



PROPOSED GENEX KIDSTON CONNECTION PROJECT

Corridor Selection Report

PREPARED BY

QUEENSLAND ELECTRICITY TRANSMISSION CORPORATION LIMITED

(ACN 078 849 233) trading as "POWERLINK"

11 ECOLOGY AND VEGETATION

Powerlink commissioned third party ecological advice in late 2016. The purpose of the advice was to assess the likely presence of MNES, Matters of State Environmental Significance (MSES) and other ecological constraints, providing a better understanding of potential environmental impacts for each study corridor option. The full ecological assessment is provided at Attachment 1.

The ecological advice included the three study corridor options from the DCSR. It was prudent to add study corridor A from the DCSR to the ecological assessment to validate the conclusions of desktop assessment in the DCSR that study corridor A had the highest relative environmental impact. It was as a result of the DCSR that study corridor A was removed from assessment in this CSR and the ecological advice provided an opportunity to confirm that removal of study corridor A had been undertaken on sound logic. The ecological advice confirmed that study corridor A had the highest potential for environmental impact (Attachment 1).

Due to the expansive nature of the study area and the early nature of these investigations, it was not feasible or justified to undertake field studies (ecological or otherwise) for the purpose of the CSR. Field studies will be part of any future detailed impact assessment process

In an endeavour to improve the ecological assessment, recognising that field studies were not feasible, Powerlink commissioned a small scope of remote sensing work over the region. The methodology of the remote sensing work is described in Section 11.1. The purpose of remote sensing was to define the physical extents of woody vegetation in the project area, which are not readily understood from other publicly available data sources.

Defining the extent of woody vegetation allows for primary quantification of potential vegetation impacts associated with the study corridor options. Understanding the physical extent of vegetation impacted also allowed the ecological advice to make more informed inferences about the type of vegetation and habitat potentially impacted.

11.1 REMOTE SENSING

Remote sensing was undertaken over the same area as the ecological advice, being the general extent covered by all study corridor options from the DCSR. Satellite imagery was utilised due to the vast size of the project area and limited availability of aerial imagery.

The methodology captured the extent and spatial distribution of current woody vegetation using an object based image classification process. This methodology has been previously deployed at a wide range of scales and using different remotely sensed source datasets for organisations across Australia and internationally. Landsat satellite imagery was used to derive landcover classification for the project extent from which indicative regional ecosystem mapping was generated. This was then aggregated into the mapping of woody vegetation for the project.

The final report associated with the remote sensing scope is provided at Attachment 2 and contains extensive detail about the methodology adopted. The output of greatest importance was spatial data representing the woody vegetation in the project area, which formed the basis of the ecological assessment.

11.2 ECOLOGICAL ASSESSMENT METHODOLOGY

The general methodology adopted for the ecological assessment is described in Table 6.

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Table 6 – Ecological Assessment Methodology

Process	Comments
Database searches	<ul style="list-style-type: none"> • EPBC Protected Matters Search Tool (by coordinates, buffer 5km) • Wildlife Online (Figure 16) • Atlas of Living Australia.
GIS analysis and mapping	<p>All study corridor options buffered to 3km wide and intersection with the following features mapped and quantified:</p> <p>The number of Wildlife Online species records for threatened flora and fauna species listed under the NC Act and/or EPBC Act that have been previously recorded within each corridor investigation area.</p> <p>The number of Atlas of Living Australia's species records for threatened fauna listed under the NC Act and/or EPBC Act that have been previously recorded within each corridor investigation area.</p> <p>The presence or absence of 'high risk areas' for endangered, vulnerable and near threatened plants (EVNT plants) listed under NC Act on the 'protected plants flora survey trigger map' within each corridor investigation area.</p> <p>The extent (hectares) of MSES regulated vegetation in reference to:</p> <ul style="list-style-type: none"> • Department of Natural Resources and Mine's (DNRM) regulated vegetation mapping (endangered and of concern regional ecosystems) • DNRM's regional ecosystem mapping (endangered, of concern and least concern regional ecosystems) • Virtual GIS's remote sensing analysis and mapping of woody vegetation – predicted and potential extent of remnant, regrowth and non-remnant vegetation • regulated remnant watercourse vegetation (endangered, of concern and least concern regional ecosystems). <p>The extent (hectares) of other MSES listed under Schedule 2 of the Environmental Offsets Regulation 2014 within each corridor investigation area, including:</p> <ul style="list-style-type: none"> • Protected areas (e.g. National parks and state reserves) • Wildlife habitats • Strategic environmental areas • High ecological significance wetlands • High ecological value waters (wetland) • High ecological value waters (watercourses) • Environmental offsets

	<ul style="list-style-type: none"> Connectivity. 						
Regulated remnant watercourse vegetation	<p>1:100,000 scale regulated vegetation mapping published by the State of Queensland covers approximately two thirds of the project area, while the remaining third (the western extent) is covered by the 1:250,000 scale mapping.</p> <p>The 1:250,000 scale mapping does not have stream order attributes. Therefore, the Strahler method was applied to the 1:250,000 watercourse layer using GIS to appropriately assign stream orders.</p>						
Threatened ecological communities	<p>An assessment of the mapped regional ecosystems within each corridor was undertaken to identify the potential presence of regional ecosystems that may potentially constitute threatened ecological communities listed under the EPBC Act</p>						
Constraint Ranking	<p>A ranking system was applied for each environmental matter and/or potential ecological constraint, to capture the degree of ecological constraints within each study corridor option.</p> <table border="1"> <tr> <td style="background-color: red; color: white; text-align: center;">RED</td> <td>Greatest amount of potential impact and ecological constraint</td> </tr> <tr> <td style="background-color: orange; color: black; text-align: center;">ORANGE</td> <td>Moderate amount of potential impact and ecological constraint</td> </tr> <tr> <td style="background-color: green; color: black; text-align: center;">GREEN</td> <td>Least amount of potential impact and ecological constraint</td> </tr> </table> <p>The ranking system was not applied to database search results (i.e. Wildlife Online and PMST) because they have been used to inform species record searches and assessment. The ranking system was also not applied to matters that do not require significant impact assessments or trigger environmental offsets (i.e. least concern regional ecosystems and regrowth and areas of non-remnant).</p> <p>The 'high risk areas' for endangered, vulnerable and near threatened plants (EVNT plants) listed under NC Act on the 'protected plants flora survey trigger map', were not ranked because they were captured as flora species records.</p>	RED	Greatest amount of potential impact and ecological constraint	ORANGE	Moderate amount of potential impact and ecological constraint	GREEN	Least amount of potential impact and ecological constraint
RED	Greatest amount of potential impact and ecological constraint						
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11.3 POTENTIAL ENVIRONMENTAL IMPACT SUMMARY

Table 7 summarises the potential environmental impacts described in Sections 11.4 to 11.5.14. The summary is copied from the third party ecological assessment described in 11. The only variation is the removal of 3ha of impact to protected areas in study corridors A and C, resulting from the study area amendment described in Section 5.1.5.

The summary is based on a traffic light system and demonstrates that study corridor option C is preferred from an environmental perspective. The difference in potential impact between study corridors B and C is small for many criteria but the cumulative benefit of study corridor C is likely to be significant. Co-location options and shared access opportunities around study corridor C offer potential to further lower overall impacts during impact assessment and design phases.

It is important to reiterate that study corridor A only appears in the ecological assessment to validate its removal from assessment at the DSCR stage. The traffic light system demonstrates that study corridor A had the potential for highest environmental impact by a reasonable margin.

Table 7 – Potential Environmental Impact Summary

Ecological constraint	CONSTRAINT RANKINGS		
	Option A	Option B	Option C
Matters of State Environmental Significance			
NC Act threatened species records (numbers)	2	4	5
Regulated of concern dominant vegetation (ha)	2,059	1,819	1,519
Regulated of concern sub-dominant vegetation (ha)	1,008	442	334
Regulated of high value regrowth vegetation (ha)	3.6	2.4	2.4
Regulated Category R regrowth vegetation (ha)	422	296	257
Mapped of concern dominant regional ecosystems (ha)	1,008	442	334
Mapped of concern dominant regional ecosystems (ha)	2,059	1,891	1,519
Predicted of concern dominant woody vegetation (ha)	1,535	1,460	1,223
Predicted of concern sub-dominant woody vegetation (ha)	549	295	618
Potential of concern dominant woody vegetation (ha)	240	344	431
Potential of concern sub-dominant woody vegetation (ha)	364	87	37
Regulated remnant watercourse Wet Tropics bioregion (ha)	118	50	45
Regulated remnant watercourse vegetation Einasleigh Uplands bioregion (ha)	5,585	5,547	5,493
Protected areas (ha)	655	214	142
Wildlife habitats (ha)	522	411	385
High ecological significance (HES) wetlands (ha)	0	1.1	0
Matters of National Environmental Significance			
Threatened and migratory species records (numbers)	3	6	5
Proximity to Wet Tropics of Queensland heritage properties (km)	4.8	5.2	5.6

11.4 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

11.4.1 EPBC ACT THREATENED AND MIGRATORY SPECIES

Database searches identified few records of threatened and migratory species. A low number of records was expected due to the remote and largely undeveloped and unsurveyed (ecological survey) nature of the project area. There is however the potential for additional species to be identified in subsequent impact assessment stages.

