APPENDIX D

Cross Reference EIS Guidelines

Mt Todd Gold Project
Appendix D - Cross Reference of EIS Guidelines with Content of Mt Todd Gold draft EIS

Key Risk	Guideline	Location
7.2 Key Risks of the Mt Todd Gold Project		
The major risks below have been identified through analysis by the Northern Territory Government of the Notice of Intent for the Mount Todd Gold Project. It is possible that further risks will be identified in the environmental impact assessment process. The major risks currently identified are:		
Acid and Metalliferous Drainage (AMD) seepage and runoff from the waste rock dump (WRD), ore stockpiles and tailings storage facilities (TSFs) polluting surface and ground waters.		See specific treatment in 7.3 of the EIS Guidelines See also risk assessment in Chapter 5
Contamination of groundwater from mining activities causing groundwater quality impacts outside of the mineral lease or release of contaminated groundwater expressing to surface water.		See specific treatment in 7.4 of the EIS Guidelines See also risk assessment in Chapter 5
Groundwater drawdown impacts on groundwater flows in the Edith River and the potential to impact production bores in the region.		See specific treatment in 7.4 of the EIS Guidelines See also risk assessment in Chapter 5
Contamination of on-site surface water from AMD and mining activities, potentially exacerbated by poor segregation of clean and polluted water generated on-site, causing adverse impacts to downstream environmental values.		See specific treatment in 7.5 of the EIS Guidelines See also risk assessment in Chapter 5
Biodiversity impacts associated with the disturbance footprint of mining activities and infrastructure requirements.		See specific treatment in 7.6 of the EIS Guidelines See also risk assessment in Chapter 5
Mine closure and rehabilitation - failure of final design of the WRD and TSFs to adequately ensure the structures are safe, stable, not prone to significant erosion, minimises AMD seepage and runoff and meet stakeholder expectations as final land use structures.		See specific treatment in 7.7 of the EIS Guidelines See also risk assessment in Chapter 5
Social, economic, transport and heritage impacts have not yet been fully identified.		See specific treatment in 7.8 of the EIS Guidelines
Environmental objectives, or overarching goals identifying environmental values protected, have been identified for each risk. These are supported by environmental outcomes, which define specific performance requirements to be met by the proponent in order to achieve identified environmental objectives. Each of the identified risks should be addressed by the Proponent in the risk assessment and management process. Additionally, any further risks identified through the comprehensive risk assessment process required for the EIS should be addressed and appropriate management initiatives instigated.		See specific treatment in 7.3-7.8 of the EIS Guidelines See also risk assessment in Chapter 5
7.3 Acid and Metalliferous Drainage (AMD)		
Key Risk	The Mount Todd Mine site has a history of mining operations with a legacy of contamination from waste rock and tailings storages. This history highlights the importance of mine planning for all new Projects to minimise the potential for AMD development during operations and as a legacy of the proposed mine. Assessment of likelihood and consequence for the AMD risk assessment should take into account other incidences of AMD that have occurred in the region, as well as associated management and rehabilitation costs.	N/A. There is no other mine in the catchment.
	Potential for AMD from Project infrastructure and operation causing environmental impact.	Chaper 12
Environmental Objective	Prevent, mitigate or manage AMD so that it does not create off-site environmental impact during mine operations and legacy issues both on and off site after mine closure.	Chapter 12
Outcomes	The footprint, intensity and duration of AMD impacts associated with waste rock and tailings disposal is minimised.	Chapter 12
	Potential for AMD development is minimised and managed to a degree which can be assimilated by the receiving environment without causing environmental harm, both now and in the future, for all mine components and construction, operation and post closure stages.	Chapter 12
Information Requirements	Summary of the proposed ongoing treatment of existing AMD at the Mount Todd site.	Chapters 11 and 12
	Summary of the AMD characterisation of final pit wall, ore and waste rock and tailings including chemical and physical characteristics such as sodicity, salinity and dispersive potential and detail appropriate AMD management strategies.	Chapter 12, no assessments of sodicity, salinity or dispersive materials Future action required
	Provide a conceptual site model describing potential release, transport, and fate of any AMD waters from the mine site identifying possible sources, pathways, and receptors (see example figure 4.4 GARD Guide).	Chapter 11 and appendix J

