliance with the conditions of MIN100737008 identified. Specifically, the following conditions were found to be in non-compliance.

Condition number	Details of areas of non-compliance
C1-1	Receiving waters affected by the release of process water and $/$ or stormwater contaminated by the mining activities must be monitored at the locations and frequencies defined in Schedule $C-T$ able 1 and Schedule $I-M$ and comply with the contaminant limits defined in Schedule $C-T$ able 2
	As requested by the department during the site inspection, MMG provided surface water monitoring analysis results for monitoring undertaken since 1 April 2010 at the receiving waters monitoring points specified in Schedule C – Table 1 of MIN100737008. A review of these results was undertaken and the following non-compliance issues were noted.
	 Sampling of the background quality of total suspended solids has not been undertaken as required by Schedule C – Table 2; and
	 Sampling of total magnesium and total calcium has not been undertaken as required by Schedule C – Table 2.
	Sampling for the above mentioned contaminants must be undertaken at the locations specified in Schedule C – Table 1 of MIN100737008.
C5-1	Groundwater affected by the mining activities must be monitored at the locations and frequencies defined in Schedule C - Table 9 and Schedule I - Map 4
	During the inspection, MMG advised that groundwater monitoring is not carried out at three of the monitoring points specified in Schedule C – Table 9 of MIN100737008 due to the failure of these bore holes. Specifically, monitoring points NMCK_GW06, LAC_GW03 and PCK_GW23. It is understood that MMG is currently investigating where alternative similar monitoring points could be located at the site.
	The alternative monitoring points must be provided to the department and include justification to support the new location of each monitoring point.
F7-1	Subject to the release limits defined in Schedule C all reasonable and practicable measures must be implemented to prevent hazardous leachate being directly or indirectly released or likely to be released as a result of the activity to any groundwater or watercourse.
	During the inspection leachate contaminated with heavy metals and sulphate was observed to be seeping through the dam wall of sediment dam 10 to the Page Creek North sump and the Page Creek South sump. Contaminated water contained within these unlined sumps is unlikely to prevent infiltration to groundwater or overflow and discharge directly to Page Creek during intense rainfall events that are characteristic of the wet season in the region.

 Condition Details of areas of non-compliance
MMG must take action to prevent the seepage of leachate through the dam wall of sediment dam 10 to the Page Creek North sump and Page Creek South.

Areas of concern

Areas of concern are areas or issues which might not technically form a contravention of licence conditions, however rectification of these issues is recommended to minimise potential environmental harm. The issues of concern noted during the inspection are as follows:

1. Stream sediment quality

During the inspection stream sediment samples were collected at the receiving water monitoring points nominated in Schedule C – Table 1 of MIN100737008. The results of the analysis of these samples show:

- o sediments in Page Creek continue to contain high concentrations of cadmium, lead, nickel and zinc. The concentration of zinc at the receiving water monitoring location was 1 800 mg/kg which is more than the ISQG-high guideline limit of 410 mg/kg as prescribed in the *Australian and New Zealand Environment and Conservation Council* water quality guidelines; and
- o sediments in Mitton Creek contain high concentrations of zinc. The concentration of zinc at the receiving water monitoring location was 600 mg/kg which is more than the ISQG-high guideline limit of 410 mg/kg as prescribed in the *Australian and New Zealand Environment and Conservation Council* water quality guidelines.

The department is concerned that the above mentioned elevated concentrations of heavy metals in the sediments of the receiving waters may cause environmental harm. The department is currently considering further enforcement action.

2. Tailings management

During the inspection MMG advised that periodic analysis/characterisation of tailings contained within the tailings storage facility (TSF) is not undertaken. As the site nears closure this information should be collected for rehabilitation purposes to ensure MMG understand the quality, geochemical nature and distribution of tailings within the TSF. This analysis/characterisation should include analysis for heavy metals, sulphate, electrical conductivity and pH.

It is unknown whether periodic analysis/characterisation is carried out of waste rock disposed on in the waste rock dumps at the site. Similar to tailings, periodic analysis/characterisation of waste rock should be carried out for rehabilitation purposes to understand the quality, geochemical nature and distribution of the waste rock contained within the waste rock dumps.

3. Overflow of TSF transfer tanks

As discussed during the inspection, the TSF transfer tanks overflowed on 12 March 2010 and 6 June 2010, which resulted in the discharge of water contaminated with heavy metals, sulphate and high electrical conductivity to nearby land and water management structures. Overflows such as these have occurred on numerous occasions in the past and have the potential to cause environmental harm.

MMG must provide details of how the overflows from the TSF transfer tanks has been rectified and will be prevented in the future.

4. Contamination from historical brine disposal

Contamination of land from the historic disposal of waste brine from the reverse osmosis water treatment plant was observed on the hillside adjacent to the plant during the inspection. It is understood that this contamination consists predominantly of calcium carbonate material.

The contamination of the land on the hillside has the potential to cause environmental harm and must be remediated.

Hazardous dams annual inspection reports

Condition F4-1 of MIN100737008 requires that all high hazard dams containing hazardous waste must be inspected by a Registered Professional Engineer Queensland (RPEQ) prior to 1 November each year. As required by condition F4-3 of MIN100737008 please provide the department with two copies of the engineers report and any recommendations as to the measures to be taken to ensure the integrity of each hazardous dam.

As built design plans for sediment dams 3, 8 and 10

As previously discussed between MMG and the department please provide the as built design plans for the recently expanded sediment dams 3, 8 and 10.

Wet season preparations

Heavy rainfall experienced during the wet season in North Queensland has the potential to cause environmental harm from mining activities.

Potential issues which may arise on mine sites during the wet season can include but are not limited to:

- Erosion and sediment control;
- Storm water contamination;
- Exceedence of mandatory reporting levels in hazardous dams;
- Overflows from sewage treatment plants;
- Dam overflows; and
- Discharge from hydrocarbon storage areas.

Contravention of a condition of an environmental authority is an offence under section 430 of the *Environmental Protection Act 1994* and may result in significant penalties. As the holder of Environmental Authority MIN100737008 you are required to comply with all of the conditions stated in MIN100737008.

Whilst the department cannot ignore or pardon contraventions of the legislation, the department is focused on achieving environmental outcomes. Therefore on this occasion, the department has decided to issue an official warning notice for the contravention of condition F7-1 of MIN100737008. The warning notice is enclosed with this letter.

In conclusion, the department requires that you provide written advice by 14 January 2011 with respect to the measures that you intend to take in order to address the issues detailed in this letter and to ensure that you achieve full compliance with Environmental Authority MIN100737008.

Should you require any further information regarding the above matters please contact

Team Leader - Cairns
Mining and Heavy Industry
North Region
Environmental Services
Department of Environment and Resource Management

MINERALS AND METALS GROUP

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4 January 2011

Manager – Mining & Heavy Industry Department of Environment & Resource Management 5b Sheridan St Cairns QLD 4870 PO Box 2066 Cairns QLD 4870

Dear

CNS8234 - PRE WET SEASON INSPECTION MMG CENTURY MINE 23-24 NOVEMBER 2010

We refer to your correspondence dated 23 December 2010 arising from DERM's pre wet season compliance inspection of the MMG Century Mine at Lawn Hill on 23-24 November 2010.

and conducted the inspection. DERM's letter identified three (3) areas of potential non-compliance and four (4) areas of concern.

Compliance Issues

C1-1 Receiving Water Monitoring

Monitoring of background sites for total suspended solids (TSS) has not been conducted. Suitable sites for North Mitton and Bullridge creeks do not exist because their headwaters lie within the disturbance envelope of the mining area. Safe, all weather access to the upper reaches of Page and Coglan creeks for monitoring purposes has not been established.

Schedule C table 2 of MIN100737008 requires that TSS at the receiving water monitoring sites must be "not > than 10% of background (at the time of sampling)". This implies that the TSS at the receiving site must be < 10% (or a full order of magnitude less) than the upstream, or background site. This is clearly not the intention of the environmental authority and MMG Century remains eager to amend this inconsistency in the upcoming review of the water management schedule.

Monitoring of calcium and magnesium in receiving waters has been conducted pursuant to the requirements of the environmental authority. There was an oversight in responding to DERM's information request and specific data for calcium and magnesium was not forwarded. This data is attached to this correspondence.

MMG Century is in the process of developing a safe, all weather access to a 'background' monitoring site for the Page Creek receiving waters. We expect to have this access developed by 15 February 2011.

C5-1 Groundwater Monitoring

DERM's conclusion to the advice provided by MMG Century during the compliance inspection is an over-simplification.

- NMCK_GW06: This monitoring bore has been installed in the vicinity of the Century landfill and
 is routinely monitored. The bore is almost always observed to be in a 'dry' state and sample
 collection is not possible.
- LAC_GW03: This bore has been covered by the Northern Waste Rock Dump and is not monitored.
- PCK_GW23: This monitoring bore has been installed in the vicinity of the Century ROM pad and
 is routinely monitored. The bore is almost always observed to be in a 'dry' state and sample
 collection is not possible. The dry state of the bore is attributed to the sites proximity to the open
 pit.

As advised during the compliance inspection, we have engaged specialist advice to propose a groundwater-monitoring regime that better reflects the hydro-geological setting and environmental aspects of the property. We expect to forward the findings of this study to DERM by 28 April 2011. MMG Century expects that in consultation with DERM, MIN100737008 can be amended to reflect this more appropriate regime.

F7-1 Seepage Management

Your contention that "leachate contaminated with heavy metals and sulphate was observed to be seeping through the dam wall of sediment dam 10 to the Page Creek North sump and the page Creek South sump" is unfounded and we find your approach to this matter entirely unhelpful.

Our contention is that leachate is not seeping through the dam wall of Sediment Dam 10.

The southern section of the Western Waste Rock Dump is generating seepage contaminated with heavy metals and sulphate. This seepage is directed in an easterly direction to Sediment Dam 10 for containment and management by removal. The vast majority of the seepage generated drains freely into sediment dam 10, however a small volume bypasses the dam via the main haul-road foundation. This seepage stream is confined by the sediment dam 10 northern embankment which runs parallel to the road. Once the seepage gets past the embankment, it daylights on the southern batter. A seepage collector sump (Page Creek South sump) has been established to reclaim this seepage back to Sediment Dam 10. An underground seepage collector has been established through the haul road and below the Page Creek South sump to collect any remnant seepage in the Page Creek North sump. This sump is also pumped out to Sediment Dam 10.

This arrangement has been in place since 2009 and DERM has been briefed on this issue during previous site inspections. The installed arrangement includes works to exclude surface water and release via overland flow is well controlled. The works significantly restrict seepage losses to groundwater to a point where we believe that all reasonable and practicable steps are being taken.

Areas of Concern

Stream Sediment Quality

MMG Century is aware that concentrations of heavy metals in a number of the receiving water streams surrounding Century exceed the ISQG-high guidelines. The Australian Centre for Tropical Freshwater Research (ACTFR) has conducted regular limnological assessments of the receiving environments including Page and Mitton Creeks since 2006. This work has been completed to ascertain whether the mining operations are contributing to environmental harm in the receiving water environment. DERM has been provided copies of previous assessments including the 2010 round of monitoring.

Tailings & Waste Rock Geochemical Characterisation

DERM's comments relating to characterisation of tailings and waste rock permanent storages are noted. Tailings characterisation work was completed in 2003-2004 and another round is scheduled for 2012. Routine and project metallurgical analysis is used as infill data.

Release from TSF Transfer Tanks

Historically the transfer tanks were used to transfer excess mine and process water to the TSF and evaporation dam for storage. The excess process water stream is significantly more contaminated and is generated intermittently. Releases from this system generally resulted from scheduling and communication issues between plant and mine systems and personnel. In 2010, a project was executed that supports purge of excess process water via an alternate system thereby removing the main environmental hazard from the transfer tank system. In addition, improved telemetry systems have been installed on all of the remote pumps that direct water to the transfer tanks. Improved control logic has improved level stability significantly.

This issue was discussed at the inspection close-out meeting on 24 November 2010.

Runoff from the area surrounding the TSF transfer tanks reports to Sediment Dam 1. MMG Century monitors the quality of this impoundment and particularly release waters which generally occurs each year. The monitoring program has indicated that water quality in the catchment remains at an acceptable standard.

Contamination from Historic Brine Disposal

MMG Century is aware of the salt scalds resultant from previous practices. Our stance is that any environmental harm associated with the scalding is related to visual amenity and very localised loss of establishment sites for tree and shrub species. We agree that that remediation of this site is required prior to lease relinquishment. This work has been included as a line item in our closure plan.

Other Issues

Hazardous Dams Annual Inspections

Annual inspections for the evaporation dam and TSF were conducted during Q4 2010. Our consulting engineer raised no major areas of concern. We expect to forward copies of the 2010 inspection reports to DERM by 15 February 2011.

As-Built Designs for Sediment Dams 3, 8 & 10

MMG Century expects to forward the design and as-built reports for the expanded sediment dams 3, 8 & 10 to DERM by 28 January 2011.

Yours faithfully

Manager Environment

T F E @mmg.com

cc Karl Spaleck, General Manager

	====	Sit O	SamplePoint	Source	Date Value	Granhable Value	EA Criteria Schodula C Table 21Comment	Commont	Г
Accord (Total)	1/000	1 2 mm	Claring DEC	1	1/2040	Capitalia Value			Т
Cadmium (Total)	J /G	Lawn Hill	B SW01 REC	Findrocheck	4/04/2010 0.002		50.0 80.0		
Cyanide WAD	mg/L	Lawn Hill	B SW01 REC	Envirocheck	4/04/2010 <0.004	0	0.1		
Lead (Total)	mg/L	≣	B_SW01_REC	Envirocheck	4/04/2010 0.007	0.01	1,5		
Oil & Grease		≣	B_SW01_REC	Envirocheck	4/04/2010 <0.1	0.1	20		
pH Lab		≣	B_SW01_REC	Envirocheck	4/04/2010 6.33	6.33	6-9		
Sulfate as SO4 (Dissolved)	mg/L	Lawn Hill	B_SW01_REC	Envirocheck	4/04/2010 270	270	008		
Zinc (Total)	ma/L	=	B SW01 REC	Envirocheck	4/04/2010 1.148	1.15	NO DACABIOUNI I ECOLUER 50		
Calcium	mg/L	Lawn Hill	B SW01 REC	Envirocheck	4/04/2010 25.52	25.52			
Magnesium (Total)	mg/L	Lawn Hill	B_SW01_REC	Envirocheck	4/04/2010 38.19	38.19			
Arsenic (Total)	mg/L	Lawn Hill	B_SW01_REC	Envirocheck	5/04/2010 0.006	0.01	0.05		Г
Cadmium (Total)	mg/L	Lawn Hill	B_SW01_REC	Envirocheck	5/04/2010 0.005	0	0.08		•
Cyanide WAD	mg/L	Lawn Hill	B_SW01_REC	Envirocheck	5/04/2010 <0.004	0	0.1		
Lead (Total)	mg/L	Lawn Hill	B_SW01_REC	Envirocheck	5/04/2010 0.004	0	1.5	-	
Oil & Grease	mg/L	≣ :	B_SW01_REC	Envirocheck	5/04/2010 <0.1	0.1	20	· ·	
pH Lab			B_SW01_REC	Envirocheck	5/04/2010 6,58	6.58	o- o		
Sulfate as SO4 (Dissolved)	mg/L	Lawn Hill	_SW01	Envirocheck	5/04/2010 390	390	800		-
Total Suspended Solids	mg/L	Lawn Hill	B_SW01_REC	Envirocheck	5/04/2010 78	78	No background recorded	٠	
Zinc (Total)		Lawn Hill	B_SW01_REC	Envirocheck	5/04/2010 4.221	4.22			
Calcium		£awn Hill	B_SW01_REC	Envirocheck	5/04/2010 33.3	33.30		~	
Magnesium (Total)	mg/L	Lawn Hill	B_SW01_REC	Envirocheck	5/04/2010 60.03	60.03			
Arsenic (Total)	mg/L	≣	B_SW01_REC	Envirocheck	8/04/2010 <0.006	0.01	0.05		1
Cadmium (Total)	mg/L	Lawn Hill	B_SW01_REC	Envirocheck	8/04/2010 0.001	0	0.08		
Cyanide WAD	mg/L	Lawn Hill	SW01	Envirocheck	8/04/2010 NR		0.1		
Lead (Total)	mg/L	Lawn Hill	B_SW01_REC	Envirocheck	8/04/2010 0.006	0.01	1.5		
Oil & Grease	mg/L	Lawn Hill	B_SW01_REC	Envirocheck	8/04/2010 <0.1	0.1	20		
рн Lab		Lawn Hill	B_SW01_REC	Envirocheck	8/04/2010 6.74	6.74	o-9		
Sulfate as SO4 (Dissolved)	mg/L		B_SW01_REC	Envirocheck	8/04/2010 280	280	800		
Total Suspended Solids	mg/L	_	B_SW01_REC	Envirocheck	8/04/2010 51	57	No background recorded		
Zinc (Total)	mg/L	_	B_SW01_REC	Envirocheck	8/04/2010 0.039	0.04	50		
Calcium	mg/L		·B_SW01_REC	Envirocheck	8/04/2010 1.31	1,31			
Magnesium (Total)	mg/L	Lawn Hill	B_SW01_REC	Envirocheck	8/04/2010 5.71	5.71			
Arsenic (Total)	mg/L	Lawn Hill	B_SW01_REC	Envirocheck		0.01	0.09	-	Г
Cadmium (Total)	mg/L	_	B_SW01_REC	Envirocheck		0	0.08		-
Cyanide WAD	mg/L	≣	B_SW01_REC	Envirocheck	18/04/2010 <0.004		0.1		-
Lead (Total)		霊	B_SW01_REC	Envirocheck	18/04/2010 0.008	0,01	1.5		
Oil & Grease	mg/L	≣ :	B_SW01_REC	Envirocheck	18/04/2010 0.96	96.0	20		
pH Lab		Lawn Hill	B_SW01_REC	Envirocheck	18/04/2010 6.81	6.81	g - 6		
Sulfate as SO4 (Dissolved)		Cawn Hill	B_SW01_REC	Envirocheck	18/04/2010 70	70	800		
Total Suspended Solids		Lawn Hill	B_SW01_REC	Envirocheck	18/04/2010 15	<u>,</u>	No background recorded		_
Zinc (Total)		Lawn Hill	B_SW01_REC	Envirocheck	18/04/2010 0.026	0.03	50		
Calcium	mg/L	Lawn Hill	B_SW01_REC	Envirocheck	18/04/2010 5.074	5.07			-
Magnesium (Total)	mg/L	Lawn Hill	B_SW01_REC	Envirocheck	18/04/2010 3.06	3.06			
Arsenic (Total)	mg/L	Lawn Hill	C_SW08_REC	Envirocheck		0.01	0.05		
Cadmium (Total)	mg/L	Lawn Hill	C_SW08_REC	Envirocheck	8/04/2010 0.008	0.01	80.0		_
Cyanide WAD	mg/L	Lawn Hill	C_SW08_REC	Envirocheck	8/04/2010 NR	-	1.0		
Lead (Total)	mg/L	Lawn Hill	C_SW08_REC	Envirocheck	인	0	1,5		
Oil & Grease	mg/L	₹	C_SW08_REC	Envirocheck	8/04/2010 <0.1	0.1	20		
	. :		C_SW08_REC	Envirocheck	8/04/2010 7.21	7.21	6-9		
Sulfate as SO4 (Dissolved)	mg/L	Lawn Hill	C_SW08_REC	Envirocheck	8/04/2010 27	27	800		_

	0.08 0.1 1.5	000		Envirocheck Envirocheck Envirocheck	P_SW03_REC P_SW03_REC P_SW03_REC	Lawn Hill Lawn Hill Lawn Hill	mg/L mg/L	Cadmium (Total) Cyanide WAD Lead (Total)
Monitoring conducted for discharge event from sediment dam 3 & 9	0.05	0.01	3/04/2010 <0.006	Envirocheck	P_SW03_REC	Lawn Hill	mg/L	Arsenic (Total)
			2/04/2010 2/04/2010	Envirocheck Envirocheck	P_SW03_REC	Lawn Hill	mg/L	Calcium Magnesium (Total)
	50	0.02	2/04/2010 0.022	Envirocheck	P_SW03_REC	Lawn Hill	mg/L	Zinc (Total)
	No background recorded	24	2/04/2010 24	Envirocheck	P_SW03_REC	Lawn Hill		Total Suspended Solids
	800	1 ω 1	2/04/2010 3	Envirocheck	P_SW03_REC	Lawn Hill	mg/L	Sulfate as SO4 (Dissolved)
	B - 90	A 44	2/04/2010 50.1	Finvirocheck	P SWO3 REC	Lawn Hill	Ę,	DH I ab
	30	0.01	2/04/2010 0.006	Envirocheck		Lawe Hill	B (4)	Oil & Grease
	0	2 0	2/04/2010 < 0.004	Envirocheck	P_SW03_REC	Lawn Hill	mg/L	Cyanide WAD
	0,08	0	2/04/2010 0.001	Envirocheck	P_SW03_REC	Lawn Hill	mg/L	Cadmium (Total)
	0,05	0.01	2/04/2010 < 0.006		P_SW03_REC	Lawn Hill	mg/L	Arsenic (Total)
		18.21			NM_SW04_REC	Lawn Hill	mg/L	Magnesium (Total)
		0.01	8/04/2010 0.01		NM_SW04_REC	Lawn Hil!	mg/L	Calcium
	50	5.17	8/04/2010 5.173		NM SW04 REC	Lawn Hill	mg/L	Zinc (Total)
	No background recorded	<u> </u>	8/04/2010 11		NM SW04 REC	Lawn Hill		Total Suspended Solids
	800	42	8/04/2010 42		NM SW04 REC	Lawn Hill	mg/L	Sulfate as SO4 (Dissolved)
		6.71	8/04/2010 6.71		NM SW04 REC	Lawn Hill	6	pH Lab
	20	0.7	8/04/2010 <0.1		NM SW04 REC	Lawn Hill	mo/L	Oil & Grease
	ب - ات	0 01	8/04/2010 0.012		NM SW04 REC	Lawn Hill	mg/L	Lead (Total)
	0.1	c	8/04/2010 NR		NM SW04 REC	Lawn Hill	ma/L	Cvanide WAD
	0,08	0.0	8/04/2010 <0.000	Envirocheck	NM SWO4 REC	Lawn Hill	mg/l	Cadmium (Total)
		202			NIM CWION DEC		ma/l	Arsonic (Total)
			2/04/2010	Envirocheck	NIM SWOA REC		mg/L	Magnesium (Total)
	50	c	2/04/2010 <0.002		NIM SWO4 REC	Lawn Hill	mg/L	(di)
	No background recorded	16			NM_SW04_REC	Lawn Hill	mg/L	l otal Suspended Solids
	800	. 2	2/04/2010 2		NM_SW04_REC	Lawn Hill		Sulfate as SO4 (Dissolved)
	6-9	8.15	2/04/2010 8.15	Envirocheck	NM_SW04_REC	Lawn Hill		pH Lab
	20	0.1	2/04/2010 < 0.1		NM_SW04_REC	Lawn Hill	mg/L	Oil & Grease
	1.5	0	2/04/2010 0.003	Envirocheck	NM_SW04_REC	Lawn Hill	mg/L	Lead (Total)
	0.1	0	2/04/2010 < 0.004		NM_SW04_REC	Lawn Hill	mg/L	Cyanide WAD
	0.08	0	2/04/2010 0.001		NM_SW04_REC	Lawn Hill	mg/L	Cadmium (Total)
	0.05	0.01	2/04/2010 < 0.006	Envirocheck	NM SW04 REC	Lawn Hill	mg/L	Arsenic (Total)
		5.85	18/04/2010 5.846	Envirocheck	C SW08 REC	Lawn Hill	mg/L	Magnesium (Total)
		3 48 0	18/04/2010 0.000		C SWOS REC	Hill dwg	3 2	Calcium Calcium
	No background recorded		18/04/2010 2				3 <u>5</u>	Zinc (Total)
	800	. 5	18/04/2010 60		C SWOO REC	Lawo Hill		Total Supported College
	o - o	7.11	18/04/2010 7.11		C_SWO8_REC	Lawn Hill		pH Lab
	20	0.88	18/04/2010 0.88	•		Lawn Hill	mg/L	Oil & Grease
	, <u>, ,</u>	, 0	18/04/2010 0.005			Lawn Hill	mg/L	Lead (Total)
	0.1	. 0	18/04/2010 < 0.004	Envirocheck	C_SW08_REC	. Lawn Hill	mg/L	Cyanide WAD
	0.08	0	18/04/2010 0.005		C_SW08_REC	Lawn Hill	mg/L	Cadmium (Total)
	0.05	0.01	18/04/2010 <0.006		C_SW08_REC	Lawn Hill	mg/L	Arsenic (Total)
		2.29	8/04/2010 2.29	Envirocheck	C_SW08_REC	Lawn Hill	mg/L	Magnesium (Total)
	C	1.21	8/04/2010 1.21	Envirocheck	C SW08 REC	Lawn Hill	ma/L	Calcium
	FO	24	8/04/2010 <0 002	Envirocheck	C SWOS REC	Lawn Hill	mo/l	Zinc (Total)
	Po books on a social section	3	900000000000000000000000000000000000000	T with a back	0 000000 000		3	Total Supported Solida

Oil & Grosso	1,500	, ave	O SWINS DEC	700doorive 7	4 07 0400/40/4	7	oc .	
offi de Conso	j j		P SW03 RFC		2 0		0,2	
Sulfate as SO4 (Dissolved)	ma/L		P SW03 REC	. —	0	06	008	
Total Suspended Solids	mg/L		P_SW03_REC		3/04/2010 42	42	No background recorded	
Zinc (Total)	mg/L	Lawn Hill	P_SW03_REC		3/04/2010 1.1	1.	50	
Calcium Magnopium (Total)	mg/L	Lawn Hill	P_SW03_REC	Envirocheck	3/04/2010			
Arsenic (Total)	mg/L	I≢	P SW03 REC	1	4/04/2010 <0.006	0.01	0.05	
Cadmium (Total)	ma/L	₹	P_SW03_REC		4/04/2010 0.006	0.01	80.0	-
Cyanide WAD	mg/L	₹	P SW03 REC	_	4/04/2010 <0.004	0	0.0	
Lead (Total)	mg/L	≣	P_SW03_REC		4/04/2010 0.004	0	1.5	
Oil & Grease	mg/L	₹	P_SW03_REC		0	0.1	20	
pH Lab	ı	Lawn Hill	P SW03 REC	Envirocheck	4/04/2010 6.42	6.42	6-9	
Sulfate as SO4 (Dissolved)	mg/L		P_SW03_REC		4/04/2010 170	170	008	
Total Suspended Solids	mg/L	_	P_SW03_REC		4/04/2010 14	14	No background recorded	
Zinc (Total)	mg/L	_	P_SW03_REC		0	2.35	50	
Calcium	mg/L	Lawn Hill	P_SW03_REC	Envirocheck	0	17.53		
Magnesium (Total)	mg/L	Lawn Hill	P SW03 REC	Envirocheck	4/04/2010 20,34	20.34		
Arsenic (Total)	mg/L	Lawn Hill	P_SW03_REC	Envirocheck	8/04/2010 <0.006	0.01	0.05	
Cadmium (Total)	mg/L		P_SW03_REC		0	0.02	0.08	
Cyanide WAD	mg/L		P_SW03_REC	Envirocheck	0		0.1	
Lead (Total)	mg/L	Lawn Hill	P_SW03_REC		0	10.01	7,5	
Oil & Grease	mg/L	Lawn Hill	P_SW03_REC		0	0.1	20	
pH Lab		Lawn Hill	P_SW03_REC		0	6.35	0.9	
Sulfate as SO4 (Dissolved)	mg/L	Lawn Hill	P_SW03_REC	Envirocheck	8/04/2010 290	290	008	
Total Suspended Solids	mg/L		P_SW03_REC	Envirocheck	8/04/2010 36	36	No background recorded	
Zinc (Total)	mg/L	Lawn Hill	P_SW03_REC	Envirocheck	8/04/2010 9.281	9.28	50	-
Calcium	mg/L	Lawn Hill	P_SW03_REC	Envirocheck	0	0.27		-
Magnesium (Total)	mg/L	Lawn Hill	P_SW03_REC	Envirocheck		34.34		
Arsenic (Total)	mg/L	tawn Hill	P_SW03_REC	Envirocheck	0	0.01	0.05	The state of the s
Cadmlum (Total)	mg/L		P_SW03_REC		0	0.01	0.08	
Cyanide WAD	mg/L		P_SW03_REC		18/04/2010 <0.004	0	0.1	
Lead (Total)	mg/L		P_SW03_REC	_	0	0.01	1.5	
Oil & Grease	mg/L		P_SW03_REC		18/04/2010 1.05	1.05	20	
pH Lab			P_SW03_REC		18/04/2010 6,48	6.48	6-9	
Sulfate as SO4 (Dissolved)	mg/L		P_SW03_REC		18/04/2010 80	80	800	
Total Suspended Solids	mg/L		P_SW03_REC		18/04/2010 8	80	No background recorded	•
Zinc (Total)	mg/L		P_SW03_REC		18/04/2010 2.044	2.04	20	
Calcium	mg/L		P_SW03_REC		18/04/2010 23.2/	23.27		
Magnesium (Total)	mg/L		P SWU3 KEC	-1	18/04/2010 19:69	19.69		
Arsenic (Total)	mg/L "		P_SWU3_KEC		9/05/2010 0.008	0.01	0.05	
Cadmium (Total)	mg/L		P_SW03_REC		9/05/2010 0:001	0	0.08	
Cyanide WAD	mg/L		P_SW03_REC		0		0.1	
Lead (Total)	mg/L	_	P_SW03_REC	_	0	0	1.5	
Oil & Grease	mg/L	_	P_SW03_REC	_	0	0.26	20	
рн Гар		_	P_SW03_REC	_	0	6.47	6-9	
Sulfate as SO4 (Dissolved)	mg/L		P_SW03_REC	_	0	120	800	
ended Solids	mg/L		P_SW03_REC			17	No background recorded	
tal)	mg/L		P_SW03_REC		0	1.4	50	
Calcium Mographic (Total)	mg/L ma″		P_SW03_REC	Envirocheck	9/05/2010 24.97	24.97		
Iviagnesium (Total)	IIIG/L	Lavei Fili	2000 NEC	FIIVIOURECK	s١	CO.81		

/ CARMS



Enquiries Telephone Our reference



Department of Environment and Resource Management

17 January 2011

Manager Environment MMG Century Limited PO Box 8016 GARBUTT QLD 4814 CC: Mr Karl Spaleck
General Manager
MMG Century Limited
PO Box 8016
GARBUTT QLD 4814

Dear

Compliance inspection at Century Mine on 23-24 November 2010 in relation to Environmental Authority MIN100737008

I refer to your letter received by the Department of Environment and Resource Management (the department) on 10 January 2011 concerning the above mentioned compliance inspection. Comments from the department in relation to this response provided by MMG Century Limited (MMG) are detailed below.

Condition C1-1 – Receiving water monitoring

The department acknowledges that MMG are currently undertaking investigations to determine an appropriate water quality background monitoring location for waterways at the site. MMG must ensure that background location/s are determined in accordance with the Australian and New Zealand Environment and Conservation Council Water Quality Guidelines, 2000. Specifically, background sites must:

- Be from the same biogeographic and climatic region;
- be from a catchment with similar geology, soil types and topography;
- be from a location containing a range of habitats similar to those at the Century Mine site; and
- be from a similar flow regime.

As committed to in your letter, MMG must provide details of the nominated background location/s and justification for this location/s to the department by 15 February 2011.

The department recognises that the water quality release limit for total suspended solids stated in Schedule C – Table 2 (Receiving water contaminant limits) of MIN100737008 is unclear. This limit will be considered by the department in relation to the finalisation of the environmental evaluations for the site.

Condition C5-1 – Groundwater monitoring

As committed to in your letter MMG must provide the results of the groundwater monitoring investigation to the department by 28 April 2011. It is recommended that the content of this investigation is discussed with the department to ensure all of the relevant issues are considered.

The department recognises that some of the groundwater monitoring locations stated in Schedule C of MIN100737008 are no longer practical. The groundwater monitoring locations will be considered by the department in relation to the above mentioned investigation and the finalisation of the environmental evaluations for the site.

Condition C7-1 - Seepage management

Your comments regarding seepage through sediment dam 10 are noted. The department would like to meet and further discuss seepage management from sediment dam 10.

Stream sediment quality

The response provided in your letter does not nominate measures MMG intend to take to rectify the issue of elevated concentrations of contaminants in stream bed sediments in Page Creek and Mitton Creek. This issue has been brought to your attention for prompt action.

In relation to Page Creek, the recommendations of the report titled "The Condition of Stream Ecosystem Influenced by Century Mine" dated August 2010 state that sediment analysis results suggest that the majority of the zinc contained in Page Creek sediments is readily extractable and potentially bio-available. The report also recommends that the detailed sediment profiling survey undertaken in Page Creek in September 2009, be repeated in 2010.

As previously advised in our letter dated 15 November 2010, the department supports these recommendations as part of an overall strategy to address the issue of elevated contaminants in stream sediments.

Tailings and waste rock management

The tailings characterisation regime currently being carried out by MMG does not appear to be consistent with current industry best practice standards. It is recommended that more frequent tailings characterisation occurs on site (i.e. a minimum of 8 regularly spaced samples for every 100, 000 tonnes of tailings material disposed. Analysis should include net acid producing potential and heavy metal concentrations as a minimum).

Should MMG plan to vary from this standard, the proposed sampling regime must be appropriately justified.

I further note that the response provided in your letter does not address the issue of waste rock characterisation at Century Mine. The issue must be addressed by MMG.

Overflow of TSF transfer tanks

Your comments are noted. As previously advised, all reasonable and practical measures must be taken by MMG to minimise any environmental harm caused by the operation of the TSF transfer tanks.

Contamination from historical brine disposal

Your comments are noted. In addition, the remediation of the contamination from historical brine disposal must be incorporated in the calculation of financial assurance for the site.

Hazardous dams annual inspection reports

As committed to in your letter dated 4 January 2011 please provide two copies of the 2010 hazardous dams annual inspection report to the department by 15 February 2011.

I would highlight that the late provision of this report does not allow adequate time for MMG to implement any of recommendations from this report prior to this wet season. In future, it is expected that the submission of these reports will occur within a timely manner.

As built design plans for sediment dams 3, 8 and 10

As committed to in your letter dated 4 January 2011, these plans must be submitted to the department by 28 January 2011.

In addition to the above detailed issues from the November 2010 compliance inspection, there are a number of other outstanding issues which require further action. These issues are as follows:

Transitional Environmental Program (TEP)

I refer to the further information response received by the department on 22 December 2010 in relation to the slurry pipeline failure remediation TEP amendment application. The department will assess this information and respond in due course.

I would like to bring to your attention that the six monthly progress report required under Certificate of Approval number MAN9619 and section 4 of the TEP document was submitted to the department on 14 January 2011. Please be aware that this document was required to be submitted by 4 January 2011.

Submission of the above mentioned report after the 4 January 2011 has resulted in contravention of section 432 of the *Environmental Protection Act 1994*. The department considers failure to comply with an approved TEP a serious matter. Therefore on this occasion the department has decided that this letter shall serve a formal waring for non compliance with section 432 of the EPAct. Future non compliance with this TEP may result in enforcement action in accordance with the departments enforcement guidelines.

Financial assurance

I refer to the submitted financial assurance information received by this department on 17 December 2010. In order to finalise this matter, the department requires the following information:

- O Details of the maximum area of disturbance for each infrastructure type in the aerodrome zone and accommodation zone as detailed in the most recent plan of operations dated January 2010 December 2012. This must include the administration buildings, accommodation buildings, sewage treatment plants, water treatment plants and concrete pads, footings and bitumen.
- O Details of the area of disturbance of contaminated sediments in the waterways at the site and historical brine disposal contamination and third party quotes for rehabilitation of these areas.

A response of this matter is requested by 31 January 2011.

The issues raised in this letter are scheduled for further discussion as part of the meeting between MMG and the department on 19 January 2011 in Mount Isa.

Should you have any further queries in relation to above matters please contact on telephone

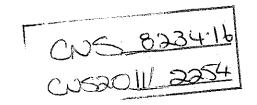
Yours faithfully

Manager
Mining and Heavy Industry
Regional Services
Department of Environment and Resource Management



reminer.

✓ CARMS



Meeting agenda

Date:

19 January 2011

Time:

9am-12pm

Location: DERM, Mount Isa office

Crn Camooweal and Mary St Mount (sa, Queensland 4825

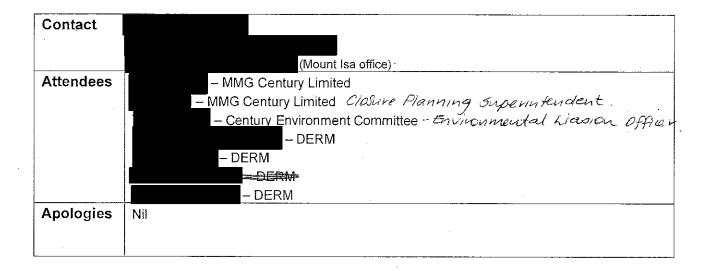
Meeting title:

General discussion of outstanding issues at Century Mine

Purpose:

To discuss DERM pre-wet season compliance inspection outcomes, financial assurance

for Century Mine and the concentrate slurry pipeline failure TEP.



Agenda items:

Open meeting

2/ Outcomes of DERM pre-wet season compliance inspection - 30 mins

WD, 155 + Infrastructur
Financial assurance for Century Mine - 30 mins

MMG update on Rehabilitation success criteria for Century Mine – 30 mins

Upcoming Century Mine EA review - 30 mins

MMG update on current water management/wet season preparedness status at Century Mine – 10mins

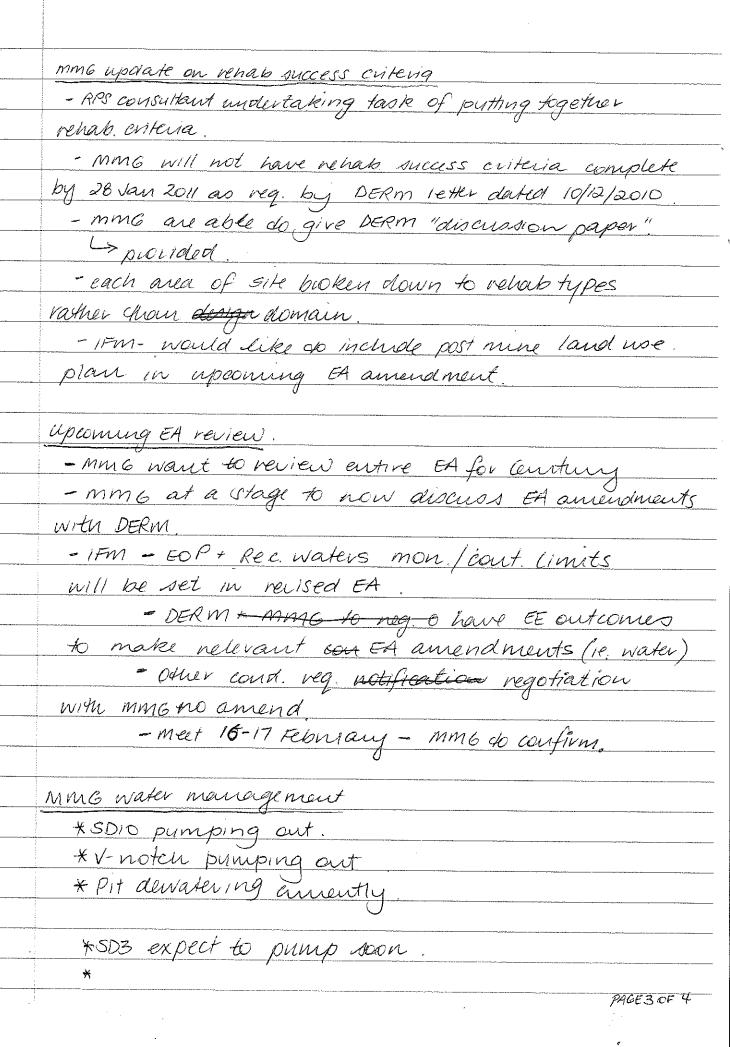
Y. MMG update on concentrate slurry pipeline remediation – 10 mins

8. General business

S. Meeting close

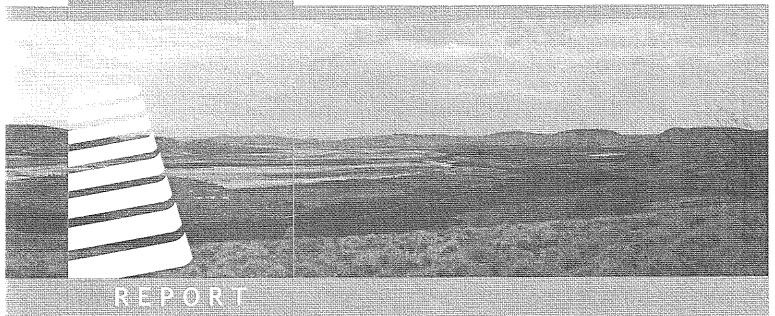
Jam 19 January 2011 Meeting with MMG (refer attached Outcomes of DERM pre- wet season compliance inspection - MMG have identified a site for blyround on Page Creek waker quality - 1Fm ~ should have minimum I blyround mon points - Doing Ru MME doing study to identify app g/water mon regime. - considering landfill, pit, process area - Rm. EE identified glwater mon not suitable for site therefore EE & proposed study results incorporated into EA ancerdment WWRD supage frow. C7-1 + goes along hand road v doesn't enter 5010. SD/0 via Soro in pref Mou. pump back to SDIO Page Ck South Page Ck North. PAGECREER o picksal to remedy problem to extend 5010 bund + 2012 Potential to repair hand road. in 2012 PAGE 1 OF 4

Stream sed quality - ACTER have done futurer detailed study in to Page Creek (as recommended in 2010 limno report). - mmg to ask ACTFR do provide summary/conclusion in relation to Mittouck. Tailing 8 + WR man - MMG doing some characterisation - 1FM - regular sampling should be completed + then reduced if shown consistent Haz dams ins-pect vepouts - IFM - need do need undertake top inspection earlier to enable actions to be taken prior to wet season. AS built des Plan - mm6 on target to provide plans by 28/01/2011 FA * 1FM - DERM WIll provide spreadsheet do monte with FA cale determined by DERM for mm6 comment * early Feb ISSINE FA to spreadsheet to MMG. * 2018 March PAGE 2 OF 4



* Kauvinba FFP - discharged to Norman R 10am-1	\$30 0 y
20/12/2010	
* MMG provided wither notification to DERM	retractive to produce to
* MMG provided. Written notification to DERM * * Kammba DA to be asked to 20/01/2011?	
mm6 update on conc. slury pipeline remediation	
* DERM inspection 14 February 2011	
mm6 update on conc. sluing pipeline remediation * DERM inspection 14 February 2011 * DERM still assessing info requested by DERM	<u> </u>
Tailings lift (proposed for DOII)	
Tailings lift (proposed for 2011) * EA amendment will be required	
Silver King deposit * EA amendment will be required. * cultural heritage significant for historic workings	
* EA amendment will be regured.	722
+ WITHOUT her tage significant for motoric workings	





MINERALS AND METALS GROUP LIMITED

Century Mine Lawn Hill, QLD

Tailings Storage Facility 2010 Annual Audit

December, 2010

99033R28

Document History and Status

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(RPEQ) Author



Reviewer

IMPORTANT NOTICE

Please refer to our Conditions of Investigation and Report



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CONDITIONS OF INVESTIGATION AND REPORT

Conditions of Report

- This report has been prepared by us for the purposes stated herein. We do not accept responsibility for the consequences of extrapolation, extension or transference of the findings and recommendations of this report to different sites, cases or conditions.
- This report is based in part on information which was provided to us by the client and/or others and which is not under our control. We do not warrant or guarantee the accuracy of this information.
- 3. We believe the conclusions and recommendations contained herein were reasonable and appropriate at the time of issue of the report. However, the user is cautioned that fundamental input assumptions upon which this report is based may change with time. It is the user's responsibility to ensure that input assumptions remain valid.
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Geotechnical Investigation

- 7. Geotechnical site investigation necessarily involves the investigation of the subsurface conditions at a site at a few isolated locations. and the interpretation and extrapolation of those conditions to elsewhere on the site not so investigated. This procedure has been adopted at the site that is the subject of this report and due care and skill has been applied in carrying out and reporting on the work. Thus the findings, conclusions and comments contained in this report represent professional estimates and opinions and are not to be read as facts unless the context makes it clear to the contrary. In general, statements of fact are confined to statements as to what was done and/or what was observed. Other statements have been based on professional judgement.
- 8. The scope of the work has been planned in the absence of any fore-knowledge of the site other than that stated in the report. Unless otherwise stated we consider that the number of locations investigated and the depths to which they have been investigated are reasonable bearing in mind the scale and nature of the project, and the defined purpose for which the investigation was undertaken.
- 9. We do not accept any responsibility for any variance between the interpreted and extrapolated conditions and those that are revealed by any means subsequently. Specific warning is also given that many factors, either natural or artificial, may render ground conditions different from those which pertained at the time of the investigation. Should there be revealed during the construction or at any other time any apparent difference from subsurface conditions described or assessed in this report, it is strongly recommended that such differences be brought to our attention so that its significance may be assessed and appropriate advice given.





EXECUTIVE SUMMARY

This report documents the 2010 annual audit of the tailings Storage facility at the Minerals and Metals Group Limited (MMG) Century Mine. A Senior Geotechnical Engineer from ATC Williams carried out the audit inspection over the period 14 to 15 November 2010.

At the time of the inspection, the water level in the Evaporation Pond was approximately 4.3 m below the Design Storage Limit.

The facility is being well operated. A summary of recommendations stemming from the inspections are presented below. Issues identified during the audit mainly relate to maintenance or monitoring.

It is proposed to commence the Stage 3 raise on the TSF embankment during the second quarter of 2011. With this in mind, no recommendations are made, other than to continue the current monitoring programme, for the TSF embankments. This said, the crest of Western Saddle Dam 1 requires attention and should be addressed prior to the 2010/2011 wet season.

Tailings Retaining Dams, Diversion Channels and Emergency Spillway

Diversion Channels 1 to 4

- The current routine inspection and monitoring programme should be continued.
- Vegetation, where it could potentially obstruct flow, should be removed.
- Erosion downstream of the channel should continue to be monitored.
- Cut slopes should continue to be monitored for stability for all channels.

<u>TSF Embankments, including Main Embankment, Western Saddle Dams 2 to 4, Eastern Saddle Dam and Emergency Spillway</u>

• Continue the current routine inspection and monitoring programme.

Western Saddle Dam 1

- Continue the current routine inspection and monitoring programme.
- The crest of the embankment should be lightly scarified (to a maximum depth of 300 mm), watered as required, graded and compacted. It is recommended that this work is performed <u>prior to the 2010/2011 wet season</u>. (note 1)
- Seepage at the east and west abutments of the Stage 1 Bench should continue to be inspected. Observations should be made on a daily basis as part of the shift inspection and should be limited to clarity of the seepage. An inspection of the seepage should be made as part of the weekly inspection. Clarity, flow (on a relative scale of low to high) and extent should be recorded.

