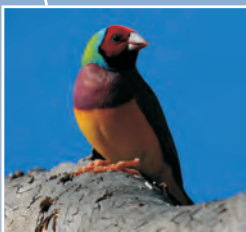


APPENDIX H

Sustainability Assessment





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Vista Gold Australia Pty Ltd
Mt Todd Gold Project
Sustainability Assessment

May 2013



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Summary and Conclusions

This sustainability assessment has been undertaken by GHD as part of the Environmental Impact Assessment (EIA) for the proposed re-establishment and operation of the Mt Todd Gold Mine.

A sustainability framework has been developed based on existing mining best practice standards and principles. This framework identifies sustainability initiatives which should be considered during specific phases of the Project, and associated targets or indicators which may be used to measure the performance against.

This framework identifies sustainability initiatives beyond business as usual to facilitate reduced operation costs, reduce costs associated with the environmental footprint and minimise potential adverse impacts associated with Project development, operation and closure.

Key sustainability initiatives to be considered for the Mt Todd Gold Project incorporate the following sustainability themes:

- ▶ Environmental management monitoring and reporting
- ▶ Procurement and materials
- ▶ Establishing sustainability objectives
- ▶ Project economic longevity
- ▶ Minimising and mitigating Project risks
- ▶ Minimising energy use and greenhouse gas emissions
- ▶ Water demand reduction and recycling
- ▶ Managing and control of hazardous materials
- ▶ Managing and minimising emissions and discharges to the environment
- ▶ Biodiversity considerations
- ▶ Planning for closure and rehabilitation
- ▶ Tailings and acid mine drainage management
- ▶ Natural and cultural heritage
- ▶ Safety and community



1. Introduction

Vista Gold Australia Pty Ltd (Vista Gold) is proposing to develop the Mt Todd Gold Project (the Project) consisting of the re-establishment, operation and rehabilitation of the Mt Todd Gold Mine. This sustainability assessment has been undertaken as part of the Environmental Impact Assessment for the Project and addresses Section 2.1 of the EPA (formerly Department of Natural Resources, Environment, the Arts and Sport's) 2011 Guidelines for the Preparation of an Environmental Impact Statement, Mt Todd Gold Project, Katherine Region NT.

1.1 Study Area

The Mt Todd Gold Mine site is located approximately 55km north west of Katherine, and 250km south of Darwin. The topographical feature named Mt Todd is within the mine lease. The mine site is accessed via Jatbula Road, approximately 10 km east of the Stuart Highway off the Edith Falls Road.

Mining and associated operations will primarily occur on mine leases MLN 1070, MLN 1071 and MLN 1127, covering approximately 5,365 hectares (ha). A small portion of EL 29886 will be affected by the proposed increase in the area of inundation associated with raising the Raw Water Dam.

1.2 Objective of this Document

To effectively manage the Project's sustainability performance, sustainability objectives and targets should be set, reviewed and updated throughout each stage of the Project.

The main objectives of this assessment are to:

- ▶ Outline the approach to meeting any Project specific sustainability objectives and integrating principles of sustainable development into the delivery of the Project.
- ▶ Provide guidance for Vista Gold in establishing sustainability benchmarks for the Project.
- ▶ Develop an adequate sustainability matrix which incorporates social, economic and environmental risks and performance indicators. It is envisaged that this matrix will assist in defining Vista Gold's objectives to integrate the principles of sustainability into the Mt Todd development.
- ▶ Identify sustainability initiatives beyond current business practice to ultimately reduce operation costs, reduce costs associated with the environmental footprint and minimise potential adverse social impacts associated with the Project.



2. Methodology

The methodology applied to undertake the sustainability assessment has included a detailed review of:

- ▶ The Mt Todd April 2011 Notice of Intent (GHD 2011)
- ▶ Project documents and technical studies provided by Vista Gold including the Pre-feasibility Study.