	Provide total sulphur and total metals for a representative suite of samples from all rock types and process materials and ensure information is an integral component of ore body and waste block modelling phase of mine development.	Chapter 12 and App L
	Provide details on selection of samples (drill core, drill cuttings) and sampling methodology for subsequent testing for potential AMD.	Chapter 12 and App L
	An assessment of potential for AMD using specific AMD chemical analyses (pH, Total Sulphur, Net Acid Producing Potential (NAPP), Net Acid Generation (NAG), Acid Neutralising Capacity (ANC), multi-element composition and mineralogy of mine waste and tailings samples.	Done in Chapter 12 and App L
	Full waste characterisation report (as an appendix) with details on methodologies used for above determinations and main results summarised in the EIS.	Appendix L
	Describe classes and quantities of waste rock and selective handling purposes to minimise AMD for life of mine plan.	Chapter 12
	A geological waste block model based on comprehensive static and kinetic test data to facilitate AMD management.	Appendix L
	Proposed strategies to prevent, mitigate and manage AMD including avoidance of disturbance, dry covers, underwater storage, neutralisation and collection and treatment.	Chapter 12
	Develop detailed operational guidelines integrating AMD management practices into the daily operating activities.	Appendix Z
	Detail a monitoring program to ensure design specifications to manage AMD are implemented (e. g. proposed instrumentation used to evaluate whether oxidation of sulphides is occurring and evaluate the performance of encapsulation layers, cover systems).	Appendix Z, i.e. states a commitment to do the work
	Detail proposed performance monitoring of geochemical and geotechnical characteristics of placed waste, oxygen and temperature monitoring and water quality data to evaluate performance of AMD management.	Done in Appendix Z, i.e. states a commitment to do the work
	Detail long term closure options for AMD storage and management.	Chapter 12
7.4 Groundwater impacts		
Key Risks	Impacts to groundwater quality from mining activities causing contamination of groundwater or release of contaminated groundwater expressing to surface water.	Chapters 11 and 12
	Groundwater drawdown impacting groundwater flows in the Edith River and the potential to impact production bores in the region.	Chapter 11
Environmental Objective	To ensure that groundwater quality and quantity is protected both now and in the future, such that ecological health and the health, welfare and amenity of people and land uses are maintained.	Chaper 11
Outcomes	The quality and extraction of groundwater so that it complies with relevant standards and Guidelines such as document four of the National Water Quality Management Strategy beneficial use declarations.	Chapter 11, i.e. states that groundwater is not intended for such purposes
	Groundwater monitoring, based on the known availability and extent of the groundwater resource, is sufficient to ensure over extraction of groundwater does not occur and regional groundwater quality is not impacted.	Chapter 11 and Appendix K
Information Requirements	Refer to section 6.1 for information requirements of existing groundwater and hydrogeology.	
	Conceptual model showing understanding of subsurface migration processes and behaviour of the groundwater system and interactions with all waste storage facilities.	Chapter 11 and Appendix K
	Groundwater modelling to determine the potential and scale of drawdown and whether there are impacts to groundwater dependent ecosystems.	Chapter 11 and Appendix K
	Describe the proposed bore field - the number of bores, location, extraction rates and pit dewatering requirements.	Chapter 11 and Appendix K
	Identify the natural hydro-geochemistry of the groundwater system (heavy metals, toxic metalloids, pH, redox, total dissolved solids).	Chapter 11 and Appendix K

