



ENVIRONMENTAL IMPACT STATEMENT

Expansion of Redbank Copper Operations

SUPPLEMENT



DOCUMENT CONTROL

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SUPPLEMENT STRUCTURE AND CONTENT

The supplement is structured in the same way as the draft EIS and the Appendices. All major headings have been retained, even where there were no submissions or comments received.

Comments from all submissions have been addressed under the major headings from the EIS. Comments specific to issues in the draft EIS and Appendices are listed under the relevant headings. Comments which were general in nature have been included under the key heading they seemed to best fit. Comments from each respondent has been numbered sequentially, quoted in full (except where has been a request not to publish extracts from submissions) and placed at the beginning of the relevant section. Responses then follow in text in order to address same or similar comments from different respondents once, and to reduce the space required to respond to all the comments.

The WDL was not available at the time of EIS submission, and has been included as an appendix within this Supplement document. The WMP appendices were omitted from the EIS, and thus the WMP complete with all appendices has been included as one appendix to this document.

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Location of comments within Document

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AAPA 01	AAPA advises that Redbank Copper Limited were issues with a new Authority Certificate C2009/309 on the 16th of October 2009 for this project. On the basis that the new Certificate is in place, AAPA is satisfied that the requirements of EIS Guideline 6.9 have been met and the Draft EIS appropriately addresses AAPA requirements.	6.8
Biodiversity 01	The mine occurs in area listed as a Site of Conservation Significance (Wollogorang and China Wall sandstone ranges) regarded as nationally significant based on the presence of threatened species. The EIS did not identify the area to be a Site of Conservation Significance. Further information is available at http://www.nt.gov.au/nreta/environment/conservation/index.html , noting that the Carpentarian Rock-rat is actually known from six sites (not 5) on Wollogorang Station (surveys in 2008 located animals in a gorge close to McDermott's Springs).	6.2
Biodiversity 02	The information contained in the terrestrial fauna survey report and sampling effort is considered adequate, however, it is noted that the flora surveys were restricted to the fauna survey sites and not the entire lease area, and therefore may have failed to detect rarer species.	6.2
Biodiversity 03	No surveys were conducted to detect Gulf Snapping Turtle (<i>Elseya lavarackorum</i>).	6.2
Biodiversity 04	SUMMARY OF IMPACTS AND MANAGEMENT FOR FAUNA AND FLORA - A summary of potential impacts and management options for species of conservation significance are presented in Table 6.2-6. Overall, the assessment is considered to be adequate for the majority of species. However, the assessment is considered to be inadequate for the following three species:	6.2
Biodiversity 04	Carpentarian Rock Rat – The presence of a population of <i>Zyzomys palatalis</i> at Masterton Gorge is significant. It is the smallest of the five known populations for the species (two sites at McDermott's Springs are probably one population), and therefore has the greatest potential for extinction. Based on the information provided in the EIS, the proposed expansion of the mine adds considerably to the risk of extinction of this population in the following ways: degradation of habitat from fire, weeds, cattle and draw down of aquifer; and increased risk of predation from introduced predators. The close proximity of the camp to Masterton Gorge, the increased work force and potential for expansion, and the existing presence of weeds in the gorge add to this risk. In the document, the proposed management options are pooled for all monsoon forest species, which is considered not to be adequate for <i>Zyzomys palatalis</i> . It is recommended that a separate set of management actions are specified for <i>Z. palatalis</i> . These should include: no clearing of any monsoon forest habitat, no clearing within 500 m of monsoon forest habitat, a complete ban on the cats on the mining lease, a feral cat control program be instigate to remove any cats from the mining lease, fire management be implemented to exclude all fire from the monsoon forest and the 500 m buffer, an assessment of the proposed water use for the camp and monitoring of the aquifer to ensure spring in the gorge is not impacted and visitor access to the gorge be controlled.	6.2
Biodiversity 04	Carpentarian Grass Wren - The Carpentarian Grasswren is restricted to sandstone outcrops within the Carpentarian and Adelaidean systems of the Gulf of Carpentaria (Woinarski et al. 2007), and in the NT is known from only a small number of sites, including in the China Wall area. Recent searches of all known sites for this species in the NT have located the species only at two sites on Wollogorang Station (Perry 2005; A. Fisher, NRETAS, pers. comm.). The proposed expansion of the mine adds considerably to the risk of extinction of this population through degradation of habitat from fire. It is recommended that fire management actions specified for the Carpentarian Grasswren be changed to exclude all fire to encourage growth of <i>Spinifex</i> .	6.2
Biodiversity 04	Gouldian Finch – The Gouldian Finch was regularly observed throughout the mining lease during the fauna survey. The species breeds during the dry season in <i>Eucalyptus</i> spp associated with sandstone hills and ranges, and therefore it is likely that a breeding colony is located within the local area. The proposed expansion	6.2

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	of the mine adds to the risk of extinction of this population through degradation of habitat from fire, the loss of breeding habitat and the contamination of freshwater sources. It is recommended that management actions be extended to include strict fire management of the lease to protect food and nesting habitat, ensuring water contaminated water bodies are not used by finches, and consider the installation of artificial watering points.	
Biodiversity 05	Little or no information on monitoring management actions was presented in the EIS or the draft EMP, particularly in relation to threatened species. This needs to be addressed. There needs to be an explicit monitoring program for all threatened species, with sufficient power to allow detection of any significant decline and should be an explicit target in the EMP.	6.2
Biodiversity 06	The development has the potential to impact the conservation values of the area, notably the Carpentarian Rock Rat. More stringent mitigation measures are required to ameliorate the potential impacts.	6.2
DHF (Katherine) 11	The draft EIS does not mention the use of radiation sources in the proposed mining operation. Please be aware that the Radiation Protection Act 2004 applies to servicing, testing, installing, decommissioning, manufacturing, possessing, using, storing, transporting, disposing of or otherwise dealing with a radiation source. The provisions of the Radiation Protection Act may apply to this project if the operation includes the use of radiation sources. Natural sources of radiation may be included in the definition if radiation exposure results from the enterprise. The Act is not expected to apply to any mining operation in which the most exposed person could not receive a radiation dose that is greater than 1mSv per year.	5
DHF (Katherine) 12	Camp drinking water should be tested regularly to ensure it conforms to the Australian Drinking Water Guidelines, and to ensure the aquifer is not affected by mining operations.	6.3
DHF 01	All activities and access roads are to be constructed, operated and maintained so as not to create a nuisance from dust or other particulates. Dust control and monitoring are to be conducted in line with condition 6.11.3 of the Draft Environmental Impact Statement part B.	6.5
DHF 02	Develop mechanisms for the recording and remedy mechanisms for the community to lodge complaints relating to dust and noise discharges.	6.5
DHF 03	Mine site kitchens that are not self catering, should hold Food Act registration with the Department of Health and Families. Construction and fit out of camp kitchen facilities should be consistent with standards contained in Australian & New Zealand Food Standards Code and hold registration under the NT Food Act.	6.5
DHF 04	All proposed and existing sleeping accommodation rooms should be designed and constructed in accordance with the Building Code of Australia (BCA) and NT Public Health Act and regulations and reference should be made to the proposed NT Standard for Prescribed Commercial Accommodation.	6.5
DHF 05	The provision of an adequate potable water supply should be provided for mine sites, accommodation and work places. All water supplies collected from groundwater must be at least 100 metres from any effluent drainage system or other water bodies as described in the NT Code of Practice for Small On-site Sewage and Sullage Treatment Systems and the Disposal or Reuse of Sewage Effluent (The Code). Bottled drinking water may be considered on locations where it is not practical to source other potable water supplies.	6.3
DHF 06	All water users must be made aware that they will be responsible for the treatment of their own water supplies. If they transport community bore water to their own tanks they must take responsibility for chlorinating their water and maintaining their tanks.	6.3
DHF 07	Waste water treatment system(s) shall be installed capable of collecting treating and disposing of waste water on-site. All waste water from ablution and kitchen facilities shall be directed to the waste water treatment system	6.7

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DHF 08	Depending on the size of the camp, advice should be sought from a qualified hydraulic consultant as to the most suitable method for waste water treatment and disposal.	6.7
DHF 09	An area of land should be set aside for the safe disposal of waste and conducted so as to avoid potential public health nuisances and environmental pollution	6.7
DHF 10	An application is to be lodged with the Department of Health and Families for approval to establish a solid waste disposal operation.	6.7
DRDPIFR 01	The assessment of the ARD and metals leaching potential of the waste material should have been undertaken and presented in this EIS to demonstrate that the operator understands the potential impacts to ground and surface waters from their activities. Waste rock characterisation must be conducted.	6.7
DRDPIFR 02	Acid base accounting studies should be undertaken in conjunction with other tests to give a greater degree of confidence in the predicted properties of materials tested. E.g.; undertake static and kinetic testing or both ABA and NAG. NAG will also give an indication of the likely solute load regardless of pH (i.e. metals and salts). Serious errors can result if relying solely on ABA. Long term leachates properties of waste can be very different to that originally predicted when using a single type of testing.	6.7
DRDPIFR 03	Acid neutralisation capacity results are meaningless in isolation from other formation - e.g. is neutralising capacity available at the same rate as ARD production?	6.4
DRDPIFR 04	There are no results in this EIS to demonstrate that the assumption that the rock outside the mineralised zone will all be NAF. Also, it cannot be assumed, without supporting data, that the NAF material will not require monitoring.	6.7
DRDPIFR 05	There is no information to support the assumption that the acid consuming material will be sufficient to neutralise PAF material or be available at the same rate as acid production, or for as long as is required.	6.7
DRDPIFR 06	The percentage of NAF and PAF should be known to enable appropriate WRD design and management.	6.7
DRDPIFR 07	More details are required on the capping and containment of PAF in WRD's. Details of the cover design and thickness should be supplied. It is not possible to construct an impermeable layer and more realistic designs which achieve the required objectives (e.g. minimisation of oxygen and water into the heap) should be outlined.	6.7
DRDPIFR 08	The proposal to progressively determine the management/rehabilitation requirements for PAF material through ongoing research is inadequate. Ongoing research is expected for continual improvement however it is expected that something is known now to guide management and closure plans.	6.7
DRDPIFR 09	Specific strategies and commitments should be outlined to address the legacy environmental source terms (i.e. WRD, stockpiles, HLP, TSF, etc) early in the mine operations (e.g. within 2 years).	6.3
DRDPIFR 10	Further work is required to define the extents of the highly impermeable layer intersecting the current Sandy Flat Pit. Justification for why all the new bores are in the deep aquifer should be given. The data provided does not indicate slotting depth so it is difficult to determine what level of the aquifer is being sampled. Further information should be provided on the justification of new bore locations.	6.3
DRDPIFR 11	Investigations into the suitability of the TSF location should have been done to enable them to demonstrate that they understand any potential impacts and that they have effective environmental management strategies in place.	3
DRDPIFR 12	Ore characterisation needs to be undertaken to understand the tailings character and enable appropriate management and closure. An impermeable capping layer is unrealistic. Appropriate capping strategy should be formulated based on the character of the tails. Cover design should indicate the permeability that is trying to	6.4

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	be achieved, how and to what end.	
DRDPIFR 13	The statement that mitigation of tails seepage is to divert waters into the Sandy Flat Pit 'or other impermeable storage facility for treatment' needs to be expanded on. What impermeable storage facilities are available or will be built? The Sandy Flat Pit could not be interpreted as an 'impermeable' structure.	6.4
DRDPIFR 14	Tables summarising monitoring data (e.e. 6.3-1, 6.3-5) should display the number (n) and variability (e.g. Standard Deviation) of samples for each site that the average values are calculated from.	6.3
DRDPIFR 15	Water monitoring for a period of only 3 years post mining is overly optimistic. It is likely a minimum of 5-10 years would be more appropriate to the level of disturbance.	6.3
DRDPIFR 16	Given that most of the freshwater in this area tends to be slightly acidic in its natural condition, the placement of PAF material in the base of pits may lead to unacceptable levels of metal contamination that may limit water use options for the future.	6.3
DRDPIFR 17	It should be outlined how the pits will be assisted to 'quickly fill' with water. Timeframes would be specified and details of how this will occur and the expected results. They must demonstrate that the filling of the pits will be quickly enough to minimise oxidation of sulphide material and result in acceptable quality water.	6.4
DRDPIFR 18	It is assumed' - this should be known or be able to be predicted from modelling and testing.	6.4
DRDPIFR 19	Pit water quality of a standard appropriate to the region' needs to be clarified. What is the standard appropriate to the region?	6.4
DRDPIFR 20	Pit closure strategies to ensure zero discharge of void waters into the environment need to be detailed. Is zero discharge realistic/achievable?	6.4
DRDPIFR 21	The statement 'rehabilitated according to best practice at the time' is used in several instances. Rehabilitation should be based on current best practice and include a commitment to continually improve and implement new findings in rehabilitation. Does the author understand current best practice?	6.4
DRDPIFR 22	The concept that the operator would most likely go into administration should they not gain approval for further operations is noted. However, this highlights the importance of completing a comprehensive risk assessment on the options ahead rather than using this perceived outcome as a reason to not complete it. A risk assessment for a number of alternatives should be undertaken (e.g. oxide only, mine sulphide but manage in a number of ways, etc).	5.
EHA (NRETAS) 01	All the archaeological and heritage issues for this project have been identified and addressed. Masterton's Cave and Garden have been proposed for heritage listing and the process is nearing completion. These areas should not be impacted upon by the mine operations, however they may become subject to disturbance by increased numbers of personnel in the area. There are some issues surrounding Masterton's Grave and plans to re-locate it outside of the proposed impact area, but as Masterton's Grave is no longer included in the area proposed for heritage listing, this is not a matter for Heritage Branch. It will need to be negotiated by the relevant family members and Redbank Copper.	6.8
EHA (NRETAS) 02	The draft EIS states that Redbank will investigate opportunities to extend their commitment to local economic development and capacity building. Given that the majority of staff will be fly-in fly, reducing the direct local benefits, what other measures can Redbank demonstrate to Government and Community (e.g. Industry Participation Plan)?	3
EHA (NRETAS) 03	There is a lot of assumption within the comment Legacy environmental issues have been impacting the project area environment and downstream waterways for over a decade, and it could be assumed that Redbank's involvement and subsequent environmental management will reduce the level of risk and impact (section 4.2). This would not be demonstrable until the company is well into its activities and depends on Redbanks proposed activities not further exacerbating legacy issues by poor design and management practices. Given the information gaps relating to the mining and processing of sulphidic ores and final design of the tailings	4

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	storage facility/waste rock dumps, Redbank is requesting the government and community place a great deal of trust in its management of legacy issues. As part of the supplement, Redbank should address the information gaps and provide the key performance indicators they intend to develop to measure their environmental performance.	
EHA (NRETAS) 04	Active dewatering of the Sandy Flat Pit may address some of the legacy issues; however, it should be recognised by Redbank that future activities, if not managed correctly, present environmental risk that can contribute to existing issues. For example, if the new tailings storage facility or waste rock storages are not designed or managed appropriately, there may be an increased environmental risk and impact on the existing environment. More details on the design and management of these structures (including oxide waste rock dumps and storage of oxide tailings) are required for the supplement (refer also to sections below).	4
EHA (NRETAS) 05	The alternatives for environmental management techniques lack detail (section 4.7), given that the management of legacy issues is one of the major risks Redbank is facing on site. Redbank should identify the type of relevant research projects proposed. For the treatment of contaminated pit water, Redbank must provide evidence on the long term efficacy of the lime as a neutralising agent in the old Tailings Storage facility (TSF) and how it would be assessed. More detail is required on how effective the lime sludge would be in assisting with the sealing of any leaks in the old TSF since this has been identified as one of the sources of contamination contributing to the existing legacy issues. Related questions include; 1. What is the longevity/durability of sludge as a sealing/neutralising agent and what are alternative options for dealing with the old TSF seepage issues? 2. How would the old TSF be managed as a source of contamination if this sludge is reprocessed in the future to separate its copper content (as stated in section 6.3.3)?	4
EHA (NRETAS) 06	More details need to be provided on the several proposed waste storage techniques, surface stabilisation and erosion prevention strategies. For example, what is the proposed drainage control or leachates collection if sub grade material is temporarily stored? What is the proposed waste rock storage design for the four pits and what alternatives have been considered?	
EHA (NRETAS) 07	In general the risk assessment is qualitative given that Redbank has not accumulated sufficient information to conduct a more robust risk assessment. As per the EIS Guidelines (issued in September 2009) the following information on risk assessment should be provided in the supplement; 1. Identify alternatives or mitigation measures to either eliminate or manage the acknowledged risks and describe the levels of uncertainty regarding risk. 2. Provide a quantitative method of measuring performance of mitigation and management measures. 3. Acknowledge and describe the levels of uncertainty regarding estimates of risk and the effectiveness or risk control measures in place. 4. Explicitly identify those members of the community expected to accept residual risks and their consequences.	5
EHA (NRETAS) 08	The risk assessment standard referred to in the EIS has been superseded by AS ISO 31000:2009. In table 5.2.1 the terms 'minor', 'substantial', 'medium', 'high' and 'extreme' should be defined. The concept of what defines substantial environmental damage or high-medium financial loss is difficult to understand (without quantitative examples) and open to perception.	5
EHA (NRETAS) 09	Redbank should identify the key participants in the risk identification and ranking process. This will provide an indication of the experience and perspectives and the robustness of the risk assessment. The supplement should supply some detail as to how the risk assessment was conducted, which stakeholders were involved and how they were engaged in the process.	5
EHA (NRETAS) 10	Existing surface and groundwater issues have been given a 'high' risk assessment rating in the preliminary risk assessment. For all high risks identified, Redbank needs to also identify active remedial actions with anticipated timelines for implementation. For these high risk ratings, a detailed additional section on specific actions to address off site migration of contaminants is required. The supplements needs to clarify what is meant by 'stakeholder enquiries' as a mitigation measure for existing surface and groundwater issues, and detail the 'significant ongoing research into groundwater flows' that has been conducted to date.	5
EHA	In this section Redbank states that new developments will not repeat the mistakes of the past and that improvements must occur incrementally during the life of the	5

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(NRETAS) 11	project. Redbank needs to clarify whether this reparation would occur only as money becomes available or whether the risk treatments or management would be tailored to achieve gradual improvement.	
EHA (NRETAS) 12	Past mistakes indicate that seepage from the TSF and Waste Rock Dumps (WRD) have contributed to poor water quality in the pit that has then contaminated streams downstream. In particular, EHA considers that there are inadequacies in Acid Rock Drainage (ARD) characterisation and WRD design and groundwater monitoring/knowledge. Yet in the risk assessment Redbank states treatment and research into ARD, surface and groundwater issues is ongoing and the results of the 2009/10 wet season water quality monitoring will be a major consideration when reviewing the management plans in the following years. This mitigation measure is inadequate and the EHA Division is concerned that a lack of comprehensive site geochemistry may lead to a higher risk ranking associated with ARD issues. Information on ARD is required at this stage of assessment to adequately assess the management of this issue	5
EHA (NRETAS) 13	There is a lack of information on tailings storage design, failure and leakage. At this stage, a plan of the new TSF and monitoring should be included. Redbank needs to provide contingency plans in the event of severe leakage/seepage from the TSF.	5
EHA (NRETAS) 14	Redbanks proposed mitigation strategies, management actions, controls and procedures outlined in the risk assessment, rely almost entirely on people doing jobs outside of their field/expertise. The design needs to incorporate passive controls, particularly in water management so that mine personnel do not come from an environmental background are not solely relied upon to fulfil environmental obligations.	5
EHA (NRETAS) 15	The risk assessment report that provides analysis and interpretation of monitoring results for the waste discharge license period (R.3, WDL175) must be provided as part of the supplement	6.3
EHA (NRETAS) 16	It is noted in the EIS that the most important failure if the 1992 assessment report (Sandy Flat Copper Mine, Preliminary Environment Report, 1992), was the lack of prescribed ground and surface water monitoring regimes. In order to minimise this risk Redbank has proposed an extensive water quality monitoring regime that will allow early detection of any negative impacts thus remediating actions can be progressed almost immediately. Further detail is required on the proposed investigations and remedial actions that are planned once the operation has financial resources (section 6.1.6).	6.1
EHA (NRETAS) 17	Redbank state they are committed to address legacy environmental issues and have assumed current and subsequent environmental management will lower the level of environmental risk from the current levels. This may be correct for on-site issues but Redbank needs to provide detail on how they plan to address off-site legacy issues. For example, if any water below pH 6 is discharged, it may result in mobilisation of residual contamination in creek beds and may transport impacts further downstream. Contingency actions if monitoring indicates this type of event is occurring should be identified.	6.1
EHA (NRETAS) 18	The EIS states that legacy issues are not yet thoroughly understood. Redbank needs to have thorough baseline assessment of legacy issues so that appropriate actions are taken to resolve these issues or prevent them from happening at the commencement of any mining activities. EHA division suggests that Redbank be clear on baseline conditions at various monitoring points prior to operations to enable assessment of site improvement over time.	6.1
EHA (NRETAS) 19	Appendix B - the Water Management Plan (WMP) - Table 2 lists the commitments made for the term of the WMP and expected completion dates. The results of these commitments and appendices referred to in the WMP (Appendix A-I) need to be included in the supplement - specifically; Digital terrain modelling; A final plan for dewatering the Sandy Flat Pit; An understanding of required Pit levels; Sandy Flat Pit Water Management Strategy; New Water Testing Equipment; Installation of Monitoring Bores; Commence Water Treatment; Strategic Plan for groundwater and Stormwater management; Water Balance; Chemistry of Seepage Trench Analysis; Collation and Analysis of historic data; Reduction of offsite water contamination by 50% (how this is to be measured). Redbank needs to provide contingency/remedial actions if the water management objectives and Targets (Table 1, Appendix B) are not successful.	9

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EHA (NRETAS) 20	Table 6.3.2 - Average water quality in Settlement Creek - more information is required on the number of samples on which these averages are based to provide better indication of existing baseline conditions. All monitoring site data should also be included in table format as the graphs on the table are difficult to read and the log scale on the graphs make it difficult to interpret. Raw data should be provided to indicate the quantity and differences of concentrations (reported in the same units of measurement) at different times of the year. Table 6.3.2 should detail whether listed figures are total or filterable concentration, laboratory or field tested data.	6.3
EHA (NRETAS) 21	With regard to the surface water data that has been presented in the EIS to define baseline conditions, Redbank should indicate whether the data has followed the baseline recommendations from ANZECC as per the EIS Guidelines (section 6.3.2): Reference to the baseline recommendations (section 3.2.4.2 'Baseline data collection') and balance of indicators for measurement (chemical and biological, section 7.2.1) from ANZECC and ARMCANZ (2000) should be used as a starting point for initiating baseline data collection and ongoing monitoring. For aquatic systems, wet season or recession flow surveys are to be included.	6.3
EHA (NRETAS) 22	The macroinvertebrate sampling undertaken since 2008 to provide baseline data against which improvements in water management at the Sandy Flat Pit and future expansions can be measured against was not in the draft EIS. This report and data needs to be provided in the supplement as part of defining baseline conditions (including samples from March 2009)(section 6.3.1).	6.3
EHA (NRETAS) 23	Further detail is required on the proposed water management infrastructure and management of surface water runoff to determine that design is suitable for site conditions. For example: The return water dam - what is its capacity and the large storm event it will be designed to? What is the location/capacity of different settling ponds including those for the waste rock dump? Where will the new proposed surface water management infrastructure in the form of surface water flow management devices and retention ponds go? These are not marked on the figures provided on the EIS. What rainfall event are they designed to and where will they discharge to? What is Redbank proposing as sufficient freeboard to store runoff from storm water and prevent spillages and overflows? What is meant by 'further detailed investigations to ascertain treatment requirements' (page 184) for stored water?	6.3
EHA (NRETAS) 24	Section 6.3 (pg 191) indicates that regular surface water will allow early detection of changes in water quality providing the opportunity to take action and make timely alterations in mining activities. Redbank should provide the proposed remediation actions/contingency plans if surface water monitoring does detect water quality impacts and the triggers for action.	6.3
EHA (NRETAS) 25	Table 6.3-7 - water balance is based on the average 32 year rainfall for Wollogorang Station. It may be more beneficial to base water balance on the average last 13 years measured at Redbank (Table 6.3-4), given that rainfall at this location has exceeded the Wollogorang mean annual rainfall for 7 of the last 13 years.	6.3
EHA (NRETAS) 26	Figure 6.3-9 illustrates the impacted groundwater zone expressing in the surface water in Hanrahans Creek. The EIS states that a bore testing program to estimate groundwater yields is yet to commence. This program will aim at determining the hydraulic parameters for the aquifer for detailed hydrogeological monitoring employing flow and mass transport finite element techniques. This information should be provided in the supplement, given that the proposed mining and processing at Sandy Flat Pit will require water in excess of the existing sources (Table 6.2-7) and that mining of the Sandy Flat Pit will require the Pit to be dewatered. Management of water pumped from the open pits should also be detailed.	6.3
EHA (NRETAS) 27	The information in Table 6.3.5 should be placed on a geological map with corresponding bore water quality data to assist in understanding of groundwater condition in the region as per the EIS guidelines (section 6 and 6.3.3, EIS Guidelines September 2009): 1. Geological plans and cross sections of the area to provide an understanding of the spatial nature of the deposits and existing relevant hydrogeological information; 2. Describe with suitably detailed maps the geology and aquifers underlying the waste water, rock storage and surrounding areas, to the outer extent of the underlying aquifers. Contour maps should include	

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	overlays of all proposed infrastructure; 3. Describe surface connections and expressions of groundwater aquifers potentially affected by the waste water, waste rock and tailings facilities.	
EHA (NRETAS) 28	Table 6.3-6 only lists the groundwater quality for September and states that historical and recent groundwater data are included in appendix B. These data are not in Appendix B and should be included in the supplement to enable baseline assessment of existing groundwater quality. Table 6.3-6 states that the bores were sampled shortly after drilling and may currently not be representative of aquifer water quality. Any further samples that have been undertaken since September 2009 should be included in the Supplement to provide a better estimation of aquifer water quality.	6.3
EHA (NRETAS) 29	Redbank states that the aquifers are largely unknown, which means the effects of groundwater contamination and the extent of its dispersal beyond the direct vicinity of the mine may be largely underestimated. A detailed study into the groundwater systems and resources is a requirement of the WMP and Redbank state that this study is currently underway. The data from this study and analysis of the results should be included in the supplement to aid in the assessment of existing groundwater impacts.	6.3
EHA (NRETAS) 30	Section 6.3.3 - As discussed previously in the alternatives section, Redbank will need to demonstrate the effectiveness of sealing the base of the old Tailings Storage Facility (TSF) with sludge from the water treatment process to stop contaminated tailings water leaking through the dam wall and entering the creek. Contingency actions need to be described for management of tailings seepage in the event that the sludge is not effective at sealing the TSF or when/if the sludge is removed to reprocess in the future.	6.3
EHA (NRETAS) 31	Table 6.3-7 is a preliminary site water balance and indicates that future mining will require water in excess of existing sources. Redbank should consider the implications of groundwater drawdown or groundwater influx into the pits on nearby springs that may support threatened species (e.g. the Carpentarian rock-rat habitat has been found to inhabit mastersons Gully fed by Muinyin Spring)	6.3
EHA (NRETAS) 32	Redbank should propose measures to contain the plume if it is demonstrated that groundwater is migrating off the site.	6.3
EHA (NRETAS) 33	As discussed previously, Redbank should clarify the contingency actions if surface water monitoring detects changes in water quality.	6.3
EHA (NRETAS) 34	The surface water monitoring results of the Waste Discharge License (WDL 175) period should be provided in the supplement to allow assessment of Redbank management and understanding of legacy and contamination issues.	6.3
EHA (NRETAS) 35	Redbank should provide data from the water quality samples for Muinyin and Bagunganaje Springs and camel Spring that improves/increases baseline water quality data for the region (pg 186).	6.3
EHA (NRETAS) 36	When is the detailed bore testing program schedule and groundwater modelling of the aquifer to be devised? This information must be included in the supplement as requested in the EIS Guidelines (section 6.3.2)	6.3
EHA (NRETAS) 37	In the Draft EIS it is stated that proposed new open pits, waste rock dumps and other expansions will be located deliberately away from natural watercourses (section 6.3.3). Justification needs to be given in the supplement as to why the waste rock dump for the bluff deposit appears to be located on a drainage course (Figure 3.4.1).	6.3
EHA (NRETAS) 38	Redbank states that Should downstream water qualities worsen, or fail to improve, operations will be curtailed immediately for re-evaluation. Redbank needs to clarify this statement and indicate the triggers of water quality decline that would justify curtailing operations.	6.3

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EHA (NRETAS) 39	The final decommissioning plan will need development in the early stages of the operation given it is only an eight year operation.	6.4
EHA (NRETAS) 40	Section 6.4.8 - Redbank has stated that "trialling a range of potential designs that minimise the production of ARD and could meet the long-term closure objectives will begin in year one of the project" - This needs to be included in the commitments table 1.9-1.	6.4
EHA (NRETAS) 41	This section of the EIS Guidelines (Section 6.4) was updated in the modified EIS Guidelines issued to Redbank in September 2009, but is largely unaddressed in the draft EIS. The fact that sulfidic ore from the Sandy Flat Pit was only handled at the end of a two year mining campaign (1994-1996) resulting in the legacy issues evident today, indicates the high risk of accessing the sulfides and that this material needs to be characterised and handled correctly before it is disturbed or mined. The EHA division believes that this information should have been provided in the EIS so that proper assessment of the mining of the sulfidic ore and storage of waste rock and processed tailings could be made. If this information cannot be provided in the supplement and within Redbank's proposed timeframe, it is possible it may need to undergo a separate assessment process when it becomes available.	6.4
EHA (NRETAS) 42	Details need to be given on the management actions of selective handling of waste rock and encapsulating the potentially acid forming (PAF) material. Data on PAF material at Redbank (and acid consuming) needs to be included in the supplement.	6.7
EHA (NRETAS) 43	While it is stated in the EIS that water management with PAF material is paramount - Redbank has not provided any quantitative data on waste rock characterisation and quantities and disposal/storage methods. Table 3.14-1 estimates 10 689 000 tonnes of sulfidic waste rock is expected to be mined and a fraction of total waste rock will be PAF (Table 6.7-1). The complete lack of data on this subject does not provide confidence that Redbank can address the legacy of environmental issues that have occurred as a result of acid mine drainage and management of future activities. It can be assumed that Redbank has invested resources into drilling and assaying for delineation of the ore and resource - these samples can readily be logged for estimates of various sulfide minerals (volume %) and any carbonates (volume %) to provide valuable information for planning for AMD management. No mention has been made for Net Acid Producing Potential (NAPP) that could be block modelled in the same way the ore resource is modelled (given sufficient data). It is hoped that AMD work has been carried out during exploration and resource estimating drilling and that this information (a minimum of sulfide minerals and carbonates) is provided in the supplement.	6.7
EHA (NRETAS) 44	Table 6.7.1 lists the expected wastes and quantities of waste rock during the development of Redbank mine. Clarification is needed regarding the units (one table is in tonnes, the other is in cubic meters). For example, non acid forming waste rock (NAF) in the oxide zone is estimated at 362 000 m ³ with a total production of 516 000 tonnes. Does this mean there will be a certain amount of oxide waste that will be PAF that needs to be stored/handled correctly to prevent AMD? The Table lists NAF rock in the sulfide zone to be 4 443 000 m ³ and a fraction of total waste rock (10 689 000 tonnes) as PAF. Redbank should provide quantities of different types of waste rock in a comparable unit type (e.g. tonnes) to indicate the quantities of waste rock being generated and requiring management (stating 'a fraction' is not sufficient). Acid drainage tests on oxide waste have identified an acid neutralisation capacity ranging between 21 and 102 kg H ₂ SO ₄ /tonne. Redbank need to indicate the number of samples that have been conducted to get this indicative range.	
EHA (NRETAS) 45	The statement in the draft EIS that detailed acid producing potential studies will be performed during 2010 (section 3.12.1) is not sufficient to provide confidence that acid mine drainage issues will be managed adequately. It is also noted that this statement is not included in the table of commitments (Table 1.9-1). The results from these studies are required with the waste rock dump design being detailed at this stage rather than the anticipated May 2010 - Mining Management Plan (MMP) submission. This includes details of the acid base accounting studies to be conducted that would inform the WRD design (for NAF and PAF materials). Redbank needs to provide evidence that NAF waste rock does not have any issues with enriched elements under neutral conditions.	6.7

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EHA (NRETAS) 46	The statement if large amounts of low grade and transitional material are encountered then the strategy will be amended to account for additional waste rock material that is potentially acid forming (section 6.7) does not engender confidence. Again it is to be expected that Redbank has an idea of quantities of types of PAF rock prior to disturbance so that appropriate storage of this material occurs in the short to medium term (particularly if the option is to process low grade ore at a loss if rehabilitation costs of encapsulating this material are high). The proposed storage of sub grade material in bunded lime pads needs to be shown to be effective in managing this material in the short term. If the sub grade ore is processed at the end of mine life, would the resultant tailings be an issue for long term management?	6.7
EHA (NRETAS) 47	What are the potential waste rock designs to minimise the production of AMD (at a minimum a concept design)? More information is required on the expected quantities of PAF and NAF rock to determine the suitability of the suggested waste rock dump design (capping with layer of lime/local neutralising rock or other NAF material, treating the material in the same way as Acid Sulphate Soils). Where will non Acid Forming rock (NAF) come from to finish the WRD after the PAF material has been mined? (Is there enough suitable NAF material in the sulfidic zones?).	6.7
EHA (NRETAS) 48	The EIS also states studies into the oxide mining activities have shown that oxidised wastes consists mostly of dolomitic rock, which are, in fact, acid consuming (section 3.12.1). This statement needs to be supported with evidence as legacy issues to date have indicated the waste rock dump was a source of contamination (which was predominately oxide waste and transition zone waste mined during 1994-1996).	6.7
EHA (NRETAS) 49	Certainty needs to be provided prior to material being disturbed or mined to optimise AMD management strategies. Details on the design of storage facilities and testing of the waste rock and processing wastes are required as per the EIS guidelines, section 6.4.4: 1. Describe in detail the methods for waste rock handling, disposal and waste rock dump construction; 2. Provide details on quantity of waste rock produced, when it will be produced and how waste rock receptacle design will accommodate expected waste volumes and avoid exposure of waste rock to the elements; 3. Outline proposed waste dump locations, dimensions, water catchments, surface treatment and final landform (discuss alternatives) and identify associated risks and risk treatments; 4. Characterise waste rock in terms of Acid Generation Potential, acid consuming and neutralising capacity from drill core samples and in-situ assessments (kinetic tests/field trials), including sample selection methodology; 5. Provide analysis of waste rock to better understand the potential for metals mobilisation and surface and groundwater contamination; 6. Detection and remediation plans for potential waste rock dump seepage; 7. Present detailed designs demonstrating how the formation of acid and /or metalliferous seepage to groundwater aquifers would be prevented; 8. Demonstrate that seepage from waste water storage facilities will not cause a loss of water quality in local groundwater resources; 9. Establish vertical and horizontal permeability data of all waste storage facility layers and calculate likely oxygen diffusion and water percolation rates through the layers - demonstrate how construction quality control will be achieved - Quantitatively estimate (with evidence) the capacity of the underlying geology to neutralise any acid/or metalliferous seepage outputs - Describe final rehabilitation and revegetation plans for the completed waste storage facilities - Describe ongoing monitoring, and contingency management plans for the waste storage facilities after mining ceases; 10. Review the effectiveness of the impoundment methods and evaluation of the risk of failure and management strategies should failure occur; 11. Compare predicted seepage quality with existing groundwater quality; 12. Detail mitigation measures available/proposed to manage/contain seepage, with a focus on the post-mine-closure period; 13. Provide details of planned monitoring programs to ensure that new mining activities do not cause an environmental impact from acid mine drainage.	
EHA (NRETAS) 50	In table 1.9-1, Redbank has committed to the new TSF to be designed according to advice from site specialist TSF engineer and metallurgist, who will investigate optimal structural integrity of the wall and the requirement for lining prior to construction and development. Oxide tails material from the first 2 years of processing may form a gypsum rich lower layer that seals the dam and provide neutralising capacity. It is expected that the design of the new TSF is detailed in the supplement so that impacts of tailings storage/seepage issues can be properly assessed. It is not clear whether the new TSF will be used for the oxide tailings (Will it be constructed in time for oxide processing or will the old TSF be used?). Evidence is required that the tailings, gypsum rich lower layer provides; 1. A	6.7

