CopperString 2.0

Framework and environmental management plan

Volume 3 Appendix Q

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Acronyms and abbreviations

Acronym/abbreviation	Definition
ASS	Acid Sulfate Soils
CEMP	Construction Environmental Management Plan
CLR	Contaminated Land Register
DAWE	(Commonwealth) Department of Agriculture, Water and Environment
DES	(Queensland) Department of Environment and Science
DNRME	(Queensland) Department of Natural Resources, Mines and Energy
DTMR	(Queensland) Department of Transport and Main Roads
EA	Environmental Authority
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EMR	Environmental Management Register
EP Act	(Queensland) *Environmental Protection Act 1994*
EPBC Act	(Commonwealth) *Environment Protection Biodiversity Conservation Act 1999*
EPP	Environmental Protection Policy
ERA	Environmentally Relevant Activity
ESCP	Erosion and Sediment Control Plan
ESWMS	Environmental and Safe Work Method Statement
FEMP	Project Framework Environmental Management Plan
GAB	Great Artesian Basin
MGD	Mitchell Grass Downs
MLES	Matter of Local Environmental Significance
MNES	Matter of National Environmental Significance
MSDS	Material Safety Data Sheet
MSES	Matter of State Environmental Significance
NEM	National Electricity Market
NHMRC	National Health and Medical Research Council
NWMP	North West Minerals Province
NWPS	North West Power System
OMEWP	Operation and Maintenance Environmental Work Plans
SDPWO Act	(Queensland) *State Development and Public Works Act 1971*
ToR	Terms of Reference

1. Introduction

1.1 Objectives and purpose

This Project Framework Environmental Management Plan (FEMP) has been developed from the findings of Volume 2 of the CopperString Environmental Impact Statement (EIS) for the design, construction, operation and maintenance of the CopperString 2.0 Project (the Project). It has been developed in accordance with the final Terms of Reference (ToR) for the EIS, issued by the Coordinator-General in September 2019. This document addresses section 12.129 of the ToR, which requires an environmental management plan to be developed for the Project by a suitably qualified person, in accordance with the Australian Government's Environmental Management Plan Guidelines (Department of the Environment, 2014).

This Framework Environmental Management Plan (FEMP) outlines the requirements that shall be met by CuString Pty Ltd (CuString) and the nominated Construction Contractor and Operation and Maintenance Service Provider for the Project. This document is intended to guide the development of other documents such as Construction Environmental Management Plans (CEMPs). This FEMP:

- Summarises the environmental management strategies for the Project identified in the EIS
- Outlines the proposed performance criteria and strategies to prevent or minimise environmental impacts.

The FEMP has been created for the management of potential environmental impact associated with the delivery of the Project.

The Project phases applicable to the FEMP include:

- Detailed design
- Construction with a pre-construction component
- Post-construction
- Operation and maintenance with an operational readiness component.

Details of infrastructure to be developed for the Project under this EMP are described further in section 2.

This FEMP covers activities carried out by the proponent, CuString, its contractors or representatives only. CuString is not responsible for the activities in the Project area of other parties (such as activities carried out by landholders or other utilities). This FEMP excludes actions which may be required as part of end-of-life and decommissioning activities. These activities will be addressed prior to the commencement of this phase.

1.2 Defined terms

The following are a list of defined terms used within this report:

Corridor selection: The baseline investigation corridor being a nominal 1,000 km long corridor transmission line alignment including the a 120 m wide easement for the 330 kV transmission line from Woodstock to Dajarra Road, and 60 m wide for the 220 kV transmission lines from Dajarra Road to Mount Isa, Dajarra Road to Chumvale Substation, Dajarra Road to Selwyn, and Selwyn to Phosphate Hill and Cannington.

Project area: The 120 m or 60 m wide easement and associated infrastructure (including laydown areas, substations, CEV huts, access tracks, brake and winch sites and construction camps) and works referred to in the EIS ToR (these include off-easement components).

Study area: As defined by individual technical studies in the methodology section or by default the 5 km wide study corridor defined in the Initial Advice Statement and referred to in the EIS ToR.

Watercourse: as defined under section 5 of the Queensland *Water Act 2000*, a watercourse is a river, creek or other stream, in which water flows either permanently or intermittently regardless of frequency, in either a natural or artificial channel

Waterway: as defined under Schedule 1 of the Queensland *Fisheries Act 1994*, includes a river, creek, watercourse or drainage feature.

1.3 Scope of the environmental management plan

The FEMP outlines the environmental management requirements for the design, construction, operation and maintenance phases of the Project. Contractor(s) engaged by CuString to carry out works for the Project will be required to prepare a CEMP and site specific environmental management documentation that addresses the requirements of this FEMP.

This FEMP contains:

- A description of the Project (Section 2)
- An environmental management strategy including requirements for:
  - Environmental risk assessment and management
  - Identification of approvals and legal requirements
  - Allocation of roles and responsibilities
  - Contractor management
  - Communications and environmental reporting
  - Training, awareness and inductions
  - Emergency contacts and procedures
  - Monitoring, inspections and audits
  - Incidents and complaints
  - Non-conformity, corrective and preventative actions.
- Environmental values, performance objectives, monitoring and management requirements.
- A Social Impact Management Plan has been developed as a separate document (Volume 3 Appendix Z Social impact assessment) which includes management of impacts to landholders, communities and other stakeholders.
- The FEMP has been prepared based on the information contained in the EIS. The FEMP will require review and update to incorporate findings and recommendations from any new studies and conditions of any approvals or permits granted once these are available.
- Appendix A contains a proposed documentation register of required environmental management documentation.
- Appendix B contains a list of properties affected by the Project listed on the Environmental Management Register (EMR).

1.4 Project background

The Project involves the construction and operation of approximately 1,060 km of extra high voltage overhead electricity transmission line that will extend from Mount Isa to the State Electricity grid, via a new connection point near Woodstock, south of Townsville.

At present, the north-west Queensland region's electricity is provided through a stand-alone system that does not participate in the National Electricity Market (NEM). The Project will facilitate the participation of this economically important region into the NEM and will enable development of new industrial facilities and large agricultural projects in the region, and will facilitate participation of renewable energy projects in the NEM.

The Project was declared a 'coordinated project' under the Queensland *State Development and Public Works Organisation Act 1975* (SDPWO Act) and as such an EIS is required. The Project is also a 'controlled action' and requires assessment and approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

CuString is a private, Townsville-based company, with a long history in the energy supply industry in North Queensland.

CuString is committed to operating in a manner that conforms to the contractual requirements of its customers and to all relevant regulatory and legislative requirements. To achieve this objective, CuString will plan, implement and control systems that facilitate the management of the environmental aspects of its activities.

1.5 Suitably qualified person

This FEMP has been reviewed by Dr. Joanna Stephens. Table 1-1 contains an overview of Dr. Stephens qualifications to be considered a suitably qualified person.

Table 1-1 Suitably qualified person

Suitability	Detail
Qualifications	Bachelor of Agricultural Science (Honours) Adelaide University. PhD in Agricultural Science, La Trobe University, 2007.
Certifications	Exemplar Global Certified Environmental Management Systems Lead Auditor (No.129347)
Relevance to the Project	Joanna is a Senior OHS & E Consultant and Auditor. She has over thirteen years of experience in auditing, risk assessment and the development and review of management systems and environmental management plans. Joanna has been an auditor's assistant on high profile projects including major construction projects. Joanna has reviewed and developed Environmental Management Systems and Environmental Management Plans. Joanna regularly provides advice on environmental management systems, risk management and compliance. She has audited against the requirements of Australian and international standards for management systems and documented procedures and protocols during the construction phase of large projects. She is certified by Exemplar Global as a Lead Environmental Management Systems Auditor.

1.6 Limitations

This report: has been prepared by GHD for CuString Pty Ltd and may only be used and relied on by CuString Pty Ltd for the purpose agreed between GHD and the CuString Pty Ltd as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than CuString Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by CuString Pty Ltd and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

2. Project description

2.1 Project infrastructure

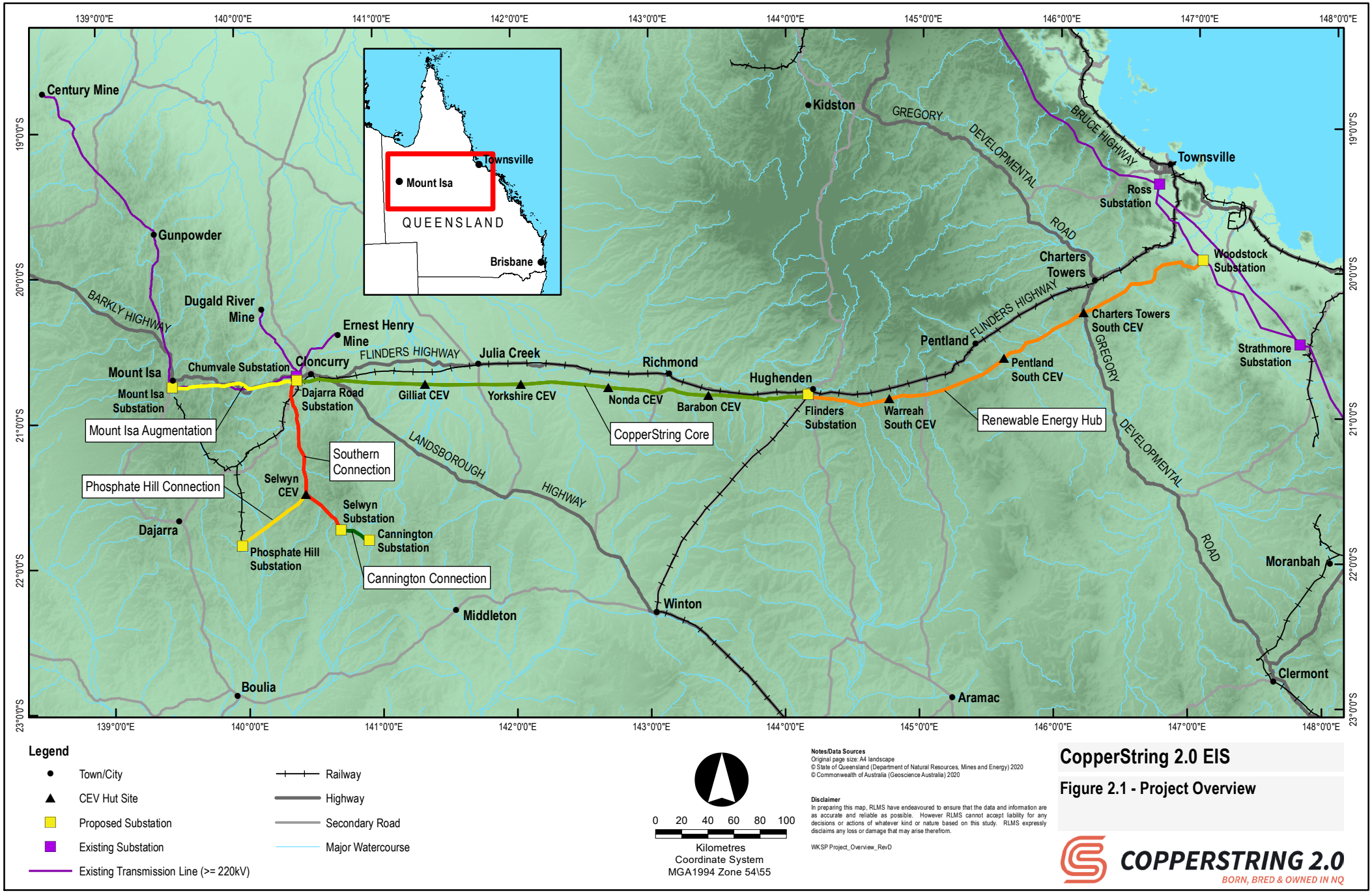
The Project involves the construction and operation of approximately 1,060 km of extra high voltage overhead electricity transmission line that would extend from Mount Isa to the Powerlink transmission network, via a new connection point south of Woodstock, near Townsville.

The Project involves construction of seven new substations at Woodstock, Hughenden, Dajarra Road (Cloncurry), Mount Isa, Selwyn, Cannington Mine and Phosphate Hill Mine.

The CopperString transmission network is divided into the following eight sections as shown in Figure 2-1:

1. Woodstock Substation
2. Renewable Energy Hub
3. CopperString Core
4. Mount Isa Augmentation
5. Southern Connection
6. Cannington Connection
7. Phosphate Hill Connection
8. Kennedy Connection (option).

In addition to the Project infrastructure, temporary workers' accommodation camps will be constructed to house the majority of the construction workforce. The construction camps are proposed to be located near major towns of the region to utilise existing services and infrastructure, including water, sewage and electricity. These camps will only be utilised for the construction of the Project and will be decommissioned at the end of the construction program.



Notes/Data Sources
Original page size: A4 landscape
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WKSP Project_Overview_RevD

CopperString 2.0 EIS

Figure 2.1 - Project Overview

COPPERSTRING 2.0
BORN, BRED & OWNED IN NQ

2.2 Project activities

The transmission line sections are summarised in Table 2-1. The corridor selection is 120 m wide from the Woodstock Substation to the Dajarra Road Substation (Cloncurry). This width is to account for future duplication of the transmission lines. The Project will be constructed within the southern 60 m corridor along this portion of the easement. From the Dajarra Road Substation (Cloncurry) to the Mount Isa Substation, and along the southern connection (Dajarra Road Substation to the Selwyn Substation and beyond), the corridor selection is 60 m wide. The small section of the corridor selection that connects Dajarra Road to the Chumvale substation will have an easement of 200 m width. Easements will be aligned as closely as practical to existing major infrastructure, such as the Flinders Highway and the majority of the railway line that runs west from Townsville.

Table 2-1 Transmission line easement description

Transmission Line Section	Approximate Distance (km)	Voltage (kV)	Easement width (m)	Corresponding KPs
Renewable Energy Hub	342	330	120	0 - 341.74WD
CopperString Core	395	330	120	341.74 - 736.289WD
Dajarra Connection for Ernest Henry and Chumvale Substation	4	220	120	0 - 3.671EE
Dajarra Connection for Dugald River	3	220	120	0 - 2.68MMG
Mount Isa Augmentation	99	220	60	0 - 98.599DM
Southern Connection	129	220	60	0 - 129.247DS
Cannington Connection	24	220	60	0 - 24.304SC
Phosphate Hill Connection	63	220	60	90.33DS - 63.145SP

2.3 Schedule of works

Construction is expected to take approximately 31 months to complete and will be supplemented by a four month pre-construction period for the procurement of materials and construction camp establishment.