	Describe the groundwater monitoring program and how it will be implemented in order to include monitoring of impacts from the mine site on the local and regional hydrogeological conditions; Identify existing depths of bore holes on neighbouring properties, and seasonal depth ranges of potable aquifers being accessed by the bores, to identify appropriate water table depths which can serve as triggers for management action to provide alternative water supplies; Identify water treatment options to manage risk of AMD contaminating groundwater; Supply monitoring data from water quality sampling of groundwater monitoring bores receiving discharges and drainage from the Mount Todd; and Present multiple lines of evidence assessment of groundwater ecosystem condition, including water quality data, sediment, rapid biological assessment data and existing land use data.	Chapter 11 and Appendix K
7.5 Surface Water Impacts		
Key Risks	Impacts to surface water quality from mining activities causing contamination of surface water.	Chapter 10
	Physically altered surface flow regime impacting downstream aquatic habitats.	Chapters 10 and 14
Environmental Objective	To ensure that surface water quality is protected both now and in the future, such that ecological health and the health, welfare and amenity of people and land uses are maintained.	
Outcomes	The quality of surface water onsite and moving offsite is managed so that it complies with relevant standards and guidelines such as document four of the National Water Quality Management Strategy and beneficial use declarations.	Chapter 10
	Surface water runoff from the mine site does not impact downstream water quality.	Chapter 10
Information Requirements	Refer to section 6.2 for information requirements of existing surface water.	
	Outline a plan to develop site-specific Water Quality Objectives (WQO), such that identified environmental values and beneficial uses are maintained.	
	Provide baseline surface water quality data including location of monitoring sites to inform ongoing monitoring and assessment of the legacy and future Project impacts on water resources using existing relevant site monitoring data (include details of the sources of monitoring data).	Chapters 10 and 14, and Appendix J
	Provide a site water balance within the water management system and its management across the mine site. The water balance must take into account inputs (rainfall, surface flows), outputs (e. g. evaporation, evapotranspiration, controlled/uncontrolled discharges, production use etc.), interactions with surface and groundwater, surface area of stores, total catchment surface area per store etc.	Chapter 10 and Appendix J for each water storage containment
	Provide details on the construction and management of any proposed creek diversions and their potential environmental impacts.	Chapters 10 and 14, and Appendix J
	Provide management strategies for control of erosion and sediment runoff from disturbed areas, processing areas and waste rock stockpiles. Describe the size and design of sediment control structures proposed to intercept and divert surface water.	Chapter 10 and Appendix Z
	Describe water management systems and design criteria of infrastructure in terms of average recurrence intervals (ARI), durations and intensities.	Chapter 10
	Provide mine de-watering requirements must be provided with details on water quality, predicted volumes, discharge points and likely impacts on regional drainage.	Chapter 10
	Provide details on the current and proposed Water Treatment Plant with a cost/benefit analysis of purchasing and maintenance costs.	Future action (pending economic assessment)
	Summarise existing surface water knowledge and how multiple lines of evidence will be used to assess the condition of surface water ecosystems, including water quality data, rapid biological assessment data and existing land use data.	Chapter 10 and Appendix J

	Details of the safeguards and management strategies used to minimise the impacts of construction, operation and closure on hydrogeological features should be provided. Outline management of clean, dirty and contaminated water within the proposed mineral lease. Detail management strategies for high/extreme rainfall events and probable maximum precipitation events. Outline any water recycling. Proposed surface water monitoring program proposed to validate any models.	Chapter 10 and Appendices J and Z
7.6 Biodiversity		
Key Risks	The proposed clearing of approximately 700ha of native vegetation impacting flora and fauna species of conservation significance.	Chapters 13 and 14, and Appendices M and N
	Potential impacts on matters of national environmental significance including listed threatened species and communities (Gouldian Finch) under the EPBC Act, and listed migratory species.	Chapter 22
Environmental Objectives	To maintain the abundance, diversity, geographic distribution and productivity of flora and fauna at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge within the Project and surrounding area.	Chapters 13 and 14
	No net loss of biodiversity consistent with the Territory 2030 Strategic Plan requirement that intensive developments operate under a 'no net biodiversity loss principle.	
Outcomes	Native flora and fauna species, and significant habitat types, particularly those of conservation and traditional Aboriginal cultural significance, are identified, and protected from impacts from the Project.	Appendix S
	Surveys of flora and fauna species, and proposed clearing of native vegetation are in accordance with relevant NT Guidelines (section 10.3).	Appendicies M, N and O
Information Requirements	Sufficient information is required regarding the current biodiversity of the Project area to assess and monitor Project impacts. The following information should be provided:	
	Refer to section 6.3 for information requirements of describing existing flora and fauna.	
	Detail the extent of clearing required during construction and operation and indicate on a map.	Chapter 13 and Appendix M
	Discuss impacts on species, communities and habitats of local, regional or national significance including sensitivity of species to disturbance.	Chapters 13 and 14, and Appendices M and N
	Describe impacts such as loss of vegetation, reduction in species abundance, introduction and increase in abundance of pest plants and animals, edge effects, reduced conditions for favourable plant growth, impacts on habitat corridors, habitat loss and fragmentation and visual impacts associated with the vegetation clearing required during the life of the Project.	Chapters 13 and 14, and Appendices M and N
	Discuss potential impacts on water quality of creeks, streams and ephemeral lakes (habitat for aquatic fauna and drinking water for terrestrial species).	Chapters 10 and 14, and Appendices J and O
	The ability of identified stands of vegetation and fauna to withstand any increased pressure resulting from the Project (e. g. , increase in dust, light, noise, vibration, traffic and fire) and measures proposed to mitigate impacts.	Chapters 13 and 14, and Appendices M, N and O
	Identify and discuss environmental risks associated with the proposed land clearing. Discuss proposed clearing with regard to issues raised and recommendations contained within the NT Land Clearing Guidelines (NRETAS 2009).	Chapter 13 and Appendix M
	Discuss ways in which impacts on species, communities and habitats can be minimised (e. g. timing of works, minimising disturbance catchment).	Chapters 13 and 14, and Appendices M, N and O
	Discuss how visual impacts of land clearing will be minimised.	Chapter 9
	A fire, weeds and feral animal management plan as part of the Environmental Management Plan.	Chapters 13 and 14, Appendices M, N and Z
	Demonstrate that appropriate flora and fauna survey methodology has been employed, to define species present on the Project site.	Chapters 13 and 14, Appendices M, N and O