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	neutralising capacity that is sufficient to manage AMD issues that may arise from processing the sulfidic ore; and 2. The same effectiveness of sealing as other recommended linings such as a compacted clay lining for the base of the TSF.	
EHA (NRETAS) 51	Table 6.7-1 - the existing TSF is currently a contamination source with seepage estimated at 500m ³ /day. Is this amount expected to decrease with the use of sludge to seal the surface medium to long term? How will it be monitored and what are the long term options for managing the existing TSF? If seepage from the new TSF is determined to be of a quality unsuitable for release into the environment, what are the strategies for management while Sandy Flat Pit is still operating?	4
EHA (NRETAS) 52	Capping Budgets need to be examined for the rehabilitation of the tailings dams. What quantity of benign or potentially acid-consuming rock mixed with available clat soils is required to create an impermeable layer above the tailings material?	6.4
EHA (NRETAS) 53	When will it be known whether the Redbank and Azurite deposits can be potentially sterilised and used for storage of PAF material as this may provide confidence in future management of PAF material?	6.4
EHA (NRETAS) 54	Redbank should identify how it proposes to minimise greenhouse gas emissions as per appendix B (NT Environmental Impact Assessment Guide: Greenhouse Gas Emissions and Climate Change) of the EIS Guidelines.	6.10
Environment Centre 01	p. 17: It is stated that groundwater will be required for processing requirements during the dry season. Limited detail has been provided about the capacity of the system to meet processing needs and how utilisation of the groundwater resource may affect the hydrological balance of the local landscape.	6.3
Environment Centre 02	p. 20: The EIS addresses project alternatives in limited detail. It fails to adequately justify that the proposed and preferred course of development is the one best suited to meeting sustainability objectives.	4
Environment Centre 03	p. 21: It is indicated that the development of pits and waste rock dumps at the Bluff, Azurite and Redbank deposits will impact on these areas, but it seems that there is still very limited understanding of the hydro-geology of the nearby Redbank Creek drainage system. This understanding must be further developed before any mining expansion is permitted, to provide assurance that additional contamination problems will not develop.	6.3
Environment Centre 04	p. 21: Increased levels of greenhouse gas emissions are acknowledged, but no indication is given of any offset measures that the proponent is planning to undertake. The undertaking of offsetting activities would demonstrate a commitment to 'best practice' mining. Importantly, offset measures should be Territory-focused and achieve both carbon and biodiversity benefits.	6.1
Environment Centre 05	p. 21: The EIS states that "the amount of water that will have to be discharged [from the on-site pits] is unknown. Further hydrological studies need to investigate this issue to allow for the development of a sound water management plan. This is not something that can be brushed aside, given that the site's environmental legacy issues centre on poor water management.	6.3
Environment Centre 06	p. 24: The uncertainty surrounding the possible impacts of Potential Acid Forming (PAF) material is a concern. PAF material, if it proves problematic, could derail the plans by Redbank Mines Ltd. to have a net positive environmental effect on the Redbank site. Further investigations are required before an expanded operation commences, so that the company can adequately address this issue.	5
Environment Centre 07	It is also concerning to see that the company still needs to investigate the contaminated water, ore piles and waste rock at the Sandy Flat site, to determine how to properly deal with these waste materials. It seems unwise to permit an expansion of the mining operation, including the generation of new waste material, while the company is still trying to determine how to deal with pre-existing waste. We recognise that Redbank Mines Ltd. did not generate the existing on-site problems, but given that the company now has control of the site, they must accept full responsibility for all issues. It is important that a complete and thorough risk assessment is	5

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	conducted and that all environmental matters are dealt with appropriately.	
Environment Centre 08	p. 25: It appears that investigations into the nature of the site's groundwater system are somewhat preliminary. Results from the proposed 'detailed study' must be carefully analysed before a comprehensive site water management plan can be developed. This is a critical aspect of the mining operation and must be dealt with diligently.	6.3
Environment Centre 09	p. 26 and p. 145: Fences and similar structures will be erected to exclude cattle and horses and other vertebrate fauna from hazardous areas such as the tailing storage facility. What measures will be undertaken to exclude birds from such areas (particularly the tailings dam, p. 79)? Does Redbank Mines Ltd. have data on the number of birds (and other fauna) that are currently killed at these hazardous sites? How does the company plan to assess the effectiveness of their exclusion measures?	6.2
Environment Centre 10	p. 32: All storage areas for waste and hazardous materials must be designed to withstand extreme weather events – not just high-speed winds but also intense, high rainfall events. Two tropical cyclones have impacted the area in recent years (Tropical Cyclone Fritz in February 2004 and Unnamed Tropical Cyclone in January 2003) and similar extreme weather events are likely to affect the site again. The potential impacts of such weather events on waste and hazardous materials management must be addressed in detail. Adequate structures and procedures need to be put in place to ensure that hazardous materials will be contained (particularly fuel and reagents stored on-site during the wet season), and that leakages/spillages from waste receptacles will be avoided. A thorough assessment should be conducted of the likely impacts to occur if the integrity of storage structures is compromised. Both soil and water contamination need to be considered. The proponent must also demonstrate that appropriate technical response measures and capacities will be available in the event of an emergency, especially given the remoteness of the site.	6.7
Environment Centre 11	p. 36 and p. 292-3: The proponent should perform carbon stock calculations for the areas of vegetation they are proposing to clear. This will establish baseline conditions which can then be used to assess whether the carbon stocks on rehabilitated land actually offset the initial carbon deficit created by land clearing.	6.10
Environment Centre 12	The proponent has not provided any indication as to how they plan to offset the greenhouse gas emissions associated with their activities. They should consider offset measures that are Territory-focused, with an aim of realising both carbon and biodiversity benefits.	6.10
Environment Centre 13	p. 38: Redbank Mines Ltd. need to further investigate dewatering options in order to adequately manage contaminant flows. This work is critical for ensuring the company has a net positive impact. Details of planned dewatering should be made available for evaluation as soon as possible, to determine whether the company is actually on track to improving on-site environmental management.	6.3
Environment Centre 14	p. 40: The proponent's management and auditing commitments should also address annual greenhouse gas emissions.	6.10
Environment Centre 15	p. 56: The timetable for construction, operation, decommissioning and rehabilitation shows that rehabilitation work will cease mid-way through 2017. Given it is indicated that mining will conclude in late 2015 and that processing work will finish in early 2016, the Environment Centre NT questions whether the company has allowed enough time for rehabilitation activities in their timetable.	3
Environment Centre 16	p. 58: Redbank Mines Ltd. is due to finish on-site processing by early 2016. In light of this timeframe the Environment Centre NT does not understand why the company is planning to consider "long term access by sea transport to the Gulf..." in future studies. Firstly, we would argue that this seems unnecessary given the current schedule the company is working to, and secondly, this option is likely to have considerable impact on the relatively undisturbed marine ecosystems in the Gulf. Development of coastal infrastructure in this region would need to be comprehensively assessed.	3

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Environment Centre 17	p. 62: There are considerable uncertainties associated with the management of PAF sub-grade material. Detailed studies need to be undertaken prior to the commencement of mining and comprehensive plans should be subsequently developed and made available. Both the Territory Government and the public need to be assured that the company knows how to handle such material, in a way that will lead to zero environmental impact.	6.7
Environment Centre 18	p. 75: The proponent has not presented any alternatives to the establishment of a new Tailings Storage Facility (TSF), neither have they demonstrated that they have sufficient on-site hydro-geological and geochemical knowledge to ensure that a new TSF, as well as the existing TSF, can be adequately managed (p. 78-79). For example, it is stated: “if seepage from the TSF is determined to be of a quality unsuitable for entry into the environment then strategies that may include the diversion of these seepage waters into the decommissioned Sandy Flat Pit will be investigated” (p. 75); “other locations may need to be identified and assessed if the proposed TSF area is unsuitable” (p. 78); and “current groundwater modelling will aid in understanding the behaviour of possible leakage from the existing TSF and associated waste dumps” (p. 79). A sound plan for managing tailings must be put in place from the outset. This plan should address potential seepage problems and ensure there is no impact from the TSF post-closure. Unfortunately, based on the draft EIS, the Environment Centre NT does not hold a great deal of confidence in the proponent’s capacity to manage TSF issues.	3
Environment Centre 19	p. 77: The timetable for tailings production, which appears to run for 10 years, does not match the timetable for construction, operation, decommissioning and rehabilitation (p. 56), which finishes in 2017.	3
Environment Centre 20	p. 93: It is curious to see that another severe global economic crisis is regarded as an “unlikely” event. Given that the economy is dependent on functioning ecosystems, and also given that we have crossed some critical planetary boundaries (or biophysical thresholds) and are approaching others, another global economic crisis seems more likely than unlikely.	4
Environment Centre 21	p. 96: The Environment Centre NT would like to see an assessment of the socio-economic risks associated with the mining venture. In particular, due consideration should be given to the impact that commodity price volatility might have on future operations, particularly site management and remediation.	5
Environment Centre 22	p. 101: We are not assured that Redbank Mines Ltd. has adequate knowledge about Acid Rock Drainage (ARD) and potential impacts on surface and groundwater resources. Considerably more work needs to be done looking into ARD treatment to ensure that the company’s WDL is of an appropriate and adequate standard.	5
Environment Centre 23	p. 102: The proponent should commit to ensuring that PAF materials are secure from erosion-induced exposure for a timeframe well beyond the closure date.	5
Environment Centre 24	p. 105: “Significant ongoing research into groundwater flows” has been identified as part of the risk assessment. Detailed information about groundwater flows should <i>inform</i> the risk assessment, rather than the risk assessment simply highlighting the need to look further into groundwater flows. The detailed study of groundwater and surface water systems (p. 117) must be completed and carefully reviewed before any consideration is given to an expanded operation.	5
Environment Centre 25	p. 105-106: Both soil <i>and</i> water contamination is potential impacts that could arise from an acid or chemical spill.	5
Environment Centre 26	p. 115: Given that groundwater and surface water quality monitoring has “not been particularly comprehensive” and “somewhat ad-hoc”, further sampling work needs to be undertaken in order to establish baseline conditions which can be used as the basis for monitoring the environmental performance of the mine over time.	6.1

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Environment Centre 27	p. 117: "...Redbank have proposed an extensive water quality monitoring regime that will allow early detection of any negative impacts, thus remediating actions can be progressed almost immediately". This statement reads well, but given the admission: "...the type and size of this company...limits its ability to invest in significant environmental repair prior to the project returning an income" (p. 16), we question whether Redbank Mines Ltd. can actually follow through with extensive water quality monitoring, and in particular, immediate advancement of remediation.	6.1
Environment Centre 28	Also, the claim that "...Redbank Copper's presence on the site will have a substantially positive impact upon the existing environment within one year..." cannot be substantiated or properly evaluated in the absence of a comprehensive baseline dataset, particularly for groundwater and surface water quality.	6.1
Environment Centre 29	p. 136: "Mine operations will cease should significant impacts be detected..." – the proponent needs to provide more information about what remediation actions they will undertake if this scenario were to occur.	6.2
Environment Centre 30	p. 144, p. 152: The proponent must further investigate the aquifers associated with Sandy Flat and the mine camp to determine whether water extraction will impact on watertable and groundwater-dependent ecosystems.	6.2
Environment Centre 31	p. 163: Queensland's <i>Wild River Declaration 2007</i> does not directly apply to the project area but the Territory Government's developing Living Rivers policy certainly does.	6.4
Environment Centre 32	p. 168: The Environment Centre NT seeks greater assurance from Redbank Mines Ltd. that the environmental values of the currently undisturbed Redbank Creek will be protected and not compromised by the mining expansion.	6.3
Environment Centre 33	p. 196: The draft EIS claims that "...stakeholder feedback on Redbank's intentions with respect to post closure rehabilitation has been positive" – but it fails to provide further details about this feedback. Which stakeholder groups have responded and what have they conveyed in their response?	8
Environment Centre 34	p. 205: Groundwater research must be finalised before the new pits are built to ensure that the design of the infrastructure prevents groundwater contamination.	6.3
Environment Centre 35	p. 250: If herbicides or insecticides are to be used they should be listed in Table 6.7-2, which provides a record of possible hazardous substances stored on-site.	6.7
Environment Centre 36	p. 302: The Environment Centre NT has not been directly consulted about the Redbank Mines Ltd. project. Given we are the peak non-government environment organisation in the Northern Territory; we should be viewed as a key stakeholder. We would have welcomed an opportunity to meet with the proponent in order to learn more about the project prior to the release of the draft EIS.	8.
Environment Centre 37	p. 36: Weeds and pest animals within the project area should be <i>less</i> prevalent not just "no more prevalent" if management plans are actively implemented and followed through. Also, a detailed weed management plan needs to be developed as soon as possible. Ideally, it should have been in place before further exploration activities commenced.	6.2
Land Management Unit 01	The proposed Erosion and Sediment Control Plan (ESCP), mentioned in Appendix I should be submitted to the Land Management Unit of NRETAS for approval prior to implementation. This ESCP should contain detailed information on design, construction and monitoring of erosion control structures on all infrastructures associated with the project.	9
MEB 01	Section 6.11.1 Biting Insects - Baseline - a) Mosquito genus's are abbreviated differently to other insects. For example, <i>Aedes normanensis</i> and <i>Culex annulirostris</i> are correctly abbreviated to <i>Ae. normanensis</i> and <i>Cx. annulirostris</i> , as opposed to <i>A. normanensis</i> and <i>C. annulirostris</i> .	6.11

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MEB 02	Section 6.11.1 Biting Insects - Baseline - <i>Anopheles annulipes</i> s.l. Breeding: For the third sentence in this paragraph, the word ‘pulls’ should be replaced with the word ‘pools’.	6.11
MEB 03	Section 6.11.1 Biting Insects - Baseline - <i>Culex annulirostris</i> and <i>Anopheles annulipes</i> s.l.– control. Bifenthrin barrier insecticide can also be used for the control of adult mosquitoes of these species.	6.11
MEB 04	Section 6.11.2 Potential impacts - Paragraph 3. In the second last sentence, the word ‘burrow’ should be replaced with the word ‘borrow’.	6.11
MEB 05	Section 6.11.3 Management and monitoring - Point 1, dot point 5. It should be specified that only equipment and receptacles sourced from North QLD that appear to have previously held water, or are holding water upon arrival, should be treated with a 10% chlorine solution or a suitable insecticide such as alpha-cypermethrin or lambda-cyhalothrin. There would be no requirement for broad scale treatment of all incoming equipment and receptacles.	6.11
MEB 06	Appendix I Section 12.3 Biting Insects Management - Management Actions – Dot Point 3. ‘Yellow or red lights will be used in areas where personnel may gather at night to prevent attracting midges’. The word ‘midges’ should be replaced with the words ‘biting insects’.	6.11
Museum 01	The draft EIS is of a high standard and appears to identify and address all major issues that might impact on individual fauna species and/or communities. Species of conservation significance were identified and their presence or the probability of their occurrence noted	6.2
Museum 02	Issues with the Redbank NOI, that I had previously raised, were satisfactorily addressed in the EIS.	2
Museum 03	Overall this Draft EIS adequately addresses issues relating to the composition, status, impacts and conservation of the terrestrial vertebrate fauna of the Project area.	2
NLC 01	NLC are highly satisfied with the level of engagement Redbank and its consultants have had with Traditional Owners to date. It is now hoped that Redbank will continue with this high level of engagement throughout operations and closure, and develop systems of stewardship that will provide traditional owners the opportunity to sustainably manage the post-mining landscape into the distant future.	6.8
NLC 02	In Chapter 3.10, pages 75-76, it is deduced that groundwater regimes near and at the proposed location have not been adequately investigated. This information is vital to describing connectivity between the proposed dam and nearby watercourses. Without it, the full extent of possible environmental impacts due to TSF seepage cannot be described nor appropriate plans made to mitigate the associated risks.	3
NLC 03	NLC are concerned that should construction of a dam be permitted without full development of groundwater models and without full assessment of the associated regional effects and risks, the existing legacy, to which Redbank has made a commitment to mitigate, may become worse.	3.
NLC 04	In 6.3.1, the hydraulic parameters for the aquifers near Sandy Flat (the proposed TSF site) are still to be determined. NLC therefore consider that the suggested lack of connectivity with nearby water systems has not been fully defined and necessary modelling is incomplete. The implication on page 178 that groundwater seepage in the Sandy Flat Area is not significant is inconsistent with the preceding paragraph which indicates that sufficient testing has not been done to draw this conclusion.	6.3
NLC 05	Analytical data describing the chemical nature of both the oxide and sulphide tailings and their pore waters have not been provided as metallurgical testing was not completed prior to release of the EIS. This lack of information makes assessment of potential amount of acid rock drainage (ARD) from the dam impossible. Sulphidic ores are known to hold a high risk of ARD, and although it is argued by Redbank that the oxidic materials are not prone to form ARD of their own accord, the company plans to use sulphuric acid to process this type of ore. Any residual acid seeping from these tailings will create a risk similar to that of	3

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	spontaneous ARD from the sulphidic material, so both ore types should be considered here to have ARD potential. The severity of the risk of ARD is further complicated by the lack of thorough knowledge of the groundwater regimes mentioned earlier.	
NLC 06	Redbank anticipates that lining the base of the TSF with sludge will help seal it and prevent contaminated tailings water from passing through the dam wall and entering the creek. The geochemical nature, including the porosity of the sludge does not seem to have been determined, so we cannot properly assess the veracity of this statement.	6.3
NLC 07	The fact that metallurgical testing was not completed prior to release of the EIS, and this lack of information leads to weaknesses in the Environmental Management Plans (Appendix I), and the Water Management Plan (Appendix B) that will need to be addressed.	9
NLC 08	Other than the existing Sandy Flat structure, alternative sites for the proposed TSF have not been seriously considered. Should the proposed location be found unsuitable, then alternative sites must be subjected to a much higher investigative rigour than has currently been applied.	3
NLC 09	In-pit disposal of tailings should have, but does not appear to have been considered as an alternative to construction of above ground dumps. In-pit disposal is of particular interest as the risk of chronic above ground release of ARD is mitigated and the risk to groundwater can be minimized if the pits are sealed.	6.3
NLC 10	NLC believes that the project should not proceed until the risks and impacts related to the TSF are better described and understood and TSF plans are revised. Redbank could submit this information by way of a separate PER, or by way of a Supplement, however the public must have a chance to comment.	2
NLC 11	In Chapter 3.1.2, the document considers the mining of 3 new pits (Redbank, Azurite & Bluff) and further mining of an existing pit (Sandy Flat), however in 3.1.5, the document goes on to suggest that there will likely be a further 3 additional pits (Roman Nose, Camp Valley and Punchbowl), while Figure 3.4-1 suggests that at least two other sites (San Manuel and Quartzite) are also being considered. No additional or cumulative environmental impact or risk seems to have been associated with these 5 prospective sites. The NLC considers that this process should be treated as a further expansion of the mine and submit to full environmental impact assessment, not simply a change to the Mining Management Plan (which are not available for public comment).	3
NLC 12	In Chapter 1.6.2, Redbank indicates that the development of pits and waste rock dumps near the Redbank Creek drainage system will impact on that area. Experiences at other mines, and the fact that Redbank is in a tropical climate, long-term impacts following failure of waste rock dumps and TSF capping could be reasonably expected.	6.1
NLC 13	The extent of impact to Redbank Creek system could be minimised if Redbank mines, backfills and rehabilitates the new pits progressively and sequentially. This would result in a lower long-term cost to landowners and the Government as it reduces requirements for ongoing maintenance of above-ground waste rock dumps, reduces the potential for ARD into surface water systems and leads to a more ecologically sustainable stewardship process.	3
NLC 14	Each pit has an expected life of between 6 months and 2 years only, which suggests they will be small, so sequential backfilling should not pose a serious technical problem. The full potential for backfilling the pits has been briefly considered in Chapter 4.7, but does not appear to have been carried through in the rest of the planning, which is of great concern given that ARD from the pits, waste rock dumps and tailings and remaining impacts of the mine after closure are considered to be the primary risks.	4
NLC 15	Pit voids and above-ground waste dumps result in decreased future land value as the pits, the waste dumps and the land beneath them cannot generally be used profitably in the future. To maximise future land values and achieve practical and sustainable ecological outcomes, the NLC considered that further detailed investigation into the potential for and a commitment to progressive rehabilitation and sequential mining and backfilling of pits is therefore warranted before the project proceeds.	6.4

EcOz Code	Comment	Chapter Location
NLC 16	Redbank appears to have entered into this project without having done sufficient test work to fully assess the risk that the acid forming potential of the materials to be mined and the tailings produced represent to the environment. Consequently, the plans and systems devised may be inappropriate and should be revised in light of further information acquired during metallurgical work. Once this has been completed and the information provided for public scrutiny, then we would be in a better position to fully appreciate the risk and assess the applicability of alternative means of long-term management, such as in-pit disposal.	5
NLC 17	Generation of acid following decay of sulphidic material in an oxidising environment is a significant risk in tropical environments. In addition to sulphuric acid, many dissolved toxic heavy metals and metalloids are transported into watercourses as the rock decays with associated impacts on local flora and fauna. However, Redbank's consideration of the risks of ARD in Chapter 5.2.2 appears to be confused and their general recognition of ARD as a medium risk appears to understate the case. For example, the Risk Assessment Table provided on page 100 indicates that all legacy issues have the same severity of impact, yet ARD is considered a low risk.	5
NLC 18	Potentially acid forming (PAF) materials is seen as a long-term problem, but has only been described as a medium risk. On page 98, Redbank states that the host rock is reportedly unlikely to result in significant ARD issues but also states that substantive testing has not been undertaken. To allow us to better understand the substance of this claim, the report on which it is based should be provided. The NLC also notes that the EIS contains insufficient information about the geochemistry of the ore, especially the levels of toxic metals and metalloids contained.	6.7
NLC 19	In the absence of key information about acid forming potential, the environmental risk should be treated more conservatively and considered to be high and a greater focus should therefore be placed on systems to investigate, manage and deal with the risk.	5
NLC 20	In general, the management and monitoring systems for surface and groundwater appear to be satisfactory. However NLC do not understand why the fish community analyses have not been undertaken as a part of surface water monitoring. Depending upon the species, fish are often utilised as a food source and the presence of high concentrations of metals may represent a health hazard and liability to Redbank. Fish community analyses would also represent a current baseline against which improvements made to the quality of nearby watercourses through management of the legacy issues could be measured.	6.3
NLC 21	NLC believe that the post closure watercourse management programme suggested on page 187 is inadequate. Experience with Nabarlek and Rum Jungle suggests that quarterly monitoring for only 12 months followed by bi-annual monitoring will not demonstrate return to a sustainable environment. The monitoring programme needs to be determined at the time of closure and the first two to three years should be a continuation of the routine operational system to ensure that a steady state has been achieved following cessation of mining. Once this has been demonstrated, then a reduction in monitoring frequency can be entertained.	6.3
NLC 22	Potential cumulative impacts in association with other nearby mining projects have not been fully considered. Chapter 1.6 suggests that there are no new mines proposed for the region, however exploration has recommenced at the nearby old Eva and Cobar II uranium mines, and should these proceed again to mining phase, then wastes might enter into the same groundwater and surface water systems as Redbank. These mines are about 50km distant, and may therefore not represent a problem; however it might be useful to assess potential cumulative impacts associated with these mines (e.g. transportation on an unsealed road; water-borne contamination pathways; other social effects).	6.5
NLC 23	Matters related to cultural heritage management are generally acceptable. However, traditional owners have indicated that communication between Redbank and their representatives, while good, can be further improved, and that ongoing engagement on cultural matters would be an ideal way of addressing some concerns. For example, in 6.3.1, Redbank does not appear to have adequately defined the cultural values of the catchments and creeks and therefore does not have adequate knowledge of the baselines required for demonstrating that beneficial uses are not impacted. Traditional Owners have indicated a willingness to continue to work with Redbank to address this issue and to ensure that those impacts can be measured and managed as and when necessary.	6.8

EcOz Code	Comment	Chapter Location
NLC 24	In respect of the Historic and Cultural Environment Management Plan (Appendix I - page 44), Traditional Owners have requested that they be fully involved in management of cultural and archaeological matters. Some specific points raised include the development of additional exclusion zones, particularly around sensitive areas such as burial grounds; and dealing with artefacts from areas targeted for disturbance and destruction.	6.8
NLC 25	On page 139, Redbank seeks to perform further ecological studies because the area is under-represented in scientific literature. The approach suggested ignores the wealth of knowledge held by traditional owners and considers only western or European approaches to be of value. The NLC considers that it would be of great value for Redbank to engage Traditional Owners in collaborative projects of this nature, as they will provide key information useful for ongoing management during both operations and stewardship of the post-mining environment through generation of a comprehensive fusion of ecological and cultural information.	6.8
NLC 26	Redbank already appears to have missed one opportunity to develop a cultural baseline that goes beyond the limits of current best practice, by failing to integrate traditional ecological knowledge fully into their baseline measurements. The NLC recommended the attendance of traditional owners during the flora and fauna surveys as a means by which this cultural information, which is useful for targeted indigenous based land management practices, could be collected. We find that many species that are not recognized as threatened, vulnerable (etc) based on European values or numbers have significant value to indigenous people and that a reduction in their numbers can represent a threat to culture. In this respect they may also be viewed as threatened or vulnerable species. Genuine participation of indigenous people in these aspects of a project goes beyond simple involvement in surveys. They also have a significant role to play in developing land management plans that will be required during operations, closure and stewardship.	6.8
Member Public (PJ) 01	The Guidelines for Preparation of an Environmental Impact Statement (EIS) for the <i>Expansion of the Redbank Copper Oxide Leaching and Sulphidic Ore Operations - Redbank Copper Ltd (dated September 2009)</i> state that the draft EIS should enable interested members of the public to understand the environmental consequences of the proposed action. At this site adverse impacts to the aquatic ecosystems in Hanrahan, Echo, Twelve Mile and Settlement Creeks have been noted since at least 1999. These impacts have resulted from the extremely high concentrations of copper which have been found in Hanrahan Creek (over 50,000 µg/L as total Cu), Echo Creek (over 6,000 µg/L as total Cu), Twelve Mile Creek (over 800 µg/L as total Cu) and Settlement Creek (over 200 µg/L as total Cu). The source of that copper is contaminated water that enters Hanrahan Creek either through the aquifers that underlie the Sandy Flat site or from surface water leaving the Sandy Flat site. The information contained in the draft EIS does not enable the impact the proposed development will have on the concentration of copper leaving the Sandy Flat site through either the groundwater or the surface water systems to be understood. On Page 113 of the draft EIS the proponent agrees with the above statement by stating that The aquifers are largely unknown, which means that the affects of groundwater contamination and the extent of its dispersal beyond the direct vicinity of the Mine may be largely underestimated.	6.3
Member Public (PJ) 02	The proponent also states that groundwater yields are expected to be low in bores intersecting the groundwater system that feeds contaminated water into Hanrahan Creek from the Sandy Flat site (refer Pages 175 and 176). The following information, however, tends to suggest that groundwater yields from bores on the Sandy Flat site may in fact be significantly higher: 1. Data was obtained from 17 bores in the vicinity of the Sandy Flat Pit from the NRETAS Map Internet Site. Yields ranged from 0 to 10 litres per second with the mean yield being approximately 2.5 litres per second. Bore RN029527, drilled in September 1994, and airlifted 10 litres per second. Bore RN029527 was reported as being located in the “NE corner of the pit”. 2. In Redbank Copper Limited’s 2009 Annual Report (downloaded from the Company’s website www.redbankcopper.com.au) which was lodged with the Australian Securities Exchange Limited on the 21 October 2009, the company stated that Three reverse circulation holes (SFRC09-001,003,005) have been completed at Sandy Flat for primarily resource delineation and metallurgical purposes. Drilling deviated significantly from planned, principally due to high water inflows, and the holes struggled to intercept the targeted zones. Results for these holes were not available at the time of printing. A major concern, therefore, with the current proposal is the decision to continue to base the processing plant and tailings dams at the Sandy Flat site, a site that has produced high copper loads in the creeks downstream of the site. Any decisions regarding placing the	6.3

EcOz Code	Comment	Chapter Location
	processing plant and tailings dams at the Sandy Flat site should be deferred until more detailed information is provided regarding the groundwater beneath the Sandy Flat site and its interaction with Hanrahan Creek, both in the wet season and the dry season. The failure to do this could result in a legacy of contamination much greater than that which exists today. It should be noted that this is contrary to what the proponent's stated aim is. They state in the draft EIS that the risk treatment and management options proposed in the draft EIS have been developed with the aim of gradual improvement over time.	
Water Resources 01	The EIS did not address some issues regarding of the water management plan, geology, groundwater and surface water requested by Guidelines for Preparation of an Environmental Impact Statement (September 2009).	6.3
Water Resources 02	The main and fundamental issue or problem with the EIS is a lack of hydrogeological modelling of the area. Detailed groundwater modelling should present the surface/groundwater interaction and include the influence of waste storage facilities on the aquifers and groundwater flows. This model should be used to describe the behaviour of groundwater aquifers at the site and to predict the potential groundwater impacts due to the proposed open cut mining.	6.3
Water Resources 03	Any remedy proposed in the EIS in respect of potential pollution management and future development should be accompanied by a demonstrated comprehensive understanding of the hydrogeology of the Sandy Flat Pit.	6.3
Water Resources 04	Proposed management of potential sources of surface and groundwater pollution should be based on comprehensive groundwater modelling. This in turn, may require additional shallow drilling in the area. The shallow aquifer is not well understood. The relationship between Sandy Flat pit and shallow aquifer should be quantified. If, for example, the water level in the pit intermittently allows contaminated water to enter the shallow fractured aquifer zone or the paleo-channel, this has to be addressed and remedies proposed. It might be that the paleo-channel or zone of fractures could be sealed by grouting or other means.	6.3
Water Resources 05	The Water Management Plan (Appendix B) in Section 2.3 Groundwater Resources mentions groundwater model and appropriate groundwater management strategies but did not present any detail of this model or any clear results of groundwater modelling.	6.3
Water Resources 06	From the present geological information it seems that the shallow aquifer is transmitting water from the pit to the creek. How is this problem going to be solved?	6.3
Water Resources 07	The WMP does not take recent rainfall data under consideration. The last 10 years are the wettest in recorded history. This is critical to the water balance and consequently the frequency of hydraulic connection between pit-water and the shallow aquifer. Figure 1 below presents a plot of rainfall from SILO Data Drill data made available by the State of Queensland through the Department of Natural Resources, Environment, The Arts And Sport for Calvert Hills Station DR014705 and clearly shows how important is to make provision for above average rainfall.	9
Water Resources 08	The average rainfall for the period 1889-2007 is 661mm, for the period 1972-2007 the average is 796mm but for 1999-2006 the average is 1008mm. High recent rainfall was also recorded at Wollgorang Station DR14707 with rainfall (annual total) of 1353mm in 2002/03, 1263mm in 2003/4 and 1874mm in 2005/2006. The EIS does not address the impact of high rainfall years nor appropriate management responses.	6.3
Water Resources 09	The location of any new monitoring bores should be supported by the hydrogeological model. Geological and hydrogeological information (cross-sections, geological log of bores, maps) obtained from previous documentation and description of the mineral deposit should be included in the EIS to better explain its relationship to the hydrogeology of the area.	6.3
Water Resources 10	The document states (Section 6.3) that historical and recent groundwater quality data are in Appendix B but they are not.	6.3

EcOz Code	Comment	Chapter Location
Water Resources 11	A detailed groundwater sampling protocol should be proposed including a list of relevant determinants. This should accompany proposed remediation actions if water quality deteriorates.	6.3
WEEDS 01	Is it possible to include a statement that all weeds are mapped in accordance with the NRETAS Weed Management Branch 'Guidelines for Weed Data Collection in the Northern Territory'? This is a Territory wide weed data collection technique that provides a standard methodology for weed mapping.	6.2
WEEDS 02	Can we make sure that all weed mapping data is sent to NRETAS weed management branch for amalgamating into the Territory data set (including data collected during annual control activities)?	6.2
WEEDS 03	The EIS mentions 'Redbank will build a wash down area so that all vehicles and equipment arriving and leaving the site can be inspected and if necessary washed to reduce the risk of weed spread'. It is important to ensure all vehicles and machinery <u>is</u> inspected prior to entering and leaving. This is particularly important for vehicles and equipment involved with working on and around native veg where the possibility of seed spread and subsequent germination and establishment has a greater chance of occurrence.	6.2
WEEDS 04	The list of potential weeds that could potentially invade the site requires further work (page 139-40). Recently an outbreak of Parthenium weed (Class A/C) occurred at the Wollogorang Station homestead, approx 40 km from the mine site. Although eradicated, the site is still under monitoring. Rubber vine (Cryptostegia grandiflora – Class A/C) is known to exist approx 25 km from the NT/QLD border. Given the close proximity to the QLD border and the high volume of traffic entering and leaving, other potential weeds that should be included in the report include: Parkinsonia (B/C), Bellyache Bush (B/C), Caltrop (B/C), Grader Grass (B/C), Prickly acacia (A/C).	6.2

1 INTRODUCTION

Variations requested to the assessment of the EIS;

EXPANSION OF THE REDBANK COPPER OXIDE LEACHING AND SULPHIDE ORE OPERATIONS

During mid 2009 Redbank Copper Ltd sought an amendment to the original “Expansion of the Redbank Copper Oxide Leaching Operations” EIS guidelines, released in October 2008 so as to include the mining and processing of Sulphide ores.

The revised EIS guidelines “Expansion of the Redbank Copper Oxide Leaching and Sulphide Ore Operations” were released in September 2009.

Redbank have not been able to undertake Acid Based Accounting and associated studies in the time since the revised guidelines were released. Acid Based Accounting is imperative to proper planning and thorough assessment of the mining and processing of the Sulphide resources.

Redbank have therefore decided that in order for the project to proceed within the timeframe required to ensure that it becomes economically viable, that this assessment process should not be undertaken to gain approvals for the mining and processing of Sulphide ores. Instead, Redbank propose that the Sulphide ores component be assessed under the *Environmental Assessment Act* at a time when the Company have provided sufficient information so that proper planning and assessment can take place.

Similarly, the studies that are required to assess the location and plans for the proposed new Tailings Storage Facility (TSF) have not been progressed for this approvals process. Instead, project planning and investigations have determined that the nature of the tails produced during the first 2 years of an oxide only production campaign can be added to the existing TSF and help contribute to the management and remediation of this facility. Removing the need for studies associated with establishing a new TSF also reduces the pre production investment in the project, advancing its economic viability and enabling sufficient time to thoroughly investigate the new TSF options. As such, the options around establishing a new TSF may be thoroughly assessed separately and at a later date under the *Environmental Assessment Act*.

One of the contributing factors to not progressing with investigations to develop a new TSF was that metallurgical results identified the most economic manner in which to process the oxides is via the vat leach system. The agitated leach system, originally proposed in addition to the vat leach system, would have required more sophisticated tailings management. Yet, the agitated leach system was reported to contribute less than 5% of the total material, resulting in the capital expenditure for establishing this system being excessive. As such, the oxide processing is planned to proceed as a vat leach only process.

The removal of the agitated leach process has also resulted in a lower water demand which is identified in the updated water balance presented in the EIS Supplement. Further studies will continue on the groundwater, including whilst it is being utilized, providing more than just theoretical results. The reduced water demand will pose reduced risk until modelling results are available.

Further information and updated plans for waste rock and the associated waste rock dumps have also been presented in the EIS Supplement.

Please assess the current EIS and associated Supplement according to these changes. We look forward to developing detailed plans for the further expansion of activities at Redbank, and will seek approvals for these in the future.



Bruce Morrin

Managing Director

Redbank Copper

Monday, January 25, 2010

Please find revised maps of the project proposal on the following pages.

Figures following page:

Figure 1-1: Revised Sandy Flat Plant Layout

Figure 1-2: Revised ERL94 Conceptual Mine Layout

2 GENERAL INFORMATION

Museum 02	Issues with the Redbank NOI, that I had previously raised, were satisfactorily addressed in the EIS.
Museum 03	Overall this Draft EIS adequately addresses issues relating to the composition, status, impacts and conservation of the terrestrial vertebrate fauna of the Project area.