The proposed construction staging is outlined in Table 2-2. This scenario is based on a single engineering, procurement and Construction Contractor with a maximum of four transmission line construction camps in operation at any given time.

Table 2-2 Proposed construction staging

CopperString project milestone	Proposed date
Preliminary design via early contractor involvement	Q1 2021
Completion of the EIS Process	Q2 2021
Detailed Design	Q3 2021
Financial close/Notice to Proceed for construction phase	Q3 2021
Commissioning of connection to Renewable Energy Hub and CopperString Core	Q1 2024

CopperString project milestone	Proposed date
Commissioning of the Mount Isa Augmentation and Southern Connections	Q2 2024

Due to the linear nature of the infrastructure, the Project route will be segmented into eight or more construction zones. It is envisaged that transmission line construction will be undertaken using four work fronts, moving from one construction zone to another upon completion of the required works. Each work front will consist of several small teams, each focusing on a specific activity – clearing and access, foundations, steelwork, stringing or rehabilitation. Once the clearing and access teams of a particular work front have completed a construction zone, they will move onto the next construction zone, while other teams, such as foundation teams continue their activities.

The wet season will impact the ability to access constructions sites due to boggy conditions, particularly in the regions between Hughenden and Cloncurry. Flooding may impact construction transportation during the wet season. Heavy vehicle transport along the Kennedy and Barkly highways may also be restricted during this period.

The final arrangement for the management of the work program will be subject to customer requirements, contractor's specific work methods and detailed scheduling.

3. Project Environmental Management Strategy

3.1 Environmental values

3.1.1 Land use and tenure

The Project traverses the following seven local government areas:

- Burdekin Shire Council
- Charters Towers Regional Council
- Flinders Shire Council
- Richmond Shire Council
- McKinlay Shire Council
- Cloncurry Shire Council
- Mt Isa City Council.

The corridor selection traverses predominantly leasehold and freehold land, with the main land use being low intensity cattle grazing on native vegetation.

The region the Project corridor selection area traverses has numerous mining and exploration activities including:

- Petroleum activities
- Exploration permits and applications for exploration permits
- Mineral development licences and applications for mineral development licences
- Mining leases and applications for mining leases
- Economic resources (extractive resources)
- Active, disused and abandoned workings.

No changes to land use or tenure are proposed as part of the Project.

3.1.2 Contaminated land

There are no properties within the corridor selection listed on the CLR. There are 17 properties within the corridor selection are listed on the EMR due to notifiable activities that have the potential to cause land contamination (such as livestock dips, fuel storage and landfills). Appendix B contains details on the Project areas listed on the EMR.

Seven properties within the Corridor selection have also been mapped by the Department of Defence as potentially containing unexploded ordnance (UXOs).

Contaminated areas will be avoided during siting and design wherever practicable.

3.1.3 Visual amenity

The visual landscapes along the Project corridor selection between Woodstock and Mount Isa traverses a large range of visual landscapes including:

- Townships with historical buildings
- Existing electricity substations and power lines

- Rail yards and railway lines
- Rural cattle grazing and pastures
- Mountainous regions
- Eucalypt woodland
- Acacia scrub
- Grasslands
- Undulating hills and rocky out crops
- Large termite mounds and red soils.

Overall, the study area includes several important historic and cultural tourist routes. Visual sensitivity refers to the nature and duration of views. The visual sensitivity of viewpoints along these routes is increased due to the greater number of likely viewers and the greater emphasis that travellers, tourists, recreational users and local residents have on landscape appreciation. The visual impact for each key viewpoint identified as likely to have an elevated visual sensitivity are summarised in Table 3-1.

Further details on the visual landscape can be found in Volume 3 Appendix O Visual amenity.

Table 3-1 Sensitivity of key receptors

Location	Visual Sensitivity
Flinders Highway, Woodstock to Cloncurry	Low
Landsborough (Matilda) Highway, Winton to Cloncurry	Low
White Mountains National Park	Moderate
Barkly Highway (Mount Isa Riversleigh Byway), Cloncurry to Mount Isa	Moderate
Inlander Travel Train, Townsville to Mount Isa	Low
Kennedy Developmental Road (Dinosaur Way) Hughenden to Winton	Low
Richmond Winton Road (Marine Fossil Byway)	Low
Mount Walker	Low
Chinaman's Creek Dam Reserve	Moderate
Burke and Wills Memorial	Low

3.1.4 Geology and soils

The soils and rocks that are found in the corridor selection are associated with the following bioregions:

- Brigalow Belt
- Einasleigh Uplands
- Desert Uplands
- Mitchell Grass Downs
- Gulf Plain
- Northwest Highlands.

Substantial earthworks are not anticipated to be required as part of the Project. Activities such as clearing within the transmission easements, developing access tracks, developing structure foundations and laydown areas have the potential to cause erosion and sedimentation problems if not properly managed.

3.1.5 Topography

Topography across the corridor selection is variable. Landforms range from steep undulating granite country in the Einasleigh Uplands, to flat, gently undulating plains crossed by braided channels in the Gulf Plain, to ridges and rocky outcrops in the Northwest Highlands. The Project is not anticipated to result in changes to topography.

3.1.6 Terrestrial flora

Based on the Ecological assessment (Volume 3 Appendix P Ecological assessment), four flora species of conservation significance were confirmed present within the study area and one flora species of conservation significance is considered likely to occur within the study area, being:

- *Acacia armitii*
- *Eucalyptus nudicaulis*
- *Eucalyptus raveretiana* (black ironbox)
- *Livistona lanuginosa* (waxy cabbage palm)
- *Acacia crombiei* (pink gidgee) (likely to occur).

The corridor selection intersects one area mapped as protected plant high risk trigger area, being for waxy cabbage palm.

A majority of the corridor selection is mapped as remnant regional ecosystems, with some small polygons of Of Concern regional ecosystems mapped. No Endangered regional ecosystems are mapped within the corridor selection.

Based on the Protected Matter Search Tool (PMST) reports, 16 introduced plant species are predicted to occur within the Project area. Wildlife Online records were retrieved to provide information on confirmed introduced plant species previously recorded within the study area. Wildlife Online records confirmed the presence of 214 introduced flora species, including 14 Weeds of National Significance (WoNS) and 27 species classed as restricted invasive plants under the *Biosecurity Act 2014*. One additional restricted invasive plant species, *Bryophyllum delagoense* (Mother of millions) was recorded during the 2011 SEIS surveys. A total of eight restricted invasive plant species were recorded during the 2019 field surveys including an additional restricted invasive species, *Sphagneticola trilobata* (Singapore daisy). The recorded invasive plant species were primarily found around river frontages and alluvial flats of major river systems supported the greatest infestations of invasive plants.

3.1.7 Terrestrial fauna

A total of 217 terrestrial fauna species were recorded during field surveys, comprising of 37 mammal species, 151 bird species, 26 reptile species and three amphibian species. Of these the following species of conservation significance were confirmed present within the study area:

- Koala (*Phascolarctos cinereous*)
- Short-beaked echidna (*Tachyglossus aculeatus*)
- Purple-necked rock-wallaby (*Petrogale purpureicollis*)
- Julia Creek dunnart (*Sminthopsis douglasi*)

- Black-throated finch (southern) (*Poephila cincta cincta*)
- Squatter pigeon (southern) (*Geophaps scripta scripta*).

Additionally, one reptile species of conservation significance, the vine-thicket fine-lined slider (*Lerista cinerea*), was recorded during the 2011 SEIS surveys.

A number of other conservation significant fauna are also considered likely to occur in the study area, based on the habitat types identified within the study area.

A total of 24 introduced fauna species were identified in desktop searches within 5 km of the Project. Of these, 18 species were recorded in both the PMST and Wildlife Online database. Two species, the black rat (*Rattus rattus*) and the feral deer were recorded in the PMST database only, and two species, the goat (*Capra hircus*) and the Indian peafowl (*Pavo cristatus*), were recorded in the Wildlife Online search only. Nine introduced mammal species and one amphibian species were recorded during the 2010 and 2019 field surveys. Two introduced fish species were recorded during the 2010 field surveys. Nine species are listed as restricted invasive matter under the *Biosecurity Act 2014*.

3.1.8 Threatened ecological communities (TEC)

No TECs were identified within the current corridor selection during the field surveys or are expected of be impacted by the Project.

3.1.9 Surface water

The corridor selection crosses 62 named watercourses, as defined by the *Water Act 2000*. These include watercourses within the following major catchment areas:

- Haughton River
- Burdekin River
- Cooper Creek
- Flinders River
- Leichardt River
- Georgina River.

The Project also includes 94 crossings of major or high risk waterways for waterway barrier works, as defined by the *Fisheries Act 1994*.

The majority of watercourses are ephemeral. Major river systems including the Burdekin River are likely to contain perennial flow.

There are no listed wetlands within the corridor selection.

3.1.10 Groundwater

The corridor selection overlies groundwater reserves, The most significant groundwater reserve is the Great Artesian Basin (GAB), which is largely located beneath the central portion of the Renewable Energy Hub and CopperString Core sections of the Project. Water resources of the GAB are managed and allocated through the Great Artesian Basin and Other Regional Aquifers water plan, which covers the corridor selection from KP 179WD to 689WD and from KP 143CC to 154.9CC.

Groundwater reserves along the corridor selection are largely from varying rock forms and floodplain alluviums that supply reasonable quantities of water close to the surface. The primary use of groundwater bores in the area is for domestic and stock use. A total of four groundwater bores were identified within the corridor selection (Volume 2 Chapter 9 Water resources).

Groundwater is used as a water supply source for the following towns located near the corridor selection:

- Pentland
- Torrens Creek
- Prairie
- Hughenden
- Richmond
- Maxwelton
- Julia Creek.

No new groundwater bores are proposed for the Project. Existing registered bores will be utilised if required.

3.1.11 Air quality

The Environmental Protection (Air) Policy (2019) (Air EPP) applies to the environment of Queensland and identifies the environmental values to be enhanced or protected including:

- The health and biodiversity of ecosystems
- Human health and wellbeing
- Visual amenity
- Agricultural use of the environment.

Potentially affected sensitive receptors include residential premises and building points which are in the vicinity of the corridor selection. A total of 55 sensitive receptors were identified within two kilometres of the corridor selection, of which 45 are located more than 500 m from the proposed transmission line. No sensitive receptors were located within the corridor selection.

3.1.12 Noise

The Environmental Protection (Noise) Policy (2019) (Noise EPP) applies to the environment of Queensland and identifies the environmental values to be enhanced or protected including:

- The health and biodiversity of ecosystems
- Human health and wellbeing
- Community amenity.

Potentially affected sensitive receptors include residential premises and building points which are in the vicinity of the corridor selection. A total of 55 sensitive receptors were identified within two kilometres of the corridor selection, of which 45 are located more than 500 m from the proposed transmission line. No sensitive receptors were located within the corridor selection.

3.1.13 Waste

Waste streams generated by the Project can be broadly classified into the following three types:

- Commercial and domestic waste from construction camps, including food and waste water
- Construction waste, including waste concrete
- Waste generated at laydown/delivery areas.

Waste generated during the decommissioning phase of the Project would be similar to construction waste streams with additional waste streams generated from removal of

transmission line components (e.g. Concrete and steel from transmission towers and footings, cables from transmission lines etc.) Construction wastes from work sites and camps may be considered regulated wastes and include:

- Construction and demolition waste
- Industrial waste
- Solid inert waste
- Sludge and residue form water and sewage treatment plants
- Tyres

These wastes must be disposed of to appropriately licenced facilities.

3.1.14 Traffic and transport

The Renewable Energy Hub, CopperString Core and Mount Isa Augmentation sections of the Project generally run parallel with the Kennedy and Barkly Highways. These roads are dual lane, sealed and meet interstate highway standards.

The Southern Connection is remote and is accessed by a combination of gravel and single lane sealed roads.

Many of the roads in the corridor selection are gravel roads that are graded by the relevant local councils in the dry season only. Most of the local council operated roads have creek crossings that will result in road closures in the wet season. All roads in the Project area are subject to flooding.

Queensland Rail operates the Mount Isa Rail Line (including the Phosphate Hill Spur). A passenger service (The Inlander) between Townsville and Mount Isa operates twice weekly.

Airlines service Mount Isa, Cloncurry and Townsville from Brisbane daily. Qantas operates regular services between Townsville, Cloncurry and Mount Isa. REX operates a SAAB 340 (30- 36 seat) hop service from Townsville to Mount Isa (and return) through Hughenden, Richmond and Julia Creek every second day.

Other air services in the region include charter services operated by Incitec Pivot and Chinova between Townsville and Phosphate Hill, and between Townsville and Osbourne, respectively. Spare seats to related contractors, neighbouring mines and the local community are offered on an ‘as available’ basis.

The Port of Townsville is the nearest major port to the corridor selection. It is expected that the bulk of the materials and equipment will be imported through the Port of Townsville.

3.1.15 Cultural heritage

The corridor selection traverses areas where mining and pastoral industries were significant in developing the north and north-western regions of Queensland in the late 19th and early 20th centuries. There are 11 existing non-Indigenous cultural heritage sites registered on the Queensland Heritage Register that have been identified in proximity to the corridor selection.

The Indigenous cultural heritage assessment identified 294 registered cultural heritage sites and two registered cultural heritage polygons that may be impacted by the Project. There is also potential for the Project to impact Aboriginal cultural heritage yet to be identified. Prior to construction, a full field survey will be undertaken of the Project corridor selection, with each Aboriginal party to re-identify known Aboriginal cultural heritage sites and identify new sites that may be impacted.

3.2 Risk assessment

An initial scoping of environmental impacts arising from the project has been undertaken as detailed in Volume 2 of the EIS and informs the preparation of this FEMP. A summary is presented in Table 3-2.

Prior to commencing work on any phase of the project (design, construction, operations and maintenance, decommissioning), a detailed assessment of environmental risks associated with specific work activities and methods shall be carried out by the Construction Contractor. The assessment shall consider, but not be limited to, the potential environmental impacts detailed in the EIS (and Table 3-2). Risk assessment and management processes must be consistent with AS/NZS ISO 31000:2018 Risk Management – Guidelines.

A specific control program for reducing environmental risk to acceptable levels has been developed. Details of control measures to address identified environmental risks include, but are not limited to:

- Engineering controls and construction techniques to be implemented to protect the environment
- Work procedures and methods to address identified environmental risks
- Drawings and plans which clearly show locations of and design specifications for environmental controls

CuString is responsible for capturing these in this FEMP as part of the regulatory approval process, and, by the Construction Contractor as required for specific parcels of work. Roles and responsibilities are outlined in Section 3.4.

