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1 Executive Summary

Western Desert Resources Limited (WDRL) is proposing to develop an iron ore mine in the Gulf region of the Northern Territory. The project is titled the Roper Bar Iron Ore Project (the Project). As part of the approvals process WDRL submitted a Notice of Intent in 2011 which was referred to the Northern Territory Department of Natural Resources, Environment, the Arts and Sport (NRETAS) and the Australian Government Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) for a determination as to the level of environmental assessment required.

The project has been determined to require an EIS by the Environment and Heritage Division of NRETAS and the Environment Minister of the NT. The Commonwealth Government Department of SEWPaC and the Commonwealth Environment Minister declared the project a Controlled Action under the EPBC Act. The relevant agencies have agreed to conduct the Assessment under the Bi-Lateral Agreement between the NT and the Commonwealth.

This document is the EIS for the Project. This Executive Summary provides an overview of the EIS.

1.1 Project Overview

Western Desert Resources Limited (WDRL) are seeking approval to mine within Mining Lease Application (MLA) 28264 and MLA 28963 in the Roper Bar Region of the Northern Territory. The location of the project and exploration leases is shown in Figure 1-1. WDRL have submitted five MLA's as required under the Northern Territory *Mineral Titles Act*: MLA 28264 – for mining purposes; MLA 28267 – infrastructure (airstrip); MLA 28266 – infrastructure (facilities); MLA 28962 – camp; and MLA 28963 – for mining purposes.

The project is comprised of six granted exploration licences (EL24307, EL24655, EL24944, EL25672, EL26759 and EL26992) which are located about 240km east of Mataranka and 60kms south of Ngukurr. JORC-standard (Joint Ore Reserves Committee) resources have been estimated from about one-third of the outcropping haematitic iron formations within the Sherwin Ironstone Formation. WDRL are currently seeking approvals to mine a small proportion of the total known resource, focussing on high grade direct shipping ore (DSO).

The WDRL proposal is located external to the boundaries of the proposed Limmen National Park, which is intended to be declared as a park pursuant to the *Territory Parks and Wildlife Conservation Act (NT)* (TPWCA). At the time of writing the Park announcement was subject to a community consultation period.

Project Proponent

Western Desert Resources Limited (WDRL) is a diversified resources business with a portfolio of quality assets in the Northern Territory (NT), including gold, copper and other base metal prospects.

The company's flagship project is the rich iron ore deposits at Roper Bar, near the Gulf of Carpentaria.