Noted and appreciated.

NLC 10	NLC believes that the project should not proceed until the risks and impacts related to the TSF are better described and understood and TSF plans are revised. Redbank could submit this information by way of a separate PER, or by way of a Supplement, however the public must have a chance to comment.
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Noted - The development of the TSF plans has been hampered by a variety of issues including seasonal restricted access to the site. Further plans and some results have been received since the draft EIS was submitted, however Redbank have deemed this information insufficient to submit to enable proper assessment of the proposed TSF and have therefore decided to proceed with gaining approvals for the oxide mining phase of the project as soon as possible and seek approvals for the newly proposed TSF at a later date.

The assessment proposal for the TSF will contain sufficient site-specific details and hydrogeological and geotechnical details for a comprehensive impact assessment, along with specific contingency plans. In the meantime, Redbank will be processing oxides only, the tailings of which have been tested and can be acceptably managed within the existing TSF.

3 PROPOSED DEVELOPMENT

NLC 13	The extent of impact to Redbank Creek system could be minimised if Redbank mines, backfills and rehabilitates the new pits progressively and sequentially. This would result in a lower long-term cost to landowners and the Government as it reduces requirements for ongoing maintenance of above-ground waste rock dumps, reduces the potential for ARD into surface water systems and leads to a more ecologically sustainable stewardship process.
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Noted - Redbank are committed to a progressive rehabilitation plan and are utilising a current best practice adaptive management strategy to ensure that the best options are chosen when available.

EHA (NRETAS) 02	The draft EIS states that Redbank will investigate opportunities to extend their commitment to local economic development and capacity building. Given that the majority of staff will be fly-in fly, reducing the direct local benefits, what other measures can Redbank demonstrate to Government and Community (e.g. Industry Participation Plan)?
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The Native Title negotiations have maintained a strong emphasis on employment of local traditional owners and Redbank have demonstrated commitment to this philosophy. Increasing numbers of Indigenous people employed in the region will have positive flow on effects. Other opportunities for business relationships with Indigenous enterprises have been raised during Native Title discussions. During 2009, Redbank utilised maintenance and service personnel from Borroloola and Katherine. Diesel will be sourced from the NT and Lime would be sourced from Mataranka if supply was available.

NLC 11	In Chapter 3.1.2, the document considers the mining of 3 new pits (Redbank, Azurite & Bluff) and further mining of an existing pit (Sandy Flat), however in 3.1.5, the document goes on to suggest that there will likely be a further 3 additional pits (Roman Nose, Camp Valley and Punchbowl), while Figure 3.4-1 suggests that at least two other sites (San Manuel and Quartzite) are also being considered. No additional or cumulative environmental impact or risk seems to have been associated with these 5 prospective sites. The NLC considers that this process should be treated as a further expansion of the mine and submit to full environmental impact assessment, not simply a change to the Mining Management Plan (which are not available for public comment).
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Noted - This EIS seeks approvals only for those developments for which environmental impacts have been assessed.

Environment Centre 15	Page 56: The timetable for construction, operation, decommissioning and rehabilitation shows that rehabilitation work will cease mid-way through 2017. Given it is indicated that mining will conclude in late 2015 and that processing work will finish in early 2016, the Environment Centre NT questions whether the company has allowed enough time for rehabilitation activities in their timetable.
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Noted - Although remaining rehabilitation requirements will be completed soon after processing operations cease, rehabilitation monitoring will continue past closure of operations and identified remediation requirements will also be addressed past this point. The rehabilitation plan will be fully developed utilising a current best practice adaptive management strategy to ensure that the best options are chosen when available.

Refer also to response to Environment Centre Comment 19 below.

Environment Centre 19	Page 77: The timetable for tailings production, which appears to run for 10 years, does not match the timetable for construction, operation, decommissioning and rehabilitation (p. 56), which finishes in 2017.
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Table 3.2.1: The anticipated timetable for the construction, operation, decommissioning and rehabilitation of actions as components of the proposed operation identifies fewer years of production than does Table 3.10-1: Redbank Tailings Production, as it is based on conservative estimates of known resources. Please extend the years Table 3.2-1 so that 2014 and 15 are repeated (i.e. operations cease in 2019 and rehabilitation activities carried through to 2020). The volume of known resources within the proposed pits is being regularly refined as exploration drilling data is analysed.

Environment Centre 16	Page 58: Redbank Mines Ltd. is due to finish on-site processing by early 2016. In light of this timeframe the Environment Centre NT does not understand why the company is planning to consider "long term access by sea transport to the Gulf..." in future studies. Firstly, we would argue that this seems unnecessary given the current schedule the company is working to, and secondly, this option is likely to have considerable impact on the relatively undisturbed marine ecosystems in the Gulf. Development of coastal infrastructure in this region would need to be comprehensively assessed.
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Any alternative transport options that Redbank may seek in the future will be detailed comprehensively and submitted for public approval within a separate Environmental Impact Statement.

DRDPIFR 11	Investigations into the suitability of the TSF location should have been done to enable them to demonstrate that they understand any potential impacts and that they have effective environmental management strategies in place.
NLC 08	Other than the existing Sandy Flat structure, alternative sites for the proposed TSF have not been seriously considered. Should the proposed location be found unsuitable, then alternative sites must be subjected to a much higher investigative rigour than has currently been applied?
Environment Centre 18	Page 75: The proponent has not presented any alternatives to the establishment of a new Tailings Storage Facility (TSF), neither have they demonstrated that they have sufficient on-site hydro-geological and geochemical knowledge to ensure that a new TSF, as well as the existing TSF, can be adequately managed (p. 78-79). For example, it is stated: “if seepage from the TSF is determined to be of a quality unsuitable for entry into the environment then strategies that may include the diversion of these seepage waters into the decommissioned Sandy Flat Pit will be investigated” (p. 75); “other locations may need to be identified and assessed if the proposed TSF area is unsuitable” (p. 78); and “current groundwater modelling will aid in understanding the behaviour of possible leakage from the existing TSF and associated waste dumps” (p. 79). A sound plan for managing tailings must be put in place from the outset. This plan should address potential seepage problems and ensure there is no impact from the TSF post-closure. Unfortunately, based on the draft EIS, the Environment Centre NT does not hold a great deal of confidence in the proponent’s capacity to manage TSF issues.

Redbank acknowledges that insufficient information has become available to allow for the proper assessment of the newly proposed TSF within this supplement and so have removed it from the assessment process. The proposed new TSF will require a separate approvals process, at which point sufficient geotechnical and hydrogeological detail will be available and provided to ensure that this location poses minimal risk to the environment. Hydrogeological knowledge is rapidly increasing and plans for early dry season 2010 investigations are presented in this Supplement. Geotechnical investigations will also take place as soon as possible in 2010.

NLC 02	In Chapter 3.10, pages 75-76, it is deduced that groundwater regimes near and at the proposed location have not been adequately investigated. This information is vital to describing connectivity between the proposed dam and nearby watercourses. Without it, the full extent of possible environmental impacts due to TSF seepage cannot be described nor appropriate plans made to mitigate the associated risks.
NLC 03	NLC are concerned that should construction of a dam be permitted without full development of groundwater models and without full assessment of the associated regional effects and risks, the existing legacy, to which Redbank has made a commitment to mitigate, may become worse.

Hydrogeological knowledge is rapidly increasing and plans for early dry season 2010 investigations are presented in this Supplement. The proposed new TSF will now require a separate approvals process, at which point sufficient geotechnical and hydrogeological detail will be available to ensure adequate impact assessment. Redbank are committed to ensuring that the mistakes of the past are not repeated.

NLC 05	Analytical data describing the chemical nature of both the oxide and sulphide tailings and their pore waters have not been provided as metallurgical testing was not completed prior to release of the EIS. This lack of information makes assessment of potential amount of acid rock drainage (ARD) from the dam impossible. Sulphidic ores are known to hold a high risk of ARD, and although it is argued by Redbank that the oxidic materials are not prone to form ARD of their own accord, the company plans to use sulphuric acid to process this type of ore. Any residual acid seeping from these tailings will create a risk similar to that of spontaneous ARD from the sulphidic material, so both ore types should be considered here to have ARD potential. The severity of the risk of ARD is further complicated by the lack of thorough knowledge of the groundwater regimes mentioned earlier.
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The current proposal does not seek to gain approvals for the deposition of wet tails on the existing TSF, but rather <10 mm sized gravel that will be transported via front end loader. The gravel will be moist and the TSF will continue to receive water inflows from rainfall and (neutralised) plant water. Drainage ditches will be installed within the TSF in order to assist with the reclamation of this water for the process.

All future activities associated with the existing TSF are aimed at minimising the contamination potential of the existing conditions by only adding materials that will assist in the reduction of the overall contamination potential rather than adding to it.

Initial testing has identified that the process water deposited in the TSF will have a pH of greater than 6.5 and is expected to contain levels of metals similar to those indicated below (reported in mg/L). The pH of the water will minimise its potential to mobilise metals within the TSF.

Table 3-1: Metals Contents

Aluminium	0.14	Manganese	3.18
Cadmium	0.0001	Nickel	0.025
Chromium	0.001	Uranium	<0.001
Cobalt	0.209	Zinc	0.015
Copper	0.110	Iron	0.64
Lead	<0.001		

Further samples have been submitted for analysis and AMD testing.

4 ALTERNATIVES

Environment Centre 02	Page 20: The EIS addresses project alternatives in limited detail. It fails to adequately justify that the proposed and preferred course of development is the one best suited to meeting sustainability objectives.
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Further detail is provided in Chapter 4 of the draft EIS and further clarification is provided in Chapter 4 of this Supplement.

The existing infrastructure and legacy issues have been the major drivers of the project and limit the potential alternatives.

EHA (NRETAS) 03	There is a lot of assumption within the comment Legacy environmental issues have been impacting the project area environment and downstream waterways for over a decade, and it could be assumed that Redbank's involvement and subsequent environmental management will reduce the level of risk and impact (section 4.2). This would not be demonstrable until the company is well into its activities and depends on Redbanks proposed activities not further exacerbating legacy issues by poor design and management practices. Given the information gaps relating to the mining and processing of sulphidic ores and final design of the tailings storage facility/waste rock dumps, Redbank is requesting the government and community place a great deal of trust in its management of legacy issues. As part of the supplement, Redbank should address the information gaps and provide the key performance indicators they intend to develop to measure their environmental performance.
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The Government is a stakeholder in the environmental legacy and is partly responsible for both its existence and perpetuation over the past 15 years. The Government has not acted on this responsibility and has not responded to the communities' concerns and complaints during this extended period. Redbank's involvement with the site over the past 12 months has seen a massive injection of money (\$2.5M) and research into remediating the environmental legacy, thus providing the community with the only positive outcomes that have resulted on the site since 1996.

Activities associated with this expenditure include the expansion of the surface water monitoring and investigations, the installation of environmental monitoring bores and associated studies and the treatment of Sandy Flat Pit waters so as to reduce the pit levels and reduce the potential for these waters to flow off site as well as providing important information about the groundwater. Improvements in off site surface water quality are expected to result from the pit dewatering activities, however the simple improvement in knowledge will allow for the development of future plans based on fact rather than assumption.

Acknowledged, approvals may only be granted once stakeholders are convinced that the environmental risk of the legacy issues is greater than the risk Redbank's proposed expansions pose to the environment. There were significant information gaps in the EIS relating to the mining and processing of sulphidic ores, and final design of the tailings storage facility had not been developed to a sufficient level for assessment. Therefore, the sulphides and TSF aspects of the project have been removed from this approvals process for completion and submission at a later date. Redbank now request environmental approvals to progress the oxide mining component and provide an economic return. Whilst the site is providing an economic return, investment into the legacy issues and future management of the site can continue and increase.

Examples of what activities can be up scaled once the project enters the operations phase include the research into the Sandy Flat aquifer and its potential connections to other aquifers will continue during the operations of the project and be underway prior to the application to mine Sandy Flat for its sulphide reserves. The existing WRD within the containment area at Sandy Flat requires further investigations so that detailed remediation plans can be developed. There are known areas of high contamination potential and methods for either processing, treating or encapsulating this material need to be thoroughly researched. These and other activities are planned to scaled up during 2011.

Further information regarding waste rock dump designs are presented in this Supplement in **Chapter 3**.

Key performance indicators are also being refined and constantly updated in the WDL and WMP. The most recent examples are provided in this Supplement in **Chapter 6.3**.

EHA (NRETAS) 04	Active dewatering of the Sandy Flat Pit may address some of the legacy issues; however, it should be recognised by Redbank that future activities, if not managed correctly, present environmental risk that can contribute to existing issues. For example, if the new tailings storage facility or waste rock storages are not designed or managed appropriately, there may be an increased environmental risk and impact on the existing environment. More details on the design and management of these structures (including oxide waste rock dumps and storage of oxide tailings) are required for the supplement (refer also to sections below).
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Noted - Further details on the proposed oxide waste rock dumps and oxide tails is provided within this Supplement.

Environment Centre 20	Page 93: It is curious to see that another severe global economic crisis is regarded as an “unlikely” event. Given that the economy is dependent on functioning ecosystems, and also given that we have crossed some critical planetary boundaries (or biophysical thresholds) and are approaching others, another global economic crisis seems more likely than unlikely.
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The statement that another severe global economic crisis is unlikely is based on historical data of timeframes between economic downturns. It is unlikely that another severe crisis will occur within the recent memory of financial markets and regulators, and therefore within the timeframes of this project.

NLC 14	Each pit has an expected life of between 6 months and 2 years only, which suggests they will be small, so sequential backfilling should not pose a serious technical problem. The full potential for backfilling the pits has been briefly considered in Chapter 4.7, but does not appear to have been carried through in the rest of the planning, which is of great concern given that ARD from the pits, waste rock dumps and tailings and remaining impacts of the mine after closure are considered to be the primary risks.
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Use of the pits for the long term storage of ARD material and wastes in general will be investigated and reported on during the approvals process for the sulphide mining stages. The results of the following areas of investigation planned for 2010 will help direct such a decision:

1. A drilling program that will identify the potential to sterilise a pit; and
2. Testing the ARD potential of the sulphide materials and their relevant volumes.

EHA (NRETAS) 05	The alternatives for environmental management techniques lack detail (section 4.7), given that the management of legacy issues is one of the major risks Redbank is facing on site. Redbank should identify the type of relevant research projects proposed. For the treatment of contaminated pit water, Redbank must provide evidence on the long term efficacy of the lime as a neutralizing agent in the old Tailings Storage facility (TSF) and how it would be assessed. More detail is required on how effective the lime sludge would be in assisting with the sealing of any leaks in the old TSF since this has been identified as one of the sources of contamination contributing to the existing legacy issues. Related questions include; 1. What is the longevity/durability of sludge as a sealing/neutralizing agent and what are alternative options for dealing with the old TSF seepage issues? 2. How would the old TSF be managed as a source of contamination if this sludge is reprocessed in the future to separate its copper content (as stated in section 6.3.3)?
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Alternatives options for the site in general have been limited by the fact that this is an existing facility with existing problems. Management actions and plans are focused on fully understanding and managing the legacy whilst not extending or exacerbating its impacts. Financial constraints also have an impact on what remedial actions can be performed prior to the site entering production, and actual operations and production on the site is the only foreseeable opportunity for this site to be remediated.

The current research projects underway include;

1. a detailed groundwater management plan,
2. an understanding of the extent of groundwater contamination,
3. a thorough understanding of the existing sources of contamination,
4. plans to remediate these sources of contamination, and
5. studies of the impacts and improvements in the downstream surface water quality as required by the WDL.

The current monitoring program associated with waters identified as having leached through the TSF into the south low flow drain indicates that the high pH treated waters are displacing the remnant low pH water from the pit. The previous operators claim that the tailings deposited into the TSF were neutralized as they exited the plant so the most likely source of high pH waters within the TSF is the SFP, as water has been pumped from the pit to the TSF each year in an attempt to prevent the pit from expressing into Hanrahans Creek.

One of the impacts of this deposition of high pH lime rich treated water into the TSF has been the dramatic reduction in flows through this subsurface path from the TSF into the south low flow drain.

These findings have led to the preliminary conclusions that flows from the TSF have been reduced and more importantly that the TSF is again entering a state of neutrality, dramatically reducing the potential impacts from any seepage that does occur.

Further monitoring wells are planned for early 2010 to help monitor and further understand this situation.

There are now no plans to attempt to access the copper content in the sludge that has been deposited on the existing TSF.

EHA (NRETAS) 51	Table 6.7-1 - the existing TSF is currently a contamination source with seepage estimated at 500m³/day. Is this amount expected to decrease with the use of sludge to seal the surface medium to long term? How will it be monitored and what are the long term options for managing the existing TSF? If seepage from the new TSF is determined to be of a quality unsuitable for release into the environment, what are the strategies for management while Sandy Flat Pit is still operating?
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In addition to the comments above in EHA (NRETAS) 05 - the surface water monitoring points that target the sub surface expressions from the TSF are monitored monthly, will continue to do so throughout the project so that a closure strategy can be based on the findings. The ongoing and post closure monitoring of surface and groundwater will continue for at least 5 years or until DRDPFR are satisfied that the site is meeting its closure criteria.

Issues associated with the new TSF will be identified at a later date when approvals for such a facility are sought.

5 PRELIMINARY RISK ASSESSMENT

DHF (Katherine) 11	The draft EIS does not mention the use of radiation sources in the proposed mining operation. Please be aware that the Radiation Protection Act 2004 applies to servicing, testing, installing, decommissioning, manufacturing, possessing, using, storing, transporting, disposing of or otherwise dealing with a radiation source. The provisions of the Radiation Protection Act may apply to this project if the operation includes the use of radiation sources. Natural sources of radiation may be included in the definition if radiation exposure results from the enterprise. The Act is not expected to apply to any mining operation in which the most exposed person could not receive a radiation dose that is greater than 1mSv per year.
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Radiation sources will not be present on site and as such have not been considered as part of the Redbank Mines Risk Assessment Process.

EHA (NRETAS) 07	In general the risk assessment is qualitative given that Redbank has not accumulated sufficient information to conduct a more robust risk assessment. As per the EIS Guidelines (issued in September 2009) the following information on risk assessment should be provided in the supplement; 1. Identify alternatives or mitigation measures to either eliminate or manage the acknowledged risks and describe the levels of uncertainty regarding risk. 2. Provide a quantitative method of measuring performance of mitigation and management measures. 3. Acknowledge and describe the levels of uncertainty regarding estimates of risk and the effectiveness or risk control measures in place. 4. Explicitly identify those members of the community expected to accept residual risks and their consequences.
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Many aspects of this project are pre existing and therefore options for development and management are often limited. Therefore the focus has been on developing mitigation measures to either eliminate or manage the acknowledged.

The primary identified risks and associated measures are:

- **Existing legacy environmental issues.**

Assessing and determining the existing sources of potential contamination on site is an ongoing process partly limited due to seasonal access restrictions and timeframes necessary for laboratory analysis and data collection for hydrogeological modelling. Redbank has proven its commitment to remediation by committing over \$2.5M during 2009 to research and remediation of ARD legacy issues. Redbank will continue to invest into remediating the legacy issues over which they have responsibility, and management to ensure they minimise risk of further environmental impact. A significant amount of information regarding the existing TSF is constantly being collected and analysed but is not at a point where it can be reported on. Samples of the existing WRD's were taken last year and proven to hold no economic reserves of copper, and varying acid generating potential. The bulk movement of materials and installation of remediation devices and activities is extremely expensive so Redbank are committed to allowing several years to thoroughly understand the historical issues and the current management conditions prior to undertaking any physical remediation. This is based on sustainability principals and will result in no unnecessary use of resources, including fuel and the atmospheric pollution that would be generated.

- **Acid Rock Drainage (ARD) from the new pits, waste rock material and tailings.**

The removal of the sulphides and new TSF from this assessment removes this issue from the primary risk register. The first point associated with legacy issues now covers the vast majority of existing and potential sources and impacts of ARD.

- **Seepage from the Tailings Storage Facility (TSF), and remaining impact of the TSF after closure.**

Mitigation measures to reduce both the seepage and long term potential impact of the existing TSF are well underway.

The existing TSF currently leaks into the southern low flow drain. During most wet seasons over the past 10 years, Sandy Flat Pit water has been pumped into the TSF in an attempt to reduce pit levels and thus avoid interaction between the pit water and outside environment, thus when Redbank Mines acquired the site, over ten years of pit waters had accumulated and concentrated in the TSF. Under recent Care and Maintenance, treated water and sludge from the treatment of the water with lime has been added to the TSF, neutralising the acidity of the previously added SFP water. Flows from the TSF into the south have also ceased, even though the TSF water level is high and treated water continues to be added, demonstrating that this path of subsurface flow has been effectively sealed. Water losses from the TSF are now being measures and compared to on site evaporation tests in an attempt to determine if there are other potential points of flow from the TSF. Future use of the TSF will involve the addition of and management of material that will not contribute to the potential contamination.

It is expected that the current water treatment and ongoing management will result in the TSF no longer being a source of contamination and therefore not requiring an impermeable layer. This will be determined during the next 2 years so that the decommissioning and rehabilitation strategy will be in place for these activities to potentially being during 2012.

- **Hazardous materials and waste produced and stored on site.**

Risk potential is minimized via several strategies. These include the wise selection of materials to be utilised, modern design and construction of facilities that are appropriate for the climatic and other conditions, minimizing the levels of stock of hazardous materials held on site, and proper OH&S management.

- **Uncontrolled discharge of contaminated water to off site.**

During 2010 the SFP will have a water level at which it will not be able to interact with the surface waters of the region. It will also become the emergency receptacle for any waste waters that may require emergency storage. The operations and clean up of the site will ensure that the existing catchment area of potential contamination that is directed into the SFP is reduced so that at closure the pit will not receive any surface water flows and therefore will not reach a level at which it can discharge into the environment. Each new facility has management, monitoring and mitigation measures identified.

- **Impacts upon endangered species.**

WRD designs have been altered to avoid any Gouldian Finch habitat. The groundwater management plan is identifying monitoring actions and potential remediation activities if groundwater dependant ecosystems such as those supporting the Carpentarian Rock Rat are experiencing impacts. Camp design and ongoing management will continue to be aware of the need to minimise potential impacts on this species.

- **Impacts upon heritage sites.**

The Masterton's Cave and Garden has been listed as a heritage site and is the only one in the area. The Company is already custodian of this site and has management plans in place. The removal of the desire to list Masterton's Grave has reduced this point from a primary identified risk.

- **Remaining impact of the mine after closure.**

Redbank are acutely aware of the potential impacts of this mining venture and intend to close the site so that it may be relinquished from their care. In order to reach this goal the development of the closure plan will begin in 2010 and be ongoing throughout the project as research continues and rehabilitation trials are monitored.

Groundwater and surface water trigger levels specific to Redbank ERL locations have been refined and developed in **Appendix I**. A conceptual model of environmental risk at the mine site, along with a table outlining how performance regarding risk management will be monitored and mitigated is available in **Appendix C**.

The removal of the sulphides component of this assessment, along with the new TSF has removed the greatest areas of uncertainty associated with the risk assessment of this project. The lack of available knowledge of the sites history has led many stakeholders to be wary of the potential risks of acid producing material existing within the oxide wastes. The project geologist has discounted this issue as a result of his on site sampling and initial lab results identify this as being the case. This issue will be monitored as waste and ore materials are assayed on site to determine their status as either ore or waste and if waste, its potential acid producing capacity. Waste and ore storage areas will be monitored for potential contaminants that may emanate from the area and enter the surface or ground waters.

The incomplete GWMP can be considered a risk, however the research and actions currently being performed have created a far better understanding of the legacy contamination issue associated with the groundwater and have not identified any major issues that may impede the ongoing management and associated reduction in contamination entering and exiting the ground water.

The main stakeholders in this project are; the NT Government, the Indigenous Native Title Applicants and their representative body the NLC, and the surrounding and overlying land holder, the owners of Wollongorang Station. It has been communicated by stakeholders that the risk of proceeding with this project is minimal compared with the continuing and ongoing environmental degradation that has been allowed to proliferate at this site for the past decade and a half. The operator has the greatest knowledge of the impacts that previous operators have caused and has developed the project from day one with this awareness. It is also expected that members of the stakeholder community will be taking an active role in monitoring the activities and the government will hold a current security bond over the site and be fully aware of the mistakes of the past if the site reverts to their hands due to unexpected circumstances.

EHA (NRETAS) 08	The risk assessment standard referred to in the EIS has been superseded by AS ISO 31000:2009. In table 5.2.1 the terms 'minor', 'substantial', 'medium', 'high' and 'extreme' should be defined. The concept of what defines substantial environmental damage or high-medium financial loss is difficult to understand (without quantitative examples) and open to perception.
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Noted - It is difficult to provide quantitative examples when climatic, environmental, and economic conditions are variable and cannot be accurately predicted. Risk analysis, by nature, is open to perception. Thus table 5.2.1 within the draft EIS outlines the risk levels as perceived by Redbank Mines, and should have stated such. Financial loss has been included as an environmental risk factor due to the potential for liquidation or bankruptcy to interrupt progressive rehabilitation plans.

EHA (NRETAS) 09	Redbank should identify the key participants in the risk identification and ranking process. This will provide an indication of the experience and perspectives and the robustness of the risk assessment. The supplement should supply some detail as to how the risk assessment was conducted, which stakeholders were involved and how they were engaged in the process.
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The development of the risk assessment was an internal process utilising the skills of experienced mining and environmental practitioners, including people involved in the original mining project at the Sandy Flat Pit. Risks raised by EHA and DRDPIFR during consultations were included and assessed within this chapter of the draft EIS. The risk assessment was also identified as 'preliminary', and will thus be reviewed throughout the life of the project. The first review will focus on stakeholder comments received on the draft EIS.

EHA (NRETAS) 10	Existing surface and groundwater issues have been given a 'high' risk assessment rating in the preliminary risk assessment. For all high risks identified, Redbank needs to also identify active remedial actions with anticipated timelines for implementation. For these high risk ratings, a detailed additional section on specific actions to address off site migration of contaminants is required. The supplements needs to clarify what is meant by 'stakeholder enquiries' as a mitigation measure for existing surface and groundwater issues, and detail the 'significant ongoing research into groundwater flows' that has been conducted to date.
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Remedial actions for identified 'high' risks were outlined within the draft EIS, however we acknowledge these respective sections should have been specifically referred to within the Risk Assessment chapter. A conceptual diagram of environmental risks at the site, accompanied by a table of proposed monitoring and remedial actions, has been developed and provided in **Appendix C** of this Supplement document.

A stakeholder inquiry is a method of control (under the heading Mitigation Measures and Controls) whereby awareness is raised and input invited from the company, public and/or regulators.

Significant ongoing research into groundwater flows is detailed in chapter 6.3 of the draft EIS, and further detail is available in chapter 6.3 of this Supplement document.

EHA (NRETAS) 11	In this section Redbank states that new developments will not repeat the mistakes of the past and that improvements must occur incrementally during the life of the project. Redbank needs to clarify whether this reparation would occur only as money becomes available or whether the risk treatments or management would be tailored to achieve gradual improvement.
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Redbank has proven its commitment to the site and its remediation by committing over \$2.5M during 2009 to research and remediation of ARD legacy issues. This level of expenditure provided for a considerably greater level of remediation than would have been achieved (ie Nil) should Redbank not have taken on the lease. Redbank intends to continue this program but funds are not limitless, and the sooner the site is in production, the sooner the program can be expanded and sustainably implemented over the next few years.

All new activities will be aligned with current best practice and environmental management will be rigorous, monitored and ongoing. The management of newly proposed activities will be separate from legacy issues and not reliant on funds becoming available through production as they are a standard cost of production. Legacy issues are an additional cost and therefore treated separately.

EHA (NRETAS) 12	Past mistakes indicate that seepage from the TSF and Waste Rock Dumps (WRD) have contributed to poor water quality in the pit that has then contaminated streams downstream. In particular, EHA considers that there are inadequacies in Acid Rock Drainage (ARD) characterisation and WRD design and groundwater monitoring/knowledge. Yet in the risk assessment Redbank states treatment and research into ARD, surface and groundwater issues is ongoing and the results of the 2009/10 wet season water quality monitoring will be a major consideration when reviewing the management plans in the following years. This mitigation measure is inadequate and the EHA Division is concerned that a lack of comprehensive site geochemistry may lead to a higher risk ranking associated with ARD issues. Information on ARD is required at this stage of assessment to adequately assess the management of this issue
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Noted.

EHA (NRETAS) 14	Redbank's proposed mitigation strategies, management actions, controls and procedures outlined in the risk assessment, rely almost entirely on people doing jobs outside of their field/expertise. The design needs to incorporate passive controls, particularly in water management so that mine personnel do not come from an environmental background are not solely relied upon to fulfil environmental obligations.
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Any specified management and monitoring tasks that require training and expertise beyond that held by Redbank staff stationed on site will be contracted to appropriate environmental companies. It is likely that EcOz staff will be contracted for the management and monitoring tasks for which they have appropriate expertise. Redbank acknowledge that EcOz, due to their close involvement with this potential project, may not necessarily be considered 'independent', however like all mines, Redbank's and EcOz' environmental performance will be independently monitored through DRDPFIR's audit process and by using organisations such as ERISS to perform certain specialist activities such as macroinvertebrate sampling and identification and ecotoxicology. Remotely operated and data logging passive water monitoring devices are also planned to address WDL requirements.

Environment Centre 06	p. 24: The uncertainty surrounding the possible impacts of Potential Acid Forming (PAF) material is a concern. PAF material, if it proves problematic, could derail the plans by Redbank Mines Ltd. to have a net positive environmental effect on the Redbank site. Further investigations are required before an expanded operation commences, so that the company can adequately address this issue.
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Noted - Due to this fact, the sulphide component of this project has been removed from this assessment and we now only seek approvals for the mining of oxide ores. Notes on the acid producing potential of the oxide ores and wastes are provided in this EIS Supplement.

Environment Centre 07	It is also concerning to see that the company still needs to investigate the contaminated water, ore piles and waste rock at the Sandy Flat site, to determine how to properly deal with these waste materials. It seems unwise to permit an expansion of the mining operation, including the how generation of new waste material, while the company is still trying to determine to deal with pre-existing waste. We recognise that Redbank Mines Ltd. did not generate the existing on-site problems, but given that the company now has control of the site, they must accept full responsibility for all issues. It is important that a complete and thorough risk assessment is conducted and that all environmental matters are dealt with appropriately.
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Assessing and determining the existing sources of potential contamination on site is an ongoing process due to seasonal access restrictions and timeframes necessary for laboratory analysis and data collection for hydrogeological modelling. Redbank has proven its commitment to remediation by committing over \$2.5M during 2009 to research and remediation of ARD legacy issues. Redbank will continue to invest into remediating the legacy issues over which they have responsibility, and management to ensure they minimise risk of further environmental impact. A significant amount of information regarding the existing TSF is constantly being collected and analysed but is not at a point where it can be reported on. Samples of the existing WRD's were taken last year and proven to hold no economic reserves of copper, and varying acid generating potential. The bulk movement of materials and installation of remediation devices and activities is extremely expensive so Redbank are committed to allowing several years to thoroughly understand the historical issues and the current management conditions prior to undertaking any physical remediation. This is based on sustainability principals and will result in no unnecessary use of resources, including fuel and the atmospheric pollution that would be generated.

Environment Centre 21	Page 96: The Environment Centre NT would like to see an assessment of the socio-economic risks associated with the mining venture. In particular, due consideration should be given to the impact that commodity price volatility might have on future operations, particularly site management and remediation.
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The current environmental condition of the site is due to the actions taken on site by the previous operators and the NT Government once the venture failed in 1996. All parties involved in the previous venture learnt valuable lessons and will thus ensure that, should the current venture experience severe commodity price down turn, greater security bonds and improved infrastructure design will affect a far more acceptable and sustainable situation than what currently exists.

Environment Centre 22	Page 101: We are not assured that Redbank Mines Ltd. has adequate knowledge about Acid Rock Drainage (ARD) and potential impacts on surface and groundwater resources. Considerably more work needs to be done looking into ARD treatment to ensure that the company's WDL is of an appropriate and adequate standard.
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Redbank is acutely aware of the impacts of ARD on surface and groundwater resources. It is agreed that a considerable amount of further work must be done to allow for the proper assessment of the sulphide phase of this project and this is why this assessment is now only seeking to gain approvals for the mining of oxide resources.

The company holds a current WDL (175), approved by EHA, after considerable liaison including a visit to site. The WDL is a public document and is available for viewing on the Government website.

Environment Centre 23	Page 102: The proponent should commit to ensuring that PAF materials are secure from erosion-induced exposure for a timeframe well beyond the closure date.
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Noted - Further detail on the oxide waste rock dump design is provided in Chapter 6.7 of this Supplement document.

Environment Centre 24	p. 105: “Significant ongoing research into groundwater flows” has been identified as part of the risk assessment. Detailed information about groundwater flows should <i>inform</i> the risk assessment, rather than the risk assessment simply highlighting the need to look further into groundwater flows. The detailed study of groundwater and surface water systems (p. 117) must be completed and carefully reviewed before any consideration is given to an expanded operation.
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Noted, however it must also be noted that significant works have been undertaken to date and they continue. The nature of the site and its history must be taken into account in this situation as expectations for background studies beyond the capability of the operators and the deposits to support will result in no operator ever being able to take on the legacy and remediate this site.

Also refer to response to DRDPFR 09.

Environment Centre 25	Page 105-106: Both soil and water contaminations are potential impacts that could arise from an acid or chemical spill.
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Noted.

NLC 16	Redbank appears to have entered into this project without having done sufficient test work to fully assess the risk that the acid forming potential of the materials to be mined and the tailings produced represent to the environment. Consequently, the plans and systems devised may be inappropriate and should be revised in light of further information acquired during metallurgical work. Once this has been completed and the information provided for public scrutiny, then we would be in a better position to fully appreciate the risk and assess the applicability of alternative means of long-term management, such as in-pit disposal.
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Noted and accepted and hence the removal of the sulphide component of this proposal.

NLC 17	Generation of acid following decay of sulphidic material in an oxidising environment is a significant risk in tropical environments. In addition to sulphuric acid, many dissolved toxic heavy metals and metalloids are transported into watercourses as the rock decays with associated impacts on local flora and fauna. However, Redbank's consideration of the risks of ARD in Chapter 5.2.2 appears to be confused and their general recognition of ARD as a medium risk appears to understate the case. For example, the Risk Assessment Table provided on page 100 indicates that all legacy issues have the same severity of impact, yet ARD is considered a low risk.
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Noted.

NLC 19	In the absence of key information about acid forming potential, the environmental risk should be treated more conservatively and considered to be high and a greater focus should therefore be placed on systems to investigate, manage and deal with the risk.
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Noted and agreed. The risk of ARD was understated in the draft EIS.

EHA (NRETAS) 13	There is a lack of information on tailings storage design, failure and leakage. At this stage, a plan of the new TSF and monitoring should be included. Redbank needs to provide contingency plans in the event of severe leakage/seepage from the TSF.
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Noted - Redbank have decided to utilise the existing TSF for the first 2 years of oxide processing. The proposed new TSF will require a separate approvals process, at which point sufficient geotechnical and hydrogeological detail will be available and provided. Oxide tailings have proven to be suitable to be added to the existing TSF where they can be managed so that they will not pose any additional contaminant risk.

DRDPIFR 22	The concept that the operator would most likely go into administration should they not gain approval for further operations is noted. However, this highlights the importance of completing a comprehensive risk assessment on the options ahead rather than using this perceived outcome as a reason to not complete it. A risk assessment for a number of alternative should be undertaken (e.g. oxide only, mine sulphide but manage in a number of ways, etc).
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Noted - This project is now only seeking to mine 3 oxide pits. Future planned activities will include greater details on the risk assessment process for a variety of options.

