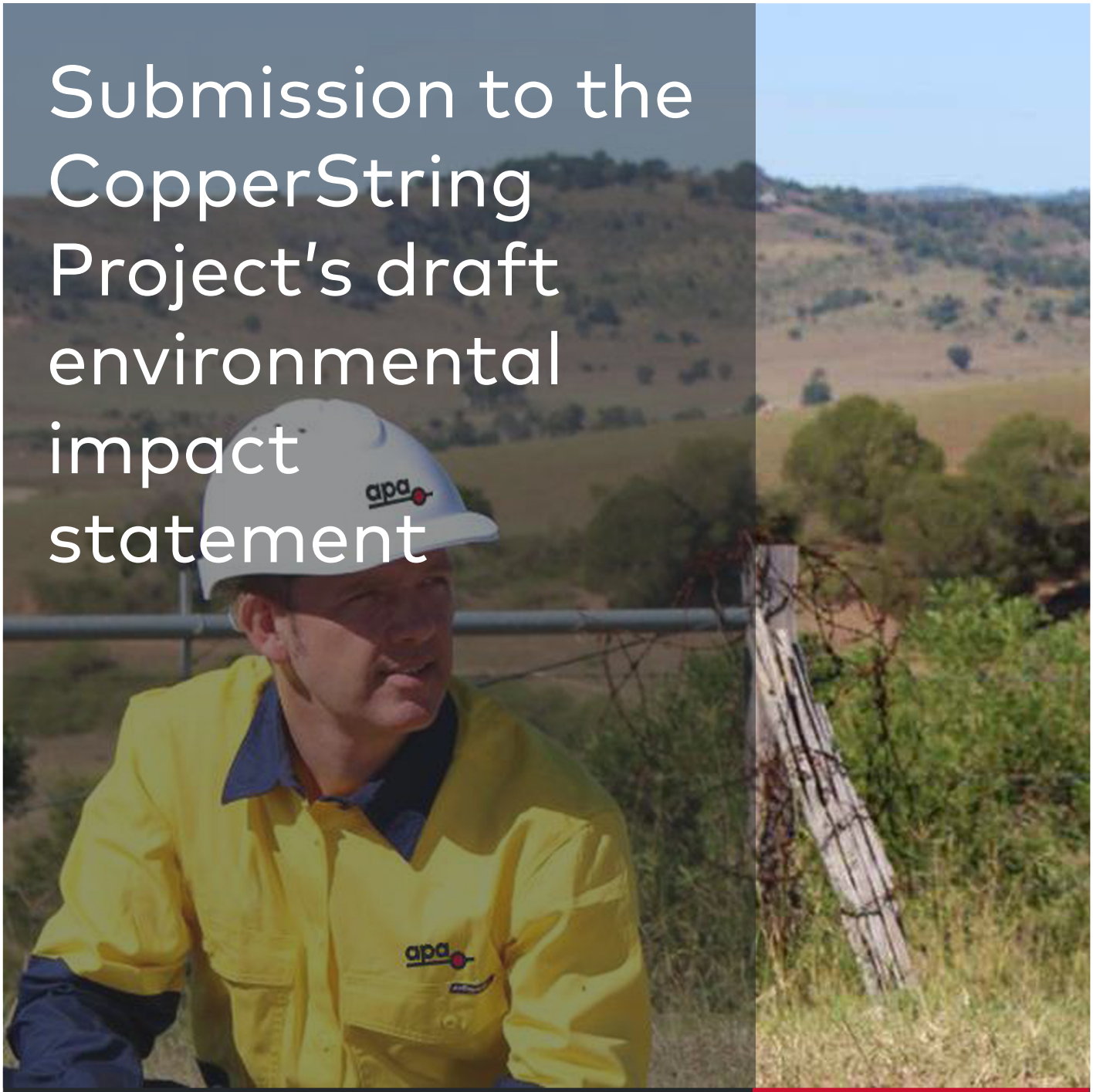
Submission to the CopperString Project's draft environmental impact statement



12 February 2021

1 Introduction

The Terms of Reference (**TOR**) and the Coordinator-General's Economic Impact Assessment (**EIA**) Guidelines require that the EIA provides the required information on the key economic impacts of a project to underpin the assessment of the EIS. It is therefore essential that any EIA be rigorous and robust. The Coordinator-General's EIA Guidelines are intended to apply to all coordinated projects across all industry sectors. Accordingly, they are broad and do not include industry specific information. In contrast, there is a well understood, widely accepted, robust and transparent process for the economic assessment of electricity transmission projects known as the regulatory investment test for transmission (**RIT-T**). The RIT-T assessment regime is intended to apply to regulated transmission investments. As the CopperString project (**CopperString**) is intended to be a regulated asset, the RIT-T assessment process would be the most appropriate.