Note 1: The recommended works were completed in late November 2010, prior to finalising this report.

Evaporation Pond Water Retaining Dams and Spillways

Dam A

- The current routine inspection and monitoring programme should be continued.
- The remaining vegetation on the downstream face should be removed.
- Seepage and salt staining at the downstream toe should be monitored.

Dam B

- The current routine inspection and monitoring programme should be continued.
- Vegetation (saplings) should be routinely managed.
- Salt staining and discolouration at the downstream toe should continue to be monitored.
 ATCW should be notified if seepage occurs.

<u>Levee</u>

- The current routine inspection and monitoring programme should be continued.
- Continue the ongoing vegetation management practices for this structure.
- The erosion gully downstream of the Levee should continue to be monitored.

Spillways 1 and 2

Continue with existing ongoing vegetation management, as required

Operations

Settlement monuments at Evaporation Dam A should be measured at nominally 6 monthly intervals to assess ongoing settlement.

The monuments on the crest of the TSF embankments will be destroyed during Stage 3 works. New monuments will need to be constructed on the raised embankment crest.

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1 INTRODUCTION

This report presents the results of the 2010 Annual Audit of the Tailings Storage Facility (TSF) and Evaporation Pond at the Century mine, operated by Minerals and Metals Group Limited (MMG).

2 BACKGROUND

.2.1 General

The TSF at the Century Mine was originally constructed in accordance with the requirements of Waterworks Licences No's 10051 and 10052 as issued by the Department of Natural Resources (DNR), Queensland. Licence No. 10051 relates to the tailings retaining dam. Licence No 10052 relates to the dams associated with the evaporation pond. The TSF is operated under Environmental Authority MIN 100737008, a copy of which is presented in Appendix A.

In order to ensure satisfactory operation of the TSF the Environmental Authority requires an annual audit prior to 1 November of each year or at any time if alarming, unusual or otherwise unsatisfactory conditions are observed.

2.2 Previous Reports and Audits

A list of reports, which are relevant to the operation of the TSF, is presented in the References/Bibliography section of this report [Ref's. 1 to 34].

The list includes the details of reports of previous audits. It can be seen that, to date, MMG has commissioned ATC Williams (ATCW) to carry out audits, or reviews, on a more frequent basis than the mandatory 12 months.

2.3 The TSF

The TSF at Century is based upon single point down-valley discharge. The tailings are retained by a zoned earth and rockfill embankment, which currently consists of a main embankment approximately 1500 m long with a crest elevation of RL 175m. The embankment was raised in 2005 and includes both the original main embankment and Western Saddle Dam 1. In addition, there are four smaller saddle dams, referred to as the Eastern Saddle Dam and Western Saddle Dams 2, 3 and 4.

The saddle dams have been constructed to reduce the volume of rainfall run-off from external catchments. Runoff during the wet season ponds behind these saddle dams. To manage this ponded water, there are four diversion channels that divert water to the downstream evaporation pond when ponded water exceeds a certain depth. Diversion Channel 1 connects the catchments behind Western Saddle Dam 1 to the main body of the Evaporation Pond. Diversion Channel 2 allows water to flow from the catchments behind Western Saddle Dam 2 to 1, Diversion Channel 3 from catchments 3 to 2 and Diversion Channel 4 from catchments 4 to 3.

Process water and storm water is decanted from the tailings storage area through two overflow weir structures, referred to as Decant 1 and Decant 2. The weir structures consist of a concrete channel formed from pre-fabricated concrete culverts. The decant level is maintained and raised by placing concrete stop logs over the concrete channels in the form of a lid, to ensure adequate freeboard for tailings. The concrete channels discharge into 700 mm diameter polyethylene pipes. In addition, underdrains are placed at 10m intervals along the face of the main embankment. The drains were terminated at RL 170m. The purpose of these drains was to de-

water the tailings at depth and to promote densification and strength increase. The decants have a gate arrangement which rests against the upper most stop log within a galvanised steel channel attached to the face of the concrete channel sections. The gate can be raised or lowered as required to allow the water level in the dam to be raised during severe storm events to minimize the loss of turbid water.

The tailings dam has an emergency spillway at RL 174 m located through a cutting to the east of the main embankment.

Decant overflow from the tailings storage and rainfall runoff is impounded within the Evaporation Pond located downstream of the facility. The Evaporation Pond has three embankments and two spillways. The embankments are referred to as Dam A, Dam B and a small levee. All three dams have the same crest elevation of RL 173.1 m. Dam A is approximately 30 m high and has a crest length of some 220 m, whilst Dam B and the levee are considerably smaller with heights of 15 m and 4 m respectively. The two spillways are referred to as Spillway 1 and Spillway 2. Both spillways are 50 m in width and have an invert level of RL 170.9 m. Spillway 1 is located to the north of Dam B and Spillway 2 is located to the north east of the Levee.

Figure 1 shows the various components of the TSF and Evaporation Pond. Figure 2 shows the location of the Decants and underdrain outlets.

The TSF and Evaporation Pond scheme is designed for zero release and it is expected that the water level within the Evaporation Pond will increase with time.

The TSF at Century Mine has a "High" Hazard Rating in accordance with the "Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland", published by the Department of Minerals and Energy [Ref 34]. This sets the hydrological design criteria for storages (i.e. design of spillway) at an AEP (Annual Exceedance Probability) of 0.0001 (1 in 10,000 years).

3 AUDIT PROCEDURE

The audit procedure generally consists of:

- a site inspection;
- a review of the previous audit(s) with respect to recommended action;
- a review of records of operations routine inspections;
- a review of development of the TSF compared to expectations; and
- recommendations for remedial works, and any modifications to operational procedures.

4 AUDIT INSPECTION SITE VISIT

The site visit for this audit was carried out on 15 and 16 November 2010, which is outside of the timeframe outlined in the DNR licence. This occurred as a result of availability of both MMG staff and ATCW staff who were familiar with the site.

The inspection of each embankment of the TSF and the Evaporation Pond, along with the TSF spillway and TSF Diversion Channels was carried out on foot or from a slow moving vehicle. As part of the audit, the following structures were inspected:

- TSF Main embankment, which includes Western Saddle Dam 1.
- Western Saddle Dams 2, 3 and 4
- Eastern Saddle Dam

- TSF Decants 1 and 2
- TSF Diversion Channels 1, 2, 3 and 4
- TSF Emergency Spillway
- Evaporation Dam A
- Evaporation Dam B
- Evaporation Levee embankment
- Evaporation Pond Spillways 1 and 2

In addition, operation and monitoring records produced since the previous audit carried out on 13 and 14 October 2009 were assembled and reviewed against previous data. Discussions regarding operations were undertaken with Mr. Shane Wilson, Production Co-ordinator.

Observations made during the inspection are presented in the following sections of this report.

During the inspection, photographs were taken of relevant features. A photographic record, along with descriptions of the photographs is presented in Appendix B.

5 RESULTS OF AUDIT INSPECTION

5.1 Inspection of Structures

5.1.1 Tailings Retaining Dams, Diversion Channels and Emergency Spillway

5.1.1.1 Diversion Channels 1 to 4

All of the diversion channels are open and clear. Runoff water flowed through the channels during the 2009/2010 wet season for approximately four months.

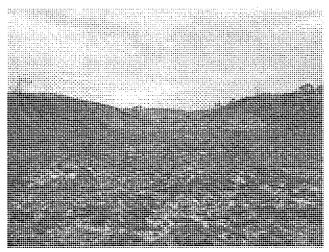
A discussion of diversion channels is presented below.

Diversion Channel 1

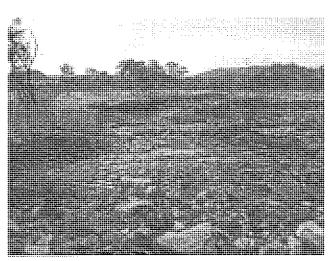
Diversion Channel 1 is located between the western end of the Stage 1 Main Embankment and Western Saddle Dam 1 (now part of the Stage 2 Main Embankment). The channel allows run-off from the catchments areas behind Western Saddle Dams 1, 2, 3 and 4 to discharge into the Evaporation Pond.

There was no significant change to Diversion Channel 1 when compared to observations made during the previous inspection in October 2009, although the erosion downstream of the channel has increased.

- The cut slopes remain stable with some evidence of preferential weathering of less competent rock in the cut faces.
- The floor of the channel remains clear of obstructions
- Bed erosion has increased slightly.
- Grass in the base of the channel has decreased, although there are a few saplings in the channel bed towards the eastern end.
- The erosion noted downstream of the channel has significantly increased in extent since the 2009 inspection.



Channel 1, looking south east from northern end



Erosion downstream of Channel 1, looking south east from eastern end of channel

- The current inspection and monitoring programme should be continued.
- Saplings should be removed from the floor of the channel.
- Erosion downstream of the channel should continue to be monitored.

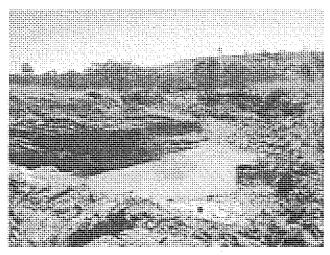
Diversion Channel 2

Diversion Channel 2 is located between Western Saddle Dams 1 and 2 and allows run-off from the catchments areas behind Western Saddle Dams 2, 3 and 4 to be discharged into the catchment area behind Western Saddle Dam 1 and ultimately into the Evaporation Pond via Diversion Channel 1.

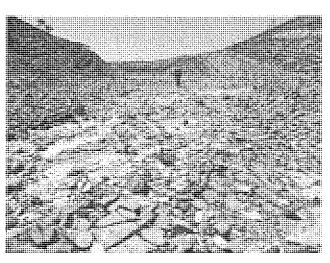
There was no significant change to Diversion Channel 2 when compared to observations made during the previous inspection in October 2009, although there has been some channel bed erosion and erosion downstream of the channel has increased.

- The cut slopes remain stable. Similar to Diversion Channel 1, there is some evidence of preferential weathering of less competent rock in the cut faces.
- The erosion noted downstream of the channel has significantly increased in extent since the 2009 inspection. Erosion is up to 2.5 m deep downstream of the channel. The erosion does not affect the operation of the channel, but should continue to be monitored after water flow through the channel. Water was ponded in the erosion at the time of the inspection.

• The floor of the channel remains clear of obstructions. Of note is that the orientation of the rock bedding planes in the floor of the channel is resulting is some minor erosion of the floor towards the downstream (eastern) end of the channel. The erosion is occurring due to preferential weathering of the white clayey bands within the rock. At this stage, the erosion is on little concern and should be monitored after water flow through the channel.



Erosion downstream of Channel 2, looking south east from the southern end of the channel



Rock bedding in the floor of Channel 2, looking south east from the mid point of the channel.

Recommendations are summarised below:

- The current inspection and monitoring programme should be continued.
- Erosion of the channel bed and downstream of the channel should continue to be monitored after flow events.

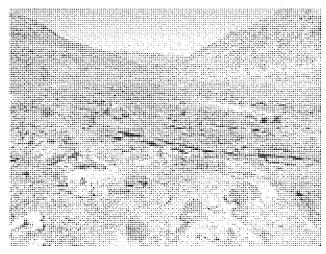
Diversion Channel 3

Diversion Channel 3 is located between Western Saddle Dams 2 and 3 and allows run-off from the catchments areas behind Western Saddle Dams 3 and 4 to be discharged into the catchment area behind Western Saddle Dam 2 and ultimately into the Evaporation Pond via Diversion Channels 1 and 2

There was no significant change to Diversion Channel 3 when compared to observations made during the previous inspection in October 2009, although there has been some additional preferential weather of the cut slopes.

- The cut slopes remain stable, although there is considerable preferential weathering of less competent rock (clayey zones) in the cut faces.
- The erosion noted downstream of the channel has increased in extent since the 2009 inspection. The erosion does not affect the operation of the channel. The erosion should continue to be monitored after water flow through the channel.
- The floor of the channel remains clear of obstructions. However, grasses present in the eastern half of the channel floor appear to be trapping the eroded less competent rock, resulting in a slight build-up of material at this point of the channel.

- There is some erosion of the southern cut side slope at the eastern end of the channel. This was observed during the 2009 inspection and doe not appear to have increased in extent (251006E, 7920509N).
- There is erosion due to concentrated flow at 250983E, 7920503N on the south side slope, eastern end.



Rock bedding in the base of Channel 3, looking west from the east end

Channel floor, looking east from west end.

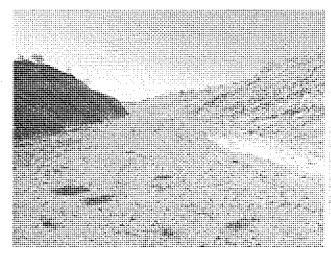
- The current inspection and monitoring programme should be continued.
- Erosion of the side slopes should be inspected after flow events.

<u>Diversion Channel 4</u>

Diversion Channel 4 allows run-off from the catchment area behind Western Saddle Dam 4 to be discharged into the Evaporation Pond. This channel was constructed during Stage 2 construction in 2005. The channel has now experienced four wet seasons.

Diversion Channel 4 is located between Western Saddle Dams 3 and 4 and allows run-off from the catchments areas behind Western Saddle Dam 4 to be discharged into the catchment area behind Western Saddle Dam 3 and ultimately into the Evaporation Pond via Diversion Channels 1, 2 and 3.

- The cut slopes remain stable; although there is considerable preferential weathering of less competent rock in the cut faces (white rock).
- Erosion downstream of the channel does not appear to have increased since the 2009 audit inspection. The erosion is minor and of no consequence for the operation of the channel. The erosion should be monitored after water flow through the channel.
- The floor of the channel remains clear of obstructions. Plants becoming established at the inlet of the channel. The vegetation is considered to be light at this time.





Channel 1, looking south from the northern end

Weathering of Cut slope in Channel 4, west face, north end

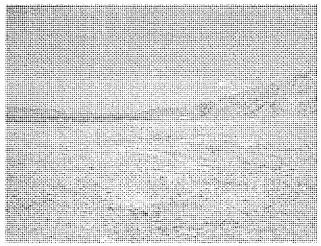
- The current inspection and monitoring programme should be continued.
- Cut slopes should continue to be monitored for stability, especially after high rainfall events.
- Light vegetation should be removed from the inlet to the channel.

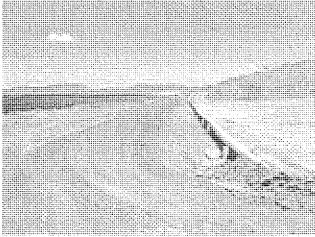
5.1.1.2 TSF Emergency Spillway

The TSF Emergency Spillway is located on the east side of the tailings dam, between the east abutment of the Main Embankment and the southern abutment of the Eastern Saddle Dam. The spillway was constructed as part of Stage 2 works.

There was no noticeable change to the condition of the spillway when compared to observations made during the previous inspection in September 2009. However, a 1 m high compacted bund wall has been constructed across the inlet of the spillway, the crest of which is some 1 m below the TSF main embankment crest elevation. It is understood that the bund wall has been constructed to provide containment of tailings during the upcoming 2010/2011 wet season in the event that the tailings level rises more than 1 m above the current level adjacent to the spillway. It should be noted that this is a temporary structure and that the existing spillway will be infilled during Stage 3 construction works which are planned for the second quarter of 2011.

- The bund wall has been constructed using fine grained material, has been moisture conditioned and compacted using a pad foot roller.
- The cut slopes remain stable. Minor rilling of fine grained material was observed at the toe of the cut slopes but preferential weathering was not observed.
- The floor of the spillway channel was clear of obstructions.
- The HDPE pit water discharge pipe supports are in good condition.





Spillway floor, looking upstream from the downstream edge.

1 m high bund Wall constructed across the upstream end of the spillway.

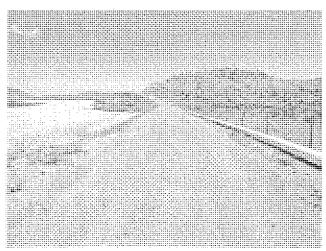
Ongoing monitoring condition of the spillway.

5.1.1.3 Eastern Saddle Dam

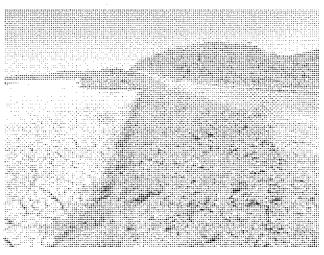
The Eastern Saddle Dam is located to the north of the Emergency Spillway.

There was no noticeable change to the dam when compared to observations made during the previous inspection in October 2009.

- The crest of the embankment was in good condition with a good coverage of gravel. No rutting was observed.
- Minor sink hole development was observed on the crest adjacent to the upstream face, 10 m south of the northern abutment. The sink holes have been infilled by fine grained material and appear to be "self healing".
- The upstream face was in good condition. There is minor erosion on the upstream shoulder but this was assessed to be limited in depth to the gravel overspill towards the southern end of the embankment. This was also observed during 2009.
- The downstream face (from the crest to the Stage 1 bench) was in good condition. Erosion was not observed on the face, although minor erosion was observed at the abutments. The abutment erosion is minor and did not appear to have increased since the 2009 audit inspection. There is woody vegetation at the abutments.
- The downstream face (from the Stage 1 bench to the downstream toe) was in good condition. Minor breakdown of some rock armour continues, but it is not considered detrimental to the stability of the dam. There is some vegetation along the downstream toe.
- The minor sink holes observed during the 2008 audit inspection have become infilled with fine material. There has been an increase in vegetation on the stage 1 bench (grasses and saplings) since the 2009 inspection.



East Saddle Dam crest, looking north from southern end.



Upstream Face, looking north from southern end.

- It is planned to raise the Eastern Saddle dam during the second quarter of 2011. As part of the proposed works, vegetation and minor erosion issues mentioned above will be addressed at that time.
- The general condition of the embankment should continue to be monitored over the wet season.

5.1.1.4 Main Embankment

The Main Embankment includes the Decant Structures.

The previous inspection identified that the embankment was showing signs of the effects of ponded water and shrinkage cracking. This effect manifests as discolouration of the embankment fill and sink holes in the crest of the embankment. With time some of the shrinkage cracks "self heal" whilst others develop into sink holes.

Erosion along the downstream toe of the embankment has previously been reported at the historic high water level. This area could not be inspected due to the higher water level within the evaporation pond.

Tailings have generally been tracking towards the western side of the TSF for the majority of the past 12 months and has only recently tracked back towards the central and eastern sides of the facility.

Crest

The crest is generally in good condition and was assessed as better than at the time of the 2009 audit inspection. The majority of sink holes and cracks observed have "self healed". Minor erosion on the upstream and downstream shoulders is present in places.

The pit water pipe was noted to be damaged during the 2007 inspection. The pipe was observed to still be damaged (252760E, 7921094N). There is evidence that water is leaking from the pipe and that water ponds on the surface on the crest

adjacent to the damaged pipe.

There is a sink hole at 252769E, 7921067N. This area was noted in all audits since 2006. The sink hole has increased in extent since 2009 inspection but has been infilled with fine material.

There is a sinkhole developing at 252749E, 7921164N.

The crack, described as approximately 8 m in length, 3 m in from the upstream edge of the crest at 252664E, 7920854N at the time of the 2009 inspection has self healed.

Upstream Batter

• The upstream face is generally in good condition.

- There are patches of minor erosion resulting from concentrated runoff from the crest. The majority of the erosion is within the white rockfill.
- Minor erosion was observed on the upstream edge of the crest at 252766E,
 7921061N.
- There is vegetation (grasses and shrubs) on the face of the slope and some saplings. Saplings have been sprayed but a second pass is required in some places.

• Downstream Batter (Crest to Stage 1 Bench)

The downstream face, from the crest to the Stage 1 bench is generally in good condition. There is minor erosion and vegetation in places.

Stage 1 Bench

• The bench is in good condition with a cross fall towards the downstream edge of the crest.

• Downstream Batter (Stage 1 Bench to Downstream Toe)

- The downstream face below the original Western Saddle Dam 1 crest is covered with vegetation but otherwise in good condition.
- The rock armour on the downstream face, from the Stage 1 bench to the downstream toe is in good condition.

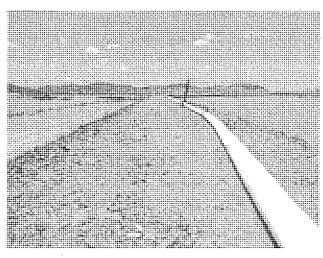
Decants

Both decants are in good condition.

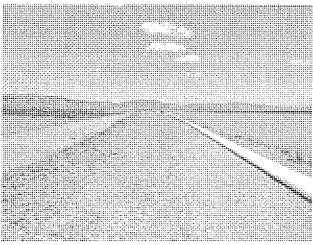
• Water was flowing through Decant 1, whilst the top stop board of Decant 2 was above water level.

There is evidence of movement of the concrete of the Decant 2 steps.

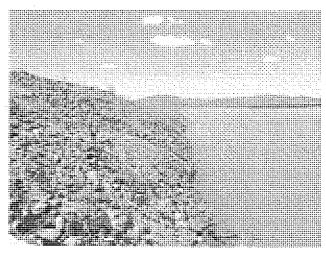
- o Discharge water was relatively clear with no evidence of suspended tailings in the water
- The outlet pipe from both decants were submerged at the time of the inspection.



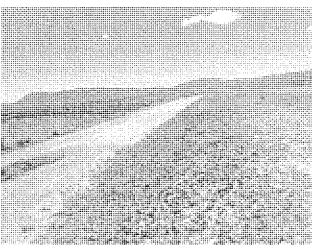
Overview of Crest, looking south from eastern abutment



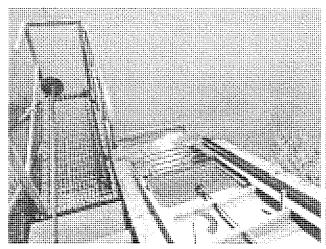
Overview of Crest, looking west from Decant 1

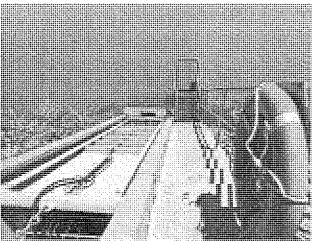


Upstream face, looking west from Decant 1



Downstream face and Stage 1 Bench, looking west from adjacent to Decant 1



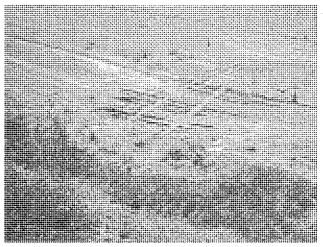


It is proposed to raise the Main Embankment during the second quarter of 2011, therefore recommendations for this embankment are to continue the current monitoring protocols. Vegetation management, erosion and sink holes will be addressed during construction activities.

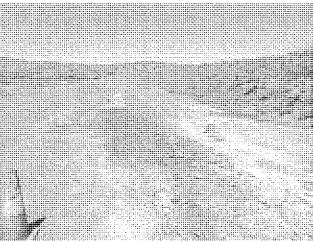
5.1.1.5 Western Saddle Dam 1

Western Saddle Dam 1 is in reasonable condition. Observations are summarised below:

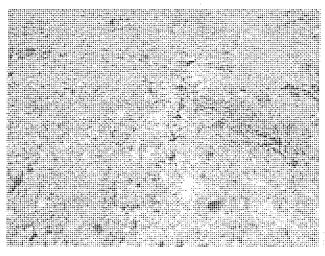
- Seepage was observed on the Stage 1 Bench at the west abutment, whilst salt and discolouration of the embankment fill was observed at the eastern abutment.
- Cracking was observed on the crest at three locations. The cracks were all approximately 2 m in from the upstream edge of the crest and parallel to the crest. The crack were observed as follows:
 - o 251735E, 7920481N to 251768E, 7920486N (approximately 10 to 20 cm in width and 35 m in length). In places the crack has been infilled with fine material.
 - o 251786E, 7920491N to 251807E, 7920490N (approximately 10 cm in width and 25 m in length. The crack is infilled with fine material).
 - o 251817E, 7920494N to 251834E, 7920495N (approximately 20 m in length and ranging from a fine crack to a width of about 10 mm).
- The upstream slope and downstream slope (to the Stage 1 Bench) were in good condition with a light covering of grasses.
- The Stage 1 Bench was in good condition, except for near the western abutment where traffic has rutted the surface where seepage runoff is present.
- The downstream slope below the Stage 1 bench was in good condition. Saplings have been removed since the previous inspection but there is some regrowth present.
- Water was ponded against the downstream toe of the embankment.

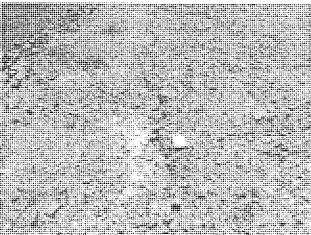


Seepage runoff at the western abutment of the Stage 1 Bench, looking down from the crest.



Discolouration at eastern abutment of Stage 1 Bench.





Crack on crest at 251735E, 7920481N.

Crack on crest at 251786E, 7920491N

Discussion of Cracking on the Crest

 The cracking is parallel to the upstream edge of the embankment and approximately 2 m in from the edge of the crest. Cracking was not observed at the time of the 2009 inspection.

At the time of the 2009 inspection the tailings level was at or slightly below the Stage 1 crest, it is now about 1 m above the Stage 1 crest elevation.

It is considered that the cracking is along the interface of the outer rock facing and the clay core material. It is also considered that the cracking has occurred as the toe of the rockfill has become wet and that there has been some collapse settlement of the rockfill.

The cracking is, for the most part infilled with fine grained material indicating that the cracking is not recent and likely occurred around the time of the 2009/2010 wet season.

Discussion of Seepage on Stage 1 Bench

• The seepage on the Stage 1 bench was first observed from the eastern abutment in May 2010. This commenced as a damp patch and progressed to seepage with time. The seepage ceased around June 2010. The tailings elevation is approximately 1 m above the Stage 1 crest.

ATCW visited site around the time of the seepage as part of other works on site and inspected the seepage.

It was considered that the seepage was a result of a defect in the foundation soils which is an interbedded, highly fractured sedimentary rock. It was also considered that the seepage would cease with time as the tailings level within the TSF rose and sealed off the defect. This was the case.

Recently, the ground has been observed by MMG staff to have rewetted. An inspection of the tailings upstream of this area showed that the tailings beach is desiccated with large cracking. Bleed water from settled tailings is currently pooling in the cracks, providing a source of water for the seepage. It is likely that the seepage will stop in time.

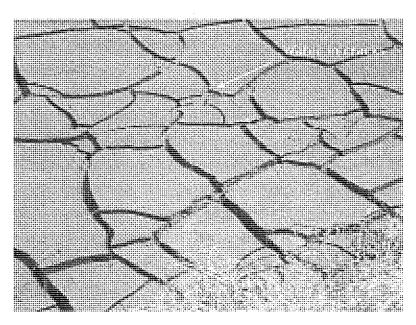
To date all seepage in this area has remained clear. MMG personnel have been briefed on how to manage and monitor the seepage.

• The seepage at the western abutment of the stage 1 bench was initially observed in early October 2010. The tailings elevation is approximately 1 m above the Stage 1 embankment crest. Seepage water has been observed as being clear.

From discussions with site personnel it is understood that the onset of seepage was similar to that observed at the eastern abutment in May 2010. It is understood that the seepage ceased for a period of about two weeks and recommenced on 16 November 2010.

Inspection of the tailings upstream of the seepage area is desiccated and the cracks are currently filling with bleed water as shown in the photograph below. This is similar to the observations at the eastern abutment.

It is considered that the seep will continue for some time to come until fresh tailings are deposited in this area.



Desiccated tailings beach upstream of seepage. Note water within cracks.

Recommendations are summarised below:

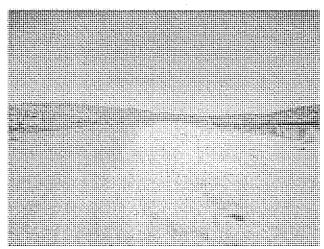
- The current monitoring programme should be continued.
- The crest of the embankment should be lightly scarified (to a maximum depth of 300 mm), watered as required, graded and compacted. This is recommended that this work is performed prior to the 2010/2011 wet season.
- Seepage at the east and west abutments of the stage 1 Bench should continue to be inspected. Observations should be made on daily basis as part of the shift inspection and should be limited to clarity of the seepage. An inspection of the seepage should be made as part of the weekly inspection. Clarity, flow (on a relative scale of low to high) and extent should be recorded.
- It is proposed to raise this embankment during the second quarter of 2011, therefore vegetation management will be addressed during construction activities.

5.1.1.6 Western Saddle Dam 2

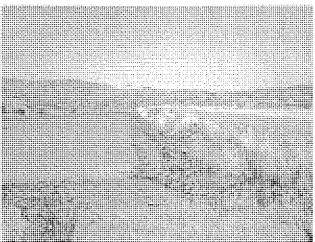
Western Saddle Dam 2 was in good condition. When compared to the October 2009 inspection, vegetation has increased on the upstream and downstream faces.

Observations are summarised below:

- The crest of the embankment was in good condition with a good coverage of gravel.
- The crest has recently been graded.
- It is apparent that saplings have been removed since the 2009 inspection, however there has been some regrowth.
- The upstream face was in good condition. There was minor erosion along the upstream shoulder of the crest where runoff is concentrated. This erosion is of no concern at this stage and should be monitored.
- The downstream face was in good condition.
- Water within the tailings storage facility was ponded against the upstream face at the time of the inspection.
- Water was also against the downstream toe of the embankment.



Embankment crest, looking west from the eastern abutment.



Downstream face, showing surface vegetation and ponded water against downstream toe.

Recommendations are summarised below:

• It is proposed to raise Western Saddle Dam 2 during the second quarter of 2011, therefore recommendations for this embankment are to continue the current monitoring protocols. Vegetation management and erosion will be addressed during construction activities.

5.1.1.7 Western Saddle Dam 3

Western Saddle Dam 3 was in good condition. When compared to the October 2009 inspection, vegetation has increased on the upstream and downstream faces.

- The crest of the embankment was in good condition with a good coverage of gravel.
- The crest has recently been graded.

- There is a scour on the downstream edge of the crest where a rock has been dislodged from the rockfill zone (250655E, 7920743N).
- Saplings have been removed from the upstream and downstream slopes since the previous inspection.
- The upstream face was generally in good condition, although there is considerable vegetation present (grasses, shrubs and some regrowth of saplings).
- The downstream face is in good condition, although there is considerable vegetation present (grasses, shrubs and regrowth of saplings).
- Water with the tailings storage facility was ponded against the upstream face at the time of the inspection.
- Water was also ponded against the downstream face of the embankment.



Overview of crest, looking south east from the western abutment.



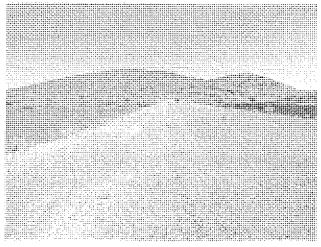
Upstream face, looking south east from upstream of the western abutment.

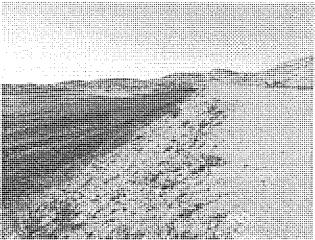
• It is proposed to raise Western Saddle Dam 3 during the second quarter of 2011, therefore recommendations for this embankment are to continue the current monitoring protocols. Vegetation management and erosion will be addressed during construction activities.

5.1.1.8 Western Saddle Dam 4

Western Saddle Dam 4 was constructed in 2005 as part of Stage 2 works. The dam is in good condition.

- Gravel has been placed on the shoulders of the embankment and graded since the last inspection.
- Saplings have been removed from the upstream and downstream faces since the last inspection.
- The upstream face of the embankment is in good condition. There is some light vegetation (grasses) and a few regrowth saplings.
- The downstream face is in good condition. No evidence of erosion was observed. There is minimal vegetation (grasses) on the face.
- Water was also ponded against the downstream face of the dam. The water level was approximately 1.5 m lower than the inlet to Diversion Channel 4.





Embankment crest, looking north from south end.

Upstream face, looking south from northern abutment.

• It is proposed to raise Western Saddle Dam 4 during the second quarter of 2011, therefore recommendations for this embankment are to continue the current monitoring protocols. Vegetation management will be addressed during construction activities.

5.1.2 Evaporation Pond Water Retaining Dams and Spillways

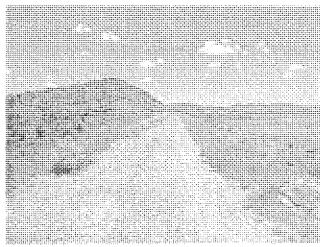
The water level in the evaporation pond at the time of the inspection was RL 161.81 m, 1.36 m higher than at the time of the 2009 inspection.

5.1.2.1 Dam A

There was no noticeable change to the condition of Dam A when compared to the 2009 inspection.

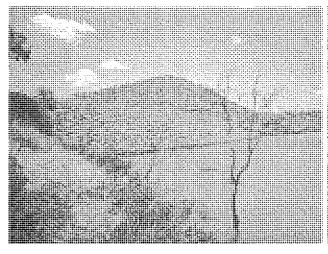
- The crest was in good condition.
- The downstream face was in good condition. There is minor vegetation present on the slope, consisting of grasses and a few saplings. The grasses are more prolific than observed during the 2009 inspection. Saplings should be removed.
- The upstream face rock armour is in good condition.
- The abutments appear to be in good condition. The rock cutting at the northern abutment appeared stable and no rilled rock was observed.
- Minor erosion of the downstream toe was observed at the southern abutment. There was no observed change in the extent of erosion when compared to the 2009 inspection photographs.
- An area of seepage was observed at the toe of the northern abutment at 254,662E, 7920567N. This was observed at the time of the 2009 inspection. Based on review of photographs, the seepage rate has decreased.

- Vegetation in the drain downstream of the dam appears lusher and a slow flow of seepage water was observed in the drain. There is also some salt staining on the ground immediately downstream of the dam. The extent of seepage flow in this area was judged as being similar to the 2009 inspection. The extent of the salt staining has also similar.
- Erosion gullies, noted in 2009 at the downstream toe, approximately mid point along the toe of the embankment have not increased.



Embankment crest, looking north from southern abutment.

Downstream face, looking north from southern abutment.



Upstream face, looking south from north of the embankment.



Seepage at downstream toe, adjacent to northern abutment.

- The condition of the embankment should continue to be monitored.
- Vegetation (saplings) should be routinely managed.
- Seepage and salt staining at the downstream toe should continue to be monitored.

5.1.2.2 Dam B

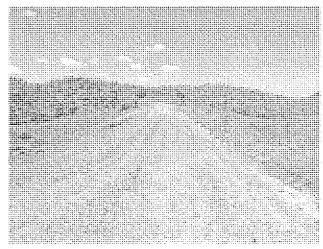
The Dam B embankment saw water against its upstream face for the second wet season during

2009/2010. At the time of this inspection water was still ponded against the upstream face.

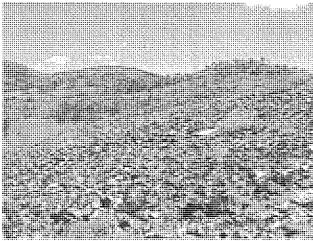
Observations are summarised below:

- The crest was in good condition. There is minor vegetation (grasses) on the shoulders of the crest.
- The downstream face of the embankment is in good condition. There is minor vegetation (grasses and a few saplings) on the face. Saplings should be removed.
- There is some minor erosion on the downstream abutments. The erosion is considered minor at this stage and does not appear to have increased since the 2009 inspection.
- There is erosion at the downstream toe of the northern abutment. The erosion is between the toe and rip rap placed at the interface of the embankment and natural ground. There is no noticeable increase in its' extent compared to the 2009 inspection photographs.
- There is erosion at the interface of the upstream face of the embankment and natural ground at both abutments. The erosion is considered minor at this stage.
- Weathering of the upstream armour rock continues. Based on review of the 2009 photographs, there was a slight increase in the extent of weathering.
- Salt was observed at the midpoint of the downstream toe. There was also discolouration on the downstream face over a length of some 20 m and extending approximately 3 m upslope.

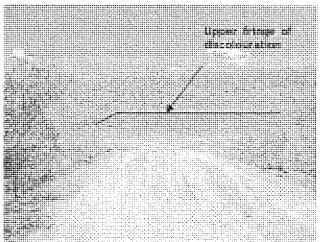
The discolouration and salt observed at the downstream toe is likely a result of the release of moisture that would have infiltrated the downstream shell of the embankment during the previous wet season.

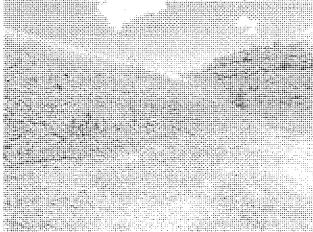


Crest, looking south west from northern abutment



Weathering of upstream rock armour.





Downstream face showing vertical extent of discolouration.

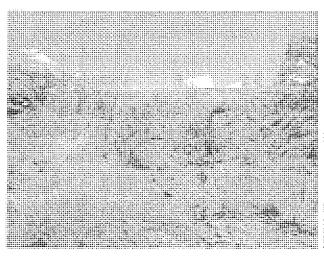
Downstream face showing extent of discolouration

- The condition of the embankment should continue to be monitored.
- Vegetation (saplings) should be routinely managed.
- Salt staining and discolouration at the downstream toe should continue to be monitored. ATCW should be notified if seepage occurs.
- The weathering of the upstream rock armour should be monitored.

5.1.2.3 Levee

The water level within the evaporation pond is yet to rise to a level where water will be stored against the Levee. The condition of the Levee is generally similar to that at the time of the previous audit inspection.

- The crest was in good condition and has been recently graded.
- The upstream face is in good condition. There is sparse vegetation present on the slope. Saplings have, in the most part been removed
- The downstream face is in good condition. Similar to the upstream face there is sparse vegetation on the slope and saplings, in the most part have been removed.
- There is an erosion gully downstream of the Levee, which is located within loose soil;
 possibly spoil from construction of the Levee.



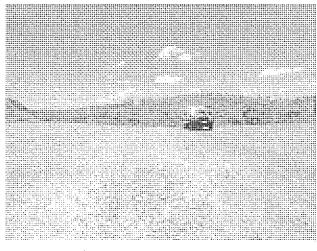
Downstream face. Note that some vegetation has been poisoned

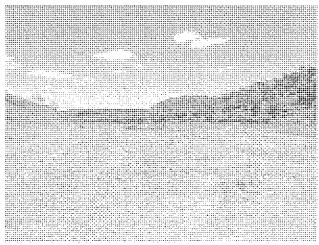
Upstream face

- Continue with the current ongoing vegetation management, as required.
- The erosion gully downstream of the Levee should continue to be monitored.

5.1.2.4 Spillways 1 and 2

Spillways 1 and 2 have been graded since the 2009 inspection. Both spillways are in good conditions within evidence of recent movement of the cut slopes. There has been some regrowth on the floor of Spillway 2 but this is of little concern at this stage.





Spillway 1

Spillway 2

Recommendations are summarised below:

• Continue with existing ongoing vegetation management, as required.

5.2 Review of Operations

5.2.1 Monitoring Records

A review of monitoring records of the decants between 1 September 2009 and 31 October 2010 inclusive has shown that 104 readings were missed during the period. It should be noted that of these 104 days, the concentrator was not operating for 94 days.

Monitoring reports for the weekly and monthly inspections, as required by the Operations Manual indicates that all monthly inspections were completed and the majority of the weekly reports were completed.

In general, although a significant number of inspections were missed during the audit period, it is apparent that the TSF is being operated in accordance with the requirements of the Operations Manual and in accordance with the intent of the design.

The primary aim of the TSF design; minimisation of the decant pond on the tailings retaining dam, in both area and volume; is being achieved.

5.2.2 Production Data

During the period 1 September 2009 to 31 August 2010 approximately 3.38 Mt of tailings was discharged into the TSF at an average solids content of approximately 49%. In addition, approximately 2.67 Mm³ of water from sources such as pit dewatering and process water from the thickener was also discharged. The total water discharged into the TSF, excluding rainfall runoff was approximately 5.9 Mm³.

Production rates were lower than the 2008/2009 period by approximately 1.2 Mt due to the extended shut down of the concentrator over the period October to December 2009.

The discharge solids content has been similar to the previous audit period at around 49%. However, low solids content tailings were discharged in October 2009 and again in April 2010. The low solids content in October 2009 was associated with the plant shutdown and the April 2010 low solids content was for tailings management purposes.

Pit water discharged into the facility has increased by some 200,000 m³ since the previous audit period.

5.2.3 Stored Density

A tailings surface survey was carried out by MMG in October 2010. The survey was completed by AAM Hatch and was undertaken using LIDAR technology. The extent of the tailings surface at the time of the LIDAR survey on 14 October 2010 is presented as **Figure 3**. In addition, a IKONOS satellite image was captured in June 2010. This is presented as **Figure 4**.

A review of the stored density since the previous survey in June 2008 indicates an average density of 1.54 t/m³, which is higher than the original design value of 1.5 t/m³.

6 DEVELOPMENT OF THE TSF

The TSF continues to develop in accordance with expectations.

The extent of the tailings, as of 14 October 2010, is shown on Figure 3. Review of beach slopes indicates that the beach slopes are flatter than those measured in 2008. At the time of the October 2010 survey, the beach slopes varied between 1.2% to 0.4% with a mid slope of 0.7%. This flatter beach slope is expected as a consequence of the lower average solids content of the tailings since 2008.

Figure 5 presents the historical average monthly discharge solids content, the discharge solids content with time and the target discharge solids content. Over the audit period, the average discharge solids content has remained around 49% but with brief periods of around 52% to 53%. There have also been two occurrences of solids content around the mid 30%. At the present time the target solids content is 50%. This lower target has been set to flatten the beach which was becoming too steep at the head of the beach. Options available to increase the capacity whilst maintaining a target solids content around 54% are to raise the pipe head or extend the pipe over the tailings beach.

Figure 6 shows the rate of rise of tailings at the decant structures. The figure shows that the tailings elevation at the decants has risen by around 1.5 m during the audit period. It should be noted however, that the tailings elevation at decant 1 has risen since May 2010 whilst the rise in elevation at Decant 2 has occurred since April 2010. Prior to the rise in elevation, tailings were being deposited adjacent to Western Saddle Dams 2, 3 and 4. The tailings level is about 1.2 m below the predicted level; however, the predicted tailings beach is based on an even distribution of tailings, rather than prolonged periods of discharge to a certain area of the tailings beach.

7 DESIGN STORAGE ALLOWANCE

Water levels within the evaporation pond remain below the Design Storage Allowance (DSA) elevation of RL 165.2 m.

Figure 7 shows the water elevation within the evaporation pond, rainfall, DSA, and crest and spillway levels of the embankments for the period August 2000 to November 2010. Figure 7 reflects the impact of the 2008/2009 and 2009/2010 wet seasons. The overall decline in the water level post wet season has not been as rapid as previous years, due to the increased volume of water put into the system. The period during which the concentrator was shut down is reflected by a sharp drop in water level between October and December 2009.

At of 1 November 2010, the water level measured at Dam A was RL 161.9 m. The remaining volume between the current water level and the DSA is approximately 23,000 ML.

8 ISSUES ARISING OUT OF PREVIOUS ANNUAL AUDITS

8.1 Action Issues

The previous audit stated that:

8.1.1 Issues Relating to Structures

8.1.1.1 Tailings Storage Facility

Diversion Channels 1 to 4

- Cut slopes should continue to be monitored for stability for all channels
- Erosion downstream of the channels should continue to be monitored, especially the deep erosion downstream of channel 2.
- Saplings should be removed where present in the base of the channels.
- Erosion of the rock bedding in the base of channels 2 and 3 should be monitored.

Eastern Saddle Dam

- Monitor minor erosion of downstream abutments.
- Monitor rock armour on downstream face below the Stage 1 bench.
- Remove vegetation from the downstream face and Stage 1 bench.

Main Embankment (Including Western Saddle Dam 1)

- The crest of the embankment should be lightly scarified (to a maximum depth of 300 mm), watered as required, graded and compacted. This is recommended to seal shallow sink holes, remove minor cracking and shape the crest with a slight cross fall towards the tailings to shed rainfall runoff.
- The remaining light vegetation should be removed from the upstream and downstream faces.
- The damaged section of the pit water pipe should be replaced.

Western Saddle Dam 2

• Vegetation should be removed from the upstream and downstream faces of the embankment.

Western Saddle Dam 3

- Vegetation on the downstream face should be removed.
- Two additional settlement monuments should be installed towards the eastern end of the embankment. These would identify any differential settlement between the Stage 1 and stage 2 works.

Western Saddle Dam 4

The light vegetation on the upstream and downstream faces should be removed.

8.1.1.2 Evaporation Dam

Dam A

- Erosion of the downstream toe at the southern abutment should be monitored.
- The remaining vegetation on the downstream face should be removed.
- Seepage and salt staining at the downstream toe should be monitored.

Dam B

- Vegetation on the crest, and downstream face should be removed.
- Erosion at the upstream and downstream abutments should be monitored.
- The condition of the upstream rock armour should be monitored.

Levee

- The remaining vegetation on the upstream and downstream faces should be removed.
- The erosion gully downstream of the Levee should continue to be monitored.

Spillways 1 and 2

- The light vegetation should be removed from the spillway channels where present.
- 8.1.2 Issues Relating to Operations

The previous audit recommended that settlement monuments should be measured at the following frequencies:

- Evaporation Dam A 6 monthly
- Tailings Dam Embankments 3 monthly

8.1.3 Other Issues

The previous audit stated that:

- The entire base survey of the tailings storage area should be updated so that an unequivocal estimate of the tailings density can be prepared at the time of the next aerial survey.
- 8.2 Action Taken
- 8.2.1 Action Relating to Structures
- 8.2.1.1 Tailings Storage Facility

Diversion Channels 1 to 4

- Routine monitoring is being completed.
- Saplings and shrubs have not been removed.

Eastern Saddle Dam

- Routine monitoring is being completed.
- Saplings have been poisoned and cut. Light vegetation remains.

Main Embankment (Including Western Saddle Dam 1)

- No action has been taken in regards to reworking the crest of the embankment.
- Vegetation in the most part was removed before the 2009/2010 wet season. There is some regrowth present.
- The damaged section of the pit water pipe has not been repaired.

Western Saddle Dam 2

Vegetation has been removed, however there has been some regrowth.

Western Saddle Dam 3

- Vegetation has been removed but there has been considerable regrowth.
- No action has been taken in regards to installation of additional settlement monuments towards the eastern end of the embankment.

Western Saddle Dam 4

• The light vegetation on the crest of the embankment has been removed but there has been considerable regrowth.

8.2.1.2 Evaporation Dam

Dam A

- Routine monitoring has been carried out.
- Woody vegetation (saplings) has been removed, however there has been some regrowth.

Dam B

- Routine monitoring has been carried out.
- Woody vegetation has been removed.