6 ASSESSMENT OF THE ENVIRONMENTAL IMPLICATIONS OF THE ACTION

6.1 Pre-existing Environment

NLC 12	In Chapter 1.6.2, Redbank indicates that the development of pits and waste rock dumps near the Redbank Creek drainage system will impact on that area. Experiences at other mines, and the fact that Redbank is in a tropical climate, long-term impacts following failure of waste rock dumps and TSF capping could be reasonably expected.
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Noted - Lessons learnt from investigating the legacy issues at the Sandy Flat Area will be applied to ensure that the environmental risk to Redbank Creek system is minimised. Engineering designs and construction of new facilities will be of best practice standard

EHA (NRETAS) 16	It is noted in the EIS that the most important failure if the 1992 assessment report (Sandy Flat Copper Mine, Preliminary Environment Report, 1992), was the lack of prescribed ground and surface water monitoring regimes. In order to minimise this risk Redbank has proposed an extensive water quality monitoring regime that will allow early detection of any negative impacts thus remediating actions can be progressed almost immediately. Further detail is required on the proposed investigations and remedial actions that are planned once the operation has financial resources (section 6.1.6).
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The annually updated WMP will identify the water monitoring regime. Currently a surface water monitoring regime is in place and has been approved by the WMP and WDL. A more detailed ground water monitoring and research program is also underway and both will be expanded during 2010. Site specific surface water sampling locations will be established with each new facility and on any natural watercourse that may be impacted, and EMB's will be established to obtain baseline ground water quality information and allow for ongoing monitoring around new facilities. These locations will be required to be approved through the WMP process. Remedial actions for issues identified by monitoring will be determined in consultation with DRDPIFR and other relevant Government Departments according to the relevant activity. The current ARD treatment and release program is an example of a remedial action developed in conjunction with relevant Government Departments that has been identified by monitoring.

If contaminants or environmental degradation is detected, the approximate source of contamination will be identified, and relevant operations will cease until the exact source of the problem is identified and remediated to a satisfactory condition. Proposed remediation methods include re-processing legacy wastes until they no longer pose a contamination risk, surface water management through bunding and diversion banks, and neutralising PAF materials and waters with lime.

All newly proposed mining activities are not contingent on financial resources, it is the research and remediation of legacy issues that will be scaled up once the site is returning an income. The focus of the further investigations and resultant remedial actions will be the ground water and the potential sources of contamination.

EHA (NRETAS) 17	Redbank state they are committed to address legacy environmental issues and have assumed current and subsequent environmental management will lower the level of environmental risk from the current levels. This may be correct for on-site issues but Redbank needs to provide detail on how they plan to address off-site legacy issues. For example, if any water below pH 6 is discharged, it may result in mobilization of residual contamination in creek beds and may transport impacts further downstream. Contingency actions if monitoring indicates this type of event is occurring should be identified.
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Redbank are committed to addressing the on site environmental legacy issues which will result in a reduction of contamination exiting the site. The focus of the program is to manage the source of the problem and prevent further degradation of the downstream environments. Although not ideal, it is expected that wet season flows of uncontaminated water will result in significant improvements in the stream conditions. In addition to this the creek beds are mostly coarse sand and rock and therefore hold little potential to maintain residual contamination beyond several flush events. Samples of the existing stream bed soil conditions have been analysed and will be repeated after this and subsequent wet seasons.

Redbank Mines are committed not to discharge water with a pH below 7.0. and are required not to according to WDL 175. The current ARD treatment and release program is anticipated to result in less if any connection between the SFP and Hanrahan's Creek, dramatically reducing the potential for acidic water to leave the site. It is anticipated that the surface water regime will recover over the short term (2 – 5 years) provided that low pH waters are not discharged.

Should low pH water seep from the SF Pit or any other source, the current monitoring regime will identify it early so that its source can be identified and remediation actions put in place. After the ARD treatment and associated water release this wet season followed by the utilisation of the SFP water for the oxide process during 2010 (and 2011) it is expected that the water levels in the SFP will be reduced to a point that it will be impossible for those waters to express into the surface waters via the ground water.

Improved management of the site associated with new operations will result in a reduced area of catchment that directs contaminated water into a storage structure (currently the SFP pit). Complete dewatering of the SFP is planned for the future potential mining of the sulphide resource below it which will significantly draw upon the contaminated aquifer and provide further information about the extent of the groundwater contamination. Testing and studies will take place prior to the potential for sulphide mining to assist in determining the extent of groundwater contamination.

A comprehensive monitoring regime has been designed to enable early detection of contaminating issues, should they occur, and monitoring points will be located to provide a reasonable estimate of contaminant origin

Contingency actions will vary according to the nature and source of the contaminants; however, upon detection of worsening downstream water quality, Redbank will invest all available resources into remediating the issue until monitoring indicates that the problem has been resolved.

Contingency actions may include the introduction of lime or high pH water into the system and simply more clean water into the system.

EHA (NRETAS) 18	The EIS states that legacy issues are not yet thoroughly understood. Redbank needs to have thorough baseline assessment of legacy issues so that appropriate actions are taken to resolve these issues or prevent them from happening at the commencement of any mining activities. EHA division suggests that Redbank be clear on baseline conditions at various monitoring points prior to operations to enable assessment of site improvement over time.
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Redbank has collated approximately a decade of surface water quality baseline data into a spreadsheet. Available historical data on surface water and groundwater collected by previous operators has also been included in this spreadsheet. The surface water quality monitoring program was up scaled in 2008 to provide a monthly baseline of surrounding impacted and un-impacted waterways.

Historical groundwater data are minimal, thus new Environmental Monitoring Bores (EMBs) were installed during 2009. Information from these bores will better inform plans for further drilling of EMB's in 2010. The aim of the new bores is to provide sufficient baseline information on groundwater movement to enable groundwater flow modelling, a task which is also planned for 2010. Groundwater flow models will provide valuable information to enhance design of proposed developments and facilitate water quality management. Baseline standing water level data from EMBs will also enable calculations of groundwater recharge and potential groundwater drawdown.

The database of baseline water quality monitoring has been provided in full to EHA and DRDPIFR and the summary dashboard depicting the results that have triggered ANZEC Guidelines has been provided in this Supplement at **Appendix E**.

The operators are conscious of minimising risk of future impacts and have facilitated the collection of quality data over the past 18 months and continues to monitor and expand the baseline monitoring program. 2010 will also see the installation of new monitoring points so as to ensure awareness of any potential new impacts so that they may be acted upon immediately.

Environment Centre 26	p. 115: Given that groundwater and surface water quality monitoring has “not been particularly comprehensive” and “somewhat ad-hoc “, further sampling work needs to be undertaken in order to establish baseline conditions which can be used as the basis for monitoring the environmental performance of the mine over time.
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The surface water monitoring program has been ad hoc since 1996 however comprehensive and extensive since mid 2008 and a quality set of baseline surface water monitoring data exists. A solid baseline of conditions in Hanrahans Creek and downstream environments exists so that environmental improvements can be tracked and a thorough baseline of the un-impacted Redbank Creek exists and will be built on this year prior to any mining activities.

The ground water monitoring program has been ad hoc since 1996, up scaled during 2008 and comprehensive since late 2009 when 10 new EMB's were installed. Eight of these EMB's were installed to investigate environmental legacy issue around the SFP area and 2 were installed at Bluff to obtain baseline ground water quality samples. Historical bores exist around the Redbank deposit and have been sampled and further EMB's will be installed in this area in early 2010.

Environment Centre 27	Page 117: “...Redbank have proposed an extensive water quality monitoring regime that will allow early detection of any negative impacts, thus remediating actions can be progressed almost immediately”. This statement reads well, but given the admission: “...the type and size of this company...limits its ability to invest in significant environmental repair prior to the project returning an income” (p. 16), we question whether Redbank Mines Ltd. can actually follow through with extensive water quality monitoring, and in particular, immediate advancement of remediation.
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The statement on page 16 refers to repairing legacy issues, which Redbank can upscale once in production. The statement on page 117 refers to new developments which Redbank will be immediately responsible for. Redbank have been undertaking an extensive water quality monitoring program for the past 18 months and intend to expand

the program along with new developments. Redbank have expended over \$2.5M in 2009 on remediating and researching the environmental legacy.

Environment Centre 28	Also, the claim that “...Redbank Copper’s presence on the site will have a substantially positive impact upon the existing environment within one year...” cannot be substantiated or properly evaluated in the absence of a comprehensive baseline dataset, particularly for groundwater and surface water quality.
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A comprehensive baseline dataset for surface water exists. The groundwater quality database is in its infancy. The reduction of the Sandy Flat Pit water to topographically below the level at which it can express into the surface water systems will result in an immediate substantially positive impact on the surrounding environment by way of not allowing another year of extremely acidic and metal laden water to enter the environment.

6.2 Protection of Flora and Fauna

Biodiversity 01	The mine occurs in area listed as a Site of Conservation Significance (Wollogorang and China Wall sandstone ranges) regarded as nationally significant based on the presence of threatened species. The EIS did not identify the area to be a Site of Conservation Significance. Further information is available at http://www.nt.gov.au/nreta/environment/conservation/index.html , noting that the Carpentarian Rock-rat is actually known from six sites (not 5) on Wollogorang Station (surveys in 2008 located animals in a gorge close to McDermott’s Springs).
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We note that although the draft EIS stated that Wollogorang Station was ranked as priority for inclusion in the NT reserve system, there was little detail provided on the site of conservation significance. Further detail has been sourced from the Natural Heritage Trust (2006).

Redbank is located within the boundaries of the Wollogorang and China Sandstone Ranges Site of Conservation Significance (for a rough location refer to the northern-most ‘Rock-rat’ records marked on the map at http://www.nt.gov.au/nreta/environment/conservation/pdf/36_wollogorang.pdf).

A Natural Heritage Trust project in 2006 identified 66 sites of international or national significance for the NT, based on natural values that may be held within the area, including:

- A concentration of threatened species;
- A concentration of endemic species;
- Large aggregations of wildlife;
- Wetland value; and/or
- Botanical values.

The Wollogorang and China Wall Sandstone Ranges area encompasses 3,485 square kilometres and is rated of national significance for six threatened fauna species that inhabit this area:

- Australian Bustard *Ardeotis australis* (-/VU);
- Carpentarian Grasswren *Amytornis dorotheae* (-/EN);
- Emu *Dromaius novaehollandiae* (-/VU);
- Gouldian Finch *Erythrura gouldiae* (EN/EN);
- Carpentarian Rock-rat *Zyomys palatalis* (EN/CR); and
- Merten's Water Monitor *Varanus mertensi* (-/VU).

This site of conservation significance is also rated as regionally significant under the ‘Wetland’ criteria because of the springs feeding into the gorges and monsoon thickets, which presumably support locally important aquatic ecosystems. Wollogorang and China Wall Sandstone Ranges area also contains regionally significant flora with

regard to the sandstone gorges that support some of the best developed and diverse monsoon rainforest patches in the Gulf Falls and Uplands bioregion.

There are a number of management issues identified for Wollongorang and China Wall Sandstone Ranges through the Sites of Conservation Significance project. Identified management issues include frequent and intense fires within the region, presence of feral cats and pigs, and the presence of four Category B weeds (*Acanthospermum hispidum*, *Alteranthera pungens*, *Sida acuta*, and *Sida cordifolia*) for which there is a general lack of knowledge on status. Management recommendations include:

- Continuing to implement the management program for the Carpentarian Rock-rat in conjunction with the landholder;
- Investigating options for inclusion of significant areas of Wollongorang in the reserve system by agreement with landholder;
- Managing grazing and fire within the ranges to help maintain the conservation values of the area; and
- Survey weeds in the area and develop a management plan that identifies weed management priorities and potential resources.

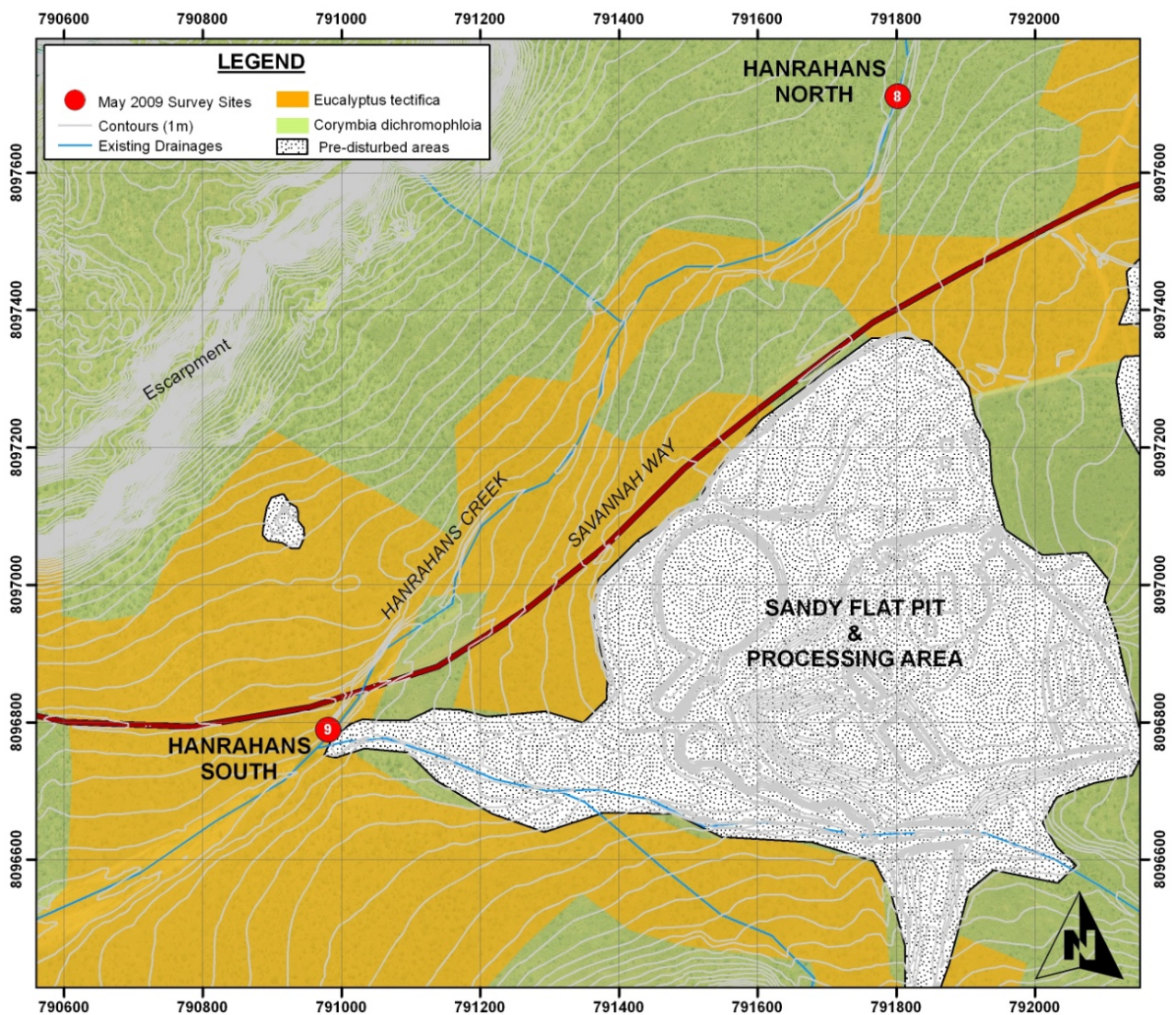


Figure 6.2-1: Map of Riparian Survey Sites

Environment Centre 30	Page 144, p. 152: The proponent must further investigate the aquifers associated with Sandy Flat and the mine camp to determine whether water extraction will impact on watertable and groundwater-dependent ecosystems.
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Noted - The existing contamination in the Sandy Flat aquifer has been identified as a far more significant environmental issue and the management and remediation of that contamination is the focus of current work. Contaminated aquifers may result in more permanent damage to groundwater-dependent ecosystems than temporary impacts associated with reduced water levels.

The developing groundwater management plan has identified the need for further EMB's in the vicinity of the Sandy Flat and the groundwater dependant ecosystems and they will be installed during April/May 2010 and study and monitoring initiated immediately.

Refer to response to EHA (NRETAS) 31 in Chapter 6.3 of this Supplement for further detail on proposed monitoring and mitigation for groundwater drawdown.

Environment Centre 09	Page 26 and p. 145: Fences and similar structures will be erected to exclude cattle and horses and other vertebrate fauna from hazardous areas such as the tailing storage facility. What measures will be undertaken to exclude birds from such areas (particularly the tailings dam, p. 79)? Does Redbank Mines Ltd. have data on the number of birds (and other fauna) that are currently killed at these hazardous sites? How does the company plan to assess the effectiveness of their exclusion measures?
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The current proposal does not seek to gain approvals for the deposition of wet tails on the existing TSF, but rather <10mm sized gravel that will be transported via front end loader. The gravel will be moist and the TSF will continue to receive water inflows from rainfall and (neutralised) plant water. Drainage ditches will be installed within the TSF in order to assist with the reclamation of this water for the process. This variation from the standard tailings facility that holds and expanse of water will be in itself less of an attraction to birds and the timely reclamation of waters will keep the water levels down. All future activities associated with the existing TSF are aimed at minimising the contamination potential of the existing conditions by only adding materials that will assist in the reduction of the overall contamination potential rather than adding to it.

David Donato (1999) from the Northern Territory Bird Usage of Tailings Storage Facilities Coordinating Group prepared an information booklet called 'Bird Usage Patterns on Northern Territory Mining Water Tailings and their Management to Reduce Mortalities'. This booklet discusses a variety of means to discourage native birds from visiting tailings storage facilities, however the research focussed on tailings containing cyanide. Redbank tailings are likely to be acidic, but will not contain cyanide and are thus considered to be less toxic. As such, mortality risk is lower due to the fact that individuals would need to drink from the tailings over a regular period of time in order to experience health effects potentially leading to mortality.

Granivorous species, such as the Gouldian Finch, need to drink regularly, although few granivorous species were recorded by Donato (1999) drinking from TSFs during his study period. Donato (1999) suggests that these granivorous species prefer to drink from small, well-vegetated water bodies as a response to predator risk. As such, Gouldians may well drink from the currently contaminated Hanrahan's Creek which Redbank are in the process of remediating. Some granivorous species, such as Budgerigars and Cockatiels, fly in large flocks for predator protection and are likely to drink from TSFs when alternative water sources are drying up (Donato 1999).

Donato (1999) notes that the birds 'most susceptible' to mortality through utilising TSFs include:

- Tern species (Whiskered Tern and Gull-billed Tern);
- Duck species (Grey Teal, Pacific Black Duck and Hardhead);
- Wader species (Scolopacidae, Recurvirostridae, and Charadriidae families);
- Australian Pratincole and Oriental Pratincole; and
- Raptor species (predominantly Whistling Kite and Black Kite).

The ducks, terns and waders are likely to use supernatant and / or a supernatant/slurry interface, whilst raptors and Pratincoles are likely to use bare ground (Donato 1999).

Redbank will consider the following options to reduce the number of native animals drinking from contaminated mine water sources (such as sulphide pits and TSF):

- Screening or netting liquid tailings or avoiding supernatant;
- Use of live and 'bird frite' ammunition if flocks of 'susceptible species' are present, or significant mortalities are being experienced;
- Keeping surrounding ground bare of vegetation and debris;
- Lining the walls of the TSF so that they are black; and
- Checking for, and removing, carrion daily to avoid attracting raptors and native scavengers.

WEEDS 01	Is it possible to include a statement that all weeds are mapped in accordance with the NRETAS Weed Management Branch 'Guidelines for Weed Data Collection in the Northern Territory'? This is a Territory wide weed data collection technique that provides a standard methodology for weed mapping.
WEEDS 02	Can we make sure that all weed mapping data is sent to NRETAS weed management branch for amalgamating into the Territory data set (including data collected during annual control activities)?

Noted - It is important that Redbank data is collected in accordance with NRETAS 'Guidelines for Weed Data Collection in the Northern Territory' such that it can be incorporated into a Territory-wide GIS weed mapping database. In addition, Redbank will require weed mapping at a finer scale (i.e. 500m² grid squares or smaller, compared to 13 km² grid squares) in order to monitor more localised changes in weed distribution and infestation extent. Such fine scale mapping will enable Redbank to detect increases in weed infestations, such as Hyptis within Masterton's Gully, and prioritise weed management efforts over the whole project area.

All weed mapping and weed management data will be sent to NRETAS Weed Management Branch for amalgamation into the Territory data set.

WEEDS 03	The EIS mentions 'Redbank will build a wash down area so that all vehicles and equipment arriving and leaving the site can be inspected and if necessary washed to reduce the risk of weed spread'. It is important to ensure all vehicles and machinery are inspected prior to entering and leaving. This is particularly important for vehicles and equipment involved with working on and around native veg where the possibility of seed spread and subsequent germination and establishment has a greater chance of occurrence.
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Noted and amended below.

Redbank will build a wash down area so that all vehicles and equipment arriving and leaving the site can be inspected *prior to entering and leaving* and, if necessary, washed to reduce the risk of weed spread. *Particular attention will be paid to vehicles and equipment that is destined to, or has returned from, working on and around native vegetation, such as vehicles involved in exploration or clearing for expansions.*

WEEDS 04	The list of potential weeds that could potentially invade the site requires further work (page 139-40). Recently an outbreak of Parthenium weed (Class A/C) occurred at the Wollogorang Station homestead, approx 40 km from the mine site. Although eradicated, the site is still under monitoring. Rubber vine (Cryptostegia grandifolia – Class A/C) is known to exist approx 25 km from the NT/QLD border. Given the close proximity to the QLD border and the high volume of traffic entering and leaving, other potential weeds that should be included in the report include: Parkinsonia (B/C), Bellyache Bush (B/C), Caltrop (B/C), Grader Grass
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	(B/C), Prickly acacia (A/C).
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Noted and amended below.

Table 6.2-1: Potential Weeds and their Management Priority

Common Name	Weed Species	Schedule Class	Priority	Threat to Natural Ecosystems
Parthenium Weed	<i>Parthenium hysterophorus</i>	Class A/C	Very High	Severe
Rubber Vine	<i>Cryptostegia grandifolia</i>	Class A/C	Very High	Severe
Prickly Acacia	<i>Acacia Nilotica</i>	Class A/C	Very High	Severe
Mexican Poppy	<i>Argemone ochroleuca</i>	Class B/C	High	Severe
Candle Bush	<i>Senna alata</i>	Class B/C	High	Severe
Khaki Weed	<i>Alternanthera pungens</i>	Class B/C	High	High
Noogoora Burr	<i>Xanthium strumarium</i>	Class B/C	High	High
Parkinsonia	<i>Parkinsonia aculeata</i>	Class B/C	High	High
Bellyache Bush	<i>Jatropha gossypifolia</i>	Class B/C	High	High
Grader Grass	<i>Themeda quadrivalvis</i>	Class B/C	High	High
Caltrop	<i>Tribulus cistoides</i>	Class B/C	High	Moderate
Nut Grass	<i>Cyperus rotundus</i>	Not Listed	Medium	Moderate
White Cedar	<i>Melia azedarach</i>	Not Listed	Medium	Moderate
Wild Passion Fruit	<i>Passiflora foetida</i>	Not Listed	Medium	Moderate

(Reference: Smith 2002)

Biodiversity 05	Little or no information on monitoring management actions was presented in the EIS or the draft EMP, particularly in relation to threatened species. This needs to be addressed. There needs to be an explicit monitoring program for all threatened species, with sufficient power to allow detection of any significant decline and should be an explicit target in the EMP.
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Redbank are of the opinion that the greatest ongoing risk to threatened species from proposed mining activities would be contamination of ground and surface waters. Contaminated water could alter habitat and food availability, and would also impact the species directly through poisoning drinking water. It was also assumed in the development of the draft EIS that the rigorous water quality monitoring regime proposed would be much more efficient at detecting and ameliorating negative impacts to groundwater and surface water quality than would monitoring the threatened species populations themselves.

Redbank has been advised in the past that, due to the lack of available individuals, threatened species monitoring does not necessarily provide reliable data to indicate the success or otherwise of environmental management. As such, the comprehensive water monitoring plan has been proposed in order to detect detrimental impacts to these species long before a species is found to no longer exist in a particular location.

Nonetheless, Redbank acknowledge the value of research data obtained through repeated surveys, and are committed to regular surveys to monitor the presence or absence of species, including threatened species, over time in the same survey locations. The draft EIS should have been more explicit in detailing the frequency of the proposed flora and fauna monitoring surveys; further detail follows.

In the 'Monitoring and Corrective Actions' section of the Flora and Fauna protection section of the Draft Environmental Management Plan (Appendix C of the draft EIS), it states; "Ongoing monitoring will be undertaken to assess the impacts of mining works and expansions on local flora and fauna (compare to baseline data)". In Chapter 6.2 of the draft EIS, it was also stated that Redbank will engage in (either actively or by providing support for) further ecological research in the region. Redbank would like to clarify that Carpentarian Rock-rat and Gouldian Finch monitoring will be conducted on an annual basis. General Biodiversity surveys may be less

frequent – every second or third year of operation- and will be consistent and comparable with the baseline survey (May 2009) outlined in Appendix E of the draft EIS. Additional fauna survey sites may be added as necessary (for example, to assess the success of rehabilitation measures). Redbank and EcOz will seek advice from the NT Biodiversity Division on Rock-rat and Gouldian Finch survey methodologies and align with their preferred monitoring outcomes. Redbank is in an ideal location and situation to dramatically increase scientific knowledge of Carpentarian Rock Rats and are keen to become involved in a regular monitoring program that will not simply monitor the population and potential impacts but provide information that may benefit all stakeholders and in particular benefit the management actions that can ensure the survival and proliferation of this endangered species.

Environment Centre 37	In the EMP, p. 36: Weeds and pest animals within the project area should be less prevalent not just “no more prevalent” if management plans are actively implemented and followed through. Also, a detailed weed management plan needs to be developed as soon as possible. Ideally, it should have been in place before further exploration activities commenced.
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Noted - The sentence in the EMP should have read; *through preventative measures, Redbank will minimise introduction of new weed and pest animal species. If new species are detected, management plans will be put in place to eradicate. Existing weeds and pest animals will be monitored and managed in conjunction with the land owner and government authorities to minimise population increase and spread.* The draft project EMP reflects this change and will be submitted for approvals in the near future.

The weed management plan is also incorporated within the draft EMP, including weed management strategies, will continue to be updated annually in conjunction with submission of the MMP.

Environment Centre 29	p. 130: “Mine operations will cease should significant impacts be detected...” – the proponent needs to provide more information about what remediation actions they will undertake if this scenario were to occur.
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The “Mine operations will cease should significant impacts be detected...” is written in the context of potential impacts and management of flora and fauna and particularly with regard to unforeseen events or unintended consequences.

This statement should have qualified that should proposed monitoring programs detect negative impacts or measurements which consistently fall outside of an identified acceptable range or an unintended event occur, that elements of the mining operation likely to be contributing to negative consequences will be suspended while remedial action is taken. The exact means of detecting negative impacts, triggers for response (**Appendix I**) and specific remedial actions (**Appendix C**) will be identified within the Environmental Management Plan and also separate guiding documents such as the Waste Discharge Licence. In all instances remedial actions will attempt to restore the state of the environment to which it was before the negative change was detected.

Biodiversity 03	No surveys were conducted to detect Gulf Snapping Turtle (<i>Elseya lavarackorum</i>).
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Contrary to the guidelines, Redbank and EcOz did not seek a field expert to comment on the likelihood of presence of the Sawfish and Turtle within the project area. EcOz’s Principal Ray Hall has extensive experience with the freshwater turtles of northern Australia. Ray also provided indigenous assistants and advice to WA Museum researchers who conducted a survey of Arnhem Land Rivers for the Freshwater Sawfish. This personal knowledge base, and knowledge of the Redbank site and its immediate downstream environments leads EcOz to the opinion that it would be very unlikely for these species to inhabit areas potentially impacted by the future mining activities. Results of a literature review supported for our summations. Throughout field surveys and water monitoring events within the project area, potential habitat was sought for the sawfish and turtle, and it was concluded by field ecologists and researchers that the highly ephemeral nature and rocky substrate of the water courses within the project area did not constitute potential habitat for the sawfish, and were unlikely to constitute potential habitat for the Gulf Snapping Turtle.

It is believed that natural barriers in the waterways would further restrict these species from entering the vicinity of the project area. Three Creeks have their headwaters in or near the mining lease; Redbank Creek, Hanrahans/Echo Creek and 7 mile Creek. Approximately 2.5 km downstream of the mine on Echo Creek, there is a waterfall that would prevent the upstream movement of the Sawfish. Similarly, 7 mile Creek has a waterfall known as the ‘Jump Up’ located approximately 1 km from the mine area. Redbank Creek does not directly enter Settlement Creek, but instead ends in a flood out zone that appears to only connect with Settlement Creek during the wet season. As a result, it is possible for the Sawfish, and the Turtle, to enter Redbank creek but only at certain times of the year. *Elseya lavarackorum* is restricted to rivers draining into the Gulf of Carpentaria in the Northern Territory within and between the Calvert and Nicholson River systems (the Redbank project area is within the Settlement Creek basin, which lies between the Calvert and Nicholson Basins). The Gulf Snapping Turtle species is known to occur in riverine habitats, but little is known about their preferred microhabitats. In summary, although the presence of *Elseya lavarackorum* and *Pristis microdon* would be unlikely in the project area due to the ephemeral nature of the waterways, it is likely that these nationally listed species are present within the distant downstream river systems.

Redbank acknowledge the paucity of available data on the Gulf Snapping Turtle, and the fact that further research is necessary in order to better understand the distribution and habitat requirements of this species. In response, Redbank propose to conduct a targeted survey in Redbank Creek (the only waterway in the project area that may provide potential nesting habitat for the turtle). Part of this survey would involve habitat assessment over the upper lengths of this ephemeral creek, and scouting for potential nesting sites. Any signs of feral pigs and notes on the extensiveness of habitat damage will be recorded. This survey would be planned for early dry season 2010, aimed at gathering an idea of absence or presence and degree of feral pig impact on this species. This survey would increase available baseline information on the Gulf Snapping Turtle, however Redbank do not propose that this survey would be repeated as an impact monitoring tool. Redbank will continue to work with Wollogorang Station to provide feral animal control on the mining lease. The use of firearms will necessarily comply with the conditions of the mining lease. In the meantime, and should targeted surveys fail to detect the species, best management practice is still to assume the presence of the Gulf Snapping Turtle, and to manage accordingly. As Redbank will not be clearing or directly impacting the riparian systems, comprehensive monitoring of ground and surface water quality as proposed in the draft EIS will allow early detection and thus mitigation of potential deteriorating water quality within the downstream river systems.

The Freshwater Sawfish *Pristis microdon*, is highly unlikely to ever inhabit the ephemeral creeks of the project area, however it is likely to inhabit downstream environs. All of Redbank’s proposed management and monitoring measures are directed toward minimising risk and enabling early detection of any deterioration in downstream water quality, which constitutes the only potential impact to this species from mine expansion. Active trapping should not be proposed for the Freshwater Sawfish (rather it should be assumed present in downstream environs) due to the fact that it is difficult to ensure the survival of individuals captured during targeted surveys.

Biodiversity 02	The information contained in the terrestrial fauna survey report and sampling effort is considered adequate, however, it is noted that the flora surveys were restricted to the fauna survey sites and not the entire lease area, and therefore may have failed to detect rarer species.
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Fauna survey site locations did target preferential habitat for known threatened fauna and included monsoon forest habitat (for the purposes of confirming presence of the Rock-rat), and Snappy Gum forests (habitat of the Gouldian Finch), but otherwise focussed on surveying potential impact areas rather than spanning available vegetation types. Thus there is the potential that the surveys failed to detect rarer flora species.

As outlined in Appendix E of the draft EIS, NT Flora Atlas records within 20 km of the project area did not include any species listed as threatened under *EPBC* or *TPWC Acts*, and the EPBC database search did not indicate the potential for nationally threatened flora species to occur within 30 km of Redbank. However, five species are considered Near Threatened in the Northern Territory (*TPWC Act*), with a further eight species being recognised as Data Deficient and four species ‘Not Evaluated’ under NT classification criteria. These known species of concern were actively sought, however no threatened flora species were identified within the survey sites in monsoon forest of Masterton’s Gully, nor were threatened species recorded at the survey sites

Biodiversity 06	The development has the potential to impact the conservation values of the area, notably the Carpentarian Rock Rat. More stringent mitigation measures are required to ameliorate the potential impacts.
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We hope that the clarifications in this supplement document provide for increased confidence in the adequacy of the mitigation measures proposed in the draft EIS.

Biodiversity 04	SUMMARY OF IMPACTS AND MANAGEMENT FOR FAUNA AND FLORA A summary of potential impacts and management options for species of conservation significance are presented in Table 6.2-6. Overall, the assessment is considered to be adequate for the majority of species. However, the assessment is considered to be inadequate for the following three species:
	Carpentarian Rock Rat – The presence of a population of <i>Zyzomys palatalis</i> at Masterton Gorge is significant. It is the smallest of the five known populations for the species (two sites at McDermott’s Springs are probably one population), and therefore has the greatest potential for extinction. Based on the information provided in the EIS, the proposed expansion of the mine adds considerably to the risk of extinction of this population in the following ways: degradation of habitat from fire, weeds, cattle and draw down of aquifer; and increased risk of predation from introduced predators. The close proximity of the camp to Masterton Gorge, the increased work force and potential for expansion, and the existing presence of weeds in the gorge add to this risk. In the document, the proposed management options are pooled for all monsoon forest species, which is considered not to be adequate for <i>Zyzomys palatalis</i>. It is recommended that a separate set of management actions are specified for <i>Z. palatalis</i>. These should include: no clearing of any monsoon forest habitat, no clearing within 500 m of monsoon forest habitat, a complete ban on the cats on the mining lease, a feral cat control program be instigate to remove any cats from the mining lease, fire management be implemented to exclude all fire from the monsoon forest and the 500 m buffer, an assessment of the proposed water use for the camp and monitoring of the aquifer to ensure spring in the gorge is not impacted and visitor access to the gorge be controlled.
	Carpentarian Grass Wren - The Carpentarian Grasswren is restricted to sandstone outcrops within the Carpentarian and Adelaidean systems of the Gulf of Carpentaria (Woinarski et al. 2007), and in the NT is known from only a small number of sites, including in the China Wall area. Recent searches of all known sites for this species in the NT have located the species only at two sites on Wollongorang Station (Perry 2005; A. Fisher, NRETAS, pers. comm.). The proposed expansion of the mine adds considerably to the risk of extinction of this population through degradation of habitat from fire. It is recommended that fire management actions specified for the Carpentarian Grasswren be changed to exclude all fire to encourage growth of Spinifex.
	Gouldian Finch – The Gouldian Finch was regularly observed throughout the mining lease during the fauna survey. The species breeds during the dry season in <i>Eucalyptus</i> spp associated with sandstone hills and ranges, and therefore it is likely that a breeding colony is located within the local area. The proposed expansion of the mine adds to the risk of extinction of this population through degradation of habitat from fire, the loss of breeding habitat and the contamination of freshwater sources. It is recommended that management actions be extended to include strict fire management of the lease to protect food and nesting habitat, ensuring water contaminated water bodies are not used by finches, and consider the installation of artificial watering points.
MUSEUM 01	The draft EIS is of a high standard and appears to identify and address all major issues that might impact on individual fauna species and/or communities. Species of conservation

BIODIVERSITY 04

We acknowledge the importance of the Rock-rat population at Masterton's Gully, especially considering the fact that it is the smallest of the five known populations. Redbank is committed to reducing the risk of extinction of this population, and we have separated management options for the Rock-rat from other monsoon forest species below. We maintain that management of all monsoon forest-dependent threatened species would best be approached through overarching best-practice management of the monsoon forest in Masterton's gully. Thus, the refined and additional management measures for the Rock-rat proposed as follows will also minimise impacts to other species of conservation significance, such as the Carpentarian Antechinus *Pseudantechinus mimulus*, Northern Quoll *Dasyurus hallucatus*, Ghost Bat *Macroderma gigas*, Derby White-browed Robin *Poecilodryas superciliosa cerviniventris*, and Orange Leaf-nosed Bat *Rhinonictis aurantia*.

Redbank will not clear any monsoon forest habitat, and will not clear within 300 metres of monsoon forest habitat. Redbank cannot commit to a 500 metre buffer because the camp is currently within 500 metres of the monsoon forest at Masterton's Gully. Clearing for camp expansions is not necessary, and new camp infrastructure will be located to the east of the existing camp (in the opposite direction to the gully and escarpment) – further detail is provided in **Chapter 3** of this Supplement document. A buffer of 300 metres of vegetation surrounding the Gully is sufficient to maintain for fire and weed management reasons, and will provide sufficient habitat for the Rock-rat, which is unlikely to range far from monsoon forest (Puckey *et al.* radio-tracking studies of 2004 indicated that the rats forage a maximum of 80 metres away from their monsoon forest).