The corridor selection will not impact on any of the listed heritage sites identified in the non-Indigenous cultural heritage assessment. These activities and impacts may be updated as the Project Construction Program is developed.

Table 3-2 Initial environmental impacts scoping

Activity	Potential environmental impact	Relevant aspect / EMP (Section 4)
Design – Field surveys and verification, selection of alignment and positioning of infrastructure	• Disruption to sensitive receptors, flora and fauna • Destruction or disturbance of known or previously unrecorded heritage artefacts	• Amenity • Flora and fauna • Cultural heritage • Noise and vibration
Landform changes	• Changes to local drainage patterns • Changes to visual character	• Geology and soils • Amenity • Water resources

Activity	Potential environmental impact	Relevant aspect / EMP (Section 4)
Vegetation clearing	• Increased dust generation • Increased salinization of soils • Changes to visual character • Loss of habitat, modification of habitat, edge effects and fragmentation due to clearing • Barriers to terrestrial fauna movement and entrapment in trenches/open excavations • Direct mortality of fauna from construction/operation/maintenance activities (e.g. Vehicle strike) • Spread of pest animal and plant species • Increase of existing populations of pest animal and plant species • Increased competition for habitat where fauna has been displaced by clearing • Sediment runoff to waterways • Degradation of downstream water quality	• Air quality • Geology and Soils • Flora and Fauna

Activity	Potential environmental impact	Relevant aspect / EMP (Section 4)
Construction activities	• Changes to local drainage patterns and visual character • Soil and water contamination, including as a result of inappropriate waste control • Movement of contaminated materials off site • Erosion and sedimentation • Importing of contaminated material • Alterations to land use • Noise, vibration, dust and lighting impacts • Direct mortality of fauna from construction/operation/maintenance activities (e.g. Vehicle strike) • Introduction of pest animal and plant species • Attraction of vermin from inappropriate waste control • Visual amenity impacts from inappropriate waste control • Increase of existing populations of pest animal and plant species • Disruption to sensitive receptors, flora and fauna, and employees • Destruction or disturbance of known or previously unrecorded heritage artefacts • Transfer of dirt, mud and weed species onto roads and adjacent properties • Inefficient use of resources from inappropriate waste control	• Land contamination • Geology and soils • Amenity • Water resources • Flora and Fauna • Cultural heritage • Waste • Traffic and transport • Noise and vibration
Lighting – portable or attached to permanent or temporary infrastructure	• Disruptions to nocturnal fauna species as a result of artificial lighting for construction	• Flora and fauna

Activity	Potential environmental impact	Relevant aspect / EMP (Section 4)
Use of access tracks	• Sediment runoff into waterways • Degradation of downstream water quality • Modification/removal of habitat due to deposition of sediment • Increased dust generation • Movement of vehicles outside of construction footprint (impacts to vegetation, sedimentation, erosion and cultural heritage)	• Geology and soils • Water resources • Flora and fauna • Air quality • Traffic and transport
Construction workforce and freight vehicle movements, including road, air and sea	• Increased traffic accident potential, through increased vehicle movements • Damage to public roadways and railways through increased use • Increased dust generation • Increased traffic, particularly trucks, on Flinders and Barkly Highways and local roads • Increased traffic through regional airports and aerodromes • Increased traffic through regional sea ports • Increased biosecurity risks from overseas freight	• Traffic • Air quality • Hazards, health and safety
Ground disturbance	• Increase in soil compaction • Localised slope instability • Erosion and sedimentation • Disturbance of UXOs	• Geology and soils

Activity	Potential environmental impact	Relevant aspect / EMP (Section 4)
Disturbance/movement of soil	• Contamination to land and waterways • Spread of contamination to/from site • Erosion and sedimentation • Mud and dust to roads • Increased wind-blown dust • Sediment runoff into waterways • Degradation of downstream water quality • Modification/removal of habitat due to deposition of sediment	• Land contamination • Geology and soils • Water resources • Air quality
Access and vehicle movements	• Increased dust generation • Disturbance of soils • Import of weeds • Disruption to landholder access and existing operations •	• Air quality • Flora and fauna
Construction within a watercourse / drainage path	• Local changes to stream morphology • Alteration to overland flow • Loss of topsoil quality and quantity • Increase in soil erosion including stream bank erosion	• Water resources • Geology and Soils
Waterway crossings	• Barriers to aquatic fauna movement • Increased bank erosion • Disturbance to GAB communities • Degradation of downstream water quality	• Flora and Fauna • Water

Activity	Potential environmental impact	Relevant aspect / EMP (Section 4)
Construction and operation of workers' accommodation camps	• Changes in groundwater levels from use by construction activities and at camps • Degradation of water quality through wastewater release • Fire on site, including fire involving flammable substances	• Water
Waste management	• Land and water contamination • Attraction of vermin • Visual amenity impacts where waste is not stored or disposed of correctly • Adverse effects to flora and fauna	• Land contamination • Amenity • Flora and Fauna
Storage of hazardous substances and goods	• Hazardous substance spill/leak • Land and water contamination • Attraction of vermin • Visual amenity impacts where waste is not stored or disposed of correctly • Adverse effects to flora and fauna	• Land contamination • Water • Flora and Fauna

Activity	Potential environmental impact	Relevant aspect / EMP (Section 4)
Operation and maintenance activities	• Injury and mortality of wildlife by collision with vehicles, and entrapment • Disturbance of wildlife behaviour through exposure to light, noise and vibration • Localised habitat degradation through exposure to dust, run-off and sedimentation • Introduction and spread of invasive species • Hazardous substance spill • Disruption to sensitive receptors, flora and fauna • Destruction or disturbance of known or previously unrecorded heritage artefacts • Increased electromagnetic fields • Bushfire ignited by arc or spark from transmission line (eg. Faults such as broken conductor, vegetation interference with line, flashovers	• Flora and Fauna • Cultural heritage

3.3 Compliance obligations

3.3.1 Project approvals

CuString is responsible for obtaining the primary statutory environmental and planning approvals and permits for the project. These primary environmental and planning approvals have been identified in the Regulatory Approvals Plan (Volume 3 Appendix L Regulatory approvals plan).

The requirements of this FEMP shall be reviewed and where required, updated, following confirmation of requirements for, and then receipt of the permits and approvals.

The Construction Contractor is responsible for obtaining any additional permits to work as may be required (e.g. Road Use Management Plan under the *Transport Infrastructure Act 1995*) and shall implement a process for identifying environmental legal and other requirements relevant to their work. Copies of all project approvals records shall be maintained in a central location.

3.3.2 Relevant legislation, standards and guidelines

The Project is subject to the requirements of the SPDWO Act.

A summary of the legislation and other applicable standards/guidelines that may apply to the Project include, but are not limited to, those listed in Table 3-3.

3.3.3 Other compliance obligations

Other compliance obligations CuString will require the Construction Contractor to maintain include:

- Environmental management systems
- Site specific environmental management plans.

Table 3-3 Legislative and other controls for environmental management

Environmental aspect	Legislative/standards cross-reference
General	• (Queensland) *Electricity Act 1994* • (Queensland) *Electricity Regulation 2006* • (Queensland) *Environmental Protection Act 1994* (EP Act) • (Queensland) *Environmental Protection Regulation 2019* • (Queensland) *Electrical Safety Act 2002* • (Queensland) *Electrical Safety Regulation 2013* • (Queensland) *Planning Act 2016* • (Queensland) *Planning Regulation 2017* • Local Government planning schemes: – Burdekin Shire Council IPA Planning Scheme – Charters Towers Regional Plan – Flinders Shire Planning Scheme – Planning Scheme for the Shire of Richmond – McKinlay Shire Planning Scheme – Cloncurry Shire Planning Scheme – City of Mount Isa Town Planning Scheme • AS/NZS ISO 14001:2016 Environmental Management Systems – Requirements with guidance for use • AS ISO 14004:2018 – Environmental Management Systems – General guidelines on implementation. • AS ISO 31000:2018 – Risk management - Guidelines • AS/NZS ISO 19011:2019 – Guidelines for auditing management systems • AS/NZS 5577:2013 Electricity network safety management systems
Land use and tenure	• *Land Act 1994*

Environmental aspect	Legislative/standards cross-reference
Contaminated land	• National Environment Protection (Assessment of Site Contamination) Measure 1999 • State Planning Policy – state interest guidance material, Natural hazards, risk and resilience – Fire, 2017 • AS 4482.2-1999 Guide to the sampling and investigation of potentially contaminated soil – Volatile substances • AS 4482.1-2005 Guide to the investigation and sampling of sites with potentially contaminated soil – Non-volatile and semi-volatile compounds
Soils/geology/topography	• *Soil Conservation Act 1986* • IECA (2008) Best Practice Erosion & Sediment Control • Department of Natural Resources, Mines and Energy (DNRME) Soil Conservation Guidelines for Queensland 2015, 3rd edition • Department of Transport and Main Roads (DTMR) Technical Specification MRTS52 Erosion and Sediment Control • Institute of Public Works Engineering Australasia Queensland Urban Drainage Manual, 4th Edition.
Visual amenity	• Australian Institute of Landscape Architects Queensland, The Guidance Note for Landscape and Visual Assessment (GNLVA), 2018 • Landscape Institute and Institute of Environment Management and Assessment, The Guidance for Landscape and Visual Impact Assessment (GLVIA), 2013
Flora and fauna	• (Commonwealth) *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) • (Queensland) *Fisheries Act 1994* (Fisheries Act) • (Queensland) *Nature Conservation Act 1992* (NC Act) • (Queensland) *Nature Conservation (Wildlife) Regulation 1994* • (Queensland) *Vegetation Management Act 1999* (VM Act)
Biosecurity	• (Queensland) *Biosecurity Act 2014* • (Queensland) *Biosecurity Regulation 2016*

Environmental aspect	Legislative/standards cross-reference
Water resources, water quality, flooding and groundwater	• (Queensland) *Environmental Protection (Water and Wetland Biodiversity) Policy 2019* (Water and Wetland Biodiversity EPP) • (Queensland) *Water Act 2000* • *Water Supply (Safety and Reliability) Act 2008* • (Queensland) *Fisheries Act 1994* Queensland Water Quality Guidelines as outlined in the Water and Wetland Biodiversity EPP • Department of Environment and Science Monitoring and Sampling Manual 2018, Version 2 • AS 2031-2012 Water quality – Sampling for microbiological analysis • ANZECC & ARMCANZ Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2018 • National Water Quality Management Strategy 2018 • Reef 2050 Water Quality Improvement Plan 2017-2022 • National Health and Medical Research Council (NHMRC) Australian Drinking Water Guidelines, Version 3.5, 2018 • State Planning Policy – state interest guidance material, Natural hazards, risk and resilience – Flood, 2017
Air quality and greenhouse gases	• (Commonwealth) *National Greenhouse and Energy Reporting Act 2007* • (Queensland) *Environmental Protection (Air) Policy 2019* • BS EN 12341-2014 Ambient air – standard gravimetric measurement method for the determination of the PM_{10} or $PM_{2,5}$ mass concentration of suspended particulate matter • AS/NZS 3580.1.1:2016 Methods for sampling and analysis of ambient air – Guide to siting air monitoring equipment • AS/NZS 3580.10.1:2016 Methods for sampling and analysis of ambient air – Determination of particulate matter – Deposited matter – Gravimetric method • AS/NZS 3580.9.11:2016 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM_{10} beta attenuation monitors.

Environmental aspect	Legislative/standards cross-reference
Noise and vibration	• (Queensland) *Environmental Protection (Noise) Policy 2019* • DTMR Transport Noise Management Code of Practice: Volume 2 – Construction Noise and Vibration, 2016 • Department of Environment and Science (DES) Guideline Noise and vibration from blasting, Version 3.01, 2016 • DES Noise Measurement Manual, Version 4.01, 2016 • AS 1055.1-1997 Acoustics – Description and measurement of environmental noise – General procedures • AS 1055.2-1997 Acoustics – Description and measurement of environmental noise – Application to specific situations • AS 1055.3-1997 Acoustics – Description and measurement of environmental noise – Acquisition of data pertinent to land use • AS 2187.0-1998 Explosives – Storage, transport and use – Terminology • AS 2187.1-1998 Explosive – Storage, transport and use – Storage • AS 2012.1-1990 Acoustics – Measurement of airborne noise emitted by earth-moving machinery and agricultural tractors – Stationary test condition – Determination of compliance with limits for exterior noise • AS 2363-1999 Acoustics – Measurement of noise from helicopter operations • AS 2436-2010 (R2016) Guide to noise and vibration control on construction, demolition and maintenance sites • AS 2702-1984 Acoustics – Methods for the measurement of road traffic noise.
Waste management	• (Queensland) *Waste Reduction and Recycling Act 2011* • (Queensland) *Waste Reduction and Recycling Regulation 2011*
Hazardous materials	• (Queensland) *Explosives Act 1999* • Australian Code for the Transport of Dangerous Goods by Road and Rail, edition 7.6 • AS 1216-2006 Class labels for dangerous goods • AS ISO 16101-2007 Transport packaging for dangerous goods – Plastics compatibility testing • AS 1940:2017 The storage and handling of flammable and combustible liquids • AS 3780-2008/Amdt 1-2009 The storage and handling of corrosive substances.

Environmental aspect	Legislative/standards cross-reference
Indigenous and non-Indigenous cultural heritage	• (Commonwealth) *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* • (Queensland) *Aboriginal Cultural Heritage Act 2003* (ACH Act) • *Queensland Heritage Act 1992* • (Queensland) *Torres Strait Islander Cultural Heritage Act 2003*
Native title	• (Commonwealth) *Native Title Act 1993* • (Queensland) *Native Title Act 1993*
Transport and traffic	• (Queensland) Transport Infrastructure Act 1994 • (Queensland) Transport Operations (Road Use Management) Act 1995

3.4 Roles and responsibilities

Under section 319 of the Queensland *Environmental Protection Act 1994*(EP Act), all persons have a general environmental duty not to conduct activities that cause, or are likely to cause, environmental harm, unless all reasonable and practicable actions have been taken to minimise or prevent this harm.

Specific roles and responsibilities for the Project are provided in Table 3-4. The term 'Construction Contractor' shall apply to all firms directly contracting to CuString for the construction phase of the Project, including vegetation clearing contractors. The term 'Operations and Maintenance Service Provider' shall apply to all firms operating the commissioned Project or undertaking maintenance activities associated with the commissioned Project.