2 Draft EIS - CopperString Economic Model Technical Report – Appendix AB

The modelling carried out by ACIL Allen is deficient for the purposes of the TOR and the EIA Guidelines and falls short of what would be required for a RIT-T for the below reasons.

2.1 Modelling errors

2.1.1 Avoided "fuel and variable operating cost saving" assumptions

The ACIL modelling of the "Net efficiency benefits" ($4,648.7 undiscounted) rests largely on the "fuel and variable operating cost change" ($5,488.5, undiscounted). The derivation of this saving is not properly explained, however, it appears that ACIL has:

- used either the price of the commodity (electricity), not the cost of producing the commodity itself, as the basis; or
- inflated estimates of the short-run marginal cost (**SRMC**) of the generators whose dispatch would be reduced under the NEM connected case.

If so, ACIL's modelling approach will materially over-estimate the "Net efficiency benefits".

This reasoning would apply unless ACIL is making some other offsetting reduction in the benefits which it is including in its benefit-cost modelling to reflect the contribution that the recovery of sunk investments and fixed costs are making to final prices under the BAU case.

There is no need to augment the existing (gas) generation fleet over the forecast time horizon under the BAU case, as:

- the BAU forecast demand indicates a material decline in demand (everything else being equal, limiting the need to invest in new generation capacity); and
- the current generation fleet is dominated by Diamantina Power Station (**DPS**), which ACIL assumes will remain open until 2050.

These features of the BAU case reinforce our view that it is the SRMCs of the plants that would be avoided under the "with CopperString" case (or NEM

connected case) which would form the only material economic benefit to the electricity industry of the "with CopperString" case.

The overall impact of this error would be to materially overstate the "Net efficiency benefits".

2.1.2 *There is a failure to include all of the economic costs*

It is not clear that the economic modelling takes into account all of the economic costs required to facilitate the delivery of electricity to all of the mines that are assumed to consume electricity under the "with CopperString 2.0" case. Some examples underpinning this observation include:

- it is not clear how or whether, if at all, the incremental economic cost of catering for increasing demands on the existing infrastructure has been incorporated into the economic analysis;
- it is not clear whether or if at all any of the incremental network costs required to service some of the isolated mines mentioned (and potentially others that are included, but not mentioned in the report) are included in the analysis, noting that many of the additional mines listed are well away from the CORE CopperString project (and/or existing infrastructure);
- the required capital costs related to the extension of mining operations at Phosphate Hill (extended 2028 to 2050) and Cannington (extended 2032 to 2056) are explicitly excluded by ACIL. Such capital investments would be required for extension of mining operations and should be included; and
- the required capital costs for the development of new mining activities have been intentionally excluded.

The overall impact of these exclusions and omissions would be to materially overstate both the demand and the "Net efficiency benefits".

2.1.3 *CopperString infrastructure costs are not included in comparisons*

The price comparisons of wholesale energy are potentially misleading on the basis that the BAU sent out generation cost is compared with NEM wholesale electricity prices. It is clear that NEM wholesale electricity is not available to the region without the construction of CopperString so this comparison is invalid. The comparisons also omit other important factors such as the

marginal loss factor of transmitting electricity to this region. Based on the equivalent experience at Broken Hill, the MLF would be expected to be in the order of 1.1. This increases costs by at least 10% over that represented in the report.

The overall impact of these errors would be to materially overstate the "Net efficiency benefits".

2.1.4 Omission of the value of existing and ongoing contracts

There are existing contracts in place until beyond 2025. The assumption of economic savings from 2025 is not correct as charges for both the BAU generation fleet and the new CopperString revenues would need to be summated.

The overall impact of these errors would be to materially overstate the "Net efficiency benefits".

2.2 Customer savings assumptions and increased demand

A central assumption in the economic assessment appears to be that all mineral production activities will achieve a uniform percentage reduction in energy costs of 40%. This is the key driver of increased mining activity, increased power consumption and the forecast "Change in NWMP mining gross surplus" ($7,812.5 million, undiscounted) which in turn is 50% of the "Total Project Benefits".