<u>Levee</u>

- Routine monitoring has been carried out.
- Saplings have been removed but there has been some regrowth.

Spillways 1 and 2

- Vegetation has been removed.
- 8.2.2 Action Relating to Operations

The settlement monuments have not been surveyed at the frequencies recommend in the 2009 audit report.

- 8.2.3 Action Relating to Other Issues
 - At the time of preparing this audit report we understand that the base survey for the site has not been updated.

9 OTHER ISSUES

9.1 Water Balance

The water balance for the TSF was included in a site wide water balance prepared by Gilbert & Associates Pty Ltd which was completed in early 2010.

9.2 Survey

A LIDAR survey of the site was carried out on 14 October 2010. An aerial photograph was not captured at the time of the LIDAR survey but a satellite image was captured around 30 June 2010.

9.3 Settlement Monitoring

Settlement monitoring is carried out on a regular basis on Evaporation Dam A, the Tailings Dam Main Embankment and Western Saddle Dams 2, 3 and 4.

9.3.1 Evaporation Dam A

Settlement monitoring of Dam A has been carried out since November 2000. Movement of the embankment is monitored through 10 prisms on the downstream side of the dam. The prisms are located adjacent to the downstream edge of the crest (M1 to M4), mid height on the downstream face (M5 to M8) and towards the downstream toe (M9 and M10). Figure 8 shows the location of the settlement monuments.

During the audit period the settlement monuments were measured on one occasion, on 24 January 2010, the previous reading was on 15 March 2009.

Monitoring of the settlement monuments indicate:

- The highest total settlements since 2000 are along the downstream edge of the crest (M1 to M4) which varies from about 74 mm to 146 mm. Settlements during the audit period were between 2 and 6 mm.
- Settlements at mid height of the downstream slope (M5 to M8) are between 12 mm and 50 mm since 2000. During the audit period settlements have been between 3 and 4 mm.
- Total settlement towards the downstream toe has been around 24 to 34 mm since 2000. During the audit period settlements of about 4 mm were recorded.
- The rate of vertical settlement of the embankment is generally reducing with each successive measurement.
- There has been no trend in horizontal displacement associated with any of the settlement measured.
- Measurements of monuments M1, M6, M7, M9 and M10 indicate that settlements are reducing with time.
- Measurements of monuments M2, M3, M4, M5 and M8 are still exhibiting a slight downward trend.

The settlements measured are not of major concern but should continue to be regularly monitored.

9.3.2 Tailings Dam Embankments

Settlement monitoring of the tailings dam embankments was also commenced in November 2000. However, monitoring ceased during Stage 2 construction during 2005.

Twenty three prisms were installed in January 2006, referred to as TM11 to TM33. Five of the monuments were removed during dam maintenance in 2006, three from Western Saddle Dam 2 (monuments TM26, TM27 and TM28) and two from Western Saddle Dam 3 (TM29 and TM 30). These were replaced in February 2007 with TM34, TM35 and TM36 on western Saddle Dam 2 and TM37 on Western Saddle Dam 3. The location of the settlement monuments is shown on Figure 9.

During the audit period the settlement monuments were measured on one occasion, on 17 and 18 January 2010. The previous reading was on 16 February 2009.

The 2008 audit inspection recommended surveying of the monuments on a 3 monthly basis. The frequency of survey is not in accordance with recommendations.

Monitoring of the settlement monuments during the audit period indicate:

- All readings of monuments on Western Saddle Dam 2 (TM34, 35, 36), Saddle Dam 3 (TM37) and Saddle Dam 4 (TM31, 32, 33) indicate an increase in the height of the targets of between 2 mm and 12 mm. This is the second period where these targets have increased in height. This increase in elevation of the prisms is likely a function of the survey accuracy.
- Three of the prisms on Western Saddle Dam 1 (TM23, 24, 25) were not measured. The reading of TM 25 indicates a rise in elevation of 16 mm.
- The eastern end of the Main Embankment (TM12 TM15) has settled by approximately 35 to 50 mm. TM11, near the northern abutment had not changed since the last inspection.
- The central portion of the Main Embankment (TM16 TM18) has settled between 14 to 26 mm.

The monuments on the crest of the TSF embankments will be removed during Stage 3 construction works, planned for the second quarter of 2011.

It is proposed that new monuments will be installed on the raised embankment crests.

10 DISCUSSION AND RECOMMENDATIONS

10.1 Discussion

Management of the TSF continues to be carried out to a standard in accordance with the requirements of the Operations Manual. This has resulted in the TSF developing in accordance with the intent of the original design.

The action items identified below generally relate to ongoing maintenance issues and do not affect dam safety or environmental issues.

10.2 Recommendations

10.2.1 Structures

The issues identified during the audit relate to maintenance or monitoring.

10.2.1.1 Tailings Storage Facility

Diversion Channels 1 to 4

- The current routine inspection and monitoring programme should be continued.
- Vegetation, where it could potentially obstruct flow, should be removed.
- Erosion downstream of the channel should continue to be monitored.
- Cut slopes should continue to be monitored for stability for all channels.

Emergency Spillway

Monitor condition of spillway.

Eastern Saddle Dam

• The current routine inspection and monitoring programme should be continued.

Main Embankment

• The current routine inspection and monitoring programme should be continued.

Western Saddle Dam 1

- The current monitoring programme should be continued.
- The crest of the embankment should be lightly scarified (to a maximum depth of 300 mm), watered as required, graded and compacted. This is recommended that this work is performed prior to the 2010/2011 wet season (Note 1).
- Seepage at the east and west abutments of the stage 1 Bench should continue to be inspected. Observations should be made on daily basis as part of the shift inspection and should be limited to clarity of the seepage. An inspection of the seepage should be made as part of the weekly inspection. Clarity, flow (on a relative scale of low to high) and extent should be recorded.

Note 1: The recommended works were carried out in November 2010, prior to finalising this report.

Western Saddle Dam 2

The current routine inspection and monitoring programme should be continued.

Western Saddle Dam 3

The current routine inspection and monitoring programme should be continued.

Western Saddle Dam 4

The current routine inspection and monitoring programme should be continued.

10.2.1.2 Evaporation Dam

Dam A

- The current routine inspection and monitoring programme should be continued.
- The remaining vegetation on the downstream face should be removed.
- Seepage and salt staining at the downstream toe should be monitored.

Dam B

- The current routine inspection and monitoring programme should be continued.
- Vegetation (saplings) should be routinely managed.
- Salt staining and discolouration at the downstream toe should continue to be monitored. ATCW should be notified if seepage occurs.

Levee

- The current routine inspection and monitoring programme should be continued.
- Continue the ongoing vegetation management practices for this structure.
- The erosion gully downstream of the Levee should continue to be monitored.

Spillways 1 and 2

Continue with existing ongoing vegetation management, as required

10.2.2 Operations

Settlement monuments at Evaporation Dam A should be measured at nominally 6 monthly intervals to assess ongoing settlement.

11 CLOSURE

The 2010 annual audit indicates that the dam is being operated in a satisfactory manner. No observations were made that indicate potential instability of the structures.

The water level within the evaporation Pond was some 4.3 metres below the Design Storage Allowance as of 1 October 2010.

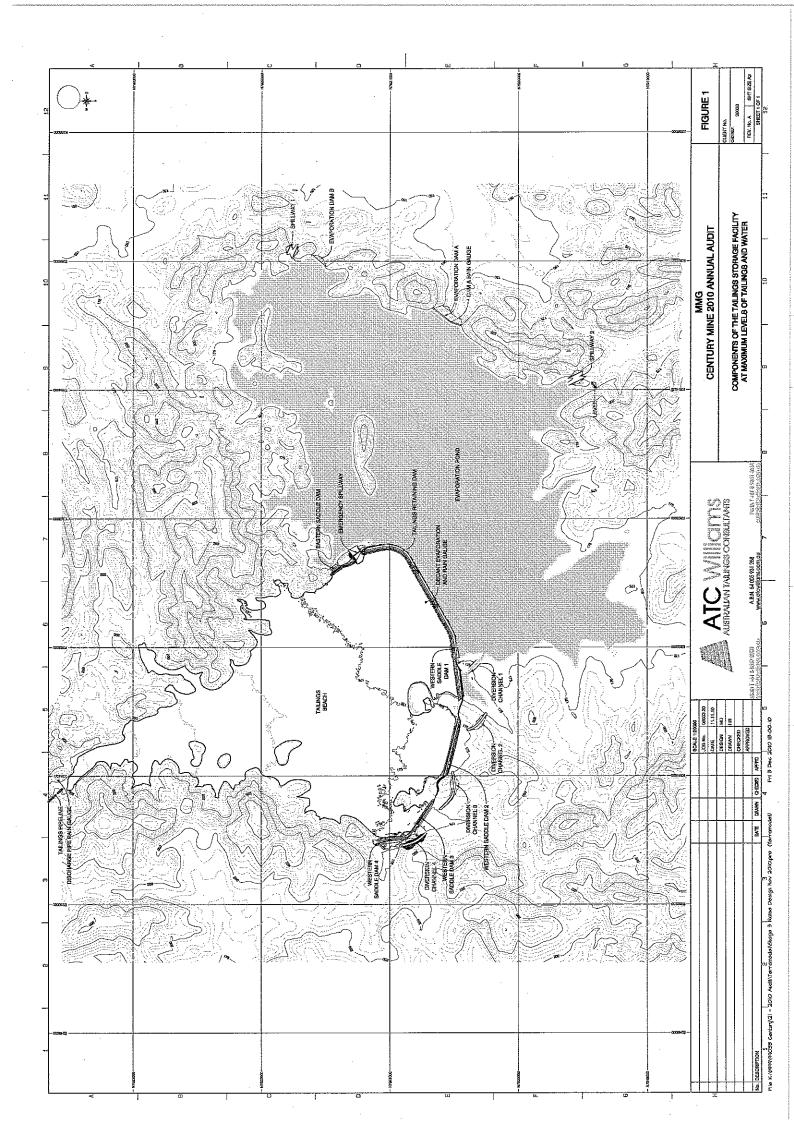
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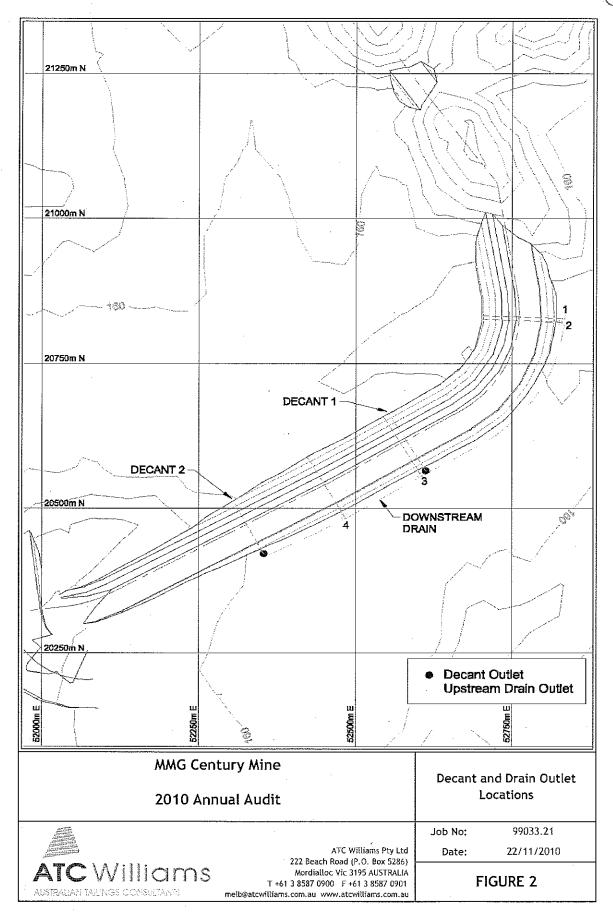
ATC WILLIAMS PTY LTD

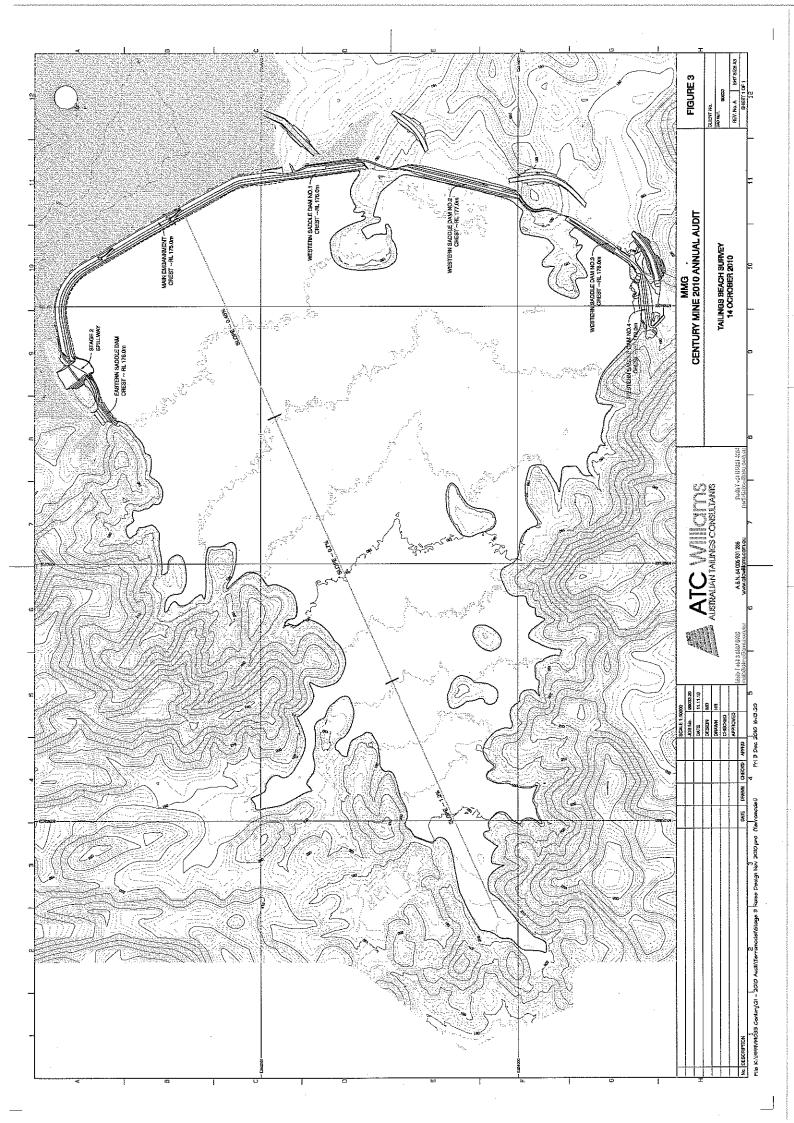
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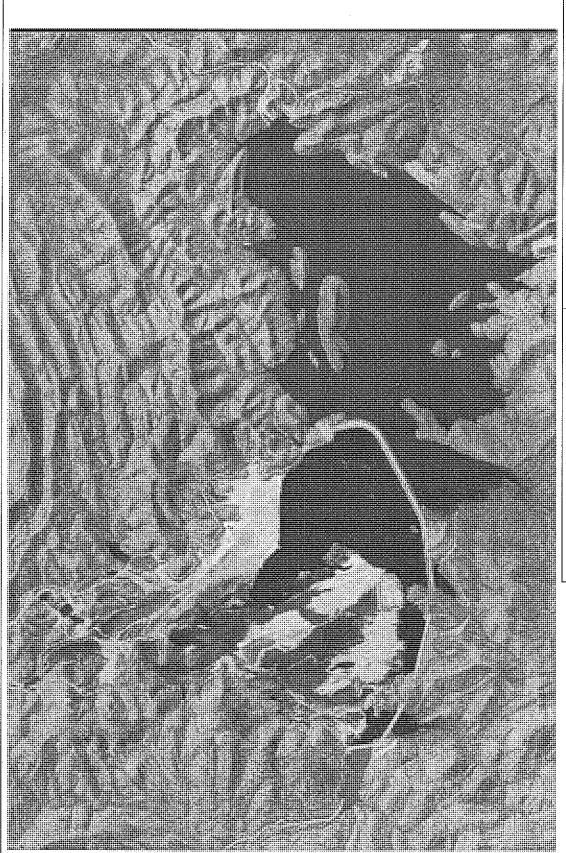
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MMG Century Mine 2010 Annual Audit

Satellite Image of the Tailings Storage Facility and Evaporation Pond June 2010

22/11/2010 Date:

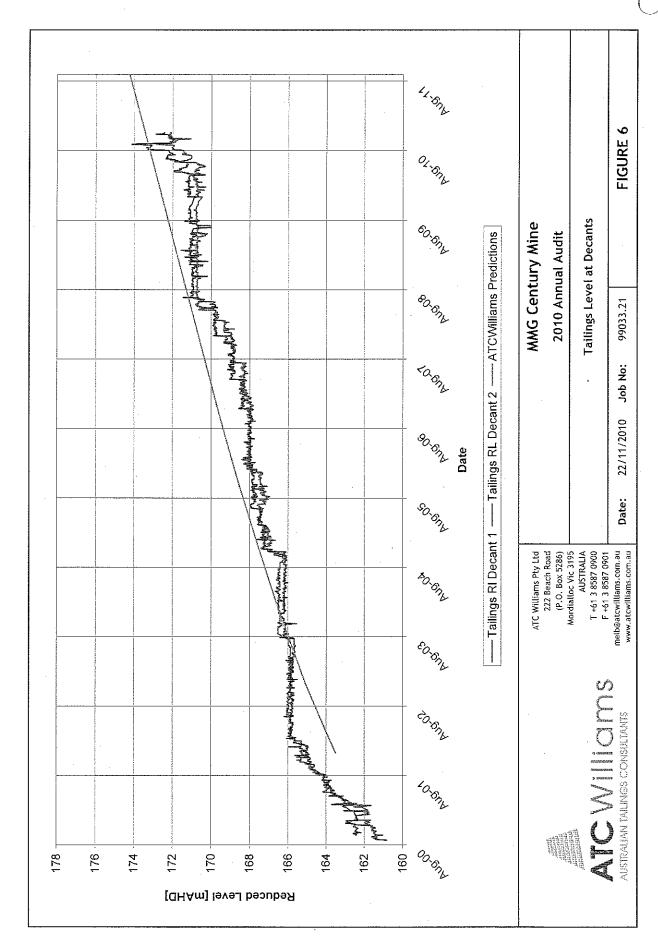
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ATC Williams Pty Ltd 222 Beach Road P. O. Box 2560 Mordialloc Vic 3195 AUSTRALA T +61 3 8587 0901 Pref1 2 8587 0901

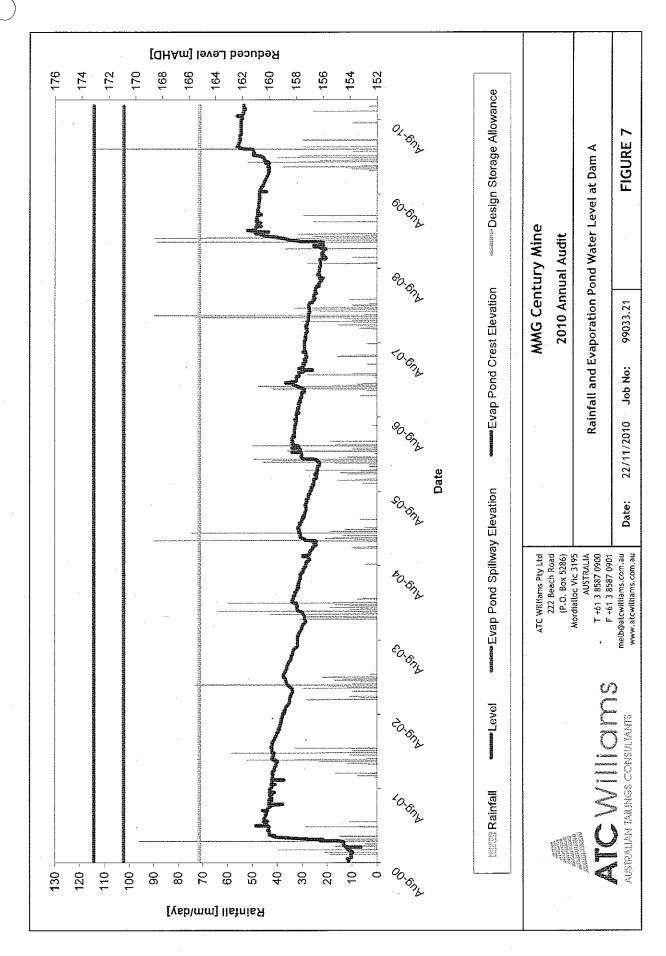
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FIGURE 4

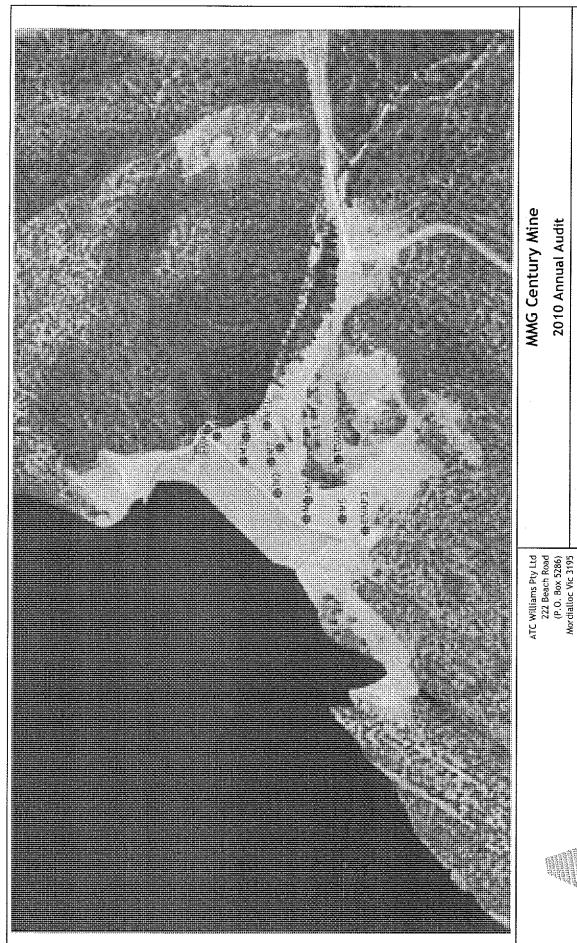
K:\1999\99033 Century\21 - 2010 Audit\Data and Calcs\MJD\Monitoring Data 2010 Audit.xis Figure 5



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MMG Century Mine

2010 Annual Audit

Settlement Monitoring Monument Locations - Evaporation Pond Dam A

22/11/2010 Date:

melb@atcwilliams.com.au www.atcwilliams.com.au

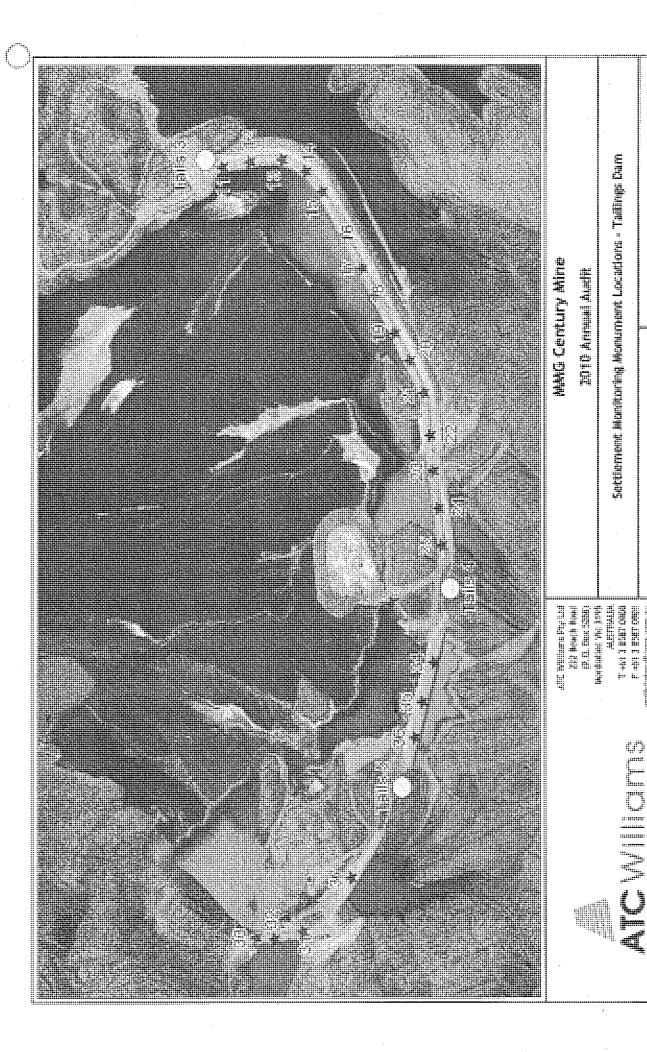
AUSTRALIA T +61 3 8587 0900 F +61 3 8587 0901

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FIGURE 8

PION SUPPLIANTS
AUSTRALIAN TAILINGS CONSULTANTS



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Pemi

S258 Environmental Protection Act 1994
Non-code compliant Environmental Authority (Mining Lease)

Permit¹ number:

MIN100737008

Takes Effect From: 30-JAN-09

Details

Permit Holder(s)

Name

Principal Holder

OZ Minerals Century Limited

Address

Level 29 Freshwater Place 2 Southbank Boulevard SOUTHBANK VIC 3006

Activity(s)
Mining Lease
Mining Lease

Location(s) ML90045 ML90058

This environmental authority is subject to the conditions set out in the attached schedules. The conditions of this environmental authority should be read in conjunction with the Environmental Management Plan for the OZ Minerals Century Mine Project, dated September 2008, addendum Environmental Management Plan for OZ Minerals Century Mine, dated April 2008 and the combined Environmental Management Overview Strategy and Plan of Operations dated 26 June 2007.

The anniversary date of the environmental authority is: 29-OCT

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



Delegate Environmental Protection Agency 30-01-09

¹ Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Environmental Protection Agency and the Queensland Parks and Wildlife Service



Schedule A - General

Financial Assurance

(A1-1) Provide a financial assurance in the amount and form required by the administering authority prior to the commencement of activities proposed under this environmental authority.

NOTE: The calculation of financial assurance for condition (A1-1) must be in accordance with Guideline 17 and may include a performance discount. The amount is defined as the maximum total rehabilitation cost for complete rehabilitation of all disturbed areas, which may vary on an annual basis due to progressive rehabilitation. The amount required for the financial assurance must be the highest Total Rehabilitation Cost calculated for any year of the Plan of Operations and calculated using the formula: (Financial assurance = Highest Total Annual Rehabilitation Cost x Percentage Required).

(A1-2) The financial assurance is to remain in force until the administering authority is satisfied that no claim on the assurance is likely.

NOTE: Where progressive rehabilitation is completed and acceptable to the administering authority, progressive reductions to the amount of financial assurance will be applicable where rehabilitation has been completed in accordance with the acceptance criteria defined within this environmental authority.

Maintenance of measures, plant and equipment

(A2-1) The environmental authority holder must ensure:

a) that all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority are installed; and

b) that such measures, plant and equipment are maintained in a proper condition; and

c) that such measures, plant and equipment are operated in a proper manner.

Monitoring

- (A3-1) Record, compile and keep for a minimum of five years all monitoring results required by this environmental authority and make available for inspection all or any of these records upon request by the administering authority.
- (A3-2) Where monitoring is a requirement of this environmental authority, ensure that a competent person(s) conducts all monitoring.

Storage and handling of flammable and combustible liquids

- (A4-1) Spillage of all flammable and combustible liquids must be contained within an on-site containment system and controlled in a manner that prevents environmental harm (other than trivial harm) and maintained in accordance with Section 5.9 of "AS 1940 Storage and Handling of Flammable and Combustible Liquids 1993".
- (A4-2) The on-site storage of corrosive liquids must be in accordance with Section 5.9 of "AS 3780 Storage and Handling of Corrosive Substances 1994".
- (A4-3) Chemical products may be received at the licensed place, provided that:
 - a) adequate storage space is not available at another facility that has been specifically licensed for that purpose;
 - b) the chemical products are stored in containers;
 - c) the containers have their closures securely fixed in a closed position at all times whilst on the licensed place; and
 - d) the containers are stored on a compacted hardstand area.

Permit

Permit number: MIN100737008

- (A4-4) When chemical product storage (in quantities constituting an environmentally relevant activity) is to be undertaken on the licensed place, fences, barriers or signage must be provided so as to:
 - a) clearly delineate the area designated for chemical storage on the licensed place; and
 - b) prevent the storage of materials other than containers of chemicals within the designated area.

Definitions

(A5-1) Words and phrases used throughout this environmental authority are defined in Attachment A - Definitions. Where a definition for a term used in this environmental authority is sought and the term is not defined within this environmental authority, the definitions in the *Environmental Protection Act* 1994, its Regulations and Environmental Protection Policies must be used.

Notification

- (A6-1) 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 environmental authority, the administering authority must be notified of the release by telephone and e-mail or facsimile.
- (A6-2) Notifications of emergencies or incidents as required by condition number (A6-1) must include but not be limited to the following:
 - (a) the holder of the environmental authority;
 - (b) the number of the environmental authority;
 - (c) the name and telephone number of the designated contact person;
 - (d) the location of the emergency or incident;
 - (e) the date and time of the release:
 - (f) the time the holder of the environmental authority holder became aware of the release;
 - (g) the estimated quantity and type of substance released;
 - (h) the suspected cause of the release;
 - (i) a description of the potential environmental risk;
 - (j) any sampling conducted or proposed relevant to the emergency or incident; and
 - (k) immediate actions taken to prevent any further release and mitigate any environmental harm caused by the release.
- (A6-3) As soon as practicable, but not more than six (6) weeks following the initial notification of an emergency or incident, written advice must be provided of the information supplied in accordance with condition number (A6-2) in addition to:
 - (a) results and interpretation of any samples taken and analysed;
 - (b) proposed actions to prevent a recurrence of the emergency or incident; and
 - (c) outcomes of actions taken at the time to prevent or minimise environmental narm.

Schedule B - Air

Dust nuisance

- (B1-1) Subject to Conditions (B1-2) and (B1-3) the release of dust or particulate matter or both resulting from the mining activity must not cause an environmental nuisance, at any sensitive place.
- (B1-2) When requested by the administering authority, dust and particulate monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive place, and the results must be notified to the administering authority within 14 days of their receipt by the environmental authority holder.

- (B1-3) If the environmental authority holder can provide evidence that the environmental authority holder is not exceeding the following limits then the holder is not in breach of (B1-1):
 - a) dust deposition of 120 milligrams per square metre per day, averaged over one month, when monitored in accordance with "AS 3580.10.1 Methods for Sampling and Analysis of Ambient Air Determination of Particulates Deposited Matter Gravimetric Method" of 1991; and
 - b) a concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (µm) (PM10) suspended in the atmosphere of 150 micrograms per cubic metre over a 24 hour averaging time, at a sensitive place downwind of the operational land, when monitored in accordance with:
 - particulate matter "Determination of Suspended Particulate PM10 High-Volume Sampler With Size-Selective Inlet Gravimetric Method, When Monitored in Accordance with AS 3580.9.6 Methods for Sampling and Analysis of Ambient Air Determination of Suspended Particulate Matter PM (sub) 10 High-Volume Sampler With Size-Selective Inlet Gravimetric Method" of 1990; or
 - Any alternative method of sampling PM10, which may be permitted by the "Air Quality Sampling Manual" as published from time to time by the administering authority.
- (B1-4) If monitoring indicates exceedance of the relevant limits in Condition (B1-3), by the environmental authority holder then the environmental authority holder must:
 - a) address the complaint including the use of appropriate dispute resolution if required; or
 - b) immediately implement dust abatement measures so that emissions of dust from the activity do not result in further environmental nuisance.

Odour nuisance

- (B2-1) Subject to condition (B2-2), the release of noxious or offensive odour(s) or any other noxious or offensive airborne contaminant(s) resulting from the mining activity must not cause an environmental nuisance at any sensitive place.
- (B2-2) When requested by the administering authority, odour monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive place, and the results must be notified to the administering authority within 14 days of their receipt by the environmental authority holder.
- (B2-3) If monitoring indicates Condition (B2-1) is not being met by the environmental authority holder then the environmental authority holder must:
 - a) address the complaint including the use of appropriate dispute resolution if required; or
 - b) immediately implement odour abatement measures so that emissions of odour from the activity do not result in further environmental nuisance.

Point source release of contaminants to the atmosphere

- (B3-1) Contaminants must not be released to the atmosphere from a release point shown in Schedule B Table 1 other than:
 - a) in accordance with the criteria shown in Schedule B Table 1; and
 - b) directed vertically upwards, with no impedance.

Schedule B - Table 1 (Release of contaminants)

Release Point	Minimum release height (m)	Minimum Velocity (m/s)	Contaminant released	Maximu m release limit (grams/ min)	Sampling frequency
MINE SITE			Nitrogen Dioxide	380	Once during
Diesel Generator (1a) Diesel Congretor (2a)			Hydrocarbons	52	any 12 month period for any generator that has operated
Generator (2a) Diesel Generator (3a) Diesel Generator (4a)	7.8	35	Carbon Monoxide	7.5	for a continuous period in excess of 7 days during that
Diesel Generator (5a)			Total Suspended Particulates	3.5	12 month period.

- (B3-2) When requested by the administering authority, monitoring of contaminant releases to the atmosphere must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint of air contamination (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) and the results must be notified to the administering authority within 14 days of their receipt by the environmental authority holder.
- (B3-3) If the environmental authority holder can provide evidence that the environmental authority holder is not exceeding the limits in Schedule B Table 1 then the holder is not in breach of (B3-1).

 Monitoring must include:
 - a) monitoring provisions for the release points listed in Schedule B Table 1 must comply with "AS 4323.1 Stationary Source Emissions Method 1: Selection of Sampling Positions" of 1995;
 - b) the following tests must be performed for each required determination specified in Schedule B Table 1:
 - gas velocity and volume flow rate; and
 - temperature; and
 - water vapour concentration (moisture content);
 - c) any sampling of contaminants released to the atmosphere must be representative of the emissions; and
 - d) during the sampling period the following additional information must be gathered:
 - relevant process rate at the time of sampling; and
 - operating or mixing temperature of contaminant releases; and
 - reference to the actual test methods and accuracies.

Fugitive Dust

(B3-4) At all times when concentrate slurry is deposited in the concentrate recovery facility a water cover must be maintained to minimise airborne emissions.

Schedule C - Water

Release to waters

(C1-1) Receiving waters affected by the release of process water and / or stormwater contaminated by the mining activities must be monitored at the locations and frequencies defined in Schedule C - Table 1 and Schedule I - Map 1 and comply with the contaminant limits defined in Schedule C - Table 2 when analysed by an independent laboratory in accordance with protocols established by a "recognised entity" as defined by the Queensland Environmental Protection Agency.

Schedule C - Table 1 (Receiving water monitoring locations and frequency)

Monitoring point	Easting (AMG)	Northing (AMG)	Monitoring frequency
Page Creek P SW03 REC	54K 246 584	7 929 930	Per discharge event
Mitton Creek NM SW04_REC	54K 252 850	7 927 620	Per discharge event
Little Archie Creek A_SW01_REC	54K 248 540	7 930 830	Per discharge event
Bull Ridge Creek* B_SW01_REC	54K 242 742	7 934 415	Per discharge event
Coglan Creek C SW08 REC	54K 259 977	7 922 944	Per discharge event

NOTE: This does not apply to dams containing hazardous waste.

NOTE: The monitoring locations are +/- 20 metres.

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Schedule C - Table 2 (Receiving water contaminant limits)

Parameter	Units	Release Limit	Limit Type
рН	pH units	6.0 - 9.0	Range
Total Suspended Solids	mg/L	Not > 10% of background (at the time of sampling)	80 th Percentile
Electrical Conductivity	mS/cm	≤1	80 th Percentile
Electrical Conductivity	mS/cm	1.5	Maximum
Oils and Greases	mg/L	≤ 10	80 th Percentile
Oils and Greases	mg/L	20	Maximum
Dissolved SO₄	mg/L	≤ 500	80 th Percentile
Dissolved SO₄	mg/L	800	Maximum
Total Arsenic	mg/L	≤ 0.03	80 th Percentile
Total Arsenic	mg/L	0.05	Maximum
Total Cadmium	mg/L	≤ 0.04	80 th Percentile
Total Cadmium	mg/L	0.08	Maximum
Total Lead	mg/L	≤ 1.0	80 th Percentile
Total Lead	mg/L	1.5	Maximum
Total Zinc	mg/L	≤ 35	80 th Percentile
Total Zinc	mg/L	50	Maximum
Total Magnesium	Ca / Mg ratio		
Total Magnesium			
Cyanide (WAD)	mg/L	≤ 0.08	80 th Percentile
Cyanide (WAD)	mg/L	0.1	Maximum

NOTE: This does not apply to dams containing hazardous waste.

NOTE: The environmental authority holder to demonstrate background for Total Suspended Solids by at least three measurements from undisturbed drainage systems within 5km of monitoring site taken at similar time.

NOTE: 80th Percentile means that not more than two (2) of the measured values of the quality characteristics is to exceed the stated release limits for any ten (10) consecutive samples.

NOTE: The parameters are to be reviewed on a five yearly basis to determine the appropriateness of the monitoring and whether additional parameters should be included or existing parameters should be removed.

(C1-2) The environmental authority holder must investigate and report on the environmental effects including toxicity of magnesium in Page Creek and Bull Ridge Creek catchments to determine an appropriate trigger level for magnesium. This report, with recommendations and justifications, must be submitted to the administering authority by 31 October 2008.

(C1-3) End of pipe release limits (excluding wet weather spillway releases) for process water and storm water contaminated by mining activities must be monitored at the locations and frequencies defined in Schedule C - Table 3 and Schedule I - Map 2 and comply with the contaminant limits defined in Schedule C - Table 4 when analysed by an independent laboratory in accordance with protocols established by a "recognised entity" as defined by the Queensland Environmental Protection Agency.

Schedule C - Table 3 (End of pipe monitoring locations and frequency)

Monitoring point	Latitude (AMG)	Longitude (AMG)	Monitoring frequency
MSP1	54K 250 185	7 927 060	Per discharge event
MSP3	54K 246 660	7 926 555	Per discharge event
MSP5	54K 246 869	7 929 060	Per discharge event
MSP6	54K 248 655	7 930 720	Per discharge event
MSP8*	54K 246 099	7 928 631	Per discharge event
MSP9* (interim)	54K 245 326	7 929 194	Per discharge event
MSP9 [†] (final)	54K 244 814	7 929 730	Per discharge event
Coglan Creek	To be provided	To be provided	Per discharge event

NOTE: This does not apply to dams containing hazardous waste.

NOTE: The monitoring locations are +/- 20 metres.

MSP8 and MSP9 (interim) are proposed sedimentation dams to be constructed if the Western Waste Rock Dump is constructed. Actual co-ordinates will be provided to the Environmental Protection Agency, upon establishing monitoring location.

* MSP9 (final) is planned to replace MSP9 (interim) in 2007 if the proposed Western Waste Rock Dump is constructed and then expanded. Depending on haulage requirements, MSP9 (final) could be built in 2003, thereby making MSP9 (interim) redundant.

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Schedule C - Table 4 (End of pipe contaminant release limits)

Parameter		Release Limit	Limit Type
pН	pH units	6.0 - 9.0	Range
BOD₅	mg/L	20	Maximum
Total Nitrogen	mg/L	20	Maximum
Total Phosphorus	mg/L	5	Maximum
Oils and Greases	mg/L	20	Maximum
Dissolved SO₄	mg/L	1000	Maximum
Total Arsenic	mg/L	0.1	Maximum
Total Cadmium	mg/L	0.01	Maximum
Total Lead	mg/L	0.1	Maximum
Total Zinc	mg/L	40	Maximum

NOTE: This does not apply to dams containing hazardous waste.

- If the environmental authority holder can provide evidence that the environmental authority holder is (C1-4)not causing an exceedance to the limits specified in Schedule C - Table 2 then the holder is not in breach of conditions (C1-1) and (C1-3).
- (C1-5)In periods of wet weather or following wet weather when a release occurs from the monitoring locations defined in Schedule C - Table 3, then compliance will be assessed against limits specified in condition (C1-1).
- (C1-6)The design storage allowance on 1 November of each year for any dam containing hazardous waste constructed or operated within the operational land must comply with Schedule C - Table 5.

Schedule C - Table 5 (Storage design for dams containing hazardous waste)

Storage Type	Design Storage Allowance ⁽⁵⁾	Spillway Critical Design Storm	Mandatory Reporting Level
Process Water Dam		1:100 Year ARI	50mm below spillway RL
Evaporation Dam	1:100 ARI 2 month wet season plus process inputs for the 2 month wet season	1: 10 000 ARI	168.8M (RL)
Tailings Storage Facility (TSF)		1: 10,000 ARI	N/A

NOTE:

ARI means annual recurrence interval.

NOTE (5)

The design storage allowance on 1 November of each year for any dam containing hazardous waste constructed within the operational land must be equivalent to the run-off from the critical wet period plus process inputs for period. Process inputs refers to hazardous mineral process waste and water, which is being disposed of in the storage facility.

NOTE (6):

The critical design storm has a duration that produces the peak discharge for the catchments.

NOTE (7):

If the MRL is exceeded the administering authority must be notified within 24 hours.

- (C1-7) The spillway for any dam containing hazardous waste, constructed or operated within the operational land must be designed and maintained to withstand the peak flow from the spillway critical design storm defined in Schedule C Table 5.
- (C1-8) The holder of the environmental authority must mark the mandatory reporting level defined in Schedule C Table 5 on the spillway of all dams containing hazardous waste within the operational land.
- (C1-9) The holder of the environmental authority must notify the administering authority when the pondage level of the dam containing hazardous waste, reaches the mandatory reporting level defined in Schedule C Table 5.

Tailings Storage Facility

(C2-1) The holder of this environmental authority is responsible for the making of determination and keeping of records of the Tailings Storage Facility water quality characteristics at the frequency and location specified in Schedule C - Table 6 of the environmental authority.

Schedule C - Table 6 (Tailings Storage Facility Contaminant Monitoring Requirement)

Quality Characteristic Determination	Tailings Dam Decant and Evaporation Dam	Tailings Discharge Pipe
pH (pH Units)	Monthly	Monthly
Total Dissolved Solids (mg/L)	Monthly	Monthly
Total Suspended Solids (mg/L)	Monthly	Not Applicable
Electrical Conductivity (mS/cm)	Monthly	Monthly
Total Zinc (mg/L)	Monthly	Monthly
Total Cadmium (mg/L)	Monthly	Monthly
Total Lead (mg/L)	Monthly	Monthly
Turbidity (NTU)	Monthly	Not Applicable
SO₄(mg/L)	Monthly	Monthly
Total Hydrocarbons (mg/L)	Monthly	Monthly

- (C2-2) The monthly quantity of contaminants released to the tailings storage facility will be determined by the holder of this environmental authority utilising a flow meter installed in the tailings discharge pipe.
- (C2-3) The monthly quantity of contaminants released to the evaporation pond will be determined by the holder of this environmental authority utilising calculations based on the height of water over the decant structure and estimates of inputs from other sources.
- (C2-4) The water level in the tailings dam and evaporation pond must be monitored and recorded weekly.

Stream sediment contaminant levels

(C3-1) All reasonable and practicable erosion protection measures and sediment control measures must be implemented and maintained to minimise erosion and the release of sediment.

(C3-2) The environmental authority holder must investigate and develop stream sediment concentration trigger values for mine site receiving waters by 31 October 2008.

Sewage effluent

(C4-1) All effluent released to the Darimah Village sewage treatment plant evaporation pond or the West Go Line Sewage Treatment Plant, must be monitored at the frequency and for the parameters specified in Schedule C - Table 7.

Schedule C - Table 7 (Sewage effluent quality targets for dust suppression and irrigation)

Parameter	limit	Units	Limit type	Monitoring frequency
Total suspended solids	30	mg/l	4 out of 5 consecutive samples.	Six monthly
	50	1779	Maximum	,
Biological oxygen demand	20	mg/l	4 out of 5 consecutive samples.	Six monthly
3 73	30		Maximum	
pH between	6.5 8.5	pH unit	Range	Monthly
Faecal coliforms	1000 4000	CFU/100	Median ¹ Maximum	Quarterly
Free residual chlorine level	0.2 0.7	mg/L	Range	Monthly

Median of at least 5 but no more than 10 consecutive samples

- (C4-2) Sewage effluent used for dust suppression or irrigation must not exceed sewage effluent release limits defined in Schedule C Table 7.
- (C4-3) Sewage effluent used for dust suppression or irrigation must not cause spray drift or over spray to any sensitive or commercial place.
- (C4-4) Subject to Conditions (C4-1) to (C4-3) inclusive, sewage effluent from sewage treatment facilities must be reused or evaporated and must not be directly released from the sewage treatment plant to any water way or drainage line other than in accordance with condition (C4-5).
- (C4-5) In periods of wet weather or following wet weather, when no further irrigation of effluent is reasonably practicable and when effluent storage ponds are full, the release of effluent to waters is permitted from the release point(s) defined in Schedule I Map 3 and in accordance with the release limits in Schedule C Table 8 when analysed by an independent laboratory in accordance with protocols established by a "recognised entity" as defined by the Queensland Environmental Protection Agency.

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Schedule C - Table 8 (Darimah Village Sewage effluent pond discharge quality targets)

Quality characteristics	Release limit	Units	Limit type	Monitoring frequency
рН	6.0 - 9.0		Range	Per Discharge Event
BOD₅	20	mg/L	80 th Percentile	Per Discharge Event
BOD₅	- 60	mg/L	Maximum	Per Discharge Event
Total Suspended solids	30	mg/L	80 th Percentile	Per Discharge Event
Total Suspended solids	60	mg/L	Maximum	Per Discharge Event
Dissolved Oxygen	>2	mg/L	Maximum	Per Discharge Event
Free Chlorine Residual	1.0	mg/L	Maximum	Per Discharge Event
Faecal Coliforms, based on a minimum of five samples collected	1000	Colonies per 100 millilitres	Median	Per Dis c harge Event
Nitrogen	15	mg/L	Maximum	Per Discharge Event
Phosphorous	5	mg/L	Maximum	Per Discharge Event

NOTE: 80th Percentile means that not more than two (2) measured values of the quality characteristic are to exceed the stated release limit for any ten (10) consecutive samples.

Groundwater

Groundwater affected by the mining activities must be monitored at the locations and frequencies (C5-1) defined in Schedule C - Table 9 and Schedule I - Map 4 and analysed for the parameters defined in Schedule C - Table 9 by an independent laboratory in accordance with protocols established by a "recognised entity" as defined by the Queensland Environmental Protection Agency.

Schedule C - Table 9 (Groundwater monitoring locations and frequency)

Monitoring point	Latitude	Longitude	Surface RL (m)	Monitoring frequency
CCK_GW01	250092	7925320	169.34	Quarterly
CCK_GW09	255673	7920460	142.07	Quarterly
BRCK_GW01	245363	7930018	134.42	Quarterly
NMCK_GW06	250323	7926551	152.73	Quarterly
PCK_GW15	247130	7926407	. 143.74	Quarterly
LAC_GW03	248851	7929667	149.22	Quarterly
PCK_GW23	248663	7927347	170.80	Quarterly

NOTE: The monitoring locations are +/- 20 metres.

