

**CopperString 2.0** 

# Conclusions

Volume 2 Chapter 22



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# 22. Conclusions

# 22.1 Overview

This chapter summarises the main findings of the Environmental Impact Statement (EIS), specifically the key environmental impacts of the Project and key mitigation and management measures that will be undertaken to address the impacts. A key part of the EIS process has been to identify those impacts that can be avoided through site selection, and the design and construction planning of the Project and its various components.

A preliminary corridor selection workshop identified areas of high ecological value that could be avoided by the Project through a process of realignment of localised sections of the transmission line and corridor selection. Notably this minimised impact to riparian areas and avoided any impact on the Semi-evergreen vine-thicket threatened ecological community and associated habitats for conservation significant species.

The corridor selection also assessed several options for the southern connection near and through the Ballara Nature Refuge. The preferred corridor through the Ballara Nature Refuge is on the eastern side of Cloncurry Dajarra Road, which reduces the distance of the corridor selection through the refuge and avoids steep land and rugged terrain. Several alternative alignments outside and inside the nature refuge were investigated and informed the corridor selection report included within Volume 3 Appendix D. The EIS has assessed impacts associated with the preferred option.

The EIS has been prepared as required under the *State Development and Public Works Act 1971*. The EIS addresses the final terms of reference prepared by the Coordinator General of the State of Queensland.

# 22.2 Key findings

The key findings of the EIS are summarised below including the notable environmental, social and economic benefits and other impacts of the Project.

# 22.2.1 Land

The assessment of land use considered potential impacts to a range of areas including land use, State, regional and local planning instruments, disused and abandoned workings, contaminated land, unexploded ordnance, native title, land acquisition, stock routes, and visual amenity.

Construction activities have the greatest potential for impact given the length of the linear disturbance area. The Project will directly impact 130 land parcels; however, land use is not expected to significantly change as grazing on natural pastures will continue as a predominant land use, with landholders having access to the transmission line easement for grazing livestock.

A land acquisition protocol has been developed for the Project and Option Agreements are being used for the purposes of acquiring the land required for the transmission line easement. The Option Agreements allow for access to land for construction prior to the registration of an easement. Preliminary native title assessments have been undertaken and the entirety of the Project area will be subject to suppression of native title.

Key potential impacts relating to land include the discovery of abandoned mines, risk of contaminated land finds or chemical spills, and disturbance of current landholder practices.

Impacts are anticipated to be manageable through the implementation of a Construction Environmental Management Plan (CEMP).

Operational land use impacts are expected to be manageable through maintaining activities within the transmission line easement. Overall, the potential impacts to the visual landscape are low.

# 22.2.2 Geology and soils

Impacts to landforms and soils have been identified, particularly during the construction phase of the Project; however, through implementing the proposed mitigation measures these impacts would be low. The Project is anticipated to have a negligible impact on geology.

Many soils in the study area are susceptible to erosion, which may be further exacerbated during construction activities, resulting in impacts such as sediment run-off, soil degradation, and soil compaction. A Concept Erosion and Sediment Control Plan (CESCP) has been developed as part of the EIS to provide overarching strategies for erosion and sediment control principles. The CESCP is intended to guide construction contractors in their development of site-specific Erosion and Sediment Control Plans once detailed design, construction and site establishment information is available.

The Project will not impact any important agricultural areas or priority agricultural areas. Grazing on natural pastures will continue as a predominant land use, as landholders will have access to the transmission line easement for grazing livestock.

The corridor selection has been carefully considered to minimise disturbance to topography and landforms by avoiding key features. Significant earthworks and cut and fill activities are not proposed as part of the Project construction. The geology, soils and landforms in the corridor selection have been identified as presenting potential constraints on construction activities, including the following:

- Sourcing quarry materials from local suppliers
- Providing suitable foundations
- Steep slopes and dissecting gullies
- 62 watercourse crossings (named watercourses identified on Geoscience Australia (2006) 1:250,000 Topographic data) and approximately 185 km of floodplain.