The forecast electricity cost savings, being between 4% and 10.4% of operating costs translating to an instantaneous (in one year, 2025) increase in demand from 400 MW to 500 MW, are not credible.

It is not appropriate to apply a blanket percentage saving or cost reduction to every customer. In any event, it is not clear what the reference or starting point in such an analysis is for a new venture. To carry out a serious and rigorous analysis would require a more granular approach which should consider the comparative cost of connection to CopperString versus the alternatives.

Each customer will be materially different as each will face different electricity transmission costs and distribution costs and have specific opportunity costs. Cases in point are the Cannington and Phosphate Hill mines which require extensive dedicated transmission assets and likely would

be better off continuing to use their captive generation and more renewables than committing to 40 years of connection charges – some 15-20 years beyond their project mine lives.

The overall impact of these errors would be to materially overstate the "Net efficiency benefits".

2.3 Additional electricity and renewable generation

ACIL appears to conclude that the construction of CopperString will result in an additional $5.5 billion in benefit from increased renewable generation in Queensland. They also conclude that their model shows CopperString will result in 1000 MW of wind generation in the North West between 2025 and 2030.

It is important to note that the ultimate construction of renewable generation in Queensland will be a function of government policy and demand for energy and will not be affected by CopperString. Any facilitation of renewables by CopperString will be displacing renewables development elsewhere in Queensland, and not creating additional renewables generation in Queensland.

These calculations appear to overstate the incremental "Net efficiency benefits" of CopperString.

2.4 Base Case (BAU) assumptions

It is a requirement of the EIS process that it must be developed in consultation with key stakeholders. To date, there has been no engagement on the economic assessment with APA who is a key stakeholder. This has resulted in various incorrect assumptions in the BAU case.

The assumptions relating to the current cost of "wholesale" electricity are overstated by 14% as at January 2021. While APA does not have access to and will not disclose gas prices paid by customers, it is aware that some are materially less than the $11/GJ assumed in the BAU case.

Further, the ACIL modelling and assumptions about renewable power generation in the BAU case are incorrect. APA has relevant experience in both Mount Isa and remote mining projects.

In relation to the NWPS, APA is presently considering developing renewable generation. The Mount Isa region has world class solar and substantial wind resources with a complementary generation profile.

In relation to remote and isolated mines, ACIL's assumption that these mines are unlikely to underwrite new renewable generation is demonstrably incorrect. APA is an active supplier in this market having recently announced the Gruyere hybrid gas, solar and battery project in Western Australia. APA carries out numerous project conceptual studies to optimise the key parameters of demand size, mine life, location relative to gas supply and renewable resource. The smaller demand, shorter duration, remote sites are typically selected for either diesel-solar or CNG-solar solutions while the larger sites are selected for LNG/pipeline gas-renewable hybrids. Set out below is a sample of relevant projects:

Location	Size and technology
Gruyere Gold Mine, W.A.	49 MW gas, 4.4 MW battery and 13 MWp solar PV
Agnew Gold Mine, W.A.	16 MW gas, 18 MW wind farm, 4 MW solar PV and 13 MW battery
DeGrussa Copper Mine, W.A.	19 MW diesel, 10.6 MW solar PV and 6 MW battery (Note 5.5 year PPA)
Nova Nickel Mine, W.A.	20 MW diesel, 6.7 MW solar PV
Cannington Mine, Qld	35 MW gas, 3 MW solar PV
Pilbara Generation Project and Chichester Hub, W.A.	Pilbara: 150 MW gas, 150 MW solar PV and unspecified battery Chichester: 60 MW solar PV – connected to Newman 178 MW gas and 30 MW battery.

The overall impact of this error would be to materially overstate the hypothesised benefits of CopperString.

3 Options and sensitivities

There are obligations in the TOR to understand and consider alternative options. Furthermore, the proponents are proposing that CopperString be a regulated asset where the owners bear no market risk and all costs are passed on to Queensland electricity consumers. In this context, the appropriate economic assessment is the RIT-T which has a robust and proven methodology, is subject to transparency and scrutiny, and protects consumers/customers from inefficient investment in transmission projects.