The records retrieved have been mapped for each study corridor option (Figure 3.1 – 3.3 in Attachment 1).

The potential to identify other species does not dictate that a referral under the *EPBC Act 1999* should, or should not, occur. It is rather a gap in existing database information. In an effort to address the shortfall in existing information, Powerlink commissioned a likelihood of occurrence assessment.

11.4.1.1 LIKELIHOOD OF OCCURRENCE ASSESSMENT

The likelihood of occurrence assessment (Attachment 3) built on the third party ecological advice described in Section 11.2. It related mapped vegetation types to fauna and flora species known to be associated with those features in the broader region well beyond the CSR study area, targeting more developed areas where species records are more readily available.

The likelihood of occurrence assessment represents best endeavours to identify flora and fauna species potentially occurring in the study area and responds to feedback from the Department of Environment and Heritage Protection in January 2017 suggesting such an investigation.

This additional assessment confirmed the initial ecological advice procured for the CSR and identified only a relatively small number of additional EPBC species that may occur in the study area. Importantly, no new Threatened Ecological Communities or World Heritage Values were identified through this additional assessment.

It is important to note that the likelihood of occurrence assessment does not influence the preferred study corridor at the current level of assessment because vegetation communities and habitats occur in a broad and homogenous manner across the CSR study area.

Future ecological survey approaches will be designed to reflect the potential for additional species and provide for an adequate survey intensity to explore the ecological values of the project area. Appropriate management measures can then be designed on the basis of survey results. A range of management and mitigation measures are available in the development of transmission lines and terrestrial impacts can be minimised in most circumstances.

The likelihood of occurrence assessment does not dictate that a referral under the *EPBC Act 1999* should, or should not, occur. Detailed discussion of the referral process is provided in Section 9.1.1.1.

11.4.2 THREATENED ECOLOGICAL COMMUNITIES (TEC)

Broad Leaf Tea-tree (Melaleuca viridiflora) woodlands in high rainfall coastal north Queensland was the only TEC revealed by the PMST as potentially occurring within the project area. The Broad Leaf Tea-tree TEC in

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the Wet Tropics and Central Mackay Coast Bioregions is associated with varieties of regional ecosystems described as 7.3.8/ 7.5.4 (floodplain), 8.3.2, 8.5.2 or 8.5.6 (*Melaleuca*).

The ecological assessment determined that the likelihood of The Broad Leaf Tea-tree TEC occurring in the project area is low as the associated regional ecosystems are not present. Based on the assessment undertaken to date the risk of impacting TECs is considered low for all study corridor options.

11.4.3 WET TROPICS OF QUEENSLAND – WORLD, NATIONAL AND INDIGENOUS HERITAGE PROPERTIES

The ecological assessment considered proximity of the proposed line to the World Heritage-listed Wet Tropics. None of the study corridors impact the World Heritage area. Option A is the closest, located 4.8km at its closest point. At that distance, a transmission line is highly unlikely to impact the Wet Tropics in any manner (see Figure 3.65 in Attachment 1).

11.5 MATTERS OF STATE ENVIRONMENTAL SIGNIFICANCE

11.5.1 NC ACT THREATENED SPECIES

Wildlife Online database search results revealed that 26 threatened species listed under the NC Act and/or EPBC Act have been previously recorded within the search area, including 11 birds, six mammals and nine plants. Threatened species listed as endangered, vulnerable and special least concern under the NC Act are recognised as MSES under the *Environmental Offset Act 2014*. Near threatened species do not need to be assessed in terms of significant residual impacts under the *Environmental Offset Act 2014*, but have been included, just in case of any future changes in legislation that may occur during the approval pathway of the project.

As noted for EPBC Act threatened and migratory species (Section 11.4.1), the largely undeveloped and unsurveyed (ecological survey) nature of the project area dictates that species records are likely to be partial. There is potential for additional species to be identified in subsequent impact assessment stages.

Future ecological survey approaches will be designed to reflect the potential for additional species and provide for an adequate survey intensity to explore the ecological values of the project area. Appropriate management measures can then be designed on the basis of survey results. A range of management and mitigation measures are available in the development of transmission lines and terrestrial impacts can be minimised in most circumstances.

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The records retrieved have been mapped for each study corridor option (Figure 3.1 – 3.3 in Attachment 1).

11.5.2 PROTECTED PLANTS

High risk areas for endangered, vulnerable and near threatened plants (EVNT plants) listed under NC Act on the 'protected plants flora survey trigger map' are presented in Figure 3.4 in Attachment 1. The high risk

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areas indicate confirmed records of *Acacia tingoorensis* and represent a potential constraint to all three study corridors.

Subsequent impact assessment processes will need to target these areas and flora surveys will need to be undertaken in accordance with the *Flora Survey Guidelines – Protected Plants Nature Conservation Act 1992*. Powerlink has extensive experience in designing and developing infrastructure to minimise impacts to EVNT plants.

11.5.3 REGULATED VEGETATION

Category R Vegetation

DNRM's *Category R regrowth vegetation: A self-assessable vegetation clearing code* states that Category R regrowth vegetation is native woody vegetation on freehold land, Indigenous land or leasehold land granted for agriculture or grazing purposes, located within 50 metres of a watercourse in the Burdekin, Mackay, Whitsunday and Wet Tropics Great Barrier Reef catchments.

It is prudent to consider potential impacts to Category R vegetation, irrespective of the legislative treatment of Category R under the latter approval process for the project which may exempt the project dependant on the pathway chosen. Study corridor option C impacts the least amount of Category R vegetation. The physical extents impacted are described in Section 11.3.

11.5.4 DNRM REGIONAL ECOSYSTEMS

No endangered regional ecosystems are mapped in the study area. Study corridor option C impacts the least of concern regional ecosystem based on DNRM mapping. The physical extents impacted are described in Section 11.3.

Regional ecosystem mapping is undertaken by broad scale processes, with most maps prepared at a scale of 1:100,000 and based on the best available information. There are established processes for broad scale regional ecosystem mapping to be refined. Survey information collected during project development by Government and the private sector is used to amend the high level mapping, providing a clearer picture of the actual ecological makeup of the region.

The Genex Kidston Connection Project study area is largely undeveloped and therefore does not benefit from the same refinement of regional ecosystem mapping as more intensely developed regions. It is for this reason that the remote sensing scope described in Section 11.1 was undertaken. Remote sensing provides limited insight into the actual regional ecosystem communities present, but it does serve to rationalise the physical extent of vegetation in an otherwise largely unexplored region.

Higher regard is given to an assessment of potential vegetation impacts based on the intersection of regional ecosystem mapping with the results of the remote sensing exercise.

11.5.5 WOODY VEGETATION ASSESSMENT (REMOTELY SENSED)

The woody vegetation assessment used GIS remote sensing to predict the extent of woody remnant vegetation, and the potential extent of woody remnant vegetation and regrowth vegetation in each study corridor.

The assessment broadly involved:

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- Physical identification of woody vegetation by remote sensing
- Removal of areas mapped as regional ecosystem where no vegetation was present
- Addition of areas where vegetation was present but not mapped in regional ecosystem mapping
- Attribution of remotely sensed vegetation with DNRM mapped regional ecosystem descriptions where the two intersected.

This process provides the best possible understanding of vegetation cover and potential impacts without the intensive investment of time and resources associated with a full impact assessment process. The description above is a summary in simple language for the purpose of this report. The full methodology is available in Attachment 2.

Study corridor C is the least constrained in terms of potential impacts upon 'of concern' dominant regional ecosystems. Study corridor B is least constrained in terms of potential impacts upon 'of concern' sub-dominant regional ecosystems. The cumulative impact to 'of concern' regional ecosystems is similar for both options.

Greater emphasis should be applied to the predicted of concern dominant remnant vegetation, which therefore suggests that study corridor C is least constrained in terms of regional ecosystems. The physical extents impacted are described in Section 11.3.