The residual impacts identified in the impact assessment are short-term construction impacts to soils including increased dust generation, compaction of soft soil, particularly in the Gulf Plains bioregion, and increased erosion, particularly in the Gulf Plains and Einasleigh Uplands bioregions. Additionally, there is the potential for disturbance of fossils during construction in the eastern section of the Gulf Plains within limestone deposits where fossils have previously been discovered. While these residual impacts may be locally significant, they are unlikely to be regionally significant and are able to be managed without significant impacts to environmental values. Areas impacted by the Project construction are expected to be returned to predevelopment equivalent conditions.

# 22.2.3 Flora and fauna

The extensive size and linear nature of the Project means it intersects large areas of land, crossing six bioregions and six major catchments. While much of the land intersected by the Project is devoted to pastoral land uses and has been subject to varying levels of existing impact from grazing, weed and pest infestation, land clearance and erosion, areas of higher ecological value persist.



The ecological assessment identified one threatened ecological community and 29 conservation significant species as confirmed present or considered likely to occur in the Project area.

Impacts to these ecological values have been avoided by locating the proposed corridor in areas of cleared open land wherever possible. The impact on habitat will be minimised by micro-siting towers away from areas of high resource value to avoid breeding/nesting habitat and wetlands. Impact to watercourses will also be avoided as a priority by positioning towers so that spans cross watercourses entirely without the need to locate infrastructure on the bed or banks.

Despite these measures, the Project will impact habitat for a range of conservation significant species including:

- Eucalyptus raveretiana
- Livistona lanuginosa
- Acacia crombiei
- Eucalyptus nudicaulis
- Acacia armitii
- Squatter pigeon (southern)
- Koala
- Black-throated finch (southern)
- Julia Creek dunnart
- Red goshawk
- Greater glider
- Night parrot
- Painted honeyeater
- Australian painted snipe
- Purple-necked rock wallaby
- Ornamental snake
- Grey falcon
- Plains death adder
- Northern leaf-nosed bat
- Vine thicket fine-lined slider
- Common death adder
- Short-beaked echidna

While the area of habitat estimated to be disturbed is relatively large, this is spread over a large geographic area. The proportional loss of habitat in any local or regional area indicates that for these species, the loss of habitat is unlikely to have significant adverse ecological effects in terms of a loss of access to habitat and resources.

The area of habitat loss anticipated for the koala and ornamental snake exceeds the threshold for which a significant impact is predicted in Commonwealth referral guidelines; however, the guidelines acknowledge that these thresholds may not apply to all projects. Substantial avoidance of habitat is likely to be achieved via spanning areas of high value habitat and



micrositing towers and access tracks to avoid koala food trees and gilgais utilised by the ornamental snake. As koala habitats within the Project area are typically located in open woodland with sparse tree densities, there is substantial opportunity to avoid direct loss of mature koala food trees via localised micrositing of tracks, towers and other infrastructure. Given the relatively benign nature of the Project during the operation phase and the potential to avoid and reduce impact during construction, the Project is considered unlikely to have a significant impact on these species.

There is also potential for direct mortality or injury of individuals or disturbance to critical resources such as nesting sites, particularly for populations of conservation significant plants, gilgais supporting the ornamental snake, areas of cracking-clay soils providing habitat for the Julia Creek dunnart, nesting sites for the squatter pigeon (southern) and black-throated finch (southern) and den sites for the greater glider.

The Project intersects Ballara Nature Refuge which contains habitat for several conservation significant species. To mitigate impacts to the refuge, the corridor selection will avoid disturbance to mapped or field-verified regional ecosystems listed as Of Concern or Endangered. Disturbance to wetland and riparian vegetation will also be avoided, or minimised where it cannot be avoided. Natural water flows and processes will not be impacted by the Project.

Standard fire management strategies and pest plant management strategies have been applied for the construction and operation of the Project.

Temporary laydown areas, stockpiles, site office and other construction areas will be rehabilitated after these facilities are no longer required.

Once operational, the Project is expected to have minimal ongoing impact on conservation significant species and their habitats and will not present a barrier to fauna movement.

A range of mitigation measures to avoid impact to high-risk ecological receptors during the construction phase have been proposed and local ecological management plans will be developed and incorporated into the field development plan during detailed design following the EIS process, to manage construction risks to the following key areas:

- Ballara Nature Refuge and other areas of potential habitat value for the night parrot
- Areas of potential breeding habitat for the ornamental snake
- Areas of potential nesting habitat for the black-throated finch (southern)
- Areas of koala habitat particularly koala movement corridors
- Known populations of conservation significant plants.