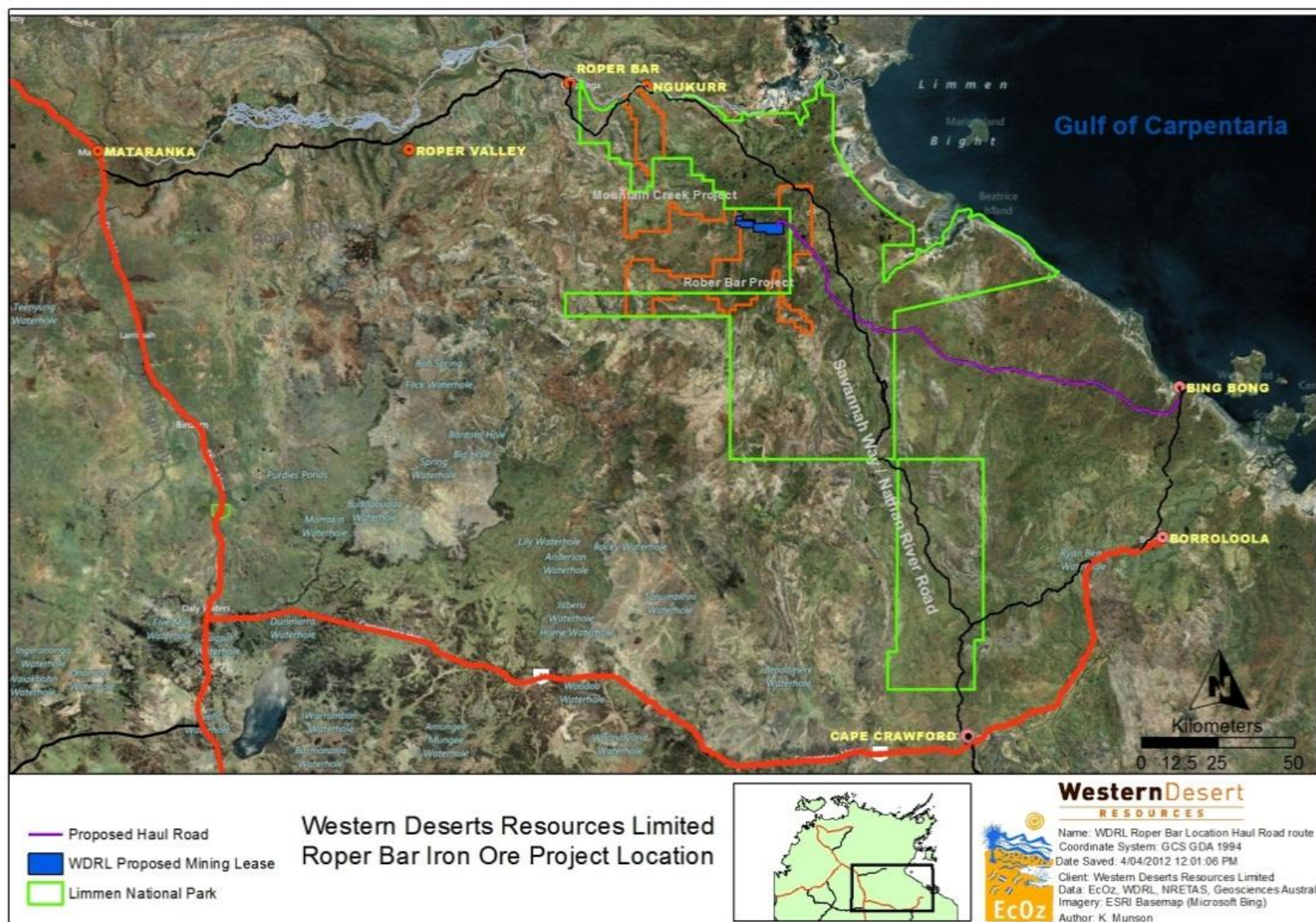


Figure 1-1 Project Location

Project Justification and Alternatives

The development of this project has seen the consideration of a range of project, and consequently environmental, alternatives. The project was originally conceived as a Beneficiated Ore (BFO) project with ore slurried and transported by pipeline to waiting ships.

Project alternatives and options considered during the planning process and detailed further in Chapter 2 included:

- Not proceeding with the proposal;
- A range of mining methodologies, including open pit size, improvements in energy consumption and efficiencies;
- Ore handling, preparation, processing and transport;
- Overburden and waste management for long-term, stable landforms;
- Location of ancillary facilities;
- Disposal of general waste after all recycling options have been exhausted;
- Water supplies and efficiencies for construction and operations;
- Power supply and distribution during construction and operations, and energy use and efficiencies;
- Methods to transport and accommodate the construction and operations workforce; and
- Rehabilitation methods and environmental management techniques.

The EIS Process

This Environmental Impact Statement (EIS) provides the framework for considering the sustainability indices of environmental, social, cultural and economic impacts of the proposed mine in the context of legislative and policy requirements.

This report is the primary source of information for the government and the public to use to assess this project. The public will have the opportunity to review and provide comment to the Government during their assessment period. This EIS addresses the assessment Guidelines as proposed by the Australian and Northern Territory Governments (refer to Appendix A).

EIS Scope

This EIS presents the results of a series of environmental, social and cultural assessments undertaken to generate baseline data and scope the impacts (positive and negative) and management implications for the proposed mine.

The main body of the EIS (this document, Volume 1) is structured into sections to conform with the Department of Natural Resources, Environment, The Arts and Sport (NRETAS) Guidelines for the Preparation of an Environmental Impact Statement. The guidelines have been attached as Appendix A. The Document Cross-reference (Appendix B) identifies where in the EIS document the relevant risks, requirements, assessment and management actions can be found.

Technical appendices providing detailed information on many aspects of the project are attached to the EIS as separate documents in Volumes 2 and 3.