Schedule C - Table 10 (Groundwater Monitoring Parameters)

Parameter	Units
Water Level	m
рН	pH units
Electrical Conductivity	mS/cm ⁻
Dissolved SO₄	mg/L
Total Cadmium	mg/L
Total Arsenic	mg/L
Total Lead	mg/L
Total Zinc	mg/L

Schedule C - Table 11 (Groundwater contaminant trigger levels)

Parameter	Units	Limit type	Contaminant trigger levels
Water Level	m	Range	>1.0m above local piezometric surface
pН	pH units	Range	0.5m outside natural range for that bore
Electrical Conductivity	mS/cm	Range	>1,000 above natural range for that bore
Dissolved SO ₄	mg/L	80 th Percentile	<=500 (in limestone)
Dissolved SO₄	mg/L	80 th Percentile	<=4000 in Proterozoic shale)
Total Cadmium	mg/L	80 th Percentile	<=0.03
Total Arsenic	mg/L	80 th Percentile	<=0.04
Total Lead	mg/L	80 th Percentile	<=1.0
Total Zinc	mg/L	80 th Percentile	<=35

- (C5-2) Subject to Condition (C5-1), if the groundwater contaminant trigger levels defined in Schedule C Table 11 are exceeded then the environmental authority holder must complete an investigation into the potential for environmental harm and notify the administering authority within 3 months of receiving the analysis results.
- (C5-3) Subject to Condition (C5-1), groundwater contaminant limits must not exceed the contaminant limits defined in Schedule C -Table 12.

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Schedule C - Table 12 (Groundwater contaminant limits)

Parameter	Units	Minimum	Maximum
Water Level	m	<2.0m below local piezometric surface and not a result of dewatering	>2.0m above local piezometric surface
рН	pH units	6.0	9.0
Electrical Conductivity	mS/cm	NA	>1500 above background for each individual bore
Dissolved SO₄	mg/L	NA	800 (In Cambrian Limestone)
Dissolved SO ₄	mg/L	NA	6000 (In Proterozoic)
Total Cadmium	mg/L	NA	0.08
Total Arsenic	mg/L	NA	0.05
Total Lead	mg/L	NA	1.5
Total Zinc	mg/L	NA	50

(C5-4) The method of water sampling required by this environmental authority must comply with that set out in the latest edition of the Environmental Protection Agency's "Water Quality Sampling Manual".

Concentrate Recovery Facility

(C6-1) The only authorised release from the concentrate recovery facility will be through pipework to an existing concentrate floor spillage bund at the process plant during an emergency event.

Schedule D - Noise and vibration

Noise nuisance

- (D1-1) Subject to Conditions (D1-2) and (D1-3) noise from the mining activity must not cause an environmental nuisance, at any sensitive place.
- (D1-2) When requested by the administering authority, noise monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint (which is neither frivolous nor vexatious nor based on mistaken belief in the opinion of the authorised officer) of environmental nuisance at any sensitive or commercial place, and the results must be notified to the administering authority within 14 days of their receipt by the environmental authority holder.
- (D1-3) If the environmental authority holder can provide evidence through monitoring that the limits defined in Schedule D Table 1 are not being exceeded by the environmental authority holder then the holder is not in breach of Condition (D1-1). Monitoring must include:



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- a) L_{A, max adj, T}; and
 b) the level and frequency of occurrence of impulsive or tonal noise; and
 c) atmospheric conditions including wind speed and direction; and
- d) location, date and time of recording.

- (D1-4) If monitoring indicates exceedence of the limits in Schedule D Table 1, by the environmental authority holder then the environmental authority holder must:
 - a) address the complaint including the use of appropriate dispute resolution if required; or
 - b) immediately implement noise abatement measures so that emissions of noise from the activity do not result in further environmental nuisance.
- (D1-5) The method of measurement and reporting of noise levels must comply with the latest edition of the Environmental Protection Agency's "Noise Measurement Manual".

Schedule D - Table 1 (Noise limits)

Noise level	Monday to Saturday		Monday to Saturday Sundays and pub		s and public ho	blic holidays
dB(A) measured as	7am - 6pm	6pm - 10pm	10pm - 7am	9am - 6pm	6pm - 10pm	10pm - 9am
		Noise r	neasured at a 'N	loise sensitive	place'	
L _{A10} , adj, 10 mins	b/g+5	b/g+5	b/g+5	b/g+5	b/g+5	b/g+5
L _{A1} , adj, 10 mins	b/g+10	b/g+10	b/g+5	b/g+10	b/g+10	b/g+5
		Noise	measured at a	'Commercial p	lace!	
L _{A10} , adj, 10 mins	b/g+10	b/g+10	b/g+5	b/g+10	b/g+10	b/g+5
L _{A1} , adj, 10 mins	b/g+15	b/g+15	b/g+10	b/g+15	b/g+15	b/g+10

Note: The method of measurement and reporting of noise levels must comply with the latest edition of the Environmental Protection Agency's "Noise Measurement Manual".

Schedule E - Waste

Storage of tyres

- (E1-1) Tyres stored awaiting disposal or transport for take-back and, recycling, or waste-to-energy options should be stockpiled in volumes less than 3m in height and 200m² in area and at least 10m from any other tyre storage area.
- (E1-2) All reasonable and practicable fire prevention measures must be implemented, including removal of grass and other materials within a 10m radius of the scrap tyre storage area.

Disposal of tyres

- (E2-1) Disposing of scrap tyres resulting from the mining activities in spoil emplacements is acceptable, provided tyres are placed as deep in the spoil as reasonably practicable.
- (E2-2) Scrap tyres resulting from the mining activities disposed within the operational land must not impede saturated aquifers or compromise the stability of the consolidated landform.

Regulated Waste Landfill Site

(E3-1) Regulated waste authorised for disposal on site will be disposed of only at the locations shown in Maps 5 and 6.

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- (E3-2) The regulated waste licensed for disposal at the landfill site marked 'Landfill' on Map 5 shall be limited to:
 - a) copper sulfate and zinc oxide bags;
 - b) xanthate bulk bags;
 - c) empty acid containers;
 - d) empty detergent / sanitiser containers;
 - e) grease trap residues;
 - f) empty solvent containers;
 - g) paint tins:
 - containers which have contained caustic solutions, laboratory solutions, oxidising agents, reducing agents, resins, pesticides or herbicides, alkalis, surfactants and aerosol lubricants;
 - i) sediments from vehicle wash down bays;
 - j) lime sludges;
 - k) rubber and synthetic polymer liners and other miscellaneous rubber and synthetic polymer products excluding tyres; and
 - any other waste for which written agreement for disposal had been obtained from the administering authority.

Regulated Waste Rock Dump

- (E4-1) The regulated waste licensed for disposal in the Waste Rock Dumps as defined in Map 6 shall be limited to:
 - a) truck tyres;
 - b) waste rock contaminated by hydrocarbon spills;
 - c) lime grit;
 - d) mill scats;
 - e) empty xanthate boxes
 - f) regulated wastes generated at the Port Site de-watering facility including activated carbon, filter cloths, and contaminated materials; and
 - g) any other waste for which written agreement for disposal has been obtained from the administering authority.

Regulated Waste Tailings Storage Facility

- (E5-1) The defined tailings release point is:
 - a) T1 as described on Map 6 and / or
 - b) The release point nominated by the environmental authority holder and approved in writing by the administering authority.
- (E5-2) The regulated waste licensed for disposal in the Tailings Storage Facility marked as 'Tailings Dam' on Map 6 shall be limited to:
 - a) tailings from the mineral processing operation originating from activities located on ML 90045 and ML 90058;
 - sewage treatment plant effluent and sludges originating from activities located on ML 90045 and ML 90058;
 - water from workshops which has passed through the relevant pollution control equipment located at the relevant workshop and originating from activities located on ML 90045 and ML 90058;
 - d) vehicle wash down waters which have passed through the relevant pollution control equipment installed at vehicle wash down locations and originating from activities located on ML 90045 and ML 90058;
 - e) work shop wash down waters which have passed through the relevant pollution control equipment installed at the relevant workshop locations and originating from activities located on ML 90045 and ML 90058;
 - regulated wastes generated at the Port Site de-watering facility including activated carbon, filter cloths, and contaminated materials and soils;
 - g) sludges from vehicle wash down areas originating from activities located on ML 90045 and



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ML 90058;

- h) neutralised laboratory waste originating from activities located on ML 90045 and ML 90058;
- i) concentrate spillage and associated regulated wastes originating from activities located on ML 90045 and ML 90058, the pipeline to Karumba or the Karumba de-watering facility.
- Any other waste for which written agreement for disposal has been obtained from the administering authority.
- (E5-3) Where regulated waste is removed from the site (other than by a release as permitted under another schedule of this environmental authority), records must be kept of the following:
 - a) the date, quantity and type of waste removed, and
 - b) name of the waste transporter that removed the waste; and
 - c) the intended treatment / disposal destination of the waste.

Note: Records of documents maintained in compliance with a waste tracking system established under the *Environmental Protection (Waste Management) Regulation 2000* or any other law for regulated waste will be deemed to satisfy this condition.

(E5-4) Unless otherwise in accordance with environmental authority conditions, all off-site movement of regulated wastes must be conducted by a licensed regulated waste transporter.

Schedule F - Land

Rehabilitation landform criteria

(F1-1) On application of surrender or partial surrender of the environmental authority all areas significantly disturbed by mining activities must be rehabilitated to a stable landform with a self-sustaining vegetation cover in accordance with Schedule F - Table 1 and other tables.



Schedule F - Table 1 (Final Land Use and Rehabilitation Approval Schedule)

	Disturbance type				
	Residual Void(s)	Tallings dam(s)	Waste rock dump(s) including ROM	Infrastructure and camp(s)	Road(s) and track(s)
Tenure ID	ML90045 ML90058	ML90045 ML90058	ML90045 ML90058	ML90045 ML90058	ML90045 ML90058
Projective surface area (ha)	300	1000	1500	250	160
Map reference (refer schedule I)	Map 7	Мар 7	Map 7	Map 7	Мар 7
Post mine land description	Steep sheer rock faces with narrow benches as well as more moderate slopes with limestone rock armouring.	Native ecosystem. Developed on flat to steep slopes.	Native ecosystem. Generally flat with steeper sides.	Gently undulating poor quality grazing land based in native vegetation.	Native ecosystem. Developed on flat to steep slopes.
Post mine land capability classification	5	4, 5	4, 5	3, 4, 5	3, 4, 5
Projective cover range (%)	0-10%	5-30%	5-30%	20-80%	20-80%
Slope Range (%)	0-Vertical	0-60%	0-60%	0-40%	0-40%
Species mix	1-40% tree Eucalyptus terminalis 5-40% Enneapogon sp.	1-10% tree Eucalyptus leucophloia 5-20% grass Triodia pungens	1-10% tree Eucalyptus terminalis 10-40% Enneapogon sp.	1-10% tree Eucalyptus leucophloia 5-50% Enneapogon sp.	1-10% tree Eucalyptus leucophloia 5-20% grass Enneapogon sp.

- Progressive rehabilitation must be conducted in accordance with the most recent version of (F1-2)Guideline 18, as produced from time to time by the Environmental Protection Agency.
- The environmental authority holder must submit sustainability success and criteria for rehabilitation (F1-3)by 31 October 2008.
- Progressive rehabilitation must commence when areas become available within the operational (F1-4)land.

Residual void outcome

(F2-1)Residual voids must comply with the following outcomes: residual voids must not cause any serious environmental harm to land, surface waters or any recognised groundwater aquifer, other than the environmental harm constituted by the existence of the residual void itself and subject to any other condition within this environmental authority; and

b) residual voids must comply with Schedule F - Table 2.

Schedule F - Table 2 (Residual void design)

Void Identification	Void wall - competent rock max slope (%)	Void wall - incompetent rock max slope (%)	Void maximum surface area (ha)
Pit	58%	48%	300

Dams containing hazardous waste

(F3-1) The construction or operation of any dam containing hazardous waste within the operational land must comply with Schedule F - Table 3.

Schedule F - Table 3 (Size and purpose of dams containing hazardous waste)

Name of dam containing hazardous waste	Maximum surface area of dam (ha)	Maximum volume of dam (GL)	Maximum depth of dam (m) (2)	Purpose of dam
Process water dam	0.6	0.013	4	"The containment of process water used in the extraction of zinc and lead at the Century mine"
Tailings Storage Facility (TSF)	1000	140	35	"The containment of tailings resulting from the extraction of zinc and lead at the Century mine"
Evaporation Dam				

Note (1): The name of the dam containing hazardous waste should refer to the name of the dam e.g. process residue facility and decant dam.

Note (2). For dams, which do not require a dam wall, input the maximum void depth e.g. where dams are formed by excavating below the land surface or backfilling a residual void.

Note ⁽³⁾: Purpose of the dam should outline the designed function, e.g. "the permanent containment of tailings resulting from the extraction of nickel, **c**obalt and other metals at the XYZ Refinery".

(F3-2) Any dam containing hazardous waste constructed or operated within the operational land must be located within the areas defined in Schedule F - Table 4.

Permit number: MIN100737008

Schedule F - Table 4 Location of dams containing hazardous waste

hedule F - Table 4 Location of Name of dam containing hazardous	Easting	Northing
waste (1)	(AMG)	(AMG)
	249145	7926752
	249127	7926847
Process water dam	249111	7926845
Process water dam	249106	7926871
	249044	7926861
	249069	7926739
Tailings Storage Facility	252042.8	7922051
(TSF)1	252397.4	7922217
	252440.1	7921750
	252826	7921063
	252464.1	7920666
	251754.7	7920416
•	251171.6	7920520
	250532.1	7920824
	250500.5	7921109
	250688.8	7921297
•	250621	7921616
•	250994.5	7922077
·	250980.3	7922642
	251079.6	7922785
	250916.8	7923030
	251098.2	7923219
	250948.9	7923479
•	251324.4	7923514
	251558.5	7923599
	251807.1	7923483
	251657.8	7923184
	252181.3	7922994

251871	7922710
251714.5	7922418

NOTE (1): The Tailings Storage Facility includes the lead concentrate storage dams.

- (F3-3) The holder of the environmental authority must design, construct and operate all high-hazard dams containing hazardous waste in accordance with the "Code of Environmental Compliance for High Hazard Dams Containing Hazardous Waste".
- (F3-4) The holder of the environmental authority must design, construct and operate all low-hazard dams containing hazardous waste and non-hazardous dams in accordance with the criteria outlined in Appendix B of the "Code of Environmental Compliance for Mining Activities".

Inspection of Dams

- (F4-1) High-hazard dams containing hazardous waste shall be inspected by a Registered Professional Engineer Queensland (RPEQ) prior to **1 November** each year or at any time if alarming, unusual or otherwise unsatisfactory conditions are observed.
- (F4-2) For each inspection, the engineer shall assess the condition of the dam and its foundations, determine the hydraulic adequacy of the dam and assess the adequacy of the works with respect to dam safety.
- (F4-3) For each inspection, two copies of the engineer's report and any recommendations as to measures to be taken to ensure the integrity of the dam shall be furnished to the administering authority within 28 days of receipt of the report.

Decommissioning of Dam - Objective

- (F5-1) Dams containing hazardous waste as defined in Schedule F Table 4, other than the structure mentioned in condition F5-2, must not be abandoned and must be decommissioned to a situation where water can no longer be stored in the dams. The dams and their contained waste(s) must be stable, whereafter the dams are no longer dams and they become landforms on the operational land and must comply with the rehabilitation requirements of this environmental authority.
- (F5-2) The evaporation dam, which forms part of the Tailings Storage Facility as defined in Schedule F Table 4 must not be abandoned and must be decommissioned to a situation where the dam and its contained waste(s) are stable, and comply with the rehabilitation requirements of this environmental authority.

Decommissioning of Dam - Documentation and Compliance

(F6-1) Decommissioning activities for dams must be documented in detail in the plan of operations under which the activities are to occur. Where the detailed documentation is not already contained in the Design Plan for the dam, the detailed documentation is considered to be an amendment to the design plan and must be submitted as an amendment to the design plan required by the "Code of Environmental Compliance for High-Hazard Dams Containing Hazardous Waste".

Acid Rock Drainage Management

(F7-1) Subject to the release limits defined in Schedule C all reasonable and practicable measures must be implemented to prevent hazardous leachate being directly or indirectly released or likely to be released as a result of the activity to any groundwater or watercourse.

Infrastructure

Permit

Permit number: MIN100737008

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(F8-1) All infrastructure, constructed by or for the environmental authority holder during the mining activities, including water storage structures, must be removed from the site prior to mining lease surrender, except where agreed in writing by the post mining land owner / holder.

NOTE: This is not applicable where the landowner / holder is also the environmental authority holder.

Schedule G - Community

Complaint response

(G1-1) 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 the administering authority on request.

Permit number: MIN1007370

Permi

DEFINITIONS

"acceptance criteria" means the measures by which the actions implemented to rehabilitate the land are deemed to be complete. The acceptance criteria indicate the success of the rehabilitation outcome or remediation of areas which have been significantly been disturbed by the mining activities. Acceptance criteria may include information regarding:

vegetation establishment, survival and succession;

vegetation productivity, sustained growth and structure development;

fauna colonisation and habitat development;

ecosystem processes such as soil development and nutrient cycling, and the recolonisation of specific fauna groups such as collembola, mites and termites which are involved in these

microbiological studies including recolonisation by mycorrhizal fungi, microbial biomass and

respiration;

effects of various establishment treatments such as deep ripping, topsoil handling, seeding and fertiliser application on vegetation growth and development;

resilience of vegetation to disease, insect attack, drought and fire;

vegetation water use and effects on ground water levels and catchment yields.

"airblast overpressure" means energy transmitted from the blast site within the atmosphere in the form of pressure waves. The maximum excess pressure in this wave, above ambient pressure is the peak airblast overpressure measured in decibels linear (dB).

"ambient (or total) noise" at a place, means the level of noise at the place from all sources (near and far), measured as the Leq for an appropriate time interval.

"competent person" means a person with the demonstrated skill and knowledge required to carry out the task to a standard necessary for the reliance upon collected data or protection of the environment.

"authority" means environmental authority (mining activities) under the Environmental Protection Act 1994.

"blasting" means the use of explosive materials to fracture-

(a) rock, coal and other minerals for later recovery; or

(b) structural components or other items to facilitate removal from a site or for reuse.

"commercial place" means a work place used as an office or for business or commercial purposes, which is not part of the mining activity and does not include employees accommodation or public roads.

"dam" means a containment or proposed containment whether permanent or temporary, which is designed to contain, divert or control flowable substances. However this does not include a fabricated or manufactured tank or container designed to a recognised standard.

"emergency event" in the context of this environmental authority is an unexpected situation which will disrupt production and where environmental harm has the potential to occur if alternate actions are not taken (eg. mechanical failure of a component of the monohydrate gypsum conveyance system).

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

hazardous waste" means any substance, whether liquid, solid or gaseous, derived by or resulting from, the processing of minerals that tends to destroy life or impair or endanger health.

"LA 10, adj, 10 mins" means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 10% of any 10-minute measurement period, using Fast response.

"LA1, adj, 10 mins" means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 1% of any 10-minute measurement period, using Fast response

"LA, max adj, 7" means the average maximum A-weighted sound pressure level, adjusted for noise character and measured over any 10 minute period, using Fast response.

"land" in the "land schedule" of this document means land excluding waters and the atmosphere.

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"land capability" as defined in the DME 1995 Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland.

"land suitability" as defined in the DME 1995 Technical Guidelines for the Environmental Management of Exploration and Mining in Queensland.

"land use" term to describe the selected post mining use of the land, which is planned to occur after the cessation of mining operations.

"mandatory reporting level" means the volume below the spillway crest, equivalent to the lower of the AEP, 72 hour storm or the AEP wave allowance (AEP is the annual exceedence probability).

"mineral" means a substance which normally occurs naturally as part of the earth's crust or is dissolved or suspended in water within or upon the earth's crust and includes a substance which may be extracted from such a substance, and includes—

(a) clay if mined for use for its ceramic properties, kaolin and bentonite;

(b) foundry sand;

- (c) hydrocarbons and other substances or matter occurring in association with shale or coal and necessarily mined, extracted, produced or released by or in connection with mining for shale or coal or for the purpose of enhancing the safety of current or future mining operations for coal or the extraction or production of mineral oil therefrom;
- (d) limestone if mined for use for its chemical properties;

(e) marble;

(f) mineral oil or gas extracted or produced from shale or coal by in situ processes;

(g) peat;

(h) salt including brine;

(i) shale from which mineral oil may be extracted or produced;

- (j) silica, including silica sand, if mined for use for its chemical properties;
- (k) rock mined in block or slab form for building or monumental purposes;

but does not include-

(l) living matter;

(m) petroleum within the meaning of the Petroleum Act 1923;

- (n) soil, sand, gravel or rock (other than rock mined in block or slab form for building or monumental purposes) to be used or to be supplied for use as such, whether intact or in broken form;
- (o) water.

"noxious" means harmful or injurious to health or physical well being, other than trivial harm.

"non-standard" means a mining operation that if in the opinion of the administering authority does not have a low risk of serious environmental harm and the activities can not comply with the criteria for standard mining activities prescribed in schedule 1A of the *Environmental Protection Regulation 1998*. The standard mining activity trigger criteria are as follows;

- the mining activities do not or will not cause more than 10 ha of land to be significantly disturbed at any one time;
- the mining activities do not or will not cause more than 5 ha of land to be significantly disturbed at any one time;
- (a) in a riverine area;
- (b) because of mine workings;

Permit number: MIN1007370 ป

- the mining activities are not or will not be carried out in, or within 2 km of a category A Environmentally Sensitive Area;
- the mining activities are not or will not be carried out in, or within 1 km of a category B environmentally sensitive area;
- the mining activities do not include a level 1 environmentally relevant activity
- no more than 20 persons are carrying out or will, at any one time, carry out the mining activities;

"offensive" means causing reasonable offence or displeasure; is disagreeable to the sense; disgusting, nauseous or repulsive, other than trivial harm.

"peak particle velocity (ppv)" means a measure of ground vibration magnitude which is the maximum rate of change of ground displacement with time, usually measured in millimetres/second (mms⁻¹).

"protected area" means - a protected area under the Nature Conservation Act 1992, or

- a marine park under the Marine Parks Act 1992; or
- a World Heritage Area.

"progressive rehabilitation" means rehabilitation (defined below) undertaken progressively or a staged approach to rehabilitation as mining operations are ongoing.

"reference site" (or analogue site) may reflect the original location, adjacent area or another area where rehabilitation success has been completed for a similar biodiversity. Details of the reference site may be as photographs, computer generated images and vegetation models etc.

"rehabilitation" the process of reshaping and revegetating land to restore it to a stable landform and in accordance with the acceptance criteria set out in this environmental authority and, where relevant, includes remediation of contaminated land.

"representative" means a sample set which covers the variance in monitoring or other data either due to natural changes or operational phases of the mining activities.

"residual void" means an open pit resulting from the removal of ore and/or waste rock which will remain following the cessation of all mining activities and completion of rehabilitation processes.

"self sustaining" means an area of land which has been rehabilitated and has maintained the required acceptance criteria without human intervention for a period nominated by the administering authority.

"sensitive place" means;

- a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or
- a motel, hotel or hostel; or
- an educational institution; or
- a medical center or hospital; or
- a protected area under the Nature Conservation Act 1992, the Marine Parks Act 1992 or a World Heritage Area; or
- a public park or gardens.

"significant disturbance" - includes land

- (a) if it is contaminated land; or
- (b) it has been disturbed and human intervention is needed to rehabilitate it.
 - i. to a state required under the relevant environmental authority; or
 - ii. if the environmental authority does not require the land to be rehabilitated to a particular state to its state immediately before the disturbance.

Permit

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Some examples of disturbed land include:

- areas where soil has been compacted, removed, covered, exposed or stockpiled;
- areas where vegetation has been removed or destroyed to an extent where the land has been made susceptible to erosion; (vegetation & topsoil)
- areas where land use suitability or capability has been diminished;
- areas within a watercourse, waterway, wetland or lake where mining activities occur;
- areas submerged by tailings or hazardous contaminant storage and dam walls in all cases;
- areas under temporary infrastructure. Temporary infrastructure includes any infrastructure
 (roads, tracks, bridges, culverts, dams, bores, buildings, fixed machinery, hardstand areas,
 airstrips, helipads etc) which is to be removed after mining activities have ceased; or
- areas where land has been contaminated and a suitability statement has not been issued.

However, the following areas are not included:

- areas off lease (e.g. roads or tracks which provide access to the mining lease);
- areas previously significantly disturbed which have achieved the rehabilitation outcomes;
- by agreement with the EPA, areas previously significantly disturbed which have not achieved the rehabilitation objective(s) due to circumstances beyond the control of the mine operator (such as climatic conditions);
- areas under permanent infrastructure. Permanent infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dams, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be left by agreement with the landowner. The agreement to leave permanent infrastructure must be recorded in the Landowner Agreement and lodged with the EPA;
- disturbances that pre-existed the grant of the tenure unless those areas are disturbed during the term of the tenure.

"spillway" means passage or outlet from the dam through which surplus water flows.

"stable" means geotechnical stability of the rehabilitated landform where instability related to the excessive settlement and subsidence caused by consolidation / settlement of the wastes deposited, and sliding / slumping instability has ceased.

"trivial harm" means environmental harm which is not material or serious environmental harm and will not cause actual or potential loss or damage to property of an amount of, or amounts totalling more than \$5,000.

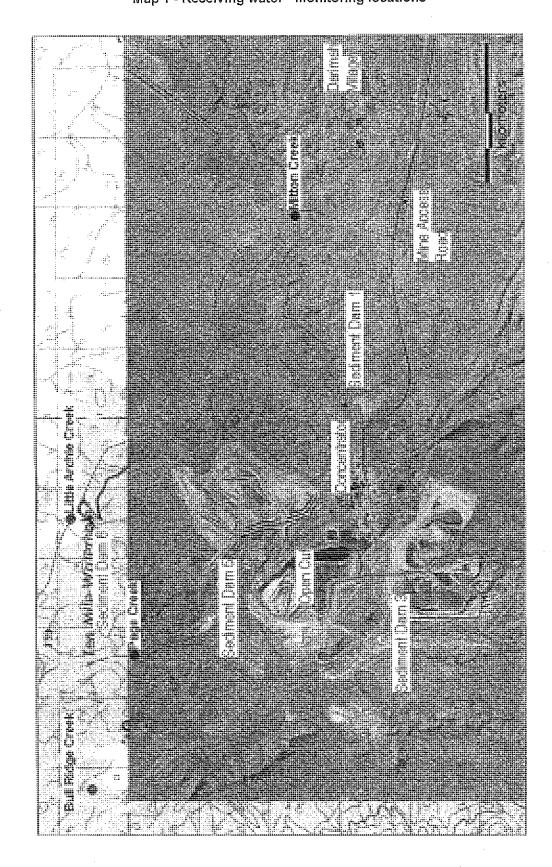
"watercourse" - Means a river, creek or stream in which water flows permanently or intermittently in a visibly defined channel (natural, artificial or artificially improved) with:

(a) continuous bed and banks;

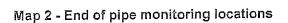
(b) an extended period of flow for some months after rain ceases, and

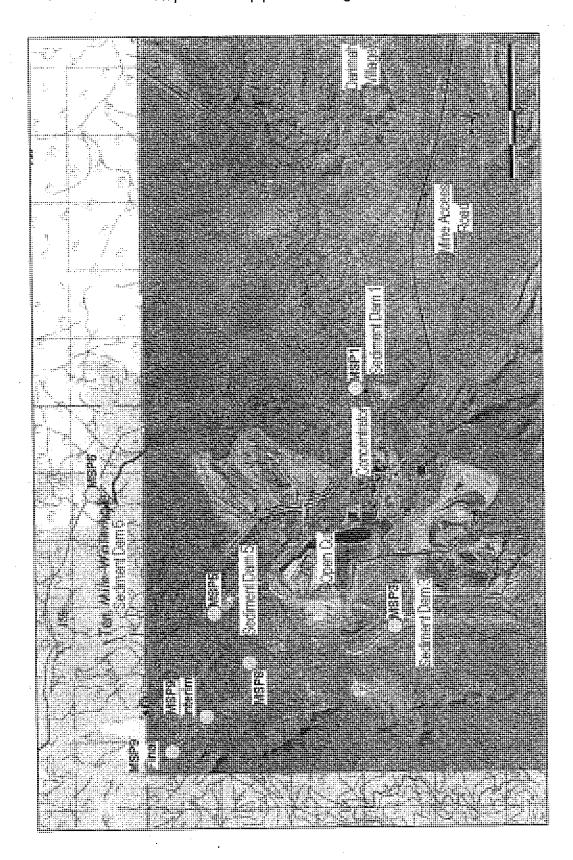
(c) an adequacy of flow that sustains basic ecological processes and maintains biodiversity. "waters" includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea) or any part-thereof.

END OF CONDITIONS

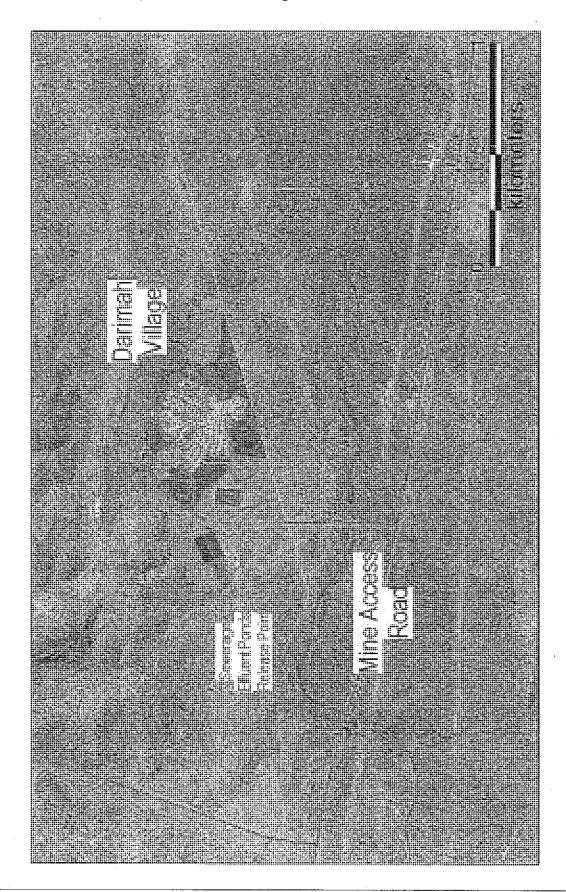


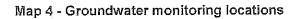






Map 3: Wet weather sewage effluent release location







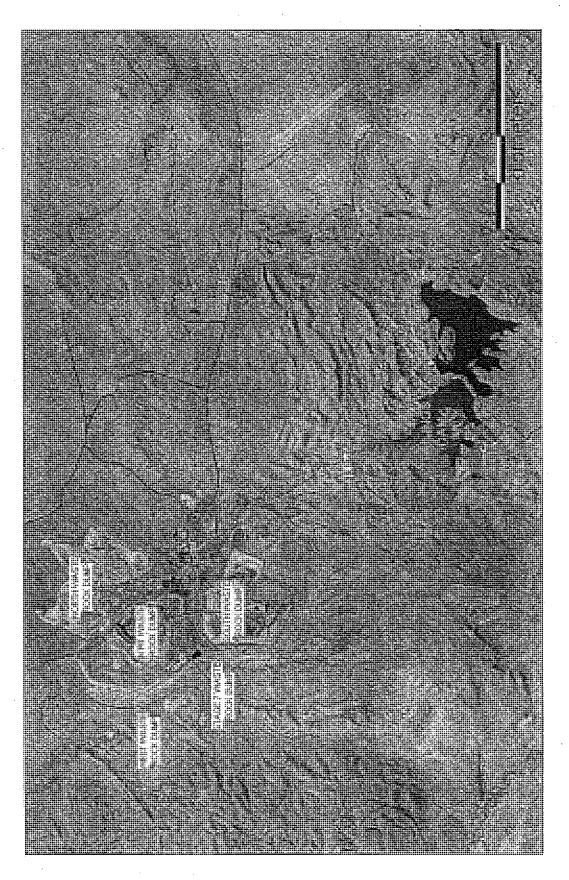
Permit number: MIN1007376

Map 5 - Regulated waste landfill site

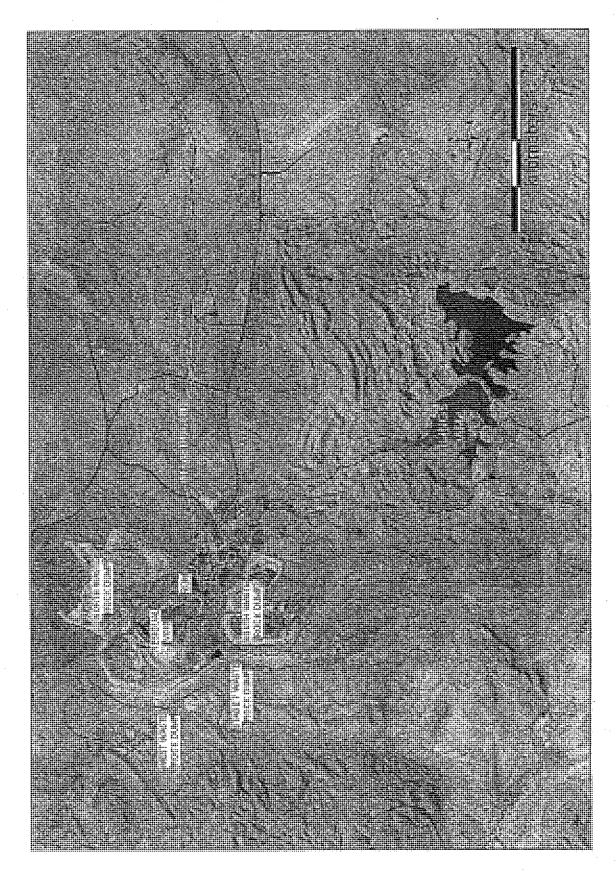




Map 6: Regulated waste rock dumps and tailings storage facility locations



Map 7- Land use disturbance type





Tailings Storage Facility 2010 Annual Audit Photographic Summary

(MMG)

Inspected By: (ATCW) &

Date of Inspection: 15 and 16 November 2010

Photograph ID	DESCRIPTION / COMMENT
Century 2010 Audit_001	Eastern Saddle Dam - crest, looking north from southern abutment.
Century 2010 Audit_002	Eastern Saddle Dam - upstream face, looking north from southern abutment.
Century 2010 Audit 003	Eastern Saddle Dam - minor sink holes along upstream edge of crest, infilled with fine material, 10 m south of north abutment.
Century 2010 Audit_004	Eastern Saddle Dam - downstream face (crest to bench), looking south east from northern abutment.
Century 2010 Audit_005	Eastern Saddle Dam - downstream face (bench to toe), looking south from northern abutment. Rock armour is in good condition. Note minor vegetation and water ponded behind the dam.
Century 2010 Audit_006	Eastern Saddle Dam - bench, looking south from northern abutment. Note minor vegetation.
Century 2010 Audit_007	Eastern Saddle Dam - vegetation and minor erosion at southern downstream abutment (crest to bench).
Century 2010 Audit_008	TSF - Pond adjacent to eastern end of the main embankment.
Century 2010 Audit_009	TSF Emergency Spillway - 1 m high clay bund constructed at the spillway inlet as a precaution for the 2010/2011 wet season. Crest of bund is approximately 1 m lower than the Main Embankment crest.
Century 2010 Audit_010	TSF Emergency Spillway -crest of 1 m high clay bund constructed at the spillway inlet
Century 2010 Audit_011	TSF Emergency Spillway - Spillway base, looking south east from western abutment.
Century 2010 Audit_012	TSF Emergency Spillway - spillway cutting, south side.
Century 2010 Audit_013	TSF Emergency Spillway - spillway cutting, north side.
Century 2010 Audit_014	TSF Emergency Spillway - spillway base, looking west from the downstream end.
Century 2010 Audit_015	Evaporation Pond Spillway 1 - Rock cutting, east side.
Century 2010 Audit 016	Evaporation Pond Spillway 1 - Rock cutting, west side.
Century 2010 Audit 017	Evaporation Pond Spillway 1 - spillway cutting, looking south.
Century 2010 Audit 018	Evaporation Pond Spillway 1 - spillway cutting, looking north.
Century 2010 Audit 019	Evaporation Dam B - crest, looking north east from southern abutment.
Century 2010 Audit_020	Evaporation Dam B - upstream rock armour. Note breakdown of rock due to weathering in foreground.
Century 2010 Audit_021	Evaporation Dam B - overview of downstream face, looking north from southern abutment.
Century 2010 Audit_022	Evaporation Dam B - overview of downstream face, looking south from northern abutment.
Century 2010 Audit_023	Evaporation Dam B - Abutment and upstream face, looking south from northern abutment.
Century 2010 Audit_024	Evaporation Dam B - overview of upstream face, looking south from northern abutment.
Century 2010 Audit_025	Evaporation Dam B - Drain downstream of the dam.
Century 2010 Audit_026	Evaporation Dam B - Abutment and upstream face, looking north from southern abutment.



Tailings Storage Facility 2010 Annual Audit Photographic Summary

Inspected By:

(ATCW) &

(MMG)

Date of Inspection:

Photograph ID	DESCRIPTION / COMMENT
	Evaporation Dam B - Downstream face, looking south. Note discolouration at
Century 2010 Audit_027	downstream toe.
Century 2010 Audit_028	Evaporation Dam B - Downstream toe - note salt on surface.
Century 2010 Audit_029	Evaporation Dam B - Downstream face, note salt on downstream face, extending approximately 3 m above downstream toe.
Century 2010 Audit 030	Evaporation Dam A - downstream face of the dam, looking south west from north east abutment. Note regrowth of saplings since previous clearing.
Century 2010 Audit 031	Evaporation Dam A - crest, looking north east from south east abutment.
Century 2010 Audit 032	Evaporation Dam A - water level gauge board. Water level is approximately RL 161.81m.
Century 2010 Audit 033	Evaporation Dam A - upstream face of the dam showing the condition of the rock armour. Looking north east from southern abutment.
Century 2010 Audit 034	Evaporation Dam A - downstream face of the dam, looking north east from south west end. Note grasses have grown since the previous inspection.
Century 2010 Audit 035	Evaporation Dam A - toe seepage outlet structure, downstream of the Dam.
Century 2010 Audit 036	Evaporation Dam A - seepage water within the channel between the downstream toe of the dam and the outlet structure. Note that there was a trickle of water flowing within the channel.
Century 2010 Audit 037	Evaporation Dam A - salt at the downstream toe of the dam. The soil below the salt crust was damp to moist. This indicates some capillary rise of seepage water to the surface in this area.
Century 2010 Audit_038	Evaporation Dam A - minor erosion at downstream toe of north east abutment.
Century 2010 Audit_039	Evaporation Dam A - seepage water at the toe of the north east abutment. Note that this seepage was not present at the time of the 2008 inspection.
Century 2010 Audit 040	Evaporation Dam A - north east downstream abutment of dam. Note previous repair to abutment (rock armour) is in good condition but some further repair work is required towards the toe of the abutment. No change since last inspection.
Century 2010 Audit 041	Creek downstream of Evaporation Dam A.
Century 2010 Audit 042	Seepage water in creek downstream of Evaporation Dam A.
Century 2010 Audit 043	Levee Embankment - crest, looking south west from north east abutment.
Century 2010 Audit 044	Levee Embankment - downstream north east abutment.
Century 2010 Audit 045	Levee Embankment - erosion approximately 20 m downstream of the embankment, looking downstream of the embankment.
Century 2010 Audit_046	Levee Embankment - overview of downstream face of the Levee embankment. Note sparse vegetation.
Century 2010 Audit_047	Levee Embankment - upstream face, looking down from the crest.
Century 2010 Audit_048	Evaporation Pond Spillway 2 - Rock cutting western side.
Century 2010 Audit_049	Evaporation Pond Spillway 2 - spillway base, looking north.
Century 2010 Audit_050	Evaporation Pond Spillway 2 - Rock cutting eastern side.
Century 2010 Audit_051	TSF - overview of central portion of the tailings beach from high ground near discharge (1).



Tailings Storage Facility 2010 Annual Audit Photographic Summary

Inspected By:

(ATCW) &

(MMG)

Date of Inspection:

Photograph ID	DESCRIPTION / COMMENT
Century 2010 Audit_052	TSF - overview of central portion of the tailings beach from high ground near discharge (2).
	TSF - overview of central portion of the tailings beach from high ground near
Century 2010 Audit_053	discharge (3).
Century 2010 Audit_054	TSF - overview of channel transporting tailings from discharge point.
Century 2010 Audit_055	TSF - discharge point.
Century 2010 Audit_056	TSF - discharge point and head of tailings beach, looking south.
Century 2010 Audit 057	Western Saddle Dam 4 - upstream face, looking south from northern abutment. Minor vegetation (grasses). Saplings have been removed since last audit.
Century 2010 Audit 058	Western Saddle Dam 4 - downstream face, looking south from northern abutment. Minor vegetation.
Century 2010 Audit 059	Western Saddle Dam 4 - crest, looking south from northern abutment. Note crest has been graded. Water on each side of dam wall.
Century 2010 Audit 060	TSF - view of tailings beach between Western Saddle Dams 3 and 4.
Century 2010 Audit_061	Western Saddle Dam 4 - upstream face, looking north from southern abutment. Minor vegetation (grasses).
Century 2010 Audit_062	Western Saddle Dam 4 - downstream face, looking north from southern abutment. Minor vegetation.
Century 2010 Audit_063	Western Saddle Dam 4 - crest, looking north from southern abutment. Note crest has been graded.
Century 2010 Audit_064	TSF - view of tailings beach upstream of Western Saddle Dam 4.
Century 2010 Audit_065	Diversion Channel 4 - inlet.
Century 2010 Audit_066	Water ponded behind Western Saddle Dam 4.
Century 2010 Audit_067	Diversion Channel 4 - channel floor, looking south from northern end.
Century 2010 Audit_068	Diversion Channel 4 - channel floor, looking north from approximately 50 m south of north end. Note vegetation.
Century 2010 Audit_069	Diversion Channel 4 - preferential weathering of clayey bands in cut face, east side cut near northern end of channel.
Century 2010 Audit_070	Diversion Channel 4 - channel floor, looking west from eastern end.
Century 2010 Audit 071	Diversion Channel 4 - erosion downstream of the channel, slight increase in the extent of the erosion.
Century 2010 Audit_072	Water ponded behind Western Saddle Dam 3.
Century 2010 Audit 073	Western Saddie Dam 3 - downstream face, looking east from the downstream end of diversion channel 4. Note dense vegetation on slope is regrowth. Saplings observed in 2009 have been removed.
Century 2010 Audit_074	Western Saddle Dam 3 - scour at downstream edge of crest at 250655E, 7920743N caused by grading of surface.
Century 2010 Audit 075	Western Saddle Dam 3 - crest looking north west from southern abutment. Note that the crest has been graded and crushed rock has been placed on upstream side of crest.
Century 2010 Audit_076	Western Saddle Dam 3 - crest looking south east from northern abutment. Note that the crest has been graded.



Tailings Storage Facility 2010 Annual Audit Photographic Summary

Inspected By:

(ATCW) &

(MMG)

Date of Inspection:

Photograph ID	DESCRIPTION / COMMENT
Century 2010 Audit 077	Western Saddle Dam 3 - upstream face, looking south east from adjacent to northern abutment. Note vegetation (grasses and shrubs) on face should be removed. Saplings observed in 2009 have been removed.
Century 2010 Audit 078	TSF - deposition of tailings between Western Saddle Dams 2 and 3.
Century 2010 Audit 079	Western Saddle Dam 2 - overview from west of the dam, looking east.
Century 2010 Audit 080	Western Saddle Dam 2 - downstream face, looking east from western end.
Century 2010 Audit_081	Western Saddle Dam 2 - crest, looking west from eastern end. Note surface has been sheeted with crushed rock and graded.
Century 2010 Audit 082	Western Saddle Dam 2 - upstream face, looking west from eastern end. Note water ponded against upstream face.
Century 2010 Audit_083	Western Saddle Dam 2 - crest, looking east from western end. Note surface has been sheeted with crushed rock and graded.
Century 2010 Audit_084	Diversion Channel 3 - erosion downstream of the channel.
Century 2010 Audit_085	Diversion Channel 3 - erosion of clayey soils in southern cut face at the eastern (outlet) end of the channel (251006E, 7920509N).
Century 2010 Audit_086	Diversion Channel 3 - channel floor, looking west from eastern end. Note erosion in floor.
Century 2010 Audit_087	Diversion Channel 3 - erosion of clayey soils in southern cut face at the eastern (outlet) end of the channel as a result of concentrated flow (250983E, 7920503N).
Century 2010 Audit 088	Diversion Channel 3 - channel floor, looking east from western (inlet) end.
Century 2010 Audit_089	Diversion Channel 3 - grasses and deposited fine grained material on inside bend in channel (250846E, 7920523N).
Century 2010 Audit_090	Diversion Channel 2 - channel floor and side slope cutting, looking north from bend in channel.
Century 2010 Audit 091	Diversion Channel 2 - channel floor and side slope cuttings, looking south from northern (inlet) end.
Century 2010 Audit 092	Diversion Channel 2 - Erosion in channel floor appears to be primarily related to the white interbedded clays (looking south from mid point of cutting).
Century 2010 Audit 093	Diversion Channel 2 - erosion downstream of the channel. Note that the extent of the erosion has significantly increased and is now when compared to the 2009 inspection photograph.
Century 2010 Audit_094	Diversion Channel 2 - channel floor and side slope cutting, looking north from southern end.
Century 2010 Audit 095	Western Saddle Dam 1 - surface salt and moist ground at eastern abutment, Stage 1 bench (251866E, 7920479N).
Century 2010 Audit_096	Western Saddle Dam 1 - Stage 1 bench, looking west from eastern abutment.
Century 2010 Audit_097	Western Saddle Dam 1 - downstream face, looking west from eastern end.
Century 2010 Audit_098	Western Saddle Dam 1 - Seepage at western abutment, Stage 1 Bench (251616E, 7920451N).
Century 2010 Audit_099	Western Saddle Dam 1 - overview of seepage at western abutment, looking east towards Stage 1 bench.
Century 2010 Audit_100	Western Saddle Dam 1 - Tailings beach upstream of seepage at western abutment.