Recovery actions outlined in the Rock-rat's revised recovery plan (Puckey *et al.* 2004) to which Redbank may be able to contribute include:

- **Implement fire, cattle and feral predator management strategies that will maintain or increase habitat quality and extent at existing sites**

Management strategies to protect thickets from fires will be developed. These will include annual assessment of fuel loads at thicket margins, fuel reduction burning around buffer edges in the early dry season, and implementation of fire breaks around the 300 metre vegetation buffer if recommended by Bushfires NT.

Fencing for the exclusion of cattle will be considered for Masterton's Gully should further research and monitoring highlight the need, however the cattle are the property of Wollgorang Station and any cattle management strategies would need to be approved by the owners.

The only existing weed in Masterton's Gully is Hyptis *Hyptis suaveolens* (in addition, a very small amount of introduced Wild Passionfruit *Passiflora foetida* and a couple of Mango Trees *Mangifera indica*). Hyptis is currently scattered throughout the base of the Gully, which indicates that it has been present from some years. The rocky substrate of the gully is inhibiting the growth of the Hyptis such that it is highly unlikely to form impenetrable thickets. *Hyptis suaveolens* is generally fire resistant (Smith 2001), thus it provides some fire protection to the monsoon forest habitat of the Gully. Hyptis is, however, a Class B weed under NT legislation and therefore its spread must be controlled. Redbank plan to spray Hyptis around the base of the gully at the end of this wet season, and will monitor the extent of the existing Hyptis infestation annually. Should the Hyptis infestation prove to be spreading throughout the Gully, management actions will be implemented, and will involve foliar spraying the plants with herbicide, with annual follow-up spraying as required. Redbank will monitor the site quarterly following the spraying to ensure that the Hyptis is not replaced with new invasive species or native grass species that may increase risk of wildfire. Redbank do not propose to initiate management if the infestation within the gully is stable on the belief that the risk of wildfire, a primary threat to Rock-rat habitat, may increase with the removal of the fire retarding weed.

We note that the management actions listed in the draft EIS omitted to account for feral predators. Puckey *et al.* (2003) outlined that the current direct threat to *Zyomys palatalis* is feral cats. In order to ensure that the mine does not increase the risk of new predators being introduced to the area, Redbank will ban cats and dogs from entering the lease for the life of the mine, and staff and contractor inductions will emphasise this ban. Redbank will maintain a feral cat trap at the base of the gully (checked and rebaited daily). Any cats trapped will be euthanased

in accordance with Animal Ethics requirements. Redbank will continue to work with Wollogorang Station to provide feral animal control on the mining lease. The use of firearms will necessarily comply with the conditions of the mining lease. Redbank will also support (through land access agreements and logistics) feral pig programs as another off-set measure against the potential environmental impacts arising from the expansion.

- **Continue studies of diet and habitat requirements that will assist in the conservation management of the species**

Redbank will support any external studies that are to be conducted within the project area, and, under the guidance of the NT Biodiversity Division, will conduct annual monitoring of Rock-rats within Masterton's Gully..

- **Continue studies on population structure and demography**

Redbank will support any external studies that are to be conducted within the project area, and may implement surveys to gather requested data from authorities.

- **Establish iterative PVA models that will incorporate new biological information as it becomes available**

Redbank will support local Carpentarian Rock-rat research that will provide biological information for input into the PVA models.

- **Other Specific Management Commitments**

In addition to the management actions listed above, Redbank staff, visitors, and contractors will not be permitted to visit Masterton's Gully (reinforced through inductions) unless they are assisting with surveys or monitoring programs for the area.

Potential implications, monitoring and proposed management of groundwater drawdown on the Rock-rat and general habitat is discussed in **Chapter 6.3** of this Supplement document.

BIODIVERSITY 04

We acknowledge the fact that potentially the last two Carpentarian Grasswren populations in the NT are on Wollogorang Station (Perry 2005; A. Fisher, NRETAS, pers. comm.), thus avoiding impact to this species is extremely important. However, we argue that expansion of the mine will considerably add to the risk of extinction of these populations through fire. If it were possible, Redbank would exclude all fire, however even the best fire management strategies cannot guarantee exclusion of fire. Redbank is further restricted through being only a leaseholders of the land that supports the Grasswren. Redbank hold the mining lease (ERL94) that incorporates a small area of potential Grasswren habitat. However, only the land owners (Wollogorang Station) and potentially the Native Title holders have the authority to prescribe general land management practices. As a mining leaseholder, Redbank are committed to avoiding creation of offsite wildfire through their mining activities, and will encourage and support fire management practices conducted by the land owner.

The risk of starting wildfires through proposed mining activities is low, and Redbank will maintain sufficient resources on hand to extinguish a wildfire should it start through activities on ERL94.

BIODIVERSITY 04, Environment Centre 09.

Redbank acknowledges the likelihood that there may be a breeding colony of Gouldian Finches within ERL94 or the local area. We argue that the proposed expansion of the mine adds to the risk of extinction of this population through fire, as the risk of wildfire resulting from proposed mining activities will be extremely low. We do acknowledge that within the project area, a certain area of buffer vegetation around Gouldian breeding habitat will be cleared, and a small area (2.5 hectares) of recognised Finch breeding habitat (*Eucalyptus leucophloia* woodland) may be necessarily cleared for haul road construction. It is important to note that the recognised Gouldian breeding habitat in the region is not limited to the project area, and also that the 2.5 hectares proposed to be cleared in the project area constitutes only a small percentage (0.5%) of the total estimated area of *Eucalyptus leucophloia* woodland in the ERL (refer to **Table 6.2.2** following). Redbank take on board the requirement that when Snappy

Gum trees are necessarily cleared, those trees with substantial hollows will be retained. The haul road location has been developed to follow the current access track where possible, and route choice will minimise or avoid clearance of mature Snappy Gums. Should, after all alternative options are exhausted, mature Snappy Gum trees be necessarily cleared, a suitably qualified ecologist will be engaged to check for hollows in trees prior to clearing.

Gouldians are identified as potentially breeding between the months of February and October (PWSNT Gouldian Finch Fact Sheet) which is the majority of the year and all of the dry season, making a blanket avoidance period very difficult. Ongoing monitoring will identify any populations in residence for an extended period in order to ensure that breeding Gouldian Finches are not disturbed.

The current mapping identifies the reconfiguration of waste dumps so as to avoid areas of Snappy Gum. Roman Nose, Punchbowl, Camp Valley, Quartzite and San Manuel ore bodies were included within a map in the draft EIS, however the draft EIS is concerned only seeking approvals for and identifying the impacts arising from the mining of Redbank, Azurite and Bluff deposits, associated roads and waste dumps and further activities at the SFP area. Any proposed development on these additional mentioned ore bodies would require a separate and new public approvals process.

Redbank acknowledges that there is a risk of contamination of freshwater sources from which the Finches may drink, and hope that improving the quality of currently degraded watercourses will assist with this problem. For example, native bird species were regularly observed drinking from known contaminated areas of Hanrahan's Creek. Redbank agrees that it is important to ensure that not only Gouldian Finches, but all native fauna species, do not utilise contaminated water bodies. Redbank propose to fence off Sandy Flat processing area in order to exclude stock and native vertebrate fauna, and mine developments containing potentially contaminated water (i.e. pits and TSF) will be designed to discourage visitation from birds.

In terms of fire management, Redbank as the leaseholder can only support the wishes of Wollogorang, thus Redbank's proposed fire management strategy will stand as outlined in the draft EMP. The project area will be managed in a way that reduces extensive late dry season fires through a partnership with Wollogorang, the land owner. Redbank will encourage liaison with Bushfires NT for fire management advice, and engagement of local traditional owners to conduct the burns. In addition, Redbank will minimise the risk of wildfires originating through their own mining activities, and will maintain resources on site to extinguish a fire should it start.

Table 6.2-2: Proportions of Proposed Clearing within ERL94 for the mining of Oxide ore.

Proposed Expansion	Pre-disturbed Areas (m ²)	<i>Eucalyptus leucophloia</i> (Snappy Gum) (m ²)	<i>Eucalyptus pruinosa</i> (Silver Box) (m ²)	<i>Corymbia dichromophloia</i> (Small-fruit Bloodwood) (m ²)	<i>Eucalyptus tectifica</i> (Darwin Box) (m ²)	Monsoon Forest (m ²)	Total Area of Expansion (m ²)	Total Area of Clearing Required (m ²)
Waste Rock Dumps								
Bluff	0	0	0	10500	0	0	10500	10500
Redbank Azurite	3160	0	0	0	5300	0	8460	5300
Open Cut Pits								
Bluff	7000	0	0	10200	0	0	17200	10200
Redbank	14400	0	0	0	0	0	14400	0
Azurite	11850	0	0	0	1400	0	13250	1400
Other Infrastructure that will require clearing of native vegetation								
Haul Road - Sandy Flat Pto Bluff (6 km)	33300	25000	7500	46000	19200	0	131000	97700
Mine Camp Road	0	0	0	27132	11206	0	38338	38338
Process Plant Area Expansion	0	0	0	24000	0	0	24000	24000
TOTAL PROPOSED CLEARING	n/a	25000	7500	117832	37106	0	257148	187438
PROPORTION CLEARED	n/a	0.50%	1.20%	1.00%	1.40%	0%	1.30%	

Table 6.2-2 was removed from the draft EIS because the level of precision is uncertain considering constraints associated with GIS and GPS accuracy and inability to clearly delineate various vegetation types on the ground to within tens of metres. We have included this table in the supplement in response to comment **Biodiversity 04**.

6.3 Protection of Water Resources.

Environment Centre 13	Page 38: Redbank Mines Ltd. need to further investigate dewatering options in order to adequately manage contaminant flows. This work is critical for ensuring the company has a net positive impact. Details of planned dewatering should be made available for evaluation as soon as possible, to determine whether the company is actually on track to improving on-site environmental management.
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Redbank has invested heavily into research and action into dewatering options for the Sandy Flat Pit. The treatment and release (in accordance with WDL 175) of up to 600 ML of Sandy Flat Pit (SFP) water has been underway since September 2009 is aimed at reducing the pit water level to a point where it can contain all of the 2009/10 wet season inflows and remain at a topographic level that is below the point at which ground waters express into Hanrahan's Creek. Redbank will maintain the water level of the SFP in order to remove the potential for contaminated water to enter the natural system during the wet season, resulting in improved off site and downstream water quality. Once production begins the remainder of the water will be utilised for the oxide mineral extraction process further lowering the pit water levels, far beyond the potential amount of wet season inflows.

Environment Centre 05	Page 21: The EIS states that "the amount of water that will have to be discharged [from the on-site pits] is unknown. Further hydrological studies need to investigate this issue to allow for the development of a sound water management plan. This is not something that can be brushed aside, given that the site's environmental legacy issues centre on poor water management.
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Noted – Current and future water management is the highest priority environmental management action identified by Redbank. Further Hydrogeological studies are identified in this supplement.

Environment Centre 32	p. 168: The Environment Centre NT seeks greater assurance from Redbank Mines Ltd. that the environmental values of the currently undisturbed Redbank Creek will be protected and not compromised by the mining expansion.
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Redbank Mines is acutely aware of the impacts that mining can have on the environment. Further baseline studies are planned for Redbank Creek during 2010 and prior to any major new disturbances. Waste rock dump locations and designs will minimise erosion potential and management actions will prevent sediment movement into the creek. Acid based accounting studies of the Redbank and Azurite deposits are underway and groundwater studies will be up scaled in early 2010. WRD's will be designed to eliminate or at worst minimise release of acidic water to the environment. A detailed monitoring program will be established to monitor potential water quality impacts. Baseline water quality and macroinvertebrate information exists.

Member Public (PJ) 01	The Guidelines for Preparation of an Environmental Impact Statement (EIS) for the <i>Expansion of the Redbank Copper Oxide Leaching and Sulphidic Ore Operations - Redbank Copper Ltd (dated September 2009)</i> state that the draft EIS should enable interested members of the public to understand the environmental consequences of the proposed action. At this site adverse impacts to the aquatic ecosystems in Hanrahan, Echo, Twelve Mile and Settlement Creeks have been noted since at least 1999. These impacts have resulted from the extremely high concentrations of copper which have been found in Hanrahan Creek (over 50,000 µg/L as total Cu), Echo Creek (over 6,000 µg/L as total Cu), Twelve Mile Creek (over 800 µg/L as total Cu) and Settlement Creek (over 200 µg/L as total Cu). The source of that copper is contaminated water that enters Hanrahan Creek either through the aquifers that underlie the Sandy Flat site or from surface water leaving the Sandy Flat site. The information contained in the draft EIS does not enable the impact the proposed development will have on the concentration of copper leaving the Sandy Flat site through either the groundwater or the surface water systems to be understood. On Page 113 of the draft EIS the proponent agrees with the above statement by stating that The aquifers are largely unknown, which means that the affects of groundwater contamination and the extent of its dispersal beyond the direct vicinity of the Mine may be largely underestimated.
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The current degraded situation on site results from the legacy of a mine site that was placed into long term maintenance rather than long term containment. The highly reactive transition and sulphidic ores that remained on the ROM pad were not managed or treated, simply a rainfall catchment system was installed to ensure that stormwater influenced by the ROM pad were directed into the Sandy Flat Pit. The size of the catchment provides inflows that cannot be contained during years of high flow, resulting in overflow of the pit and surface water flows into the environment. No pit water reduction strategies other than moving the pit water to the TSF were implemented during this time. Groundwater investigations into the site have begun since Redbank Mine Ltd's acquisition of the site, and it is known that the Sandy Flat pit (SFP) expresses into surface waters at Hanrahan's creek. The treatment and release (according to WDL 175) of 600ML of SFP water that has been underway since September 2009 aims to reduce the pit water level to a point where it can contain all of the 2009/10 wet season inflows and remain at a level that is topographically below the point at which waters express into Hanrahan's Creek. The results of this activity will ensure no potentially contaminated surface water flows into the environment and also isolate the impacts of the pit on the groundwater which will be monitored through the new monitoring bores. More EMB's will be installed during 2010, and further detailed hydrogeological investigations are planned. The point of this study to better understand the situation and continue to eliminate the potential for pollutants to leave the site. The 2009/2010 wet season will be the first time contaminated surface water flows have not entered the environment. Groundwater expressions of the pit water into the environment will be determined by monitoring after the wet season.

Member Public (PJ) 02	The proponent also states that groundwater yields are expected to be low in bores intersecting the groundwater system that feeds contaminated water into Hanrahan Creek from the Sandy Flat site (refer Pages 175 and 176). The following information, however, tends to suggest that groundwater yields from bores on the Sandy Flat site may in fact be significantly higher: 1. Data was obtained from 17 bores in the vicinity of the Sandy Flat Pit from the NRETAS Map Internet Site. Yields ranged from 0 to 10 litres per second with the mean yield being approximately 2.5 litres per second. Bore RN029527, drilled in September 1994, airlifted 10 litres per second. Bore RN029527 was reported as being located in the “NE corner of the pit”. 2. In Redbank Copper Limited’s 2009 Annual Report (downloaded from the Company’s website www.redbankcopper.com.au) which was lodged with the Australian Securities Exchange Limited on the 21 October 2009, the company stated that Three reverse circulation holes (SFRC09-001,003,005) have been completed at Sandy Flat for primarily resource delineation and metallurgical purposes. Drilling deviated significantly from planned, principally due to high water inflows, and the holes struggled to intercept the targeted zones. Results for these holes were not available at the time of printing. A major concern, therefore, with the current proposal is the decision to continue to base the processing plant and tailings dams at the Sandy Flat site, a site that has produced high copper loads in the creeks downstream of the site. Any decisions regarding placing the processing plant and tailings dams at the Sandy Flat site should be deferred until more detailed information is provided regarding the groundwater beneath the Sandy Flat site and its interaction with Hanrahan Creek, both in the wet season and the dry season. The failure to do this could result in a legacy of contamination much greater than that which exists today. It should be noted that this is contrary to what the proponent’s stated aim is. They state in the draft EIS that the risk treatment and management options proposed in the draft EIS have been developed with the aim of gradual improvement over time.
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Study of the EMB’s installed during late 2009 have identified that the SFP is the source of current high yields and artesian flows from bores around the site. The 40 hectares of catchment feeding directly into the pit and therefore the groundwater has charged the aquifer beyond the levels that could have been achieved prior to mining.

Mr Craig Hall, General Manager – Exploration, has also identified that the three reverse circulation holes (SFRC09-001,003,005) that were located on the edge of the SF pit targeting ore resources beneath the base of the pit experienced inflows from the open pit itself and not from ground water.

Redbank is carefully investigating all options and will give preference to minimize impacting on undisturbed environments. Therefore it makes sense to locate a new TSF and WRD at the existing plant as it provide synergies in rectifying legacy issues. Redbank is committed to provide new infrastructure in due regard of both the disturbed (SF Pit) and undisturbed environments within their mining lease and will only proceed with new infrastructure if it can be located and designed in accordance with best management practice.

We concede that 10 litres per second is more than a low yield. Groundwater studies that are underway and the ongoing reduction of SFP water via the treatment and release program that is underway and the proposed dewatering of the SFP for mining after 2011 will facilitate the conditions under which a thorough understanding of the groundwater can be achieved.

NLC 20	In general, the management and monitoring systems for surface and groundwater appear to be satisfactory. However NLC do not understand why the fish community analyses have not been undertaken as a part of surface water monitoring. Depending upon the species, fish are often utilized as a food source and the presence of high concentrations of metals may represent a health hazard and liability to Redbank. Fish community analyses would also represent a current baseline against which improvements made to the quality of nearby watercourses through management of the legacy issues could be measured.
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The focus of studies to date have been of the areas impacted by the off site migration of contaminated water. The baseline from which improvements can be identified in this system has been set at zero within Hanrahans Creek and fish monitoring will take place annually to detect improvements. Baseline information of fish communities in Redbank Creek is planned for the early dry season 2010. The involvement of Traditional Owners will be sought for this survey.

NLC 21	NLC believe that the post closure watercourse management programme suggested on page 187 is inadequate. Experience with Nabarlek and Rum Jungle suggests that quarterly monitoring for only 12 months followed by bi-annual monitoring will not demonstrate return to a sustainable environment. The monitoring programme needs to be determined at the time of closure and the first two to three years should be a continuation of the routine operational system to ensure that a steady state has been achieved following cessation of mining. Once this has been demonstrated, then a reduction in monitoring frequency can be entertained.
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Noted - Redbank are committed to continued monitoring and remediation until water quality and rehabilitation targets have been successfully achieved.

Water Resources 06	From the present geological information it seems that the shallow aquifer is transmitting water from the pit to the creek. How is this problem going to be solved?
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The installation of the 8 EMB's around the Sandy Flat Pit during late 2009 and the study of the geological logs and water data indicates that there is not a shallow aquifer or "palaeochannel" as previously hypothesized.

The simple solution to preventing the expression of pit waters into the surface waters via groundwater is to reduce the level in the pit so that it is topographically lower than any potential surface expression points. Redbank are currently simply treating water for release in an attempt to lower the water level in the SFP as soon as possible and reduce the potential impacts on the creek this year. Once production begins (planned for 3rd quarter 2010) then the plan and process will utilize much of the water in the pit so that its levels will be tens of metres below the late 2009 levels. The levels experienced during the last 15 years have been the result of the pit being the catchment for approximately 40 hectares of the mine site, a situation which will not be the case once operations utilize, clean up and maintain the site.

Water Resources 08	The average rainfall for the period 1889-2007 is 661 mm, for the period 1972-2007 the average is 796mm but for 1999-2006 the average is 1008 mm. High recent rainfall was also recorded at Wollongorang Station DR14707 with rainfall (annual total) of 1353mm in 2002/03, 1263 mm in 2003/4 and 1874 mm in 2005/2006. The EIS does not address the impact of high rainfall years nor appropriate management responses.
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Noted: Redbank are aware of the recent high annual rainfall figures and have developed the project based on variable monsoonal rainfall.

DRDPIFR 10	Further work is required to define the extents of the highly impermeable layer intersecting the current Sandy Flat Pit. Justification for why all the new bores are in the deep aquifer should be given. The data provided does not indicate slotting depth so it is difficult to determine what level of the aquifer is being sampled. Further information should be provided on the justification of new bore locations.
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Further work is scheduled to commence April/May 2010. The newly drilled investigative bores did not encounter the highly permeable layer - i.e. the layer is not continuous and/or is not as well developed between the SF Pit and Hanrahans Creek as previously thought. The October 2009 monitoring bores encountered little weathering at the top overlying fractured strata - there is no indication that a shallow and/or multiple aquifers exist between the SF pit and Hanrahans Creek as the weathering/shallow strata did not contain ground water. Only the shallow weathered portion of the bores has been cased with solid steel casings. Upon completion 50mm uPVC inserts were placed inside the 150mm diameter bore - these inserts comprised solid casings with a perforated screen across the bottom 15m. Bores were located to facilitate a preliminary assessment and characterization of the seepage zone (mapped by field traverses along Hanrahans Creek), including its possible extent, between the SF Pit and Hanrahans Creek and were completed in October 2009 - they have been included in the water quality monitoring program - testing are underway to ascertain the hydraulic characteristics of this zone by means of bore testing methodologies.

DRDPIFR 15	Water monitoring for a period of only 3 years post mining is overly optimistic. It is likely a minimum of 5-10 years would be more appropriate to the level of disturbance.
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Noted - Monitoring will continue until water quality targets are met.

DRDPIFR 16	Given that most of the freshwater in this area tends to be slightly acidic in its natural condition, the placement of PAF material in the base of pits may lead to unacceptable levels of metal contamination that may limit water use options for the future.
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Noted – this statement in the EIS refers to the potential management of PAF material accessed during the sulphide mining operations. This is no longer relevant.

EHA (NRETAS) 20	Table 6.3.2 - Average water quality in Settlement Creek - more information is required on the number of samples on which these averages are based to provide better indication of existing baseline conditions. All monitoring site data should also be included in table format as the graphs on the table are difficult to read and the log scale on the graphs make it difficult to interpret. Raw data should be provided to indicate the quantity and differences of concentrations (reported in the same units of measurement) at different times of the year. Table 6.3.2 should detail whether listed figures are total or filterable concentration, laboratory or field tested data.
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The averages in table 6.3-2 have been calculated from varying sample numbers, as can be seen from Table 4 of this Supplement. This variation is a result of accessibility issues discussed throughout the EIS and Supplement. These samples are taken monthly, and as a result, a more accurate understanding of water conditions will be gathered over time.

All analysis performed on surface and ground waters is tabulated and stored in databases. As a part of these databases, a “dashboard” has been created which highlights any breaches in water quality when compared to the relevant guidelines, i.e. ANZECC guidelines for Aquatic Ecosystems 2000. These dashboards (surface and groundwater) have been supplied in **Appendix E**. Unfortunately, due to the size and complexity of the water quality databases, it is not practical to tabulate all of the monitoring site data, however, databases will be supplied to interested parties in electronic format if requested.

Surface water samples are analysed for both total heavy metal content and dissolved (or filtered) heavy metal content amongst other information. All of this information is contained within the water quality databases, whilst table 6.3-2 uses total metals only to calculate the averages supplied.

NLC 06	Redbank anticipates that lining the base of the TSF with sludge will help seal it and prevent contaminated tailings water from passing through the dam wall and entering the creek. The geochemical nature, including the porosity of the sludge does not seem to have been determined, so we cannot properly assess the veracity of this statement.
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Please refer to response EHA (NRETAS) 05 in chapter 4 of this EIS Supplement.

EHA (NRETAS) 28	Table 6.3-6 only lists the groundwater quality for September and states that historical and recent groundwater data are included in appendix B. These data are not in Appendix B and should be included in the supplement to enable baseline assessment of existing groundwater quality. Table 6.3-6 states that the bores were sampled shortly after drilling and may currently not be representative of aquifer water quality. Any further samples that have been undertaken since September 2009 should be included in the Supplement to provide a better estimation of aquifer water quality.
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Noted - Historical and continuing bore data is supplied in this supplement at **Appendix E**.

NLC 09	In-pit disposal of tailings should have, but does not appear to have been considered as an alternative to construction of above ground dumps. In-pit disposal is of particular interest as the risk of chronic above ground release of ARD is mitigated and the risk to groundwater can be minimized if the pits are sealed.
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The alternative of placing tailings into abandoned open pits was considered but rejected, in the short term, for the following reasons:

- Most of the ore bodies continue at depth and further exploration is required so as to assess the potential for deeper mining. Placing of tailings into an open pit which has mineralisation beneath it would almost

certainly prevent that mineralisation from ever being mined in the future. A potentially valuable resource could be permanently lost.

- Most of the known ore bodies occur within areas of geological and structural complexity that are almost certainly connected to the groundwater systems. Placement of tailings in these future open pits, which would ultimately contain water from seasonal rains, could provide a direct connection between water in contact with the tailings and the groundwater system, which is likely to be undesirable.

In the event that both of these above issues are, or can be negated, then tailings disposal into an abandoned open pit could be a potential solution in the later years of the project.

DHF 05	The provision of an adequate potable water supply should be provided for mine sites, accommodation and work places. All water supplies collected from groundwater must be at least 100 metres from any effluent drainage system or other water bodies as described in the NT Code of Practice for Small On-site Sewage and Sullage Treatment Systems and the Disposal or Reuse of Sewage Effluent (The Code). Bottled drinking water may be considered on locations where it is not practical to source other potable water supplies.
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Noted - Currently, groundwater supply to both the camp and mine facilities is located over 100 m away from any effluent drainage system on site. Any site expansions will take this requirement into account and actions will be taken where necessary in order to conform with the NT Code of Practice for Small On-site Sewage and Sullage Treatment Systems and the Disposal or Reuse of Sewage Effluent (The Code).

DHF 06	All water users must be made aware that they will be responsible for the treatment of their own water supplies. If they transport community bore water to their own tanks they must take responsibility for chlorinating their water and maintaining their tanks.
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Noted - At this point, it is expected that all camp water will be supplied from the nearby bore. Redbank are fully aware of their responsibility to provide their staff with quality potable water.

DHF (Katherine) 12	Camp drinking water should be tested regularly to ensure it conforms to the Australian Drinking Water Guidelines, and to ensure the aquifer is not affected by mining operations.
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Noted - As part of the current monthly water monitoring program, camp drinking water is sampled and sent to a NATA accredited Laboratory for analysis. The results of this testing is then compared with the Australian Drinking Water Guidelines (ADWG) 2004. These results are also displayed on the noticeboard at the camp so that camp residents are aware of the quality of water used for drinking and cooking purposes.

EHA (NRETAS) 25	Table 6.3-7 - water balance is based on the average 32 year rainfall for Wollgorang Station. It may be more beneficial to base water balance on the average last 13 years measured at Redbank (Table 6.3-4), given that rainfall at this location has exceeded the Wollgorang mean annual rainfall for 7 of the last 13 years.
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Calculations on average annual rainfall data collected at Redbank Mine since 1977 result in an average yearly rainfall value of 916.74 mm. This average is lower than the value calculated for Wollgorang Station.

Noted, a new water balance has been compiled and incorporates both average minimum and average maximum rainfall events calculated from the last 13 years at Wollgorang. This water balance can be found at **Appendix H** of this Supplement document. This is comparable to the data at Redbank. The average of both Wollgorang and Redbank for annual rainfall were 1089 mm. The maximum average for Wollgorang is 1433 mm.

EHA (NRETAS) 21	With regard to the surface water data that has been presented in the EIS to define baseline conditions, Redbank should indicate whether the data has followed the baseline recommendations from ANZECC as per the EIS Guidelines (section 6.3.2): Reference to the
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	baseline recommendations (section 3.2.4.2 'Baseline data collection') and balance of indicators for measurement (chemical and biological, section 7.2.1) from ANZECC and ARMCANZ (2000) should be used as a starting point for initiating baseline data collection and ongoing monitoring. For aquatic systems, wet season or recessional flow surveys are to be included.
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The ANZECC guidelines recommend that baseline data should be gathered at 3 to 5 reference sites at least, and over a period of at least 3 years. Redbank currently has 9 reference sites. Sampling at these nine sites started in early 2008, 2010 being the third year of sampling. As such, it is believed that baseline data collected on site conforms to the suggestions within the ANZECC guidelines for aquatic ecosystems (Chapter 3.2.4.2). Four of these reference sites may necessarily change over time as they may be affected by future mining operations. Further reference sites, access permitting, will be added at the permanent springs in the area as a means of continually gathering baseline information. The springs have been sampled in the past and are incorporated into the surface water sample database.

The indicator selection process was guided by; ANZECC and ARMCANZ guidelines, previously monitored indicators, and to reflect potential legacy and future mining contaminants.

EHA (NRETAS) 30	Section 6.3.3 - As discussed previously in the alternatives section, Redbank will need to demonstrate the effectiveness of sealing the base of the old Tailings Storage Facility (TSF) with sludge from the water treatment process to stop contaminated tailings water leaking through the dam wall and entering the creek. Contingency actions need to be described for management of tailings seepage in the event that the sludge is not effective at sealing the TSF or when/if the sludge is removed to reprocess in the future.
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The existing TSF currently leaks into the southern low flow drain. During most wet seasons over the past 10 years, Sandy Flat Pit water has been pumped into the TSF in an attempt to reduce pit levels and thus avoid interaction between the pit water and outside environment, thus when Redbank Mines acquired the site, over ten years of pit waters had accumulated and concentrated in the TSF. Under recent Care and Maintenance, treated water and sludge from the treatment of the water with lime has been added to the TSF, neutralising the acidity of the previously added SFP water. Flows from the TSF into the south have also ceased, even though the TSF water level is high and treated water continues to be added, demonstrating that this path of subsurface flow has been effectively sealed. Water losses from the TSF are now being measured and compared to on site evaporation tests in an attempt to determine if there are other potential points of flow from the TSF. Future use of the TSF will involve the addition of and management of material that will not contribute to the potential contamination.

Environment Centre 01	p. 17: It is stated that groundwater will be required for processing requirements during the dry season. Limited detail has been provided about the capacity of the system to meet processing needs and how utilisation of the groundwater resource may affect the hydrological balance of the local landscape.
EHA (NRETAS) 31	Table 6.3-7 is a preliminary site water balance and indicates that future mining will require water in excess of existing sources. Redbank should consider the implications of groundwater drawdown or groundwater influx into the pits on nearby springs that may support threatened species (e.g. the Carpentarian rock-rat habitat has been found to inhabit Mastersons Gully fed by Muinyin Spring)

The water requirements of the current revised proposal are significantly lower than the previous project plan. It is anticipated that most structures will be at design capacity at the close of summer rains which will assist during the dry season. Naturally more water would have to be drawn from ground water resources (dewatering systems) during the dry season. The revised dry and wet weather water balances are presented in **Appendix H** and coupled with detailed modelling scheduled for April/May 2010 will address the impacts on all water sources. This detailed modelling will provide the information required to progress with plans for increased water use.

Potential implications considered and detailed below.

Groundwater overdraft develops when long-term groundwater extraction exceeds aquifer recharge. Water quality also suffers because groundwater pumped from greater depths typically contains more salts and minerals

(http://www.azwater.gov/AzDWR/WaterManagement/documents/Groundwater_Code.pdf). Previous research and studies have proved that declines in groundwater of only 1 metre have caused mortality of saplings of cottonwood and willow, with lesser declines of 0.5 metres reducing stem growth (Rassam *et al.* 2007). Unfortunately, measuring groundwater overdraft is limited by effects such as temporary and seasonal overdrafts that are sometimes falsely interpreted as overall changes groundwater levels. The effects of groundwater overdraft may take decades or centuries to manifest themselves (Alley *et al.* 1999); therefore vegetation monitoring is not likely to detect early overdrafts. In addition to temporal and seasonal constraints, little is understood of the likely indicators that would show a dependent ecosystem is responding to changes in groundwater levels (Sinclair Knight Merz 2001).

Muinyen Spring in Masterton's Gully is within sandstone escarpment habitat, and it is highly likely that both the spring and the monsoon forest within Masterton's Gully depend on a groundwater source during the dry season. We consider it likely that this groundwater sources from seasonal rainfall on the escarpment that is 'sponged' up by the porous sandstone, the permeable nature of which provides continuous contribution of water to perennial spring supplying Masterton's Gully.

Muinyin Springs are at elevation 197-207mAHD whilst Bagunganaje Springs are at elevation 206-216mAHD. Both springs lie at an elevation well above the proposed new Redbank (187-189mAHD) and Azurite (187-191mAHD) open pits, at least 1,000m, to the north-west of the Redbank Creek in a different sub-catchment. The springs drain from the base of the Masterton Sandstone which sits on the Hobblechain Rhyolite which overlays the Gold Creek Volcanics which host the aquifers that will be impacted by the existing and proposed pits. They are therefore very unlikely to be hydraulically connected to the proposed new pits. Water quality monitoring of the springs has also identified a difference in water quality parameters between the Redbank groundwater and that of the springs.

Nevertheless, the pits are to be dewatered and Redbank Mines will locate monitoring bores between the dewatering system and the springs to demonstrate that dewatering will not impact on the springs. Should the springs (negligible probability) be impacted upon by the dewatering activities, management options include;

- Placing a recharge bore between the dewatering bores and the springs;
- Supplementing flow in the springs with a similar quality of water from bores located somewhat closer to the springs;
- Piping water of a similar quality from the dewatering system to the springs; and/or
- Sourcing alternative camp water supplies other than the bore at the camp in order to avoid risk of overdraft.

The springs have been added to the regular monthly surface water monitoring and sampling regime.

Vegetation monitoring is not likely to provide a timely indication of groundwater overdraft, thus the spring flow levels and the standing water levels of the EMBs will be used as an indication over time as to whether the groundwater replenishment rates are keeping up with groundwater extraction for camp and processing requirements. Should groundwater drawdown outside of expected seasonal variation be detected, management options such as alternative processing options will be considered to avoid impact to the Gouldian Finch and other resident native flora and fauna species.

EHA (NRETAS) 35	Redbank should provide data from the water quality samples for Muinyin and Bagungedja Springs and camel Spring that improves/increases baseline water quality data for the region (pg 186).
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Noted - **Table 6.3-1** below is a table off all information gathered from the springs surrounding the Redbank camp as of Jan 08, 2010. Additional samples from these locations will be taken in the future to further ascertain baseline levels.

Table 6.3-1: Baseline Parameter Levels at nearby springs

Analyte	Units	ANZECC Guidelines 80%	ANZECC Guidelines 95%	Muinyin Spring	Bagungedja Spring
Aluminium	µg/L	150	55	60	130
Cadmium	µg/L	0.8	0.2	<0.1	0.2
Cobalt	µg/L	-	-	<0.1	<0.1
Copper	µg/L	2.5	1.4	3	28
Iron	µg/L	-	-	160	1620
Lead	µg/L	9.4	3.4	<0.1	<0.1
Manganese	µg/L	3600	1900	6	14
Nickel	µg/L	17	11	<1	<1
Uranium	µg/L	-	-	<1	1
Zinc	µg/L	31	8	<5	<5

- Aluminium and copper are high in all baseline samples throughout the area sampled.

EHA (NRETAS) 37	In the Draft EIS it is stated that proposed new open pits, waste rock dumps and other expansions will be located deliberately away from natural watercourses (section 6.3.3). Justification needs to be given in the supplement as to why the waste rock dump for the bluff deposit appears to be located on a drainage course (Figure 3.4.1).
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The topography around Bluff does not allow for the location of the WRD to completely avoid drainages. The chosen and preferred site therefore minimises potential impact to drainages via its location being at the uppermost limit of one very minor catchment and crossing another small existing drainage. The small drainage necessarily crossed by the proposed WRD will be diverted and managed as its upper catchment will be impacted by the proposed pit.

Water Resources 10	The document states (Section 6.3) that historical and recent groundwater quality data are in Appendix B but they are not.
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Noted: Historical groundwater data can be located in the dashboard at **Appendix E** of this document, and the full database is available upon request.