Specialist technical studies have been undertaken to support the development of the EIS including:

- Hydrogeology and ground water testing and modelling;
- Geotechnical and geological investigations;

- Geochemical and Acid and or Metalliferous Drainage investigations;
- Surface water quality baseline investigations;
- Terrestrial and aquatic flora and fauna studies;
- Biting insect surveys;
- Archaeological investigations;
- Social Impact Assessment;
- Noise baseline data and modelling; and
- Targeted stakeholder consultation.

Public Consultation

This EIS has been released for public comment. This process was facilitated by the advertising of the public consultation process in the NT News, Katherine Times and The Australian Newspapers. Dates for submissions are included on the advertisements and available on the NRETAS website.

Copies of the document are available on the NRETAS website, and a list of where hard copies are available is included in the EIS Guidelines at Appendix A.

1.2 Project Description

Chapter 2 describes in detail all aspects of the proposal.

The Project involves mining and processing ore onsite and hauling the ore 165km to Xstrata's existing facility at Bing Bong where the ore is transferred by barge to off-shore anchored Ocean Going Vessels (OGV).

WDRL proposes to develop its open pit iron ore mine in 2013 with a series of open pits of varying depths between 20 vertical meters and 100 plus vertical meters.

The project will be developed in phases. Phase 1 involves mining and processing of Direct Shipping Ore (DSO) only. This incorporates mining, crushing and transport/shipment of high grade (>58%) ore only. This phase will operate from years one through to year eight and will focus on areas of the deposit in which reserves have been well investigated (Areas F and E East) within MLA 28264 and MLA 28963.

This area features an estimated 24 Mt of high grade direct shipping ore resource, resulting in an expected mine life for these MLA's of approximately 8 – 10 years. It is anticipated that during phase 1, approvals will be sought for Phase 2, a Beneficiation Plant to be constructed to extend mine life with the mining and production of Beneficiated Ore (BFO).

Approximately 15 million tonnes per annum (Mtpa) of ore and waste material will be mined at Roper Bar during this initial project start-up phase. Phase 1 of the Project will continue beyond this project start-up phase and focus on known resources that will undergo further resource definition during the start-up phase. Ore processing will have a designed capacity of at least 3Mtpa to cater for peak production periods during the start-up phase and any future production increases.

Construction and Operations will both be 24 hours per day for around 325 days a year utilising standard mining machinery and equipment. It is assumed that that up to 40 days production a year will be lost due to delays mainly attributable to high rainfall events.

The ore body starts at shallow depths. The deposit is expected to be mined in sections so that there is the opportunity to utilise mined out pits for the storage of water or wastes. Once mined, ore will be hauled to the Run of Mine (ROM) pads from where it will be crushed, sorted and loaded for transport to Bing Bong.

The total area of impact from the proposed activities is approximately 1,400 ha.

Product Description

The initial mining phase for which approvals are being sought will involve MLA 28264 and MLA 28967 which contain a number of deposits including the high grade Area F and Area E East. This area features an estimated 65 Mt of ore resource, of which only the direct shipping ore component of this resource is being proposed to be mined as phase 1 of this project. The estimated JORC Mineral Resource estimates for this aspect of the project of approximately 24 Mt will result in an expected mine life for these ML's of approximately 8 – 10 years. 20.2Mt @ 58.6% Fe is a JORC Inferred and Indicated Mineral Resource estimate. WDRL expect another 4 Mt of DSO from updated JORC-compliant resource estimates to be released soon. Ore which is greater than 58% Fe is regarded as Direct Shipping Ore (DSO).

Infrastructure Requirements

Ancillary Infrastructure

The mine camp will be located about 4km North West of the proposed Process Plant. The camp will be sized for 100 beds during the Phase 1 construction and mine establishment period and administered by a camp catering contractor. It will then be adapted for ongoing operation.

Additionally, during the construction period 120 workers will be required to complete the haul road in four concurrently constructed zones over a period of five months, necessitating four temporary construction camps. These camps will be purpose-built demountable style camps with all necessary infrastructure including water, sewerage, drainage and electricity.