Table 3-4 Roles and responsibilities

Role	Responsibilities
CuString (Proponent)	CuString shall: • Define environmental performance and management requirements that shall be complied with. • Obtain all nominated Project statutory approvals (as described in section 3.3) prior to works commencing. • Liaise with regulators and other agencies where required. • Require formal adherence to the FEMP, CEMP and Operational Environmental Management Plan (OEMP) as a condition of contract/employment at the site. • Require the Construction Contractor to report all incidents and non-conformances with compliance obligations to CuString and to relevant government authorities /agencies where required and follow up to check that remedial actions have been implemented.

Role	Responsibilities
	• Undertake regular surveillance and audit of the Construction Contractor's compliance with the FEMP and CEMP. • Undertake Management review of environmental performance and • Update the EMP as required during the project lifetime to capture changes to the scope of works and services, updated compliance obligations and in response to incident, complaint or audit. • Manage environmental performance requirements in contracts, including penalties in the event of non-compliance.
Designer	The Designer shall: • Develop and maintain environmental design criteria that is consistent with this FEMP for endorsement by CuString prior to the commencement of onsite works. • Carry out all design work consistent with the environmental design criteria, FEMP and approval conditions. • Obtain any additional works permits and approvals from statutory authorities other than Project statutory approvals obtained by CuString, which may be required for field investigations. • Liaise with regulators and other agencies where required.
Construction Contractor	The Construction Contractor shall: • Develop and maintain a CEMP that is consistent with this FEMP for endorsement by CuString prior to the commencement of onsite works. • Carry out all work consistent with the CEMP and approval conditions. • Conduct activities in accordance with any pertinent licences or agreements. • Obtain any additional works permits and approvals from statutory authorities other than Project statutory approvals obtained by CuString. • Set and work towards achieving CEMP environmental objectives and targets. • Ensure all employees are trained, inducted and competent in their responsibilities under the CEMP prior to commencing work on site.

Role	Responsibilities
	• Conduct monitoring, site inspections and reporting on environmental performance as specified in the CEMP. • Record complaints, incidents and non-conformances, implement corrective and preventative actions to address these and report on these matters to CuString and relevant government authorities /agencies as required. • Submit an appropriate Emergency Response Plan to CuString for implementation prior to commencement of any construction works. • Update the CEMP as required during the project to capture changes to the scope of works and services, updated compliance obligations and in response to incident, complaint or audit. • Submit updated CEMP revisions to CuString for approval. • Prepare and submit site specific work method statements and site specific environmental management plans to CuString as required by contract conditions and this FEMP prior to commencement of works that these documents apply to. • Participate in inspections and audits by CuString, auditors (CuString internal staff or consultant) and regulatory authorities.

Role	Responsibilities
Operation and Maintenance Service Provider	The Operation and Maintenance Service Provider shall: • Develop and maintain an Operations Environmental Management Plan (OEMP) that is consistent with this FEMP for endorsement by CuString prior to the commencement of the operation phase. • Carry out all work consistent with the OEMP and approval conditions. • Conduct activities in accordance with the Operation and Maintenance Service Provider's maintenance policies and procedures, the OEMP, and any pertinent licences or agreements • Obtain any additional works permits and approvals from statutory authorities other than Project statutory approvals obtained by CuString • Set and work towards achieving OEMP environmental objectives and targets • Ensure all employees are trained, inducted and competent in their responsibilities under the OEMP prior to commencing work on site. • Conduct monitoring, site inspections and reporting on environmental performance as specified in the OEMP. • Record complaints, incidents and non-conformances, implement corrective and preventative actions to address these and report on these matters to the Operations and Maintenance Service Provider and relevant government authorities /agencies as required. • Submit an appropriate Emergency Response Plan to CuString for implementation prior to commencement of any operational or maintenance works. • Update the OEMP as required during the project to capture changes to the scope of works and services, updated compliance obligations and in response to incident, complaint or audit. • Submit updated OEMP revisions to CuString for approval. • Prepare and submit site specific work method statements and site specific environmental management plans to CuString as required by contract conditions and this FEMP prior to commencement of works that these documents apply to. • Participate in inspections and audits by CuString, auditors (Custring internal staff or consultant) and regulatory authorities.

3.5 Construction Contractor management

The Construction Contractor(s) for the project will be required to comply with this FEMP and to prepare a Construction Environmental Management Plan (CEMP) demonstrating how the requirements of the FEMP would be met.

The CEMP shall be based on the principles of AS/NZS ISO 14001:2016 *Environmental management systems – requirements with guidance for use* or its updates and include:

- A description of the contractor's proposed environmental management system, procedures and processes as discussed in this section, including all forms and registers
- An environmental risk assessment and control program
- Details of compliance obligations (including but not limited to a register of legal and other requirements, including details of approvals, permits, agreements and/or licences)
- Environmental objectives and targets
- Roles and responsibilities for environmental management
- Competence (Training and awareness)
- Communications and reporting (internal and external)
- Environmental procedures, and work method statements, incorporating and addressing the environmental management requirements in Section 4 of this FEMP
- Plans and drawings, which clearly show locations of and design specifications for environmental controls
- Procedures for inspections, environmental monitoring, data evaluation, performance evaluation and internal auditing
- Procedures for responding to and managing complaints, non-conformances and incidents, including corrective and preventative actions
- Procedures for control of documents and records
- Requirements for review of the CEMP and regular management review
- A checklist that demonstrates that each requirement of this FEMP has been addressed in the CEMP.

The CEMP is to be prepared and submitted to CuString prior to the Construction Contractor starting works. Works shall not start until written approval of the CEMP has been issued by CuString. The Construction Contractor would be responsible for regularly reviewing their site documentation and management plans to confirm they continue to adequately address environmental management requirements for the project. Any changes to the contractor's documentation, where documents have been reviewed and approved by CuString as part of the tender or pre-construction phases, shall be discussed and agreed with CuString prior to implementing the changes.

3.6 Operations and Maintenance Service Provider management

The Operations and Maintenance Service Provider(s) for the project will be required to comply with this FEMP and to prepare an Operations Environmental Management Plan (OEMP) demonstrating how the requirements of the FEMP would be met.

The OEMP shall be based on the principles of AS/NZS ISO 14001:2016 *Environmental management systems – requirements with guidance for use* or its updates and include:

- A description of the contractor's proposed environmental management system, procedures and processes as discussed in this section, including all forms and registers
- An environmental risk assessment and control program
- Details of compliance obligations (including but not limited to a register of legal and other requirements, including details of approvals, permits, agreements and/or licences)
- Environmental objectives and targets
- Roles and responsibilities for environmental management
- Competence (Training and awareness)
- Communications and reporting (internal and external)
- Environmental procedures, and work method statements, incorporating and addressing the environmental management requirements in Section 4 of this FEMP
- Plans and drawings, which clearly show locations of and design specifications for environmental controls
- Procedures for inspections, environmental monitoring, data evaluation, performance evaluation and internal auditing
- Procedures for responding to and managing complaints, non-conformances and incidents, including corrective and preventative actions
- Procedures for control of documents and records
- Requirements for review of the CEMP and regular management review
- A checklist that demonstrates that each requirement of this FEMP has been addressed in the OEMP.

The OEMP is to be prepared and submitted to CuString prior to the Operations and Maintenance Service Provider starting works. Works shall not start until written approval of the OEMP has been issued by CuString. The Operations and Maintenance Service Provider would be responsible for regularly reviewing their site documentation and management plans to confirm they continue to adequately address environmental management requirements for the project. Any changes to the Operations and Maintenance Service Providers documentation, where documents have been reviewed and approved by CuString as part of the tender or pre-operation phases, shall be discussed and agreed with CuString prior to implementing the changes.

3.7 Communication and Environmental Reporting

3.7.1 Internal communications

Regular meetings will be held between CuString and the Construction Contractor during the construction phase. Environmental management will be an agenda item at these meetings.

Regular meetings will be held between CuString and the Operation and Maintenance Service Provider during the operation phase. Environmental management will be an agenda item at these meetings.

3.7.2 Internal reporting

The Construction Contractor shall provide monthly written reports to CuString outlining the status of works, any issues and summary of conformance with the CEMP. The final report format is to be approved by CuString, but as a minimum, this report shall include a summary of results from site environmental inspections, external and internal audits, monitoring and

complaints, incidents (including 'near miss' environmental incidents) and non-conformance as well as corrective and preventative actions taken. The Construction Contactor shall also periodically provide CuString with details of any information that shall be collected in accordance with permit and approval conditions relevant to the Construction Contractors scope of work.

The Operation and Maintenance Service Provider shall provide regular written reports to CuString outlining the status of works, any issues and summary of conformance with the OEMP. The final report format is to be approved by CuString, but as a minimum, t his report shall include a summary of results from site environmental inspections, external and internal audits, monitoring and complaints, incidents (including 'near miss' environmental incidents) and non-conformance as well as corrective and preventative actions taken. The Operation and Maintenance Service Provider shall also periodically provide CuString with details of any information that shall be collected in accordance with permit and approval conditions relevant to the Operation and Maintenance Service Providers scope of work.

3.7.3 CuString reporting and communication

CuString is responsible for all liaison with external agencies. The Construction Contractor shall keep a record of all contact with members of the project team, public agency or authority representatives and members of the community and direct their enquiries to CuString.

CuString is responsible for external reporting to agencies in accordance with statutory requirements including approval and consent conditions. Reportable incidents would include:

- Events causing unauthorised environmental harm
- Incidents involving unauthorised adverse impacts to native vegetation, flora or fauna
- Encountering non-Aboriginal or Aboriginal cultural heritage.

The Construction Contractor shall report all environment related incidents to CuString in accordance with the procedures outlined in Section 3.11. The Construction Contractor shall have procedures in place that assign contact protocols (for reporting to CuString) and assign responsibility for external reporting and the maintenance of records associated with external reporting.

For clearing works within the Project area, CuString will be responsible for reporting to the Department of Agriculture, Water and Environment (DAWE) any information required under the EPBC Act approval conditions pertaining to the Project.

3.8 Emergency contacts and procedures

The Construction Contractor shall identify the key emergency contacts responsible for managing environmental emergencies associated with the Project and their contact details. These personnel should have the power to stop and direct works so that they can manage emergencies effectively. The Construction Contractor shall submit an appropriate Emergency Response Plan to CuString for implementation prior to commencement of any construction works.

The Operation and Maintenance Service Provider shall identify the key emergency contacts responsible for managing environmental emergencies associated with the Project and their contact details. These personnel should have the power to stop and direct works so that they can manage emergencies effectively. The Operation and Maintenance Service Provider shall submit an appropriate Emergency Response Plan to CuString for implementation prior to commencement of Operations.

3.9 Environmental training and awareness

3.9.1 Environmental Inductions

All site personnel will attend an initial project induction prior to commencing work on site. Inductions will incorporate project environmental aspects including, but not limited to the following:

- Relevant Project approvals and their requirements
- Relevant site specific environmental issues on the project (including as a minimum, those identified in Section 4)
- Understanding of the general environmental duty
- Understanding the requirements of the FEMP and individual roles
- Environmental incident emergency response procedures
- Environmental risks associated with the site and the procedures and environmental management controls in place to manage these risk
- An outline of the potential consequences of not meeting their environmental responsibilities.
- Guidance for site access.

The environmental aspects that shall be included in the site induction shall include those in Sections 3.1 and 4 of this FEMP. All records of site inductions are to be maintained and may be subject to internal and external audits (Section 3.12).

3.9.2 Ongoing environmental training

Training and awareness, both formal and informal (e.g. Toolbox talks) will be undertaken regularly throughout the duration of the Project. Environmental aspects will be addressed at these meetings.

3.10 Environmental monitoring, inspections and audits

The environmental performance of the Project will be determined by developing and implementing environmental monitoring programs and site inspection programs. Compliance with environmental requirements such as approval conditions, management standards, the Project FEMP and system requirements will be assessed during environmental audits.

3.10.1 Environmental monitoring

The Construction Contractor and Operation and Maintenance Service Provider are required to develop and implement an environmental monitoring program consistent with the requirements of this FEMP. This monitoring program will address the EIS commitments and approval, permit and licensing conditions, and be reviewed and approved by CuString as part of the Construction Contractor's CEMP and Operation and Maintenance Service Provider's OEMP.

Monitoring activities will be conducted by a person who is suitably trained and qualified. Monitoring will be carried out in accordance with guidelines and standards specified in permit and approval conditions.

The results of the monitoring programs will be interpreted and reviewed regularly. Results will be reported to relevant authorities within agreed timeframes as determined in approval conditions. The incident management procedures will describe the procedures for instances, where monitoring results trigger the need for a management and/or reporting response.

3.10.2 Environmental inspections

The Construction Contractor and Operation and Maintenance Service Provider will be required to conduct regular environmental site inspections at a frequency appropriate to the work activity being undertaken. The inspections will review all environmental controls that are relevant to the construction activities underway at the time of the inspections. Further details on frequencies and type of inspections can be found in the management measures in Section 4.

The date and time of the inspections shall be recorded as well as comments on non-conformance and corrective action taken. Copies of the site inspection checklist will be signed and maintained. Where the non-conformance does not present a significant risk of environmental harm, and can be corrected promptly, the corrective action will be closed out on the checklist. Where the risk of environmental harm is more significant and/or the corrective action cannot be undertaken promptly, the action will be recorded in the corrective action register.

Where an incident or near miss is observed during inspections, the incident investigation and reporting procedure will be followed.

3.10.3 Environmental auditing

The Construction Contractor is responsible for periodic internal audits of compliance with the requirements of the CEMP. The Operation and Maintenance Service Provider is responsible for periodic internal audits of compliance with the requirements of the OEMP.

CuString may choose to engage an independent, suitably qualified and experienced auditor to conduct external audits of the Construction Contractor's implementation of the CEMP and FEMP and/or the Operation and Maintenance Service Provider's implementation of the OEMP and FEMP.

CuString will develop and implement an environmental auditing program to determine compliance with the CEMP, OEMP and permit and approval conditions over the life of the Project. Auditing of the performance of construction activities against the CEMP will be carried out at least monthly and auditing of performance of the operations and maintenance phase OEMP will be carried out annually.

CuString will maintain all audit records and will be responsible for scheduling follow-up inspections to ensure that corrective actions are being implemented for any non-compliances detected.

3.10.4 Environmental management plan review

This FEMP shall be reviewed and updated to reflect approvals received and any changes in the Project construction requirements and environmental management measures prior to works commencing. The person responsible for undertaking the FEMP review shall be the CuString environmental representative.

A CEMP, consistent with the FEMP, will be prepared prior to commencement of construction, and an OEMP, consistent with the FEMP will be prepared prior to operations. The CEMP and OEMP will be reviewed as required to assess whether it is achieving its objectives and the requirements of any relevant approval conditions, as outlined in Section 3.3.