Key sustainability issues identified during the review process were then benchmarked against the following sources:

- ▶ The Australian Green Infrastructure Council (AGIC) tool was utilised as a reference and basis to align the sustainability initiatives. The tool provides a relevant and quantifiable benchmark for a standardised assessment method. The preliminary initiatives identified were aligned against the infrastructure sustainability principles from AGIC, and a gap analysis highlighted areas where potential objectives may have been omitted in the preliminary review.
- ▶ A Guide to Leading Practice Sustainable Development in Mining (DRET 2011) was used as a reference source to identify key areas of risk and evaluate sustainability approaches. The Mt Todd site was referenced within the guide identifying failures of incorporating Project sustainability into the design and development phase.
- ▶ Existing sustainability criteria and objectives (Corporate, Territory, Industry or Local) were integrated into the Project sustainability framework.
- ▶ Technical specialists (mine engineers with extensive operational experience) were consulted to review risks and relevance of sustainability initiatives and indicators.
- ▶ Ecologically Sustainable Development in the Northern Territory.



3. Project Description

The Project will expand the Batman Pit, re-establish and refurbish existing facilities, expand the existing waste rock dump and develop new associated infrastructure such as a processing plant, power station, and a second Tailings Storage Facility (TSF2).

The proposed development will occur both within the existing disturbance footprint of the Batman Mine and in surrounding areas.

Mining will be an open-pit truck and shovel operation, using large haul trucks, hydraulic shovels and front end loaders to transport materials to the crusher, stockpiles, Run of Mine (ROM) pad and waste dump. Extracted ore, will be processed in an ore processing plant where it will be crushed, milled and then carbon in leach (CIL) leached followed by adsorption, desorption and recovery leading to gold dore (unrefined gold).

Approximately 17.8 million tonnes per annum (Mtpa) of ore will be processed. Gold dore will be transported for onward secure shipment to a refinery.

The Project, based on current known data, will have a life of around 19 years inclusive of construction, operations and closure. Construction is anticipated to commence in the first quarter of 2014 and take two years, including 6 months pre-production. The mine is scheduled to operate for a further 13 years. Closure and rehabilitation of the mine is expected to take four years.

The key elements of the Project include:

Mining and Mining Infrastructure

- ▶ Extension of the existing Batman Pit from its current depth of 114m to approximately 588m (RL -400m) and surface area of 40 hectares (ha) to approximately 137ha.
- ▶ Expansion of the existing waste rock dump (WRD) from a height of 24m above ground level to approximately 350m above ground level (RL 470m), and a footprint of 70ha to approximately 217ha. The dump currently contains 16Mt of waste rock and the expansion will provide total capacity of up to 510 Mt.
- ▶ Construction of a Run of Mine (ROM) pad and ore stockpile.
- ▶ Construction of an Ammonium Nitrate and Fuel Oil (ANFO) Facility.
- ▶ Construction of heavy and light vehicle workshop and administration offices, and facilities comprising wash down area, tyre change facility, lube storage facility etc.
- ▶ Construction of haul roads and access roads.



Process Plant and Associated Facilities

- ▶ Ore Processing Plant processing approximately 50,000 tonnes per day (tpd) of ore
- ▶ Processing and / or reclamation of the existing low grade ore (LGO) stockpile and scats stockpile, and construction and processing of new LGO stockpile with a footprint of approximately 47ha.
- ▶ Raising the existing tailings storage facility (TSF1) from 16m to approximately 34m above ground level.
- ▶ Construction of a new TSF2, approximately 300ha in area and up to 60m high (RL 175m).
- ▶ Diversion of Horseshoe Creek and Stow Creek adjacent to TSF2 to provide flood protection.
- ▶ Rehabilitation of the existing heap leach pad (HLP), if residual HLP material is not processed through the new plant.
- ▶ Chemical and reagent storage and handling facility
- ▶ Process plant workshops, administration offices, control room etc.