At the outset, no formal need or problem has been stated by the proponents. The following has been extracted from the Draft EIS:

> *"The Project will provide access to competitively priced electricity through a connector with the capacity to both import and export electricity. This will significantly contribute to the prolonged economic development of the region, by facilitating substantial growth in the resources sector by reducing the cost of mining and minerals processing."*

The following has been extracted from the CopperString application for an Electricity Transmission Authority:

> *"The objective of CopperString is to provide electricity market benefits to the NWMP and stimulate the development of major renewable generation projects along the length of the CopperString transmission line route."*

The clear statement of a need for this project would facilitate an improved economic assessment and would be mandatory for the purposes of the RIT-T process.

It is a concern that only one option or solution has been presented when there are a number of feasible solutions.

It is of further concern that there is a very limited set of sensitivities. Sensitivities should consider:

- smaller increase in energy consumption in the Mount Isa region for the NEM connected case;
- lower gas costs from the late 2020s consistent with credible unconventional supply opportunities; and

- greater penetration of renewable energy in the BAU case.

The Draft EIS does not consider any options other than a pessimistic BAU case. As such, it has ignored alternative solutions which reduce costs and reduce emissions. Credible alternative options which have not been studied include timing of construction to coincide with the end of the economic life of existing infrastructure and adding more renewable generation to the isolated grid.

By avoiding the normal framework which applies to regulated and contestable investments, there is a real risk that the project is not the best solution. It is not a true contestable investment because the direct users are bearing the costs but it is not being tested under the usual mechanisms for regulated investments which protect customers against inefficient investment.

4 Emissions

The treatment of emissions in the ACIL report is generally confusing with no clear tabulated summary of results and no alignment of modelling periods. This made it difficult to properly analyse the results.

ACIL forecast that CopperString will increase emissions in the period until 2030. The report does not provide a total, but it can be approximated from the charts provided at ~2.0 million tonnes (Mt) CO_2-eq for 5 years or ~10 Mt tonnes CO_2-eq in total. This is inconsistent with current Queensland government policy to achieve a 50% reduction by 2030.

The analysis goes on to attribute a NEM-wide decrease in emissions from 2020 to 2050 of 6 Mt CO_2-eq to CopperString. It is unclear why the period starts at 2020 as CopperString is not due to be operational until 2025. Further, it is logically inconsistent to attribute NEM-wide emissions reductions to CopperString while at the same time an input assumption is the existence of government policy to reduce emissions by way of an EIS.

Later, the report presents that there is a reduction in Queensland electricity generation emissions of 7.3 Mt CO_2-eq from 2020 to 2050. It is unclear how this reconciles with the previously mentioned 6 Mt CO_2-eq for the entire NEM for the same period. Finally, there is a forecast that increased mining will result in an additional 11.2 Mt CO_2-eq from mining over the period 2020 to 2050.

In contrast, the existing APA plant in Mount Isa has an emissions intensity of 0.412 tonnes CO_2-eq /MWh[1] (NGERS 2018/19) or 695,857 kg CO_2-eq for 1,686,196 MWh sent out. This is approximately 56% of the Qld NEM intensity. A modest renewable deployment in Mount Isa of 100 MW would reduce this to under 350 kg CO_2-eq /MWh and a more aggressive but economically sustainable approach would reduce the carbon intensity by more than 50%. The cost of these deployments is far lower than CopperString while delivering attractive emissions outcomes.

[1] National Greenhouse and Energy Reporting, Electricity sector emissions and generation data 2018-19 http://www.cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/electricity-sector-emissions-and-generation-data

The CopperString project is inconsistent with Qld government policy in relation to the Queensland Climate Transition Strategy and all three key climate commitments, as according to the Draft EIS, it will:

- increase coal fired energy consumption until 2030 and **increase emissions** above 2005 levels and thus frustrate the goals of:
    - powering Queensland with 50% renewable energy by 2030; and
    - achieving a 30% reduction in emissions below 2005 levels by 2030;
- **increase** net emissions by 2050 by an overall amount of at least 3.9 million tonnes CO_2-eq.

5 Reliability

The Draft EIS makes numerous references to the project providing "reliable supply" and implies that the current arrangements do not meet this test. It also calls into question the reliability of supply of gas to Mount Isa.

On the matter of electricity supply, the energy supply to the Ergon load has been provided at 100% reliability since March 2018. The supply to industrial customers is contracted on the basis of an agreed reliability standard. The DPS/LPS plant has exceeded this standard for the life of the plant.