A review of the CEMP and/or OEMP will be undertaken:

- Following a significant environmental incident
- When there is a need to improve performance in an area of environmental impact
- To address any material changes in any relevant legislation, policies or guidelines

- Periodically to assess suitability and applicability to current activities.

The EMP review will take into account environmental monitoring records, corrective actions and the results of any audits. Any reason for varying the CEMP or OEMP will be documented.

The Construction Contractor is responsible for undertaking the review and update of the CEMP. The Operations and Maintenance Service Provider is responsible for the review and update of the OEMP.

Management reviews will occur at the frequency specified by Project approvals and at minimum the following will be completed for the duration of the construction and post-construction (site reinstatement) phases of the Project:

- Monthly meetings between the proponent and Construction Contractor(s) with reports to top management on actions requirement.
- Quarterly meeting involving proponent top management for the duration of the construction and post-construction phases.

3.11 Environmental non-conformity, corrective action and complaints

3.11.1 Management of environmental non-conformance

CuString will ensure that all environmental incidents are identified, reported and thoroughly investigated, and that the appropriate corrective action is taken to prevent recurrence of the incident.

In the event of an incident, the Construction Contractor, Service Provider and CuString will take appropriate action to minimise any adverse environmental impact and promptly report details of the incident to relevant government agencies. The Construction Contractor, Service Provider and CuString must carry out any lawful instruction received from the authorised representatives of relevant agencies.

The investigation of incidents will include a process for identifying all the contributing factors of the incident. The investigations will be carried out by competent persons with the appropriate involvement of relevant personnel and their representatives. The level of detail of these investigations will be appropriate to the actual or potential seriousness of the event.

Prioritised corrective or preventive actions will be implemented to prevent recurrence of similar events. Procedures will be established and maintained to ensure the follow-up and completion of corrective actions. Corrective actions following incidents will be communicated to relevant staff.

An incident register will be developed and maintained by the Construction Contractor, recording all environmental near-misses and incidents. Additional procedures will be developed for specific environmental incidents, such as spills of hazardous substances and injury or death of animals, such as native wildlife and livestock.

The incident management procedure will be communicated to all staff and contractors during environmental inductions and made available at appropriate locations in appropriate formats. Contact names and numbers will be updated as required. CuString, the Construction Contractor, and Operation and Maintenance Service Provider must develop and maintain incident management procedures and registers.

3.11.2 Non-conformance reporting

General

All environmental non-conformances will be recorded in the health, safety and environment incident management system. The Construction Contractor will notify CuString as soon as practicable of environmental non-conformances for CuString to notify regulating agencies, if appropriate.

Activities or non-conformances that cause or threaten to cause unauthorised material environmental harm or serious environmental harm must be reported to the DES.

- Material environmental harm is defined under section 16 of the EP Act as environmental harm that is:
- Not trivial or negligible in nature, extent or context
- Causes actual or potential loss or damage to property of more than $5,000 but less than $50,000
- Results in costs of more than $5,000 but less than $50,000 to prevent/minimise the harm or rehabilitate/restore the environment its condition before the harm.

Serious environmental harm is defined under section 17 of the EP Act as environmental harm that is:

- Irreversible, of a high impact or widespread
- Caused to an area of high conservation value or special significance
- Causes actual or potential loss or damage to property of more than $50,000
- Results in costs of more than $50,000 to prevent/minimise the harm or rehabilitate/restore the environment its condition before the harm.

3.11.3 Environmental complaints management

Consultation with all Project related interested parties will be carried out to ensure any disruptions to their operations, access, or assets, from construction activities or related activities are minimised. Interested parties include property owners (freehold or leasehold), owners of infrastructure (e.g. roads, telecommunications and utilities), traditional owners and members of the general community in the vicinity of the Project area.

In the event of a complaint, the appropriate person within CuString relating to that particular Project phase is to be notified as soon as practicable (refer to Table 3-5). The Construction Contractor shall maintain their own processes for management of complaints and report these to CuString.

Table 3-5 Person responsible for environmental complaints management

Project phase	Person responsible for complaints management within CuString
Design	Environmental Consultant
Construction	Project Environmental Officer
Operation and maintenance	Easement Maintenance Coordinator

All complaints will be investigated and entered into an environmental complaints register, which will include the following details:

- Time, date and nature or the complaint

- Type of communication (e.g. telephone, letter, in person)
- Name, contact address and contact telephone number of the complainant (if the complainant does not wish to be identified, then “Not Identified” is to be recorded)
- Response and investigation undertaken as a result of the complaint
- Name of person responsible for investigation the complaint
- Corrective action taken as a result of the complaint investigation and signature of responsible person.

Environmental complaints management procedures will be established for the construction and operational phases of the Project.

3.11.4 Non-conformity, corrective action and preventative action

CuString will implement a corrective action process in the event of a non-conformity with the CEMP or OEMP. The Construction Contractor and Operations and Maintenance Service Provider will be required to comply with this process as a minimum. The process will consist of the following steps:

- Identification of the problem (failure or deficiency)
- Root cause analysis to identify causes and determine solutions
- Decision as to the appropriate action
- Application and documentation of corrective or preventative action
- Follow-up and evaluation.

Corrective actions in relation to environmental management may arise from:

- Recommendations and outcomes of incident investigation reports, including investigations into incidents, near misses and non-compliances
- Reviews of monitoring results indicating that performance requirements are not being met and/or that trends indicate that environmental degradation may be occurring
- Checks and inspections (note that minor corrective actions identified through checks and inspections will generally be resolved on the spot)
- Identification of hazards or improvement opportunities
- Audit recommendations
- Complaints

Corrective actions will be raised through CuString’s notification system or through a separate corrective action register if required for Construction Contractors or Operation and Maintenance Service Providers not operating under CuString’s systems. Completion and close out of corrective actions will be reported regularly to the CuString– General Manager.

3.12 Control of documents and records

All documents and records shall be managed so that they can be easily identified, stored, protected, retrieved, retained and disposed appropriately. Records shall be kept for a period of seven years and be legible, identifiable and traceable.

The following documents and records will be kept:

- Project approvals, licences and permits
- Copies of drawings and plans showing environmental controls

- Current site contact list
- Induction and training records and competency assessments
- Site inspection records
- Waste transport certificates
- Records of complaints and communications
- Monthly reports
- Audit reports
- Records of non-conformances, incidents and emergencies, including corrective and preventative actions taken
- Records of management review
- Other documents as may be required to demonstrate compliance with this FEMP, the CEMP or OEMP.

4. Environmental management plans

The following specific management plans have been developed to provide practical measures to prevent or minimise environmental impacts on existing environmental values. The structure of the management plans for each element has been developed to meet the requirements of the TOR for the EIS. The general structure of each management plan is outlined in Table 4-1. Documentation required to be prepared and the responsible party is summarised in Appendix A.

Table 4-1 Structure of management plans

Element	Description of Content
Existing environmental values and potential impacts	A basic description of the environmental values likely to be affected by the Project during the construction and operational phases.
Management objective(s)	The overarching objective to be achieved for the environmental value likely to be affected by the Project.
Performance criteria	Measurable outcomes or indicators prescribed to gauge whether the management objectives are being met.
Management and mitigation measures	The strategies, tasks or methods proposed to achieve the performance criteria. This section provides the measures relevant to design, construction and operation.
Monitoring requirements and corrective actions	The proposed monitoring activities to measure the performance criteria against relevant thresholds or trigger values. And the corrective actions to be implemented where certain performance criteria are not met.

4.1 Land use and visual amenity

4.1.1 Management objective

- Ensure stockpiles are managed to prevent environmental harm
- Ensure movement of material and equipment on and off site does not increase the risk of environmental harm
- Minimise the visual impact of construction and operational activities on sensitive receptors

4.1.2 Performance criteria

- Minimal complaints from land holder and community during construction and operation

4.1.3 Management and mitigation criteria

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Design	• Minimise the number of intersections with other infrastructure • Consider the placement of towers and vegetative screening of substations and maintenance areas • Where towers are visible by road travellers for a long duration, symmetry and regular spacing will reduce the visual contrast with the broad open plains of the surrounding landscape and create visual rhythm and should be considered • Placement of towers to maximise the screening effects of undulating landforms and vegetation • Consider placement of towers at maximum distance from roadways • Consult with land holder regarding design criteria	CuString / Design Manager	Corridor design	Corridor selection and design criteria
Design / Pre-Construction/ Construction / Operational Readiness	• Land access to be undertaken in accordance with the land acquisition protocol	CuString / Design Manager / Construction Contractor / Operation and Maintenance Service Provider	Access to land	Land acquisition protocol

4.1.4 Monitoring and corrective actions

Timing	Monitoring activity	Responsibility	Frequency	Corrective action
Design / Pre-construction / Construction / Operation and Maintenance	Land access to be arranged in accordance with land acquisition protocol	CuString / Design Manager / Construction Contractor / Operation and Maintenance Service Provider	Ongoing	As outlined in land acquisition protocol

4.2 Contaminated Land

4.2.1 Management objective

- Ensure no health risk or environmental harm occurs as a result of contaminated sites disturbed by the Project's construction activities
- Prevent contamination of land resulting from Project activities
- Ensure appropriate management implemented as a result of identifying contamination

4.2.2 Performance criteria

- Minimise disturbance of contaminated material in-situ within the easement or at substation, CEV, temporary workers accommodations camp sites or laydown areas.
- No movement of contaminated material offsite without appropriate approvals
- No contamination of soil as a result of the Project activities
- Appropriately manage complaints from land holder and community during construction and operation

4.2.3 Management and mitigation measures

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Design	• During the detailed survey of the easement and associated construction sites, inspection for signs of contaminated sites will be completed on properties listed on the CLR/EMR	CuString / Design Manager	Identification of contaminated land	Contaminated Sites Register
Pre-Construction	Development of required environmental management documentation to meet Queensland legislative requirements	CuString / Construction Contractor	Contract	All relevant environmental documentation as listed in Appendix A
Pre-Construction	Known contaminated sites will be marked on the Environmental Work Plans	Construction Contractor	Contract	Environmental work plan
Construction	Substation sites will be listed on the EMR due to the operational requirements of electrical transformer repair	CuString	Construction	Duty to notify
All Project Phases	Areas containing contaminated soils will be avoided. In the event that excavation of contaminated soils is required, soil will be remediated on site or disposed of at a licenced waste disposal facility.	CuString / Design Manager / Construction Contractor / Operation and Maintenance Service Provider	Contract	Disposal permit

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Construction / Operation and Maintenance	All imported fill material will be certified as uncontaminated by the supplier Handling and storage of hazardous materials will be undertaken in accordance with the CEMP and OEMP.	Construction Contractor / Operation and Maintenance Service Provider	Contract	Environmental work plan Certification of clean fill CEMP OEMP Disposal permit
Pre-Construction / Operational Readiness	Development of the relevant EMP to include detailed procedures for storage, handling and use of chemicals and fuels that include but are not limited to: • All refuelling and maintenance of vehicles and storage of hazardous materials, fuels and chemicals to be done off site • Minimising presence of chemicals and fuels on site and requirements for handling of chemicals and fuels when on site (e.g. clear labelling, temporary storage, PPE, etc.) • Current material safety data sheets to be kept for all chemicals and fuels in use • Provision of collection systems to contain fuels and contaminated run-off, where necessary • Methods of disposal of any contaminated materials resulting from spills • Emergency response plans in the event of any fuel or chemical spill • Provision of accessible hydrocarbon spill kits on site at all time and training for all personnel in use of spill kits	Construction Contractor / Operation and Maintenance Service Provider	Contract	CEMP

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Pre-Construction / Operational Readiness	Development of the relevant EMP to include: • Classification of soil to be excavated prior to works commencing in accordance with relevant standards, guidelines and regulations; • A procedure for managing unexpected encounters of contaminated material (including asbestos) including soil sampling and classification processes, stop work processes, notification and reporting requirements; • A procedure for the handling, storage and disposal of contaminated material; • Storage and stockpiling of suspected or contaminated soils in clearly identifiable, separate stockpiles within the construction footprint. Transport and disposal shall be conducted in accordance with DES requirements, dependent on the classification of the contaminated material • Transport by appropriately certified contractors with waste transport certificates completed and copies of records, tracking the movement of contaminated material, to be maintained and available for inspection.	Construction Contractor / Operation and Maintenance Service Provider	Commencement of any temporary or permanent on-site works	Material tracking register CEMP
Construction / Operation and Maintenance	Any fill material imported onto the site shall be certified to be free of contamination, weeds and fungal diseases A materials tracking register shall be maintained tracking the movement and acceptance of all materials on to and off the site.	Construction Contractor / Operation and Maintenance Service Provider	Commencement of any temporary or permanent on-site works	Material tracking register CEMP
Construction	• Implement and maintain the CEMP	Construction Contractor	Commencement of any temporary or permanent on-site works	CEMP

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Construction	The site shall be left in a clean and tidy condition after completion of works to the satisfaction of the relevant landholder. The site is to be progressively rehabilitated to a safe and stable condition as construction progresses. Rehabilitation protocols and monitoring requirements are to be agreed with relevant landholders and CuString prior to commencement of the project.	Construction Contractor	Completion of construction at each site-	CEMP
Operation and Maintenance	Implement and maintain the OEMP	Operation and Maintenance Service Provider	Contract	OEMP

4.2.4 Monitoring and corrective actions

Timing	Monitoring activity	Responsibility	Frequency	Corrective action
Design / Pre-construction / Construction / Operation and Maintenance	All movement of soils and other material on and off the lots listed on the EMR within the Project easement and other sites will be monitored and recorded.	CuString / Design Manager / Construction Contractor / Operation and Maintenance Service Provider	Ongoing	Remediation or disposal of contaminated soil if necessary
Construction / Operation and maintenance	Monthly reporting of monitoring results, audits and incidents	Construction Contractor / Maintenance Service Provider	Ongoing	As required by incident investigation and auditing

Timing	Monitoring activity	Responsibility	Frequency	Corrective action
Construction / Operation and Maintenance	All incidents or release of material to the environment shall be reported as soon as practical to the Environmental Representative. Emergency response shall commence immediately. Incidents that results in serious environmental harm or material environmental harm shall be reported to DES (refer to section 3.4).	Construction Contractor / Operation and Maintenance Service Provider	Ongoing	As required by incident investigation and auditing
Construction	Storage areas will be regularly inspected to assess condition and appropriateness of storage	Construction Contractor	Weekly	Measures may include: • Remove inappropriately stored substances. • Repair bunding, where required. • Re-design storage area, where required.
Construction	All bunded areas will be inspected regularly and each time before and after a rain event to assess capacity of bunds	Construction Contractor	Weekly and following rain events	Empty bund to ensure required storage capacity is maintained. Visual inspection of contents of bund will determine disposal option (e.g. clear rainwater/oily sheen).