Other Infrastructure

- ▶ Gas fired Power Station, including re-routing of the existing gas pipeline.
- ▶ Anaerobic treatment wetlands, approximately 10ha in area.
- ▶ A 2m high raising of the raw water dam (RWD) and an increase in the area of inundation.
- ▶ Construction of saddle dams at the RWD and TSF1.
- ▶ Construction of three coffer dams at Retention Pond 1 (RP1) and deepening of RP1.
- ▶ Water treatment plant.
- ▶ Potential re-alignment of access roads.
- ▶ Site wide drainage, sediment traps.
- ▶ Modification to existing fuel storage and distribution facility.

Decommissioning and closure plans for each existing and proposed major facility at Mt Todd have been developed. Throughout the mine-life Vista Gold will plan, design for, and implement effective plans for:

- ▶ Identification of potentially acid forming (PAF) and non-PAF materials.
- ▶ Selective handling of PAF and non-PAF material and potentially directly treating PAF materials throughout the mine-life to prevent or reduce the generation of acid and metalliferous drainage (AMD).
- ▶ Separation of unimpacted surface and groundwater from PAF materials and AMD
- ▶ Short- and long-term hydrologic isolation of PAF and metalliferous materials from ground and surface water.
- ▶ Facility and site-wide closure.
- ▶ Control of stormwater to prevent excessive erosion and sedimentation.



4. Project Sustainability

Based on the objectives outlined in Section 1.2, and with consideration of Vista Gold's corporate sustainability values, one of the key steps in the development of the sustainability initiatives has been to review existing corporate practices and industry standards.

To facilitate the implementation of sustainability into the Project (design and construction), a sustainability hierarchy has been established. This includes identification of:

- ▶ Sustainability initiative/principles
- ▶ Objectives
- ▶ Indicators/targets
- ▶ Roles and responsibilities

4.1 Principles of Sustainability

The International Council of Mining and Minerals (ICMM), was established in 2001 to improve sustainable development performance in the mining and metals industry. It developed ten key principles of sustainability to measure performance. The principles generally align with the Themes outlined in the Australian Green Infrastructure Council (AGIC) rating tool, and are outlined below. The sustainability framework specific to the Project was prepared on this basis.

1. Implement and maintain ethical business practices and sound systems of corporate governance.
2. Integrate sustainable development considerations within the corporate decision-making process.
3. Uphold fundamental human rights and respect cultures, customs and values in dealings with employees and others who are affected by the activities.
4. Implement risk management strategies based on valid data and sound science.
5. Seek continual improvement in health and safety performance.
6. Seek continual improvement of environmental performance.
7. Contribute to conservation and biodiversity and integrated approaches to land use planning.
8. Facilitate and encourage responsible product design, use, re-use, recycling and disposal of products.
9. Contribute to the social, economic and institutional development of the communities in which we operate.
10. Implement effective and transparent engagement, communication and independently verified reporting arrangements with stakeholders.



4.2 Outcomes of the Sustainability Framework

A sustainability framework is provided in Table 1. The framework outlines sustainability initiatives and associated indicators and targets to demonstrate objectives have been achieved. The recommended Project phases during which each respective initiative should be implemented has also been provided, as well as the party responsible for each initiative.



Table 1 Mt Todd - Sustainability Matrix

Theme	Sustainability Initiative	Objective	Suggested Actions / Targets	Project Phase to be Implemented	Responsibility
Management	Environmental Management	To adopt a formal environmental management system based on established guidelines	<ul style="list-style-type: none"> ▶ Implement a system to effectively monitor, measure and report on environmental management. This may include: <ul style="list-style-type: none"> – Key Result Areas; – Key Performance Indicators; – Environmental Management Systems. ▶ An environmental management monitoring and reporting schedule will be established, with reports made available to the Project team through each Project phase. ▶ Educate Vista Gold personnel and contractors and other individuals on-site to make them aware of EMS procedures and work within the system. 	Design, Construction and Operation	Design Team Vista Gold Principal Contractor
	Purchase and Procurement	To consider type, volume, sourcing and application of materials, services and resources to achieve sustainable outcomes	<ul style="list-style-type: none"> ▶ Where practicable incorporate sustainability criteria and requirements into tender documents such as material specifications (i.e. establish preferential priority to products which are locally sourced/contain recycled materials/are low in volatile organic compounds/etc.). ▶ Communicate procedures to ensure Contractors are aware of any requirements that have been incorporated into tender documents ▶ Review key contractors based on past performance and/or audit during contract delivery. 	Design, Construction and Operation	Design Team Vista Gold Principal Contractor