The following table sets out the availability statistics for the plant.

Plant Statistics Historical	FY15	FY16	FY17	FY18	FY19	FY20
Available Capacity Factor – Customer A	99.76%	99.92%	99.75%	99.82%	99.93%	99.98%
Available Capacity Factor – Ergon	99.87%	99.96%	99.89%	99.91%	100.00%	100.00%
Available Capacity Factor – Customer B	-	-	-	99.95%	99.67%	99.98%

The Draft EIS is factually inaccurate as to the claimed unreliability of the existing system.

6 Economic regulation

CopperString is proposing the link is a regulated investment under which the owner bears no market risk and costs are passed on to customers. There are a number of issues with this approach.

First, it is unclear why Powerlink as the entity providing regulated transmission services, and responsible for transmission planning in Qld, is not undertaking the project. If this were the case, then it would be assessed in accordance with the usual regulatory investment tests which ensures customers only pay for projects that have the highest positive net market benefit under a wide range of scenarios to meet a particular need.

Second, the project is not considered in the national Integrated System Plan prepared by the Australian Energy Market Operator (**AEMO**) which seeks to coordinate transmission investment to meet the needs of future generation (particularly renewables) and load.

Third, while the Australian Energy Market Commission (**AEMC**) has sought to introduce contestability in transmission, this has not been in relation to regulated assets. There is no need for contestability in regulated assets as they are, by definition, economically regulated. The contestability has been introduced in relation to dedicated connection assets and potentially renewable energy zone transmission assets where the costs of those assets are to be primarily borne by the generators.

Fourth, even it were appropriate for Copperstring to be a contestable asset, there has in fact been no open tender process or mechanism to consider competing providers or solutions. To that end, the fundamental questions are:

- What need is CopperString addressing?
- Is transmission the best solution for that need?
- If transmission is the best solution, is the CopperString proposal the most competitive?

Fifth, the CopperString project is contrary to the AEMC's approach to transmission contestability to ensure there is a single point of accountability in each region for transmission system performance. Under the AEMC's Transmission Connection and Planning Arrangement Rules and the recent

Dedicated Connection Asset Rule change draft decision, any parts of the shared network which are open to contestable build and ownership still need to be handed over for operation to the Primary Transmission Network Service Provider in the region. In Queensland, this is Powerlink. This again raises the question as to why a regulated network solution is not being progressed by Powerlink.

7 Impacts of Queensland electricity customers

According to ACIL, CopperString is expected to result in an average increase of $1.30/MWh in wholesale costs to all Queensland consumers until 2030. Insufficient information is provided to understand how that changes across the five year period, but the figures/charts indicate that it varies over time.

The current electricity consumption in Queensland is approximately 50,000 GWh/year[2] (53,000 GWh/year with CopperString using ACIL's consumption estimate) so this implies a cost increase of $68.9 million per year.

In addition to this, ACIL/KPMG report that the PTRM shows a revenue requirement of $127 million per year (nominal), which equates to an average cost of $2.40/MWh when distributed over 53,000 GWh/year. Combined with the $1.30/MWh increase calculated by ACIL, this is a total average increase of $3.70/MWh.

Using a typical Queensland household consumption range of between 3.4 and 9.7 MWh/year[3], this adds between $12.58 and $35.89 per year to the average household cost.

The potential impacts on large commercial and industrial users have not been assessed and could be significant in the context of business viability, with the cost of energy for major users continuing to attract significant attention.

Given this significant increase in costs to ordinary Queenslanders and Queensland commercial and industrial users, it is not clear who the primary beneficiaries are (i.e. current or future energy users in the North West Power System, or the private developers of CopperString). The Draft EIS does not

---

[2] 2020 Electricity Statement of Opportunities, Australian Energy Market Operator. https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/nem_esoo/2020/2020-electricity-statement-of-opportunities.pdf?la=en&hash=85DC43733822F2B03B23518229C6F1B2

[3] Residential energy consumption benchmarks, Final Report for the Australian Energy Regulator, Frontier Economics, 9 December 2020. https://www.aer.gov.au/system/files/Residential%20energy%20consumption%20benchmarks%20-%209%20December%202020_0.pdf

transparently assess the benefits and impacts from an economic perspective.

There is a well understood industry standard process for determining the economic benefit of an investment in electricity transmission assets, being the RIT-T. The RIT-T is designed to provide an objective and transparent assessment of electricity transmission assets. Adoption of the RIT-T methodology would provide a robust and transparent result that would be readily accepted by stakeholders.