Tailings Storage Facility 2010 Annual Audit Photographic Summary

Inspected By:

(ATCW) &

(MMG)

Date of Inspection:

Photograph ID	DESCRIPTION / COMMENT
Century 2010 Audit 101	Western Saddle Dam 1 - overview of seepage on Stage 1 bench, looking down from Stage 2 crest.
Century 2010 Audit 102	Western Saddle Dam 1 - Downstream face from Stage 2 crest and Stage 1 bench, looking east from northern abutment.
Century 2010 Audit_103	Western Saddle Dam 1 - Crest, looking east from western abutment.
Century 2010 Audit 104	Western Saddle Dam 1 - upstream face and tailings beach, looking east from western abutment.
Century 2010 Audit_105	Western Saddle Dam 1 - eastern end of crack, approximately 2 m from upstream edge of crest, looking west from 251734E, 7920481N. Crack width ~ 10 to 20 cm.
Century 2010 Audit 106	Western Saddle Dam 1 - western end of crack, approximately 2 m from upstream edge of crest, looking east from 251786E, 7920491N. Crack width ~ 10 cm.
Century 2010 Audit_107	Western Saddle Dam 1 - crest, looking west from eastern abutment.
Century 2010 Audit_108	Diversion Channel 1 - channel floor, looking north west from southern (outlet) end.
Century 2010 Audit 109	Diversion Channel 1 - erosion downstream of the channel. Increase in erosion since 2009inspection.
Century 2010 Audit_110	Diversion Channel 1 - channel floor at inlet, looking towards Western Saddle Dam 2.
Century 2010 Audit_111	Diversion Channel 1 - channel floor, looking south from northern end.
Century 2010 Audit_112	Main Embankment - crest, looking east from western end.
Century 2010 Audit_113	Main Embankment - upstream face and tailings, looking east from western end.
Century 2010 Audit_114	Main Embankment - downstream face and stage 1 bench, looking east from western end of Stage 2 crest.
Century 2010 Audit_115	Main Embankment - downstream face and stage 1 bench, looking north east from bend towards western end of embankment from Stage 2 crest.
Century 2010 Audit 116	Main Embankment - upstream face and ponded water, looking west from adjacent to Decant 2, looking down from stage 2 crest.
Century 2010 Audit_117	Main Embankment - downstream face and stage 1 bench, looking west from top of Decant 2 access ramp, from Stage 2 crest.
Century 2010 Audit_118	Decant 2 - overview
Century 2010 Audit_119	Decant 2 - movement of concrete at stairs.
Century 2010 Audit_120	Main Embankment - upstream face, looking east from Decant 2.
Century 2010 Audit_121	Main Embankment - upstream face, looking west from Decant 2.
Century 2010 Audit_122	Main Embankment - crest, looking east from adjacent to Decant 2.
Century 2010 Audit_123	Main Embankment - downstream face and stage 1 bench, looking east from top of Decant 2 access ramp, from Stage 2 crest.
Century 2010 Audit_124	Main Embankment - downstream face and stage 1 bench, looking west from top of Decant 1 access ramp, from Stage 2 crest.
Century 2010 Audit_125	Main Embankment - crest, looking west from adjacent to Decant 1.
Century 2010 Audit_126	Decant 1 - overview.
Century 2010 Audit_127	Main Embankment - upstream face, looking west from Decant 1.
Century 2010 Audit 128	Main Embankment - upstream face, looking east from Decant 1.
Century 2010 Audit_129	Main Embankment - downstream face and stage 1 bench, looking east from top of Decant 1 access ramp, from Stage 2 crest.



MMG Century Mine

Tailings Storage Facility 2010 Annual Audit Photographic Summary

Inspected By:

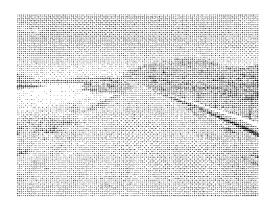
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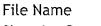
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Date of Inspection:

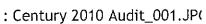
15 and 16 November 2010

Photograph ID	DESCRIPTION / COMMENT	
Century 2010 Audit_130	Main Embankment - crest, looking east from adjacent to Decant 1.	
Century 2010 Audit_131	Main Embankment - crest, looking west from eastern corner.	
Century 2010 Audit_132	Main Embankment - crest, looking north east from eastern corner.	
Century 2010 Audit 133	Main Embankment - upstream erosion (252766E, 7921061N). This was present at the time of the 2009 inspection.	
Century 2010 Audit 134	Main Embankment - damaged water pipe on crest (252760E, 7921094N).	
Century 2010 Audit 135	Main Embankment - downstream face and Stage 1 bench, looking south from northern abutment.	
Century 2010 Audit_136	Main Embankment - Crest, looking south from eastern abutment.	
Century 2010 Audit_137	Main Embankment - upstream face and water ponded against the upstream face, looking south from eastern abutment.	
Century 2010 Audit_138	TSF Main Embankment - sink hole on crest (252749E, 7921164N).	
Century 2010 Audit_139	TSF Main Embankment - sink hole on crest (252769E, 7921067N). Note this has increased in extent since 2008 inspection.	
Century 2010 Audit_140	TSF - overview looking north from south of facility (1)	
Century 2010 Audit_141	TSF - overview looking north from south of facility (2)	
Century 2010 Audit_142	TSF - overview looking north from south of facility (3)	
Century 2010 Audit_143	TSF - overview looking north from south of facility (4)	
Century 2010 Audit 144	Main Embankment - overview of downstream face, looking north east from south of Diversion Channel 1.	
Century 2010 Audit_145	Merged Photo (051, 052 and 053).	
	·	

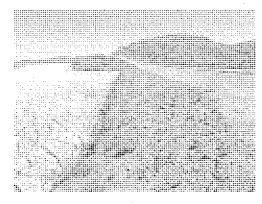




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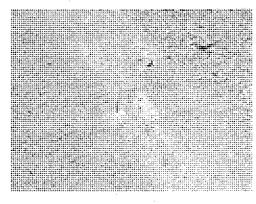


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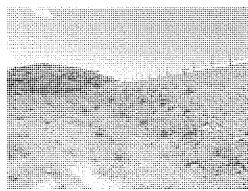


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File Name

Shooting Date/Time

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: 15/11/2010 10:34:44 AM



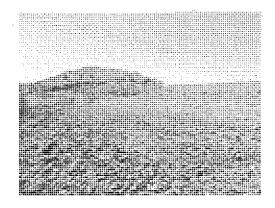
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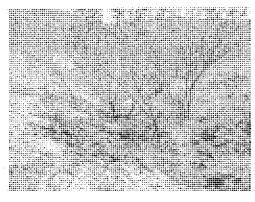
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ATC Williams



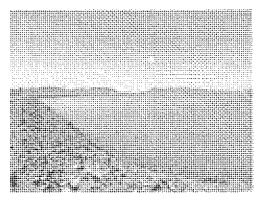
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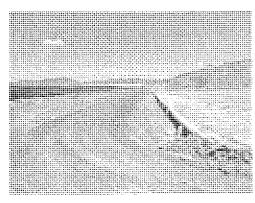
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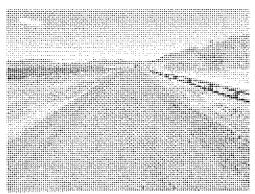
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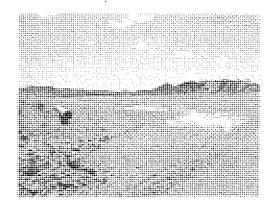


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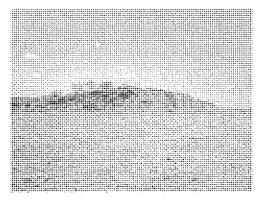
ATC Williams



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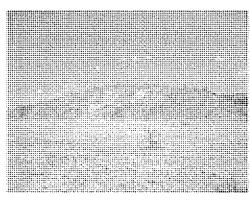
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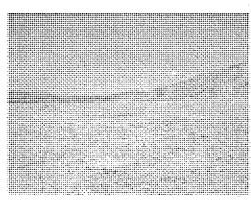
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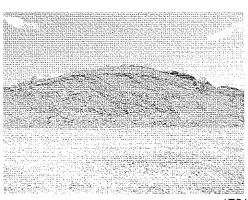
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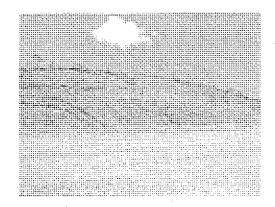


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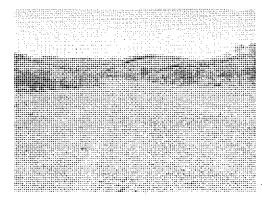
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ATC Williams



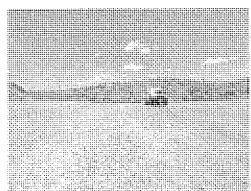
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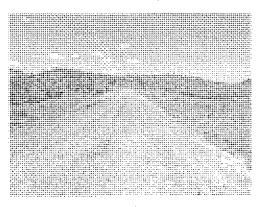
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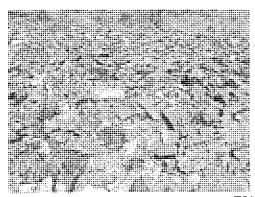
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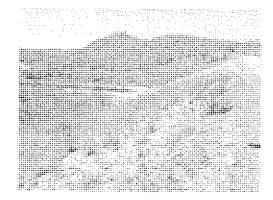


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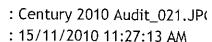
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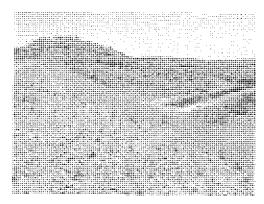
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ATC Williams



File Name
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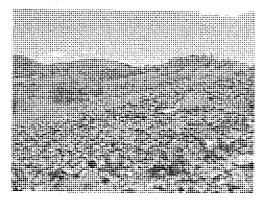
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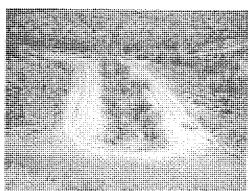
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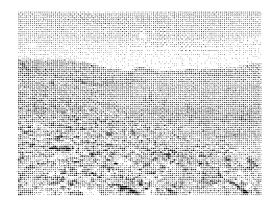


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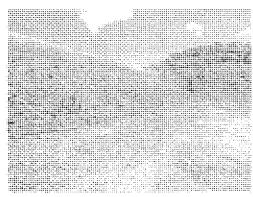
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ATC Williams



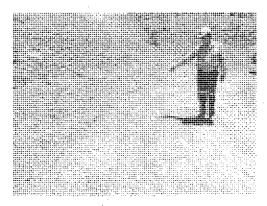
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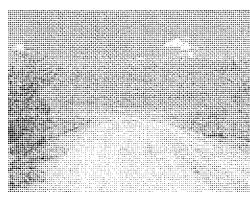
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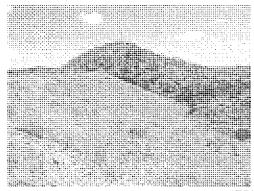
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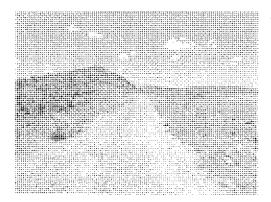
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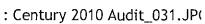
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ATC Williams

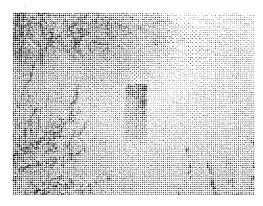


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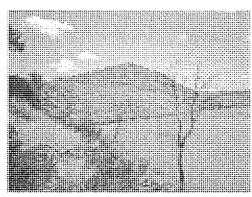


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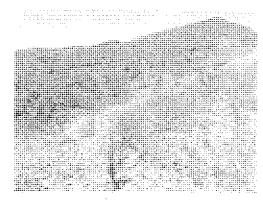


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File Name

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File Name

Shooting Date/Time

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ATC Williams



File Name
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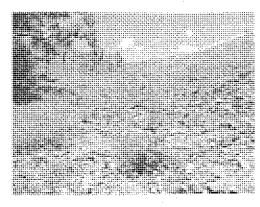
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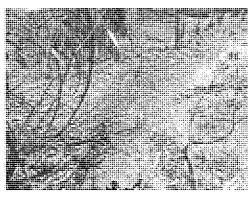
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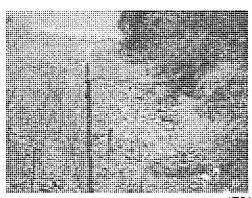
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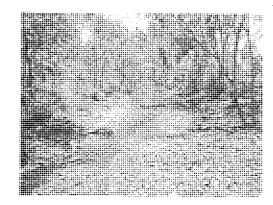


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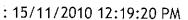
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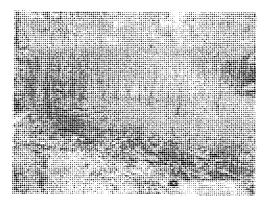
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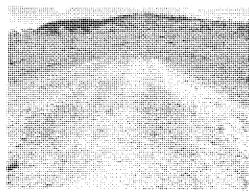




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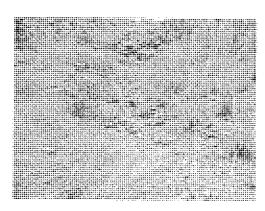
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File Name
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: 15/11/2010 12:26:49 PM



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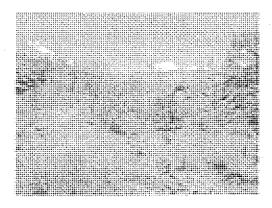


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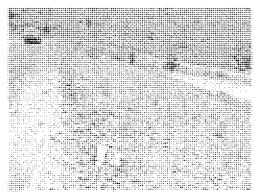
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ATC Williams



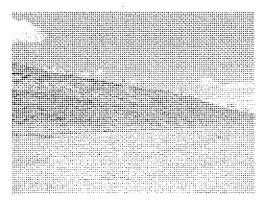
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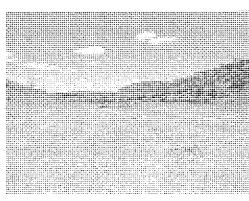
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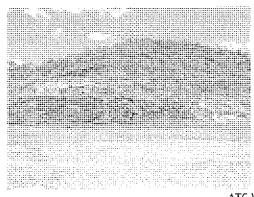
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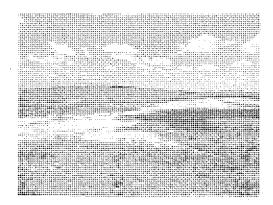
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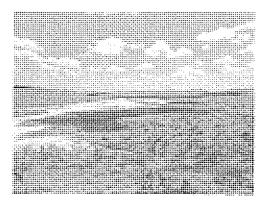
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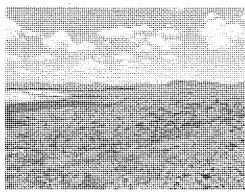
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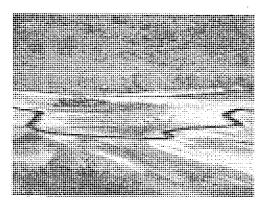
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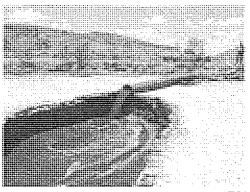
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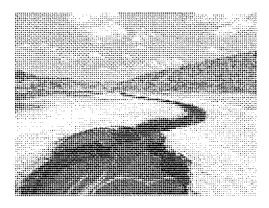


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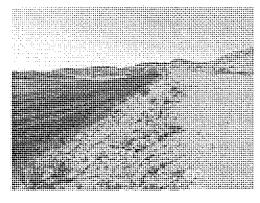
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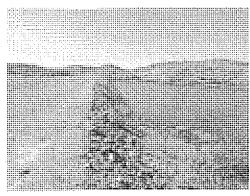
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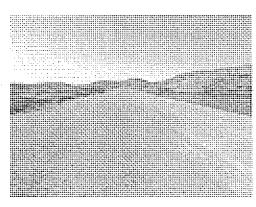
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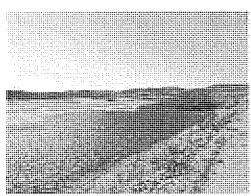
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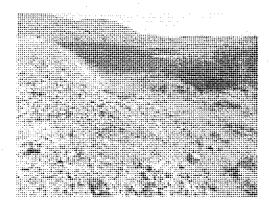


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ATC Williams



File Name
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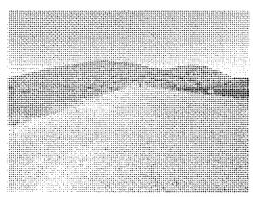
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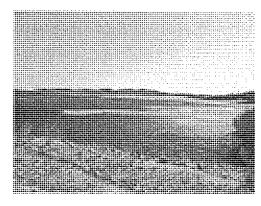
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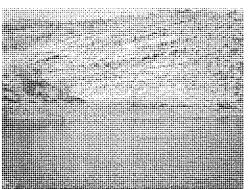
: 16/11/2010 9:01:45 AM



File Name
Shooting Date/Time

: Century 2010 Audit_064.JP(

: 16/11/2010 9:02:01 AM

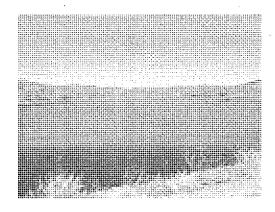


File Name
Shooting Date/Time

: Century 2010 Audit_065.JP(

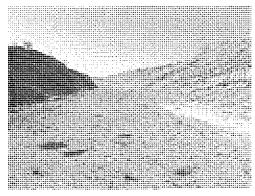
: 16/11/2010 9:03:02 AM

ATC Williams



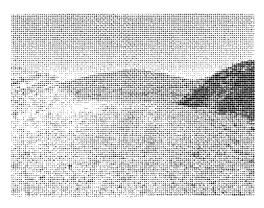
File Name
Shooting Date/Time

: Century 2010 Audit_066.JP(: 16/11/2010 9:03:07 AM



File Name
Shooting Date/Time

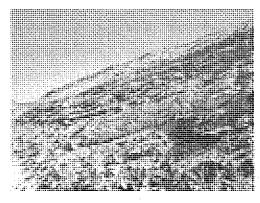
: Century 2010 Audit_067.JP(: 16/11/2010 9:10:49 AM



File Name Shooting Date/Time

: Century 2010 Audit_068.JP(

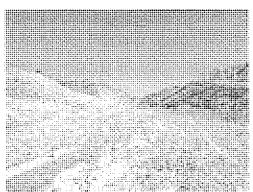
: 16/11/2010 9:11:24 AM



File Name Shooting Date/Time

: Century 2010 Audit_069.JP(

: 16/11/2010 9:14:04 AM

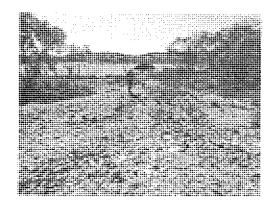


File Name
Shooting Date/Time

: Century 2010 Audit_070.JP(

: 16/11/2010 9:15:17 AM

ATC Williams



File Name
Shooting Date/Time

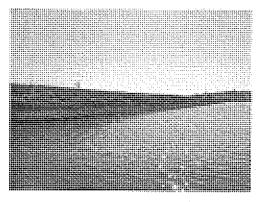
: Century 2010 Audit_071.JP(: 16/11/2010 9:15:22 AM



File Name
Shooting Date/Time

: Century 2010 Audit_072.JP(

: 16/11/2010 9:17:35 AM



File Name Shooting Date/Time

: Century 2010 Audit_073.JP(

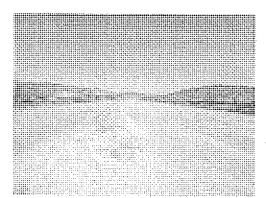
: 16/11/2010 9:20:02 AM



File Name Shooting Date/Time

: Century 2010 Audit_074.JP(

: 16/11/2010 9:22:39 AM

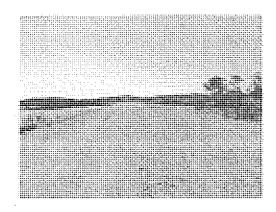


File Name
Shooting Date/Time

: Century 2010 Audit_075.JPG

: 16/11/2010 9:25:07 AM

ATC Williams



File Name
Shooting Date/Time

: Century 2010 Audit_076.JP(

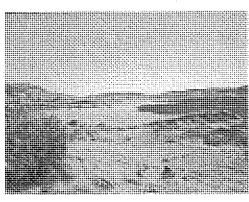
: 16/11/2010 9:29:25 AM



File Name
Shooting Date/Time

: Century 2010 Audit_077.JPC

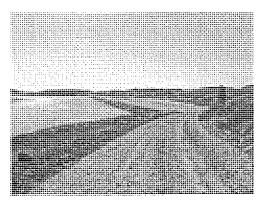
: 16/11/2010 9:30:56 AM



File Name
Shooting Date/Time

: Century 2010 Audit_078.JPG

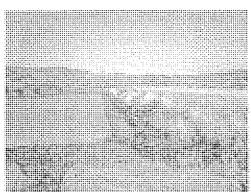
: 16/11/2010 9:35:38 AM



File Name
Shooting Date/Time

: Century 2010 Audit_079.JP(

: 16/11/2010 9:36:57 AM

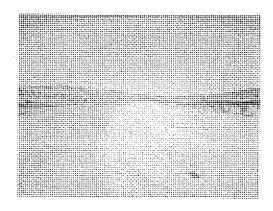


File Name Shooting Date/Time

: Century 2010 Audit_080.JP(

: 16/11/2010 9:50:21 AM

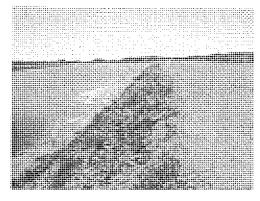
ATC Williams



File Name
Shooting Date/Time

: Century 2010 Audit_081.JP(

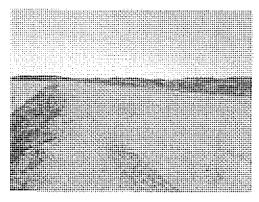
: 16/11/2010 9:50:45 AM



File Name
Shooting Date/Time

: Century 2010 Audit_082.JP(

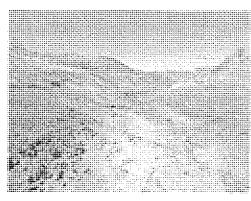
: 16/11/2010 9:58:32 AM



File Name
Shooting Date/Time

: Century 2010 Audit_083.JP(

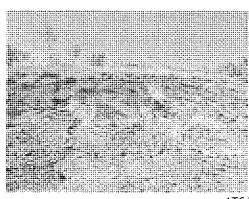
: 16/11/2010 9:58:38 AM



File Name Shooting Date/Time

: Century 2010 Audit_084.JP(

: 16/11/2010 10:00:34 AM

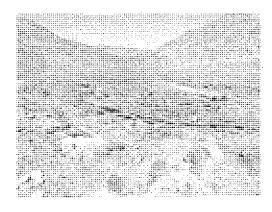


File Name Shooting Date/Time

: Century 2010 Audit_085.JP(

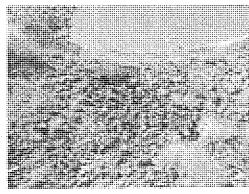
: 16/11/2010 10:01:04 AM

ATC Williams



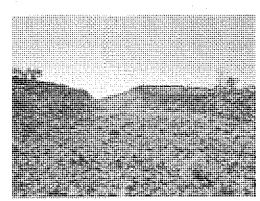
File Name
Shooting Date/Time

: Century 2010 Audit_086.JP0 : 16/11/2010 10:01:16 AM



File Name Shooting Date/Time

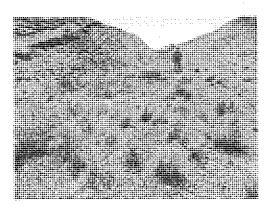
: Century 2010 Audit_087.JP0 : 16/11/2010 10:03:39 AM



File Name
Shooting Date/Time

: Century 2010 Audit_088.JP(

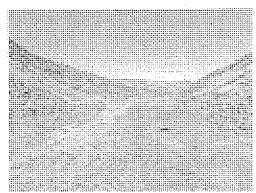
: 16/11/2010 10:06:46 AM



File Name
Shooting Date/Time

: Century 2010 Audit_089.JPC

: 16/11/2010 10:08:27 AM

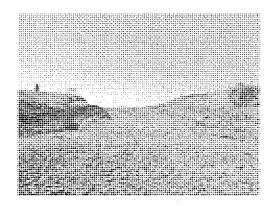


File Name
Shooting Date/Time

: Century 2010 Audit_090.JP(

: 16/11/2010 10:10:37 AM

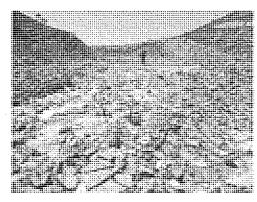
ATC Williams



File Name
Shooting Date/Time

: Century 2010 Audit_091.JP(

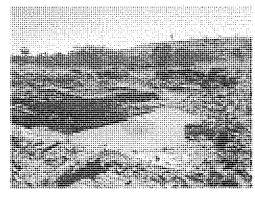
: 16/11/2010 10:18:00 AM



File Name Shooting Date/Time

: Century 2010 Audit_092.JP(

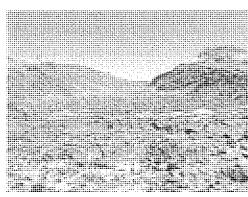
: 16/11/2010 10:21:14 AM



File Name
Shooting Date/Time

: Century 2010 Audit_093.JP(

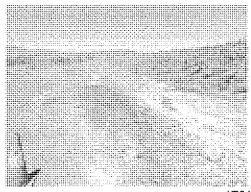
: 16/11/2010 10:23:14 AM



File Name Shooting Date/Time

: Century 2010 Audit_094.JP(

: 16/11/2010 10:23:20 AM



File Name Shooting Date/Time

: Century 2010 Audit_095.JPC

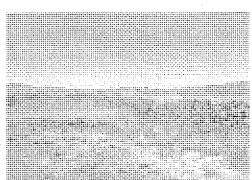
: 16/11/2010 10:43:24 AM

ATC Williams



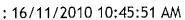
File Name Shooting Date/Time

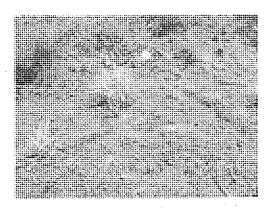
: Century 2010 Audit_096.JP(: 16/11/2010 10:44:53 AM



File Name
Shooting Date/Time

: Century 2010 Audit_097.JP0

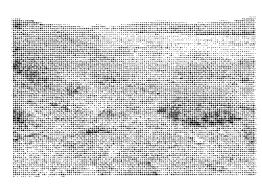




File Name Shooting Date/Time

: Century 2010 Audit_098.JP(

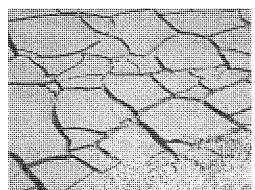
: 16/11/2010 10:50:46 AM



File Name Shooting Date/Time

: Century 2010 Audit_099.JP(

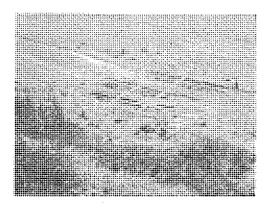
: 16/11/2010 10:50:54 AM



File Name Shooting Date/Time

: Century 2010 Audit_100.JP(

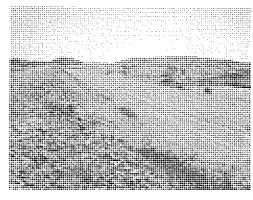
: 16/11/2010 10:53:27 AM



File Name
Shooting Date/Time

: Century 2010 Audit_101.JP(

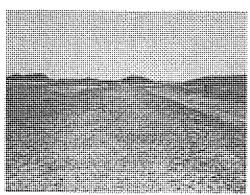
: 16/11/2010 10:54:13 AM



File Name
Shooting Date/Time

: Century 2010 Audit_102.JP(

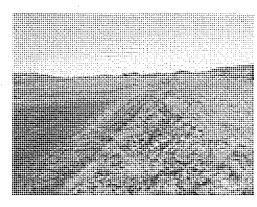
: 16/11/2010 10:54:22 AM



File Name
Shooting Date/Time

: Century 2010 Audit_103.JP(

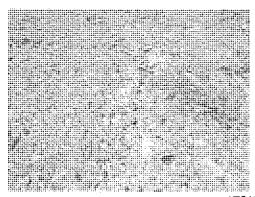
: 16/11/2010 10:54:34 AM



File Name Shooting Date/Time

: Century 2010 Audit_104.JP(

: 16/11/2010 10:54:51 AM

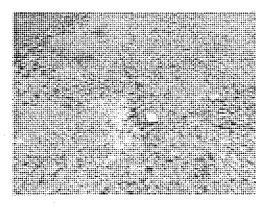


File Name
Shooting Date/Time

: Century 2010 Audit_105.JP(

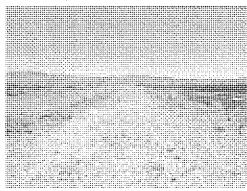
: 16/11/2010 10:57:46 AM

ATC Williams



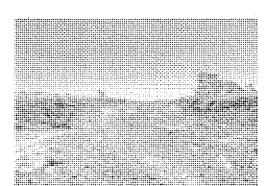
File Name Shooting Date/Time

: Century 2010 Audit_106.JP(: 16/11/2010 11:00:30 AM



File Name Shooting Date/Time

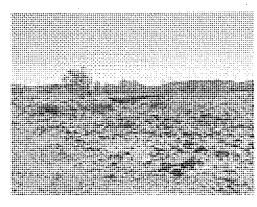
: Century 2010 Audit_107.JP(: 16/11/2010 11:03:44 AM



File Name
Shooting Date/Time

: Century 2010 Audit_108.JP(

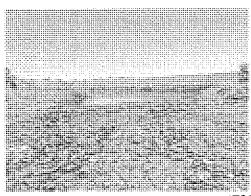
: 16/11/2010 11:07:59 AM



File Name
Shooting Date/Time

: Century 2010 Audit_109.JP(

: 16/11/2010 11:08:06 AM

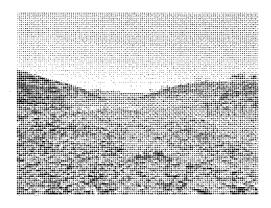


File Name
Shooting Date/Time

: Century 2010 Audit_110.JP(

: 16/11/2010 11:11:18 AM

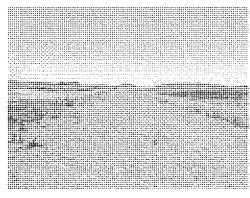
ATC Williams



File Name Shooting Date/Time

: Century 2010 Audit_111.JP(

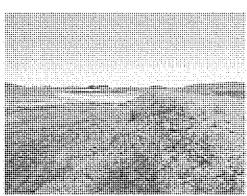
: 16/11/2010 11:11:24 AM



File Name Shooting Date/Time

: Century 2010 Audit_112.JP(

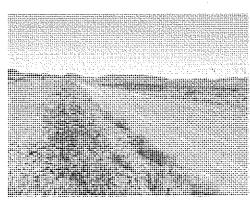
: 16/11/2010 11:27:18 AM



File Name
Shooting Date/Time

: Century 2010 Audit_113.JP(

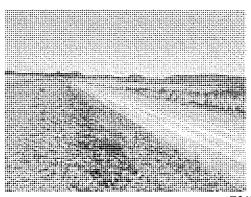
: 16/11/2010 11:27:40 AM



File Name
Shooting Date/Time

: Century 2010 Audit_114.JP(

: 16/11/2010 11:27:58 AM

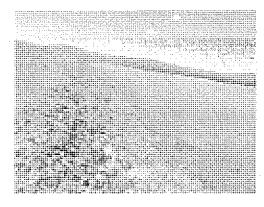


File Name
Shooting Date/Time

: Century 2010 Audit_115.JP(

: 16/11/2010 11:31:03 AM

ATC Williams



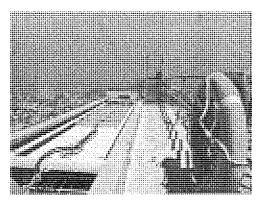
File Name
Shooting Date/Time

: Century 2010 Audit_116.JP(: 16/11/2010 11:34:18 AM



File Name
Shooting Date/Time

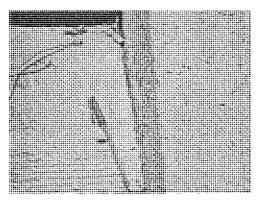
: Century 2010 Audit_117.JPC : 16/11/2010 11:34:28 AM



File Name Shooting Date/Time

: Century 2010 Audit_118.JP(

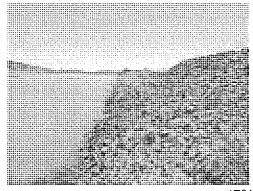
: 16/11/2010 11:35:32 AM



File Name Shooting Date/Time

: Century 2010 Audit_119.JP(

: 16/11/2010 11:37:11 AM

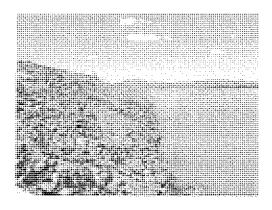


File Name Shooting Date/Time

: Century 2010 Audit_120.JPC

: 16/11/2010 11:37:20 AM

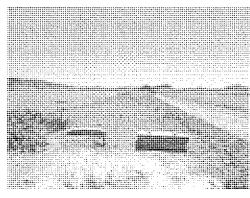
ATC Williams



File Name
Shooting Date/Time

: Century 2010 Audit_121.JP(

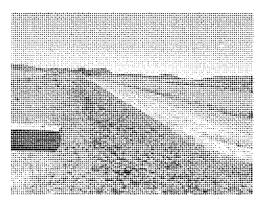
: 16/11/2010 11:37:27 AM



File Name
Shooting Date/Time

: Century 2010 Audit_122.JPC

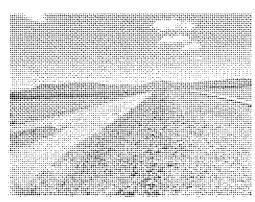
: 16/11/2010 11:38:10 AM



File Name
Shooting Date/Time

: Century 2010 Audit_123.JP(

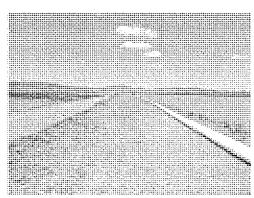
: 16/11/2010 11:38:17 AM



File Name
Shooting Date/Time

: Century 2010 Audit_124.JP(

: 16/11/2010 11:42:03 AM

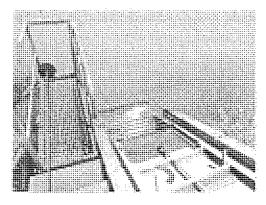


File Name
Shooting Date/Time

: Century 2010 Audit_125.JP(

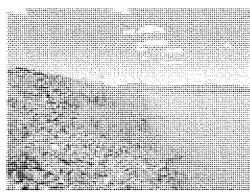
: 16/11/2010 11:42:10 AM

ATC Williams



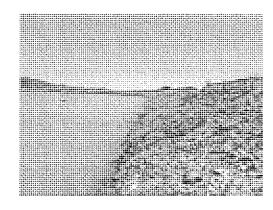
File Name
Shooting Date/Time

: Century 2010 Audit_126.JP(: 16/11/2010 11:43:14 AM



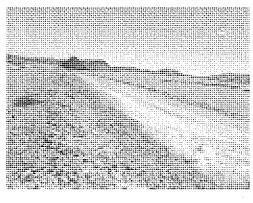
File Name
Shooting Date/Time

: Century 2010 Audit_127.JPC : 16/11/2010 11:43:21 AM



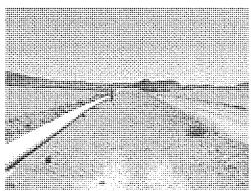
File Name Shooting Date/Time

: Century 2010 Audit_128.JP(: 16/11/2010 11:43:33 AM



File Name
Shooting Date/Time

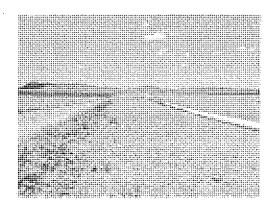
: Century 2010 Audit_129.JP(: 16/11/2010 11:44:34 AM



File Name Shooting Date/Time

: Century 2010 Audit_130.JP0 : 16/11/2010 11:44:40 AM

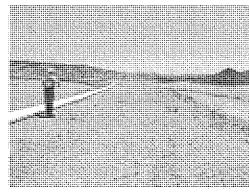
ATC Williams



File Name
Shooting Date/Time

: Century 2010 Audit_131.JPC

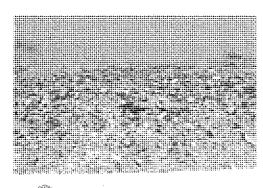
: 16/11/2010 11:46:36 AM



File Name
Shooting Date/Time

: Century 2010 Audit_132.JPC

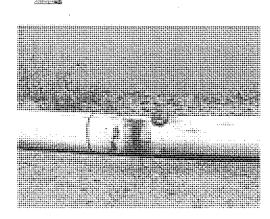
: 16/11/2010 11:46:42 AM



File Name Shooting Date/Time

: Century 2010 Audit_133.JP(

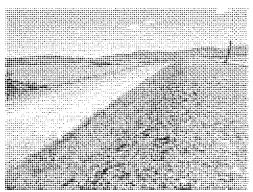
: 16/11/2010 11:50:07 AM



File Name
Shooting Date/Time

: Century 2010 Audit_134.JP(

: 16/11/2010 11:51:10 AM

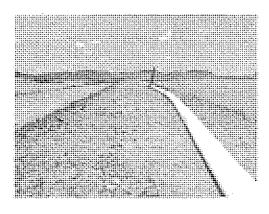


File Name
Shooting Date/Time

: Century 2010 Audit_135.JPC

: 16/11/2010 11:52:27 AM

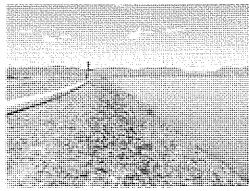
ATC Williams



File Name
Shooting Date/Time

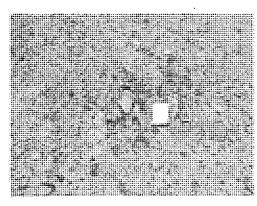
: Century 2010 Audit_136.JPC

e : 16/11/2010 11:52:42 AM



File Name
Shooting Date/Time

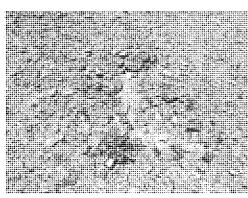
: Century 2010 Audit_137.JPC : 16/11/2010 11:53:02 AM



File Name Shooting Date/Time

: Century 2010 Audit_138.JP(

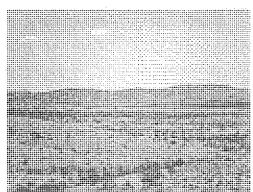
: 16/11/2010 11:53:56 AM



File Name Shooting Date/Time

: Century 2010 Audit_139.JPC

: 16/11/2010 11:56:18 AM

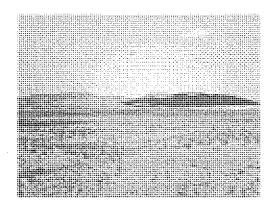


File Name
Shooting Date/Time

: Century 2010 Audit_140.JP(

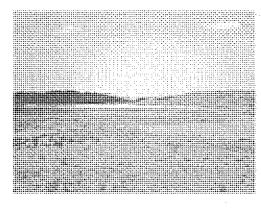
: 16/11/2010 12:16:45 PM

ATC Williams



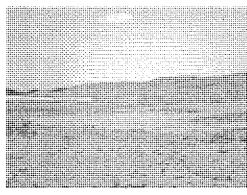
File Name
Shooting Date/Time

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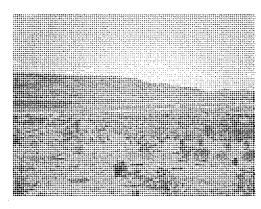
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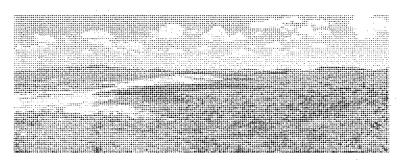
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Water management sections of the Environmental Authority applicable at the Century Mine during the 2010/2011 wet season



Permit¹

S258 Environmental Protection Act 1994 Non-code compliant Environmental Authority (Mining Lease)

Permit¹ number:

MIN100737008

Takes Effect From: 30-JAN-09

Details

Permit Holder(s)

Name

Principal Holder OZ Minerals Century Limited

Address

Level 29 Freshwater Place 2 Southbank Boulevard SOUTHBANK VIC 3006

Activity(s) Mining Lease Mining Lease Location(s) ML90045 ML90058

This environmental authority is subject to the conditions set out in the attached schedules. The conditions of this environmental authority should be read in conjunction with the Environmental Management Plan for the OZ Minerals Century Mine Project, dated September 2008, addendum Environmental Management Plan for OZ Minerals Century Mine, dated April 2008 and the combined Environmental Management Overview Strategy and Plan of Operations dated 26 June 2007.

The anniversary date of the environmental authority is: 29-OCT

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

Delegate Environmental Protection Agency 30-01-09

Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Environmental Protection Agency and the Queensland Parks and Mildlife Space.

Schedule A - General

Notification

- (A6-1)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 environmental authority, the administering authority must be notified of the release by telephone and e-mail or facsimile.
- Notifications of emergencies or incidents as required by condition number (A6-1) must include but (A6-2)not be limited to the following:

 - (a) the holder of the environmental authority;
 (b) the number of the environmental authority;
 (c) the name and telephone number of the designated contact person;
 - the location of the emergency or incident;
 - (e) the date and time of the release;
 - the time the holder of the environmental authority holder became aware of the release;
 - the estimated quantity and type of substance released;
 - (h) the suspected cause of the release;
 - a description of the potential environmental risk;
 - any sampling conducted or proposed relevant to the emergency or incident; and
 - immediate actions taken to prevent any further release and mitigate any environmental harm caused by the release.
- (A6-3)As soon as practicable, but not more than six (6) weeks following the initial notification of an emergency or incident, written advice must be provided of the information supplied in accordance with condition number (A6-2) in addition to:
 - (a) results and interpretation of any samples taken and analysed;
 - proposed actions to prevent a recurrence of the emergency or incident; and
 - (c) outcomes of actions taken at the time to prevent or minimise environmental harm.

Schedule C - Water

Release to waters

Receiving waters affected by the release of process water and / or stormwater contaminated by the mining activities must be monitored at the locations and frequencies defined in Schedule C - Table 1 and Schedule I - Map 1 and comply with the contaminant limits defined in Schedule C - Table 2 when analysed by an independent laboratory in accordance with protocols established by a "recognised entity" as defined by the Queensland Environmental Protection Agency.

Schedule C - Table 1 (Receiving water monitoring locations and frequency)

Thousand a solution of the sol	Easting (AMG)	Vortviner(AMC)	Monitodia Micaunicy
Page Creek P SW03 REC	54K 246 584	7 929 930	Per discharge event
Mitton Creek NM SW04 REC	54K 252 850	7 927 620	Per discharge event
Little Archie Creek A SW01 REC	54K 248 540	7 930 830	Per discharge event
Bull Ridge Creek* . B SW01 REC	54K 242 742	7 934 415	Per discharge event
Coglan Creek C SW08 REC.	54K 259 977	7 922 944	Per discharge event

NOTE: This does not apply to dams containing hazardous waste. NOTE: The monitoring locations are +/- 20 metres.

Schedule C - Table 2 (Receiving water contaminant limits)

Parameter	Units :	- Reese limit	- Unitely/se
pH ·	pH units	6.0 - 9.0	Range
Total Suspended Solids	mg/L	Not > 10% of background (at the time of sampling)	80 th Percentile
Electrical Conductivity	mS/cm	≤1	80 th Percentile
Electrical Conductivity	m\$/cm	1,5	Maximum
Olls and Greases	mg/L	≤ 10	80 th Percentile
Oils and Greases	mg/L	20	Maximum
Dissolved SO ₄	mg/L	≤ 500	80 th Percentile
Dissolved SO ₄	mg/L	800	Maximum
Total Arsenic	mg/L	≤ 0:03	80 th Percentile
Total Arsenic	mg/L	0.05	Maximum
Total Cadmium	mg/L	_ ≤ 0.04	80 th Percentile
Total Cadmium	mg/L	0,08	Maximum
Total Lead	mg/L	≤ 1.0	80 th Percentile
Total Lead	mg/L	1.5	Maximum
Total Zinc	mg/L	≤ 35	80 th Percentile
Total Zinc	mg/L	50	Maximum
Total Magnesium	Ca / Mg ratio		
Total Magnesium			
Cyanide (WAD)	mg/L	≤ 0.08	80 th Percentile
Cyanide (WAD)	mg/L	0,1	Maximum

NOTE: This does not apply to dams containing hazardous waste.

NOTE: The environmental authority holder to demonstrate background for Total Suspended Solids by at least three measurements from undisturbed drainage systems within 5km of monitoring site taken at similar time.

NOTE: 80th Percentile means that not more than two (2) of the measured values of the quality characteristics is to exceed the stated release limits for any ten (10) consecutive samples.

NOTE: The parameters are to be reviewed on a five yearly basis to determine the appropriateness of the monitoring and whether additional parameters should be included or existing parameters should be removed.

The environmental authority holder must investigate and report on the environmental effects including toxicity of magnesium in Page Creek and Bull Ridge Creek catchments to determine an appropriate trigger level for magnesium. This report, with recommendations and justifications, must be submitted to the administering authority by 31 October 2008. (C1-2)

End of pipe release limits (excluding wet weather spillway releases) for process water and storm water contaminated by mining activities must be monitored at the locations and frequencies defined in Schedule C - Table 3 and Schedule I - Map 2 and comply with the contaminant limits defined in Schedule C - Table 4 when analysed by an independent laboratory in accordance with protocols established by a "recognised entity" as defined by the Queensland Environmental Protection (C1-3)Agency.

Schedule C - Table 3 (End of pipe monitoring locations and frequency)

			Mentione
Monitoring point	Latitude (AMG)	Langitude (AMS)	requiency
MSP1	54K 250 185	7 927 060	Per discharge event
MSP3	54K 246 660	7 926 555	Per discharge event
MSP5	54K 246 869	7 929 060	Per discharge event
MSP6	54K 248 655	7 930 720	Per discharge event
MSP8*	54K 246 099	7 928 631	Per discharge event
MSP9* (interim)	54K 245 326	7 929 194	Per discharge event
MSP9* (final)	54K 244 814	7 929 730	Per discharge event
Coglan Creek	To be provided	To be provided	Per discharge event

NOTE: This does not apply to dams containing hazardous waste.

NOTE: The monitoring locations are +/- 20 metres.

MSP8 and MSP9 (interim) are proposed sedimentation dams to be constructed if the Western Waste Rock Dump is constructed. Actual co-ordinates will be provided to the Environmental Protection Agency, upon establishing monitoring location.

MSP9 (final) is planned to replace MSP9 (interim) in 2007 if the proposed Western Waste Rock Dump is constructed and then expanded. Depending on haulage requirements, MSP9 (final) could be built in 2003, thereby making MSP9 (interim) redundant.