Theme	Sustainability Initiative	Objective	Suggested Actions / Targets	Project Phase to be Implemented	Responsibility
	Project Sustainability	To adopt and improve identified sustainability initiatives throughout the Project life, including sustainability reporting and monitoring	<ul style="list-style-type: none"> Identify appropriate and achievable sustainability goals for the Project and reflect outcomes of subsequent monitoring and reporting annually. 	Construction and Operation	Principal Contractor Vista Gold
Economic Performance	Economic Life	To consider ongoing operational, maintenance, closure and replacement costs in the Project design	<ul style="list-style-type: none"> Consider whole of life costing in the design. Consider resilience of equipment to reduce long –term costs. Undertake mine planning to achieve efficient recovery, processing and resource use. 	Design	Design Team Vista Gold
	Due Diligence	To undertake a systematic approach to assessing risks and opportunities	<ul style="list-style-type: none"> Apply risk management systems to provide early identification and corrective action to avoid Project/mine failure. Create a culture for site construction and operation of risk awareness and risk management. 	Design, Construction and Operation	Principal Contractor Vista Gold



Theme	Sustainability Initiative	Objective	Suggested Actions / Targets	Project Phase to be Implemented	Responsibility
Resources	Energy & Greenhouse Gas	To minimise energy use and reduce greenhouse gas emissions.	<ul style="list-style-type: none"> • Consider energy use reduction opportunities noted and assessed during Project design. • Undertake greenhouse gas assessment for construction and operation phases of the Project; consider appropriate recommendations for carbon reduction opportunities. • Design buildings and structures to reduce heating ventilation and air conditioning load (HVAC), install HVAC efficient systems. • Evaluate turbine efficiency, cogeneration and heat recovery options to improve energy efficiency. • Evaluate process optimisation to reduce energy requirements and options for heat recovery/ use of waste heat in process. • Assess potential sale of excess power to grid. • Evaluate use of biofuels where feasible in plant and equipment. 	Design, Construction and Operation	Design Team Principal Contractor Vista Gold



Theme	Sustainability Initiative	Objective	Suggested Actions / Targets	Project Phase to be Implemented	Responsibility
	Water Management	<p>To reduce water consumption during all phases of the Project through efficient design and alternative means for non-potable water usage</p> <p>To avoid environmental impact through water discharge</p>	<ul style="list-style-type: none"> Design efficient water management systems to reduce pump requirements and optimise pump efficiency. Measure water consumption during construction and operation. Design measures (bunds, location to water courses, allowance for peak flow) to comply with applicable Waste Discharge Licences. Incorporate water recycling or closed loop systems where feasible. Implement mitigation plans for pipeline, WTP or pump failure. Consider climate change impacts (drought/flood events). Identify measures to optimise the system water balance. 	Design, Construction and Operation	Design Team Principal Contractor Vista Gold
	Hazardous Materials	To encourage safe and effective management of hazardous materials on site to avoid damage to the environment and human health	<ul style="list-style-type: none"> Design, construct, operate and decommission in accordance with international Cyanide Management Code. Develop effective Transport Management Plans for hazardous goods delivered to and from site. Reduce risk of wildlife mortalities - specifically birds in relation to access to contaminated water bodies. Build storage to avoid groundwater contamination or spill to waterways. Develop effective OHS systems to avoid worker and contractor health risk from hazardous materials. 	Design, Construction, Operation	Design Team Principal Contractor Vista Gold