In interpreting the table it is useful to understand that 'predicted' woody remnant vegetation is those areas where woody vegetation was verified within the regional ecosystem mapping. Potential woody remnant vegetation is those areas identified by remote sensing of similar composition to other remnant vegetation but not currently mapped as regional ecosystems. It is expected that these areas will be verified as regional ecosystems in subsequent field surveys.

All study corridor options involve clearing. Subsequent impact assessment processes will focus heavily on the extent of impacts to vegetation. Option C is considered favourable not just for lower potential physical impact to vegetation, but for the benefit of co-location and the potential to further reduce those potential impacts by refining design of a shared corridor.

Mapping of potential regional ecosystem impacts based on the woody vegetation assessment are provided in Attachment 1.

11.5.6 REGULATED REMNANT WATERCOURSE VEGETATION

Regulated remnant watercourse vegetation occurs throughout the study area. A distance from the defining bank of the mapped watercourse is specified in regulation that defines a distance from the defining bank of the watercourse within which remnant vegetation represents remnant watercourse vegetation. The distance varies by bioregion and stream order.

Study corridor C has the lowest potential impact to remnant watercourse vegetation. The physical extent of potential impact is described in Section 11.3.

11.5.7 PROTECTED AREAS

Several protected areas under the *Nature Conservation (Protected Areas) Regulation 1994* were identified in the study area. These areas are nature refuges (Newcastle Range – The Oaks and Liefway) and National Parks (Girringun). Study corridor C intersects the lowest total extent of protected area.

The extent of impact to protected areas associated with study corridor C was lowered by the amendment to the study area described in 5.1.5, which remove the Liefway Nature Refuge from the study area entirely, benefitting study corridors A (removed at DCSR stage) and C. The refuge fell outside of study corridor B.

Study corridor C intersects the lowest amount of the Girringun national park area based on existing published boundaries, with about 70ha less of the protected area intersected than study corridor B.

11.5.8 WILDLIFE HABITAT

Wildlife habitat is mapped by the State and broadly includes:

- Threatened wildlife that is classified as endangered or vulnerable
- Special least concern animals (iconic) under the NCA.

Species mapping adopts wildlife habitat using, in order of preference:

- Essential habitat mapped under the VMA
- Modelled habitat (peer reviewed and accepted) mapped using climate, elevation, bioregion, and regional ecosystems
- Point records (buffered to 1,000m) that intersect with native vegetation (remnant or regrowth regional ecosystems) where it overlays a species record location.

Study corridor C intersects the least mapped wildlife habitat. As noted in Section 11.5.1 there is potential for additional NC Act species to be present in the project area due to a lack of historic surveys. The mapped wildlife habitat is based partially on these records and there is also logically potential for additional wildlife habitat to be present.

Notwithstanding limitations in the data, study corridor C impacts the least vegetation and benefits from co-location with existing transmission lines. It is likely that these features will also minimise potential habitat impacts. Habitat values will be explored in detail in subsequent impact assessments.

11.5.9 STRATEGIC ENVIRONMENTAL AREAS

Strategic environmental areas do not exist in the study area.

11.5.10 HIGH ECOLOGICAL SIGNIFICANCE (HES) WETLANDS

Only study corridor B intersects an identified HES wetland area. The physical extent of the intersection is described in Section 11.3.

11.5.11 HIGH ECOLOGICAL VALUE WATERS (WETLAND)

High ecological value waters (wetland) areas do not exist in the study area.

11.5.12 HIGH ECOLOGICAL VALUE WATERS (WATERCOURSES)

High ecological value waters (watercourse) areas do not exist in the study area.

11.5.13 ENVIRONMENTAL OFFSET AREAS

Environmental offset areas do not exist in the study area.

11.5.14 CONNECTIVITY

Connectivity is assessed as significant residual impacts under the Queensland Government's Environmental Offsets Policy version 1.1 (2014), once a project footprint has been determined. The residual impact is assessed using GIS and the Queensland Government's Landscape Fragmentation and Connectivity tool for an individual impact area. Essentially, the assessment is based upon the level of fragmentation to remnant vegetation as a result of a project's impact area(s).

All study corridor options would result in impacts to connectivity. On this basis, once a preferred study corridor option is selected and a project impact area(s) is defined during subsequent impact assessment processes, the impact upon connectivity will need to be assessed using the Landscape Fragmentation and Connectivity tool.

As all options impact connectivity and detailed impacts are subject to significant change, connectivity does not differentiate study corridor options.

12 CONSTRUCTABILITY

Overall the study area is of rural character, dominated by timbered areas, with some areas cleared for cattle grazing. The topography of the study areas is varied, with a large portion of the area being level or gently undulating plains. There are steeper sections on both corridors, including escarpments. This may present a challenging environment for construction and associated vehicle/plant access and consideration has been given to avoid where possible. Concrete batch plants will be required for the construction of the transmission line foundations.

Construction of a substation site at Mt Fox may present challenges due to topography within the area. A flat site is required for substation, which would likely require some level of cut and fill earthworks to achieve. Further detail is provided in Section 12.3. Despite potentially challenging topography, Mt Fox remains the closest viable connection point to the existing electricity transmission network (Section 5.1.3).

Constructability considerations remain similar across all draft corridor options and do not serve to differentiate options at this level of investigation. Powerlink is the foremost authority in transmission line and substation development in Queensland and will support Genex in the development of best for project design solutions.

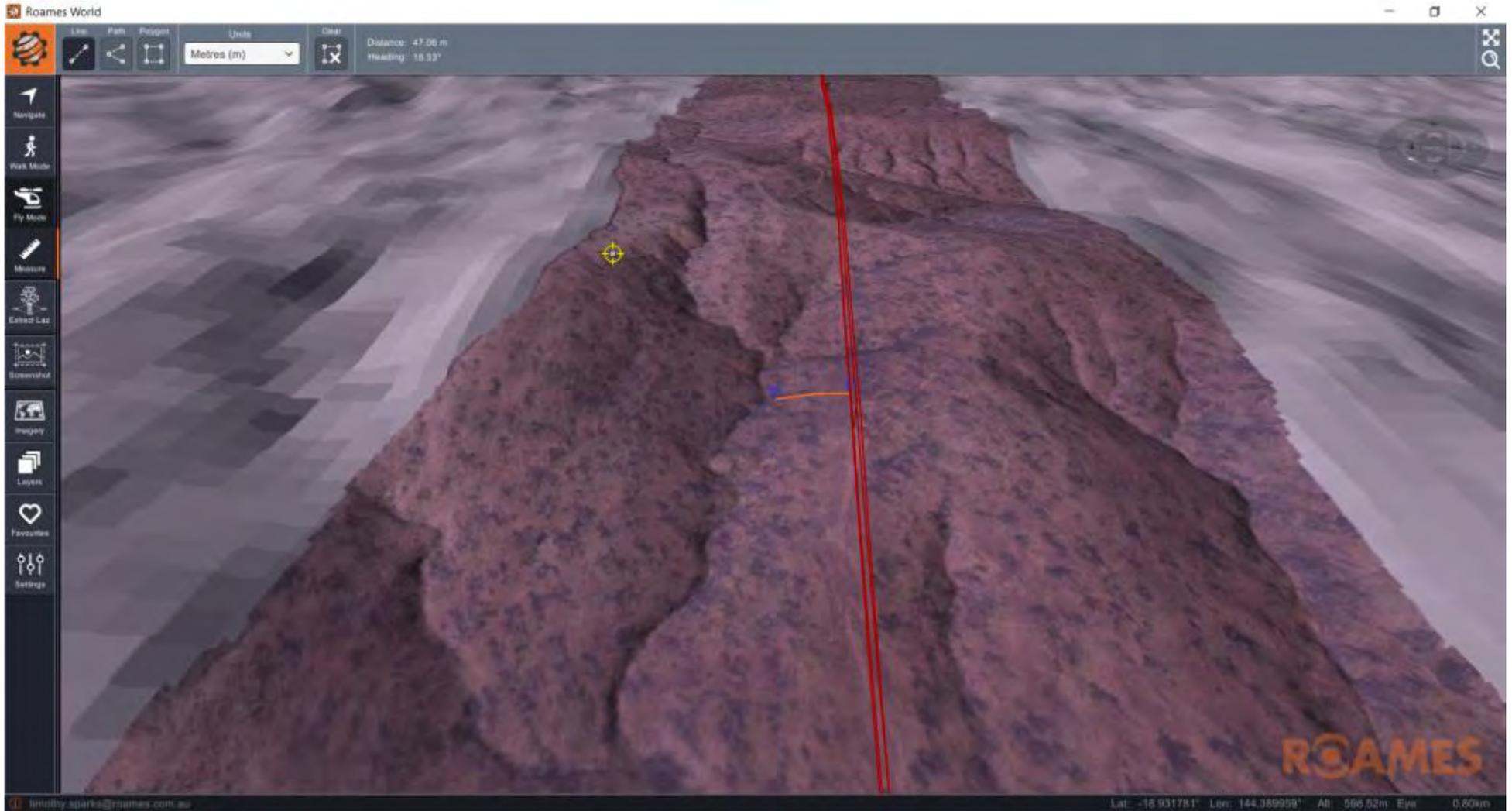
12.1 ROAMES DATA REVIEW

Ergon has compiled a comprehensive virtual model of their network using aerial survey techniques. Software called ROAMES, developed by spatial consultancy Fugro, is used to display and navigate this model.