Water Resources 11	A detailed groundwater sampling protocol should be proposed including a list of relevant determinants. This should accompany proposed remediation actions if water quality deteriorates.
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The Redbank Water Management Plan (WMP) for 2009 outlines the groundwater sampling program, including analytes to be tested. The WMP with its appendices can be viewed at **Appendix F** of this Supplement document. This WMP is undergoing review for submission to DRDPRIFR at the end of February 2010. Groundwater sampling will be performed on a monthly basis for the next 12 months and updated results will be incorporated in forthcoming annual WMP updates. A groundwater management plan outlining the proposed actions to be taken if deterioration in groundwater quality is detected is currently under development and will be provided in the WMP for submission in February. This management plan will still not be complete until results from early dry season 2010 EMB installation and testing of existing EMBs are available. An update of progress will be submitted to relevant authorities within the next few months. The groundwater management plan will be an evolving document as further works are also planned to take place in 2010. Proposed management and monitoring activities include additional groundwater monitoring bores, continued sampling, and more in-depth hydrogeological modelling.

The trigger levels are now defined in **Appendix I** of this Supplement document. Once ground and surface water monitoring indicates trigger level exceedance over consecutive days, further monitoring and remedial actions will be put into place - refer to conceptual risk diagram for the site, and remedial action table in **Appendix C**.

EHA (NRETAS) 22	The macroinvertebrate sampling undertaken since 2008 to provide baseline data against which improvements in water management at the Sandy Flat Pit and future expansions can be measured against was not in the draft EIS. This report and data needs to be provided in the supplement as part of defining baseline conditions (including samples from March 2009)(section 6.3.1).
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The 2008 macroinvertebrate report produced by ERISS can be located at **Appendix A** of this Supplement document. The 2009 Macroinvertebrate samples were supplied to ERISS for sorting and classification, however due to other ERISS commitments, these samples are yet to be processed. An update on the macroinvertebrate sampling results will be supplied to the relevant authorities as soon as this information is received. Macroinvertebrate sampling is again expected to be performed during the early dry season of 2010.

EHA (NRETAS) 23	Further detail is required on the proposed water management infrastructure and management of surface water runoff to determine that design is suitable for site conditions. For example: The return water dam - what is its capacity and the large storm event it will be designed to? What is the location/capacity of different settling ponds including those for the waste rock dump? Where will the new proposed surface water management infrastructure in the form of surface water flow management devices and retention ponds go? These are not marked on the figures provided on the EIS. What rainfall event are they designed to and where will they discharge to? What is Redbank proposing as sufficient freeboard to store runoff from storm water and prevent spillages and overflows? What is meant by 'further detailed investigations to ascertain treatment requirements' (page 184) for stored water?
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Settling ponds WRD's; The sediment dam for the oxide WRD will be designed to hold 500m³ of sediment for every hectare of catchment. This stage 1 WRD is not expected contain any PAF material and as such sediment transfer is the only potential contaminant that requires management to eliminate impact on the surrounding environment. The inclusion of an access ramp will enable periodic removal of trapped sediment and management of the structure. Water quality monitoring of the release point will take place so as to ensure that the chemistry of the waters are acceptable and the turbidity levels are acceptable. If the water chemistry is unacceptable, a further containment or treatment (lime addition) regime will be initiated immediately. If the water turbidity is unacceptable then an increase in the size of the dam or an addition to it can be installed so as to further contain and

slow the water flow. The location of these structures have been identified to coincide with existing natural low points and are identified in the WRD plans.

The RWD will be designed during 2011 to include for an operating level (this level includes for average rain – essentially empty at the start of the rainy season and then full at the end of the season) plus the capacity to store the 50-year rain event plus 0.5m freeboard. This capacity is expected to be approximately 250-300ML.

Locations will be ascertained during the final design and after further details on the groundwater and geology of the proposed location are obtained. Final capacities will be ascertained when the extent of operations are known. The RWD is expected to capture stormwater from the SFP processing facility area and therefore is unsuitable for release into the environment. The RWD will only be required once the SFP has been dewatered and therefore the RWD will have an overflow channel installed that directs any excess flow into the pit so that it is contained on site and can be managed appropriately. The dewatering of the pit will ensure that the amount of flow into the pit could not reach levels where it could express into the surface waters as it does today, especially with the volume of the RWD excluded from entry into it.

New surface water management infrastructure will be established at the SFP processing plant area to ensure that all potentially contaminated storm water is captured and stored on site, initially in the SFP and then the RWD. Additional infrastructure may be installed to prevent the flow of clean waters into contaminated areas so as to reduce the amount of water required to be managed. This activity will be planned on site as developments occur.

Surface water management structures will be installed around new pits and WRD's to direct any surface flows of clean water away from the area of impact and into the natural drainages. The most significant of these is expected to be required upslope from the Redbank and Azurite pits as they are located mid slope. Conceptual locations have been identified in the EIS. Actual design and location will take place on site so as to ensure the structures account for the detailed topography and any potentially important cultural or ecological features.

All RWD water is expected to be utilised within the mineral extraction process and therefore will not require additional treatment. Settlement ponds will be monitored and if required, treatment measures will be designed in accordance with anticipated water flows and qualities.

Environment Centre 03	p. 21: It is indicated that the development of pits and waste rock dumps at the Bluff, Azurite and Redbank deposits will impact on these areas, but it seems that there is still very limited understanding of the hydro-geology of the nearby Redbank Creek drainage system. This understanding must be further developed before any mining expansion is permitted, to provide assurance that additional contamination problems will not develop.
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Noted and agreed. The installation of monitoring wells and associated studies will be conducted in the early dry season. The extent of the contamination problems at the Sandy Flat Pit are directly attributable to the fact that there is a catchment of 40 hectares that drains into the pit resulting in an excess of water. Pit closure for the newly proposed pits will preclude any inflows from the surrounding surface waters ensuring that pit water levels remain well below any points where it may express to the surface.

Environment Centre 08	p. 25: It appears that investigations into the nature of the site's groundwater system are somewhat preliminary. Results from the proposed 'detailed study' must be carefully analysed before a comprehensive site water management plan can be developed. This is a critical aspect of the mining operation and must be dealt with diligently.
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Noted and agreed. The detailed study is ongoing and focussing on a detailed understanding of the sites legacy issues and how to manage them and prevent this situation arising again once activities at the site cease. The current activities being performed to reduce the level of contaminated water in the SFP and the associated study of groundwater quality and levels through the series of bores established around the pit will provide valuable information to progress the overall groundwater model and management plan.

Water Resources 01	The EIS did not address some issues regarding of the water management plan, geology, groundwater and surface water requested by Guidelines for Preparation of an Environmental Impact Statement (September 2009).
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Logistical constraints prevented all of the work from being completed before submission of the EIS. Redbank Mines remain committed to address these issues once bore and laboratory test work have been completed during April/May 2010. This site has required significant study and Redbank have proven they are committed to understanding the water management issues on both legacy issues and future plans. The requirements identified in the EIS Guidelines, chapter 6.3 have been used to direct the development of the Groundwater Management Plan.

Environment Centre 34	p. 205: Groundwater research must be finalised before the new pits are built to ensure that the design of the infrastructure prevents groundwater contamination.
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Noted - Groundwater investigations around the new pits have begun and further works have been identified to be conducted in April/May 2010 as soon as drill rigs can access the site.

NLC 04	In 6.3.1, the hydraulic parameters for the aquifers near Sandy Flat (the proposed TSF site) are still to be determined. NLC therefore consider that the suggested lack of connectivity with nearby water systems has not been fully defined and necessary modeling is incomplete. The implication on page 178 that groundwater seepage in the Sandy Flat Area is not significant is inconsistent with the preceding paragraph which indicates that sufficient testing has not been done to draw this conclusion.
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The observation re the insignificance of seepage from the SF Pit will be continuously reviewed and particularly during further drilling, testing and sampling programs and subsequent modelling. However, an assessment of flows in Hanrahans Creek in October/November 2009 suggested that seepage from the SF Pit equals evaporation from an area between Hanrahans Pool and immediately upstream of Savannah Way. However, comments were made in view of seepage quantity and not quality – the impact of seepage on the Hanrahans Creek and streams further downstream are significant.

EHA (NRETAS) 26	Figure 6.3-9 illustrates the impacted groundwater zone expressing in the surface water in Hanrahans Creek. The EIS states that a bore testing program to estimate groundwater yields is yet to commence. This program will aim at determining the hydraulic parameters for the aquifer for detailed hydrogeological monitoring employing flow and mass transport finite element techniques. This information should be provided in the supplement, given that the proposed mining and processing at Sandy Flat Pit will require water in excess of the existing sources (Table 6.2-7) and that mining of the Sandy Flat Pit will require the Pit to be dewatered. Management of water pumped from the open pits should also be detailed.
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The bore testing program and modeling is scheduled for April/May 2010 and will be made available prior to mining/processing commences. These tasks are not essential for the dewatering of the SF Pit as dewatering will reverse flows towards the creek. Dewatering effluent will be treated in the plant to a pH of at least 7.0 in accordance with the Waste Discharge Licence prior to release, if required. Short term releases may be required until processing of ore commences after which there will be a water balance deficit as tailings disposal will require more water than what can be pumped from the dewatering bores. A detailed water balance is provided in this Supplement (**Appendix H**).

EHA (NRETAS) 29	Redbank states that the aquifers are largely unknown, which means the effects of groundwater contamination and the extent of its dispersal beyond the direct vicinity of the mine may be largely underestimated. A detailed study into the groundwater systems and resources is a requirement of the WMP and Redbank state that this study is currently underway. The data from this study and analysis of the results should be included in the supplement to aid in the assessment of existing groundwater impacts.
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Whilst the hydraulics of the aquifers are largely unknown, the drilling program undertaken in September/October 2009 indicated that the previously postulated permeable paleo-channel is absent in the seepage zone between the SF Pit and Hanrahans Creek. Drilling was undertaken after completion of ground magnetic and electromagnetic surveys which indicated that the seepage zone is devoid of significant structures which may have a bearing of the occurrence and movement of ground water. The creek bed was subsequently surveyed extensively to record seepage and other visual indicators to assist in mapping of the contaminated zone. Assessment of the monitoring data to date suggests that the drilling program largely defined the lateral extent of the seepage zone. This complicates the mechanisms of seepage as it is currently interpreted that seepage is taking place through fractured rock. Further drilling and testing is scheduled for April/May 2010 to coincide with geotechnical investigations for the proposed new TSF and WRDs. Data from these investigations together with water level and water quality data obtained since last year and during the current water treatment and associated pit water level reduction will be utilized to calibrate a finite element model which will be used for dewatering and seepage estimations and management.

EHA (NRETAS) 32	Redbank should propose measures to contain the plume if it is demonstrated that groundwater is migrating off the site.
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The current water treatment program and associated reduction of SFP water will provide valuable information via the existing and planned EMB's to determine the extent of any plume of contaminated groundwater that may exist. The future proposed dewatering of the SFP is also expected to provide further information on this subject as well as removing significant quantities of contaminated and potentially contaminated groundwater. The current water management plans are aimed at reducing any further potential contamination of the groundwater. If further measures are required to manage off site flow of contaminated groundwater then the installation of production bores into such plumes will be investigated.

Further contingency measures will be devised when each site specific facility i.e. WRD or TSF is designed – different measures will apply to different types of infrastructure and will depend on the characteristics (topographical and geological) of that location.

EHA (NRETAS) 24	Section 6.3 (pg 191) indicates that regular surface water will allow early detection of changes in water quality providing the opportunity to take action and make timely alterations in mining activities. Redbank should provide the proposed remediation actions/contingency plans if surface water monitoring does detect water quality impacts and the triggers for action.
EHA (NRETAS) 38	Redbank states that should downstream water qualities worsen, or fail to improve, operations will be curtailed immediately for re-evaluation. Redbank needs to clarify this statement and indicate the triggers of water quality decline that would justify curtailing operations.
EHA (NRETAS) 33	As discussed previously, Redbank should clarify the contingency actions if surface water monitoring detects changes in water quality.

We acknowledge that the EIS did not include detail on proposed trigger levels, nor specific remedial actions for trigger level exceedance. The trigger levels are now defined in **Appendix I**, and the adequacy of water management will be further assessed through annual macroinvertebrate sampling results. Once monthly monitoring indicates trigger level exceedance over consecutive days, further monitoring and remedial actions will be put into place - refer to conceptual risk model and remedial action table in **Appendix C**. Redbank Copper Limited would also consult with the relevant authorities, and fly them in as necessary, to determine the best contingency response in the event of a breach. Actions may include cessation of all or part of the mining/processing activities until sources of contamination are located and remediated.

Trigger levels, remedial actions and an adaptive management framework for remediation will all be included within the revised WMP, which will be submitted to DRDPIFR by the end of February 2010.

EHA (NRETAS) 34	The surface water monitoring results of the Waste Discharge License (WDL 175) period should be provided in the supplement to allow assessment of Redbank management and understanding of legacy and contamination issues.
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The entire volume of treated water has been contained within the TSF and no water has yet been released.

EHA (NRETAS) 15	The risk assessment report that provides analysis and interpretation of monitoring results for the waste discharge license period (R.3, WDL175) must be provided as part of the supplement
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Analysis and interpretation of the monitoring results of the activities associated with the WDL cannot be reported on as no release has yet taken place and therefore no data available. The mining and processing plans for 2010 will result in a significant draw down of the SFP and therefore remove the need for future water treatment and release.

DRDPIFR 14	Tables summarising monitoring data (e.e. 6.3-1, 6.3-5) should display the number (n) and variability (e.g. Standard Deviation) of samples for each site that the average values are calculated from.
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Note - This issue has been corrected in **Table 6.3-2** following. It should be noted that this information is gathered from samples where a breach in the guidelines was experienced i.e. if not breached, results weren't included, potentially exaggerating the contamination levels. The values from this table have been altered slightly to incorporate recently received data. The second table however was for the September sampling event only. This is because the bores had only just been constructed and the only sampling event that had occurred at the time of submission was the September sampling event. It should be noted that subsequent sampling has revealed similar results to those presented in the EIS for September, indicating consistency between sampling events.

Table 6.3-2: Summary of Surface Water Monitoring Data revised from EIS version

Map Reference (Figure 6.3.X)	Distance Downstream (km)	pH	Standard deviation	Al (µg/L)	Standard deviation	Cu (µg/L)	Standard deviation	Number of Samples taken
ANZECC Guidelines for Aquatic Ecosystems 95% species level		6.5 - 8.5		55		1.4		
ANZECC Guidelines for Aquatic Ecosystems 80% species level		-		150		2.5		
17	SFP	2.6	0.4	374,550.1	124,400.3	709,810.3	268,939.3	24.0
24	0.5km Hanrahans Pool	3.8	0.5	182,987.5	131,232.3	267,337.1	238,367.1	14.0
6	3.3km confluence Echo Creek (2.8km)	5.1	0.8	4,125.7	2,956.3	39,905.5	33,076.6	17.0
9	6.8km confluence Twelve-Mile Creek (3.5km)	6.0	1.9	95,497.5	154,223.1	53,029.5	80,070.2	10.0
12	18.4km confluence Settlement Creek (11.6km)	7.7	0.3	50.0	NA	115.7	130.5	2.0
13	37.1km Wollogorang Station (18.7km)	8.0	0.3	212.5	51.0	21.5	18.7	11.0
14	Reference Site (Branch Creek not affected by SFP)	8.3	0.0	160.0	NA	48.0	8.5	2.0
Averages for all monitoring records. (2.8km) distance between sampling locations. Highlighted concentrations exceed the 80% protection level.								

DRDPIFR 09	Specific strategies and commitments should be outlined to address the legacy environmental source terms (i.e. WRD, stockpiles, HLP, TSF, etc) early in the mine operations (e.g. within 2 years).
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Existing WRD, stockpiles;

Analysis of samples collected during 2009 and revisiting samples from previous years has identified that the existing WRD within the area bounded by the north and south low flow drains has very varying contamination potential. The majority of the material appears to be of minor concern however areas of what appears to be spent heap leach material have been deposited on it and one area returned assays at results averaging 0.39% Cu, but only 0.14% was considered acid soluble. This most likely indicates that this copper originates from a mostly sulfide/transitional provenance where acid generating potential exists. Plans to devise a suitable strategy to further investigate and determine a management strategy will be developed within 2 years.

HLP:

Redbank has determined an estimate of the resources in the heap and dump leach pads. The plan at this time will be to process it through the new leach plant as if it is oxide ore and recover copper at the SX-EW plant. It will be supplemental material and most probably treated in the second year of operations so that those areas can be utilized for future planned activities.

TSF strategies are detailed elsewhere in this EIS Supplement.

EHA (NRETAS) 36	When is the detailed bore testing program schedule and groundwater modelling of the aquifer to be devised? This information must be included in the supplement as requested in the EIS Guidelines (section 6.3.2)
Water Resources 02	The main and fundamental issue or problem with the EIS is a lack of hydrogeological modelling of the area. Detailed groundwater modelling should present the surface/groundwater interaction and include the influence of waste storage facilities on the aquifers and groundwater flows. This model should be used to describe the behaviour of groundwater aquifers at the site and to predict the potential groundwater impacts due to the proposed open cut mining.
Water Resources 03	Any remedy proposed in the EIS in respect of potential pollution management and future development should be accompanied by a demonstrated comprehensive understanding of the hydrogeology of the Sandy Flat Pit.
Water Resources 04	Proposed management of potential sources of surface and groundwater pollution should be based on comprehensive groundwater modelling. This in turn, may require additional shallow drilling in the area. The shallow aquifer is not well understood. The relationship between Sandy Flat pit and shallow aquifer should be quantified. If, for example, the water level in the pit intermittently allows contaminated water to enter the shallow fractured aquifer zone or the paleo-channel, this has to be addressed and remedies proposed. It might be that the paleo-channel or zone of fractures could be sealed by grouting or other means.
Water Resources 05	The Water Management Plan (Appendix B) in Section 2.3 Groundwater Resources mentions a groundwater model and appropriate groundwater management strategies but did not present any detail of this model or any clear results of groundwater modelling.

Information and management plans for the groundwater of the site, is presented in various formats within the WMP, the WDL and the EIS, and this Supplement document. The expectations of results from the study of this aquifer are high and Redbank has invested significant funds into its study and development. The most valuable and practical results will come from the information gained via monitoring the impacts of the physical reduction in SFP

waters via the current treatment and release program authorized by WDL 175. This program was devised to take place during 2009, so as to provide results before now, however excessive workloads within EHA resulted in a period of over 4 months elapsing before the commencement of assessment of the application and a further 5 months before the licence was issued. This period stalled the progress of the GWMP as Redbank were not prepared to invest too heavily into research without the knowledge that the results would be adequate to meet the requirements of the WDL.

The level of expenditure required prior to a project producing has a serious impact on its viability and Redbank need to ensure that all expenditure is targeted and provides valuable information to assist with the development and management of the project and site.

To date Redbank Mines have therefore progressed the development of the groundwater knowledge base and management plan via extensive surface water investigations to help understand the relationship between ground and surface water, by drilling eight new environmental monitoring bores between the SFP and Hanrahans Creek (refer Table below – extract from EIS) and sampling the water quality and levels of these EMB's.

The locations of these bores were decided upon by the projects geologist and hydrogeologist to facilitate a preliminary assessment and characterization of the seepage zone (mapped by field traverses along Hanrahans Creek), including its possible extent, between the SF Pit and Hanrahans Creek and were completed in October 2009. The field traverse identified surface outcropping of geology and structure as well as identifying known pit water expression points and associating them with known geological information and utilizing high resolution photography and digital terrain mapping to further refine the locations. The geological information about the project is not presented in a format that can easily be presented in a document. The bores were completed in October 2009 and are currently being monitored for water levels and water quality on a monthly basis and testing is underway to ascertain the hydraulic characteristics of this zone by means of bore testing methodologies.

The results of the initial investigations based on the information provide by the EMB's have made it evident that the palaeo-channel previously postulated, has not been encountered - i.e. the layer is not continuous and/or is not as well developed between the SF Pit and Hanrahans Creek as previously thought. The October 2009 monitoring bores encountered little weathering at the top overlying fractured strata - there is no indication that a shallow and/or multiple aquifers exist between the SF pit and Hanrahans Creek as the weathering/shallow strata did not contain ground water. Further drilling and testing will be required to devise an appropriate conceptual hydrogeological model detailing hydraulic parameters (Transmissivity and Storativity), connectivity between the water bearing zones and preferential flow paths, identification of potential receptors to facilitate numerical modelling with Aquamod for Windows (mass and transport models). A significant amount of static and kinetic ABA and NAG and metals leach tests are currently being conducted by ALS Laboratories for inclusion in the interpretations.

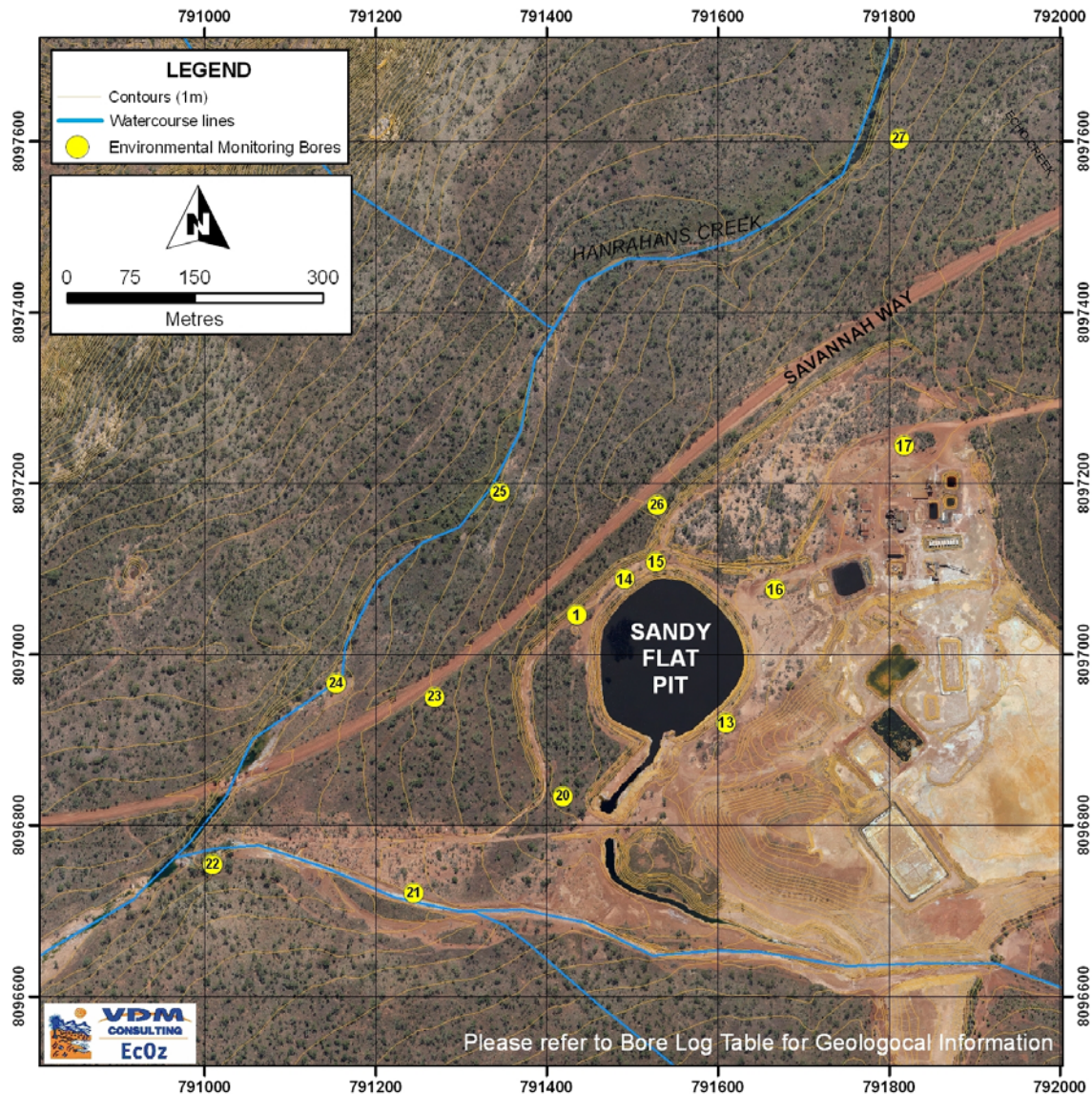
Further drilling and testing has been scheduled for April/May 2010, weather permitting, with hydrogeological modelling to follow in May/June 2010. This will incorporate surface and groundwater interactions along with effects of all existing infrastructure on hydrogeology in the area. In addition, these investigations are required to facilitate the design of additional infrastructure which cannot be finalized since process methodologies have not yet been finalized.

Currently the entire hydrogeological and hydrological regimes are being monitored for the abstraction, treatment and discharge of waters from the SF Pit with the intention to lower the pit water level significantly below the level of Hanrahans Creek. This data will be incorporated in a detailed GWMP which will be compiled and submitted after conclusion of the above additional investigations. This work will allow Redbank to formulate a greater understanding of the hydrogeological process in the area before any major works are carried out on site.

Water Resources 09	The location of any new monitoring bores should be supported by the hydrogeological model. Geological and hydrogeological information (cross-sections, geological log of bores, maps) obtained from previous documentation and description of the mineral deposit should be included in the EIS to better explain its relationship to the hydrogeology of the area.
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EHA (NRETAS) 27	The information in Table 6.3.5 should be placed on a geological map with corresponding bore water quality data to assist in understanding of groundwater condition in the region as per the EIS guidelines (section 6 and 6.3.3, EIS Guidelines September 2009): 1. Geological plans and cross sections of the area to provide an understanding of the spatial nature of the deposits and existing relevant hydrogeological information; 2. Describe with suitably detailed maps the geology and aquifers underlying the waste water, rock storage and surrounding areas, to the outer extent of the underlying aquifers. Contour maps should include overlays of all proposed infrastructure; 3. Describe surface connections and expressions of groundwater aquifers potentially affected by the waste water, waste rock and tailings facilities.
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Figure 6.3-1: Environmental Monitoring Bore Map



Depth (m)		Geology (based on bore logs September 2009)									
From	To	Bore 1	Bore 20	Bore 21	Bore 22	Bore 23	Bore 24	Bore 25	Bore 26	Bore 27	
0	1	Unconsolidate d Sand	Mixed Alluvial Cover Sequence	Moderately Oxidised Trachyte	Moderately Oxidised Trachyte	Pale Brown Limonitic Trachytes	Coarse Grained Oxidised Sandstone	Oxidised Limonitic Trachytes	Well Weathered Alluvium	Oxidised Rounded Alluvium	
1	2										
2	3	Sandstone	Cream brown Oxidised Clay				Pale Limonitic Weathered Trachyte			Pale limonitic Clays	Oxidised Limonitic Trachytes
3	4										
4	5					Coarse Grain Quartz Lithic Sandstone			Moderately Oxidised Trachytes	Oxidised and Weathered Trachytes	
5	6		Coarse Grain Quartz Lithic Sandstone				Moderately Oxidised Siltstone				Oxidised Trachytes
6	7	Oxidised Trachytes		Trachytes	Oxidised Trachytes	Limonitic Trachytes		Limonitic Trachytes	Limonitic Trachytes	Limonitic Trachytes	
7	8		Trachytes				Trachytes				Trachytes
8	9	Trachytes		Trachytes	Trachytes	Limonitic Trachytes		Limonitic Trachytes	Limonitic Trachytes	Limonitic Trachytes	
9	10		Trachytes				Trachytes				Trachytes
10	11	Trachytes		Trachytes	Trachytes	Limonitic Trachytes		Limonitic Trachytes	Limonitic Trachytes	Limonitic Trachytes	
11	12		Trachytes				Trachytes				Trachytes
12	13	Trachytes		Trachytes	Trachytes	Limonitic Trachytes		Limonitic Trachytes	Limonitic Trachytes	Limonitic Trachytes	
13	14		Trachytes				Trachytes				Trachytes
14	15	Trachytes		Trachytes	Trachytes	Limonitic Trachytes		Limonitic Trachytes	Limonitic Trachytes	Limonitic Trachytes	
15	16		Trachytes				Trachytes				Trachytes
16	17	Trachytes		Trachytes	Trachytes	Limonitic Trachytes		Limonitic Trachytes	Limonitic Trachytes	Limonitic Trachytes	
17	18		Trachytes				Trachytes				Trachytes
18	19	Trachytes		Trachytes	Trachytes	Limonitic Trachytes		Limonitic Trachytes	Limonitic Trachytes	Limonitic Trachytes	
19	20		Trachytes				Trachytes				Trachytes
20	21	Trachytes		Trachytes	Trachytes	Limonitic Trachytes		Limonitic Trachytes	Limonitic Trachytes	Limonitic Trachytes	
21	22		Trachytes				Trachytes				Trachytes
22	23	Trachytes		Trachytes	Trachytes	Limonitic Trachytes		Limonitic Trachytes	Limonitic Trachytes	Limonitic Trachytes	
23	24		Trachytes				Trachytes				Trachytes
24	25	Trachytes		Trachytes	Trachytes	Limonitic Trachytes		Limonitic Trachytes	Limonitic Trachytes	Limonitic Trachytes	

6.4 Decommissioning and Rehabilitation

EHA (NRETAS) 39	The final decommissioning plan will need development in the early stages of the operation given it is only an eight year operation.
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Noted - As corrected in this Supplement, Redbank propose 10 years of operation. Due to this short timeframe, the Decommissioning Plan will be developed over the following years in preparation for the end of operations.

EHA (NRETAS) 41	This section of the EIS Guidelines (Section 6.4) was updated in the modified EIS Guidelines issued to Redbank in September 2009, but is largely unaddressed in the draft EIS. The fact that sulphidic ore from the Sandy Flat Pit was only handled at the end of a two year mining campaign (1994-1996) resulting in the legacy issues evident today, indicates the high risk of accessing the sulphides and that this material needs to be characterised and handled correctly before it is disturbed or mined. The EHA division believes that this information should have been provided in the EIS so that proper assessment of the mining of the sulphidic ore and storage of waste rock and processed tailings could be made. If this information cannot be provided in the supplement and within Redbank's proposed timeframe, it is possible it may need to undergo a separate assessment process when it becomes available.
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Redbank now concede that this approvals process should only proceed for the oxide component of the project as there is considerable work yet to be completed in order for the sulphide activities to be fully assessed. As such, detail on sulphide characterisation and proposed mining will be submitted under a separate approvals process.

NLC 15	Pit voids and above-ground waste dumps result in decreased future land value as the pits, the waste dumps and the land beneath them cannot generally be used profitably in the future. To maximise future land values and achieve practical and sustainable ecological outcomes, the NLC considered that further detailed investigation into the potential for and a commitment to progressive rehabilitation and sequential mining and backfilling of pits is therefore warranted before the project proceeds.
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This comment is most relevant to the sulphide component of this project which is no longer seeking approvals through this process. However, as stated in the EIS, all known deposits proposed in this EIS are undefined at depth. Redbank have committed to investigating and attempting to determine if any of these deposits can be defined as ceasing at depth so that the possibility of infilling, or sterilizing a pit can be progressed. this work will begin during 2010. it is noted that the early knowledge of this does assist planning, especially where there are adjoining pits, however to delay the project until this knowledge is developed further jeopardizes the economic viability of this project.

EHA (NRETAS) 53	When will it be known whether the Redbank and Azurite deposits can be potentially sterilized and used for storage of PAF material as this may provide confidence in future management of PAF material?
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This comment is most relevant to the sulphide component of this project which is no longer seeking approvals through this process. However, as stated in the EIS, all known deposits proposed in this EIS are undefined at depth. Redbank have committed to investigating and attempting to determine if any of these deposits can be defined as ceasing at depth so that the possibility of infilling, or sterilizing a pit can be progressed. this work will begin during 2010. it is noted that the early knowledge of this does assist planning, especially where there are adjoining pits, however to delay the project until this knowledge is developed further jeopardizes the economic viability of this project.

Environment Centre 31	p. 163: Queensland's Wild River Declaration 2007 does not directly apply to the project area but the Territory Government's developing Living Rivers policy certainly does.
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Noted.

DRDPIFR 12	Ore characterisation needs to be undertaken to understand the tailings character and enable appropriate management and closure. An impermeable capping layer is unrealistic. Appropriate capping strategy should be formulated based on the character of the tails. Cover design should indicate the permeability that is trying to be achieved, how and to what end.
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The new plans for the Tailings is to utilise the existing TSF for 2010 and 2011. The only inputs to the TSF will be the waste from the vat leach process as the agitated leach process will not go ahead in the short term due to the small percentage of material that would have gone through the system making it economically unfeasible.

The vat leach tails will hold some residual sulphuric acid that is expected to be washed out with rainfall and into 2m deep trenches installed around each pile to facilitate speedy and effective reclamation of this water. The vat leach residue will have been through the acid leach process and have had the major metal components removed from it.

XRF data identifies the existing tails at SF to contain very similar concentrations of metals to those in the ore, apart from the depleted copper values. The XRF results from the oxide wastes can be seen in Table 6.7.1 of this Supplement.

A small amount of waste from the SX EW plant will be placed into the TSF also. This would include some crud, clay residue, lead, anthracite, garnet and hydrocarbons.

We will be investigating the use of bioremediation onsite to treat hydrocarbon wastes and all other wastes that are not able to be treated onsite and identified as potential contaminants will be encapsulated in HDPE liners so as to keep the tails stockpile benign.

The impact of the current water treatment process and the ongoing management of the TSF will aim to result in the TSF containing a neutral and benign mix of material. The capping strategy will then seek a low permeability layer as water seepage will not be able to mobilise contaminants.

DRDPIFR 17	It should be outlined how the pits will be assisted to 'quickly fill' with water. Timeframes would be specified and details of how this will occur and the expected results. They must demonstrate that the filling of the pits will be quickly enough to minimise oxidation of sulphide material and result in acceptable quality water.
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This management action was identified as being relevant for the mining of sulphidic ores which is no longer a part of this approvals process.

DRDPIFR 20	Pit closure strategies to ensure zero discharge of void waters into the environment need to be detailed. Is zero discharge realistic/achievable?
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The zero discharge strategy should have specified via surface water flows, which we believe is the major contributor to offsite impacts from the pits. Investigations indicate that surface water overflows from the existing Sandy Flat Pit are the result of surface water additions to the pit from a catchment of approximately 40 ha. The proposed Redbank Pit will be designed to have nil catchment other than direct input to its own surface area. Hydrogeological investigations, detailed within this Supplement document, are planned to determine if pit water can potentially express to the surface via groundwater, and if so, what management and mitigation strategies can be implemented. Pit management will also aim at keeping the water quality of the pit water at a standard that may not trigger concern.

DRDPIFR 21	The statement 'rehabilitated according to best practice at the time' is used in several instances. Rehabilitation should be based on current best practice and include a commitment to continually improve and implement new findings in rehabilitation. Does the author understand current best practice?
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The author understands current best practice, but cannot predict what 'best practice' may be at the time of rehabilitation. We understand that best practice in rehabilitation is constantly evolving as new technologies and understandings become available. Therefore, the term 'best practice at the time' is utilised in preference such that ideas and technologies developed and proven between now and decommissioning may be adopted by Redbank in preference to 'current best practice', which may have been perceived as being current to this date.

EHA (NRETAS) 40	Section 6.4.8 - Redbank has stated that "trialling a range of potential designs that minimise the production of ARD and could meet the long-term closure objectives will begin in year one of the project" - This needs to be included in the commitments table 1.9-1.
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Noted and added to the updated commitments table.

DRDPIFR 03	Acid neutralization capacity results are meaningless in isolation from other formation - e.g. is neutralising capacity available at the same rate as ARD production?
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Noted; initial laboratory results are indicating that without the influence of the lenses of dolomite the acid neutralising capacity of the host rock is negligible.

DRDPIFR 13	The statement that mitigation of tails seepage is to divert waters into the Sandy Flat Pit 'or other impermeable storage facility for treatment' needs to be expanded on. What impermeable storage facilities are available or will be built? The Sandy Flat Pit could not be interpreted as an 'impermeable' structure.
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We acknowledge that the SFP is not an impermeable structure. The intention of this statement was that once the SFP had been significantly dewatered by the use of the copper rich water in the oxide process it could become a temporary storage for contaminated waters as the significant reduction in its water level will remove its ability to interact with the surrounding surface waters.