Typically, mine buildings and services would consist of an administration building (mine services centre), change rooms, truck service bay, truck tray change bay, mining fleet fuel storage and re-fuelling building, spares store, and explosives storage. An air compressor is provided for the powering of pneumatic tools used for the maintenance of the mining fleet.

The Mine Services Centre services the administration and messing requirements of mine personnel. The building will provide workspace for around 40 personnel with additional rooms provided as board and conference / training rooms, a first aid room and communication rooms for the entire operation.

The existing 1600m x 15m Airstrip will be upgraded to a total size of 2000m x 30m strip in accordance with Civil Aviation Safety Authority (CASA) Guidelines – Guidelines for Aeroplane Landing Areas.

Power will be provided by generators.

Details of camp waste management, water supply and management, vegetation clearance, considerations for locating these camps while being aware of culturally or ecological sensitive sites, are presented in detail within the EIS.

Haul Road and Loading Facility

A private, sealed haul road will be constructed for the haulage of ore from the mine site to the proposed Bing Bong Stockyard Facility, approximately 165km in length.

The haul road will cross the Mining lease and pastoral leases. Meetings with the landholders and their native title representative body have taken place. An easement through areas of Limmen National Park (when declared) has been identified by the Government.

The alignment of the haul road has considered geotechnical, sacred site, hydrological, social, economic and biodiversity issues. The route has been traversed by and approved by the Native Title holders.

The only intersection with a public road is with the Savannah Way on the section locally known as the Nathan River Road. This intersection will be upgraded and managed with appropriate traffic management controls put in place in accordance with the relevant Australian Standards and Guidelines.

The haul road will require up to nine major river crossings potentially requiring bridges, approximately 12 minor waterway crossings requiring culverts/pipes and a further 60 locations may also require culverts/pipes to ensure adequate cross-drainage. The design of river crossings has taken into account potential impacts to water quality, flow and fish passages.

It is expected that the haul road will have an 8-10 year life, unless further resources have been found. At the end of this period the road will be relinquished to the NT Government or alternatively standard road rehabilitation techniques will be applied.

Bing Bong Loading Facility

Haul trucks will transport the ore from the mine via the haul road to a stockyard near the Bing Bong Loading Facility. Phase 1 has a manual stockpiling operation where the haul trucks will deposit the ore onto the ground of the stockyard where it will be picked up and stockpiled using front end loaders. Further developments include an automated stockpiling operation where the haul trucks drive onto an elevated roadway beside the stockyard and the trucks side tip into a ground mounted truck hopper and feeder system.

The ore would then be reclaimed and conveyed to the Bing Bong Barge Loader via a covered overland conveyor.

The proposed first phase of the project is to establish a Stockyard and Barge Loading facility with sufficient capacity to export 1.5Mtpa of DSO through the Port of Bing Bong that can be expanded to 3.0Mtpa whilst operational. Additional dredging is not expected to be required to support the WDRL proposal as the draft of the barges is planned to be the same as that of existing barges used at the Port. A combi-pile wall will be installed within the existing loading basin for the WDRL barges from a dedicated conveyor. A new conveyor platform will be required to be constructed to facilitate this.

Two self-propelled barges (each 79.8m of length, 28m breadth and a draft of 4m) would transport the DSO from the port to the transshipping point initially for the 1.5Mtpa operation increasing to three self-propelled barges for the 3Mtpa operations. For operations up to 1.5Mtpa, the transshipping anchorage point closer to the port would be used due to the shallower draft of the Supramax vessels. Later phases would see the transshipping point lengthened to approximately 21NM from the Port to accommodate larger Panamax sized vessels. The Supramax vessels have their own cranes for transshipment from the barge to the vessel. The Panamax-sized OGV's do not and therefore a 32T floating crane would be used to transfer the material from the barges to the ship.

A set of Port Operating Rules will be developed by WDRL in conjunction with Xstrata, which will include the instatement of a shipping officer to control all shipping traffic within the Port and ensure the safety of all port users.

Development Schedule

The proposed development schedule is as follows.