Schedule C - Table 4 (End of pipe contaminant release limits)

Parameter	- Units	Release Limit	tinist lives
рН	pH units	6.0 - 9.0	Range
BOD₅	mg/L	20	Maximum
Total Nitrogen	mg/L	20	Maximum
Total Phosphorus	mg/L	5	Maximum
Oils and Greases	mg/L	20	Maximum
Dissolved SO ₄	mg/L	1000	Maximum
Total Arsenic	mg/L	0.1	Maximum
Total Cadmium	mg/L	0.01	Maximum
Total Lead	mg/L	0.1	Maximum
Total Zinc	mg/L	40	· Maximum

NOTE: This does not apply to dams containing hazardous waste.

- (C1-4)If the environmental authority holder can provide evidence that the environmental authority holder is not causing an exceedance to the limits specified in Schedule C - Table 2 then the holder is not in breach of conditions (C1-1) and (C1-3).
- In periods of wet weather or following wet weather when a release occurs from the monitoring (C1-5)locations defined in Schedule C - Table 3, then compliance will be assessed against limits specified in condition (C1-1).
- The design storage allowance on 1 November of each year for any dam containing hazardous (C1-6)waste constructed or operated within the operational land must comply with Schedule C - Table 5.

Schedule C - Table 5 (Storage design for dams containing hazardous waste)

Stopage Type	i jesi čnesto icije Pa Allowalice	Spilwy Onlogiosophysiom	Manidatojy Reporting Leve
Process Water Dam		1:100 Year ARI	50mm below spillway RL
Evaporation Dam	1:100 ARI 2 month wet season plus process inputs for the 2 month wet season	1: 10 000 ARI	168.8M (RL)
Tailings Storage Facility (TSF)		1: 10,000 ARI	N/A

NOTE: NOTE (5):

ARI means annual recurrence interval.

The design storage allowance on 1 November of each year for any dam containing hazardous waste constructed within the operational land must be equivalent to the run-off from the critical wet period plus process inputs for period. Process inputs refers to hazardous mineral process waste and water, which is being disposed of in the storage facility.

NOTE (6):

The critical design storm has a duration that produces the peak discharge for the catchments. If the MRL is exceeded the administering authority must be notified within 24 hours.

NOTE (7)

- The spillway for any dam containing hazardous waste, constructed or operated within the operational land must be designed and maintained to withstand the peak flow from the spillway ·(C1-7) critical design storm defined in Schedule C - Table 5.
- The holder of the environmental authority must mark the mandatory reporting level defined in Schedule C Table 5 on the spillway of all dams containing hazardous waste within the operational (C1-8)land.
- The holder of the environmental authority must notify the administering authority when the pondage level of the dam containing hazardous waste, reaches the mandatory reporting level defined in (C1-9) Schedule C - Table 5.

Tailings Storage Facility

The holder of this environmental authority is responsible for the making of determination and (C2-1)keeping of records of the Tallings Storage Facility water quality characteristics at the frequency and location specified in Schedule C - Table 6 of the environmental authority.

Schedule C - Table 6 (Tallings Storage Facility Contaminant Monitoring Requirement)

Quality Characteristic	Tallings Dam Decantiand	Arallings Discinates Piper
pH (pH Units)	Monthly	Monthly
Total Dissolved Solids (mg/L)	Monthly	Monthly
Total Suspended Solids (mg/L)	Monthly	Not Applicable
Electrical Conductivity (mS/cm)	Monthly	Monthly
Total Zinc (mg/L)	Monthly	Monthly
Total Cadmium (mg/L)	Monthly	Monthly
Total Lead (mg/L)	· Monthly	Monthly
Turbidity (NTU)	Monthly	Not Applicable
SO ₄ (mg/L)	Monthly	Monthly
Total Hydrocarbons (mg/L)	Monthly	Monthly

- The monthly quantity of contaminants released to the tallings storage facility will be determined by (C2-2)the holder of this environmental authority utilising a flow meter installed in the tailings discharge pipe.
- The monthly quantity of contaminants released to the evaporation pond will be determined by the (C2-3)holder of this environmental authority utilising calculations based on the height of water over the decant structure and estimates of inputs from other sources.
- The water level in the tailings dam and evaporation pond must be monitored and recorded weekly. (C2-4)

Stream sediment contaminant levels

All reasonable and practicable erosion protection measures and sediment control measures must be (G3-1)implemented and maintained to minimise erosion and the release of sediment.

(C3-2) The environmental authority holder must investigate and develop stream sediment concentration trigger values for mine site receiving waters by 31 October 2008.

Sewage effluent

(C4-1) All effluent released to the Darlmah Village sewage treatment plant evaporation pond or the West Go Line Sewage Treatment Plant, must be monitored at the frequency and for the parameters specified in Schedule C - Table 7.

Schedule C - Table 7 (Sewage effluent quality targets for dust suppression and irrigation)

Parameter	elwedinii	Units	i mil type	Monitoring frequency	
Total suspended solids	30.	mg/l	4 out of 5 consecutive samples.	Six monthly	
Total suspended solids	50 -		Maximum		
Biological oxygen demand	20	mg/t	4 out of 5 consecutive samples.	Six monthly	
	. 30		Maximum		
pH between -	6.5 8.5	pH unit	Range	Monthly	
Faradaalifamaa	1000	OFIIMOD .	CFU/100 Median ¹	Quarterly	
Faecal coliforms	4000	GF0/100	Maximum	Quarterly	
Free residual chlorine level	0.2	mg/L	Range	Monthly	
riee residual ciliofine level	0.7	mg/L	rango	Wichting	

Median of at least 5 but no more than 10 consecutive samples

- (C4-2) Sewage effluent used for dust suppression or irrigation must not exceed sewage effluent release limits defined in Schedule C Table 7.
- (C4-3) Sewage effluent used for dust suppression or irrigation must not cause spray drift or over spray to any sensitive or commercial place.
- (C4-4) Subject to Conditions (C4-1) to (C4-3) inclusive, sewage effluent from sewage treatment facilities must be reused or evaporated and must not be directly released from the sewage treatment plant to any water way or drainage line other than in accordance with condition (C4-5).
- (C4-5) In periods of wet weather or following wet weather, when no further irrigation of effluent is reasonably practicable and when effluent storage ponds are full, the release of effluent to waters is permitted from the release point(s) defined in Schedule I Map 3 and in accordance with the release limits in Schedule C Table 8 when analysed by an independent laboratory in accordance with protocols established by a "recognised entity" as defined by the Queensland Environmental Protection Agency.

Schedule C - Table 8 (Darlmah Village Sewage effluent pond discharge quality targets)

(c) uality.	Kelevee limit	k.e. (Units	le limite type	Monitoring /
characteristics pH	6.0 - 9.0	1	Range	Per Discharge Event
BOD ₅	20	mg/L	80 th Percentile	Per Discharge Event
BOD ₆	60	mg/L	Maximum	Per Discharge Event
Total Suspended	30	mg/L	80 th Percentile	Per Discharge Event
solids Total Suspended	60	mg/L	Maximum	Per Discharge Event
solids Dissolved Oxygen	>2	mg/L	Maximum	Per Discharge Event
Free Chlorine Residual	1.0	mg/L	Maximum	Per Discharge Event
Faecal Coliforms, based on a minimum of five	1000	Colonies per 100 millilitres	Median	Per Discharge Event
samples collected Nitrogen	15	. mg/L	Maximum	Per Discharge Event
Phosphorous	5	mg/L	Maximum	Per Discharge Event

NOTE: 80th Percentile means that not more than two (2) measured values of the quality characteristic are to exceed the stated release limit for any ten (10) consecutive samples.

Groundwater

Groundwater affected by the mining activities must be monitored at the locations and frequencies defined in Schedule C - Table 9 and Schedule I - Map 4 and analysed for the parameters defined in Schedule C - Table 9 by an independent laboratory in accordance with protocols established by a "recognised entity" as defined by the Queensland Environmental Protection Agency. (C5-1)

Schedule C - Table'9 (Groundwater monitoring locations and frequency)

and and a second	Latitudo	Foldjijide:	Sintectal	a Nonlioilne frequency
CCK_GW01	250092	7925320	169.34	Quarterly
CCK GW09	255673	7920460	142.07	Quarterly
BRCK_GW01	245363	7930018	134.42	Quarterly
NMCK_GW06	250323	7926551	152.73	Quarterly
PCK_GW15	247130	7926407	143.74	Quarterly
LAC_GW03	248851	7929667	149.22	Quarterly
PCK_GW23	248663	7927347	170.80	Quarterly

NOTE: The monitoring locations are +/- 20 metres.

Schedule C - Table 10 (Groundwater Monitoring Parameters)

Parameter 1	Unis Unis
Water Level	m
pН	· pH units
Electrical Conductivity	mS/cm
Dissolved SO ₄	mġ/L
Total Cadmium	mg/L
Total Arsenic	mg/L
Total Lead	mg/L
Total Zinc	mg/L

Schedule C - Table 11 (Groundwater contaminant trigger levels)

- Rarametel	- Units	Limitype	== dontaminan == diggertevels=
Water Level	m	Range	>1.0m above local plezometric surface
рН	pH units	Range	0.5m outside natura range for that bore
Electrical Conductivity	mS/cm	Range	>1,000 above natural range for that bore
Dissolved SO ₄	mg/L	80 th Percentile	<=500 (in limestone)
Dissolved SO ₄	mg/L	80 th Percentile	<=4000 in Proterozoic shale)
Total Cadmium	mg/L	80 th Percentile	<=0.03
Total Arsenic	mg/L	80 th Percentile	<=0.04
Total Lead	mg/L	80 th Percentile	<=1.0
Total Zinc	mg/L	80 th Percentile	<=35

- (C5-2) Subject to Condition (C5-1), if the groundwater contaminant trigger levels defined in Schedule C Table 11 are exceeded then the environmental authority holder must complete an investigation into the potential for environmental harm and notify the administering authority within 3 months of receiving the analysis results.
- (C5-3) Subject to Condition (C5-1), groundwater contaminant limits must not exceed the contaminant limits defined in Schedule C -Table 12.

Schedule C - Table 12 (Groundwater contaminant limits)

Parameter //	Units	Minimum - P	Maximum
Water Level	m	<2.0m below local piezometric surface and not a result of dewatering	>2.0m above local plezometric surface
Н	pH units	6.0	9.0
Electrical Conductivity	mS/cm	NA	>1500 above background for each individual bore
Dissolved SO ₄	mg/L	NA	800 (In Cambrian Limestone)
Dissolved SO ₄	mg/L	NA	6000 (In Proterozoic
Total Cadmium	mg/L	. NA	0.08
Total Arsenic	mg/L	NA	0.05
Total Lead	mg/L	NA	1.5
Total Zinc	mg/L	. NA	50

(C5-4) The method of water sampling required by this environmental authority must comply with that set out in the latest edition of the Environmental Protection Agency's "Water Quality Sampling Manual".

Concentrate Recovery Facility

(C6-1) The only authorised release from the concentrate recovery facility will be through pipework to an existing concentrate floor spillage bund at the process plant during an emergency event.

Schedule F - Land

Dams containing hazardous waste

(F3-1) The construction or operation of any dam containing hazardous waste within the operational land must comply with Schedule F - Table 3.

Schedule F - Table 3 (Size and purpose of dams containing hazardous waste)

Maximum sudace area of dam (ha)	volume of dam	Maximum idepth of dam (m)	Pinposerol dam
0,6	0.013	4	"The containment of process water used in the extraction of zinc and lead at the Century mine"
1000	140	35	"The containment of tallings resulting from the extraction of zinc and lead at the Century mine"
	orea of dam (ha)	Maximum surface volume of dam area of dam (ha) (QL) 0,6 0.013	Maximum surface volume of dam, depth of dam area of dam (ha) (GE) (m) 0.6 0.013 4

Note (1): The name of the dam containing hazardous waste should refer to the name of the dam e.g. process residue facility and decant dam.

Note (2): For dams, which do not require a dam wall, input the maximum void depth e.g. where dams are formed by excavating below the land surface or backfilling a residual void.

Note (3): Purpose of the dam should outline the designed function, e.g. "the permanent containment of tailings resulting from the extraction of nickel, cobalt and other metals at the XYZ Refinery".

(F3-2) Any dam containing hazardous waste constructed or operated within the operational land must be located within the areas defined in Schedule F - Table 4. Schedule F - Table 4 Location of dams containing hazardous waste

ากตะจะสำนาจภายากเหตุกระสบใหม่		- Northing
v - v - v _a s(e _i (t)-one v - v	F (All(R)	(AMG)
	249145	7926752
	249127	7926847
Process water dam	249111	7926845
*	249106	7926871
*	249044	7926861
	249069	7926739
Tallings Storage Facility	252042.8	7922051
(TSF)1	252397.4	7922217
	252440.1	7921750
ν.	252826	7921063
	252464.1	7920666
	251754.7	7920416
	251171.6	7920520
	250532.1	7920824
	250500.5	7921109
	250688.8	7921297
	250621	7921616
	250994.5	7922077
	250980.3	7922642
	251079.6	7922785
	250916.8	7923030
	251098.2	7923219
	250948.9	7923479
	251324.4	7923514
	251558.5	7923599
	251807.1	7923483
*	251657.8	7923184
~	252181.3	7922994

	251871	7922710
140	251714.5	7922418

NOTE (1): The Tailings Storage Facility includes the lead concentrate storage dams.

- (F3-3) The holder of the environmental authority must design, construct and operate all high-hazard dams containing hazardous waste in accordance with the "Code of Environmental Compliance for High Hazard Dams Containing Hazardous Waste".
- (F3-4) The holder of the environmental authority must design, construct and operate all low-hazard dams containing hazardous waste and non-hazardous dams in accordance with the criteria outlined in Appendix B of the "Code of Environmental Compliance for Mining Activities".

Inspection of Dams

- (F4-1) High-hazard dams containing hazardous waste shall be inspected by a Registered Professional Engineer Queensland (RPEQ) prior to 1 November each year or at any time if alarming, unusual or otherwise unsatisfactory conditions are observed.
- (F4-2) For each Inspection, the engineer shall assess the condition of the dam and its foundations, determine the hydraulic adequacy of the dam and assess the adequacy of the works with respect to dam safety.
- (F4-3) For each inspection, two copies of the engineer's report and any recommendations as to measures to be taken to ensure the integrity of the dam shall be furnished to the administering authority within 28 days of receipt of the report.

Decommissioning of Dam - Objective

- (F5-1) Dams containing hazardous waste as defined in Schedule F Table 4, other than the structure mentioned in condition F5-2, must not be abandoned and must be decommissioned to a situation where water can no longer be stored in the dams. The dams and their contained waste(s) must be stable, whereafter the dams are no longer dams and they become landforms on the operational land and must comply with the rehabilitation requirements of this environmental authority.
- (F5-2) The evaporation dam, which forms part of the Tallings Storage Facility as defined in Schedule F Table 4 must not be abandoned and must be decommissioned to a situation where the dam and its contained waste(s) are stable, and comply with the rehabilitation requirements of this environmental authority.

Decommissioning of Dam - Documentation and Compliance

(F6-1) Decommissioning activities for dams must be documented in detail in the plan of operations under which the activities are to occur. Where the detailed documentation is not already contained in the Design Plan for the dam, the detailed documentation is considered to be an amendment to the design plan and must be submitted as an amendment to the design plan required by the "Code of Environmental Compliance for High-Hazard Dams Containing Hazardous Waste".

17059/10

. "16 GARBUTT BUSINESS CENTRE , T QUEENSLAND 4814 AUSTRALIA HONE 61 7 4769 5031 "SIMILE 61 7 4769 5631 "MGROUPITD.COM

Rec'd - ODG 2 2 SEP 2010



16 September 2010

Mr John Bradley
Director-General
Department of Environment and Resource Management
GPO Box 2454
CITY EAST QLD 4002

Dear Mr Bradley

UPDATE ON MMG CENTURY WATER MANAGEMENT SYSTEM IMPROVEMENT PROJECTS

I am writing to update you on water management improvement projects being undertaken at MMG Century's Lawn Hill mine site.

As you know, Century pleaded guilty to two charges brought by the Department of Environment and Resource Management (DERM) in relation to the discharges of contaminants into Page Creek, which runs through our mining operation, during the 2008-09 1-in-200 year wet season.

Over the past two years, we have been working to build Century into a stronger, more sustainable business and understand that to achieve this we must minimise the impact of our operations on the environment. In accordance with this commitment, we have invested more than \$13.5 million since early 2009 to improve the water management system at our Lawn Hill mine site.

As part of this investment, Century completed \$8 million of corrective and preventative water management improvement projects in 2009. These works included:

- > Capping of the South West Waste Rock Dump to minimise water runoff.
- > The construction of Sediment Dam 10 to a total capacity of approximately 442ML.
- > Remediation works at Page Creek following mine water discharges from the mining area into the creek system during the 2008-09 wet season. In accordance with the DERMapproved remediation plan, contaminated soil was excavated from the first 3.5 kilometres of Page Creek.

We are confident that these improvement works contributed to the site recording no environmental exceedences during the 2009-10 wet season, despite significant rainfall events.

Century has recently completed its annual post-wet season receiving water impact assessment (limnology investigation), which has been conducted annually since 2005. We are pleased to report that this assessment shows that there has been a significant improvement in the ecological condition of Page Creek compared to 2009 and that Page Creek is in its best condition since 2005.

Following the 2009-10 wet season, we commenced an additional \$5.5 million program of works to further improve our water management system by expanding the capacity of three sediment dams on site and improve the capability of our reticulation network. Works are current underway to:

- > Increase the capacity of Sediment Dam 3 by 141.7ML to 503ML.
- > Increase the capacity of Sediment Dam 8 by 75ML to 100ML.
- > Increase the capacity of Sediment Dam 10 by 625ML to 1067ML.

The total capacity of Sediment dams 3, 8 and 10 will be increased from 841ML in 2009 to 1670ML upon completion of this program of works. Works are currently progressing ahead of schedule and are expected to be completed well in advance of the 2010-11 wet season.

In addition to these works, Century is undertaking a prefeasibility study for a project to further improve the site's water transfer system in 2011. The current value of this project is estimated at approximately \$4.8 million.

I would like to take this opportunity to invite you and your representatives to tour our Lawn Hill mining operation and water management system at a time of your convenience.

Please do not hesitate to contact me on	or at	to	arrange
a visit or discuss any matter.		_	

Kind Regards



Karl Spaleck General Manager



17 NOV 2010

Ref CTS 20112/10

Department of Environment and Resource Management

Mr Karl Spaleck General Manager MMG Century Mine PO Box 8016 GARBUTT BC QLD 4814

Dear Mr Spaleck

I refer to our recent meeting at the Mount Isa/Cloncurry Community Cabinet concerning MMG Century Limited (MMG) projects.

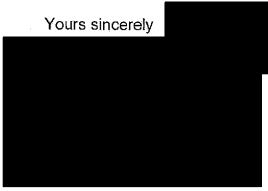
Thank you for providing me with an update on MMG projects in the Mount Isa region. I appreciate the opportunity these Community Cabinets provide to meet people like yourself and to discuss issues of importance. I trust our discussions proved to be as informative for you as they were to me.

I understand from our meeting that there has been significant expenditure and considerable effort by MMG to improve environmental management practices at the Century Mine and the Karumba Port concentrate de-watering facility.

I also understand that MMG has submitted an Environmental Impact Statement to the Department of Environment and Resource Management for the proposed Dugald River project near Cloncurry and that MMG is currently carrying out further exploration in the vicinity of the Century Mine to extend the mine life.

I encourage MMG to implement a continuous improvement regime to ensure that environmental management keeps pace with identified best practice at all existing and future operations.

Should you have any further enquiries, please do not hesitate to contact Senior Environmental Officer, Environmental Services, North Region of the department on telephone



From:

Sent:

Friday, 18 March 2011 2:37 PM

To:

Cc:

Karl Spaleck;

@blakedawson.com

Subject:

Program Notice and Notification re elevated EC in Page Creek 15 Marc h 2011

Attachments: Program Notice - Non compliant EC 15 March 2011.pdf; DERM Notification 18 March

2011 Page Creek EC on 15 Mar 2011.pdf

See attached Program Notice and Notification regarding the elevated EC detected in Page Creek on 15 March 2011.

If you have queries please contact myself or John Milsom.

regards damien

Superintendent Environment

MMG | MINERAL AND METALS GROUP

PO BOX 8016

GARBUTT BC QLD 4814 AUSTRALIA

T M F

@mmg.com

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ML30045

ML 90058

ISA 85

174596



Application form

Environmental Protection Act

OFFICIAL USE ONLY	Program notice of relevant event
DATE RECEIVED	This form is to be used where a person wishes to provide a program notice under section 350 of the <i>Environmental Protection Act 1994</i> of an act or omission that has caused or threatened environmental harm.
PILE NUT	Program notice details
PROJECT REF	Provider of program notice of relevant event
COMPLETE FORM CORRECT AA	MMG Century Limited
ENTERED BY [SIGNATURE]	2. Responsible person
DATE	Manager - Environment
	3. Current registration certificate or environmental authority number (if applicable)
	Environmental Authority MIN100737008
A relevant event is an act or omission that has caused or threatened environmental harm in	4. When did the relevant event occur?
the carrying out of an activity by the person, and is lawful apart from the Environmental Protection Act 1994.	See response to question 5 below.
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	5. Description of the relevant event Due to an extreme rainfall event, Sedimentation Dam 10 has reached capacity and is currently releasing via the emergency spillway into Page

13 March, and is ongoing.

result was measured in Page Creek.

Creek. The release event commenced at approximately 1 pm Sunday

At 12.00 noon on 15 March 2011 a potentially elevated EC monitoring



6. Location of relevant event

NAME OR TYPE OF PLACE	Century Mine	
STREET ADDRESS	ML 90045 and ML 90058	
LOT(S)	N/A	
PLAN(S)	N/A	
LOCAL GOVERNMENT	Burke Shire	

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

Due to the weather, and given the release is ongoing, MMG Century is not in a position to determine whether the release has caused or threatened any environmental harm. Given the volume of rainfall experienced, the release water has had the benefit of significant dilution In addition, utilisation of clean water to increase flows in Page Creek will be implemented.

Monitoring results obtained at PageCreek receiving water monitoring location P_SW03-REC on 15 March are as follows (field measurements to be confirmed by laboratory results); EC 1.7 Ms/cm and pH 6.8. Samples have also been sent off site to Envirocheck Laboratory in Townsville for full analysis with first results expected by Monday 21 March 2011.

8. What action has been taken to contain, clean up, rehabilitate and restore the environmental impact in relation to the relevant event?

Twice daily field monitoring is being carried out at Page Creek monitoring location P_SW03_REC. Regular sampling and full analysis is also being completed at the same location (samples taken on 15 and 16 March so far). Ongoing management of water movement as per the site Water Management Plan is continuing to ensure minimal environmental impact from the release event including utilisation of clean water to increase flows in Page Creek where possible. Following the wet season, studies will be completed to assess any impact related to wet season releases and cleanup/rehabilitation will be instigated where appropriate.

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*.

	•
•	•
	DATE
	18 March 2011

10. Provider checklist

\boxtimes	Notice completed and signed			
	Sup	porting 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:
Facsimile:
Email:
@derm.qld.gov.au



ENVIRONMENTAL NOTIFICATION TO DERM					
Holder of Authority (EA/DA) MMG Century					
EA/DA number (DERM Permit Number)		nber) Mi	N100737008 (EA -	Century N	/line)
MMG Designated			DERM Contact:		
Contact Person	Superintende	n t	(Name and Position)	Coming	0.1.
(Name and Position)	Environment	111		Senior DERM	Officer
	2				
Initial Contact			Contact		***
Details:			Details:	***************************************	
Date of Initial	15 March 201	1	Time of Initial	12.00 no	on
Contact:			Contact:		
Method of Initial	<u>Personne</u> l c	ommunica	tion	to	
Contact:	at Pa	age Creek		-	71.
	2 * 7			70.1	
Incident Leasting / A.		ent Infor			
Incident Location / Area	Sealment Da P_SW03_RI	am 10 and F EC	Page Creek receiving v	vater monito	ring location
Incident Description	Release fro	m Sedimer	nt Dam 10 and pote	entially eleva	ated EC at
	receiving wa	ater monitori	ng location (awaiting	lab confirma	ition of field
Incident Date & Time	Saturday 13				
Time EA/DA Holder	Saturday 13	March at 1	pm (field readings of E	C were belo	w 1.5 until 7
became aware of release Estimated quantity and	am on 15 Ma N/A	arch)			
substance type	IN/A				
Actual/potential Cause	High rainfal	High rainfall event; rainfall figures from the BOM Century Airport Weather Station showed rainfall (mm) as follows: 17.2 on 10 March,			
	Weather Sta	ation showed March 82.6 c	d rainfall (mm) as follo on 12 March and 207.2	ows: 17.2 or	1 10 March,
Description of potential	Elevated EC	in Page Cr	eek at the receiving w	rater monitor	ing location
environmental risk	P_SW03_RE	EC			
Immediate actions taken to Ongoing man prevent/mitigate harm from sediment		nagement o nt dams.	f the transfer/moveme	nt and relea	se of water
Notification of affected			ers (i) phone call on	14 March f	rom
parties	to	to Manager (Lawn Hill and Riversleigh Station) (ii) K Spaleck on 16 March personal communication with Board of Lawn			
	Hill and Rive	n 16 iviaren rsleigh Pasto	personal communicat oral Holding Company	ion with Boa (LHRPHC)	ard of Lawn
Any sampling conducted	ı İ		on 15 March) of EC = 1		1 E == C/o==
or proposed including date/time	maximum) a	nd pH = 6.8	(criteria = 6-9 units)	. r (criteria –	1.5 III5/CIII
Samples taken and s		en and sent	to lab for urgent analys	sis	
MMG/RIMS Referenc	e HEN-2830	73			
		Signatorie	S		
Name - Accountable Mgr: Signed: Date: 18 March 2011			18 March		
Name - Environment Mgr a/g: Signed: Date: 18 March			18 March		
Nama Cita Cart E				2 011	
Name - Site Senior Exe Karl Spaleck	ecutive:	Signed:		Date: 2011	18 March
<u> </u>					

CN882311

From:	
Sent: Fr	riday, 22 April 2011 9:36 AM
To:	
Cc:	; Karl Spaleck;
Subject: R	E: Program Notice
Thanks for yo	ur email.
	G Century gave notice of the original release by way of program notice, releases from sediment hished and our monitoring indicates that we are now in compliance with the conditions of our
On that basis,	the company has decided that it will not be necessary to submit a voluntary TEP.
Please let me	know if you have any questions.
regards	
Superintender	nt Environment
MMG MII	NERAL AND METALS GROUP
PO BOX 8016	6 C QLD 4814 AUSTRALIA
T	@mmg.com
From:	[mailto:reasonable @derm.gld.gov.au]
Sent: Monday	y, 18 April 2011 7:03 AM
To: Cc:	Karl Spaleck;
Subject: RE:	Program Notice

Thanks for the update. Just to clarify for you -

As I mentioned on during our telephone conversation on Friday the timeframes for the submission of the TEP cannot formally be extended as there is no opportunity for this under the *Environmental Protection Act 1994* (EPAct). However, as the TEP was not submitted by the date stated in the *Notice of receipt of program notice* (15 April 2011) this will have ramifications in relation to the effect of the program notice submitted by MMG. Please take a look at section 350-357 of the EPAct which states that the program notice will cease to have effect if the TEP is not submitted by the date specified in the notice. That said, MMG may still submit a voluntary TEP under section 333 of the EPAct but as stated above the program notice will still cease to have effect and will form a voluntary TEP only. If you would like to discuss this further please give me a call.

In terms of the study to be undertaken by ACTFER I am happy to take a look through a scoping document for MMG prior to undertaking the study to ensure it covers all of DERM's concerns. As previously discussed with DERM will be issuing MMG with a notice to prepare an environmental evaluation (EE) in relation to the limnology study in due course so it is critical that the study covers all of the issues to be included in the notice to require the EE.

Please give me a call if you have any queries.

Kind regards

Senior Environmental Officer Mining & Industry, North Region
Department of Environment and Resource Management Telephone: Facsimile:
Visit us online at www.derm.qld.gov.au
Department of Environment and Resource Management 5B Sheridan Street (PO Box 937), Cairns Qld 4870
From: [mailto @mmg.com] Sent: Friday, 15 April 2011 4:31 PM To: [Cc: Karl Spaleck; Subject: RE: Program Notice]
Thanks for the discussion today regarding the submission of the TEP regarding Page Creek.
As discussed, we are already liaising with ACTFR to commence the assessment of Page Creek after the recent wet season.
We will have the TEP to you by Friday 22 April. regards
Superintendent Environment MMG MINERAL AND METALS GROUP PO BOX 8016 GARBUTT BC QLD 4814 AUSTRALIA T - M - M - M - M - M - M - M - M - M -
From: [mailto: [mailt

The TEP in relation to the program notice submitted by MMG for the non compliance discharges in Page Creek in March is due for submission today (as per the attached notice).

How are MMG going with drafting this document?

Kind regards

Senior Environmental Officer

Mining & Industry, North Region

Department of Environment and Resource Management

Telephone:

Facsimile:

Visit us online at www.derm.qld.gov.au

Department of Environment and Resource Management

5B Sheridan Street (PO Box 937), Cairns Qld 4870

From:

Sent: Thursday, 24 March 2011 3:18 PM

@mmg.com;

<u>Cc:</u>

Subject: Program Notice **Importance:** High

Good Afternoon,

Please find the attached documents relating to the Program Notice submitted to the Dept on 18 March 2011. Originals have been placed in today's mail. If you have any queries, please contact this office.

<<2403 mmg program notice.pdf>> <<TEP-feesPolicy.pdf>>

Environmental Support Officer

Department of Environment and Resource Management

5B Sheridan Street, Caims Q 4870

PO Box 937, Cairns Q 4870

Ph:

Email:

@derm.qld.gov.au

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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CTS No. 14992/11

Department of Environment and Resource Management MINISTERIAL BRIEFING NOTE

TO:

Minister for Environment

SUBJECT: Century Mine Water Management update

Advisor		C)K
		/ Approved mation requ	
Minister			
Dated	1	1	

TIMEFRAME/REQUESTED BY

- On 24 August 2011 the Minister's Office requested an update on mine water management issues at the Century Mine and the Department of Environment and Resource Management's proposed actions to minimise the risk of further releases in the upcoming wet season.
- Noting of this brief is urgent to ensure the Minister is aware of the current status of mine water management at the Century Mine.

RECOMMENDATION

It is recommended that the Minister:

- note that the department is working with MMG Century Limited (MMG) to minimise the risk of future contaminated water discharges from the mine.
- note that MMG must undertake urgent works to reduce the risk of contaminated water discharges from the mine during the next wet season.

BACKGROUND

Water management

- Heavy rainfall in the 2008 2009 wet season led to contaminated water being discharged from the Century mine, resulting in MMG being charged with causing serious environmental harm.
- Due to these discharges the department required MMG to undertake an environmental investigation which included the preparation of an assessment of the site's water balance (that is, an understanding of where the water come from, what happens when it is on site, and where it goes) to improve water management at the mine.
- Using this assessment MMG has a contingency plan to reduce the risk of contaminated water discharges by pumping contaminated water from sediment dams to the tailings storage facility and the mine pit. This plan is limited by the mine's pumping capacity.
- MMG has invested significant financial resources in works to minimise the risk of future contaminated water discharges. Briefing note CTS 04361/11 provides information on the works undertaken (Attachment 1).
- These works have not prevented contaminated water discharges from the mine but they have reduced the volume and frequency of these discharges.
- In March 2011, as a result of prolonged heavy rainfall, contaminated water discharged from the mine due to inadequate pumping capacity and lack of storage in the sediment dams.
- Additional pumps arrived at the mine in June 2011 in preparation for the upcoming wet season..
- The department is undertaking a formal investigation in relation to the environmental impacts of the discharges that occurred in March 2011 that will determine what further action is required.

Evaporation dam

- The capacity of the mine's evaporation dam has been highlighted previously in CTS12308/11 (Attachment 2). This briefing provides further background in relation to the design storage allowance (DSA) and large volume of contaminated water currently held in the evaporation dam.
- Failure to achieve the evaporation dam's DSA significantly increases the risk of contaminated water discharges.
- On 5 July 2011, MMG submitted an application to amend the environmental authority it holds for the mine to construct a clean water diversion and achieve the evaporation dam DSA.
- Due to the extended timeframe associated with preparation of documents in support of the amendment application MMG decided to lodge a draft transitional environmental program (TEP) to ensure the construction of the clean water diversion is completed prior to the wet season and the

Author	Cleared by	Cleared by	Recommended:
Name:	Name: Rob Lawrence	Name: Mike Birchley	Name:
Position: Senior Environmental	Position: RM. ES	Position: ADG, RSD	Director-General, DERM
Officer	Tel No:	Tel No:	Tel No:
Tel No:	Name:	Name: Terry Wall /NWCW	Date:
Date: 26 August 2011	Position: RSD, North	Position: Associate DG, OER 2-9	• 4
	Tel No:	Tel _r No:	
File Ref: CNS8234		MCUEIVEU U 1 SEP ZU	Page 1 of 2

Page 1 of 2

potential for contaminated water discharges is minimised.

CURRENT ISSUES

- The department is currently undertaking a formal investigation in relation to the environmental impacts of the contaminated water discharges that occurred in March 2011.
- On 29 August 2011 the TEP to authorise the construction of the clean water diversion was granted by the department.
- The TEP requires MMG to complete all of the earthworks required to construct the clean water diversion and to achieve the DSA prior to the commencement of the upcoming wet season.
- Compliance with the TEP will minimise the risk of contaminated water being discharged from the mine.
- MMG has ordered more specifically designed pumps to increase its pumping capacity at the mine and these pumps are expected to arrive in September 2011.
- The application to amend the environmental authority will incorporate the TEP works in the conditions of the environmental authority held by MMG for the mine.

RESOURCE/IMPLEMENTATION IMPLICATIONS

- If an objection is received from the public as a result of the public notification process which is part of the environmental authority amendment application, it is possible that the ability to address issues raised in the objection will be restricted.
- Significant departmental resources (Environmental Services, Compliance and Investigation and Litigation) will be required if contaminated water is discharged from the mine.

PROPOSED ACTION

- In November and December 2011 the department will conduct compliance inspections to ensure TEP objectives have been met and to ensure measures across the site have been implemented to minimise the risk of a contaminated water discharge. This will include an assessment of the pumping capacity at the sediment dams.
- The department will finalise the environmental authority amendment before the wet season.
- Compliance and investigations was scheduled to send the final brief of evidence relating to the formal investigation to litigation for review by 31 August 2011.

OTHER INFORMATION

- Conditions have been applied to the TEP to ensure the works are conducted in a manner that will minimise the potential for environmental harm.
- The department is awaiting additional information from MMG to finalise the assessment of the environmental authority amendment application.

MINISTER'S COMMENTS

ATTACHMENTS

- Attachment 1 CTS04361/11 Briefing note Discharge from Century Mine
- Attachment 2 CTS12308/11 Briefing note Century Mine Evaporation Dam approvals

CTS No. 04361/11

Department of Environment and Resource Management MINISTERIAL BRIEFING NOTE

TO:

Minister for Environment and Resource

Management

SUBJECT: Discharge from Century Mine

	Advisor TW GK
	Dated 28/3/1/
	Approved Not Approved Noted
	Further information required
	Minister
	IAIII 199(C)
į	Dated / /

TIMEFRAME

 Noting of this brief is urgent to ensure the Minister is kept up to date on water management issues and details relating to a discharge from Century Mine.

RECOMMENDATION

It is recommended that the Minister:

• note that there has been a discharge of poor quality water from Century Mine and the actions the department is taking.

BACKGROUND

- Century Mine is an open cut lead and zinc mine operated by MMG Century Pty Ltd (MMG) located approximately 250 kilometres north-west of Mount Isa.
- Discharges of poor quality water from the mine previously occurred in early 2009 resulting in the contamination of the downstream environment.
- The 2009 release resulted from approximately 1000 millimetres of rainfall at the mine during the entire 2008 / 2009 wet season. During the current wet season, the mine has already received 1100 millimetres of rainfall, the bulk of which has fallen during the last month.
- The high intensity of rainfall leading to the current release is demonstrated by the mine receiving 208 millimetres in a 24 hour period and over 300 millimetres in a 72 hour period, this is nearly half the average yearly rainfall for the mine.
- The rainfall intensity experienced across North Queensland during the current wet season has been briefed separately (refer Attachment 1).
- Following the 2009 release the department issued the mine with an Environmental Evaluation to investigate and rectify impacts caused by the discharges and improve water management systems used at the mine.
- Following a formal investigation by the department into the 2009 discharges, MMG were charged with causing serious environmental harm, and in March 2010 plead guilty to the charges and were fined \$130 000.
- Since the 2009 discharges, MMG has undertaken numerous works on site to improve water management including construction of a new sediment dam and expansion of existing sediment dams providing a combined additional storage capacity of 800 megalitres.

In September 2010 MMG wrote to the Minister (refer Attachment 2) to provide an update on

improvements made to water management systems at the \$13.5 million.

File Ref: CNS8234

CURRENT ISSUES

 On 14 March 2011, MMG notified the department that due falling in the previous 72 hours sediment dams were disch

• Based on monitoring carried out by MMG, the discharges mine environmental authority.

MMG also advised that one of the sediment dams had been

CON Cleared by Author Cleared by Name Name: Terry Wall Name: Position: Team Leade Position: RSD North Reg Position: Associate Tel No: Tel No: Tel No: Date: 15 March 2011 Name: Mike Birchley Name: Position: A/ADG, RSD 11 1 Position: Tel No:

e discharges

With the provides an update

Cleared by
Name: Terry Wall
Position: Associate
Tel No:
Name:
Position: F
Tel No:

Hi "II,

- MMG advised the department that downstream water users have been notified of the releases.
- The mine contingency plan for management of large rainfall events involves transferring
 excess water from the sediment dams to the tailings storage facility and mine pit; however,
 MMG has advised that due to the high intensity of the rainfall, their pump capacity has been
 exceeded.
- On 15 March 2011 MMG advised the department that the water quality in the sediment dams had deteriorated and no longer complied with water quality limits set in the mine environmental authority including the downstream compliance point in Page Creek.
- The deterioration in water quality occurs due to the water entering the dam coming from within the waste rock dumps. Infiltration through the waste rock dump causes interactions with materials containing metals and salts, and this reaction mobilises some of these contaminants and leads to a deterioration of the water quality in the dams over time.
- Department officers inspected the mine on 15 and 16 March 2011, and took water samples for metals and other contaminants with results expected to be provided by the laboratory within 3 weeks.

RESOURCE/IMPLEMENTATION IMPLICATIONS

N/A

PROPOSED ACTION

- The department's proposed actions are as follows:
 - Liaise with the containment systems branch to ensure that sediment dam integrity is maintained.
 - Review options for using other storages at the mine as interim contaminated water storages in conjunction with the department's containment systems unit.
 - Brief Compliance and Investigations Unit to assist in investigations relating to the discharge of contaminated waters from the mine; and
 - Notify the Burke Shire Council of the contaminated discharge and establish a line of communication to ensure they are updated of developments.

OTHER INFORMATION

 The department will brief Burke Shire Council to ensure they have been appraised of the situation.

MINISTER'S COMMENTS

ATTACHMENTS

- Attachment 1 CTS04273/11 North Queensland Wet Season Update
- Attachment 2 Letter from MMG to Minister Jones dated 16 September 2010

CTS No. 04273/11

Department of Environment and Resource Management MINISTERIAL BRIEFING NOTE

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Minister for Environment and Resource

Management

Advisor	OK
Dated	1 1
	d Not Approved Noted
Further	r information required
Minister	
Dated	I = I
I .	

SUBJECT: 2010/2011 North Queensland Mining Wet Season Update

TIMEFRAME

• This briefing note is urgent to keep the Minister informed of the current status of mines and major industrial sites in North Region.

RECOMMENDATION

It is recommended that the Minister note:

- the current status of mines in North Queensland in relation to water management during the present wet season.
- the department is monitoring sites across North Queensland with a focus on high risk sites.

BACKGROUND

- The 2008/2009 wet season in North Queensland was one of the wettest on record with several sites receiving the highest recorded rainfall.
- During the 2008/2009 wet season 18 mine sites across North Queensland discharged water from site.
- Of the 18 mine sites that discharged, the volumes and quality of the discharges varied from site to site, with eight sites conducting clean up and rehabilitation works within impacted waterways.
- During 2009 the Department of Environment and Resource Management focused on ensuring that the sites that discharged carried out works to remediate the off-site impacts and to ensure the risk of a future unauthorised discharge was minimised.
- The 2009/2010 wet season was above average according to reports from the Bureau of Meteorology (BoM). However, overall rainfall was significantly less than the 2008/2009 wet season and due to the works implemented across various mine sites no contaminated discharges were recorded.
- In 2010 the department proactively worked with mining companies to further improve water management systems and ensure that contingency plans were in place for extreme rainfall events.
- Mine sites have Environmental Authorities (EA's) which stipulate water quality release limits to be achieved in case of a discharge.
- These release limits are designed to protect the environmental values of the receiving environment, and the department is confident that if these release limits are met, the environmental values of the receiving environment will be protected.
- There are limited opportunities to amend the conditions in EA's for existing mines. The
 department has been working to improve water management conditions on EA's,
 particularly with those mines that had significant contaminated discharges in the 2008/2009
 wet season.
- In addition to this, new conditions requiring mines to notify discharges to potentially affected downstream users were drafted and are being progressively included in EA's as amendment opportunities have arisen.

Author	Cleared by	Cleared by	Recommended:
	Name	Name: Terry Wall	Name: John Bradley
	Position: RSD, North Region	Position: Associate DG, OER	Director-General, DERM
Position: Manager	Tel No:	Tel No:	Tel No:
Tel No:	Name: Mike Birchley	Name:	Date:
Date:15 March 2011	Position: A/ADG, RSD	Position:	
	Tel No:	Tel No:	

- The changes made to date act to drive improvements to how water is managed on site and to provide greater communication with local landowners where incidents occur.
- North Queensland wet seasons have a very high variability from year to year due to monsoon troughs and cyclones.
- Rainfall events are often of high intensity with multiple events over one wet season resulting in significant runoff volumes.
- Due to the unpredictability and intensity of the North Queensland wet season it is impossible to totally eliminate the risk of discharges from mine sites.
- Ministerial briefing note CTS22228/10 provides background information on the North Region's Mine Discharge Response Plan; the department's mine site inspection program and landowner notification processes (refer Attachment 1).

CURRENT ISSUES

Current Rainfall and Predictions

- Since November North Queensland and the tropical coast has received above average rainfall for the wet season, with parts receiving almost twice the annual average rainfall based on information from BoM. (refer Attachments 2 5)
- Latest predictions from BoM show that all mining regions in North Queensland are currently at a 55 to 65 per cent probability of exceeding median rainfall for the period of March 2011 to May 2011.
- Over the past week there have been ongoing significant rainfall events along the coastline
 along with high intensity rainfall events in the North West. For example, the Queensland
 Nickel Refinery in Townsville has received in excess of 1600 millimetres of rain since
 November 2010, which is more than double the average rainfall for this period. Century
 Zinc Mine has reported a similar trend with the site receiving one of the highest intensity
 rainfall events ever recorded on the site on Saturday 12 March 2011.

Current Site Issues

- As a result of the ongoing rainfall 14 discharges have been reported from mines, refineries, the acid plant in Mt Isa and the Karumba Port facility (refer Attachment 6)
- Based on preliminary results provided by the companies, nine of these discharges are likely to be compliant with licence release limits and therefore environmental harm is unlikely.
- There are currently five reported non-compliant discharges, three of which have occurred intermittently over the 2010/2011 wet season (Wolfram Camp mine site, Thalanga mine site and Karumba Port Facility).
- Based on available information to date the department considers that these releases have a low risk of causing environmental harm.

High Risk Sites

- While there are a number of issues occurring across the region there are several sites which the department considers as having a high risk of causing environmental harm.
- The Queensland Nickel Refinery continues to release from site and this remains a serious concern to the department. Further actions were detailed in the briefing note CTS04142/11 and the department will continue to deal with this matter as outlined in this brief (refer Attachment 7).
- The Birla Mount Gordon Mine site commenced releasing from two areas on 11 March 2011. While these discharges are unauthorised, it is not expected that they will cause environmental harm. Weather permitting, the department will conduct a site inspection by helicopter on Wednesday, 16 March to investigate the releases and check the status of other storages on site. A briefing note will be provided following the inspection.
 - The Birla Mount Gordon Mine site is considered to be a high risk site due to the

Author	Cleared by	Cleared by	Recommended:
	Name:	Name: Terry Wall	Name: John Bradley
	Position: RSD, North Region	Position: Associate DG, OER	Director-General, DERM
Position: Manager	Tel No:	Tel No:	Tel No:
Tel No:	Name: Mike Birchley	Name:	Date:
Date:15 March 2011	Position: A/ADG, RSD	Position:	
	Tel No:	Tel No:	

ongoing water management issues on site, with the department taking legal action for alleged breaches of Environmental Protection Orders and a Court Order.

- The Great Australia Mine, located approximately two kilometres from Cloncurry, has indicated that they are considering a controlled release of waters with a low pH and elevated metals into Coppermine Creek.
 - Whilst the mine has built additional storage capacity on site over the past two years, they have advised that they are expecting more rain and have little remaining capacity.
 - Officers from the department have spoken to the mine operator and requested that treatment options be implemented prior to the release to minimise any impacts from the release.
 - The mine operator has indicated that although they will investigate options to treat the water there may be insufficient time to implement these options before further rain.
 - The department have expressed strong concern in relation to a release of poor water quality into the Coppermine Creek and will inspect the site on 15 March 2011. A briefing note will be provided following the inspection.
 - If a release occurs the department will implement an investigation plan to obtain evidence with the aim to take enforcement action against the mine site.

RESOURCE/IMPLEMENTATION IMPLICATIONS

- The mine emergency response plan has not been activated however the situation is being reviewed on a daily basis.
- At this stage a substantial number of regional staff and resources have been diverted to respond to the releases.

PROPOSED ACTION

- Inspections are occurring at all high risk sites over the next 48 hours.
- Inspections of sites that have recorded discharges will occur over the coming week.
- Officers are continuing to monitor weather conditions and predictions and are including these in forward planning.
- Officers are maintaining daily contact with relevant clients in the region.
- Where required, staff have contacted downstream land holders to advise them of the situation.
- Staff will attend a meeting on Wednesday night with the Kalkadoon people in relation to concerns raised with the Birla Mt Gordon Mine.
- Updated briefing notes will be provided as each site is assessed and reported.

OTHER INFORMATION

- The department will meet with Cloncurry Shire Council and brief them on issues occurring at Great Australia Mine; and
- will provide a update to Local Member of Parliament, Ms Betty Kiernan MP.