4.3 Geology and soils

4.3.1 Management objective

- Minimise land degradation through soil loss and erosion caused by the Project's activities
- Minimise sedimentation and maintain water quality of creeks and drainage lines
- Ensure the viability of stockpiled soil
- Sustainable use of quarry materials

4.3.2 Performance criteria

- Manage the risk of soil erosion impacts from all work areas where vegetation is removed or the soil is disturbed during construction and maintenance phases, taking into consideration relevant aspect of the Australasia Best Practice Erosion and Sediment Control (IECA 2008).
- Appropriate handling and management of uncontaminated and contaminated soil to prevent environmental impacts
- Ensure the long-term viability of stockpiled soil resources is not compromised
- Ensure compliance with the EP Act.

4.3.3 Management and mitigation measures

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Design	Site selection for project infrastructure and associated activities will consider: • Disturbance (including clearance of any vegetation) planned so that clearing occurs progressively, with construction activities commencing as soon as is practicable following clearance • Disturbances on steep slopes (>20°) and undulating ground shall be avoided where detailed design allows. Where avoidance is not practicable, the design will incorporate measures to reduce erosion impacts. Access tracks, laydowns areas etc. located to minimise erosion • Construction traffic restricted to designated access tracks • A preference to utilise already cleared areas for large work sites and construction camp areas • The identified design constraints will be considered when locating towers, particularly in high energy river and gully environments • The transmission line designed such that the corridor selection avoids erodible soils and sensitive reaches of watercourses. A 25 m buffer zone will be maintained around minor watercourse and 50 m buffer around major watercourses. Strict environmental management controls shall be applied when construction activities (like vehicle access) is within management buffers cannot be avoided. • Erosion matting (e.g. Jute mesh) or sediment socks (e.g. Sand-filled UV-resistant fabric tubes) will be used for	CuString / Design Manager	Detailed design	Detailed Design

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
	earthwork activities where there is a risk of gulling or sedimentation of watercourses. • Includes the use of diversion drains and secondary containment ponds and other erosion controls where required. • Hardstand surfaces to manage runoff and to reduce sediment loads, where required • Minimise soil compaction from construction vehicles and equipment by confining movement to designated tracks during site investigations and surveys.			
Pre-Construction	Develop an erosion and sediment control measures as part of CEMP which takes into consideration Best Practice Erosion and Sediment Control (IECA 2008) guideline	Construction Contractor	Contract	CEMP
Pre-Construction	Incorporate rehabilitation requirements from the Concept rehabilitation plan (refer to Volume 3, Appendix T Concept rehabilitation plan) in the CEMP	Construction Contractor	Contract	CEMP
Construction	Implement and maintain the CEMP	Construction Contractor	Construction	CEMP
Pre-Construction	Incorporate rehabilitation requirements from the Concept rehabilitation plan (refer to Volume 3, Appendix T Concept rehabilitation plan) in the CEMP.	Construction Contractor	Construction	CEMP
Operational Readiness	• Develop an erosion and sediment control measures as part of OEMP which takes into consideration Best Practice Erosion and Sediment Control (IECA 2008) guideline	Operation and Maintenance Service Provider	Ongoing	OEMP

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Operation and Maintenance	Implement and maintain erosion and sediment control measures for maintenance activities	Service Provider	Ongoing	OEMP

4.3.4 Monitoring and corrective actions

Timing	Monitoring activity	Responsibility	Frequency	Corrective action
Construction	• All surface drains and erosion and sediment controls will be inspected and maintained regularly. Deficiencies, including drain blockages, damage to sediment controls and signs of erosion will be recorded and rectified in a timely manner.	Construction Contractor	Weekly and following rain events	-

4.4 Flora and fauna

4.4.1 Management objective

- Avoid or minimise impacts from Project activities to terrestrial and aquatic flora and fauna (and fauna habitat) and ecological communities
- No introduction of new pest plants and animal species in the Project area
- No sustained increase in extent of existing pest plants and animals

4.4.2 Performance criteria

- Vegetation clearing is conducted in accordance with the performance requirements of the *Planning Act 2016*
- No permanent disturbance to flora or fauna outside of the Project area (easement, CEV hut, access tracks and substation sites) except where approved for construction access
- Progressive rehabilitation is undertaken as per the Rehabilitation Plan for the site
- All necessary statutory approvals are obtained prior to construction
- No introduction of new pest animal or plant species to the Project area
- No sustained increase in distribution of weeds in the areas disturbed by or influenced by construction activities

4.4.3 Management and mitigation measures

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Design	Refinement of the corridor selection during landholder negotiations and detailed design phase will consider measures to minimise vegetation removal The use of taller transmission line structures near waterways where practical will be considered with the aim of spanning of riparian vegetation Existing roads and tracks will be used for access where possible. Access tracks will be clearly marked. During site investigations and surveys no unauthorised use of alternative accesses will be permitted	CuString / Design Manager	Design	Field Development Plan
Design	An Offset Strategy will be developed in consultation with regulators during the detailed planning/design for the Project, if required.	CuString	Design	Offset Strategy
Design	A field assessment will be undertaken within planned disturbance areas (easement or access tracks) to ground truth flora and fauna constraints (such as known occurrences of conservation significant vegetation communities, flora species and fauna species) for refinement of corridor selection	CuString / Design Manager	Design	Field assessment report
Design	Refinement of clearing requirements within areas of high ecological value, such as riparian corridors, to be avoided or minimise clearing.	CuString / Design Manager	Design	Detailed Design
All Project Phases	• Vegetation clearing will be avoided during wet conditions • Ground cover and understorey of vegetated areas required for construction will be flattened rather than removed where practical • Existing roads and tracks will be used for access where possible. Access tracks will be clearly marked and no unauthorised use of alternatives will be permitted	CuString / Design Manager / Construction Contractor / Maintenance Service Provider	-	Field Development Plan

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Pre-Construction	Development of flora and fauna management measures for inclusion in the CEMP including: • Details relevant to the general management of flora and fauna • Species Management Plans for identified conservation significant species that will be impacted, including for interference with their breeding places. • Where required under approval conditions, incorporate flora and fauna monitoring activities. Where identified in the Flora and Fauna management measures in the CEMP/OEMP areas no longer required following construction will be rehabilitated to restore connectivity to a level that considers the requirements of maintaining permanent infrastructure. All cleared areas required temporarily during construction will be rehabilitated in a way that does not hinder the movement of fauna.	Construction Contractor	Contract	CEMP
All Project Phases	Implement and maintain protocols for handling and removal of fauna of conservation significance encountered during on-site work Fauna spotter-catchers shall be suitably qualified and experienced fauna handlers Procedures in the event that an animal is injured will be developed. Depending on the type and extent of injuries, animals would either be taken to the nearest veterinary practitioner or wildlife care network or humanely euthanized on site by a suitably authorised and trained practitioner.	CuString / Design Manager / Construction Contractor / Maintenance Service Provider	Identified need for on-site surveys or work	CEMP

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Design / Pre-Construction / Operational Readiness	Biosecurity management measures in the CEMP and OEMP shall include pest plant and animal prevention and management procedures and in particular addresses the spread of Weeds of National Significance and *Biosecurity Act 2014* listed weed species. Procedures shall include: • Control of topsoil and fill brought on to site • Nominated site access and wash-down points • Requirements for wash-down of plant and equipment prior to commencing work on site and when moving from a weed-infested area into a weed-free area • A vehicle wash-down logbook will be maintained in each vehicle and plant • Regular monitoring will be carried out along the easement and at substation sites • Movement protocol for vehicles will be established • • Prepare and implement a feral animal management plan, in consultation with relevant stakeholders as appropriate	CuString / Design Manager / Construction Contractor / Maintenance Service Provider	Identified need for on-site surveys or work	EMP
All Project Phases	Develop vegetation clearing procedures in the CEMP to be implemented prior to clearing works. These procedures will include: • Recording fauna interactions and activity that will require attention of the spotter/catcher • All adjacent vegetation and buffer extents that are not to be disturbed by clearing activities (due to being identified as comprising significant values for communities or species) will be marked as 'no go zones' for vehicles, machinery, materials, workers, excavated soil or fallen timber	CuString / Design Manager / Construction Contractor	Identified need for on-site surveys or work	CEMP

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Pre-Construction	• Development of CEMP erosion and sediment control procedures which are to be implemented prior to construction activities commencing in a particular construction zone, to minimise impact on aquatic and terrestrial habitat. These procedures will include: • Existing watercourse crossings will be used where safe and practical to do so • Conductor and earth wire pull cables that cross watercourses will be installed by helicopters, where possible • Machinery access on cracking soils beyond those areas necessary for the construction of the Project will be minimised in order to avoid unnecessary soil compaction • Machinery access and subsequent soil compaction within and adjacent to retained vegetation will be minimised	Construction Contractor	Contract	CEMP
Pre-Construction	Develop CEMP rehabilitation and revegetation procedures for the Project. Following the construction phase, cleared woodland and grassland areas that are not required for on-going maintenance, access and/or fire breaks will be allowed to regenerate naturally. Revegetation by way of seeding and/or planting may be used (a) where natural regeneration is not successful, (b) on banks of watercourses, and (c) buffer areas to wetland habitats.	Construction Contractor	Contract	CEMP
Construction	Implement and maintain the CEMP	Construction Contractor	Contract	CEMP
Operation and Maintenance	Implement and maintain the OEMP	Operation and Maintenance Service Provider	Contract	OEMP

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Operational Readiness	Record the as-constructed design flora and fauna management parameters in the Project GIS including: • any sensitive sites that require ongoing monitoring and management • location of any species/habitat management area	CuString / Design Manager	Construction	Project GIS
Operation and maintenance	When generating maintenance works plans include relevant flora and fauna information from Project GIS.	Operation and Maintenance Service Provider	Maintenance activities	OEMP
Operation and Maintenance	Maintain the Project GIS with history and update information pertaining to: • any sensitive sites that require ongoing monitoring and management • location of any species/habitat management area	CuString / Operation and Maintenance Service Provider	-	Project GIS

4.4.4 Monitoring and corrective actions

Timing	Monitoring activity	Responsibility	Frequency	Corrective action
Construction / Operation and Maintenance	Review mitigation and management measures outlined in the relevant EMP Vegetation and habitat managed in accordance with the relevant EMP	Construction Contractor / Operation and Maintenance Service Provider	Ongoing	Inspections and reporting against the relevant EMP
Construction	Rehabilitation success as detailed in the rehabilitation component of the CEMP.	Construction Contractor	Annual	To be outlined in the CEMP

Timing	Monitoring activity	Responsibility	Frequency	Corrective action
Construction / Operation and Maintenance	Where new species of pest plants or animals are reported, a review of the weed control procedures and training will be carried out. New infestations will be eradicated *in* situ or removed and disposed of appropriately.	Construction Contractor / Operation and Maintenance Service Provider	Triggered on detection	Procedures outlined in the CEMP/OEMP will be reviewed and changed where necessary. New infestations will be removed and disposed of appropriately.
Construction	Weed levels will be monitored in areas adjacent to construction activities and any areas that are rehabilitated	Construction Contractor	Annually	If significant infestations of any weeds occur, or if weeds of national significance or Class 1 or 2 weeds declared under the Land Protection (Pest and Stock Route Management) Act 2002, weed control measures will be implemented.
Construction	Monthly reporting of vegetation clearing, fauna activity and progressive rehabilitation success to Project Manager.	Construction Contractor	Monthly	As required by CEMP

Timing	Monitoring activity	Responsibility	Frequency	Corrective action
Construction	Regular visual inspection to ensure that clearing is occurring as per the CEMP. Record instances of unauthorised clearing outside clearing boundaries	Construction Contractor	Daily	As outlined in the CEMP
Construction / Operation and Maintenance	Regular visual inspection of access roads and easement	Construction Contractor / Operation and Maintenance Service Provider	Variable based on utilisation and seasonal weather patterns	As outlined in CEMP/OEMP
Operation and Maintenance	A monitoring program will be developed and implemented to assess the success of the pre-construction and construction mitigation and management measures for flora and fauna.	Operation and Maintenance Service Provider / CuString	Annual rehabilitation monitoring and maintenance be undertaken for five years after commencement of operations.	As a result of monitoring, any incident reporting and corrective actions will be undertaken in accordance with the EMP.

4.5 Water resources

4.5.1 Management objective

- Minimise or avoid impacts to receiving water quality in waterways, wetlands and surface water storages
- No adverse impacts to surface water storages or downstream surface water users
- No adverse impacts on groundwater quality
- Maintain water quality at existing levels.
- Ecological and cultural significance of springs are protected
- Baseflow to watercourses is maintained
- Entitlements/yields of existing bore users are maintained
- Water quality is fit for use (complies with relevant guidelines for end use).