Submission Draft environmental impact statement – CopperString Project

Name of Project: CopperString Project	

Your details

Full name Julian Peck	**Signature/s** **Date** 12/2/21
Primary contact name Matthew Forrest	**Organisation** APA Group Limited
Postal address GPO Box 1390 Brisbane QLD 4001	**Phone number** 0419 499 669
	Email address matthew.forrest@apa.com.au

APA Group comments on the EIS

#	Terms of Reference Section	EIS section and topic	Comment	Recommendation *What changes to the EIS or additional information is required?*
1	7.9	V1 Ch 1 Introduction, S1.5.2 V1 Ch 2 Project Description, S2.2	The consequences of not proceeding are not adequately considered as there is insufficient consideration given to alternative options. It considers only one alternative which is to "allow current arrangements to continue". The CopperString project (**CopperString**) is not consistent with policy for the following reasons: • it is not consistent with best practice for transmission infrastructure investment as set out in the *National Electricity (Queensland) Law* (**NEL**) and the *National Electricity Rules* (**NER**) including the Regulatory Investment Test – Transmission (RIT-T). • CopperString is proposing the link will be a regulated investment under which the owner bears no market risk and costs are passed on to customers. It is unclear why Powerlink as the entity providing regulated transmission services, and responsible for transmission planning in Queensland, is not undertaking the project. If this were the case, then the process would be in accordance with the usual regulatory investment tests which ensure customers only pay for projects that have the highest	A detailed options study should be conducted considering alternatives including, but not limited to, island grid with different generation mixes and different project timing e.g. to align with planned retirement of existing plant. The results of this study should be open to public comment and public competitive process such that the ideas and proposals of others can be properly considered. The RIT-T process should be followed in substance by preparing a Project Specification Consultation Report for public comment or similar equivalent process. ***Refer to further detailed comments attached.***

			positive net market benefit under a wide range of scenarios to meet a particular need. • it is not consistent with the Powering Queensland Plan, the Queensland Climate Transition Strategy and the climate commitment to power Queensland with 50% renewable energy by 2030, on the basis that it will materially increase emissions and prices.	
2		V1 Ch 4 Legislation and approvals, S4.1.6 to S4.1.10	There is no reference to the *Electricity – National Scheme (Queensland) Act 1997* and the *National Electricity (Queensland) Law* and the matter of economic regulation is missing from consideration.	The EIS should be updated to describe the proposed economic regulation. ***Refer to further detailed comments attached.***
3		V2 Ch 18 Matters of national environmental significance	Section 18.1.7.1 states *"Currently, the only feasible alternative to the Project is to take no action".* The proponent does not provide evidence to support this statement or evidence of the conduct of options studies or consultation with stakeholders such as APA. This assertion is without basis and is seriously flawed. For example, as the major generator in the North West Power System, APA has not been consulted.	A detailed options study should be conducted considering alternatives including, but not limited to, island grid with different generation mixes and different project timing e.g. to align with planned retirement of existing plant. The results of this study should be open to public comment and public competitive process such that the ideas and proposals of others can be properly considered. The RIT-T process should be followed in substance by preparing a Project Specification Consultation Report for public comment or similar equivalent process.
4	8.1	V1 Ch 1 Introduction V2 Ch 4 Legislation and approvals	The Draft EIS sets out an intention for the project to become a regulated asset. There is an extensive review of the relevant legislation with no acknowledgement of the relevant legislation governing economic regulation, being the *Electricity – National Scheme (Queensland) Act 1997*. In this respect there is no mention of the role of or relationship with Powerlink as the Government owned corporation responsible for the operation and development of the electricity transmission network in Queensland.	The development process for CopperString is highly irregular. No reason has been provided as to why CopperString should not follow all regular procedures that would ordinarily be applied to a project of this nature. It is unclear why Powerlink as the entity providing regulated transmission services, and responsible for transmission planning in Queensland, is not undertaking the project.
5	8.6	V1 Ch 2 Project description	V1 Ch 2 offers qualitative comments only on price and no empirical evidence to support assertions made about existing or future prices.	***Refer to further detailed comments attached.***