# 22.2.4 Biosecurity

The Project will potentially increase the opportunity for invasive plant infestation and resultant negative impacts to biodiversity and loss of land productivity. This would primarily be via the extension of known invasive plant ranges or introduction of new invasive plant or animal species to some areas, notably yellow crazy ants.

There is also a high risk that increased clearing of vegetation and transport activities could facilitate invasive plant infestations. Invasive plants pose a threat to the environment and can have costly impacts on native vegetation and agriculture. The growth of invasive animal species populations is a potential source of injury or disease transfer to personnel from contact with these invasive species.

The greatest potential for impact is during the construction phase of the Project. Activities such as the transport of materials and operation of construction camps have the greatest potential for



biosecurity impacts. Materials can carry invasive plants and small invasive animals, potentially introducing them into new environments, while all activities that involve transport—including preconstruction site visits and operating activities, have the capacity to transfer invasive plants. Temporary construction camps can attract a range of invasive animals.

A Concept Biosecurity Plan has management strategies which will be incorporated into the CEMP. Temporary construction camps will require specific strategies as part of their operation.

#### 22.2.5 Water resources and water quality

The impact assessment has identified several potential impacts to water resources and water quality; however, with implementation of proposed mitigation measures, the impact risk rating is low.

Most impacts to water resources and water quality would occur during the construction phase of the Project and include, but are not limited to, erosion and sedimentation, surface/groundwater contamination, modification of surface water features, and flood impacts to construction sites and infrastructure.

The corridor selection traverses a large linear area that includes 62 watercourse crossings (named watercourses identified on Geoscience Australia (2006) 1:250,000 Topographic data). Additionally, there are 94 crossings of mapped major or high-risk waterways for waterway barrier works, as defined by the *Fisheries Act 1994*.

Planning and design response measures will provide the greatest benefit to Project impact mitigation. The corridor selection and tower siting plans have been developed with consideration of water features and avoidance where possible. The Project will not involve any significant bank modification to water features. Vehicle access within waterways and watercourses will be carefully selected and provided via bed level crossings. Completion of technical studies such as flood modelling during the detailed design phase and further consultation with key stakeholders will further refine mitigation measures to minimise impacts to water resources and water quality. Mitigation measures will be further developed in the CEMP.

# 22.2.6 Air and greenhouse gas

The assessment of air quality indicated that the Project may be constructed and operated without significant impact on sensitive receptors, as long as appropriate routine management practices are implemented and siting studies for consolidated construction actives (such as at laydown areas) are completed.

Construction activities have the greatest potential for impact, although air quality impacts from construction will be of a short-term duration at any individual location. The placement of concrete batching plants at laydown areas should consider the proximity of sensitive receptors and ensure that adequate buffer distances are maintained or that other air quality mitigation measures are adopted during strong wind conditions.

Operation is not expected to result in any impacts on the environmental values of receptors near the corridor selection or substations. During the operational phase of the Project, a reduction in overall gaseous and particulate emissions associated with power generation is anticipated due to the connection opportunities of the North Queensland Clean Energy Hub.

Total Scope 1 and Scope 2 GHG emissions calculated over the life of the Project (3 years construction and 45 years operation) has been calculated to 9,980,748 tCO<sub>2</sub>-e. Within the context of Queensland annual GHG emissions relating to public electricity and heat production, the annual Scope 1 and Scope 2 GHG emissions from the Project equate to an increase of 0.36%. At a national level, the Project contributes an increase of 0.10% for annual GHG emissions relating to public electricity, heat production and generation of purchased electricity.

Commitments to manage potential air quality impacts include development of air quality and stockpile management procedures within the Construction Environmental Management Plan (CEMP) and undertaking progressive rehabilitation and stabilisation of disturbed areas in accordance with the Concept Rehabilitation Plan. GHG emissions may be managed through offset strategies in line with applicable State and Commonwealth climate change policies.

# 22.2.7 Noise and vibration

The assessment of noise and vibration indicated that the Project may be constructed and operated without significant impact on sensitive receptors as long as appropriate management practices are implemented and siting studies are completed.