MINISTER'S COMMENTS

ATTACHMENTS

• Attachment 1 – CTS 22228/10 – North Region Discharge Response Plan

Author	Cleared by	Cleared by	Recommended:
	Name:	Name: Terry Wall	Name: John Bradley
	Position: RSD, North Region	Position: Associate DG, OER	Director <u>-General, DERM</u>
Position: Manager	Tel No:	Tel No:	Tel No:
Te! No:	Name: Mike Birchley	Name:	Date:
Date:15 March 2011	Position: A/ADG, RSD	Position:	
	Tel No:	Tel No:	

- Attachment 2 5 Maps summarising rainfall trends Attachment 6 North Region Mine Site Status Report Atṭachment 7 CTS4142/11 Queensland Nickel Refinery

Author	Cleared by	Cleared by	Recommended:
	Name:	Name: Terry Wall	Name: John Bradley
	Position: RSD, North Region	Position: Associate DG, OER	Director-General, DERM
Position: Manager	Tel No:	Tel No:	Tel No:
Tel No:	Name: Mike Birchley	Name:	Date:
Date:15 March 2011	Position: A/ADG, RSD	Position:	
	Tel No:	Tel No:	

MINISTER FOR CLIMATE CHANGE AND SUSTAINABILITY MINISTERIAL CORRESPONDENCE ACTION SHEET

Ministerial Reply	Copy to O Minister	
Reply from PPA	O PPA	
Briefing Note	O Nicola/Maria O Karen R	
Department Response	O Simon O Sandy	ing the Subjection of Subjection of the Subjection of the Subjection of Subjection o
Department Info	O Lisa O David	
Department Action	Copy to Director-General	
Refer to:	No Further Action Required	
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Noted PPA		
Acknowledgement Letter		
Ministerial Policy Advisor Comments		
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Signatura	Date: 24,09 /200	HAC
Principal Policy Advisor / Policy Advis	ior	
TO: Div. Code: PSD N Dept. Ref.	/ Due Date to MCU:	
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Related Correspondence (if any):	File No: (to be provided b	jy.
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MINERALS AND METALS GROUP CENTURY PO BOX BO16 GARBUTT BUSINESS CENTRE GARBUTT QUEENSLAND 4814 AUSTRALIA TELEPHONE 617 4769 5031 FACSIMILE 617 4769 5631

16 September 2010

MMGROUPLTD.COM

Ms Kate Jones Minister for Sustainability and Climate Change GPO Box 2454 CITY EAST OLD 4002

4 .D 4002 @ministerial.qld.gov.au



Dear Minister Jones

UPDATE ON MMG CENTURY WATER MANAGEMENT SYSTEM IMPROVEMENT PROJECTS

I am writing to update you on water management improvement projects being undertaken at MMG Century's Lawn Hill mine site.

As you know, Century pleaded guilty to two charges brought by the Department of Environment and Resource Management (DERM) in relation to the discharges of contaminants into Page Creek, which runs through our mining operation, during the 2008-09 1-in-200 year wet season.

Over the past two years, we have been working to build Century into a stronger, more sustainable business and understand that to achieve this we must minimise the impact of our operations on the environment. In accordance with this commitment, we have invested more than \$13.5 million since early 2009 to improve the water management system at our Lawn Hill mine site.

As part of this investment, Century completed \$8 million of corrective and preventative water management improvement projects in 2009. These works included:

- > Capping of the South West Waste Rock Dump to minimise water runoff.
- > The construction of Sediment Dam 10 to a total capacity of approximately 442ML.
- > Remediation works at Page Creek following mine water discharges from the mining area into the creek system during the 2008-09 wet season. In accordance with the DERMapproved remediation plan, contaminated soil was excavated from the first 3.5 kilometres of Page Creek.

We are confident that these improvement works contributed to the site recording no environmental exceedences during the 2009-10 wet season, despite significant rainfall events.

Century has recently completed its annual post-wet season receiving water impact assessment (limnology investigation), which has been conducted annually since 2005. We are pleased to report that this assessment shows that there has been a significant improvement in the ecological condition of Page Creek compared to 2009 and that Page Creek is in its best condition since 2005.

Following the 2009-10 wet season, we commenced an additional \$5.5 million program of works to further improve our water management system by expanding the capacity of three sediment dams on site and improve the capability of our reticulation network. Works are current underway to:

- > Increase the capacity of Sediment Dam 3 by 141.7ML to 503ML.
- > Increase the capacity of Sediment Dam 8 by 75ML to 100ML.
- > Increase the capacity of Sediment Dam 10 by 625ML to 1067ML.

The total capacity of Sediment dams 3, 8 and 10 will be increased from 841ML in 2009 to 1670ML upon completion of this program of works. Works are currently progressing ahead of schedule and are expected to be completed well in advance of the 2010-11 wet season.

In addition to these works, Century is undertaking a prefeasibility study for a project to further improve the site's water transfer system in 2011. The current value of this project is estimated at approximately \$4.8 million.

I would like to take this opportunity to invite you and your representatives to tour our Lawn Hill mining operation and water management system at a time of your convenience.

Please do not hesitate to contact me on a visit or discuss any matter.	or at	to arrange
Kind Regards		
	•	
Karl Spaleck General Manager		
M		

Ε



CTS No. 12308/11

Department of Environment and Resource Management MINISTERIAL BRIEFING NOTE

TO:

Minister for Environment

SUBJECT:

Century Mine Evaporation Dam approvals

	AdvisorOK Dated / /
ı	Approved Not Approved Noted
	Further information required
	ger from the second
	Minister
-	Dated / /
1	

TIMEFRAME/REQUESTED BY

This brief was initiated by the Department of Environment and Resource Management

 Noting of this brief is urgent to keep the Minister informed on mine water management issues at MMG Century Limited (MMG).

RECOMMENDATION

It is recommended that the Minister:

 note the Century Mine evaporation dam currently holds a significant volume of contaminated water in excess of the design storage allowance for the dam;

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unless MMG take urgent action they will not comply with their environmental authority and meet the design storage allowance for the dam by 1 November 2011. Failure to meet this requirement would read significantly increase the risk of an uncontrolled contaminated water discharge during the coming wet season;

there is likely to be insufficient time for the department to assess MMG's proposal to rectify this issue through the standard legislative process; and

 due to the urgency and criticality of the works required to meet the design storage allowance for the dam by 1 November 2011, the department will facilitate an interim approval via a transitional environmental program (TEP).

 If MMG have not submitted a voluntary TEP to the department by 22 July 2011 then the department will issue MMG with a notice to prepare a TEP under the Environmental Protection Act 1994.

BACKGROUND

- Background to this issue is provided at Attachment 1.
- MMG's environmental authority requires that by 1 November each year it meets a stated design storage allowance for all of its dams. Failure to do so would significantly increase the risk of an uncontrolled contaminated water discharge during the coming wet season.

CURRENT ISSUES

- As at 5 July 2011 the volume of contaminated water within MMG's evaporation dam exceeded the design storage allowance by 8 000 megalitres.
- MMG has advised the department that without intervention, modelling indicates that the volume of contaminated water in its evaporation dam will be greater than the required design storage allowance for the remaining life of the mine.
- This is an unacceptably high risk and significant environmental impacts are expected if the evaporation dam discharges contaminated water to the receiving environment.
- To achieve the required design storage allowance by 1 November 2011, MMG has investigated a number of options, including raising the dam wall, treatment and release of water, and constructing a clean water diversion.
- The option preferred by both MMG and the department involves the construction of a clean water diversion which will require large scale earthworks including the construction of five embankments and four channels (refer Attachment 2).
- This work would greatly reduce the potential inflows into the evaporation dam, and thereby to achieve the stated design storage allowance.
- MMG has advised that the construction of the clean water diversion will take approximately four months to complete.

		AUG ESU ADDITIONADI.	
Author	Cleared by	Cleared by	Recommended:
Name:	Name: Rob Lawrence	Name: Michael Birchley	Name: Torry Wall Delolo Pes
Position: Principal	Position: Regional Manager	Position: A/ABG, RSD	Position: A/Director-General
Environmental Officer	Tel No:	Tel No.	Tel No:
Tel No:			Date:
Date: 12 July 2011	Name	Name	
	Position: A/RSD North	Position: Avassoc DG, OER	
	Tel No:	Tel No:	

File Ref: CNS8234

Page 1 of 2

- On 11 April 2011 the department advised MMG that to undertake the proposed works it requires an amendment to its environmental authority and that it should submit an amendment application as soon as possible.
- On 7 July 2011 MMG submitted an application to amend its environmental authority.
- The statutory timeframe for the assessment of the amendment application is up to 10 weeks which
 includes a four week public notification period. If public objections are received this assessment
 period could be significantly lengthened.
- The delay by MMG in submitting its application effectively means that there is now insufficient time for the assessment process to run its course without impacting the ability of MMG to complete the necessary works prior to the commencement of the wet season.
- On 12 July 2011 the department advised MMG that the company should submit a voluntary TEP under the Environmental Protection Act 1994 for the construction of the clean water diversion.
- If approved, the TEP would run concurrently with the amendment application and provide for an interim approval authorising MMG to undertake the earth works. The amendment application assessment would provide for ongoing approval following the conclusion of the TEP.
- There are risks in the department taking this course of action; approval of a TEP effectively approves the work prior to the project progressing through the full amendment application assessment process which includes the four week period of public notification.
- Public notification is provided to allow members of the public to object to an application. The TEP
 process as proposed does not allow for any third party objections.
- The department considers that the potential environmental harm of MMG not undertaking the works out weighs those associated with providing an interim approval through a TEP.
- For the department to approve any TEP on this matter the TEP must:
 - include a timetable of actions agreed to by the department for the construction of the clean water diversion prior to the 2011-2012 wet season. The diversion must result in MMG achieving its stated design storage allowance by 1 November 2011; and
 - include stakeholder consultation to ensure any concerns from the most likely affected stakeholders are addressed prior to and during the construction of the clean water diversion.
- It is expected that the likelihood of a public objection being received as part of the formal public notification period will be reduced as a result of the stakeholder consultation required to be carried out as part of any TEP approved by the department.

RESOURCE/IMPLEMENTATION IMPLICATIONS

If a public objection is received as a result of the formal public notification for the amendment application it is possible that the ability to address the issues raised in the objection will be restricted.

PROPOSED ACTION

• If MMG have not submitted a voluntary TEP to the department by 22 July 2011 then the department will issue MMG with a notice to prepare a TEP under the *Environmental Protection Act 1994*.

OTHER INFORMATION

On 11 April 2011, 13 May 2011 and 20 June 2011 the department advised MMG that an amendment to its environmental authority would be required before the lawful construction of the clean water diversion could take place.

MINISTER'S COMMENTS

ATTACHMENTS

- Attachment 1 CTS 05765/11
- Attachment 2 Design plan for clean water diversion structure.

Author	Cleared by	Cleared by	Recommended:
Name:	Name: Rob Lawrence	Name: Michael Birchley	Name: Terry Wall
Position: Principal	Position: Regional Manager	Position: A/ADG, RSD	Position: A/Director-General
Environmental Officer	Tel No:	Tel No:	Tel No:
Tel No:			Date:
Date: 12 July 2011	Name	Name:	
	Position: A/RSD North	Position: A/Assoc DG, OER	
	Tel No:	Tel No:	

File Ref: CNS8234 Page 2 of 2

CTS No. 05765/11

Department of Environment and Resource Management MINISTERIAL BRIEFING NOTE

TO:

Minister for Environment and Resource

Management

SUBJECT:

MMG Century Limited, Century Mine Financial Assurance and contaminated

Advisor ...

Minister

Dated

Dated 20 / S / i\ Approved Not Approved Noted

Further information required

water management

TIMEFRAME

Noting of this briefing note is urgent as representatives from MMG Century Limited has advised the department that the Century Mine is facing potential cessation of operations due to the significant volume of contaminated water contained within the open pit at the site.

MMG Century Limited was notified on 11 March 2011 that there is a significant discrepancy between the amount of financial assurance (FA) calculated by MMG Century Limited and the amount calculated by the Department of Environment and Resource Management.

RECOMMENDATION

It is recommended that the Minister.

note that the open pit at the Century Mine currently holds a significant volume of contaminated water which is limiting the company's ability to extract ore and may result in suspension of mining operations over the coming six months;

note that the department has reassessed the FA for Century Mine following a review of the most recent plan of operations for the site and there is a significant discrepancy between the amount calculated by MMG Century Limited (\$93 102 904), and that estimated by the department (\$270 232 864); and

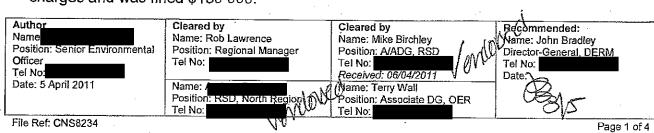
note that further negotiations with MMG Century Limited will occur in relation to the Financial Assurance

BACKGROUND

- Century Mine is an open cut lead and zinc operation located approximately 250 kilometres north-west of Mount Isa which is owned and operated by MMG Century Limited (MMG) (Refer map Attachment 1).
- The mine is currently scheduled for closure around 2015/2016.

Contaminated water management

- Poor quality water is generated at the mine due to infiltration of rainwater through waste rock dumps, which leaches metals and salts from the waste rock. Inadequate design and construction of the waste rock dumps has resulted in increased volumes of poor quality water being generated.
- Poor quality water leaking from the waste rock dumps flows into sediment dams at the mine which subsequently overflow during heavy wet season rainfall events due to insufficient storage capacity.
- Discharges of poor quality water from the mine occurred in early 2009 resulting in the contamination of the downstream environment.
- Following a formal investigation by the department into the 2009 discharges, MMG was charged with causing serious environmental harm, and in March 2010 pleaded guilty to the charges and was fined \$130 000.



- Since the 2009 discharges, MMG has undertaken numerous works on site to improve water management including construction of a new sediment dam and expansion of existing sediment dams providing a combined additional storage capacity of 800 megalitres (Refer Attachment 2a).
- In September 2010 MMG wrote to the Minister (Refer Attachment 2b) to provide an update on improvements to water management systems at the mine involving an investment of \$13.5 million.
- The site has received significant rain during this wet season with MMG indicating that the current wet season is in excess of a 1:150 year event, which is worse that the wet season experienced 2008/2009 that resulted in large scale releases from the site.
- Despite all of the works undertaken to improve water management at the mine there have still been discharges which exceeded the licences release limits (Refer Attachment 2)
- A large volume of contaminated water is currently stored on site both in the evaporation dam and the open pit which may impact on the ability of the mine to continue to operate.

Financial assurance

- The Queensland Government currently holds a total FA of \$54 069 600 for the site.
- MMG lodged a new Plan of Operations on 10 April 2010 which proposed a total FA of \$93 102 904 for the site.
- The current departmental FA guideline (Refer Attachment 3) came into force on 12 April 2010 and as such the department is assessing the FA against the FA guideline (Guideline 17) that was in effect when the Plan of Operations was lodged.
- After negotiations with MMG the Plan of Operations was accepted by the department on 10 May 2010 with an agreement from all parties that the FA would be further assessed and negotiated following a site inspection.
- The department undertook a site inspection from 12-13 October 2010 which allowed for detailed assessment of the FA required for the project.
- The inspection highlighted that MMG had commenced trials on proposed rehabilitation strategies on the waste rock dumps, but not on the tailings storage facility.
- The rehabilitation strategies being trialled for the waste rock dumps are significantly different to what would be considered to best practice.

₩

- These studies have not been completed and to date no evidence has been provided by MMG to demonstrate that the proposed method of rehabilitation will achieve the desired outcome in terms of closure of these facilities.
- MMG representatives have been advised that the commencement of the trials is encouraging and should continue, however that in the absence of demonstrated success of the trials the FA calculations should be based on what is currently considered as best practice capping methodology.



In addition the inspection also showed that:

- the cost proposed by MMG in the FA calculations for the demolition and removal of infrastructure from the site was not based on third party quotes as required by departmental Guideline 17.
- third party quotes for the cost of on-site treatment and disposal of the water contained within the evaporation dam (and now the pit) at the site has not been provided by MMG as required by Guideline 17; and
- the proposed costing for the rehabilitation of the tailings storage facility was not based on what would be considered to best practice; and no trials have been conducted to demonstrate that the proposed rehabilitation strategy will achieve the desired outcome in terms of closure of these large facilities.

Author Name: Position: Senior Environmental Officer Tel No:	Cleared by Name: Rob Lawrence Position: Regional Manager Tel No:	Cleared by Name: Mike Birchley Position: A/ADG, RSD Tel No: Received: 06/04/2011	Recommended: Name: John Bradley Director-General, DERM Tel No: Date:
Date: 5 April 2011	Name Position: RSD, Notin Region Tel No:	Name: Terry Wall Position: Associate DG, OER Tel No:	

- As a result the department conducted an internal calculation of the FA for the site based on best practice methodologies, with particular focus on rehabilitation costs for the waste rock dumps and tailings storage facility as well as the costs for water treatment.
- Based on these methodologies, the overall rehabilitation cost for the mine is estimated to be in the order of \$300 million.
- Under Guideline 17 MMG qualifies for a performance discount of 10 per cent resulting in a final FA requirement in the order of \$270 million.

CURRENT ISSUES

Contaminated water management

- On 29 March 2011 MMG advised the department that the pit contained 4,000 megalitres of contaminated water which the company had pumped to the pit in an attempt to prevent releases of contaminated water into the receiving environment.
- MMG also indicated that based on current pumping capacity it would take over 260 days to reduce the pit water sufficiently to enable the mine to access its main ore body.
- MMG has stated that the mine has access to approximately 3-6 months of ore, and that if MMG cannot access further pumping infrastructure, there may need to be a suspension of mining operations.
- In addition the evaporation dam contains 40 gigalitres of contaminated water which is limiting the available storage capacity. There are concerns that the mine may not be able to meet the design storage allowance (DSA) for the dam as stipulated in the environmental authority by 1 November 2011.
- MMG has identified works which may be able to assist in meeting the DSA by 1 November 2011, and based on preliminary estimates these works will cost in the order of \$10 million.

Financial assurance

- Over the past 2 months the department have engaged with MMG on a number of occasions to discuss differences between calculations undertaken by MMG and the department.
- These negotiations are continuing, however it is clear that MMG is very concerned about the differing FA amounts calculated by the department and MMG.



- MMG has indicated it has referred the issue to the Queensland Resource Council for assistance.
- Given that current forecast predict mine closure in 2015/2016 it is critically important for sufficient FA to be in place.
- In addition it should be noted that Pasminco, which developed Century Mine, was placed into administration in 2001 before a new company Zinifex was created to take over the operation. Zinifex, which became Oz Minerals, then experienced financial difficulties and the mine was almost placed in the hands of receivers in late 2008 before being sold to new owners MMG Century Ltd.
- Given the history of financial issues associated with the mine's various owners, the potential
 that the mine might have to cease production for a period of time over the coming year
 together with the serious issues with water management on site, it is critical that there is a
 complete assessment of the financial assurance held for this project.

RESOURCE/IMPLEMENTATION IMPLICATIONS

• There are no resource/implementation implications.

PROPOSED ACTION

Contaminated water management

Author Name: Position: Senior Environmental Officer Tel Not	Cleared by Name: Rob Lawrence Position: Regional Manager Tel No:	Cleared by Name: Mike Birchley Position: A/ADG, RSD Tel No:	Recommended: Name: John Bradley Director-General, DERM Tel No:
Date: 5 April 2011	Name: Position: RSD, North Region Tel No:	Received: 06/04/2011 Name: Terry Wall Position: Associate DG, OER Tel No:	Date:

- The department will continue to liaise with MMG to facilitate the most effective management of contaminated water at the site.
- The department is currently preparing an environmental evaluation notice which will require MMG to investigate the release of contaminated water from the site.
- The department intends to conduct a formal investigation into the release of contaminated water from the site and depending upon the outcomes of this investigation further statutory measures may be implemented.

Financial assurance

- A meeting has been scheduled between MMG and department for 20 April 2011 to further discuss differences between calculations undertaken by MMG and the department.
- As a result of this meeting it is expected that the department will be in a position to set the FA or revise the department's FA calculation if necessary.

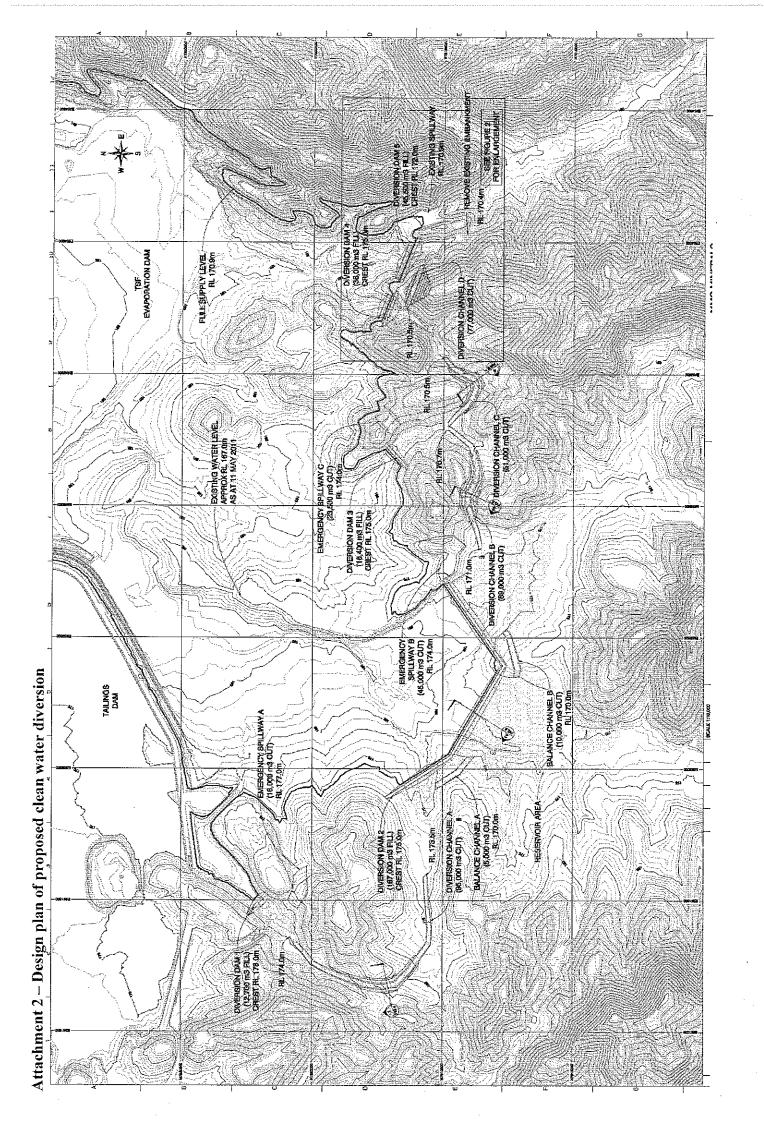
OTHER INFORMATION

MINISTER'S COMMENTS

ATTACHMENTS

- Attachment 1 Site map
- Attachment 2 CTS 04361/11 Discharge from Century Mine
- Attachment 2a CTS04273/11 North Queensland Wet Season Update (attachment of CTS04361/11)
- Attachment 2b Letter from MMG to Minister Jones dated 16 September 2010 (attachment of CTS04361/11)
- Attachment 3 Guideline 17 (dated 12 March 2003)

Author	Cleared by	Cleared by	Recommended:
Name	Name: Rob Lawrence	Name: Mike Birchley	Name: John Bradley
Position: Senior Environmental	Position: Regional Manager	Position: A/ADG, RSD	Director-General, DERM
Officer	Tel No:	Tel No:	Tel No:
Tel No:		Received: 06/04/2011	Date:
Date: 5 April 2011	Name	Name: Terry Wall	7
	Position: RSD, North Region	Position: Associate DG, OER	
	Tel No:	Tel No:	





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Sent:

Tuesday, 11 January 2011 10:47 AM

To:

Cc:

Subject: Wet season performance

We have had only one minor release, from Sed dam 1, so far. Sampling was done and we expect results from Envirocheck on 13 Jan. We are closely monitoring the pH and EC in Sed dam 1 (over the past week, EC in Sed Dam 1 has been 0.29 - 0.37 and pH has been 7.3 - 7.7) to ensure any releases are compliant. There is no flow in North Mitton Creek.

We have in place a weekly surface water monitoring program (for the wet season). We have taken samples yesterday from Sed Dam 1 (and the other dams) under this program.

Our dams are at the capacities below:

Sed Dam	Capacity (ML)	% Filled 11/1/11
1	76.4	81
2	22.3	6
3	515.6	16
5	34.7	< 1
6	77.9	< 1
8	104.8	2
9	15.2	18
10	1041.6	29

If you require any further information, please contact John or I.

regards damien

[mailto:r

Sent: Monday, 10 January 2011 3:45 PM

To:

Subject: wet season performance

Hi John,

I understand that Century had approximately 80mm of rainfall over the weekend. I just wanted to touch base with you to find out how the site has been managing in terms of contaminated water management. Are you able to provide a response to the following questions:

- Have there been any further discharges of contaminated water off site?
- 2. If so where were these discharges from and where was the water discharged to? Have water quality samples been taken? If so, what are the results? Do you know what quantity of water was discharged?
- that sediment dam 1 discharged last week is this I understand after speaking with discharge still occurring? Have MMG received the water quality monitoring results form the laboratory? Are you able to advise what these results were? 4. What level of contaminated water is currently being held in the sediment dams, ie. what percentage capacity are they currently sitting at? Thanks

Kind regards

Senior Environmental Officer

Mining & Industry, North Region

Department of Environment and Resource Management

Facsimile:

Visit us online at www.derm.qld.gov.au

Department of Environment and Resource Management

5B Sheridan Street (PO Box 937), Cairns Qld 4870

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: Sent:

Tuesday, 25 January 2011 8:01 AM

To:

Subject:

RE: Wet season performance

Attachments: 110103_01 chem MMG Surface Water Weekly pdf; 110116_008 chem MMG Events.pdf

Here are the results for 3 Jan 2011. The locations of interest in this case are

NM SW04 REC North Mitton Creek receiving environment sample

10. NM_SW02_SED1 Sample from Sed dam 1

You will note that there are no results for oil and grease and cyanide (WAD). We (re)sampled for these two parameters on 16 Jan - the result for oil and grease has been received (see attached file for 16 Jan 2011) and we are still awaiting the result for cyanide(WAD).

Pleas let me know if you have any further queries. I will advise the cyanide(WAD) result as soon as it is available.

regards damien

From:

[mailto:

Sent: Monday, 24 January 2011 4:09 PM

Subject: RE: Wet season performance

Hi Damien,

Are you able to forward me a copy of the lab analysis results for the water quality monitoring of the sediment 1 discharge mentioned below.

Kind regards

Senior Environmental Officer

Mining & Industry, North Region

Department of Environment and Resource Management

Telephone:

Facsimile:

Visit us online at www.derm.qld.gov.au

Department of Environment and Resource Management 5B Sheridan Street (PO Box 937), Cairns Qld 4870

[mailto:

Sent: Tuesday, 11 January 2011 10:47 AM

To:

Subject: Wet season performance

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If you require any further information, please contact John or I.

regards damien

From:	mailto:	
Sent: Monday, 10 J	lanuary 2011 3:45 PM	
To		
Cc:		
Subject: wet seaso	n performance	

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- 2. If so where were these discharges from and where was the water discharged to? Have water quality samples been taken? If so, what are the results? Do you know what quantity of water was discharged?
- 3. I understand after speaking with that sediment dam 1 discharged last week is this discharge still occurring? Have MMG received the water quality monitoring results form the laboratory? Are you able to advise what these results were? 4. What level of contaminated water is currently being held in the sediment dams, ie. what percentage capacity are they currently sitting at? Thanks

Kind regards

Senior Environmental Officer

Mining & Industry, North Region

Department of Environment and Resource Management

Telephone: Facs	simile:
Visit ve selies at veve ald se	
Visit us online at www.derm.qld.g.	ov.au
Department of Environment and F	Resource Management
5B Sheridan Street (PO Box 937).	Cairns Qld 4870
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+	
Think B4U Print	
1 ream of paper = 6% of a tr	ree and 5.4kg CO2 in the atmosphere
3 sheets of A4 paper = 1 lit	ere of water
+	+

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We go beyond our laboratory NATA/ISO/IEC accreditation and ISO9000 compliance. We will coordinate responses with you as well as with other specialists and GUARANTEE not to leave you on your own. We are available 7 days.

110103_01 MMG surface water Ref. No. weekly Report

> Minerals and Metals Group Australia, Century Zinc Mine OLD 4824 Attention:

Report Date: 14/01/11 Sample Collector; Collection and Test Time Differential Preliminary Report Dates: 7/01/2011 Samples Preserved Sample Collection Date and Time: not stated hours Sample Test Date and Time samples preserved 03/01/11 Sample Received Date and Time ENV-11-01 1200 hours Client Name: MMG Client Ref. 04/01/11

Table 1A: Element and Chemical Analyses - Surface water weekly Suite (Note: TDS values are determined by evaporation and performed in duplicate. Elevated TDS levels can be due to low-ionic solutes)

	_					ı .							r	_					*************	
TOC (mg/L as C)	0.1	NR	NR	NR	NR	NR	NR	NR	NR	NR	Ĕ	NR	NR	푔	NR	NR	NA	011-06		
Nitrate (mg/L as N)	0.1	6,4	9'9	14.4	4,2	11.7	13.3	3,1	28.4	2.0	1.5	2.1	0.1	F'L	1'91	2.3	102	011-06		
Chloride (mg/L as Cl)	0.01	5.5	75.1	58.4	28.9	49.0	31.5	10.0>	87.0	6.7	1.6	12.1	271.7	115.7	6.78	6.1	106.1	90-110		
Dissolved Sulphate (mg/L as SO ₄)	0.01	26	0071	1800	620	1900	019	24	2000	180	140	35	2600	0069	0081	06	100	011-06	<=800	
Acidity (mg/L)	0.1	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NA	NA		
Carbonate (mg/L as CO ₃)	0,1	<0.1	<0.1	<0.1	<0,1	4.7	7.2	<0,1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA		
Bicarbonate (mg/L as HCO ₃)	0.1	29,9	37.5	41.4	71.4	67.0	53.7	34.2	42.9	8.62	71,4	16.4	373	75.0	41.0	0'09	NA	NA		
Total Alkalinity (mg/L as CaCO ₃)	0.1	24.5	30.8	34.0	58.5	62.7	9.95	28.0	35.2	65.4	58.5	13.5	306	62.0	34.0	49,0	108.3	90-110		
TDS (dried at 180°C) (mg/L)	0.1	NR .	NR	NR	NR	NR.	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NA	90-110		
TSS (mg/L)	1	12	2	11	11	2	30	218	48	7	24	9	32	80	11	. 43	99.5	90-110		
Turbidity (NTU)	0.01	NR	NR	NR	NR	NR.	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NA	90-110		
EC (mS/cm)	0.001	0.083	2.740	2,740	1.300	2.380	1.324	0.089	2.910	0.403	0.377	0.088	4.500	8,150	2.740	0.215	100.14	90-110	ş =>	
pH (pH units)	0.01	96'5	5,80	5.89	6,57	6.84	7.39	7.52	6.78	7.02	06'9	7.18	7.23	6.42	6.38	7,05	99.85	90-110	06-09	
Sample Ref		ENV-11-01	ENV-11-01	ENV-11-01	ENV-11-01	ENV-11-01	ENV-11-01	ENV-11-01	ENV-11-01	ENV-11-01	ENV-11-01	ENV-11-01	ENV-11-01	ENV-11-01	ENV-11-01	ENV-11-01				
Sample Date		03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	11/10/60	11/10/є0.	03/01/11	NA	VΝ		
Analytes	LOR	P_SW03_REC	P_SW07_SD3	P_SD10_SD10	PSD10_NTH	PSD10_STH	P_SW12_SD9	BSW01_REC	B_SW03_SD8	NM_SW04_REC	NW_SW02_SD1	C_SW08_REC	C_SW06_EDAMS	P_SW10_V	P_SW26	P_SW13_SD2	CRM (%)	Acceptable Range (%)	Receiving water limits (supplied by client)	ANZEGC 95% Trigger values for Freshwatering (L
No.		-	2	3	ъ	3	9	7	8	6	10	11	12	13	14	15		4		

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110103_01 MMG surface water Report Ref. No. weekly

	Dissolved Zinc (mg/L)	0.002	6/0'0	18.041	58.598	0.248	0.253	0,015	0.021	3.250	1.304	4,209	0.027	0.037	142.949	59.329	0,033	93.78	90-110		
	Total Lead (mg/L)	0,003	0,007	0,004	010'0	0.004	<0.003	<0.003	0.005	600.0	<0.003	0.013	<0.003	<0.003	0.013	0,010	0,029	104.37	90-110	<u>×</u> 10√0 10√0	12 Person
	Dissolved Lead (mg/L)	0,003	<0.003	<0,003	800.0	<0,003	<0.003	<0.003	<0,003	<0,003	<0,003	<0,003	<0.003	<0,003	0,013	800'0	<0.003	103,52	90-110		18 (18 (18 (18 (18 (18 (18 (18 (18 (18 (
	Total Cadmium (mg/L)	0.001	. 100'0>	0.032	0.208	0,003	0,002	<0.001	<0,001	0.008	<0.001	0,003	<0.001	100'0>	0.189	0.203	<0.001	102.59	90-110	80'0=>	0.0002
	Dissolved Cadmium (mg/L)	0,001	<0.001	0,032	0.208	<0.001	<0.001	<0.001	<0.001	0.008	<0.001	0.003	<0.001	<0.001	0.189	0,203	<0.001	101.69	90-110		
	Total Arsenic (mg/L)	900'0	900'0>	900'0>	900'0>	900'0	900'0>	900'0>	>0.006	900'0>	>0.006	>0.006	900'0>	900'0>	0.014	>0.006	>0.006	99.31	90-110	≥=0.05	-0.0 -
	Dissolved Arsenic (mg/L)	900.0	<0.006	<0,006	>0.006	900'0>	<0.006	<0,006	<0.006	<0.006	<0.006	<0.006	>00'00	>0.006	0,011	<0.006	<0.006	97.98	90-110		
	Total Potassium (mg/L)	0.02	4.07	8.91	10.86	7.05	11.04	8.11	4.97	10.19	4.50	3.64	4.42	37.44	17.34	11.56	3.17	95.50	011-06		
	Total Sodium (mg/L)	0.02	2.53	60.15	58.79	28.06	45.95	28.20	2,61	72.63	4.59	4.37	5.75	286.16	83,42	62.65	4.07	100,95	90-110		
	Total Magnesium (mg/L)	0.02	3.53	302.11	242.15	112.15	227.27	100,34	4.79	285.75	21.55	19.86	3,93	314.22	1318,55	252.25	13,55	102.51	011-06		
	Total Calcium (mg/L)	0.02	6.12	198.80	206.16	95.71	187.12	106.49	8,26	187.82	40,14	34,25	2.32	306.47	406.40	208.16	86'61	99,52	90-110		
***************************************	Total Phosphorus (mg/L as P)	0.01	0.43	0.11	0.18	0.19	0.33	0.19	2,25	0.28	<0.01	0.27	<0.01	0.57	0,33	0.20	0.75	0,66	90-110		
ont')	Total Nitrogen (mg/L as N)	0.1	1.9	6.9	17.1	6.7	15.1	19.3	15,6	35.0	6.0	18.6	2.5	0.1	8.7	17.2	3,6	5'06	90-110		
ly Suite (C	BOD (mg/L)	1	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NA	NA		
water week	Oil and Grease (mg/L)	1	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NA	ΝA	s=20	
ss Surface	TPH (mg/L)	1	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NA	NA		
mical Analyso	Sample Date		03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	NA	NA		
Table 1A: Element and Chemical Analyses Surface water weekly Suite (Cont')	Analytes	LOR	P_SW03_REC	P_SW07_SD3	P_SD10_SD10	PSD10_NTH	PSD10_STH	P_SW12_SD9	BSW01_REC	B_SW03_SD8	NM_SW04_REC	NW_SW02_SD1	C_SW08_REC	C_SW06_EDAMS	P_SW10_V	P_SW26	P_SW13_SD2	CRM (%)	Acceptable Range (%)	Receiving water finite (supplied by	ANZECC 95% Trigger values for Prest water mg/L
Table	No.		1	2	3	4	5	9	7	8	6	10	11	12	13	14	15				

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110103_01 MMG surface water weekly Report Ref. No.

Tab	Table 1A: Element and Chemical Analyses - Surface water weekly Suite (Cont')	nical Analyses - S	urface water we	ekly Suite (Cont')										
ğ	Analytes	Sample Date	Total Zinc	Total		Total Copper (mg/L)	Total Iron	Total Manganese	Total Molybdenum	Total Nickel	Total Selenium	Total	Total Sulphur	Total Autimony
	LOR		(mg/L) 0.002	0.001	(mg/L) 0.001	0,602	0,003	(IIIB/L) 0.001	0,005	(mg/L) 0.004	(mg/L) 0.01	(mg/L) 0.001	(mg/L) 0.07	(mg/L) 0.005
_	P_SW03_REC	03/01/11	0.186	NR	Ν̈́	Ν̈́	NR	NK	N.	NR	NR	NR	NR	NR
5	P_SW07_SD3	03/01/11	19,143	NR	NR.	NR	NR	NR	NR	NR	NR	NR	NR	NR
က	P_SD10_SD10	03/01/11	65.768	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
4	PSD10_NTH	03/01/11	0,256	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
ıΩ	PSD10_STH	03/01/11	0.253	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
9	P_SW12_SD9	03/01/11	0.019	NR	NR	NR	NR	NR	NR	NR	. NR	NR	NR	NR
7	BSW01_REC	03/01/11	0.054	พห	NR	NR	NR	NR	NR	NR	. NR	NR	NR	NR
202	B_SW03_SD8	03/01/11	3,545	มห	NR	NR	NR	NR	NR	NR	NR	NR	NR	N.
6	NM_SW04_REC	03/01/11	1,312	NR	NR	NR	NR	NR	NR	NR.	NR	NR	NR	NR
0.7	NW_SW02_SD1	03/01/11	5.993	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Ξ	C_SW08_REC	03/01/11	0,036	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
12	C_SW06_EDAMS	03/01/11	0,040	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
13	P_SW10_V	03/01/11	153,732	NR .	NR	NR	NR	NR	NR .	NR	NR	NR	NR	NR
14	P_SW26	03/01/11	62.675	NR	NR	พห	มง	NR	NR	NR	NR	NR	NR	NR
15	P_SW13_SD2	03/01/11	0.183	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	CRM (%)	NA	95.72	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	Acceptable Range (%)	V N	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110	90-110
	Receiving water limits (supplied by client)		<=50											
	ANZECC 95% Trigger yalues for Preshwater mar		800'9	1000		\$100 O				11.00 11.00 11.00		0.00005		

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Refort
Ref. No.
110103_01
MMG surface water
weekly

Table 1B: Outsourced Analysis - Surface water weekly Suite

	annua.	l	Γ	Π			Γ					Π								
**Total Phenol	(J/gm) 0.050	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR		
**Total Cyanide	(mg/L) 0.004	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR		
**WAD · Cyanide	(mg/L) 0.005	NR	NR	N.R.	NR	NR	NR	NR	NR	NR	NR	ŇR	NR	NR	NR	NR	NR	70-119		
**Total Mercury	(mg/L) 0.0001	NR	NR	. NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	80-116		
**Thicoyanate (mg/L)	0,1	NR	NR	NR	NR	NR	NR	NR	NR .	NR	NR	NR	NR	NR	NR	NR	NR	NR	医角膜线医角膜囊膜唇管膜炎	
Sample Date		03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	NA	NA		
No. Analytes Sample E	TOR	P_SW03_REC	P_SW07_SD3	P_SD10_SD10	PSD10_NTH	PSD10_STH	P_SW12_SD9	BSW01_REC	B_SW03_SD8	NM_SW04_REC	NW_SW02_SD1	C_SW08_REC	C_SW06_EDAMS	P_SW10_V	P_SW26	P_SW13_SD2	CRM (%)	Acceptable Range (%)	Receiving water Limits (supplied by chent)	ANZECC 95% Unigger values for Freshwater mg/L
Z.		1	2	3	4	\$.	9	2	8	. 6	10	11	12	13	14	15				

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Ref. No.
110103_01
MMG surface water
weekly

Table 1B: Outsourced Analysis - Surface water weekly Suite (Cont')

	Ï																				
	**Ortho-Xylene	(µg/L)	2	NR	NR	NR .	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	4 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
	**meta- & para-Xylene	(µg/L)	2	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR .	NR	
**BYBX (µg/L)	**Ethylbenzene	(μg/L)	2	NR	NR ·	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	
	**Toluene	(μg/L)	2	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR NR	NR	NR	NR	NR NR	
	**Benzene	(Hg/L)		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR .	NR	NR	NR	NR	NR	050
Sample Date	<u></u>			03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	03/01/11	AN	NA	
Sample		•	(LOR)	P_SW03_REC	P_SW07_SD3	P_SD10_SD10	PSD10_NTH	PSD10_STH	P_SW12_SD9	BSW01_REC	B_SW03_SD8	NM_SW04_REC	NW_SW02_SD1	C_SW08_REC	C_SW06_EDAMS	P_SW10_V	P_SW26	P_SW13_SD2	CRM (%)	Acceptable Range (%)	ANZECC 95% Trigger values for freshwater mg.L
Sample	Š			1	2	3	4	\$	9	7	8	6	10		12	13	14	15			

Conductivity/TDS (cate) APHÁ2510B; TDS APHÁ2540 C; Alkalinity APHA2320B; Colour APHA 2120C; Chemical Oxygen Demand (COD) APHA5220 D; Biological Oxygen Demand (BOD) / Dissolved Oxygen (DO) APHA5210 B; total N APHA4500-N, total P APHA4500-S². D; ammonia APHA4500F, fluoride APHA4110 B, N APHA4500-N, total P APHA4500P; Total Suspended Solids APHA4500F, fluoride APHA4110 B, Analysis Methods: metals by ICP-OES according to APHA 3120B; digestion metals APHA 3030E, acid extractable metals APHA 3030C; Dissolved and suspended metals APHA 3030B; pH APHA 4500H+B; turbidity APHA2130B; chlorine APHA4110 B, Nitrite APHA4110 B, Nitrate APHA4500-NO₃-E; Bromide APHA4110 B, phosphate APHA4110 B; sulphate APHA4110 B; Silica APHA4500C; TPH APHA 5520 F; TOG APHA 5520 G; Electrical Conductivity; TSS = Total Suspended Solids; TDS = Total Dissolved Solids; TOC = Total Organic Carbon; TPH = Total Petroleum Hydrocarbons; BOD = Biochemical Oxygen Demand; WAD Cyanide = Weak Acid Dissociable Cyanide; BTEX = Benzene, Toluene, Ethylbenzene, Xylene.

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110103_01 MMG surface water Ref. No. weekly Report

NR = not requested not received; LOR = Limit of Reporting; NA = not applicable; # methods not covered by the laboratory's scope of accreditation; \$ parameters were determined in the field by the client at the time of sampling; IS = insufficient sample;

Report Summary: Samples were analysed as received.

Note: Total metals were determined as acid digestible metals.

The samples are indicative only at the time of sampling and further regular monitoring is recommended.

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110116_008 MMG Events Report Ref. No.

Attention: L., Minerals and Metals Group Australia, Century Zinc Mine QLD 4824

Client Name: MMG	Sample Collection Date and Time:	Preliminary Report Dates: 20/01/10	Final Report Date:
Client Ref. ENV-11-008	16/01/11 not stated hours	(24 hour Priority Status)	(24 hour Priority Status)
Sample Received Date and Time	Sample Test Date and Time	Collection and Test Time Differential	Sample Collector:
19/01/11 1030 hours	samples preserved	Samples Preserved	,

Events Sampling Suite (Note: TDS values are determined by evaporation and performed in duplicate. Elevated TDS levels can be due to low-ionic solutes)

_						
	TOC (mg/L as C)	0,1	NR	NR		
-	Nitrate (mg/L as N)	0.1	NR	NR		
-	Chloride (mg/L as CI)	0.01	N. N.	NR		
(consideration)	Dissolved Sulphate (mg/L as SO ₄)	1	NR	NR .	~500(4000)	
מון כל מווג נס זמי	Acidity (mg/L)	0.1	NR	NR		
י פוטייטו ניכוד מיי	Carbonate (mg/L as CO ₃)	0.1	NR	NR		
appraison and servine in unfineate, exercise ear of due to reserve appraise.	Bicarbonate (mg/L as HCO ₃)	0.1	NR	NR		
in political in	Total Alkalinity (mg/L as CaCO ₃)	0.1	NR	NR		
cvaporation at	TDS (dried at 180°C) (mg/L)	0.1	NR	NR		
neterminen of	TSS (mg/L)	1	NR	NR		
1DS Values at	Turbidity (NTU)	0.01	NR	N.		
ng Suite (Note.	EC (mS/cm)	0.10	· NR	NR		
Events Sampli	pH (pH units)	0.01	NR	NR		6.9=>
ııcai Anaiyses -	Sample Date		16/01/11	16/01/11		
Table 1A: Element and Unemical Ahalyses – Events Sampling Suite (Note: 1123 Values are determined by ev	Analytes	LOR	NM_SW04_REC	NM_SW02_SD1	Groundwater Trigger limits (supplied by the	Groundwater Contaminant Limits
Table 1	No.		-	2		
		1		1		F

Table 1A: Element and Chemical Analyses - Events Sampling Suite (Cont')

Dissolved Zinc (mg/L)	0.002	NR	NR	
Total Lead (mg/L)	0.003	NR	NR	0
Dissolved Lead (mg/L)	0.003	NR	NR.	
Total Cadmium (mg/L)	0.001	N. R.	NR NR	~=0.03 ~=0.00
Dissolved Cadmium (mg/L)	0.001	NR	NR	
Total Arsenic (mg/L)	900.0	NR	NR	\$ 0.04 0.05
Dissolved Arsenic (mg/L)	0.006	NR	NR	
Total Potassium (mg/L)	0.02	NR	NR	
Total Sodium (mg/L)	0.02	N.	NR	
Total Magnesium (mg/L)	0.02	NR	NR	
Total Calcium (mg/L)	0.02	NR	NR	
Total Phosphorus (mg/L as P)	0.01	NR	NR	
Total Nitrogen (mg/L as N)	0.1	NR	NR	
BOD (mg/L)	1	NR	NR	
Oil and Greasc (mg/L)	1	. 3	1	
TP14 (mg/L)	1	NR	NR	
Sample Date		16/01/11	16/01/11	
Analytes	LOR	NM_SW04_REC	NM_SW02_SD1	Groundwater Trigger lunts (supplied by the client) Groundwater Contaminant
oN.		_ ĭ	7	
	1			Control of the contro

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MMG Events 110116 008 Report Ref. No.

Table 1A: Element and Chemical Analyses – Events Sampling Suite (Cont.)