7.7 Rehabilitation, Decommissioning and Closure		
Key Risk	Mine rehabilitation and closure is an important step of the mining process and should be considered as early as possible in the preliminary stages of planning. This allows for the most options to be considered and can result in lower costs at the time of closure. Closure planning is a progressive process that requires review and improvement throughout the mine life. It is important to demonstrate that ecologically sustainable closure can be achieved.	Chapter 24 and Appendix Y
	Legacy mine structures become unstable or produce AMD post-closure.	Chapter 24 and Appendix Y
Environmental Objective	Rehabilitation of the site achieves maximum protection of the environment from seepage of contaminants, erosion or other impacts with minimal maintenance post closure.	Chapter 24 and Appendix Y
Outcomes	Rehabilitation achieves a stable and functioning landform which is consistent with the surrounding landscape and other environmental and stakeholder values.	Chapter 24 and Appendix Y
	The decommissioning, rehabilitation and closure program is integrated into the mine plan and considered as part of mining operation, rather than as a separate phase at the end of mine life.	Chapter 24 and Appendix Y
Information Requirements	Provide details on the rehabilitation of the existing Heap Leach Pad (40 hectares) with decommissioning timeframes.	Chapter 24 and Appendices Y and Z
	Describe the future management of the Project site in a rehabilitation and closure context.	Chapter 24 and Appendices Y and Z
	Provide a Mine Rehabilitation and Decommissioning Plan that provides an understanding of the issues that require management at closure and that all relevant issues have been identified. It is recognised that closure planning is a progressive process and that mine closure plans are living documents which should undergo periodic review, development and continuous improvement throughout the life of a mine. Mine closure planning needs to be appropriately integrated into the different stages of the life of a mine (including planning and design stage which is part of this assessment) and be flexible enough to allow for adaptive management.	Chapter 24 and Appendices Y and Z
	Describe: Design and construction of landforms and voids; Availability and volumes of key materials required for rehabilitation such as competent waste rock, subsoil, topsoil and low permeability clays (i. e. encapsulation material); Relevant scheduling information with respect to material stockpiling and deployment to ensure that rehabilitation materials mined early in the process are appropriately segregated and preserved for later use; Existing and proposed mathematical models to predict long term performance or environmental impacts; and Learning's from closure experience generated from the previous operation and other mines in the region Seed mixes used in rehabilitation and any information gathered from trials.	Chapter 24 and Appendices Y and Z,
	Indicate that appropriate materials are available on site and contingencies provided to make landforms such as tailings storage facilities and waste dumps secure and non-polluting in the event of unexpected or temporary closure.	Chapter 24 and Appendices Y and Z,
	Provide details on the proposed state the mining pit void will be left and managed following closure (i. e. whether it will remain dry or partially or totally filled with water, or backfilled), and discuss the benefits or detriments of each option and support these with studies or data.	Chapters 24 and Appendices Y and Z
	Estimate the quantity and quality of any water sources left on site after temporary or permanent closure.	Chapter 10 and 11, and Appendices J and K
	Identify and discuss environmental risks associated with characteristics of material to be exposed in the final(legacy) pit walls.	Chapter 12
	Provide details on rehabilitation of the WRD and TSF1 and TSF2 and how they will be managed to prevent contamination of surface or ground waters.	Chapter 10, 11, and 12, and Appendices J and K
	Describe proposed post-mining land uses which have been identified and agreed upon through consultation with stakeholders.	Chapter 9