Activity	Timing
Early preparation works	Third Quarter 2012
Contract works	Fourth Quarter 2012
Commissioning:	First Quarter 2013
Operation	First to Second Quarter 2013
Phase 1	2013 – 2021
Decommissioning	In 8 years based on 20 Million Tonnes

Rehabilitation and Decommissioning

WDRL plan to decommission the site via the removal of all infrastructure (plant, equipment, structures, hardstand and concrete footings, buildings, water storages and any other infrastructure), unless it is specifically requested to remain on site by relevant stakeholders. The majority of this activity will simply involve the physical removal of equipment or materials.

The post rehabilitation landforms of the Waste Rock Dumps (WRD's), pits, ROM pads and infrastructure areas will generally be broad, vegetated mounds with an earthen cover and a revegetated surface. Some reinstatement of rocky ridges will also be likely in certain locations. A re-alignment of the Towns River is required, as the stream traverses pit F. This stream re-alignment will be planned and designed to be a permanent feature in the landscape. The final plans for pits has not yet been determined but will be identified in a more definitive rehabilitation and closure plan required within 3 years of the project commencement.

As far as possible, the landforms will be designed to be compliant with the post-mining land use agreed to by the relevant stakeholders.

1.3 Existing Environment

The existing climate has been described in detail in Chapters 3-8 (Land Resources; Terrestrial and Aquatic Biodiversity; Marine Environment; Surface and Groundwater; Climate, Air, Noise and Vibration; and Social Aspects respectively).

Climate

The region's climate is strongly seasonal with distinct dry and wet seasons. The average rainfall is over 1000mm but this is highly variable. The evaporation rate is approximately 2400mm. This strong rainfall seasonality, high rainfall variability and high evaporation rate has historically imposed a challenging environment for regional development.

Physical Environment

The abiotic environment is described in Chapter 3 including geology and soils, topography, land systems and surface and ground water.

At a broad scale, the Roper Bar Project Area and first two thirds of the Haul Road are located within undulating terrain comprising scattered low, steep hills on sedimentary rocks, in places overlain by lateralised Tertiary material. Soils across the region are mostly skeletal or shallow sands.

The last third of the Haul Road to Bing Bong traverses across gently undulating to flat coastal plains with scattered rugged areas of Proterozoic sandstones and Tertiary sediments (i.e. the IBRA "Gulf Coastal" bioregion). Soils are predominantly sandy red earths and shallow gravelly sands.

The Port of Bing Bong is located on the Gulf coast within an area of coastal sand dunes, sand sheets, and chenier plains adjacent to tidal mud flats, tidal creeks, and mangroves.

The project area is located within the catchments of the Towns (mine and haul road) and Limmen Bight (haul road) rivers. The haul road crosses nine major creeks and rivers, the Limmen Bight River being the most substantial. Approximately 55km of the haul road passes through (within an easement) Limmen National Park.

Investigations at the mine site area have revealed the presence of groundwater at depths of approximately 60m with low bore yields.

Terrestrial Environment

The Project falls within both the Gulf Coastal and the Gulf Falls and Uplands bioregions. The vast majority of these bioregions comprise extensive areas of intact (uncleared) and relatively common land types. A number of large conservation areas are being developed for the region. In particular, the MLA areas fall within the boundary of the recently declared Limmen National Park, and are also located within the Towns River catchment which flows into the proposed Limmen Bight Marine Park. Chapter 4 (Biodiversity) discusses the terrestrial biodiversity values within both bioregions, with a particular focus on the three components of the project.

Few field surveys have been conducted in these bioregions. Those that have were mostly concentrated around accessible sections of the major tributaries and rocky ridges, and the two significant tidal systems. To garner an up-to-date understanding of the regional biodiversity, information from previous studies and existing datasets was collated. This was augmented by a number of vegetation and fauna field surveys – both general ones, and some targeted towards notable species and habitats. Priority species and sensitive habitats that are identified as possessing high conservation values and having the potential to be detrimentally impacted by project development activities are examined in detail. Those regarded as being at risk are referred to Chapter 9 (Risk) and commitments are made to those requiring further study or ongoing monitoring.