Theme	Sustainability Initiative	Objective	Suggested Actions / Targets	Project Phase to be Implemented	Responsibility
	Emissions, pollution and waste	To minimise pollution and degradation of emissions to air, water and land	<ul style="list-style-type: none"> Develop effective dust management strategies during construction and operation. Implement procedures to manage non-mineral wastes to avoid contamination and attraction of pests and vermin. 	Design, Construction and Operation	Design Team Principal Contractor Vista Gold
	Discharges to air, water and land	To seek to avoid discharges / emissions through process design, treatment and reuse / recycling	<ul style="list-style-type: none"> Comply with monitoring and reporting requirements as per the site-specific Waste Discharge Licence and other applicable regulator instruments. 	Construction and Operation	Principal Contractor
Biodiversity	Ecological Management	To minimise impact to the natural environment over the full project lifecycle	<ul style="list-style-type: none"> Consider initiatives to maintain or enhance the ecological value of the site at each major stage of the Project and document where appropriate. Categorise high risk zones and develop management plans for life of the mine. Rehabilitate and/or expand areas to promote and improve biodiversity. Develop short term and long term weed eradication plans. Consider options to offset any unavoidable loss of ecological features as a result of the Project. 	Design, Construction, Operation and Decommissioning	Design Team Principal Contractor Vista Gold



Theme	Sustainability Initiative	Objective	Suggested Actions / Targets	Project Phase to be Implemented	Responsibility
	Mine Closure & Rehabilitation	To integrate measures to reduce the need for subsequent mine rehabilitation	<ul style="list-style-type: none"> Characterise ore and waste material to assist with mine closure planning. Take into consideration during design eventual demolition and removal of structures. Reduce double handling of waste material and topsoil by integrating closure & rehabilitation planning into mine operations. Save significant future costs by cumulative closure and rehabilitation whilst staff and machinery are already on-site. Develop anaerobic wetland treatment systems. Re-use materials for capping and site management. 	Design, Construction, Operation and Decommissioning	Design Team Vista Gold Principal Contractor
	Tailings and acid and metalliferous drainage	To minimise efforts associated with site closure and mine rehabilitation	<ul style="list-style-type: none"> Perform preliminary testing of waste rock to plan for waste containment systems. Undertake ongoing monitoring to identify acid and metalliferous drainage problems. Construct containment structures to allow for variability in volumes and climatic influences including flooding and drought. Restore nutrients back into soil. Select optimal species to revegetate areas and minimise drainage impacts. 	Design, Construction, Operation and Decommissioning	Design Team Vista Gold Principal Contractor



Theme	Sustainability Initiative	Objective	Suggested Actions / Targets	Project Phase to be Implemented	Responsibility
People and Place	Natural and cultural heritage values	To ensure indigenous communities or sites of cultural significance are identified and appropriately protected during all phases of the Project	<ul style="list-style-type: none"> Develop and implement a Cultural Heritage Management Plan (CHMP) to manage potential disturbance of indigenous areas of cultural significance during Project construction and operation. Include in the (CHMP) actions to manage potential discovery or unearthing of artefacts of cultural significance. 	Construction and Operation	Principal Contractor Vista Gold
	Safety & Community	To ensure all phases of the Project consider community development and the health and safety of all workers and personnel	<ul style="list-style-type: none"> Maintain records of induction training and other briefings. Complete audits of health and safety procedures during construction, operation and decommissioning phases of the Project. Implement systems to promote health and safety aspects during construction, operation and decommissioning phases of the Project. Provide briefings to contractors and subcontractors on local conditions and risks. Provide net positive impacts to the community through support or funding of facilities and/or programs. Develop employment and training options and programs for the local community. Develop and maintain avenues for community consultation. Minimise potential adverse impacts of mine development and operation on the local community. 	Construction, Operation and Decommissioning	Principal Contractor Vista Gold



5. References

Australian Green Infrastructure Council (2012). Infrastructure Sustainability rating system.

Department of Resources Energy and Tourism (2011). A Guide to Leading Practice Sustainable Development in Mining. Australian Government.

GHD (2011). Vista Gold Australia, Mt Todd Gold Project, Notice of Intent. April 2011.

The International Council of Mining and Minerals. Sustainability Framework - <http://www.icmm.com/our-work/sustainable-development-framework>.



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