	Total	Antimony	(ma/l)	0.005	NR	N.	
	Total	Sufrant	(mo/l)	0.07	ΞN	N.	
	Total	Silver	(mø/1.)	0.001	ž	N.	
	Total	Selenium	(J/am)	0.01	Ν̈́	N.	
	Total		_	0.004	NR	NR	
	Total	Molybdenum	(mg/L)	0.005	NR	NR	
	Total	9.1	(mg/L)	0.001		Ä	
	Dissolved	Manganese	(mg/L)	0.001	NR	N.R.	
	Total	Iron	(mg/L)	0,003	NR	NR	
	Dissolved	Iron	(mg/L)	0.003	NR	N. N.	
	Total	Copper	(mg/L)	0.002	NR	Z. Z.	
	Dissolved	Copper	(mg/L)	0.002	NR	ž	
ambining some	Total	Chromium	(mg/L)	0.001	NR	ž	
Ses - Evellis S	Total	Zinc	(mg/L)	0.002	NR	NR	~ ~ 33:
ilcillical Allaly,	Sample	Date			16/01/11	16/01/11	
Table 171: Elethent and Chemical Analyses - Events Sampling Source (Colli		Analytes		LOR	NM_SW04_REC	NM_SW02_SD1	Groundwater Trigger limits (supplied by the olient) Groundwater Contaminant
1 (1)11		o Z			-	2	

	Dissolved Potassium (me/L)	0.02	NR	NR	
	Dissolved Sodium (mg/L)	0.02	NR	NR	
	Dissolved Magnesium (mg/L)	0.02	NR	NR	
	Dissolved Calcium (mg/L)	0,02	NR	NR	
()	Sample Date		16/01/11	16/01/11	
I and IA: Element and Chemical Analyses — Events Sampling Suite (Com	Analytes	LOR	NM_SW04_REC	NM_SW02_SD1	Groundwater Trigger limits (supplied by the effent) Groundwater Contaminant Limits
I abic IA; bici	Š		-	2	

Table 1B: Outsourced Analysis - Events Sampling Suite

	,		
**Total Phenol	0.050	NR	NR NR
**Total Cyanide (mo/I)	0.004	NR	NR
**WAD Cyanide (mg/l)	0.004	Pending	Pending
**Total Mercury (mg/L)	0.0001	NR	NR
**Thicoyanate (mg/L)	0.1	NR	NR
Sample Date		16/01/11	11/10/91
Analytes	LOR	NM_SW04_REC	NM_SW02_SD1
No.		_	2

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MMG Events 110116 008 Ref. No. Report

Fable 1B: Outsourced Analysis – Events Sampling Suite (Cont')

	1		Γ		_
	**Ortho-Xylene	(hg/L)	2	NR	NR
	**meta- &	μας (μg/L)	2	NR	NR
**BTEX {µg/L}	**Ethylbenzene	(µg/L)	2	NR	NR
	**Toluene	(μg/L)	2	NR	NR.
	**Benzene	(µg/L)	. 1	. NR	NR .
Sample Date				16/01/11	16/01/11
	Analytes		(LOR)	NM_SW04_REC	NM_SW02_SD1
Sample No				1	2

NA = Not Applicable; NR = Not Requested; IS=insufficient sample; LOR = Limit of Reporting EC = Electrical Conductivity; TSS = Total Suspended Solids; TDS = Total Organic Carbon; TPH = Total Petroleum Hydrocarbons; BTEX = Benzene, Toluene, Ethylbenzene, Xylene. WAD Cyanide = Weak Acid Dissociable Cyanide Analysis Methods: metals by ICP-OES according to APHA 3120B; digestion metals APHA 3030E, acid extractable metals APHA 3030C; Dissolved and suspended metals APHA 3030B; pH APHA 4500H+B; turbidity APHA2130B; Conductivity/IDS (calc) APHA2510B; TDS APHA 2540 C; Alkalinity APHA2320B; Colour APHA 2120C; Chemical Oxygen Demand (COD) APHA5220 D; Biological Oxygen Demand (BOD) / Dissolved Oxygen (DO) APHA5210 B; total NAPIA 4500-N, total P APHA 4500P, Total Suspended Solids APHA2540D, TOC APHA 5310; Surfactants by MBAS APHA5540 C.; Sulphides APHA 4500-S²-D; ammonia APHA4500F, fluoride APHA4110 B, chlorine APHA4110 B; Sulphate APHA4110 B; Sulphate APHA4110 B; Silica APHA41

Report Summary: Samples were analysed as received.

Note: Total metals were determined as acid digestible metals.

The samples are indicative only at the time of sampling and further regular monitoring is recommended.

We cannot (I) "SAMPLE IDENTIFICATION" obtained from container as received by our laboratory. Results indicate the microbial level of growth at the time of testing only in the sample received guarantee the water quality of each sample site based on these results. (2) This document and any attachments are intended solely for the named addressee and are confidential. The copying or sollected and transported by the customer. ** These analyses outsourced to Australian Laboratory Services, Brisbane, a NATA accreditation no 825, reference number EB........ distribution of them or any information they contain, by anyone other than the addressee is prohibited. This Report shall not be reproduced except in full! (PhD_BScHons,MASM,MACCS)

(PhD, BScHons, MASM, MACCS)

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Accreditation #14542

³acsimile 07 47286305

The second secon	
	_

From: Sent:

Monday, 7 February 2011 2:42 PM

To:

Subject:

RE: Wet season performance

Attachments: 110116_008 chem MMG Events Extra results.pdf

See the attached for the Oil and Grease and WAD(CN) results as discussed below.

regards



From:

Sent: Tuesday, 25 January 2011 8:01 AM

To:

Subject: RE: Wet season performance

Here are the results for 3 Jan 2011. The locations of interest in this case are

9. NM_SW04_REC North Mitton Creek receiving environment sample 10. NM_SW02_SED1 Sample from Sed dam 1

You will note that there are no results for oil and grease and cyanide (WAD). We (re)sampled for these two parameters on 16 Jan - the result for oil and grease has been received (see attached file for 16 Jan 2011) and we are still awaiting the result for cyanide(WAD).

Pleas let me know if you have any further queries. I will advise the cyanide(WAD) result as soon as it is available.

regards

rom: [mailto:

Sent: Monday, 24 January 2011 4:09 PM

To:

Subject: RE: Wet season performance

Hi

Are you able to forward me a copy of the lab analysis results for the water quality monitoring of the sediment 1 discharge mentioned below.

Kind regards

Senior Environmental Officer

Mining & Industry, North Region

Department of Environment and Resource Management

Telephone:

Facsimile:

Visit us online at www.derm.qld.gov.au

Department of Environment and Resource Management 5B Sheridan Street (PO Box 937), Cairns Qld 4870

From:	[mailto:	
1 1 0 1111	, manto	
Sent: Tu	esdav. 11 January 2011 10:47 AM	
To:		
Cc:		
Subject:	Wet season performance	

We have had only one minor release, from Sed dam 1, so far. Sampling was done and we expect results from Envirocheck on 13 Jan. We are closely monitoring the pH and EC in Sed dam 1 (over the past week, EC in Sed Dam 1 has been 0.29 - 0.37 and pH has been 7.3 - 7.7) to ensure any releases are compliant. There is no flow in North Mitton Creek.

We have in place a weekly surface water monitoring program (for the wet season). We have taken samples yesterday from Sed Dam 1 (and the other dams) under this program.

Our dams are at the capacities below:

Sed Dam	Capacity (ML)	% Filled 11/1/11
1	76.4	81
2	22.3	6
3	515.6	16
5	34.7	< 1
6	77.9	< 1
8	104.8	2
9	15.2	18
10	1041.6	29

If you require any further information, please contact John or I.

regards

From:		[mailto:
-------	--	----------

Sent: Monday, 10 January 2011 3:45 PM

To:

Subject: wet season performance

Hi

I understand that Century had approximately 80mm of rainfall over the weekend. I just wanted to touch base with you to find out how the site has been managing in terms of contaminated water management. Are you able to provide a response to the following questions:

- 1. Have there been any further discharges of contaminated water off site?
- 2. If so where were these discharges from and where was the water discharged to? Have water quality samples been taken? If so, what are the results? Do you know what quantity of water was discharged?
- 3. I understand after speaking with that sediment dam 1 discharged last week is this discharge still occurring? Have MMG received the water quality monitoring results form the laboratory? Are you able to advise what these results were? 4. What level of contaminated water is currently being held in the sediment dams, ie. what percentage capacity are they currently sitting at? Thanks

Kind regards

Think B4U Print

Senior Environmental Officer								
Mining & Industry, North Region								
Department of Environment and Resource Management								
Telephone: Facsimile:								
Visit us online at www.derm.qld.gov.au								
Department of Environment and Resource Management								
5B Sheridan Street (PO Box 937), Cairns Qld 4870								
,,								

3 sheets of A4 paper = 1 litre of water +-----

1 ream of paper = 6% of a tree and 5.4kg CO2 in the atmosphere

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Report Ref. No. 110116_008 MMG Events

Attention: Minerals and Metals Group Australia, Century Zinc Mine QLD 4824

	1 0 1. O. 11 D. 4 J. 4	D. 11. 10.00 Dozod Dozou	Dinol Deport Date: 07/02/11
Client Name: MIMG	Sample Collection Date and Time:	Freminially report Dates, 20/01/10	Fillal Inspoil Date, 07/02/11
Client Ref. ENV-11-008	16/01/11 not stated hours	(24 hour Priority Status)	(24 hour Priority Status)
Sample Received Date and Time	Sample Test Date and Time	Collection and Test Time Differential Sample Collector:	Sample Collector:
19/01/11 1030 hours	samples preserved	Samples Preserved	- The state of the

are determined by evanoration and nerformed in dunlicate. Elevated TDS levels can be due to low-ionic solutes) 5 bla 1 A : Ele

	TOC (mg/L as C)	0.1	NR	NR		
	Nitrate (mg/L as N)	0.1	NR	NR		
	Chloride (mg/L as Cl')	0.01	NR	NR		
onic source)	Dissolved Sulphate (mg/L as SO ₄)	1	NR	NR	<=500(4000)	
00 GEE 10 JOW-10	Acidity (mg/L)	0,1	NR	NR _.		
Do levels call	Carbonate (mg/L as CO ₃)	0.1	NR	NR		
poration and performed in cupilicate. Elevated 1D3 tevers can be due to 10w-tollic solutes)	Bicarbonate (mg/L as HCO ₃)	0,1	NR	NR		
idno ili califor	Total Alkalinity (mg/L as CaCO ₃)	0.1	NR	NR		
ration and ber	TDS (dried at 180°C) (mg/L)	0.1	NR	NR		
ined by evapo	TSS (mg/L)	1	NR	NR		
ues are determ	Turbidity (NTU)	0.01	NR	NR		
Note: 1D5 val	EC (mS/cm)	0.10	NR	NR		
impling Suite (pH (pH units)	0.01	NR	NR		
es – Events Sa	Sample Ref		ENV-11- 008	ENV-11- 008		
emical Analys	Sample Date		16/01/11	16/01/11		
Table 1A: Element and Chemical Analyses – Events Sampling Suite (Note: 1DS values are deformined by ever	Analytes	LOR	NM_SW04_REC	NM_SW02_SD1	Groundwater Trigger limits (supplied by the	Groundwater Contaminant Limits
Fable	, oS		1	2		

Table 1A: Element and Chemical Analyses - Events Sampling Suite (Cont')

Dissolved Zinc (mg/L)	0.002	NR	NR		
Total Lead (mg/L)	0.003	NR	NR) 	1.5
Dissolved Lead (mg/L)	0.003	NR	NR		
Total Cadmium (mg/L)	0.001	NR	NR		800
Dissolved Cadmium (mg/L)	0.001	NR	NR		
Total Arsenic (mg/L)	0.006	N.	NR	≥=0.04	
Dissolved Arsenic (mg/L)	900.0	NR	NR		
Total Potassium (mg/L)	0.02	NR	NR		
Total Sodium (mg/L)	0.02	NR	NR		
Total Magnesium (mg/L)	0.02	NR	NR		
Total Calcium (mg/L)	0.02	NR	NR		
Total Phosphorus (mg/L as P)	0.01	NR	NR		
Total Nitrogen (mg/L as N)	0.1	NR	NR		
BOD (mg/L)	1	NR	NR		
Oil and Grease (mg/L)		3	1		
TPH (mg/L)	-	NR	NR		Security to the property of the control of the cont
Sample Date		16/01/11	· 11/11/91		
Analytes	LOR	NM_SW04_REC	NM_SW02_SD1	Groundwater Trigger limits (supplied by the	Groundwater Contaminant Limits
No.		-	2		

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MMG Events 110116 008 Ref. No. Report

Total Antimony (mg/L)

Fotal Sulphur (mg/L)

Total Silver (mg/L) 0.001

Total Selenium (mg/L)

Total Nickel (mg/L) 0.004

Total Molybdenum

(mg/L) 0.005 H H

0.005 ž Ν̈́

0.07

0.01

¥ ¥

NR ĕ

Ħ ž

Ħ ž

Manganese (mg/L) Total 0.001 R ĭ Dissolved Manganese (mg/L) 0.001 ĭ ĭ Total Iron (mg/L) 0.003 NR Ν̈́ Dissolved Iron (mg/L) 0.003 Ħ ХR Total Copper (mg/L) 0.002 Ħ Ħ Dissolved Copper (mg/L) 0.002 Ħ Ĕ Table 1A: Element and Chemical Analyses - Events Sampling Suite (Cont') Chromium (mg/L) Total 0.001 ž ĭ Total Zinc (mg/L) 0.002 A=35 Ä ž Sample 16/01/11 16/01/11 Date NM_SW04_REC NM SW02 SD1 Groundwater Analytes LOR ę.

20 Ingger limits (supplied by the client) Groundwater Contaminant Limits

Dissolved Potassium (mg/L)Dissolved Sodium (mg/L) Dissolved Magnesium (mg/L) Dissolved Calcium (mg/L) Sample Date Table 1A: Element and Chemical Analyses - Events Sampling Suite (Cont') Analytes ŝ

0.02ž ĭ 0.02 ≅ ĭ 0.02 ХŖ Ħ 16/01/11 16/01/11 Groundwater Contaminant Limits Trigger limits (supplied by the client) NM SW04 REC NM_SW02_SD1 Groundwater

0.02 ž ř

Table 1B: Outsourced Analysis - Events Sampling Suite

otal (L)	950	R	R	
Phenol (mg/L)	0.0	NR	NR	
Cyanide (mg/L)	0.004	NR	มห	
Cyanide (mg/L)	0.004	<0.004	<0.004	
Mercury (mg/L)	0.0001.	NR	NR	
**Thicoyanate (mg/L)	0.1	NR	NR	
Sample Date		16/01/11	11/10/91	
Analytes	LOR	NM_SW04_REC	NM_SW02_SD1	
No.		1	2	

contact@envirocheck.com.au

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MMG Events 110116 008 Ref. No. Report

Table 1R. Outsourged Anglysis ... Events Samuling Suite (Cont.)

		T		$\overline{}$	1	T
	and the second s	**Ortho-Xylene	(μg/L)	2	NR	NR
	of the state of th	**meta- &	para-Xylene (µg/L)	2	NR	NR
	**BTEX (µg/L)	**Ethylbenzene	(μg/L)	2	NR	NR
		**Toluene	(µg/L)	2	NR	NR
		**Benzene	(Llg/L)	1	NR	NR
Sampling Same (Com	Sample Date			16/01/11	16/01/11	
table in Consoniced Analysis — Events Sampling Suite (Cont.)		Allaiytës	or enterested and a	(LOR)	NM_SW04_REC	NM_SW02_SD1
Table 115: Off	Sample No				1	2

NA = Not Applicable; NR = Not Requested; IS=insufficient sample; LOR = Limit of Reporting EC = Electrical Conductivity; TSS = Total Suspended Solids; TDS = Total Dissolved Solids; TOC = Total Organic Carbon; TPH = Total Petroleum Hydrocarbons; BTEX = Benzene, Toluene, Ethylbenzene, Xylene. WAD Cyanide = Weak Acid Dissociable Cyanide Analysis Methods: metals by ICP-OES according to APHA 3120B; digestion metals APHA 3030E, acid extractable metals APHA 3030C; Dissolved and suspended metals APHA 3030B; pH APHA 4500H+B; turbidity APHA2130B; Colour APHA 2120C; Chemical Oxygen Demand (COD) APHA5220 D; Biological Oxygen Demand (BOD) / Dissolved Oxygen (DO) APHA5210 B; total N APHA 4500-N, total P APHA 4500P, Total Suspended Solids APHA2540D, TOC APHA 5310; Surfactants by MBAS APHA5540 C-; Sulphides APHA 4500-S²-D; ammonia APHA4500P, fluoride APHA4110 B, chlorine APHA4110 B, sulphate APHA4110 B, sulphate APHA4110 B, sulphate APHA4110 B, sulphate APHA4110 B, Silica APHA 5520 F; TOG APHA 5520

Report Summary: Samples were analysed as received.

Note: Total metals were determined as acid digestible metals.

The samples are indicative only at the time of sampling and further regular monitoring is recommended.

as collected and transported by the customer. ** These analyses outsourced to Australian Laboratory Services, Brisbane, a NATA accreditation no 825, reference number EB1100944. We cannot NOTE: (1) "SAMPLE IDENTIFICATION" obtained from container as received by our laboratory. Results indicate the microbial level of growth at the time of testing only in the sample received guarantee the water quality of each sample site based on these results. (2) This document and any attachments are intended solely for the named addressee and are confidential. The copying or listribution of them or any information they contain, by anyone other than the addressee is prohibited. This Report shall not be reproduced except in fulli (PhD, BScHons, MASM, MACCS)

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Karl Spaleck

From:

Sent:

Thursday, 3 March 2011 5:10 PM

To:

Cc:

Subject:

RE: water management update for Century

Follow Up Flag: Follow up

Flag Status:

Ηi

Red

We experienced approx 48.6mm last night and 132.2 in the last 7 days. A summary of current sediment dam levels is provided below.

Sediment dam 1 is the only dam to have discharged from the site, the discharge began last night (2/3/2011) at 9pm and by this afternoon was a small trickle through the gabion basket, we expect the discharge to continue for approximately another 6hrs without further rain. Monitoring was conducted thismorning, laboratory results are expected back in 16 days, at the spillway (NM_SW02_SD1) pH = 7.69 and EC = 0.27mS/cm, in the receiving waters (NM-SW04_REC) pH = 7.54 and EC = 0.29mS/cm, well below our EA criteria.

Sediment Dams 1 and 2 are not classified as a hazardous dams and water quality has historically been compliant with EA criteria.

Sed Dam	Capacity (ML)	% Filled 11/1/11	% Filled 07/2/11	% Filled 03/2/11
1	76.4	81	69	Overflowing
2	22.3	6	6	Overflowing to SD3 and being pumped to SD1
3	515.6	16	10	24
5	34.7	< 1	< 1	<1
6	77.9	< 1	< 1	<1
8	104.8	2	< 1	3.7
9	15.2	18	22	51
10	1041.6	29	32	30

Please contact myslelf or Damien if you require any additional information.

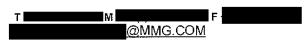
Regards,

ENVIRONMENTAL ENGINEER

MMG | MINERALS AND METALS GROUP CENTURY

Members of the Minmetals Resources Limited group of companies (HKEx:1208)

PO BOX 8016 GARBUTT BC QLD 4814 AUSTRALIA



WWW.MMG.COM

A Please consider the environment before printing this email
From:mailtomailto
Sent: Thursday, 3 March 2011 11:07 AM
To:
Subject: water management update for Century
-li

As there was some significant rainfall in the Gulf over the last few days would you able to give me an update on how things are going at Century in relation to water management. How are dam levels? Have any discharges occurred off site and if so has water quality sampling been undertaken? What are the results?

Mining and Heavy Industry - North Region Department of Environment and Resource Management

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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:

Sent:

Thursday, 10 March 2011 5:50 PM

To:

Cc:

Subject:

RE: SD1 overflow 2/3/2011

Attachments: 110303_025 chem MMG Surface Water events.pdf

Sorry, with attachment.

From:

Sent: Thursday, 10 March 2011 5:49 PM

To:

Cc:

Subject: SD1 overflow 2/3/2011

Preliminary results of laboratory analysis from the sediment dam 1 overflow that occurred on 2/3/2011 are attached, the table below provides a comparison of key parameters against EA criteria.

		Re	sult	
Parameter	Unit	NM_SW02_SD1	NM_SW04_REC	Limit
рН	pH unit	6.91	6.90	6.0 – 9.0
TSS	mg/L	47	26	TBC
EC	mS/cm	0.276	0.283	1.5
Oil & Grease	mg/L	<1	<1	20
Dissolved SO ₄	mg/L	100	90	800
Total As	mg/L	<0.006	<0.006	0.05
Total Cd	mg/L	0.002	0.001	0.08
Total Pb	mg/L	0.018	0.014	1.5
Total Zn	mg/L	3.49	1.676	50
Cyanide (WAD)	mg/L	Pending	Pending	0.1

Cyanide results are pending and will be sent through asap. As previously discussed with the department the limit for TSS is considered ambiguous and is being addressed through the current EA amendment process.

All parameters are compliant with their respective criteria, cyanide TBC, the potential for environmental impact associated with the release is insignificant. MMG Century will undertake its annual post wet season limnological investigation to assess any potential impacts associated with wet season discharges.

Please let me know if you require any additional information.

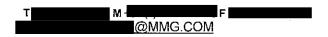
Regards,

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Report
Ref. No.
110303_025
MMG surface water
events

Attention:

Minerals and Metals Group Australia, Century Zinc Mine QLD 4824

Client Name: MMG Client Ref. ENV-11-025 Sample Collection Date and Time: Animaly Report Dates: 09/03/11 not stated hours and Time of Sample Received Date and Time Sample Received Date an	Client Name: MMG Client Ref. ENV-11-025 Sample Received Date and Time 07/03/11 1500 hours	ans and Metans Groups and Time: hours	Preliminary Report Dates: 09/03/11 (72 hour Priority Status) Collection and Test Time Differential Samples Preserved	Final Report Date: (72 hour Priority Status) Sample Collector:
	07/03/11 1500 hours	samples preserved	Samples Preserved	

Table 14; Element and Chemical Analyses - Surface water events Suite (Note: TDS values are determined by evaporation and performed in duplicate. Elevated TDS levels can be due to low-ionic solutes)

	THE LITTLE WIND COUNTY THE PARTY OF THE PART															
Š.	Analytes	Sample Date	Sample Ref	pH (pH units)	EC (mS/cm)	Turbidity (NTU)	TSS (mg/L)	TDS (dried at 180°C) (mg/L)	Total Alkalinity (mg/L as CaCO ₃)	Bicarbonate (mg/L as HCO ₃)	Carbonate (mg/L as CO ₃)	Acidity (mg/L)	Dissolved Sulphate (mg/L as SO ₄)	Chloride (mg/L as Cl)	Nitrate (mg/L as N)	TOC (mg/L as C)
	LOR			0.01	0.001	0.01	1	0.1	0,1	0.1	0.1	0.1	1	10'0	0.1	0.1
_	NM_SW04_REC	03/03/11	ENV-11- 025	06'90	0.283	NR.	56	NR	54.0	62.9	<0.1	NR	90	12.1	1.3	NR
2	NM_SW02_SD1	03/03/11	ENV-11- 025	16'9	0,276	NR	47	NR	50,0	61.0	<0.1	NR	100	6.1	0.5	NR
	CRM (%)	NA		6'96	104.1	NR	102.5	NR	104	NA	NA	NR	108	99,4	96,0	NR
	Acceptable Range (%)	ΝΑ		90-110	011-06	NR	90-110	90-110	90-110	NA	NA	NR	90-110	90-110	90-110	NR
	Receiving water limits (supplied by chent)			0.6-0.9	<=1.5								≪∺800			
	ANZECC 95% Trigger values for Preshwater mult.															

Table 1A: Element and Chemical Analyses – Surface water weekly Suite (Cont')

,	······	_,					A-130 A-1	
	Dissolved Zinc (mg/L)	0.002	1,491	2.810	103,35	90-110		
	Total Lead (mg/L)	0.003	0.014	0.018	102.01	90-110	χ. 	0.0034
	Dissolved Lead (mg/L)	0.003	0,007	0.011	102.01	90-110		
	Total Cadmium (mg/L)	0.001	0,001	0,002	103.21	90-110	<=0.08	0.0002
	Dissolved Cadmium (mg/L)	0.001	<0.001	0.001	103.21	011-06		
	Total Arsenic (mg/L)	900'0	900'0>	900.0>	97.21	90-110	<-0.05	0.024
	Dissolved Arsenic (mg/L)	900'0	<0.006	<0.006	97.21	90-110		
	Potassium (mg/L)	0.02	4.00	3,88	104.69	90-110		
	Sodium (mg/L)	0.02	4.47	4.60	104.94	90-110		
	Magnesium (mg/L)	0.02	13.42	13.63	106.98	90-110		
	Calcium (mg/L)	0.02	24.70	23,21	108.99	90-110		
	Total Phosphorus (mg/L as P)	0.01	0.83	1.50	8.96	90-110		
, , , ,	Total Nitrogen (mg/L as N)	0.1	1.3	8:0	5.06	90-110		
	BOD (mg/L)	1	NR	NR	. NR	NR		
1001	Oil and Grease (mg/L)	-	∇	▽	NR	N.	<=20	
2001100	TPH (mg/L)	1	N.	NR	NR	NR		
linear and	Sample Date		03/03/11	03/03/11	NA	NA		
Table 14th Lightly and Chelinea 2 miles main from 5 miles	Analytes	TOR	NM_SW04_REC	NM_SW02_SD1	CRM (%)	Acceptable Range (%)	Receiving water lumis (supplied by cleni)	ANZECC 95% Trigger values for Freshwater mg/L
Table	, No.		-	2				

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110303_025 MMG surface water Report Ref. No. events

9	man 14 . 121 Chaminal Analyses - Surface water weekly Suite (Cont.)	S - sesyled I lea	urface water wea	My Suite (Cont'							E	Log-D	Total	Total
1 and	IA: Element and Circus	Cal Lines year					Total	Total	Total	Lotal	Local	Total	1007	-
			Total	Lotal	Total	Total	1 1	Managaga	Molyhdenim	Nickel	Selenium	Silver	Sulphur	Antimony
2	Angivtes	Sample Date	Zinc	Chromium	Cobalt	Conner (me/L)	Iron	Ivialiganese	(barel)	(J/ma/)	(me/L)	(mg/L)	(mg/L)	(mg/L)
į			(me/L)	(mg/L)	(mg/L)	(_ G)d.d^_	(mg/L)	(mg/r)	(IIIR/III)	(11)	, , ,	1000	200	0.005
1			0,000	0.001	0.001	0.002	0.003	0.001	0,005	0.004	0.01	0,001	0.07	200.0
	LOR		0,002	100'0				12.4	GIV.	div .	2Z	ž	NR	NR
ŀ	DEG POME FAIR	03/03/11	1.676	Ν	ž	ž	NK N	Ϋ́	NK	VIVI				
_	NM SWO4 NEC	11/20/20					4.	E.	GIN	G.N.	ž	XX	ž	N.
٠	IN SWO SDI	03/03/11	3,496	邕	ĭ	ž	YN.	NK	VINI	777.7				
1							ar.v	GI X	22	Ĕ	Z.	¥	ž	Ä.
	(%) Md.)	ΑN	103.35	NR.	ğ	ž	N.Y.	AM	VIVI	3117				
	CIVIN (78)					4.5.00	00 110	01100	90-110	00,110	90-110	90-110	90-110	90-110
ľ	(70)	~ 7	00-110	90-110	90-110	90-110	90-110	011-04	011-06	21.27				
	Acceptable Kange (%)	WM	011-07											A Property of the Control of the Con
	Receiving water limits		N-SN											
	fairblish hy client													
1	The section of the se											,		
	ANZECO 95% Trigger					20,031,4		6)		0.011	0.011	a pomo		
	values for Freshwater		\$10°0	0.00		# 1 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5								V.55
	and the semple of the seminary							300 300 300 300 300 300 300 300 300 300						

***[0[3]	Phenol (mg/L)	0.050	ZZ.		NR	. N.		NR.	
T	Cyanide (mg/L)	0.004	SIN	77.1	NR	92	YINI	N.	0.007
A A C A S A A A A A A A A A A A A A A A	**WALD Cyanide (mg/L)	0.003	n = k	Fenang	Pending		Pending	Donding	10 m/s
- State - Stat	**Total Mercury	0.0001		NR	NR		N.S.	G. C.	9,005.0
	**Thicoyanate (mg/L)		T'A	NR	Olx	VIVI	~XX		NR
sekly Suite	Sample Date			03/03/11	1 1/2 0/1 0/0	03/03/11	NA		NA National Parkets
To Ho 118. Outsourced Analysis - Surface water weekly Suite	Analytes	Analytes		NM_SW04_REC		NM_SW02_SD1	(%) MGD	CNN (79)	Acceptable Range (%) Receiving water limits (supplied by ANZECC 55% Fregger values for
Table 118.	No.			-	-	2			

Accreditation #14542



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MMG surface water 110303 025 Ref. No. events

Fable 1B: Outsourced Analysis - Surface water weekly Suite (Cont')

	_	_		1	_ _	_	_	Section 1
	**Ortho-Xylene	(µg/L)	2	NR	NR	NR	NR NR	
	**meta- & para-Xylene	(µg/L)	7	NR	NR	NR	NR NR	
**BTEX (µg/L)	**Ethylbenzene	(µg/L)	2	NR	NA.	NR	NR	
	**Toluene	(1871)		NR .	NR	NR	NR .	
	**Benzene	7777	1	NR	NR	NR	NR	
Sample Dare				03/03/11	03/03/11	NA .	NA	
Analytes			(LOK)	NM_SW04_REC	NM_SW02_SD1	CRM (%)	Acceptable Range (%)	ANZECC 55% Trigger values for Freshwater rig/L
Sample	<u> </u>			_	2			

Conductivity/TDS (calc) APHA2510B; TDS APHA2540 C, Alkalinity APHA2320B; Colour APHA 2120C; Chemical Oxygen Demand (COD) APHA5220 D; Biological Oxygen Demand (BOD) / Dissolved Oxygen (DO) APHA5210 B; total N APIA4500-N, total P APHA4500P; Total Suspended Solids APHA2540D, total organic carbon (TOC) APHA5310; Surfactants by MBAS APHA5540 C., Sulphides APHA4500-S2-D, annuonia APHA4500F, fluoride APHA4110 B, Analysis Methods: metals by ICP-OES according to APHA 3120B; digestion metals APHA 3030E, acid extractable metals APHA 3030C; Dissolved and suspended metals APHA 3030B; pH APHA 4500H+B; turbidity APHA2130B; chlorine APHA4110 B, Nitrite APHA4110 B, Nitrate APHA4500-NO₂-E; Bromide APHA4110 B, phosphate APHA4110 B; sulphate APHA4110 B; Silica APHA4500C; TPH APHA 5520 F; TOG APHA 5520 G; EC = Electrical Conductivity; TSS = Total Suspended Solids; TDS = Total Dissolved Solids; TOC = Total Organic Carbon; TPH = Total Petroleum Hydrocarbons; BOD = Biochemical Oxygen Demand; WAD Cyanide = Weak Acid Dissociable Cyanide; BTEX = Benzene, Toluene, Ethylbenzene, Xylene.

NR = not requested/not received; LOR = Limit of Reporting; NA = not applicable; # methodsnot covered by the laboratory's scope of accreditation; § parameters were determined in the field by Enviro-Check field technician at the time of sampling: (feld) parameters were determined in the field by the client at the time of sampling; IS = insufficient sample,

Report Summary: Samples were analysed as received.

Note: Total metals were determined as acid digestible metals.

The samples are indicative only at the time of sampling and further regular monitoring is recommended

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Accreditation #14542

From:		
Sent: Wednesday;	9 March 2011 5:08 PM	
То:		
Cc:	Karl Spaleck	
Subject: RE: water m	anagement update for Century	
As discussed today, se through the gabion structure to overflow for	diment dam 1 began to overflow on Monday 9 March and continues to trickle cture today. It is currently raining at the site and as a result I expect the dam the next 24hrs.	e ı will
Sampling was not con- requested and I expect follows:	ucted on Monday but was conducted this afternoon, a priority turn around we the results within 7 days. Field results are compliant with EA criteria and are	as as
NM_SW02_SD1 (sed	am 1 spillway): EC = 0.34, pH = 7.46	
NM_SW04_REC (Nth	Aitton Crk receiving): EC = 0.31, pH = 7.66	
The managers of Lawi	Hill and Riversleigh Stations were notified thisafternoon.	
I expect the results fro available to you asap.	n the discharge event 2/3/2011 by the end of the week and will make them	
As always please don'	hesitate to contact me if you require any addtional information.	
Regards,		
ENVIRONMENTAL EI	GINEER	
	AND METALS GROUP CENTURY als Resources Limited group of companies (HKEx:1208)	
PO BOX 8016 GARBUTT BC QLD 48	4 AUSTRALIA	
т м	F MG.COM	
WWW.MMG.COM		
Please consider the envi	onment before printing this email	
From: Sent: Wednesday, 9 I To:	[mailto: learch 2011 12:10 PM	
Cc:	Karl Spaleck anagement update for Century	
Good afternoon		
I have tried telephonin	g you to discuss the SD1 discharge mentioned below however I have not be	en a

23/09/2011

to get through to either of you. I need to confirm whether or not the discharge is still occurring from SD1 – would you please advise.

Thank you

Kind regards

Senior Environmental Officer
Mining & Industry, North Region
Department of Environment and Resource Management
Telephone: Facsimile:

Visit us online at www.derm.gld.gov.au

Department of Environment and Resource Management 5B Sheridan Street (PO Box 937), Cairns Qld 4870

From: mailto: Mailto: Sent: Thursday, 3 March 2011 5:10 PM

To: _____

Cc: Karl Spaleck

Subject: RE: water management update for Century

We experienced approx 48.6mm last night and 132.2 in the last 7 days. A summary of current sediment dam levels is provided below.

Sediment dam 1 is the only dam to have discharged from the site, the discharge began last night (2/3/2011) at 9pm and by this afternoon was a small trickle through the gabion basket, we expect the discharge to continue for approximately another 6hrs without further rain. Monitoring was conducted thismorning, laboratory results are expected back in 16 days, at the spillway (NM_SW02_SD1) pH = 7.69 and EC = 0.27mS/cm, in the receiving waters (NM-SW04_REC) pH = 7.54 and EC = 0.29mS/cm, well below our EA criteria.

Sediment Dams 1 and 2 are not classified as a hazardous dams and water quality has historically been compliant with EA criteria.

Sed Dam	Capacity (ML)	% Filled 11/1/11	% Filled 07/2/11	% Filled 03/2/11
1	76.4	81	69	Overflowing
2	22.3	6	6	Overflowing to SD3 and being pumped to SD1
3	515.6	16	10	24
5	34.7	< 1	< 1	<1
6	77.9	< 1	< 1	<1
8	104.8	2	< 1	3.7
9	15.2	18	22	51
10	1041.6	29	32	30

Please contact myslelf or Damien if you require any additional information.

Regards,

ENVIRONMENTAL ENGINEER

MMG | MINERALS AND METALS GROUP CENTURY

Members of the Minmetals Resources Limited group of companies (HKEx:1208)

PO BOX 8016 GARBUTT BC QLD 4814 AUSTRALIA

т м м (<u>@MMG.COM</u>

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A Please consider the environment before printing this email

From: mailto:

Sent: Thursday, 3 March 2011 11:07 AM

To:

Subject: water management update for Century

Hi

As there was some significant rainfall in the Gulf over the last few days would you able to give me an update on how things are going at Century in relation to water management. How are dam levels? Have any discharges occurred off site and if so has water quality sampling been undertaken? What are the results?

Mining and Heavy Industry - North Region
Department of Environment and Resource Management

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:

Sent:

Friday, 11 March 2011 2:30 PM

To:

Cc: Subject:

SD1 overflow 7/3/2011

Attachments: 110309_027 chem MMG Surface Water events.pdf

Ηi

Preliminary results of laboratory analysis from the sediment dam 1 overflow that occurred on 7/3/2011, sampling conducted on 9/3/2011, are attached, the table below provides a comparison of key parameters against EA criteria.

	Unit	Re	sult	
Parameter		NM_SW02_SD1	NM_SW04_REC	Limit
pH	pH unit	6.52	6.42	6.0 - 9.0
TSS	mg/L	31	33	TBC
EC .	mS/cm	0.348	0.671	1.5
Oil & Grease	mg/L	<1	<1	20
Dissolved SO ₄	mg/L	100	100	800
Total As	mg/L	<0.006	<0.006	0.05
Total Cd	mg/L	0.004	0.002	0.08
Total Pb	mg/L	0.019	0.009	1.5
Total Zn	mg/L	8.417	4.694	50
Cyanide (WAD)	mg/L	Pending	Pending	0.1

Cyanide results are pending and will be sent through asap. As previously discussed with the department the limit for TSS is considered ambiguous and is being addressed through the current EA amendment process.

All parameters are compliant with their respective criteria, cyanide TBC, the potential for environmental impact associated with the release is insignificant. MMG Century will undertake its annual post wet season limnological investigation to assess any potential impacts associated with wet season discharges.

Please let me know if you require any additional information.

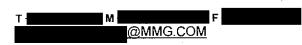
Regards,

ENVIRONMENTAL ENGINEER

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MMG surface water 110309 027 Report Ref. No. events

Attention

(24-48 hour Priority Status) Sample Collector: Final Report Date: Preliminary Report Dates: 10/03/11; 11/03/11 Collection and Test Time Differential Minerals and Metals Group Australia, Century Zinc Mine QLD 4824 (24-48 hour Priority Status) Samples Preserved Sample Collection Date and Time: 09/03/11 not stated hours Sample Test Date and Time samples preserved

and Chemical Analyses.—Surface water events Suite (Note: TDS values are determined by evaporation and performed in duplicate. Elevated TDS levels can be due to low-ionic solutes)

Sample Received Date and Time 09/03/11 1700 hours Client Name: MMG Client Ref. ENV-11-027

	TOC (mg/L as C)	0.1	NR S	NR	NR	NR	
	Nitrate (mg/L as N)	0.1	Pending	Pending	Pending	90-110	
	Chloride (mg/L as Cl)	0.01	11.3	7,6	102,3	90-110	
	Dissolved Sulphate (mg/L as SO ₄)	1	100	100	901	90-110	0085
	Acidity (mg/L)	0.1	NR	NR .	NR	NR.	
	Carbonate (mg/L as CO ₃)	0,1	<0.1	7.0≻	NA	NA	
	Bicarbonate (mg/L as HCO ₃)	0.1	72.7	73.2	NA	NA	
	Total Alkalinity (mg/L as CaCO ₃)	0.1	59.6	0'09	1.801	90-110	
and in the second	TDS (dried at 180°C) (mg/L)	0.1	NR	NR	NR	90-110	
	TSS (mg/L)	1	33	31	94	011-06	
taines are	Turbidity (NTU)	0.01	NR	NR	NR	NR	
מיני יאורי	EC (mS/cm)	0.001	0,671	0,348	104.1	90-110	
ווכן כייווס סנו	pH (pH units)	0.01	6.42	6.52	96,3	90-110	0.000
S - Sulliance	Sample Ref		ENV-11- 027	ENV-11- 027	NA	ΑΝ	
anical Analysis	Sample Date		09/03/11	09/03/11	Ϋ́Α	NA	
1 abe 1A; Eigheil and Chennea Analysis - Surface water events Saire (1906). Les mares in constitues of chemical and year.	Analytes	LOR	NM_SW04_REC	NM_SW02_SD1	CRM (%)	Acceptable Range (%)	Receiving water limits (supplied by cheur) ANZIEC 95% THESENTICLE 5001 THESENTINES FOR
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1301	Table IA: Element and Cheffileal Alialyses — Sulface water events Suffe (Colif.)	anical Allaryst	John Line	אמנטו האמזוו	2) 2112	/ 111								-				
ģ	Analytes	Sample Date	TPH (mg/L)	Oil and Grease (mg/L)	BOD (mg/L)	Total Nitrogen (mg/L as	Total Phosphorus (mg/L as P)	Calcium (mg/L)	Magnesium (mg/L)	Sodium (mg/L)	Potassium (mg/L)	Dissolved Arsenic (mg/L)	Total Arsenic (mg/L)	Dissolved Cadmium (mg/L)	Total Cadmium (mg/L)	Dissolved Lead (mg/L)	Total Lead (mg/L)	Dissolved Zinc (mg/L)
	LOR			-	-	0.1	10.0	0.02	0.02	0.02	0.02	900'0	900'0	0.001	0.001	0.003	0.003	0,002
-	NM_SW04_REC	09/03/11	NR	7	N.	Pending	99.0	20.89	12.00	4.30	3,31	>0.006	<0.006	0.002	0.002	<0.003	600'0	3,779
2	NM_SW02_SD1	09/03/11	NR	⊽	NR	Pending	92'0	22.49	13.73	4.90	3.50	>0.006	<0.006	0,003	0.004	0,004	610'0	7.378
	CRM (%)	NA	NR	NR	NR	Pending	00'56	101,24	101.11	107.46	94.38	100.54	100.54	107.86	107.86	105.74	105.74	106.80
	Acceptable Range	NA	Ä	N.	NR	90-110	90-110	011-06	011-06	90-110	90-110	011-06	90-110	90-110	90-110	90-110	90-110	90-110
	Receiving water dunts (supplied by			<=20				96.5 196.5 196.5 196.6					50.05		\$0'0 - 2		<=1.5	
	ANZECC 95% Trigger values for Freshwater ing L												0.024		0.000		0.0034	

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110309_027 MMG surface water Ref. No. Report events

Table 1A: Element and Chemical Analyses

			_				
	Total Antimony	(mg/L) 0,005	NR	NR	NR	90-110	
	Total Sulphur	(mg/L) 0.07	NR	NR	NR	90-110	
	Total Silver	0.001	NR	NR	NR	90-110	0.0008
	Total Selenium	0.01	Æ	NR	Ä	90-110	
	Total Nickel	0.004	NR	NR	N.	90-110	1000
	Total Molybdenum	0.005	NR	NR	NR	90-110	
	Total Manganese	0.001	NR	NR	NR	90-110	
	Total Iron (me/L)	0,003	NR	N.	NR	90-110	
	Total Copper (mg/L)	0,002	NR	ĸ	NR	90-110	0.0014
	Total Cobalt (me/L)	0.001	NR	NR	NR	90-110	
nts Suite (Cont')	Total Chromium (m#/l.)	0.001	NR	NR	NR	90-110	0.001
urface water eve	Total Zinc (mg/L)	0.002	4 694	8.147	106.80	90-110	800.0
ical Analyses - >	Sample Date		09/03/11	11/£0/60	NA	NA	
Table 1A: Element and Chemical Analyses — Surface water events Suite (Cont	Analytes	LOR	NM_SW04_REC	NM_SW02_SD1	CRM (%)	Acceptable Range (%)	Recoving water limits (supplied by client) ANZEGE 95% ringer values for Frishwater ing L.
Lable	Š.		1	3			
•							

	**Total Phenol	0.050	NR.	NR	NR	NR	Company of the compan
	**Total Cyanide (mp/L)	0.004	NR	NR	NR	NR	
	**WAD Cyanide (mg/L)	0.005	Pending	Pending	Pending	Pending	10-2
	**Total Mercury (mg/L)	0.0001	NR	NR	NR	NR	\$000.9
	**Thicoyanate (mg/L)	0.1	NR	NR	NR	NR	
vents Suite	Sample Date		09/03/11	09/03/11	NA	NA	
Table 1B: Outsourced Analysis - Surface water events Suite	Analytes	LOR	NM_SW04_REC	NM_SW02_SD1	CRM (%)	Acceptable Range (%)	Receiving water limits (supplied by clean) ANZECC 95% Trigger values for
Table 1B: Or	No.		_	2			



Accreditation #14542



We go beyond our laboratory NATA/ISO/IEC accreditation and ISO9000 compliance. We will coordinate responses with you as well as with other specialists and GUARANTEE not to leave you on your own. We are available 7 days.

MMG surface water 110309 027 Ref. No. events

Table 1B: Outsourced Analysis - Surface water events Suite (Cont')

	**Ortho-Xylene	2	NR	NR	NR .	NR	
	** meta- & para-Xylene	2.2	NR	NR	NR	. WN	
**BTEX (µg/L)	**Ethylbenzene	2	NR	NR	NR	NR	
	**Toluene	2	, NR	NR	NR	NR	
	**Benzene	. 1	NR	AN	NR	NR	98
Sample Date	,		09/03/11	09/03/11	NA	NA	
Analytes		(LOR)	NM_SW04_REC	NM_SW02_SD1	CRM (%)	Acceptable Range (%)	ANZEGG 95% Trugger values
Sample No	2		_	2			

Conductivity/TDS (calc) APHA2510B; TDS APHA2540 C; Alkalinity APHA2320B; Colour APHA 2120C; Chemical Oxygen Demand (COD) APHA5220 D; Biological Oxygen Demand (BOD) / Dissolved Oxygen (DO) APHA5210 B; total N APHA4500-P; Total Suspended Solids APHA2540D, total organic carbon (TOC) APHA5310; Surfactants by MBAS APHA5540 C-; Sulphides APHA4500-P; Total Suspended Solids APHA4500-P; fluoride APHA4110 B, Analysis Methods: metals by ICP-OES according to APHA 3120B; digestion metals APHA 3030E, acid extractable metals APHA 3030C; Dissolved and suspended metals APHA 3030B; pH APHA 4500H+B; turbidity APHA2130B; EC = Electrical Conductivity; TSS = Total Suspended Solids; TDS = Total Dissolved Solids; TOC = Total Organic Carbon; TPH = Total Petroleum Hydrocarbons; BOD = Biochemical Oxygen Demand; WAD Cyanide = Weak Acid Dissociable chlorine APHA4110 B, Nitrite APHA4100 B, Nitrate APHA4500-NO,-E; Bromide APHA4110 B, phosphate APHA4110 B; sulphate APHA4110 B; Silica APHA4500C; TPH APHA 5520 F; TOG APHA 5520 O;

NR = not requested/not received; LOR = Limit of Reporting; NA = not applicable; # methodsnot covered by the laboratory's scope of accreditation; § parameters were determined in the field by Enviro-Check field technician at the time of sampling. (field) parameters were determined in the field by the client at the time of sampling. IS = insufficient sample, Cyanide; BTEX = Benzene, Toluene, Ethylbenzene, Xylene.

Report Summary: Samples were analysed as received.

Note: Total metals were determined as acid digestible metals.

The samples are indicative only at the time of sampling and further regular monitoring is recommended.

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Accreditation #14542

contact@envirocheck.com.au



Record	l of Conversation:	Environmental Protection Agency Cairns District, Northern Region
Date:	18 March 2011	
BETWEEN	(Agency's Officers):	AND (Burke Shire Council): Burke Shire Council
Subject:	Advice re discharges from Cent	tury Mine
File No:	CNS8234	

 $8.33 \mathrm{am} - \mathrm{RM}$ telephoned BSC. Voice recording advising that BSC office does not open until $9\mathrm{am}$

10.52am – RM telephoned BSC. Left message with advising of the discharge from Century Mine. Jenny advised that she would have relevant council officer return call.

4.56pm – RM telephoned BSC. Left message requesting return call in relation to discharges from Century Mine.

Date:

21 March 2011

9.05am - RM telephoned BSC. Left message requesting return call in relation to discharges from Century Mine.

1.16pm – RM telephone BSC. Spoke to CEO and advised of discharges form Century Mine and potential that the waters contained high levels of heavy metals, electrical conductivity and sulphate. CEO advised that BSC were aware of the discharges but were not concerned due to significant dilution.

Agency officers must follow the QDEH Code of Practice for giving advice when providing	ng
advice at meetings or during telephone calls.	_

Signature:

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