Marine Environment

The marine environment and coastal (below Highest Astronomical Tide) environments and processes have been described using pre-existing data for the region. The marine chapter of the EIS (Chapter 5) focuses on the components of the proposal located in the intertidal and subtidal zones, comprising the proposed barge landing facility, transshipment anchorages and other ancillary facilities. Given that the proposed barge landing facility is to be located within an existing Port, no investigations of the surveys of the littoral and sub-littoral environment have been carried out by EcOz Ecologists.

The study area is located in the south-western coast of the Gulf of Carpentaria near the Sir Edward Pellew group of islands. The extensive intertidal sand and mud flats and shallow subtidal areas of the Gulf of Carpentaria and its associated estuaries contain significant and extensive coastal habitats including seagrass and macro-algal communities, intertidal banks, sandy beaches, mangrove forests, salt flats, open waters, inshore rocky reefs, and freshwater wetlands. The south-western part of the Gulf is dominated by tidal plains which provide significant habitat for several migratory bird species.

The Port of Bing Bong is located adjacent to a narrow beach berm, with low frontal and hind dune formation and extensive tidal mud flats, in a typical chenier formation. At higher elevations within the coastal zone, low, partially stabilised sand dunes are present, intersected in several locations by tidal channels. Relatively undisturbed coastal and terrestrial ecosystems are located to the north and south of the site.

Significant marine communities immediately adjacent to the Port include extensive seagrass beds, found along the coast between the Roper and McArthur Rivers, and subtidal soft sediment communities.

These communities in the Project Area are thought to be supporting a number of species which are listed as matters of National Environmental Significance including migratory waders and seabirds, marine turtles, dugongs, inshore cetacean species, sharks, teleost fish, and sea snakes.

The most significant potential impacts associated with the project are considered to be the potential for displacement and disruptions to normal behaviour for marine fauna associated with acoustic disturbance arising from the increase in shipping, and increased likelihood of direct mortality from boat strike. Other potential impacts, such as spillages, introduction of marine pests, and other mentioned impacts are considered to be low risk activities given the mitigation measures proposed.

In order to ensure that the project does not cause adverse environmental impacts, a marine ecological monitoring program is proposed. WDRL propose to contribute towards the existing Xstrata Marine Monitoring program and to this end, WDRL commits to undertaking a strategic assessment of proposed mitigation measures and the current Xstrata Marine Monitoring program to ensure that the cumulative impacts of both Xstrata's expansion and WDRL's proposal may be appropriately mitigated and monitored.

Social and Cultural Demography and Values

An extensive stakeholder engagement and consultation program has been carried out in support of this EIS. The objective of this program was to facilitate the sharing of information and to also encourage community feedback with a view to engaging and collaborating with identified community members and key stakeholders during the EIS process.

The stakeholder engagement and consultation program has formed a key component of the Social Impact Assessment (SIA) carried out for the project (Appendix G). The SIA includes a description of the communities most likely to be affected by the proposal: Borroloola; Minyeri; Ngukurr; and Numbulwar. This includes population demographic, social, cultural, and economic profiles; social amenity and use; community infrastructure and services; the existing economic environment; employment and business opportunities and potential impacts (both positive and negative) on the residents and stakeholders of four communities and their surrounds.

The region is considered remote with the only nearby population centres of Ngukurr, Borroloola and Numbulwar having small and predominately aboriginal populations. The region's economy is largely based on tourism and pastoralism. Social, cultural and economic values associated with the project area include traditional resources (economic plants, animals) social and cultural values related to place, and commercial, recreational and Indigenous fisheries and other marine resources.

Other values of the region are likely to relate to its geographically remote location and relatively unspoilt nature and visual amenity. Some tourism operators are known to operate in the region including fishing charters and there is potential for other tourism development in the area including Aboriginal cultural tours particularly given the proximity of Borroloola to the Port.

Additionally, the project lease area may hold less quantifiable social values, such as spiritual, historical, aesthetic, educational, artistic, epistemological, therapeutic and character building values for sections of the population.

All four communities have very young populations with nearly 40% of the population under the age of 25 years, and for many of the communities almost one-third of the population is below 15 years of age.

In all communities there are low levels of engagement with the labour market and as at 2006, CDEP participation was the highest reported employment category in each community.