Powerlink contacted Fugro to enquire about data available in the Genex project area. The largely undeveloped nature of the study area means that spatial data available in the public realm is limited. Data was available for the existing Ergon 66kV and 132kV feeders in study corridor C and Powerlink was afforded the opportunity to view the ROAMES system on January 6, 2017 at the Fugro offices in Eight Mile Plains.

The principal benefit of viewing the ROAMES system was to gain greater insight into the variable terrain that might be encountered. Several areas of interest were identified and a screenshot for each was captured from the ROAMES system at those locations, including coordinates so the locations can be located and investigated in subsequent impact assessment phases (Figure 17).

Figure 17 – ROAMES World Screenshots

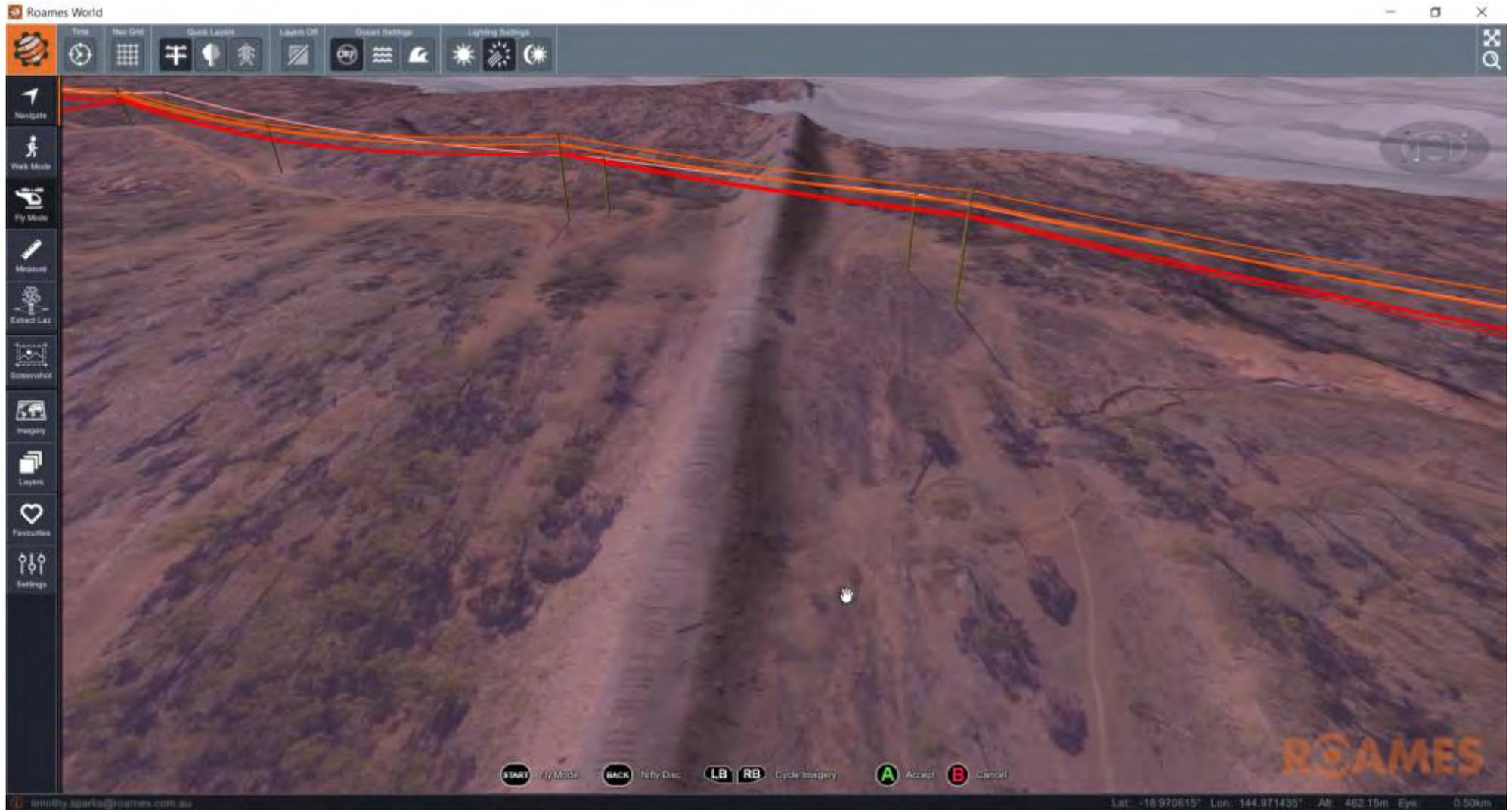


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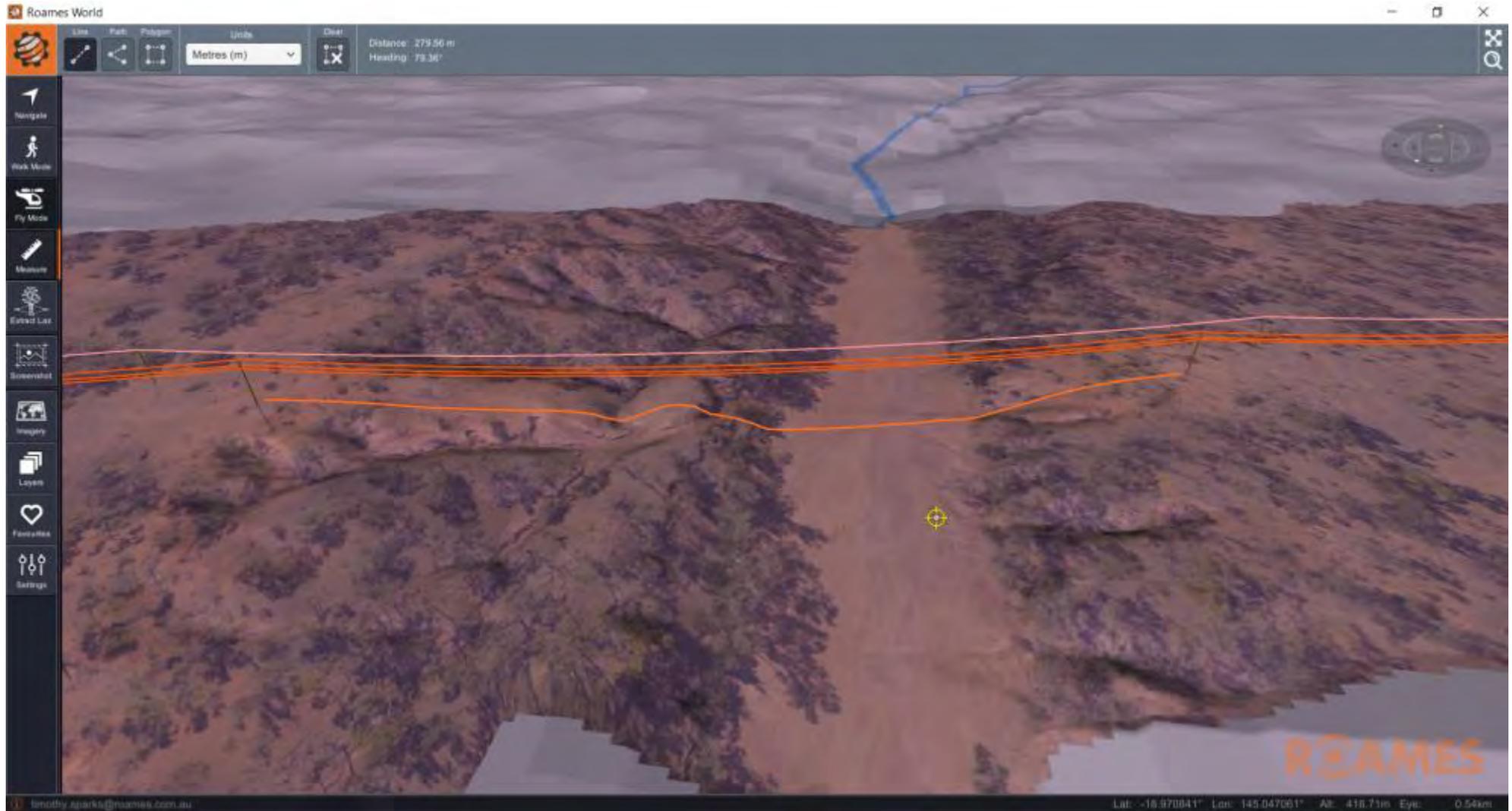