6	8.6	V 2 Ch 16 Economic	The modelling carried out by ACIL Allen is deficient for the purposes of the TOR and the EIA guidelines and it falls short of what would be required for a RIT-T. Some observations are: • the current price of energy is not adequately assessed and is incorrect and/or incomplete; • the expected price to be paid by customers if CopperString is constructed is not presented in a way that can be compared to the existing prices and is misleading such that it excludes the CopperString transmission costs and all other transmission, distribution costs, losses, and market charges; • the claims about renewable energy penetration rates are not supported by empirical evidence; and • reference is made to other reports and materials which have not been supplied and this could not be tested or validated.	All supporting reports and materials e.g. reports by consultants on electricity pricing (Soren, Izmin and others) should be provided for review and comment. ***Refer to further detailed comments attached.***
7	8.7	V3 Appendix C Public consultation report	APA is a key supplier of energy in the Mount Isa region. Neither APA nor any other impacted generators are identified in this section.	APA should be consulted and provided with the opportunity to comment on the economic regulation of CopperString.
8	10.2	V1 Ch 1 Introduction, S1.2	The proponent has not provided environmental, health, safety and community policies in accordance with the TOR item 10.2.	The proponent should comply with the TOR.
9	10.8	V1 Ch4 Legislation and Approvals	In numerous locations throughout V1 Ch4, reference is made to access to the National Electricity Market (**NEM**) and competitively priced electricity. Access to the NEM is not in itself necessarily a benefit. The Draft EIS has not forecast a total end user price for electricity in the region. Residential customers now pay exactly the same as customers in Brisbane and Townsville due to government policy so many of these comments are misleading and/or incorrect as they imply savings for these customers. Large customers who have bilateral agreements pay a final cost which includes transmission and distribution charges, a factor which does not seem to be taken into account. There are numerous references to reliability of supply and improvements in supply reliability. The Draft EIS provides no reliability data of the current generation fleet or of the local Ergon electricity network. Forecasts of expected reliability of the CopperString 2.0 project have not been provided, nor has any empirical evidence to support assertions made about reliability.	The EIS should address the issues raised here and at a minimum, set out the proposed final delivered cost of electricity to all categories of users and compare this to existing prices paid. Claims in relation to reliability and reliability improvement should be supported by empirical evidence or withdrawn. Claims about renewable energy asset development should be demonstrated by empirical evidence or withdrawn from the EIS. Our previous comments apply in relation to the need for a RIT-T or similar test to ensure that CopperString is not "*the wrong infrastructure that can waste resources and*

			There are repeated claims that the CopperString 2.0 project will in itself result in the construction of significant renewable energy assets in North Queensland and in particular the Hughenden area. No empirical evidence has been provided to demonstrate that this renewable resource is superior to other resources elsewhere in the NEM. Furthermore, there are no transmission network studies which demonstrate that energy generated in this location could be exported south to the main load centres of the NEM without significant additional augmentation works in the Powerlink network. The Draft EIS has provided inadequate consideration of cases of significant renewable penetration into the Mount Isa island grid system and whether this provides a superior economic outcome. In V1 Ch4 S4.8.1, there is reference to the 'Our North Our Future: White Paper on Developing Northern Australia' and that the white paper identifies that "*Conversely wrong infrastructure can waste resources and lock communities into poor outcomes*". This White Paper conclusion supports the need to conduct a complete, transparent and accurate assessment of options to supply infrastructure to the region.	*lock the broader Queensland communities into poor outcomes*". ***Refer to further detailed comments attached.***
10	12.51	Vol 2 Ch 10 Air and greenhouse gas, S10.5	The Draft EIS is confusing in its treatment of greenhouse gas emissions. There are a number of claims of reduced emissions in one part of the document which are not supported by calculations and/or conclusions in others. For example, Section 10.6 includes the following statement: "*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 to the North Queensland Clean Energy Hub. The Project may also provide additional connection opportunities for renewable electricity generation projects within the region.*" This ignores the assessment set out in V3 App AB S7.2.3 which concludes that the cumulative emissions from power generation in Queensland will increase until 2030. This report further points out in S5.7 that CopperString has an insignificant impact in overall emissions across the NEM – in fact, a reduction of only 0.3% which is well below any error ranges or confidence intervals for modelling work of this type. Policy decisions, namely targeting net zero emissions by 2050, drive the emissions outcomes and not CopperString. ***Further detailed comments are attached.***	The Coordinator-General should consider the increased emissions in Queensland until 2030 when assessing the project and note that the increase in emissions is inconsistent with Queensland government policy. Increases in omissions may also be inconsistent with customer climate commitments.