Indigenous stakeholders did not identify any areas of particular interest apart from those sacred sites identified in the AAPA Certificate. Mention of generic types of landscapes that provide productive hunting and gathering and related activities did occur but no potential impact to these sites was identified. Consultations provided evidence that the communities are acutely aware of the limited

capacity for employment and training opportunities and are most optimistic about the potential for the Roper Bar Iron Ore Project to change this.

Non-indigenous people have had some opportunities to provide comment on the project and the current project proposal has removed many of the potential impacts to the users of this remote recreation area.

1.4 Project Risk Assessment

To fully understand the environmental risks that affect human health, the socio-cultural environment, and the natural environment from this development a risk assessment process was developed and is presented in Chapter 9. A preliminary risk assessment identified a number of shortcomings in the information and data required to fully understand and mitigate risks. The identification of risks was informed by the development of supporting chapters and technical documents prepared in support of this EIS, as well as consultation with relevant WDRL personnel and technical experts.

Chapter 9 explores the environmental, socio-economic and cultural risks of the project. The EIS Guidelines outline five key risks:

- Risks to surface and ground water resources;
- Risks to terrestrial, aquatic, and marine biodiversity;
- Rehabilitation success and mine closure;
- Social and cultural impacts; and
- Cumulative impacts.

Two further key risks were identified; Acid Mine Drainage and the re-alignment of a small portion of the upper Towns River around Pit F.

Another six secondary risks (transport, visual amenity, air quality, noise and vibration, biting insects and bushfires) were identified during the risk assessment process. It should however be acknowledged that whilst all significant risks have been identified, a number of other potential impacts and associated mitigation measures have been identified within the EIS.

These risks were assessed in a risk management framework which was designed to delineate the effect of hazards on values and to quantify risk profiles for each hazard. Furthermore, this process quantifies the influence of mitigation measures.

This assessment found that most risks can be maintained with acceptable levels of consequence and likelihood with the mitigation measures outlined. Some risks, such as cumulative risks to the marine environment arising from both Xstrata's proposed expansion and WDRL's proposal require further work in determining the level of risk and opportunities for mitigating these risks. Commitments to mitigate, manage and monitor risks are found in the Commitment Table in Appendix Q.

Management of Identified Risks/Impacts

For each key and secondary risk, a summary of the management/and or mitigation measure is included below. The Environmental Management Plan and subsidiary plans and documents provide greater detail. For each key risk, it is assumed that relevant training and education will be provided to all personnel, contractors and visitors.

Key Risk	Management/Mitigation Summary
<i>Surface and Ground Water Resources</i>	- Compliance with the Water Management Plan (under preparation) including erosion and sediment control, baseline and ongoing surface water and groundwater quality monitoring, baseline ground and surface water environmental flow modelling and monitoring. - Aquatic macroinvertebrate monitoring (see Aquatic Biodiversity).
<i>Terrestrial Biodiversity</i>	- Additional fauna and weed surveys. - Ensure clearing is within relevant boundaries. - Speed restrictions. - Compliance with relevant plans of management including Erosion and Sediment Control, Weeds and Pests, Water, Acid Mine and Drainage and Rehabilitation and Closure.
<i>Aquatic Biodiversity</i>	Surveys of macro-invertebrate populations will be undertaken prior to the commencement of any mining or related disturbances and macroinvertebrate monitoring will continue to be undertaken as part of the surface water monitoring program.
<i>Marine Biodiversity</i>	- Commitment to undertake strategic review of proposed monitoring and mitigation measures given cumulative impacts on marine environment. - Design and procedural controls during construction and operation including but not limited to use of cutter suction dredges, silt curtains, compliance with AQIS regulations, dust and hydrocarbon spillage prevention and containment, speed restrictions, and marine megafauna approach procedures.
<i>Rehabilitation Success and Mine Closure</i>	- Weed management protocols. - Progressive rehabilitation. - Erosion and sediment controls. - Monitoring of rehabilitation against standardised protocols.
<i>Social and Cultural Impacts</i>	- Ongoing community engagement with community and key stakeholders as described in the Stakeholder Engagement Plan. - Implementation of WDRL Indigenous Employment Strategy. - Proposed social enterprise scheme (see offsets).
<i>Acid Mine Drainage</i>	Ongoing studies are being undertaken to inform management of Potential Acid Forming (PAF) materials.
<i>River Realignment – Pit F</i>	- Stream channel will be re-aligned and then allowed to drain eastwards in engineered channels back into the existing Towns River channel, downstream of the proposed mining area; and - Erosion protection and sediment control are to be achieved by providing a 0.5m thick rock armour cladding in the base and along the embankments to some 0.5m above the 100-year ARI flood level.
<i>Transport Impacts</i>	Implementation of Traffic Safety Management System including: route restrictions, speed restrictions, tonnage and axle restrictions, and driver fatigue management.
<i>Visual Amenity</i>	- Ensure areas subject to substantial modification are not visible from key vantage points. - Appropriate lighting. - Progressive rehabilitation including reinstatement of natural contours where possible.
<i>Air Quality</i>	- Dust baseline and construction and baseline monitoring to be implemented. - Design controls to reduce fugitive dust emissions i.e. covered conveyors, dust hoods, and water suppression cannons.
<i>Noise and Vibration</i>	- Maximum practical separation distance between power generators and mine camp accommodation. - Noise attenuation methods/devices for plant and machinery. - Speed restrictions for vehicles and vessels. - Compliance with relevant NT legislation and specified noise and vibration criteria.
<i>Biting Insects</i>	- Prevention of ponding and pooling. - Appropriate design of sediment ponds. - Monitoring of mosquito larvae.
<i>Bushfires</i>	Provision of appropriate fire fighting equipment, training, and compliance with Emergency Procedures Plan.
<i>Cumulative Impacts</i>	Visual amenity (remote or wilderness values) and impacts upon the marine environment considered significant; measures to mitigate these impacts as per above.