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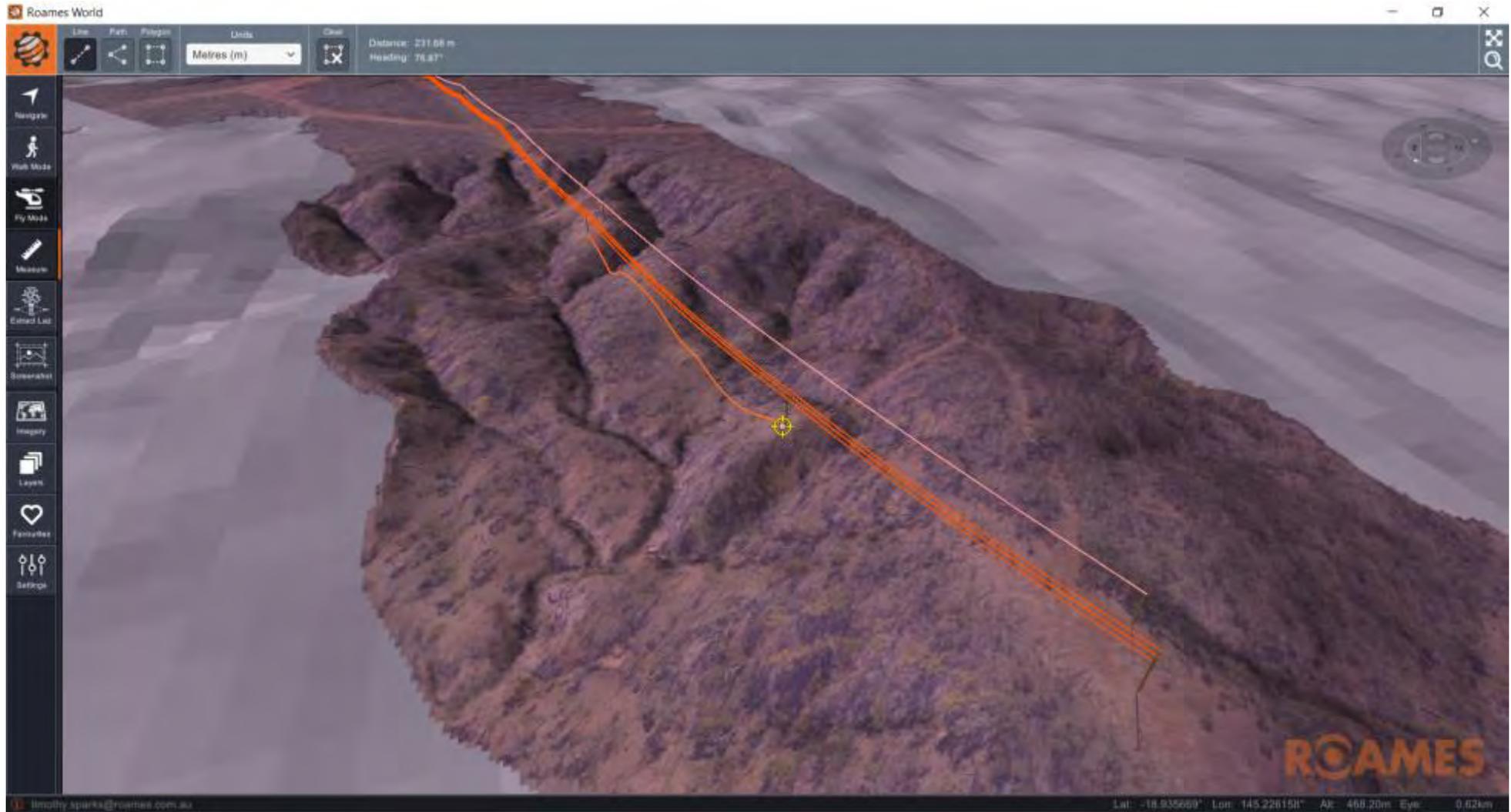


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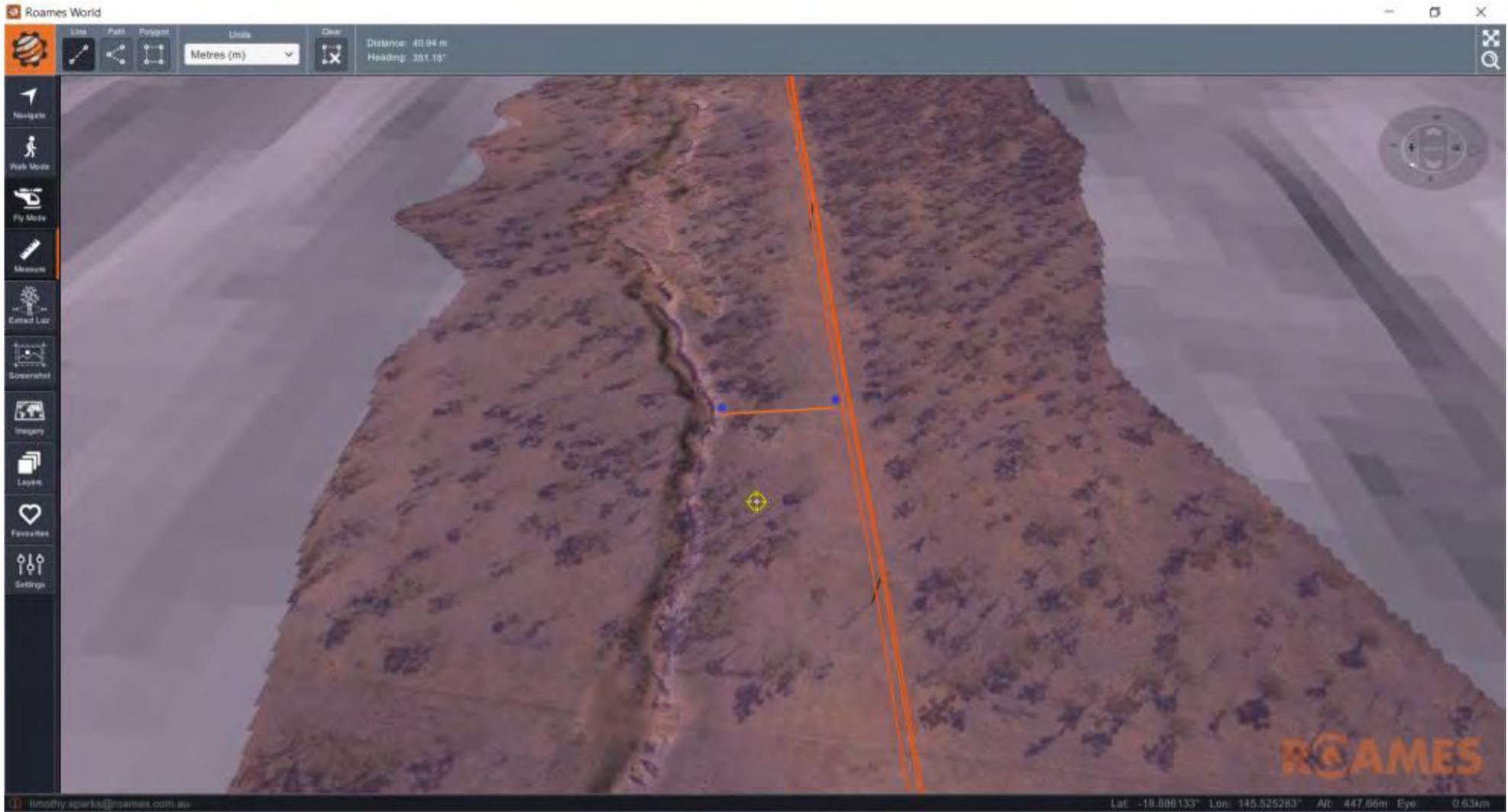