DRDPIFR 18	It is assumed' - this should be known or be able to be predicted from modelling and testing.
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Pit closure would involve allowing and assisting each open pit to quickly fill with water at the conclusion of mining. It is assumed that once a steady-state water level i.e. the pre-mining regional groundwater level, has been attained, only groundwater inflow, to compensate for evaporative losses, and direct rainfall will collect in each pit (constructed diversion banks and drains will continue to direct clean water runoff away from the pits). Anaerobic conditions are expected to prevail underwater, thus preventing oxidation of sulphides, and resulting pit water quality of a standard appropriate to the region. Pit closure strategies will be developed to ensure zero discharge of pit void water into the environment and therefore there will not be any requirement for ongoing management.

Evaporation will exceed or at least match inflow and a stable water level will be established so that there will be no discharge. Research into connectivity with groundwater, especially shallow aquifers that may express into surface waters is underway for the Sandy Flat Pit and is currently being planned for the other proposed pits.

DRDPIFR 19	Pit water quality of a standard appropriate to the region' needs to be clarified. What is the standard appropriate to the region?
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Baseline groundwater data for each new development is being collected and analysed and will provide the target for future pit water quality. The historical contamination of the SFP will have an influence on the ability to return this water to a quality standard that can be achieved in the new pits.

EHA (NRETAS) 52	Capping Budgets need to be examined for the rehabilitation of the tailings dams. What quantity of benign or potentially acid-consuming rock mixed with available clay soils is required to create an impermeable layer above the tailings material?
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For the existing TSF, the placement of the vat leach residue will result in 185,000 cubic metres or 240,500T of material that will be of a grain size ranging from <1mm to 10mm in size stacked up to 7.5m high with batter slope of 3:1. This material stacked to 7.5 m high will cover 22,500 m², the majority of the TSF apart from a drain installed around the edge to enable to recovery of process water from the TSF. This gravel will be molded to the shape of the final landform. It will be inspected for contamination potential and stability to determine the amount of capping material that may be required. If required, the stockpiled gravel would be capped with waste rock from Sandy Flat pit for final rehabilitation. Thickness may vary from tens of centimeters up to 2 metres. A cap of 2 metres deep will require approximately 60,000 cubic metres of material. It is expected that the current water treatment and ongoing management will result in the TSF no longer being a source of contamination and therefore not requiring an impermeable layer. This will be determined during the next 2 years so that the decommissioning and rehabilitation strategy will be in place for these activities to potentially being during 2012.

6.5 Social Environment

NLC 22	Potential cumulative impacts in association with other nearby mining projects have not been fully considered. Chapter 1.6 suggests that there are no new mines proposed for the region, however exploration has recommenced at the nearby old Eva and Cobar II uranium mines, and should these proceed again to mining phase, then wastes might enter into the same groundwater and surface water systems as Redbank. These mines are about 50 km distant, and may therefore not represent a problem; however it might be useful to assess potential cumulative impacts associated with these mines (e.g. transportation on an unsealed road; water-borne contamination pathways; other social effects).
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There is a possibility that the Eva and Cobar II exploration leases could undergo mining operations to extract uranium resources within the foreseeable future. However given the fact that neither of the leases are located within the Settlement Creek catchment, these potential mining operations could not contaminate the surface water system present around Redbank Mine. Currently ground water resources around both leases have not been extensively mapped so the exact likelihood of ground water contamination is unknown. However given the distance and extensiveness of sandstone formations between Redbank mine and the two leases, accumulative contamination of ground water is unlikely to be an issue. An increase in traffic could result within the region if the two mines were to go ahead, assuming that transport lanes were directed through the Northern Territory instead of Queensland. However, due to the likely small scale of the operations and small production of transportable resource, traffic increase is likely to be minor.

Should Eva and Cobar II progress to a stage where mining is likely, the cumulative effects of mining these mineral prospects will be more appropriately addressed in detail within their project EIS.

DHF 01	All activities and access roads are to be constructed, operated and maintained so as not to create a nuisance from dust or other particulates. Dust control and monitoring are to be conducted in line with condition 6.11.3 of the Draft Environmental Impact Statement part B.
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Noted.

DHF 02	Develop mechanisms for the recording and remedy mechanisms for the community to lodge complaints relating to dust and noise discharges.
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Noted - Redbank will advertise (phone book and website) an enquiries phone number and email address such that community members who wish to complain or enquire about dust and noise may do so. Administration personnel will be allocated time to record and appropriately respond to any complaints received. Appropriate response would involve installing appropriate management measures such as adapting truck driver protocol near communities, requesting noise inhibitors on transport trucks, and increased dust suppression

DHF 03	Mine site kitchens that are not self catering, should hold Food Act registration with the Department of Health and Families. Construction and fit out of camp kitchen facilities should be consistent with standards contained in Australian & New Zealand Food Standards Code and hold registration under the NT Food Act.
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Noted - All mine site kitchens will hold *Food Act* registration, and will be consistent with standards contained in Australian and New Zealand Food Standards Code.

DHF 04	All proposed and existing sleeping accommodation rooms should be designed and constructed in accordance with the Building Code of Australia (BCA) and NT Public Health Act and regulations and reference should be made to the proposed NT Standard for Prescribed Commercial Accommodation.
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Noted - Redbank have sought advice regarding upgrading existing demountable buildings to be in accordance with BCA and NT *Public Health Act* regulations. All demountable accommodation purchased for future camp expansions will be assured to be in accordance with BCA and *Public Health Act* regulations. All expansions and operations will also be performed in accordance with the Environmental Health Information Bulletin No 6 - Requirements for Mining, Construction & Bush camps.

6.6 Landform and Erosion

6.7 Waste Management and Hazardous Materials Management

DHF 07	Waste water treatment system(s) shall be installed capable of collecting treating and disposing of waste water on-site. All waste water from ablution and kitchen facilities shall be directed to the waste water treatment system
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Noted.

DHF 08	Sewerage Treatment and Effluent Disposal: Depending on the size of the camp, advice should be sought from a qualified hydraulic consultant as to the most suitable method for waste water treatment and disposal.
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Noted - When camp expansion is required in the future, a consultant will be engaged to assess the adequacy of the existing waste water treatment facilities and make recommendations on further facilities required to accommodate additional personnel.

DHF 09	An area of land should be set aside for the safe disposal of waste and conducted so as to avoid potential public health nuisances and environmental pollution
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Noted. An upgraded conceptual design has been developed which incorporates the location of the proposed landfill site for camp putrescibles. This updated conceptual map can be located at the beginning of this Supplement. The landfill site will be constructed in accordance with the *Building Act* (NT) , *Waste Management and Pollution Control Act* (NT), *Waste Management and Pollution Regulations* (NT) and *Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory* (EPA 2003).

DHF 10	An application is to be lodged with the Department of Health and Families for approval to establish a solid waste disposal operation.
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According to the *Waste Management and Pollution Control Act* (NT), a licence for a solid waste disposal option is only required if catering for over 1000 persons.

(<http://www.nt.gov.au/nreta/environment/waste/register/landfills.html>). However, DHF will be notified of plans to upgrade the existing waste disposal site prior to construction.

Environment Centre 10	p. 32: All storage areas for waste and hazardous materials must be designed to withstand extreme weather events – not just high-speed winds but also intense, high rainfall events. Two tropical cyclones have impacted the area in recent years (Tropical Cyclone Fritz in February 2004 and Unnamed Tropical Cyclone in January 2003) and similar extreme weather events are likely to affect the site again. The potential impacts of such weather events on waste and hazardous materials management must be addressed in detail. Adequate structures and procedures need to be put in place to ensure that hazardous materials will be contained (particularly fuel and reagents stored on-site during the wet season), and that leakages/spillages from waste receptacles will be avoided. A thorough assessment should be conducted of the likely impacts to occur if the integrity of storage structures is compromised. Both soil and water contamination need to be considered. The proponent must also demonstrate that appropriate technical response measures and capacities will be available in the event of an emergency, especially given the remoteness of the site.
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All new infrastructure will be built in accordance with the Building Act 1993, and all existing infrastructure has recently undergone new cyclone coding and upgrades. Engineers were sent to site in order to guarantee that camp facilities were sufficiently upgraded to be cyclone safe. The design of the plant will take into account that Redbank is within 'Region B' (non-cyclonic due to it's distance inland) as defined in AS 1170:2 - Structural Design - Wind Actions, allowing for wind loadings according to the worst case scenario of a cyclone category 2.5. Storage and containment facilities for fuels, reagents and other toxic chemicals will be in accordance with the following standards:

AS/NZS 4452 - 1997 The Storage and Handling of Toxic Substances.

AS 1940 - 2004 The Storage and Handling of Flammable and Combustible Liquids

NOHSC: 1015 (2001) National Standards for the Storage and Handling of Workplace Dangerous Goods

NHSC: 2017 (2001) National Code of Practice for the Storage and Handling of Dangerous Goods. And Legislation Dangerous Goods Act 1998 (NT) and Dangerous Goods Regulations (NT)

Fire and Emergency Act 1996 (NT) and Fire and Emergency Regulations (NT);

Workplace Health and Safety Act 2007 (NT) and Workplace Health and Safety Regulations (NT).

Mining Act 1980 (NT) and Mining Regulations (NT)

Waste Management and Pollution Control Act 1998 (NT) and Waste Management and Pollution (Administration) Regulations (NT).

Redbank Mines is aware of the dangers, implications and effects of cyclones and will do everything in their power to adequately prepare for such an occurrence. A general site operations review is planned for Redbank in mid-March and then an area specific operations review is planned for the proposed processing plant in late March. This will allow Redbank personnel to highlight any major areas of concern and to start planning for the following wet season in late 2010.

Environment Centre 35	Hazardous Substances: p. 250: If herbicides or insecticides are to be used they should be listed in Table 6.7-2, which provides a record of possible hazardous substances stored on-site.
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Noted - Best practice weed control activities vary according to the target weed species, which could involve any number of species that may invade the area. Thus, only Glyphosate, a broad spectrum herbicide, has been included within Table 6.7-1; possible hazardous substances to be stored on site. Introduction of other herbicides necessary to target particular weed species will require separate approvals as they cannot be predicted. Table updated below.

Table 6.7-1: Possible hazardous substances stored on site and their health and safety classification according to the NOHSC (HSIS website)

Substance	Risk and Safety Classification
Sulfuric Acid	Corrosive, Causes Severe Burns
Methyl Isobutyl Carbinol (MIBC)	Irritant, Flammable, Irritating to Respiratory System
Kerosene	Harmful, May Cause Lung Damage if Swallowed
Diesel	Possible Carcinogen
Aviation Gasoline (AVGAS)	Possible Carcinogen, Harmful, May cause lung damage if swallowed, Irritating to skin.
Engine Oil (Diesel)	Possible Carcinogen
Explosives	Risk of Explosion, Potentially harmful to humans as an irritant and toxicant. Potentially harmful to the environment
Glyphosate (360)	Herbicide, toxic to aquatic organisms.
Bifenthrin	Insecticide, toxic if swallowed.

Note: Yet to be determined substances will be used within the process circuits and these will be handled and stored in a manner appropriate to each substance. These substances will be incorporated into future Mining Management Plans.

DRDPIFR 01	The assessment of the ARD and metals leaching potential of the waste material should have been undertaken and presented in this EIS to demonstrate that the operator understands the potential impacts to ground and surface waters from their activities. Waste rock characterisation must be conducted.
DRDPIFR 02	Acid base accounting studies should be undertaken in conjunction with other tests to give a greater degree of confidence in the predicted properties of materials tested. Eg; undertake static and kinetic testing or both ABA and NAG. NAG will also give an indication of the likely solute load regardless of pH (i.e. metals and salts). Serious errors can result if relying solely on ABA. Long term leachate properties of waste can be very different to that originally predicted when using a single type of testing.
DRDPIFR 04	There are no results in this EIS to demonstrate that the assumption that the rock outside the mineralised zone will all be NAF. Also, it cannot be assumed, without supporting data, that the NAF material will not require monitoring.
DRDPIFR 05	There is no information to support the assumption that the acid consuming material will be sufficient to neutralise PAF material or be available at the same rate as acid production, or for as long as is required.
DRDPIFR 06	The percentage of NAF and PAF should be known to enable appropriate WRD design and management.
DRDPIFR 07	More details are required on the capping and containment of PAF in WRD's. Details of the cover design and thickness should be supplied. It is not possible to construct an impermeable layer and more realistic designs which achieve the required objectives (eg minimisation of oxygen and water into the heap) should be outlined.
DRDPIFR 08	The proposal to progressively determine the management/rehabilitation requirements for PAF material through ongoing research is inadequate. Ongoing research is expected for continual improvement however it is expected that something is known now to guide management and closure plans.
EHA (NRETAS) 42	Details need to be given on the management actions of selective handling of waste rock and encapsulating the potentially acid forming (PAF) material. Data on PAF material at Redbank (and acid consuming) needs to be included in the supplement.

EHA (NRETAS) 43	While it is stated in the EIS that water management with PAF material is paramount - Redbank has not provided any quantitative data on waste rock characterisation and quantities and disposal/storage methods. Table 3.14-1 estimates 10 689 000 tonnes of sulphidic waste rock is expected to be mined and a fraction of total waste rock will be PAF (Table 6.7-1). The complete lack of data on this subject does not provide confidence that Redbank can address the legacy of environmental issues that have occurred as a result of acid mine drainage and management of future activities. It can be assumed that Redbank has invested resources into drilling and assaying for delineation of the ore and resource - these samples can readily be logged for estimates of various sulfide minerals (volume %) and any carbonates (volume %) to provide valuable information for planning for AMD management. No mention has been made for Net Acid Producing Potential (NAPP) that could be block modeled in the same way the ore resource is modeled (given sufficient data). It is hoped that AMD work has been carried out during exploration and resource estimating drilling and that this information (a minimum of sulfide minerals and carbonates) is provided in the supplement.
EHA (NRETAS) 45	The statement in the draft EIS that detailed acid producing potential studies will be performed during 2010 (section 3.12.1) is not sufficient to provide confidence that acid mine drainage issues will be managed adequately. It is also noted that this statement is not included in the table of commitments (Table 1.9-1). The results from these studies are required with the waste rock dump design being detailed at this stage rather than the anticipated may 2010 - Mining Management Plan (MMP) submission. This includes details of the acid base accounting studies to be conducted that would inform the WRD design (for NAF and PAF materials). Redbank needs to provide evidence that NAF waste rock does not have any issues with enriched elements under neutral conditions.
EHA (NRETAS) 46	The statement if large amounts of low grade and transitional material are encountered then the strategy will be amended to account for additional waste rock material that is potentially acid forming (section 6.7) does not engender confidence. Again it is to be expected that Redbank has an idea of quantities of types of PAF rock prior to disturbance so that appropriate storage of this material occurs in the short to medium term (particularly if the option is to process low grade ore at a loss if rehabilitation costs of encapsulating this material are high). The proposed storage of subgrade material in banded lime pads needs to be shown to be effective in managing this material in the short term. If the subgrade ore is processed at the end of mine life, would the resultant tailings be an issue for long term management?
EHA (NRETAS) 47	What are the potential waste rock designs to minimise the production of AMD (at a minimum a concept design)? More information is required on the expected quantities of PAF and NAF rock to determine the suitability of the suggested waste rock dump design (capping with layer of lime/local neutralising rock or other NAF material, treating the material in the same way as Acid Sulfate Soils). Where will non Acid Forming rock (NAF) come from to finish the WRD after the PAF material has been mined? (ie is there enough suitable NAF material in the sulphidic zones?).
Environment Centre 17	p. 62: There are considerable uncertainties associated with the management of PAF sub-grade material. Detailed studies need to be undertaken prior to the commencement of mining and comprehensive plans should be subsequently developed and made available. Both the Territory Government and the public need to be assured that the company knows how to handle such material, in a way that will lead to zero environmental impact.

NLC 18	Potentially acid forming (PAF) materials is seen as a long-term problem, but has only been described as a medium risk. On page 98, Redbank states that the host rock is reportedly unlikely to result in significant ARD issues but also states that substantive testing has not been undertaken. To allow us to better understand the substance of this claim, the report on which it is based should be provided. The NLC also notes that the EIS contains insufficient information about the geochemistry of the ore, especially the levels of toxic metals and metalloids contained.
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The majority of these comments are most relevant to the sulphide component of this project. As approvals for the sulphide mining are not currently being sought some relevant material focussing on the oxide mining is presented here.

The project development has proceeded with confidence that the oxide material is NAF. Concerns have been raised as to the validity of this due to the existing contamination and legacy issues at Sandy Flat. Investigations of the contamination potential at Sandy Flat have conclusively identified sulphidic material as being present and therefore the most likely source of the contamination, exacerbated by the reworking of the acidic pit water through the TSF.

XRF data has become available that identifies a suite of analytes from rock core and chip samples (approximately 1600) from the oxide zone that analysed for Sulfur and identified only 4 readings and those readings were from the Quartzite and Roman Nose prospects and were from depths greater than 30 metres, which is the accepted maximum depth of the oxidised zone. A summary of the XRF data is provided as table 6.7.1 below

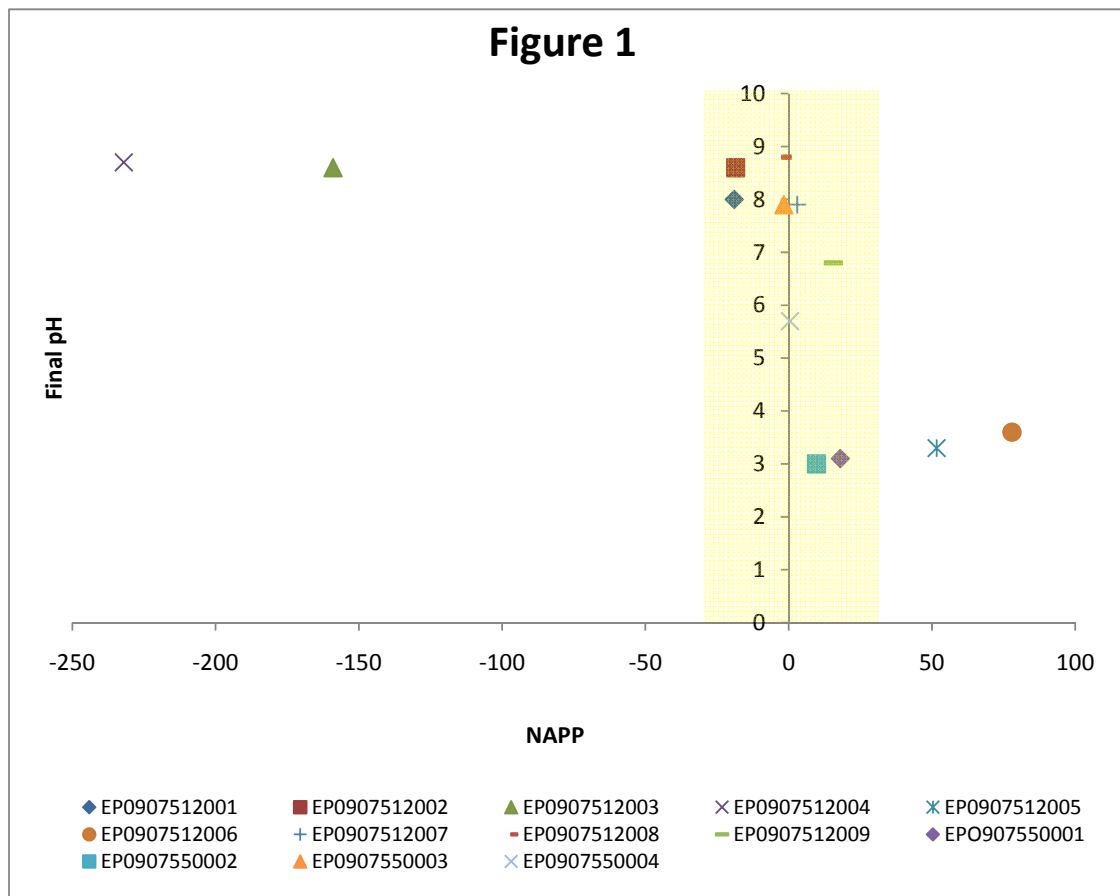
The xrf data has assisted in determining that the oxide material is defined by the acid soluble copper boundary in the centre to outer edges of the deposits, and by logging to the extremities of drilling; and a transition zone now delineated with accuracy from chemical analyses of copper solubility as well, the defined oxide waste rock can be demarcated and handled with confidence. As was demonstrated from the core samples tested (see below), whether the host rock was trachyte or mudstone/siltstone was not particularly relevant, location and depth was more definitive, and the oxide samples tested were demonstrably NAF and benign. This means that mining and handling of oxide waste is dramatically simplified.

Monitoring and assessment of the legacy issues clearly illustrates the existing and potential future impacts of mining at Redbank. Redbank Mines are acutely aware of these and will not establish any new mining infrastructure e.g. WRDs and/or TSFs without appropriate and sufficient testing, results of which will be incorporated in the detailed design, to be submitted for approval, and construction of such infrastructure. However, management and treatment of legacy issues and future potential impacts are to be separated as they require distinctly different management options.

Characterization of ores and wastes (rock and tailings) are on-going. The most recent samples for ARD/AMD testing, employing a full suite of both static and kinetic methods complimented by minerals leach and mineralogical tests, have been submitted during December 2009 and January 2010. Of these a limited number of tests were returned in time for the preparation of this document.

The mineralogy of waste rocks (refer tabulation below) reveal that most waste rocks contain typically little, if any, pyrite as measured by sulphide concentration.

A plot of the net acid production potential (NAPP) versus the final pH of samples from the oxide (EP0907152001 and 2), transition (EP0907152005 and 6) and sulphide (EP0907152003, 4, 7, 8 and 9) zones (Figure 1) clearly indicates three possible groupings. Values less than -20 on the NAPP scale indicate a low probability of ARD, while values which exceed 20 on the NAPP axis most likely will cause ARD. The third group lies between these two values and further analysis is required to determine if these samples are possible candidates for ARD generation. The EP090755000 series of tests were done on samples of tailings wastes from the oxide process.



**Samples EP0907512001 and EP0907512001 are the only samples collected from the oxide zone. They were collected at Bluff at depths of 13.75 and 29.55 metres respectively. The former was from within the waste zone identified as trachyte and the latter from the waste zone identified a mudstone.*

Samples shown in red (Risk Values > 4) in the Risk Column (refer tabulation below which lists the risk factors assigned to each graphical presentation as well as the cumulative risk) will produce ARD while a Risk ranging between 3 and 4 would require confirmation by kinetic testing (currently under way). Risk values lower than 3 indicate a low probability for ARD.

Sample Number	Figure 1	Figure 2	Figure 3	Risk	Source/Zone
EP0907512001	1	0	0	1	Oxide
EP0907512002	1	0	0	1	Oxide
EP0907512003	0	0	0	0	Sulphide
EP0907512004	0	0	0	0	Sulphide
EP0907512005	2	2	1	5	Transition
EP0907512006	2	2	1	5	Transition
EP0907512007	1	1	1	3	Sulphide
EP0907512008	1	0	1	2	Sulphide
EP0907512009	1	1	1	3	Sulphide
EPO907550001	1	2	1	4	Tailings
EP0907550002	1	2	1	4	Tailings
EP0907550003	1	0	0	1	
EP0907550004	1	1	0	2	

In conclusion, albeit based on limited test data, it seems that most wastes from both the oxide and sulphide zones are likely to cause little if any ARD which confirms earlier observations and interpretations based upon the low sulphide concentrations of the rocks outside the mineralized zone. However further work will be undertaken to define the zones likely to generate ARD such that wastes from these zones can be minimized (by pit optimization), handled and treated in a manner which will inhibit future liabilities pertaining to acid mine drainage.

Table 6.7-2: XRF Data (PPM)

Area	Assays>1%	Cu_PREF%	Co	As	K	U	Hg	Zn	S	Ca	Mo	Zr	Sr
ALL>1%	1014	2.33	158	76	69207	6	0	46	3714	8798	45	355	37
All Bluff>%	246	3.19	94	37	64142	22	0	35	9202	7174	18	274	21
All Sandy Flat >1%	112	2.06	319	217	56443	-	-	44	1064	7031	24	212	14
Current Tails		0.13	235	204	53611	23	0	35	2994	1024	18	313	41
Oxide waste < 0.5%	2195	0.06	110	19	62014	0	0	43	10	7420	9	253	32
Area	Assays>1%	Rb	Th	Pb	Se	W	Ni	Fe	Mn	Cr	V	Ti	Sc
ALL>1%	1014	107	49	40	0	4	3	48510	308	99	217	8680	1
All Bluff>%	246	116	40	30	0	2	0	53493	133	27	11	10703	0
All Sandy Flat >1%	112	44	-	36	0	3	0	75416	68	82	356	10342	-
Current Tails		109	24	26	0	139	82	24455	146	84	229	8346	0
Oxide waste < 0.5%	2195	66	19	6	0	1	6	56589	1317	64	304	9503	3
Area	Assays>1%	Ba	Cs	Te	Sb	Sn	Cd	Ag	Pd	Bal	Nb	Bi	
ALL>1%	1014	527	77	37	19	10	0	0	0	832107	28	197	
All Bluff>%	246	706	94	54	77	27	0	0	0				
All Sandy Flat >1%	112	-	-	-	4	1	0	0	0	862043	25	4	
Current Tails		469	57	117	42	38	0	0	0				
Oxide waste < 0.5%	2195	604	97	95	6	11	8	0	7	896661	26	4	

EHA (NRETAS) 48	The EIS also states studies into the oxide mining activities have shown that oxidised wastes consists mostly of dolomitic rock, which are, in fact, acid consuming (section 3.12.1). This statement needs to be supported with evidence as legacy issues to date have indicated the waste rock dump was a source of contamination (which was predominately oxide waste and transition zone waste mined during 1994-1996).
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Analysis of samples collected during 2009 and revisiting samples from previous years has identified that the existing WRD within the area bounded by the north and south low flow drains has very varying contamination potential. The majority of the material appears to be of minor concern however areas of what appears to be spent heap leach material have been deposited on it and one area returned assay results averaging .39% Cu, but only 0.14% was considered acid soluble. This most likely indicates that this copper originates from a mostly sulfide/transitional provenance where acid generating potential exists.

Recent laboratory tests have indicated that there is little acid consuming potential in the host rock. Further work into investigating dolomitic areas and testing that material will be performed in order to determine its potential value as an acid consuming material in the future.

EHA (NRETAS) 49	Certainty needs to be provided prior to material being disturbed or mined to optimize AMD management strategies. Details on the design of storage facilities and testing of the waste rock and processing wastes are required as per the EIS guidelines, section 6.4.4: 1. Describe in detail the methods for waste rock handling, disposal and waste rock dump construction; 2. Provide details on quantity of waste rock produced, when it will be produced and how waste rock receptacle design will accommodate expected waste volumes and avoid exposure of waste rock to the elements; 3. Outline proposed waste dump locations, dimensions, water catchments, surface treatment and final landform (discuss alternatives) and identify associated risks and risk treatments; 4.Characterise waste rock in terms of Acid Generation Potential, acid consuming and neutralising capacity from drill core samples and in-situ assessments (kinetic tests/field trials), including sample selection methodology; 5. Provide analysis of waste rock to better understand the potential for metals mobilisation and surface and groundwater contamination; 6. Detection and remediation plans for potential waste rock dump seepage; 7. Present detailed designs demonstrating how the formation of acid and /or metaliferous seepage to groundwater aquifers would be prevented; 8. Demonstrate that seepage from waste water storage facilities will not cause a loss of water quality in local groundwater resources; 9. Establish vertical and horizontal permeability data of all waste storage facility layers and calculate likely oxygen diffusion and water percolation rates through the layers - demonstrate how construction quality control will be achieved - Quantitatively estimate (with evidence) the capacity of the underlying geology to neutralise any acid/or metaliferous seepage outputs - Describe final rehabilitation and revegetation plans for the completed waste storage facilities - Describe ongoing monitoring, and contingency management plans for the waste storage facilities after mining ceases; 10. Review the effectiveness of the impoundment methods and evaluation of the risk of failure and management strategies should failure occur; 11. Compare predicted seepage quality with existing groundwater quality; 12. Detailing mitigation measures available/proposed to manage/contain seepage, with a focus on the post-mine-closure period; 13. Provide details of planned monitoring programs to ensure that new mining activities do not cause an environmental impact from acid mine drainage.
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As this approvals process is no longer seeking authorization to mine the sulphide deposits at the site, the requirements of this comment have reduced and are answered according to the revised project proposal.

Details on the acid producing potential of the oxide material is presented elsewhere in this chapter 6.7 of this document.

Details on waste rock dump design and construction can also be found elsewhere in this chapter 6.7 of this document. The proposed revised locations are based on detailed on site investigations, of which the most important factor identified was the avoidance of potential Gouldian Finch breeding habitat. Monitoring and management options, including detection and remediation plans are also identified in this Supplement.

These will include the establishment of surface water monitoring sites at each new facility, for example the overflow of the sediment dams installed at the WRD's and EMB's will be strategically located (to be determined by the GWMP) so that potential groundwater impacts can be monitored.

The groundwater management plan, utilizing geological information will identify the most suitable location for a return water dam (RWD). The RWD may need some form of sealing if obvious fractures cannot be avoided or lining if the area of choice proves to be too porous. The water quality of the RWD will generally be of a pH of 7, as all of the fluids exiting the plant will be neutralized, The initial flush of the vat wastes which have been treated in sulphuric acid will be stored on the existing TSF and will be flushed with rainfall and the flush water contained within the TSF until it is reused directly in the process or pumped to the RWD for storage. The RWD will be located within the SFP area which already has a highly contaminated aquifer, preventing potential contamination of other aquifers. Plans to reduce this contamination are underway.

Gathering of data so as to establish vertical and horizontal permeability data of all waste storage facility layers and calculate likely oxygen diffusion and water percolation rates through the layers along with the demonstration of how construction quality control will be achieved will begin during 2010 and be finalised and presented where it is most relevant, in the proposed future application for mining of the sulphide ores.

Strategic rehabilitation and revegetation plans for the completed waste storage facilities are identified in the EIS and final plans will be developed based on site specific issues determined over the next 2 years. The 2 proposed oxide WRD's will each cover an area of less than 1 hectare and provide practical and detailed opportunities to perform rehabilitation and revegetation trials.

The monitoring plan for the site during operations will be revised according to post closure monitoring requirements and maintained at a frequency agreed to by DRDPFR through the WMP.

Construction, operation and monitoring of the WRD's will identify potential future issues and inform the development of contingency management plans for the waste storage facilities after mining ceases.

Water quality impacts associated with the oxide waste material is expected to be confined to potentially increased sediment loads. Monitoring of surface and groundwaters will identify this or any other potential issue so that remedial actions may be taken.

EHA (NRETAS) 50	In table 1.9-1, Redbank has committed to the new TSF to be designed according to advice from site specialist TSF engineer and metallurgist, who will investigate optimal structural integrity of the wall and the requirement for lining prior to construction and development. Oxide tails material from the first 2 years of processing may form a gypsum rich lower layer that seals the dam and provide neutralizing capacity. It is expected that the design of the new TSF is detailed in the supplement so that impacts of tailings storage/seepage issues can be properly assessed. It is not clear whether the new TSF will be used for the oxide tailings (Will it be constructed in time for oxide processing or will the old TSF be used?). Evidence is required that the tailings, gypsum rich lower layer provides; 1. A neutralising capacity that is sufficient to manage AMD issues that may arise from processing the sulfidic ore; and 2. The same effectiveness of sealing as other recommended linings such as a compacted clay lining for the base of the TSF.
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The construction of a new TSF has been postponed and the approvals for such a facility are no longer being sought through this approvals process. This comment will be taken into consideration when seeking approvals for a new TSF in future. The existing TSF will be managed and used to store relatively benign tailings expected from the oxide mining process.

EHA (NRETAS) 06	More details need to be provided on the several proposed waste storage techniques, surface stabilisation and erosion prevention strategies. For example, what is the proposed drainage control or leachate collection if sub grade material is temporarily stored? What is the proposed waste rock storage design for the four pits and what alternatives have been considered?
EHA (NRETAS) 44	Table 6.7.1 lists the expected wastes and quantities of waste rock during the development of Redbank mine. Clarification is needed regarding the units (one table is in tonnes, the other is in cubic meters). For example, non acid forming waste rock (NAF) in the oxide zone is estimated at 362 000 m ³ with a total production of 516 000 tonnes. Does this mean there will be a certain amount of oxide waste that will be PAF that needs to be stored/handled correctly to prevent AMD? The Table lists NAF rock in the sulfide zone to be 4 443 000 m ³ and a fraction of total waste rock (10 689 000 tonnes) as PAF. Redbank should provide quantities of different types of waste rock in a comparable unit type (e.g. tonnes) to indicate the quantities of waste rock being generated and requiring management (stating 'a fraction' is not sufficient). Acid drainage tests on oxide waste have identified an acid neutralisation capacity ranging between 21 and 102 kg H ₂ SO ₄ /tonne. Redbank need to indicate the number of samples that have been conducted to get this indicative range.

Waste Rock Dumps

The mining operation proposed by Redbank Copper Limited focuses on the extraction of copper oxide ore from three deposits – Redbank, Azurite and Bluff. The Redbank deposit is planned to be developed first, followed by Azurite, then Bluff. All three open cut pits also have copper sulphide resources located beneath the copper oxide ore body. Therefore, the proposed mine layouts have allowed for expansions if the copper sulphide mining operation is deemed feasible after completion of the oxide mining. This current assessment only focuses on the mining of copper oxide resources at Redbank, Azurite and Bluff deposits. Approvals to mine the copper sulphide ore are likely to be sought later in 2010 after detailed investigations into the specific issues associated with the acid producing potential of the sulphidic material can be presented.

Properties of Waste Rock from Oxide Mining

Mineralogy investigations of drill core rock samples collected within the oxide zone, oxide/sulphide transition zone and sulphide zone have occurred at the Redbank, Azurite and Bluff deposits. The main objective of these tests was to determine the types and concentrations of naturally occurring sulphide minerals within the waste rock material, as it is sulphide minerals (namely Sulphur) that can produce acid compounds when exposed to oxygen and water through the mining process. Results from these investigations are identified in Table 6.7.1 of this Supplement.

Results identified that oxide waste rock material has no recorded sulphur content, and is therefore Non-Acid Forming (NAF). Over 1600 samples were tested on site using a hand held XRF. Initial laboratory results from a small number of oxide samples have not identified acid producing potential.

As expected, laboratory testing identified Potentially Acid Forming (PAF) material as being confined to sections of the ore body located below the oxide/sulphide transition zone (generally associated with the watertable), and its variability identifies it as the sulphur most likely being discovered in veins and small areas of concentration. This material will not be encountered during the proposed oxide mining operation. Possible mining of the sulphide zone may occur in the future, however the feasibility of that operation will be investigated under a separate environmental assessment.

There are layers of potentially Acid Consuming material (dolomite) present within this zone.

Figure 6.7-1: Schematic Cross Section of proposed pits showing oxide zone, transition and sulphide zone and areas where we expect to encounter acid generating rock.

Volume of Waste Rock from Copper Oxide Mining

The total volume of waste rock generated from the proposed oxide mining at Redbank, Azurite and Bluff is 291,000 m³ (refer to **Table 6.7-3** for breakdown of volumes for each void). As this material has been identified to be NAF, approximately 200,000 m³ will be used for the construction of mining infrastructure (i.e. haul roads, safety bunds and water diversion bunds, sediment dam embankments etc) without risk of acid generation when exposed to air and water (**Table 6.7-3**). This significantly reduces the area needed for waste rock storage, thus reducing the need for expansive clearing of native vegetation.

The oxide mining operation will require two relatively small Waste Rock Dumps, one within MLN634 (Redbank and Azurite deposits) and another within MLN635 (Bluff deposit) (refer to **Figures 6.7-1** and **6.7-2**). It is anticipated that oxide mining at Redbank and Azurite will generate 50,600m³ of NAF waste rock required for storage within a WRD. Bluff will generate approximately 40,400 m³ of NAF waste rock required for storage within a WRD. The footprint of each WRD will be significantly less than 1 hectare (assuming that WRDs have batter slopes of 20° and a height of 10 metres).