Construction activities have the greatest potential for impact, although this is mitigated by the duration of construction in any particular location. The placement of concrete batching plants and laydown areas should consider the proximity of sensitive receptors and ensure that adequate buffer distances are maintained or that other noise mitigation measures are adopted, such as restricted hours of operation.

Operational noise is not expected to result in any impacts on the environmental values of receptors near the line.

Commitments to manage potential noise and vibration impacts include:

- Development of Environmental Work Plans to ensure the location of vehicle access track will not impact sensitive receptors
- Consultation with affected parties
- Maintaining a complaints register for management and tracking of complaints.

# 22.2.8 Waste management

The Project traverses seven local government areas, each with their own waste management facilities. Several of these facilities have the capacity to assist with the waste management of the Project.

The construction phase will be the primary source of waste generation throughout the life of the Project and will produce a range of waste types associated with construction camp facilities, laydown/delivery areas and stores, concrete batching plants, construction facilities, and refuelling sites. Decommissioning would also generate a large amount of waste; however, management actions concurrent with contemporary waste management practices would require development at the time of decommissioning.

The Project will used hazardous materials commonly associated with industrial and construction applications. The use and storage of these materials will be in accordance with relevant legislation and safety data sheets. Materials containing asbestos or polychlorinated biphenyls (PCBs) will not be used.

The potential impacts identified in the assessment relate to large quantities of waste generation and improper disposal methods, and include land and water contamination, attraction of vermin, visual impacts, and adverse effects to flora and fauna. Cumulative impacts were considered due to the potential for multiple construction projects in the region requiring waste disposal facilities. These impacts can be mitigated by early engagement with local councils and by using the following waste management hierarchy:

- Avoid waste generation
- Reduce
- Reuse



- Recycle
- Reprocess and reclaim
- Treatment
- Disposal

The construction contractor will also be required to include waste management measures in the Construction Environmental Management Plan.

# 22.2.9 Transport

The Transport Impact Assessment identified that the Project will cause an increase in traffic generated across the State Controlled Roads, local government roads and private access roads, which will largely comprise heavy vehicles for haulage of materials during the construction phase. Transport activities will involve long distance haulage of supplies and materials to numerous construction zones located within the Project Area (approximately 1,060 km).

Traffic movements originating within Townsville will result in cumulative movements across the road network, while localised high volume movements will surround construction camps and laydown areas within each work front.

It is anticipated that the traffic associated with the Project construction will likely impact road link capacity, access and frontage, pavements, and intersection delays. Many of these impacts can be mitigated and managed by effective planning with the Department of Transport and Main Roads, local government authorities, and Queensland Rail. Limited impacts on sea and air transport networks are expected as both the Port of Townsville Limited and air services have the capacity to support the additional import loads and workforce respectively. Further assessments of construction access routes and logistics will be undertaken in consultation with the Construction Contractor.

No significant impacts are expected during the operational phase which will consist of a small workforce comprising predominantly of service vehicles undertaking intermittent maintenance and inspections.

# 22.2.10 Social

The Social Impact Assessment found that the Project is likely to stimulate economic growth and generate a range of long-term regional benefits through development opportunities and competitively priced electricity. The Project will be an enabler for the burgeoning renewable energy industry and its potential to reduce energy prices will support the ongoing development of the North West Minerals Province.

The construction of the Project is likely to support local employment and business opportunities, resulting in short-term local benefits while the workforce requirements may also contribute to a cumulative demand for labour in the regional study area. Operation of the infrastructure is expected to support a small workforce in the regional study area over the life of the Project.

Potential short-term construction impacts include:

- Temporary reduction in property productivity
- Loss of the amenity and privacy of landholders
- A perceived decrease in road safety
- Demands on local health and emergency services by workers.

A Social Impact Management Plan has been developed that includes enhancement strategies to maximise opportunities and management strategies to reduce potential negative social impacts. CuString has an ongoing community and stakeholder engagement program that will continue to address social impact concerns. It is expected that the Social Impact Management Plan would be updated and approved by the Coordinator-General prior the Project's construction.

# 22.2.11 Cultural heritage

The cultural heritage assessment has identified several Indigenous and non-Indigenous cultural heritage sites within proximity of the corridor selection. Identified non-Indigenous sites are unlikely to be impacted by the Project due to their distance from the corridor selection.