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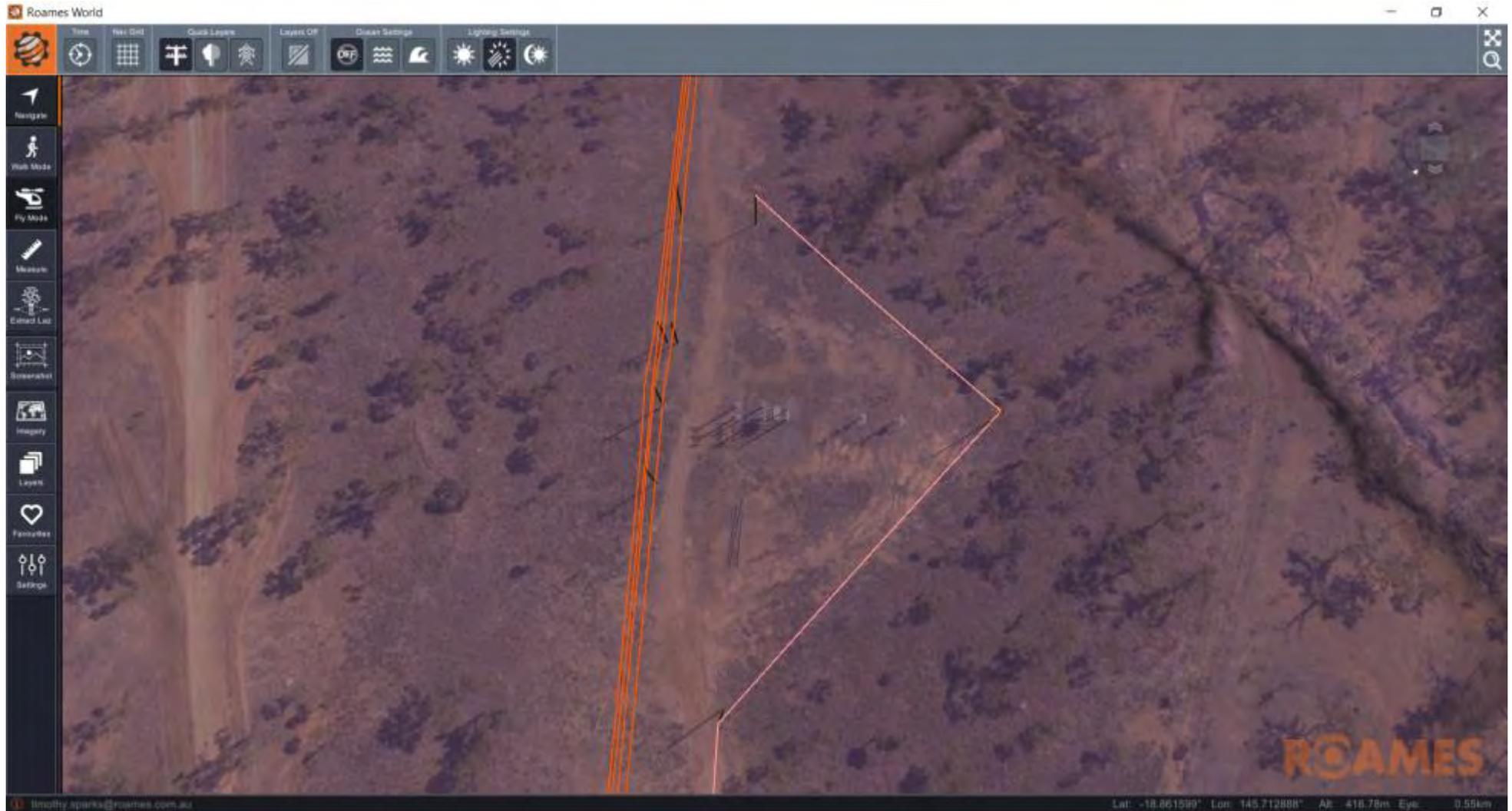


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12.2 HELICOPTER FLYOVER

Powerlink undertook an aerial inspection of the study area by helicopter in mid-January 2017. A helicopter was selected to minimise interference to landholders and their operations. All landholders were contacted in advance of the flight and any concerns raised were addressed by increased separation (altitude).

The fly over did not reveal any material constraints to delivery of the project. It was evident that the terrain is challenging in some locations, but through careful route selection and site specific design, terrain challenges can be overcome. Subsequent impact assessment and design phases will delve into greater detail around localised terrain and appropriate design responses. Challenging terrain is likely to occur along each study corridor and does not serve to differentiate options at the current level of assessment.

The flight supported that the study area amendment west of Greenvale discussed in Section 5.1.4 would facilitate constructability by avoiding escarpments. The preliminary alignment in this area will be outside of the initial extent of study corridor option C in response to the terrain that was not identifiable in the DCSR. No new properties were impacted as a result of the amendment and no material change to this assessment is realised by the deviation. See Section 5.1.4.

It was also evident from the fly over that recent rainfall had made much of the area difficult to traverse. Subsequent project planning will need to regard wet seasons and allow for restricted mobility through the area during those times. It was also evident that much of the soil was highly erodible, which will require further investigation during subsequent project phases. See Figure 18 and Figure 19.

Figure 18 – Swollen Creeks



Figure 19 – Erosion



12.3 MT FOX SITE OPPORTUNITIES

Constructability for the substation at Mt Fox was considered as part of this CSR. The assessment included identification of high level site opportunities and constraints based on landholder engagement, affording an understanding of the likely availability of a suitable substation site. It was not in the scope of this CSR to negotiate acquisition of a site or formal option over a site. No substation site has been selected.

Terrain in the Mt Fox area is undulating. There are likely to be sites that are suitable for a substation, but some care will be required in selecting one with suitable grades and access. Despite potentially challenging topography, Mt Fox remains the closest viable connection point to the existing electricity transmission network (Section 5.1.3).

Proximity to the existing 275kV Powerlink Ross to Chalumbin transmission line is also an important consideration. A site west of the existing line is preferable from a network configuration perspective, whether adjacent or nearby. It is partially for this reason that the study area amendment discussed in Section 5.1.5 was undertaken, with property east of the existing 275kV being less desirable for the substation.

Finally proximity to the existing Ergon 66kV line is desirable so that co-location of infrastructure begins at Mt Fox and the benefits of co-location apply to as much of the proposed Genex Kidston connection as possible. An area of interest for the substation has been identified, bounded generally by the refined study area and existing Powerlink and Ergon networks. The area is depicted in Figure 21.

Subsequent project phases would seek to identify a specific site in the area of interest through a targeted and detailed assessment process, involving higher resolution terrain data (and imagery if available) than what is currently available, and further engagement with landholders. The site selection process would consider matters including, but not limited to:

- Drainage

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- Cut and fill volumes
- Environmental footprint
- Availability of clean fill
- Ability to import clean fill to site (access)
- Requirements for auxiliary works
- Operational parameters.

An option over a site may be considered during the site selection process, dependant on the outcomes of technical investigations and further landholder and stakeholder engagement. Powerlink is the foremost authority in substation development in Queensland and will support Genex in the selection of a site from the area of interest.

13 ENGAGEMENT FEEDBACK

Powerlink has undertaken early and targeted consultation with Federal, State and Local governments, peak bodies and landholders within the project area as part of preparing this CSR. The objective of stakeholder engagement at this point in the process is to raise awareness among relevant stakeholders and to gain meaningful input from those stakeholders to inform the CSR. In all cases, further and more extensive engagement and consultation will be undertaken in future stages of the project.

The following provides a summary of feedback received to date from stakeholders. Landholder engagement feedback is summarised in Section 13.7.

13.1 STAKEHOLDER WORKSHOP

Nine stakeholder organisations were invited to attend an CSR engagement workshop for the proposed Genex Kidston Connection transmission line project. The workshop on 21 November 2016 was attended by representatives of six stakeholder organisations.

The purpose of the workshop was to engage these stakeholders in identifying opportunities and constraints in the study area for the Genex Kidston Connection transmission line project Corridor Selection Report.

Representatives from the following organisations attended the workshop:

- North Queensland Conservation Council
- AgForce
- Department of Infrastructure, Local Government and Planning
- Department of Natural Resources and Mines
- Charters Towers Regional Council
- Etheridge Shire Council.

The following organisations declined the invitation to attend the workshop:

- Department of Environment and Heritage Protection
- Department of National Parks, Sport and Racing
- North Queensland Dry Tropics.

Drawing on their expert and local knowledge, workshop participants identified detailed opportunities and constraints applicable to the selection of a corridor for the Proposed Genex Power Kidston Connection transmission line. Key themes discussed are presented in Table 8. Detailed participants' input was comprehensively recorded at the workshop and informed the development of the CSR.

It is also noted that individual meetings were held with the Department of Environment and Heritage Protection and Department of National Parks, Sport and Racing (Section 13.2).