11	12.51	Vol 3 App V Greenhouse gas assessment	The requirement to provide a Greenhouse Gas Management Plan and Carbon Dioxide (**CO2**) abatement plan has not been met. Only a high level summary of the greenhouse gas abatement opportunities and management measures is provided, and defers the development of a Greenhouse Gas Management Plan and a Carbon Dioxide Abatement Plan to the construction contractor or operation and maintenance service provider. An inventory of project annual emissions for the life of the project for each relevant greenhouse gas, with total emissions expressed in 'CO2 equivalent' terms for Scope 1 and 2 emissions categories as per the National Greenhouse and Energy Reporting scheme, has been provided. The calculations supporting this inventory were reviewed and the line losses as a percentage of total energy transmitted appear to have been understated by around two orders of magnitude. As a result, the greenhouse gas intensity is likely to be closer to 70 t CO_2-e per GWh not 0.60 t CO_2-e per GWh as reported in the Draft EIS.	Resubmit the EIS with a compliant plan. Redo the inventory calculations with correct numbers.
12	12.81	V2 Ch 16 Economic V 3 App AB Economic Impact assessment	APA's review focussed on the electricity sector analysis because CopperString's stated rationale for the project is "to provide substantial, sustainable, and long-lasting economic benefits to the region through the provision of reliable and more competitively priced electricity". In addition, CopperString in their application for a Transmission Authority state the purpose of the project is "to provide benefits to the electricity market and stimulate expansion of renewable energy projects along its length". CopperString has not properly addressed the terms of reference in that it cannot demonstrate it will provide a net economic benefit. Further, it has not adequately considered alternative courses of action. Key findings include that: • The basis for the 'fuel and variable operating cost savings', which make up around 50% of the electricity market benefits, are not made transparent in the report. Notwithstanding this, analysis indicates they may be significantly inflated (with this potentially being due to either the use of marginal price, not the marginal cost of supply, to determine the change in electricity generation cost, or inflated SRMCs of the generators whose dispatch would be reduced under the NEM connected case). Modelling does not appear to include all of the economic costs and hence overstates the benefits. • The link between individual customer electricity prices and their electricity-related investment decisions is ignored and hence demand increases are overstated.	• The economic assessment work should be repeated/improved/corrected. • The economic assessment work should be overseen by an independent authority. • The project should be subject to economic tests with at least the rigour of the RIT-T. Any consideration of not applying the requirements of the NER should be fully justified. • All of the reports and supporting material should be made available for scrutiny. • The proposed economic regulatory framework should be made clear including how costs are recovered and who pays. • A detailed review of all the greenhouse gas emissions impacts should be carried out. ***Refer to further detailed comments attached.***

			• The lack of renewables in the BAU case ignores a credible increase in renewable penetration. • The lack of any options analysis ignores a range of equally credible scenarios. • There is no sensitivity analysis around key input assumptions. • Emissions forecasting is fundamentally flawed as it ignores regulatory settings. • Economic regulatory considerations have been omitted. There are several supporting reports referenced in Appendix AB (ACIL Allen Report) from various consultants including Soren, Izmin and KPMG etc which have not been made available. This necessarily limits the scope of our review. One critical matter is the assumption (Appendix AB, P30) that "*Assuming CopperString can reduce power costs by 40 per cent…*". No modelling, calculations or empirical evidence is provided to support this assumption, and yet the entire economic rationale for the project rests largely on this assumption. Another is the annual estimated revenue for CopperString 2.0 set out in Appendix AB figure 7.2 which references KPMG's financial analysis and the post-tax revenue model (**PTRM**) which has not been provided. In addition to these matters, it is noted that: • Despite CopperString consulting with AEMO, CopperString is not included in the AEMO Integrated System Plan (**ISP**); and. • Despite CopperString consulting with Powerlink, CopperString is not considered in the Powerlink Transmission Annual Planning Report (**TAPR**). On the matter of emissions, Appendix AB concludes that CopperString results in a significant increase of approximately of 12 million tonnes of CO2eq in the first 6 years of operation to 2030. We note that this is inconsistent with Queensland government policy namely to reduce CO2 emissions by 2030. On this basis, it is difficult to see how the project could be approved. ***Refer to further detailed comments attached.***	