Indigenous cultural heritage sites will be managed through avoidance of known sites and development of Cultural Heritage Management Plans (CHMPs) with relevant Aboriginal parties. CHMPs will include, but not be limited to, the following:

- Defined roles and responsibilities of parties
- Defined processes for undertaking cultural heritage field surveys and managing any identified Aboriginal cultural heritage
- Provisions for management of activities in and immediately surrounding areas of identified Aboriginal cultural heritage, and contingency planning for new Aboriginal cultural heritage finds.

There is potential for significant cultural heritage items, both Indigenous and non-Indigenous, to be uncovered during the construction phase, particularly where earthworks and vegetation disturbance is required. Indigenous cultural heritage surveys will be undertaken, subject to CHMP requirements, prior to construction. Such surveys will assist in the identification and management of Aboriginal cultural heritage sites. Procedural mitigation measures from the CHMPs, and measures of discovery of archaeological artefacts will be implemented into the Construction Environmental Management Plan.

# 22.2.12 Economic

The economic benefits of the Project include increased employment opportunities and benefits through reduced electricity prices and access to the National Electricity Market (NEM).

The Project will generate a peak construction workforce of 750 full-time employees. And an operational workforce of up to 30 full-time employees.

The Project offers a strong alternative option for power supply in the NWMP as it can provide consumers with certainty regarding supply as well as offering lower prices in comparison to market analysis on the availability of gas to supply power generation.

The Project would facilitate access to the National Electricity Market (NEM), and provide industries within the NWMP a reliable, flexible and globally competitive electricity market which would have a positive impact on resource development and life of mine extensions.

NEM Market modelling undertaken as part of the economic assessment indicated:

- No changes to future capacity and generation,
- Investment in wind farms is expected to increase within the North Queensland Clean Energy Hub.
- The Project will not affect investment of capacity in other regions of the NEM.
- Wholesale electricity prices are projected to decrease in Mount Isa.

Economic impact modelling over the period to 2050 projected that the Project will increase the real economic output, real incomes and increase employment within North-West Queensland, Queensland as a whole and Australia as a whole. Cost benefit analysis results show significant net benefits across all discount rates with high benefit cost ratios.

# 22.2.13 Hazards, health and safety

The Preliminary Hazard Analysis (PHA) provides a high-level identification and evaluation of relevant hazards and risks associated with the Project. The PHA identified potential hazards and established a risk rating for each hazard using a qualitative risk assessment. Proposed mitigation measures were developed, and a residual risk rating was established.

The PHA identified that the Project will not present an unacceptable level of risk to people, property or the environment. The risk analysis determined that the risk levels with respect to the proposed control and mitigation strategies were considered acceptable, based upon the following factors:

- Risks are similar to existing risks.
- The Project will be designed, constructed and operated under the comprehensive regulatory environment that exists for the electricity transmission industry in Australia, much of which addresses the well-understood inherent safety risks and system reliability considerations.
- The Project makes use of operational technology and construction methods that are proven and standard for the industry.
- The environmental setting of the Project is favourable, with extensive separation achieved between the assets and potential sensitive receptors and sensitive land uses, which minimises the risk exposure from localised hazard events, such as transformer fires or explosions.
- The more regional risk associated with bushfire is similarly mitigated through the available separation, but additional features such as the low to moderate inherent bushfire risk and planned vegetation management process further reduces the risk.

A lower inherent risk is anticipated than those experienced by numerous existing electricity transmission and distribution assets elsewhere in Queensland and Australia, which often coexist in close proximity to more densely populated and more densely vegetated areas.

This understanding of the inherent risk of the Project, coupled with CuString's commitment to implementing Australian industry standard risk management practices, suggest that the overall risk to people and property is low in the broader electricity transmission industry context.

An Emergency Response Plan will be developed by the Construction Contractor to manage incidents associated with hazards, including evacuation plans for construction camps.

# 22.2.14 Matters of national environmental significance

This assessment of the Projects impacts on matters of national environmental significance (MNES) one threatened ecological community, three threatened flora species, 13 threatened fauna species and six migratory bird species. The significant impact assessment of these MNES found that the Project will not have any significant residual impacts on any MNES. Delivery of environmental offsets is therefore not required.