Table 8 – Summary of workshop participant input

Key theme	Workshop participants provided input and information about:
Environment	<ul style="list-style-type: none"> Vegetation including remnant vegetation and high value areas Biosecurity including weed management and cattle tick management Water flow, erosion and sedimentation issues Bush fire risk management Conservation areas, wildlife refuges and National Parks Fauna including pygmy glider, cassowary and redclaw yabbies (recreational in Kidston mine ponds) Geology including dormant volcano and lava tubes Climate including drought impacts.
Social	<ul style="list-style-type: none"> Land use which is predominantly cattle grazing with some cropping on larger holdings; smaller land holdings include chicken farm and hobby farms; includes organic producers Many properties are run by family owned businesses Landholdings are predominantly leasehold Fencing is limited on most properties Road conditions and accessibility; Air strips and wide use of aerial mustering Visitors include fossickers at small active goldmines, 4WD enthusiasts and retirees Access tracks are used by shooters and 4WD enthusiasts Limited local education options for students, schools and School of the Air Difficulties with connectivity due to limited mobile phone and Internet coverage, and poor radio reception Accommodation exists at the former Kidston mine, Junction, Greenvale and camping at Mt Fox site Native title and Indigenous Access Agreements (ILUA's) in place on some properties Indigenous and European Cultural Heritage sites Recent defence force plans and associated land acquisition.
Economic and technical issues	<ul style="list-style-type: none"> Workforce access and retention Access to raw materials and water Opportunities for local industry and workers Workforce accommodation Cost of transport and alternative freight routes Accessibility of stock routes Reliability and accuracy of mapping Construction traffic impacts to farmers and school bus Weed wash down areas Opportunities for other solar and renewable developments to connect Opportunities downstream of the hydro dam Viability of irrigation and agricultural projects that require power supply.
Key stakeholders and communication	<ul style="list-style-type: none"> Stakeholders identified within the following groups: elected representatives, local government, interest groups, traditional owners, individuals Options for communication with landholders include mail, email, newsletters and Council bulletins.
Potential local issues	<ul style="list-style-type: none"> Native Title tenure Acquisition of land process and recent experiences with defence force resumptions Traffic management including vehicle movements and driver behaviour Impacts on roads and road maintenance Weed management and wash down facilities Aerial mustering during project construction Water supply and allocations

Historical local issues	<ul style="list-style-type: none"> • Management of stock during construction • Prospective exploration of rare earth metals. • Traffic issues related to mining activities • Shutdown of Mt Surprise mine
Opportunities	<ul style="list-style-type: none"> • To support local industry and workforce during construction and maintenance • Local sporting groups • Currently no community development projects in the area • Available industrial land for manufacturing and storage • Charters Towers airport • Vegetation management under transmission lines and on access tracks and related bushfire management • Local support for development including the Genex project • Communicating with landholders about the transmission line development.

13.2 DEPARTMENTAL STAKEHOLDERS

13.2.1 DEPARTMENT OF ENERGY AND WATER SUPPLY & TREASURY

Powerlink met with representatives of the Department of Energy and Water Supply (DEWS) and the Treasury Department on 15 April 2016 as part of the DCSR. Advice was also provided to both departments on 11 November 2016 about the CSR and Powerlink’s engagement intentions. Neither department raised major issues or concerns at this early stage in the process.

13.2.2 DEPARTMENT OF ENVIRONMENT & HERITAGE PROTECTION

Powerlink met with representatives of the Department of Environment and Heritage Protection (DEHP) on 15 April 2016 to discuss the DCSR. A second meeting was held on 18 November 2016 to introduce the scope of this CSR.

Discussion was primarily held around DEHP’s position on key areas of interest. These included protected flora and fauna, regional ecosystems and catchments/wetland/watercourses. Powerlink provided the third party ecological advice procured for this CSR to DEHP on 10 January 2017 and DEHP provided a response on 13 January 2017.

DEHP also noted that a likelihood of occurrence assessment would be a positive initiative to further identify species potentially occurring on the project area. Powerlink commissioned an assessment in response to DEHP feedback (Section 11.4.1.1). It is important to note that the likelihood of occurrence assessment will not influence the preferred study corridor at the current level of assessment because vegetation communities and habitats occur in a broad and homogenous manner across the CSR study area.

13.2.3 OFFICE OF THE COORDINATOR-GENERAL

Powerlink met with representatives of the Office of the Coordinator-General (OCOG) in late 2016. The OCOG is aware of the project through ongoing discussions with the proponent, Genex Power.

On 3 March 2016, the Minister for State Development declared the Genex Solar, Pumped Storage and Transmission Line project as a ‘Prescribed Project’ under the *State Development Public Works Organisation*

Act 1979. The Minister for State Development administers the SDPWO Act via the Office of the Coordinator General.

Discussion was primarily held around administrative functions of the department through the potential overarching approval process and appropriate approvals solutions. It was agreed that detailed discussion of approvals pathways was best postponed until this CSR was complete and a greater understanding of the study area was gained.

If the project was to proceed via the Coordinated Project process and Powerlink was also engaged to undertake subsequent work, we would continue to engage with the OCOG to achieve the respective project approvals and corridor acquisition. As the project progresses, a close working relationship with the OCOG will ensure delivery is done on a best-for-project basis.

13.2.4 BUILDING QUEENSLAND

Powerlink met with representatives of Building Queensland (BQ) on 15 April 2016 as part of the DCSR. Advice was provided to Building Queensland on 16 November 2016 about the CSR. Building Queensland was advised there would not be any trigger for investment decisions involving Building Queensland at this point in the process.

It is noted that the Building Queensland process is likely to affect only Powerlink and the Queensland Government as potential proponents of the transmission line development process. Building Queensland may require oversight of a future business case for development of the transmission line project.

13.2.5 DEPARTMENT OF TRANSPORT AND MAIN ROADS

No consultation has been undertaken to date with the Department of Transport and Main Roads given the early phase in the project development process. The proposed connection project traverses the Northern and Far North Transport and Main Roads districts.

No State roads are intersected in the Northern District. Two State roads are likely to be intersected in the Far North District, being the Kennedy and Gregory Development Roads. The roads will be spanned by conductors only where possible, with towers or other structures placed well clear of the road corridor. The potential for impact to State roads is therefore minimal. Where spanning is not possible due to significant width careful placement of structures will be required to minimise impact to the utility of the road corridor.

It is recommended that consultation with the Department of Transport and Main Roads occurs once subsequent impact assessment phases commence. Whilst State roads do not differentiate corridor options they do become influential as the project is refined and the location of access tracks, construction camps etc become clear.

13.2.6 DEPARTMENT OF NATIONAL PARKS, SPORT & RECREATION

Powerlink met with representatives of the Department of National Parks, Sports & Recreation (DNPSR) on 19 April 2016 as part of the DCSR. A second meeting was held for the CSR on 18 January 2017.

Girringun National Park (Mt Fox section) is an area of particular interest for DNPSR and amenity impacts on the park area will require assessment in latter project phases.

13.2.7 DEPARTMENT OF INFRASTRUCTURE, LOCAL GOVERNMENT & PLANNING

Powerlink met with representatives of the Department of Infrastructure, Local Government and Planning (DILGP) on 19 April 2016 as part of the DCSR. DILGP advised that they were not *aware of any* proposed developments or current development applications within the corridors at that time and raised only the non-statutory Gulf Regional Plan and future North Queensland Regional Plan for further consideration.

A DILGP representative attended the stakeholder workshop on 21 November 2016. No new development applications or issues around the Gulf and North Queensland Regional Plans were noted at the workshop. Other DILGP feedback is included in the summary notes from the workshop (Section 13.1).

Powerlink is aware that the North Queensland Regional Plan is currently under production and will monitor the status of the plan. Powerlink plays an active role in submitting to emerging regulatory frameworks and will monitor the North Queensland Regional Plan as part of this activity.

13.2.8 DEPARTMENT OF AGRICULTURE, ANDFISHERIES

Constraints mapping and project background information has been provided to DAF to undertake a desktop assessment and provide feedback on areas of interest to the department. It is recommended that a meeting be held early in future stages of the project to ensure any areas of interest to the department have can be addressed.

13.2.9 DEPARTMENT OF ENVIRONMENT & ENERGY(CWTH)

Powerlink met with a representative of the Commonwealth Department of Environment and Energy (DoEE) on 22 April 2016 as part of the preparation of DCSR to obtain initial and high-level advice regarding any Commonwealth environmental considerations. Contact was re-established with the same representative in November 2016 and again in January 2017 after the third party ecological advice was completed.