Table 6.7-3: Expected Waste Rock Volumes for Redbank, Azurite and Bluff Deposits

Proposed Voids	Total Volume of Oxide Waste Rock	Volume for Mine Site Construction			Volume for Waste Rock Dumps
		Haul Road (SFP to Azurite)	Haul Road (Azurite to Bluff)	Pit Safety Bunding	
Redbank	104,000	70,000	0	1,800	32,200
Azurite	70,000	25,000	25,000	1,600	18,400
Bluff	117,000	0	75,000	1,600	40,400
Total	291,000	95,000	100,000	5,000	91,000

Note: units are in Loose Volume m³, In Situ density 2.2 t/m³, Swell 30%

Waste Rock Dump Conceptual Design

The conceptual design for the WRDs associated with oxide mining at Redbank/Azurite (MLN634) and Bluff (MLN635) aims at minimising any on site and preventing any off-site environmental risk. There are five main design criteria measures included to help reduce and mitigate environmental risk at each WRD, these are:

- Waste Rock Dump Location;
- Base Preparation;
- Surface Water Management;
- Erosion Management; and
- Final Rehabilitation.

The proposed WRDs will be shaped according to the surrounding topography and landscape. WRD height will be approximately 10 m and will contain batter slopes that will not exceed 20°. The total footprint of each WRD is expected to be less than one hectare (vegetation will be progressively cleared).

Waste Rock Dump Location

WRD are proposed to be directly adjacent to each of the proposed voids, Redbank and Azurite deposits will share the same WRD due to close proximity. Placement of the proposed WRDs for Redbank/Azurite and Bluff deposits are shown below in **Figures 1** and **2**, respectively. Selection criteria included:

- Locating WRDs in sparse vegetation;
- Ensuring adequate distances away from significant drainages and large upstream catchments;
- Ensuring that no *Eucalyptus leucophloia* Snappy Gum woodlands (the Endangered Gouldian Finch breeding habitat) will be cleared or adversely impacted.

Base Preparation

The base of each WRD will be prepared and compacted at a gradient that directs surface water flow and water seepage to the toe of the facility where a sediment dam will be constructed. Preparations will remove soil to a depth of around 300 mm, storing the top 50 mm separately to maintain the seed bank for site revegetation practices during the rehabilitation phase.

Surface Water Management

As none of the waste rock will be PAF, (regular on site testing will take place during excavation of the waste material) the only potential contaminant is an increased sediment load on the receiving environment. To mitigate this risk, surface water runoff and seepage will be directed to a sediment dam constructed at the toe of each WRD. These structures aim to trap any sediment suspended in surface runoff before waters spill into natural ephemeral drainages downstream of each WRD. Sediment dams will be designed to hold 500 m³ of sediment for every hectare of catchment.

Winged embankments will be placed on either side of the wall below the height of the main dam wall to relieve the main wall of overflow pressure, further ensuring the stability of the structure. The inclusion of an access ramp will enable periodic removal of trapped sediment.

Redbank Creek is the receiving watercourse for both WRDs. A surface water quality monitoring point will be established within the sediment dam and also downstream of this sediment dam to monitor the physical and chemical parameters of this water to ensure that it is acceptable for release into the environment. Environmental monitoring bores will also be installed at each WRD location.

The risk of sediment generation from WRDs will become less of an issue once vegetation is established.

Erosion Management

Areas of waste rock that require topsoil placement will be constructed with surfaces less than 20° with a convex crown sloping into a concave lower slope to reduce the velocity of runoff as the catchment of the slope increases.

In cases where area is restricted benches will be positioned in the landform to control erosion. Minor sections of steeper slope, if any, will be protected with rock batters constructed of inert rock to prevent erosion issues. The application of the landform evolution model will determine the ongoing requirements of the landform design to minimise erosion and maintain predictability of the site.

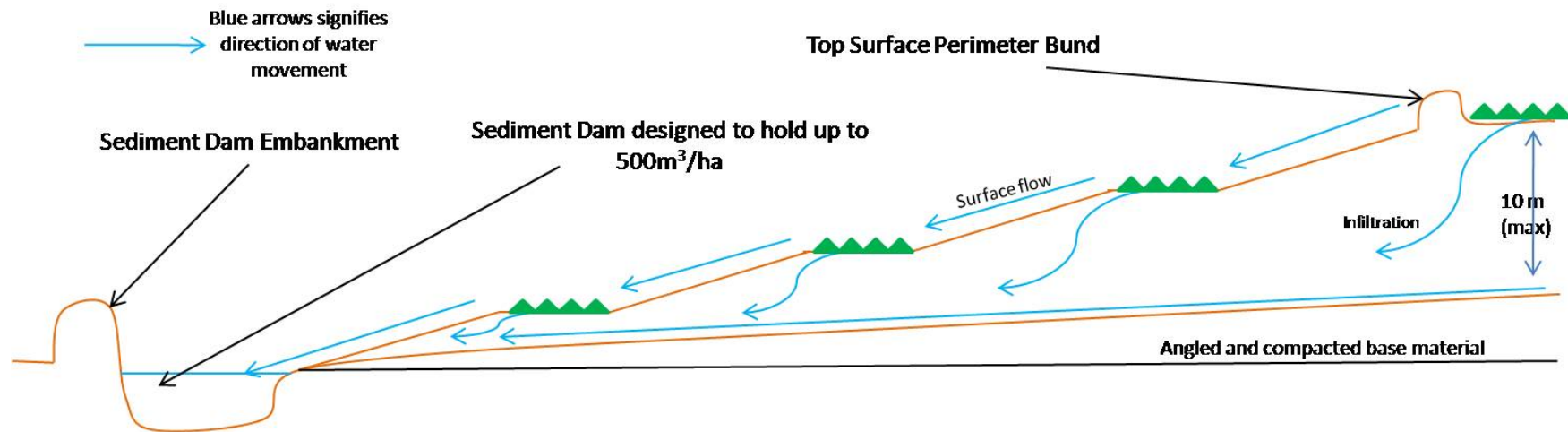
The location of drainage lines on the landform will reflect catchment runoff in surrounding landscapes with allowances made for a projected increase in drainage density requirements. Drainage lines on the landform surface will divert water into the drainage diversion bunds at the base of the batter slopes and into the sediment dam to trap any transported material before leaving the site. Refer to **Chapter 6.6** of the Redbank EIS for further details.

Rehabilitation

Refer to **Chapter 6.4** of the Redbank EIS for details on the revegetation of WRDs

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Figure 6.7-2: Conceptual Waste Rock Dump Design for Oxide Mining



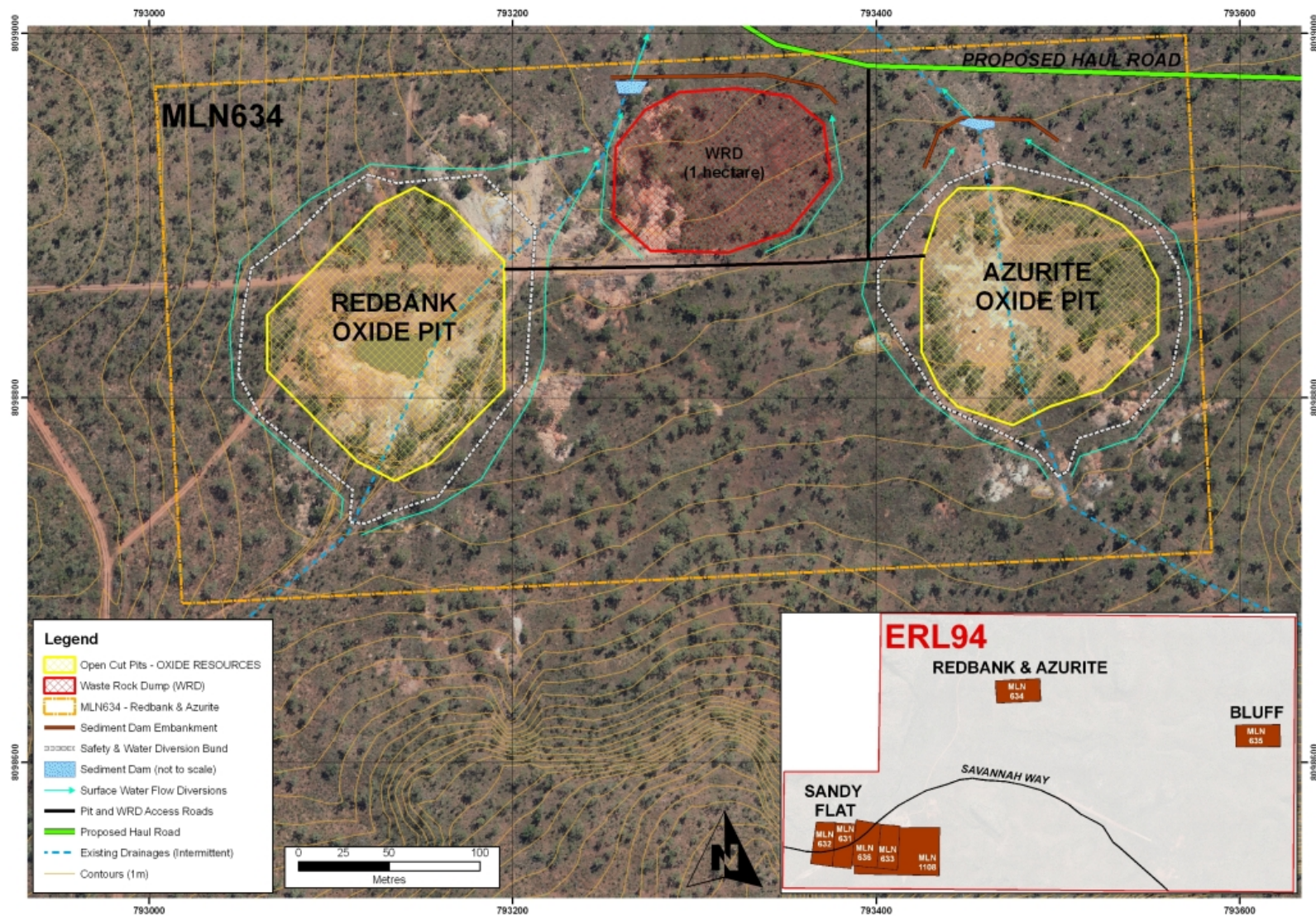


Figure 6.7-3: Proposed Waste Rock Dump for Redbank and Azurite open cut pits.

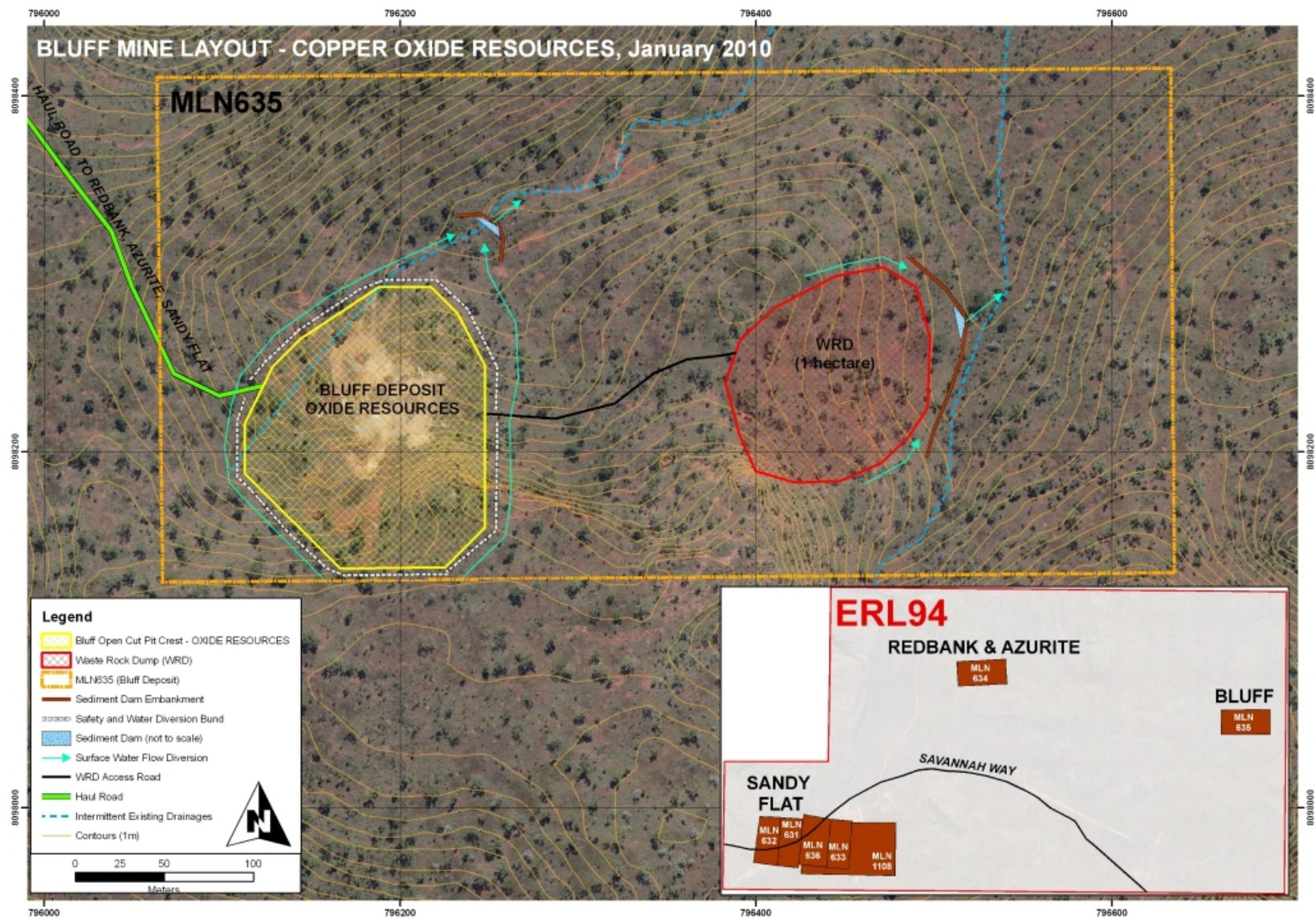


Figure 6.7-4: Proposed Waste Rock Dump for Bluff open cut pit.

6.8 Historic and Cultural Environment

AAPA 01	AAPA advises that Redbank Copper Limited were issued with a new Authority Certificate C2009/309 on the 16th of October 2009 for this project. On the basis that the new Certificate is in place, AAPA is satisfied that the requirements of EIS Guideline 6.9 has been met and the Draft EIS appropriately addresses AAPA requirements.
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Noted and appreciated.

EHA (NRETAS) 01	All the archaeological and heritage issues for this project have been identified and addressed. Masterton's Cave and Garden have been proposed for heritage listing and the process is nearing completion. These areas should not be impacted upon by the mine operations, however they may become subject to disturbance by increased numbers of personnel in the area. There are some issues surrounding Masterton's Grave and plans to re-locate it outside of the proposed impact area, but as Masterton's Grave is no longer included in the area proposed for heritage listing, this is not a matter for Heritage Branch. It will need to be negotiated by the relevant family members and Redbank Copper.
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Noted. Redbank is in discussion with the relevant families.

NLC 01	NLC are highly satisfied with the level of engagement Redbank and its consultants have had with Traditional Owners to date. It is now hoped that Redbank will continue with this high level of engagement throughout operations and closure, and develop systems of stewardship that will provide traditional owners the opportunity to sustainably manage the post-mining landscape into the distant future.
NLC 23	Matters related to cultural heritage management are generally acceptable. However, traditional owners have indicated that communication between Redbank and their representatives, while good, can be further improved, and that ongoing engagement on cultural matters would be an ideal way of addressing some concerns. For example, in 6.3.1, Redbank does not appear to have adequately defined the cultural values of the catchments and creeks and therefore does not have adequate knowledge of the baselines required for demonstrating that beneficial uses are not impacted. Traditional Owners have indicated a willingness to continue to work with Redbank to address this issue and to ensure that those impacts can be measured and managed as and when necessary.
NLC 24	In respect of the Historic and Cultural Environment Management Plan (Appendix I - page 44), Traditional Owners have requested that they be fully involved in management of cultural and archaeological matters. Some specific points raised include the development of additional exclusion zones, particularly around sensitive areas such as burial grounds; and dealing with artifacts from areas targeted for disturbance and destruction.
NLC 25	On page 139, Redbank seeks to perform further ecological studies because the area is under-represented in scientific literature. The approach suggested ignores the wealth of knowledge held by traditional owners and considers only western or European approaches to be of value. The NLC considers that it would be of great value for Redbank to engage Traditional Owners in collaborative projects of this nature, as they will provide key information useful for ongoing management during both operations and stewardship of the post-mining environment through generation of a comprehensive fusion of ecological and cultural information.

NLC 26	Redbank already appears to have missed one opportunity to develop a cultural baseline that goes beyond the limits of current best practice, by failing to integrate traditional ecological knowledge fully into their baseline measurements. The NLC recommended the attendance of traditional owners during the flora and fauna surveys as a means by which this cultural information, which is useful for targeted indigenous based land management practices, could be collected. We find that many species that are not recognized as threatened, vulnerable (etc) based on European values or numbers have significant value to indigenous people and that a reduction in their numbers can represent a threat to culture. In this respect they may also be viewed as threatened or vulnerable species. Genuine participation of indigenous people in these aspects of a project goes beyond simple involvement in surveys. They also have a significant role to play in developing land management plans that will be required during operations, closure and stewardship.
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- Improved baselines for cultural values for catchments and creeks;
- Integration of indigenous knowledge into scientific assessments and monitoring; and
- Indigenous stakeholder engagement in development of land management plans and specifically the management of historic and cultural sites and artefacts.

The EHA EIS Guidelines (September 2009), for preparing the Redbank EIS and do not highlight the need for a cultural baseline (section 6.9). Perhaps the need for a cultural baseline has not been given a high importance in these Guidelines because Redbank is a disturbed site from mining since 1916; and specifically between 1994-1996; and as a consequence some of the cultural values of the area have already been compromised (e.g the quality of freshwater wildlife). As the reviewers comments mentioned this endeavour goes beyond current best practice.

Despite the lack of a formal requirement to develop some cultural baselines the value and need for cultural knowledge has not been neglected nor overlooked in this EIS. Two indigenous men who have an association with the area were employed to assist with adding cultural knowledge to the flora and fauna surveys. Section 6.2 page 138 of the Redbank EIS acknowledges that more information on the cultural and local significance of flora and fauna will be sought during the early stages of the proposed mining expansions.

Redbank acknowledges the desires and importance to develop a cultural knowledge base. Redbank recognises that this is an important means for custodians in retaining connection to the land and planning for future use of the area well beyond the life of this mine. It is also a means of building sound relationships and two-way understanding between Redbank and traditional owners. Based on this understanding Redbank will build upon its commitment to engaging and communicating with traditional owners by identifying priorities for discerning and documenting a cultural baseline and how this may be achieved. Redbank sees the greatest opportunity for facilitating a greater cultural knowledge through: documenting the values of the local waterways;

- identifying any species or vegetation communities which may be affected by disturbance or operation of the mine which may also be of value or concern to traditional owners presently or after the life of the mine; and
- ascertaining historic burning patterns which may inform future fire management.

Improved baselines for cultural values for catchments and creeks

It is recognised that cultural uses and values for Hanrahans Creek, Echo Creek, Twelve Mile Creek Settlement Creek and Redbank can be described in more detail and that this may aid long term monitoring in restoring some of the values in the degraded systems. Redbank will make the commitment to consult further with traditional owners to ascertain some of the key values of these tributaries, with a particular focus on species and qualities (or uses) which may be useful indicators for detecting negative impacts or restoration of the degraded systems against the undisturbed Redbank Creek.

Integration of indigenous knowledge and scientific assessments and monitoring

Section 6.2 page 139 of the Redbank EIS highlights that collaborative projects including flora and fauna surveys and weed management will be sought with adjacent land managers and Waanyi Garawa Rangers. In addition more

information on the cultural and local significance of flora and fauna will be sought during the early stages of the proposed mining expansions.

All ecological assessments will endeavour to draw upon local and traditional knowledge of the indigenous and non indigenous people associated with this land.

Indigenous stakeholder engagement in development of land management plans and specifically the management of historic and cultural sites and artefacts.

Section 6.8 Historic and Cultural Environment for the Redbank EIS indicates a commitment to open communications and involvement of traditional owners in future rehabilitation and management issues.

Redbank is obliged to follow legislated procedures as a first priority upon discovering new artefacts or burial sites and negotiating their removal or protection. Traditional owners can be informed of any new discoveries or involved in the development of management plans for cultural sites and artefacts. It is proposed that this information flow and involvement is facilitated by Redbank developing a clear communication protocol with traditional owners. It will greatly assist Redbank and the traditional owners if the NLC can assist with establishing some key points of contact.

Redbank is happy to negotiate and act upon additional exclusion zones, particularly around sensitive areas such as burial grounds or artefacts targeted for disturbance or destruction.

Negotiations with traditional owners with regard to either retaining or removing access roads and infrastructure to ensure acceptable future use of the entire mine lease will be an important component in developing the closure and decommissioning management plan.

6.9 Traffic and Transport

A letter from DPI Roads Division accepted our draft Traffic Management Plan with one exception – that closure of the Wollgorang Road for blasting activities would not be permitted. As these activities are associated with sulphide mining of Sandy Flat only, this issue will be further investigated and options identified in the future.

6.10 Air Quality, Noise and Greenhouse Gas Emissions

Environment Centre 14	Page 40: The proponent's management and auditing commitments should also address annual greenhouse gas emissions.
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Noted - Greenhouse gas emissions from the proposed expanded mine will be reported annually for the life of the mine in a transparent manner in accordance with the Territory Greenhouse Gas Inventory.

EHA 54	Redbank should identify how it proposes to minimise greenhouse gas emissions as per appendix B (NT Environmental Impact Assessment Guide: Greenhouse Gas Emissions and Climate Change) of the EIS Guidelines.
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Noted - The draft EIS stated how Redbank proposed to minimise greenhouse gas emissions, but did not commit to offsetting the net emissions that are likely to result from the project. Proposed emissions offsets are outlined below.

Environment Centre 04	p. 21: Increased levels of greenhouse gas emissions are acknowledged, but no indication is given of any offset measures that the proponent is planning to undertake. The undertaking of offsetting activities would demonstrate a commitment to ‘best practice’ mining. Importantly, offset measures should be Territory-focused and achieve both carbon and biodiversity benefits.
Environment Centre 12	The proponent has not provided any indication as to how they plan to offset the greenhouse gas emissions associated with their activities. They should consider offset measures that are Territory-focused, with an aim of realising both carbon and biodiversity benefits.

In the draft EIS, maximum greenhouse gas emissions from the proposed mine were estimated at 28,012 tonnes per annum. This value will now be reduced through removing the sulphide refining component, resulting in a revised per annum emissions estimate of **13,792.3 tonnes** (likely to be an overestimate as personnel numbers required on site are now also proposed to be less). Australia’s greenhouse gas inventory total of carbon dioxide equivalent emissions was 597,156,550 tonnes. Assuming no net increase in Australia’s emissions to 2010 (unlikely based on historic trends), the proposed mine will contribute a further 0.0023% to Australia’s annual emissions. Greenhouse gas emissions from the proposed expanded mine will be reported annually for the life of the mine in a transparent manner in accordance with the Territory Greenhouse Gas Inventory.

Though not measurable under currently available standards and guidelines, Redbank’s major offset will involve returning the pH of waters from Hanrahan’s Creek to Settlement Creek to near neutral. Throughout 2009, Redbank injected a total of \$2.5 million dollars into understanding and remediating the environmental legacy at the site, and still, further work is required. Redbank’s commitment to restore the health of these waters that continued to be polluted prior to Redbank Mine’s acquisition of the lease will realise continued and far-reaching biodiversity benefits. Baseline macroinvertebrate data, in addition to proposed Gulf Snapping Turtle surveys in April/May 2010 will provide sufficient baseline data against which improvements in downstream biodiversity values can be measured.

Redbank is also keen to invest in biodiversity benefits through land management and surveys specifically designed to understand and improve the situation for the critically endangered Carpentarian Rock Rat. Redbank are committed to annual monitoring of this species, in collaboration with the NT Biodiversity Division.

At this point in time, we are unaware of any recognised NT focussed carbon offset schemes other than the WALFA Project which is unavailable for further subscriptions. Improving the biodiversity values of Settlement Creek, and providing improved information on the Endangered Rock-rat are Territory-focused activities.

Environment Centre 11	p. 36 and p. 292-3: The proponent should perform carbon stock calculations for the areas of vegetation they are proposing to clear. This will establish baseline conditions which can then be used to assess whether the carbon stocks on rehabilitated land actually offset the initial carbon deficit created by land clearing.
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Redbank acknowledge the need to acquire baseline data against which rehabilitation success can be calculated via carbon stocks. Redbank Mines Ltd’s planned expansions include development of Redbank, Azurite and Bluff Pits, associated waste rock dumps, and roads, and expansion of the process plant area at Sandy Flat.

Some proposed expansion areas (i.e. Redbank, Azurite and Bluff Pits) include areas that are pre-disturbed and thus contain only scattered regrowth (refer to **Table 2** in Chapter 6.2 of this Supplement document). As such carbon removal via deforestation will be calculated only for parts of proposed expansions that require clearing of open woodland.

Redbank Mines Ltd are committed to rehabilitating and revegetating to as near natural condition as possible, all mine impacted areas once available copper ores have been extracted, resulting in an anticipated net gain in carbon stocks at this site if rehabilitation targets are achieved.

Proposed expansions at Redbank ERL require additional clearance of 18.7 hectares, the majority of which is currently vegetated with *Corymbia dichromophloia* woodland (11.8 hectares), *Eucalyptus pruinosa* woodland (0.7

hectares) and a small portion of *Eucalyptus tectifica* (3.7 hectares), and *Eucalyptus leucophloia* open woodland (2.5 hectares).

Law and Garnett (2009) estimate that clearing *Eucalypt* open woodlands will result in an average of 88 ± 34 tonnes of CO₂ equivalent gases per hectare cleared. This figure of 88 ± 34 would be a very rough ballpark figure for Redbank to calculate greenhouse impacts from clearing. In 2010, Redbank propose to clear a total of **18.7 hectares** for expansions, which is likely to result in a **very rough figure of 1645.6 tonnes** of CO₂ equivalent gases.

To date, Australia has used largely a mix of modelling, forest inventory data and estimates based on broad structural classifications (i.e. woodland/open forest/closed forests) to calculate changes in carbon stocks (National Carbon Accounting System 2002). Tree-based allometry, using trunk diameter and tree height to estimate carbon stored in above ground biomass, is a crucial element of carbon accounting (Williams *et al.* 2005).

Prior to clearing, Redbank will engage an ecologist to gather ancillary data necessary to calculate carbon stocks to a greater accuracy, including from a representative 50m x 50m plot in each identified vegetation type:

- average trunk diameters at breast height and range;
- average tree height and range;
- tree densities within plot; and
- general woody growth descriptions.

Total area cleared of each vegetation type will also be accurately recorded and GIS mapped.

Lindsay Hutley (2010) of Charles Darwin University advised that species specific models (Williams *et al.* 2005) are available for some of the dominant Eucalypt species at Redbank, (*Eucalyptus tectifica*, *E. tetradonta*, *E. pruinosa*) and generic models can be utilised for those species for which specific models have not yet been developed (Williams *et al.* 2005 discovered that species site specific models performed slightly better than the best general models). All models provide biomass as a function of height and DBH (diameter at breast height), or just DBH, however the models are prone to being thrown out by the presence of large hollow trees on site.

Research into refining general models continues, including the impact of frequent fires, a recognised influence on northern savannas of NT and QLD (Williams *et al.* 2005). As such, Redbank will collect comprehensive baseline data and will use the best available species specific models where available, and general models as necessary, to calculate above ground biomass prior to clearing.

6.11 Biting Insects

MEB 01	a) Mosquito genus's are abbreviated differently to other insects. For example, <i>Aedes normanensis</i> and <i>Culex annulirostris</i> are correctly abbreviated to <i>Ae. Normanensis</i> and <i>Cx. annulirostris</i> , as opposed to <i>A. normanensis</i> and <i>C. annulirostris</i> .
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This fact on Mosquito nomenclature has been noted and will not only be rectified as a part of current and future Redbank work, but in all other reports produced.

MEB 02	<i>Anopheles annulipes</i> s.l. Breeding: For the third sentence in this paragraph, the word 'pulls' should be replaced with the word 'pools'.
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Noted.

MEB 03	<i>Culex annulirostris</i> and <i>Anopheles annulipes</i> s.l.– control. Bifenthrin barrier insecticide can also be used for the control of adult mosquitoes of these species.
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Noted, Bifenthrin will be considered as a potential treatment, and as such, has been added to the list of hazardous substances (refer to Chapter 6.7 of this Supplement document).

MEB 04	Paragraph 3. In the second last sentence, the word 'burrow' should be replaced with the word 'borrow'.
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Noted.

MEB 05	Point 1, dot point 5. It should be specified that only equipment and receptacles sourced from North QLD that appear to have previously held water, or are holding water upon arrival, should be treated with a 10% chlorine solution or a suitable insecticide such as alpha-cypermethrin or lambda-cyhalothrin. There would be no requirement for broad scale treatment of all incoming equipment and receptacles.
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Noted and incorporated into the updated environmental management plan.

MEB 06	Appendix I Section 12.3 Biting Insects Management Management Actions – Dot Point 3. 'Yellow or red lights will be used in areas where personnel may gather at night to prevent attracting midges'. The word 'midges' should be replaced with the words 'biting insects'.
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Noted.

7 ENVIRONMENTAL MANAGEMENT

8 PUBLIC INVOLVEMENT AND CONSULTATION

Environment Centre 36	Page 302: The Environment Centre NT has not been directly consulted about the Redbank Mines Ltd. project. Given we are the peak non-government environment organization in the Northern Territory; we should be viewed as a key stakeholder. We would have welcomed an opportunity to meet with the proponent in order to learn more about the project prior to the release of the draft EIS.
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Noted.

Environment Centre 33	Page 196: The draft EIS claims that "...stakeholder feedback on Redbanks intentions with respect to post closure rehabilitation has been positive" – but it fails to provide further details about this feedback. Which stakeholder groups have responded and what have they conveyed in their response?
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Noted - Redbank and EcOz notified stakeholders of expansion proposals via letters, however the majority of feedback was received at a meeting between Redbank Mines representatives, NLC, and Traditional Owners and Native Title Claimants of the Redbank Mine area, held at Redbank Mine Camp on the 8th October 2009.

Wollogorang Station and the AWC Conservancy provided responses that indicated they were satisfied with the rehabilitation and closure strategy.

9 RESPONSES TO COMMENTS ON APPENDICES

NLC 07	The fact that metallurgical testing was not completed prior to release of the EIS, and this lack of information leads to weaknesses in the Environmental Management Plans (Appendix I), and the Water Management Plan (Appendix B) that will need to be addressed.
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Noted - The removal of the sulphide mining and processing activities from this assessment should reduce this concern. Redbank Mines are committed to continually update these plans as new information/data become available. The WMP is due for annual renewal in February 2010 and the updated Environmental Management Plans are expected to be a condition of approval.

Water Resources 07	The WMP does not take recent rainfall data under consideration. The last 10 years are the wettest in recorded history. This is critical to the water balance and consequently the frequency of hydraulic connection between pit-water and the shallow aquifer. Figure 1 below presents a plot of rainfall from SILO Data Drill data made available by the State of Queensland through the Department of Natural Resources, Environment, The Arts And Sport for Calvert Hills Station DR014705 and clearly shows how important is to make provision for above average rainfall.
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Noted - Excess water is not expected to be a problem after 2010. Averages have been used and contingency for larger events – as have been common lately has been made.

The preliminary water balance for the site is presented in **Appendix H** of this Supplement

Land Management Unit 01	The proposed Erosion and Sediment Control Plan (ESCP), mentioned in Appendix I should be submitted to the Land Management Unit of NRETAS for approval prior to implementation. This ESCP should contain detailed information on design, construction and monitoring of erosion control structures on all infrastructures associated with the project.
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The draft ESCP will be finalised soon after the submission of this Supplement and submitted to NRETAS for approval prior to implementation.

EHA (NRETAS) 19	Appendix B - the Water Management Plan (WMP) - Table 2 lists the commitments made for the term of the WMP and expected completion dates. The results of these commitments and appendices referred to in the WMP (Appendix A-I) need to be included in the supplement - specifically; Digital terrain modelling; A final plan for dewatering the Sandy Flat Pit; An understanding of required Pit levels; Sandy Flat Pit Water Management Strategy; New Water Testing Equipment; Installation of Monitoring Bores; Commence Water Treatment; Strategic Plan for groundwater and Stormwater management; Water Balance; Chemistry of Seepage Trench Analysis; Collation and Analysis of historic data; Reduction of offsite water contamination by 50% (how this is to be measured). Redbank needs to provide contingency/remedial actions if the water management objectives and Targets (Table 1, Appendix B) are not successful.
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In the WMP submitted early in 2009, Redbank committed to a number of data gathering activities and management tasks:

1. Redbank committed to performing Digital Terrain Modelling (DTM) of the Redbank Copper Ltd Exploration Retention Licence (ERL). The DTM was completed prior to the acceptance of the WMP and has been a useful tool in completing tasks throughout the subsequent months. An image of the DTM can be found at **Appendix D**.
2. A final plan for dewatering the Sandy Flat Pit and treatment processes has been developed, approved, and is currently being implemented on site. Treated water is currently being stored in the existing Tailings Storage

Facility (TSF) before planned release in accordance with the approved Waste Discharge Licence (WDL) 175.

3. Pit level volumes and depths have been calculated to increase understanding of manageable water volumes for the upcoming wet season. Redbank Copper Ltd are confident that water quantities on site will remain at a manageable level throughout the course of the wet season thus preventing any breaches or uncontrolled releases of untreated water into the surrounding waterways.
4. Ten new Environmental Monitoring Bores (EMBs) have been installed at the Redbank site, eight in the vicinity of Sandy Flat Pit and two in the vicinity of the proposed Bluff pit. Thus far, two sampling events have taken place at the Sandy Flat EMBs, with a view of performing monthly sampling for at least the first year to assess the groundwater quality and potential changes throughout the season resulting from pit dewatering.
5. The current management strategy for the Sandy Flat Pit water is to treat and release over the current wet season. During the dry season of 2010, pit water will be used as process water in the Solvent Extraction/Electro-winning (SX-EW) plant. Prior to the onset of the 2010/11 wet season, the management strategy for pit water will be reviewed and updated if required.
6. A series of water testing equipment has been sent to Redbank including; Temperature, Electrical Conductivity and pH meters, in addition to a Colorimeter to analyse copper content of water. The equipment will continue to be maintained and upgraded according to current best practice. For example, alkalinity testing has been requested as part of the WDL and as such, equipment has been sourced and sent to Redbank for onsite testing.
7. The storage capacity of the Sandy Flat Pit is significantly affected by stormwater inflow. Volume calculations of the pit incorporated expected quantities of contaminated surface waters requiring storage on site. Uncontaminated stormwater will be diverted away from the pit to prevent unnecessary treatment of water prior to release. Analysis of existing waste rock dumps has revealed that at this point they are not contributing contaminants to groundwater. Samples from the existing TSF have also been taken and results will be available shortly. Groundwater EMBs have been installed and will be monitored monthly.
8. Water balance analysis has been conducted as part of the draft EIS and is used for water management purposes.
9. Water samples have been taken from seepage trenches which currently direct contaminated water into the Sandy Flat Pit where the water is stored before treatment and proposed release.
10. A spreadsheet has been created of both surface water and groundwater which includes historical data collected from government sources, mine sources and others (e.g. environmental consultants). These groundwater and surface water dashboards, available in **Appendix E** will continually be added to and developed as the monitoring program continues at the Redbank Mine Site. Macroinvertebrate data has also been collected in the past two years to provide baseline data for future analysis of changes to water and stream quality in the region.
11. All work carried out on site aims to achieve a 50% reduction in contaminant levels of water immediately downstream of the site by the end of the 2009/10 wet season. Progress toward achievement of this target will be reported upon in a timely manner.

The WMP is due for update and significant revision and resubmission at the end of February 2010.

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LIST of APPENDICES

- A. Macroinvertebrate Report
- B. Waste Discharge Licence 175
- C. Conceptual Risk Diagram and Table of Remedial Actions
- D. Digital Terrain Model Image of ERL 94
- E. Surface and Groundwater Monitoring Dashboards
- F. Water Management Plan
- G. Updated Commitments Table
- H. Water Balance
- I. Trigger Level Details