Impact Offsets

Significant investment into research and development of rehabilitation and reduction of greenhouse gas emissions will occur during the life of the project to assist with the potential reduction of residual environmental impacts; however it is acknowledged that despite best practice environmental management, some residual impacts are likely to occur.

An offset package has been designed in response to the level of residual impacts that are likely to arise from the project in accordance with Northern Territory and Commonwealth offset requirements and is presented in Chapter 11. Direct offsets are not possible in the region due to the land tenure issues and inability to secure small parcels of land.

The offsets program will therefore aim to provide general environmental benefits to the region via the investment in a social enterprise scheme to manage, support and cultivate Indigenous Ranger and Land Management Programs. In order to develop the environmental offsets package for this project, it is suggested that a value per unit of production be provided to fund the offsets package.

1.5 Environmental Management Plan

The detail of the implementation of management of impacts is found in the Environmental Management Plan (Appendix C). The EMP specifically identifies management objectives and targets for all relevant environmental factors, and lists how monitoring and other actions can be used to minimise adverse impacts and maximise opportunities. The EMP identifies actions to result from non-compliance to assist in early identification of potential environmental harm and ensure that problems do not reoccur, as well as reporting and compliance auditing commitments.

Supporting the EMP is a number of subsidiary plans and documents including:

- Weed and Pest Management Plan (Appendix F);
- Acid Mine Drainage Study and Management Plans (Appendix K)
- Erosion and Sediment Control Plans (Appendix L);
- Biting Insect Management Plan (Appendix O);
- Noise and Vibration Impact Assessment (Appendix M);
- Rehabilitation and Closure Management Plan (Appendix P);
- Surface and Groundwater reports (Chapter 6 and Appendices E and N);
- Terrestrial and Aquatic biodiversity chapter (Chapter 4 and Appendix D); and
- Marine chapter (Chapter 5).

1.6 Conclusions

One of the outcomes of the risk assessment and EMP planning processes are a suite of commitments (Appendix Q) that WDRL has obligated itself to meet to ensure that risks are mitigated to acceptable levels. This includes commitments to:

- Further site surveys and investigations around key issues including groundwater and potential acid forming materials;
- Best practice environmental management with respect to a number of issues including but not limited to air quality, noise, surface and ground water quality and biodiversity;
- Operational procedures including traffic management and port operating rules;
- Environmental monitoring programs;
- Extensive environmental rehabilitation; and

- Ongoing stakeholder engagement for the life of the project.