4.5.2 Performance criteria

- No detrimental impact to surface or groundwater users
- Management of construction water quality in compliance with the Australian Drinking Water Guidelines, Versions 3.5 (NHMRC, 2018)
- Compliance with any permit conditions for surface or groundwater use or discharge of treated effluent
- Risk and hazard assessment of any new or existing groundwater supply bores including full chemical testing prior to use for potable purposes

4.5.3 Management and mitigation measures

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Design	Design of temporary and permanent works: • Provide clean water diversion drains around laydown areas and substations • Sediment traps and/or fences are to be installed where there is a risk of sedimentation of watercourses, waterways or stormwater drains	CuString / Design Manager		Detailed design
Pre-Construction	Development of water quality management measures within the CEMP to include (but not be limited to) requirements for: • Fill or excavated material is not to be stockpiled in flood prone areas. Soil stockpile sites to be situated so that they are secure from a 1 in 10 year flood level and have effective sediment control works to contain any runoff • A contingency plan for high rainfall events. The majority of construction works adjacent to waterways will be scheduled during the dry season (typically May to October) to limit exposure of disturbed ground surfaces to erosive impacts of rainfall • Maintenance of all controls in proper working order throughout the construction period	Construction Contractor	Contract	CEMP
Construction	Implement and maintain water quality management measures within the CEMP, consistent with the measures in the Concept ESCP (Volume 3 Appendix S Concept erosion and sediment control plan)	Construction Contractor	Identified need for on-site surveys or work	CEMP

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Operational Readiness	Development of water quality management measures within the OEMP	Operation and Maintenance Service Provider	Contract	OEMP
Operation and Maintenance	Implementation and maintenance of the OEMP	Operation and Maintenance Service Provider	Operation	OEMP
Design	Design of onsite wastewater system and irrigation of effluent for accommodation camps will comply with AS/NZS 1547-2000	Construction Contractor	-	Relevant permit or approval for works
Pre-Construction	Develop construction schedule to target areas at high risk of flooding and erosion for construction during the dry months to mitigate the potential wet season impacts.	Construction Contractor	Contract	Construction schedule
Design	Design for temporary and permanent infrastructure to include stormwater control drainage works with open perimeter drains and suitably sized secondary containment ponds, where required.	CuString / Design Manager	Design	Detailed design
Pre-Construction	Preparation of stormwater control and drainage measures within the CEMP.	Construction Contractor	Contract	CEMP
Construction	Implementation and maintenance of stormwater controls.	Construction Contractor	-	CEMP
Operation and Maintenance	maintenance of stormwater controls	Operation and Maintenance Service Provider	Operation	OEMP

4.5.4 Monitoring and corrective actions

Timing	Monitoring activity	Responsibility	Frequency	Corrective action
Pre-Construction / Construction / Operation and Maintenance	Monitoring of works adjacent to waterways will be conducted after major rainfall events (e.g. a 25 mm/hr storm event or 50 mm/24 hrs period). Monitoring is to be undertaken as soon as it is practicable and safe to do so following such rainfall events.	Construction Contractor / Operation and Maintenance Service Provider	Ongoing	If a there is visual deterioration in turbidity downstream compared to upstream, further investigation into possible causes is to be undertaken.
Construction / Operation and Maintenance	Monitoring of weather forecasts for potential high rainfall events	Construction Contractor / Operation and Maintenance Service Provider	Daily during works	Reschedule work activities
Construction	Inspection of erosion and sediment control works will be undertaken on a regular basis	Construction Contractor	Ongoing	As required by the CEMP
Operation and maintenance	Visual inspection monitoring during routine maintenance activities of watercourse and waterway bed and banks immediately adjacent to permanent watercourse and waterway crossings to check for bank erosion, undercutting, wash outs etc.	Operation and Maintenance Service Provider	Ongoing	Remediation of watercourse and waterway crossings where required

4.6 Air quality and greenhouse gas management

4.6.1 Management objective

- Reduce and control the effects of air pollution generated from the Project activities on adjacent human receptors, employees, and fauna and flora.

4.6.2 Performance criteria

- Compliance with relevant legislation including the Air EPP
- No non-vexatious complaints from the land holder or community regarding air emissions or dust during construction

4.6.1 Management and mitigation measures

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Design	Air quality controls to be incorporated into field investigations including: • Maintaining speed limits on public and private access roads • Dust management controls to be implemented when undertaking dust generating activities	Design Manager / CuString	Field Investigation	Field investigation execution plan
Pre-Construction	Dust mitigation measures will be developed for inclusion in the CEMP and implemented for the construction phase of the Project, including the following: • Use of water carts for dust suppression where dust is a health and safety hazard and dust is a nuisance to residences • Use of soil binders where required • Restricted speeds on access tracks and easements • Restricted access to construction access tracks and easements • Soil stockpiles to be located away from sensitive receptors • Cleared areas within a construction zone to be progressively stabilised as soon as practicable • Dust generating loads being hauled in or out of the construction zones will be covered • A minimum 1000 m buffer will be maintained between concrete batching plants and sensitive receptors. • Consult with land holders regarding dust management controls	Construction Contractor	Contract	CEMP
Construction	Implement and maintain dust mitigation measures as part of the CEMP	Construction Contractor	Contract	CEMP

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Operational Readiness	Include dust management measures in the OEMP	Operation and Maintenance Service Provider	Contract	OEMP
Operation and Maintenance	Implement and maintain an OEMP	Operation and Maintenance Service Provider	-	OEMP

4.6.2 Monitoring and corrective actions

Timing	Monitoring activity	Responsibility	Frequency	Corrective action
Construction	Visual assessment of wind speed and direction during the shift to enable high wind warnings to be issue if required. Report any adverse wind conditions in a site log book. This allows for possible complaints to be investigated and checked against meteorological conditions that may have caused the dust event.	Construction Contractor	Ongoing	Implement measures in dust management measured in OEMP if required If adverse wind conditions are forecast (strong winds in the direction of nearby sensitive receptors) that could result in a high dust event, review operations schedule and postpone work if required, until such time that meteorological conditions are permitting.
Construction	Visual inspection for excessive dust emissions	Construction Contractor	Ongoing	If nuisance dust is observed when working near a residential receptor implement additional dust mitigation measures or

Timing	Monitoring activity	Responsibility	Frequency	Corrective action
				reduce dust generating activities.
Construction / Operation and Maintenance	All complaints relating to air quality will be recorded	Construction Contractor Operation and Maintenance Service Provider	Ongoing	Carry out investigation into the cause of the dust event including reference to site log book. and nuisance dust log book. Contact the complainant to discuss cause of event and implement dust control as required.

4.7 Noise and vibration

4.7.1 Management objective

Ensure environmental controls to manage the effects of noise and vibration generated from the Project activities on adjacent human receptors, employees, and fauna and flora are implemented and maintained.

4.7.2 Performance criteria

- Compliance with environmental and safety legislative requirements for noise and vibration
- Maintain an acoustic quality objective level of 50dB(A) at sensitive receptors for daytime operation (through specified buffer distances from construction components)
- No non-vexatious complaints from the land holder or community regarding noise emissions or vibration during construction

4.7.3 Management and mitigation measures

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Pre-Construction / Construction	Development of the CEMP to include Noise Management and mitigation measures including: • All plant and equipment to be maintained in good working order • Noise impacts are to be minimised wherever possible through selection of quieter plant and equipment, fitting and maintaining mufflers on heavy equipment used onsite, enclosing noisy equipment or through the use of attenuation screens, and aggregating and scheduling noisy activities for less sensitive times of the day (e.g. mid-morning to mid-afternoon). • Noise suppression devices shall be maintained to the manufacturer's specifications. Internal combustion engines are to be fitted with a suitable muffler in good repair • Install less intrusive movement/reversing warning systems for equipment and vehicles whilst ensuring occupational health and safety requirements continue to be followed • Turn off plant when not in use • Advise local residents when unavoidable out-of-hours work will occur. • Schedule deliveries to the site so that disruption to local amenity is minimised. • The Project will hold toolbox talks on the effects of noise induced hearing loss and environmental requirements relating to noise. Observe good work practices and implement toolbox talks to discuss effects of vibration.	Construction Contractor	-	CEMP

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
	• Tools and equipment will be maintained in good working condition to minimise vibration exposure limits • Blasting is not anticipated to be required during construction however in the even that blasting is carried it will be in accordance with current industry standards, and will be carried out to minimise ground vibration, airblast overpressure, dust and fly rock. Any blasting will be carried out in accordance with AS 2187 and legislative requirements • Consult with landholders regarding noise controls			
Construction	Implementation and maintenance of CEMP	Construction Contractor		CEMP
Operational Readiness	Development of the OEMP to include noise management and mitigation measures	Operation and Maintenance Service Provider		OEMP
Operations and Maintenance	Implementation and maintain noise management and mitigation measures in the OEMP.	Operation and Maintenance Service Provider	-	OEMP

4.7.4 Monitoring and corrective actions

Timing	Monitoring activity	Responsibility	Frequency	Corrective action
Design	Field investigations to be undertaken during daylight hours	CuString / Design Manager	When undertaking field investigation	-
Construction	Monitoring will be undertaken when required	Construction Contractor	Ongoing	Mitigation measures such as temporary noise barriers,

Timing	Monitoring activity	Responsibility	Frequency	Corrective action
	by the administering authority		The details of any noise measurements, results of corrective actions and complaints records will be included in monthly reports.	machine enclosures, screening or construction programming will be considered.
Construction / Operation and Maintenance	All complaints will be recorded	Construction Contractor Operation and Maintenance Service Provider	In event of a complaint	Complaints will be managed in accordance with the complaints management procedure and Stakeholder Management Plan

4.1 Waste management

4.1.1 Management objective

Minimise and reduce waste in a way that reduces potential impacts on the environment, including use of waste management hierarchy - avoid, reuse, recycle.

4.1.2 Performance criteria

- Compliance with Commonwealth and State legislation, guidelines and strategies
- No contamination of land or water as a result of Project waste management
- No adverse impact on visual amenity or complaints from landowners regarding waste management
- Waste minimisation strategy established
- Waste minimisation actions for decommissioning of Project to be addressed prior to commencement of decommissioning phase.

4.1.3 Management and mitigation measures

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Design	Maintain and update the FEMP in response to field investigations and project approvals	CuString / Design Manager	-	FEMP
Pre-Construction	Development of the CEMP to include waste management measures that includes: • Waste material shall be contained on site in appropriate receptacles and in accordance with regulatory requirements. Provision shall be made for segregation of waste streams and recycling. • Appropriate approvals and permits will be obtained for storage and disposal. Consultation will be undertaken with local councils to determine landfill capacities and accepted waste types • Work sites are to be kept free of litter. Bins and/or drums with regulated waste will be sealed, labelled and stored within appropriately bunded areas • All hazardous wastes will be disposed of in accordance with State requirements • Disposal of hazardous wastes or goods will be tracked through dockets and manifests • Waste oil will be recycled and waste tyres will be disposed of at approved locations • Spill kits will be located where required • If package sewage treatments facilities are required at construction camps, they will be designed to include alternative storage and disposal options during times of system failure and in conditions that prevent discharge to land (i.e. rain events)	Construction Contractor	-	CEMP

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
	• Treated timbers (which contain arsenic) and pesticide treatments (which contain chlorine residues) will be managed and disposed of appropriately • Stockpiles of vegetation will be located within cleared areas and away from drainage lines • Vegetation material will be used on-site for rehabilitation where appropriate			
Construction	Implement and maintain the CEMP	Construction Contractor	-	CEMP
Operational Readiness	Development of the OEMP to include waste management measures	Construction Contractor	Contract	OEMP
Operations and maintenance	Implement and maintain the OEMP	Operations and Maintenance Service Provider	-	OEMP

4.1.4 Monitoring and corrective actions

Timing	Monitoring activity	Responsibility	Frequency	Corrective action
Design	Routine visual inspection of all field survey and investigation areas	Design manager / CuString	Ongoing	Waste management procedures will be reviewed in the event of non-conformance notices after auditing.
Construction	Routine visual inspection of all works areas, waste collection areas and temporary accommodation camps	Construction Contractor	Ongoing	Waste management procedures will be reviewed in the event of non-conformance notices after auditing.

Timing	Monitoring activity	Responsibility	Frequency	Corrective action
Construction	Waste movements recorded in a waste removal register	Construction Contractor	Ongoing	Waste management procedures will be reviewed in the event of non-conformance notices after auditing.
Construction	Sewage treatment facilities will be regularly monitored to ensure wastewater discharge meets regulatory requirements	Construction Contractor	Ongoing	Waste management procedures will be reviewed in the event of non-conformance notices after auditing.
Operation and Maintenance	Waste movements recorded in a waste removal register	Operation and Maintenance Service Provider	Ongoing	Waste management procedures will be reviewed in the event of non-conformance notices after auditing.

4.2 Traffic and transport

4.2.1 Management objective

Ensure that the safety, efficiency and condition of the transport network are maintained with effective management of increased traffic along transport routes due to the construction of the Project.

4.2.2 Performance criteria

- Compliance with all relevant permits, guidelines and standards
- No road accidents or incidents in relation to the construction and operation of the Project
- Minimal increase in road congestion
- No non-vexatious complaints from the land holder or community regarding the transport of freight and personnel

4.2.3 Management and mitigation measures

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Design	Selection and design of traffic corridors, access points to access tracks and easements are selected with appropriate consideration given to logistics controls, landholders' requirements and environmental constraints.	CuString / Design Manager	-	Land acquisition protocol Corridor selection report
Pre-Construction / Construction	Develop a Road Use Management Plan (RUMP) including consultation with the relevant transport authorities (such as DTMR, Queensland Rail and local councils) to minimise traffic impacts and address the safety of all road users. The RUMP will include: • Transport routes and speed limits will be defined for Project transport activities • Crossing of highways will be limited to designated safe crossing points in accordance with approved transport routes • Buses will transport personnel from regional air access points to the construction camps, if required • Provision of traffic controllers at intersections to access roads on the Flinders and Barkly Highways to assist large trucks egressing the corridor selection construction zones during peak activity, if required • Advance warning signs will be placed on each approach, 200 m from the primary access roads with "trucks entering" warning when traffic controllers are present • Landholders will be notified of Project delivery and construction activities likely to impact on management of their property	Construction Contractor	-	RUMP

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
	• Community consultation will occur with ongoing updates and advice to local communities of Project activities and potential hazards • Access to construction sites by emergency service vehicles will be maintained at all times • Construction workforce will travel to construction zones in Project vehicles and will not be able to use private vehicles • Where compliance with the relevant permits, guidelines and standards is not met, an immediate review of the Traffic Management Plan will be conducted in consultation with transport agencies • Road condition reporting will occur for flood damage or other consequential issues affecting the road conditions during the project period of activity. • Seek land holder acceptance of traffic and transport management controls			
Construction	Implement and maintain the RUMP.	Construction Contractor	Ongoing	RUMP

4.2.4 Monitoring and corrective actions

Timing	Monitoring activity	Responsibility	Frequency	Corrective action
Construction	Monitor and record the traffic impacts during construction, such as noise, dust nuisance and travel times as part of the RUMP	Construction Contractor	Ongoing	Reinstating pre-existing conditions after temporary modifications to the roads and pavement along the route including some grading at intersections and at local entries to private land
Construction / Operation and maintenance	All complaints relating to will be recorded	Construction Contractor Operation and Maintenance Service Provider	Ongoing	Complaints will be managed in accordance with the complaints management procedure and Stakeholder engagement plan

4.3 Cultural heritage

4.3.1 Management objective

Indigenous heritage

To construct and operate the Project with minimal impacts to Indigenous cultural heritage and in compliance with the ACH Act and *Torres Strait Islander Cultural Heritage Act 2003.*

Non-Indigenous heritage

Preservation of existing heritage sites of local, state or national significance during construction and operation of the Project and management of unexpected discoveries of potential heritage sites and fossils in compliance with the *Queensland Heritage Act 1992*.