7.8 Other Impacts		
7.8.1 Cultural Heritage	Baseline information should include:	
	Description of Indigenous and non-Indigenous sites, places or objects of historic or contemporary cultural heritage significance, including: Areas nominated for listing' or listed on Commonwealth and Northern Territory Heritage registers and Commonwealth and Northern Territory registers of Indigenous cultural heritage; Sacred sites - provision of evidence of an Aboriginal Areas Protection Authority (AAPA) Authority Certificate under the Northern Territory Aboriginal Sacred Sites Act; and European historic sites;	Chapter 15 and Appendix Q
	A description of areas with special values to Indigenous and non-Indigenous people (e. g. , traditional land use); and	Chapter 15 and Appendix Q
	The EIS should describe the arrangements that have been negotiated with relevant Indigenous groups in relation to archaeological surveys. The identification of Indigenous cultural heritage impact is to take place in consultation with relevant Indigenous groups.	Chapter 15 and Appendix Q and R
	The EIS should provide:	
	A description of the potential impacts on the features described in the baseline assessment;	Chapter 15 and Appendix Q
	An assessment of the Project's effects on lifestyles, traditional practices, heritage places, the impact of increased visitation and the effects on Indigenous culture generally. Discussion of the traditional subsistence economy, Indigenous natural resource use and any Native Title interests in the area;	Chapter 15 and Appendices Q and S
	A discussion of the impacts on the relationships between groups identified with traditional and/or contemporary interest in the Project area;	
	Details of any requirements to apply to, or applications already made to, the Minister for Natural Resources, Environment and Heritage to disturb or destroy a prescribed archaeological place and/or object (as defined in Heritage Conservation Regulation 3) under sections 29 and 34 of the Heritage Conservation Act; and	Chapter 15 and Appendix Q and R
	A management plan should be developed to include: Procedures to avoid significant areas; Protection of key sites during construction, operation and decommissioning work; Ongoing protection measures; and Procedures for the discovery of surface or sub-surface materials during the course of the Project.	Chapter 15 and Appendix Q and R
	The EIS should identify the monitoring program to be implemented for each potential cultural heritage impact and should provide outcome and assessment criteria that will give early warning that management and mitigation measures are failing.	Chapter 15 and Appendix Q and R
7.8.2 Socio-economics	The EIS should describe the socio-economic characteristics of the local, regional and Northern Territory communities (including a prediction of trends- over the expected operational life of the Project). The section should present a balanced broad summary of the Project's impact on the local, regional and Northern Territory economies in terms of direct effects on employment, income and production.	Chapter 19 and Appendix W
	It should outline the overall economic benefits of the Project, the likely contribution of the Project to the development of mining industry, regional economic development and Indigenous economic development in the Northern Territory, employment and skills development outcomes and linkages with other Northern Territory business and sectors, including suppliers and other service providers.	Chapter 19 and Appendix W
	The EIS should specify:	Chapter 19 and Appendix W
	Estimated value of expenditure during the construction and operation, highlighting the proportion to be spent in the Northern Territory;	Chapter 19 and Appendix W
	Estimated value of annual expenditure on goods and services from the Northern Territory;	Chapter 19 and Appendix W
	Estimated quantity and value of production/exports;	Chapter 19 and Appendix W
	Anticipated markets for products;	Chapter 19 and Appendix W
	Estimated royalties and taxes to be paid to the Northern-Territory Government;	Chapter 19 and Appendix W

	Opportunities for local industry and Indigenous workforce participation in the construction and operation of the mine. Identify how potential local business and employment opportunities will be identified and involved;	Chapter 7 and Appendix F
	Relevant opportunities to contribute to Indigenous economic development and wider regional development in the surrounding area, specifically Katherine;	Chapter 7 and Appendix F
	A breakdown of skills/trades required, including specific opportunities for skills development that may be of benefit to the local community, past the lifetime of the mine;	Chapter 7 and Appendix F
	Identification of opportunities for facilities and infrastructure development that may be of benefit to the local community, past the lifetime of the mine;	Chapter 7 and Appendix F
	Identification of negative impacts or potential synergies with existing land uses;	Chapters 7 and 9
	A description of anticipated socio-economic impacts upon local residents, communities and towns;	Chapter 7 and Appendix F
	Any proposals to contribute to community benefit including improved services and infrastructure for relevant communities involved;	Chapter 7 and Appendix F
	Potential local business and employment opportunities and opportunities for synergistic facilities and infrastructure development;	Chapter 7 and Appendix F
	Specify the mechanisms that would be utilised to inform the local business community and workers of business and employment opportunities; and	Chapter 7
	Detail the socio-economic parameters that would be monitored on an ongoing basis.	Chapter 7
7.8.3 Fire	The proponent should be aware of sections of the Bushfires Act 2009 and Regulations that may apply to the Project and address risk and management of fires occurring both within the mine site (e.g.. during site clearing operations) and outside the mine site.	Chapters 13 and 14, and Appendices M, N and Z