The Project has been designed with the objective of achieving environmentally sustainable outcomes through the following steps:

• The corridor selection avoids environmentally sensitive areas.



- All potential environmental impacts of the Project have been assessed.
- Potential impacts are mitigated through design criteria and industry standard management measures.
- Comprehensive management plans have been developed to manage potential impacts.
- Monitoring of ongoing impacts during the life of the Project through the development of adaptive management and monitoring protocol.

The assessment has found that the development of the Project is environmentally acceptable and meets the requirements of the EPBC Act, including the principles of ecologically sustainable development (ESD).

#### 22.2.15 Cumulative impacts

The cumulative impact assessment found that for the majority of environmental values, the Project resulted in impacts which had a localised spatial extent which did not intersect another project or occurred over a short term duration or had a minor intensity during construction or operation. Hence, they would not contribute to cumulative pressures on the regional environmental value.

The unavoidable residual impacts with the greatest potential to result in longer term cumulative impacts, involved the disturbance of conservation values associated with flora and fauna. Cumulative impacts associated with biosecurity, transport and waste are expected to be short-term, occurring only during the construction phase of the Project.

The Project has provided comprehensive avoidance and management strategies to mitigate or compensate for these non-significant impacts which are most prevalent during the construction phase. Similarly, each proponent of other projects considered in this assessment will be required to provide similar mitigation and management measures or offsets in accordance with Commonwealth and State policies for unavoidable impacts on potential habitat.

# 22.3 Management and mitigation

#### 22.3.1 Environmental management

Specific environmental management measures have been developed for the Project that will be further developed and implemented over the life of the Project from planning and design through to construction and operation. Decommissioning and rehabilitation of temporary and permanent works has also been considered where necessary within the construction and operational phases of the Project.

A Framework Environmental Management Plan (Framework EMP) and a Field Development Plan (FDP) have been developed for the design, site planning, construction, maintenance, and operation of the Project. The FEMP and FDP set out the overarching components of the Project and serve as guides for further development of management procedures. These plans have been prepared to ensure that environmental harm and pollution is minimised through the active identification and management of environmental risks throughout the Project.

The FEMP and FDP consider impacts to environmental values and include detailed management plans including mitigation measures, objectives, and performance criteria, as well as monitoring and corrective actions. Further to this, the CEMP and Operations EMP will set out a detailed procedure for managing environmental impacts during the construction and the operation of the Project respectively. Where permit or approval requirements are identified, as part of post EIS activities, a site-based management plan will be developed to accompany the respective permit and will be updated to incorporate any relevant conditions of that approval.



An energy conservation and GHG management plan for the construction and operation of the Project should be prepared to develop strategies to reduce GHG emissions. A GHG Offset Plan that provides an offset for the Scope 1 and Scope 2 GHG emissions generated during the construction and operation of the Project should also be developed.

# 22.3.2 Environmental offsets

#### Matters of national environmental significance

The matters of national environmental significance (MNES) that were confirmed present or likely to occur included one threatened ecological community, 15 listed threatened species and nine listed migratory species. Offsets for MNES under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) are only required if residual impacts (those remaining after all measures to avoid, mitigate and minimise are applied) are significant as defined in the Matters of National Environmental Significance - Significant impact guidelines 1.1 (DoE 2013). The residual impacts of the Project on MNES was assessed as unlikely to be significant. Therefore, no potential offset requirements under the EPBC Act are anticipated for the Project.

#### Matters of State environmental significance

The matters of State environmental significance (MSES) that were required to be assessed for significant residual impacts were protected plants, regulated vegetation and connectivity areas.

All conservation significant flora and fauna species (MSES) confirmed present or considered likely to occur within the Project Area were assessed under the Queensland Significant Residual Impact Guidelines (DEHP 2014) as unlikely to be significantly impacted by the Project.

A significant residual impact assessment was undertaken for relevant MSES regulated vegetation and connectivity areas. This assessment determined that there is potential for a significant residual impact for Of Concern regional ecosystems, remnant vegetation within a defined distance of a watercourse, and essential habitat. Final impact areas will be further refined through pre-clearance surveys to identify areas to avoid. With consideration of the proposed avoidance strategies to occur during pre-clearance design and siting of infrastructure, the significant residual impacts to MSES are anticipated to be deemed as unlikely.