4.3.2 Performance criteria

Indigenous heritage

- An approved Cultural Heritage Management Plan (CHMP)
- Compliance to approved CHMPs
- Compliance with Cultural Heritage Management Agreements between CuString and relevant Aboriginal parties

Non-Indigenous heritage

- No unauthorised impacts to non-Indigenous cultural heritage sites
- Compliance with procedures for managing unexpected discoveries of sites of potential cultural heritage.

4.3.3 Management and mitigation measures

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Design	Develop and have approved CHMPs prior to accessing land for establishing design constraints. • If any archaeological remains or artefacts are found on site, all works will cease and procedures in the CHMP adhered to. • If any human remains are found at the site, all works shall cease and the police (000) shall be contacted immediately. The Department of Aboriginal and Torres Strait Islander Partnerships shall be contacted if there is reason to suspect that the remains are Aboriginal. • A clearly visible exclusion zone shall be erected around the site with an appropriate margin (not less than one metre) to facilitate protection.	CuString / Design Manager	At all times	CHMP
Design	Non-Indigenous cultural heritage items If a historic archaeological site is uncovered in the course of the construction activities, work in the area shall cease and the Queensland Department of Environment and Science contacted on 1300 130 372 and advice obtained on requirements for assessment of the site. In the event of fossil finds, the Queensland Museum can be contacted for assistance with identification on (07) 3840 7555	CuString / Design Manager	At all times	CEMP
All Project Phases	Implement and maintain CHMPs Contact CuString Cultural Heritage Team prior to carrying out any works, for the cultural heritage management measures which require implementation during the carrying out of such works.	CuString / Design Manager / Construction Contractor / Operation and Maintenance Service Provider	At all times	CHMP

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
All Project Phases	Implement and maintain procedures for discovery of non-Indigenous cultural heritage items or fossils on site.	CuString / Design Manager / Construction Contractor / Operation and Maintenance Service Provider	At all times	CEMP

4.3.4 Monitoring and corrective actions

Timing	Monitoring activity	Responsibility	Frequency	Corrective action
Design	As required by the CHMP	CuString / Design Manager	Ongoing	As required by the CHMP. Cultural Heritage training and awareness to be included in staff and contractor inductions
Construction	As required by the CHMP	Construction Contractor	Ongoing	As required by the CHMP. Cultural Heritage training and awareness to be included in staff and contractor inductions
Operation and Maintenance	As required by the CHMP	Operation and Maintenance Service Provider	Ongoing	As required by the CHMP. Cultural Heritage training and awareness to be included in staff and contractor inductions

4.4 Hazards, health and safety

4.4.1 Management objective

- Manage the potential flood risks to Project assets and network operation, and to the safety of the workforce to an acceptable level.
- Manage the potential fire risks to the natural environment and to the safety of the workforce and other stakeholders to an acceptable level. Conversely, manage the risks to network operations and the Project assets from fires that occur in the Project area.
- Manage potential risks from active, disused, and abandoned mine workings to construction workforce.
- Ensure the potential risk to the health and safety of the workforce, community and other stakeholders are identified and managed to ensure values can be protected or enhanced

4.4.2 Performance criteria

- Compliance with all relevant legislation, guidelines and standards
- Fire risks are not increased as a result of the Project
- No damage to Project assets from serious fire events
- No incidents from the Project's activities involving the public
- No serious injuries or fatalities caused by the Projects' activities
- No traffic accidents caused by the Project's activities
- No unauthorised access to substation sites
- All incidents responded to in 24 hours.
- No insect borne disease

4.4.3 Management and mitigation measures

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Design	Development of a Risk Management Plan incorporating the following management plans/activities: • Safety in Design Reviews/Design Specifications • Environmental Management Plan • Safety Management System • Emergency Response Plan	CuString / Design Manager		Risk Management Plan
Pre-Construction	Development of a Risk Management Plan incorporating the following management plans/activities: • Environmental Management Plan • Safety Management System • Emergency Response Plan • Transport Management Plan	Construction Contractor	-	Risk Management Plan
Construction	Implement and maintain the Risk Management Plan	Construction Contractor	-	Risk Management Plan
All Project Phases	Develop, implement and maintain a work procedures within the CEMP/OEMP to ensure personnel are qualified to undertake assigned activities	CuString / Design Manager / Construction Contractor / Operation and Maintenance Service Provider	-	CEMP / OEMP

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Operational Readiness	Development of a Risk Management Plan incorporating the following management plans/activities: • Environmental Management Plan • Safety Management System • Emergency Response Plan	Operation and Maintenance Service Provider	-	Risk Management Plan
Operation and Maintenance	Implement and maintain the Risk Management Plan	Operation and Maintenance Service Provider	-	Risk Management Plan
All Project Phases	Open communication with landholders and stakeholders regarding Project activities (as part of Stakeholder and Community Engagement Plan) will be undertaken	CuString	-	Stakeholder and Community Engagement Plan
Pre-Construction / Operation Readiness	Development of the relevant EMP to include measures for the storage, handling, transport and use of hazardous materials including: • Storage of hazardous and dangerous goods in accordance with relevant standards and physical separation will be implemented where appropriate • Transport of hazardous and dangerous goods will be carried out in accordance with the ADG Code and specific safety management plans • Refuelling and maintenance of vehicles and storage of hazardous materials, fuels and chemicals to be done off-site where possible and occur at least 30 m from a watercourse. Hazardous and dangerous goods will be stored a minimum of 100 m from a watercourse	Construction Contractor / Operation and Maintenance Service Provider	-	CEMP Hazardous Substance Register

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
	• Minimising presence of chemicals and fuels on site and requirements for handling of chemicals and fuels when on site (e.g. clear labelling, temporary storage, PPE, etc.) • Current material safety data sheets to be kept for all chemicals and fuels in use, and maintain a Hazardous Substance Register for all hazardous substances used on the Project: – A hard file copy will be kept at the substance storage area and a copy kept with all first aid equipment and facilities – The Hazardous Substances Register will be reviewed annually to ensure all SDSs are current • Daily pre-start checks for all plant and machinery • Provision of collection systems to contain fuels and contaminated run-off • Methods of disposal of any contaminated materials resulting from spills • Contingency plans in the event of any fuel or chemical spill • Provision of accessible hydrocarbon spill kits on site at all time and training for all personnel in use of spill kits • All necessary approvals and permits for the storage, handling, transport and use of hazardous materials shall be obtained by the contractor			

Timing	Controls	Responsibility	Trigger/Applicability	Documentation
Construction	• Construction schedules will be timed to avoid work in areas subject to flooding during the wet season • Firefighting equipment will be kept where there is a high fire risk • Key employees will be given appropriate firefighting training • Evacuation procedures will be developed and implemented in high risk locations • Local fire hazard conditions will be checked regularly	Construction Contractor	Natural disaster / Emergency conditions	Evacuation procedures Emergency Response Plan
Operational Readiness	Development and implementation of the OEMP and Hazardous Substance Register	Operation and Maintenance Service Provider	-	OEMP Hazardous Substance Register
Operation and maintenance	Implement and maintain the OEMP recording the relevant data and updates in the Project GIS.	Operation and Maintenance Service Provider	-	OEMP Project GIS

4.4.4 Monitoring and corrective actions

Timing	Monitoring activity	Responsibility	Frequency	Corrective action
Construction / Operation and Maintenance	Record all fire and other natural hazard-related incidents (e.g. Flood, cyclone)	CuString / Construction Contractor	Ongoing	Review of Hazard, Health and Safety Management measures and implementation of risk reduction strategies for natural hazards in the event that an uncontrolled fire occurs

Timing	Monitoring activity	Responsibility	Frequency	Corrective action
				Record events in the Project GIS for regular long term analysis and improvement actions
Construction / Operation and Maintenance	Monitor implementation of fire risk reduction strategies	Construction Contractor / Operation and Maintenance Service Provider	Ongoing	Review of Hazard, Health and Safety Management measures and implementation of fire risk reduction strategies in the event that an uncontrolled fire occurs Instances of uncontrolled fires will be included in the annual report
All Project Phases	Record all hazardous substance spill incidents in a register	CuString/Design Manager/ Construction Contractor/ Operation and Maintenance Service Provider	Ongoing	Spills will be remediated in accordance with the Emergency Response Plan
All Project Phases	Record all community complaints in a register	CuString / Design Manager / Construction Contractor / Operation and Maintenance Service Provider	Ongoing	N/A

Appendices

Appendix A – Documentation Register

Documentation	Responsibility
Detailed design	Proponent / Design Manager
Relevant permits and approvals	Proponent / Design Manager / Construction Contractor
Contaminated Sites Register	Proponent / Design Manager
Corridor selection and design criteria	Proponent / Design Manager
Construction Environmental Management Plan	Construction Contractor
Environmental work plan	Construction Contractor
Operations Environmental Management Plan	Operation and Maintenance Service Provider
Material tracking register	Construction Contractor
Field Development Plan	Proponent / Design Manager / Construction Contractor
Offset Strategy	Proponent / Design Manager
Field assessment report	Proponent / Design Manager
Landholder agreement	Proponent
Pump test results	Proponent / Design Manager
Construction schedule	Construction Contractor
Field investigation execution plan	Design Manager
Land acquisition protocol	Proponent / Design Manager
Road Use Management Plan	Construction Contractor
Cultural Heritage Management Plan	Proponent / Design Manager
Risk Management Plan	Proponent / Design Manager
Hazardous substances Register	Proponent / Design Manager / Construction Contractor / Operation and Maintenance Service Provider
Evacuation procedures	Proponent / Design Manager / Construction Contractor / Operation and Maintenance Service Provider
Emergency Response Plan	Construction Contractor / Operation and Maintenance Service Provider

Appendix B – Contaminated land register

Lot / Plan	Notifiable activity	Description	Traversed alignment
Lot 4026 on SP112067	Livestock dip or Spray race	Satellite imagery confirms the corridor selection is not in proximity to the existing stock yards or buildings. Livestock dip or spray race are likely to be located with stock yards or buildings.	KP 21-29WD
Lot 4548 on PH2196	Livestock dip or Spray race	Satellite imagery confirms the corridor selection is not in proximity to the existing stock yards or buildings. Livestock dip or spray race are likely to be located with stock yards or buildings.	KP 34-41WD
Lot 4004 on SP242524	Explosives production or storage Landfill Mine wastes Petroleum product or oil storage	Previous EIS confirmed Notifiable Activities were associated with the previously operated open-cut Robinson Crusoe Mine (abandoned areas still evident on satellite imagery) Mining lease present approximately 100 m south of the corridor selection. ML 10344 has been granted to Denjim Pty Ltd, which expires November 2029.	KP 48-51WD
Lot 4924 on SP308339	Livestock dip or Spray race	Satellite imagery confirms the corridor selection is not in proximity to the existing stock yards or buildings. Livestock dip or spray race are likely to be located with stock yards or buildings.	KP 52-55WD
Lot 300 on SP137135	Chemical Manufacture or Formulation	Notifiable activity is associated with the open-cut Thalanga Copper Mine (under ML 1571 and 1734), more than 6 km south of the corridor selection.	KP 102-103WD
Lot 4 on DV463	Livestock dip or Spray race	Satellite imagery confirms the corridor selection is not in	KP 123-143WD

Lot / Plan	Notifiable activity	Description	Traversed alignment
		proximity to the existing stock yards or buildings. Livestock dip or spray race are likely to be located with stock yards or buildings, located approximately 1.7 km south of the corridor selection.	
Lot 61 on GF812272	Livestock dip or Spray race	Satellite imagery confirms alignment location is not in proximity to the existing stock yards or buildings. Livestock dip or spray race are likely to be located with stock yards or buildings, located approximately 1.8 km north west of the corridor selection.	KP 163-173WD
Lot 28 on GF154	Livestock dip or Spray race	Satellite imagery confirms alignment location is not in proximity to the existing stock yards or buildings. Livestock dip or spray race are likely to be located with stock yards or buildings, located approximately 4 km north and/or 5 km south of corridor selection.	KP 182-204WD
Lot 1 on BD2	Livestock dip or Spray race	Satellite imagery confirms the corridor selection is not in proximity to the existing stock yards or buildings. Livestock dip or spray race are likely to be located with stock yards or buildings.	KP 665-678WD
Lot 23 on SP136472	Hazardous contaminant	Contamination may be associated with rail operations No earthworks are proposed in rail easements. The corridor selection would span over the rail easement and as such would have minimal risk.	Between KP 727WD and 728WD
Lot 922 on SP137139	Gun, pistol or rifle range	Identified through landholder consultation	KP 42-72DM
Lot 69 on SP223507	Mine wastes	Mining leases present within the property. The alignment does not traverse any mining	KP 57-72DC

Lot / Plan	Notifiable activity	Description	Traversed alignment
		lease. The closest mining lease is approximately 3.2 km to the west.	
Lot 13 on SP223510 (formerly Lot 13 on SP150177)	Engine reconditioning works Landfill Petroleum product or oil storage Mine wastes	Mining leases present within the property The corridor selection does not traverse any mining lease but is adjacent to Phosphate Hill Mine (under ML 5543, operated by Incitec Pivot Limited). Consultation with Incitec Pivot Limited occurred during the corridor selection and the Project would not impact on any existing mining infrastructure where contamination is likely to occur.	KP 80-90DC KP 0-62SP
Lot 1 on SP150176	Chemical storage Fertiliser manufacture Landfill Mine wastes Petroleum product or oil storage	The property is dominated by Phosphate Hill Mine (operated by Incitec Pivot Limited), which have activities that can be associated to the identified notifiable activities. Consultation with Incitec Pivot Limited occurred during the Project substation and corridor selection and the Project would not impact on any existing mining infrastructure where contamination is likely to occur.	KP 63-63.38SP
Lot 5364 on SP278014 (formerly Lot 5364 on PH1891)	Mineral processing Chemical storage Engine reconditioning works Landfill Petroleum product or oil storage Mine wastes Explosives production or storage	Mining leases present within the property. Three (ML2734, 2735 and 2736) of which are traversed by the corridor selection. These mining leases are owned by Chinova Resources Cloncurry Mines Pty Ltd. Consultation with Chinova Resources Cloncurry Mines Pty Ltd. occurred during the corridor selection and the Project would not impact on any existing mining infrastructure	KP 84-130DC

Lot / Plan	Notifiable activity	Description	Traversed alignment
		where contamination is likely to occur.	
Lot 10 on SP258128	Landfill	Landfill likely to be associated with the previous open-cut Mt Leyshon Mine (ML 10144) operated by Leyshon Resources Pty Ltd and Newmont Australia Ltd.	KP 103 – 109 WD
Lot 101 on SP248023	Gun, pistol or rifle range	Site identified through landholder consultation and satellite imagery.	KP 72 – 90 DM

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