Powerlink proactively undertook a likelihood of occurrence assessment for EPBC Act threatened and migratory species and NC Act EVNT flora and fauna (Attachment 3). This additional scope of work is designed specifically to supplement the low number of records returned from the Protected Matters Search Tool.

It is important to note that the likelihood of occurrence assessment will not influence the preferred study corridor at the current level of assessment because vegetation communities and habitats occur in a broad and homogenous manner across the CSR study area.

13.2.10 DEPARTMENT OF NATURAL RESOURCES & MINES

Powerlink met with representatives of the Department of Natural Resources and Mines (DNRM) on 28 April 2016 as part of the preparation of the DCSR. Feedback in relation to dealing with resource interests indicated that consultation with interest holders would be the most beneficial way to address any potential issues or compatibility conflicts. Discussion focused on:

- Vegetation clearing governance relating to available project delivery frameworks
- Land tenure

- Resource interests.

A DNRM representative also attended the stakeholder workshop on 21 November 2016. Discussion was held around similar issues at the workshop. DNRM feedback is included in the summary notes from the workshop (Section 13.1).

Further consultation with DNRM will be an important part of subsequent impact assessment processes as further detail around tenure, resource interest and vegetation impacts emerges.

13.2.11 ERGON ENERGY

Powerlink made contact with regional representatives of Ergon Energy to gain further understanding of the study area. Feedback from Ergon has assisted in the development of this CSR and further engagement with a broader cross section of the organisation is recommended as early as possible in subsequent project phases.

13.3 ELECTED REPRESENTATIVES

Powerlink has provided initial advice about the CSR to all State and Federal Government elected representatives including Mr Shane Knuth, Mr Robbie Katter, Mr Andrew Cripps and Mr Bob Katter. Contact with these elected representatives occurred in November and December 2016. A project briefing was also provided to Mr Cripps on request, who made subsequent enquiries to Powerlink on behalf of a constituent.

13.4 STATE GOVERNMENT MINISTERS

Advice was provided to the following Ministerial offices about the project and Powerlink's engagement intentions:

- The Hon. Jackie Trad MP, Deputy Premier and Minister for Infrastructure, Local Government and Planning and Minister for Trade and Investment
- The Hon. Curtis Pitt MP, Treasurer, Minister for Aboriginal and Torres Strait Islander Partnerships and Minister for Sport
- The Hon. Mark Bailey MP, Minister for Main Roads, Road Safety and Ports and Minister for Energy, Biofuels and Water Supply
- The Hon. Coralee O'Rourke MP, Minister for Disability Services, Minister for Seniors and Minister Assisting the Premier on North Queensland.

13.5 LOCAL GOVERNMENT

13.5.1 ETHERIDGE SHIRE COUNCIL

Powerlink held a teleconference with representatives of Etheridge Shire Council on 14 April 2016 and a representative of Council attended the stakeholder workshop on 21 November 2016. Powerlink also provided initial advice to Etheridge Shire Council Mayor and CEO on 18 November 2016 about the CSR and engagement activities and offered a formal briefing.

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This was followed up with a phone conversation with the Etheridge Shire CEO on 19 November 2016. A project presentation was provided via email to the Mayor and CEO on 22 December 2016, in lieu of a face-to-face briefing. Council is very familiar with the Genex project and have developed a working relationship with the proponent.

Council has approved the development application for the 50MW solar farm proposal on the Kidston tailings? Dam and continue to work with Genex on latter stages of the development.

Etheridge Shire has provided a range of feedback, much of which was included in the DCSR and has therefore contributed to this CSR. Council's feedback from late 2016 is included in the notes from the workshop (Section 13.1). No major issues or concern were raised at this early stage in the process.

13.5.2 CHARTERS TOWERS REGIONAL COUNCIL

Powerlink met with representatives of Charters Towers Regional Council on 28 April 2016 as part of the DCSR. Powerlink provided initial advice to Charters Towers Shire Council Mayor and CEO on 18 November 2016 about the CSR and engagement activities and offered a formal briefing for full Council, which occurred on 13 December 2016. A representative of Council also attended the workshop on 21 November.

Relevant feedback is included within this report and in the notes from the workshop (Section 13.1). No major issues or concern were raised at this early stage in the process.

13.5.3 HINCHINBROOK SHIRE COUNCIL

Powerlink met with representatives of Hinchinbrook Shire Council on 27 April 2016 as part of the DCSR. Powerlink also provided initial advice to Hinchinbrook Shire Council Mayor and CEO on 18 November 2016 about the CSR and engagement activities and offered a formal briefing for full Council, which occurred on 6 December 2016. No major issues or concern were raised at this early stage in the process.

13.6 PEAK BODIES

13.6.1 QUEENSLAND FARMERS FEDERATION

Powerlink met with a representative of the Queensland Farmers Federation (QFF) on 17 November 2016. Powerlink subsequently provided QFF a list of potentially impacted properties for validation against the databases of its constituents and was able to verify that QFF members were not impacted by the study area.

13.6.2 AGFORCE

A representative of AgForce attended the stakeholder workshop on 21 November, providing a host of valuable insights into the study area. AgForce feedback is included in the notes from the workshop (Section 13.1).

13.6.3 QUEENSLAND RESOURCE COUNCIL

Powerlink contacted the Queensland Resource Council (QRC) in late 2016 to introduce the project. QRC advised that they had no feedback at the time of contact.

13.6.4 NQ CONSERVATION COUNCIL

A representative from the NQ Conservation Council attended the stakeholder workshop on 21 November, providing a host of valuable insights into the study area. NQ Conservation Council feedback is included in the notes from the workshop (Section 13.1).

13.6.5 NORTHERN GULF RESOURCE MANAGEMENT GROUP

Powerlink contacted the Northern Gulf Resource Management Group (NGRMG) in late 2016 to introduce the project. NGRMG subsequently advised that they had no feedback.

13.6.6 TOWNSVILLE ENTERPRISE

Powerlink provided project details to Townsville Enterprise on 13 January 2017 and sought further information in relation to the location of Hell's Gate Dam.

13.7 ABORIGINAL PARTIES

Input into this CSR has been sought from each of the relevant Aboriginal Parties (as defined under the *Aboriginal Cultural Heritage Act 2003*) as well as the Department of Aboriginal and Torres Strait Islander Partnerships (DATSIP) Cultural Heritage Unit.

Powerlink met with Townsville based representatives of DATSIP on 15th December 2016 to gain an understanding of any local Aboriginal cultural heritage issues and known constraints. Whilst no specific cultural heritage issues were raised, the importance of meaningful and early engagement with the relevant Aboriginal Parties was stressed along with the importance of operating under an agreement or CHMP with the Aboriginal Parties. No comments were provided to differentiate between study corridor options.

Telephone contact was made with representatives of the Gugu Badhun Aboriginal Corporation, representing the Gugu Badhun native title holders and with Tatampi Puranga Aboriginal Corporation, representing the Ewamian People#2 and Ewamian People#3 native title holders on 15 and 16 December 2016, respectively. Further details of the project were provided by email on 22 December. A subsequent teleconference was held with various members of the Gugu Badhun native title holders on 31 January 2017.

Gugu Badham representatives noted the presence of known Aboriginal cultural heritage sites in the area north of Greenvale and the 'Old Beef Road' but felt these would be unlikely to be an influencing factor the differentiation between corridor options at the current level of assessment. They also noted a general preference for co-location with the existing Ergon Energy easement.

Both Aboriginal Parties, however, stressed the need for detailed cultural heritage assessments once a corridor is determined. This will require early engagement with the parties in order to reach agreement (i.e. a signed CHMP or formal agreement) on assessment methodology and heritage protective measures. Negotiation for such agreement would commence prior to a final alignment decision.

13.8 LANDHOLDER ENGAGEMENT FEEDBACK

Landholders provided input to the CSR through interactions with Powerlink representatives during the period from November 2016 to mid-January 2017. Landholders were provided with a map of their property that

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showed the extent of the study area for the CSR, constructed broadly from study corridor options B and C plus the amendments discussed in Sections 5.1.4 and 5.1.5.

Table 9 presents a summary of the input from landholders to the CSR. The input has been sorted into topic groups. Confidential, personal or private information provided by landholders is not presented in this report.

The matters most frequently raised by landholders were:

- Potential impacts on property operations including mustering activities, access and security
- Identification of constraints to the alignment including existing and proposed infrastructure and topography on their properties and in the adjoining area
- Most landholders considered co-locating with the existing ergon transmission lines as causing the least impact to their properties
- Biosecurity and weed management during construction and maintenance, and the movement of weeds throughout the life cycle of the proposed transmission line
- Line design, including conductor to ground clearance.

Figure 20 – Graph of Major Topics Raised by Landholders

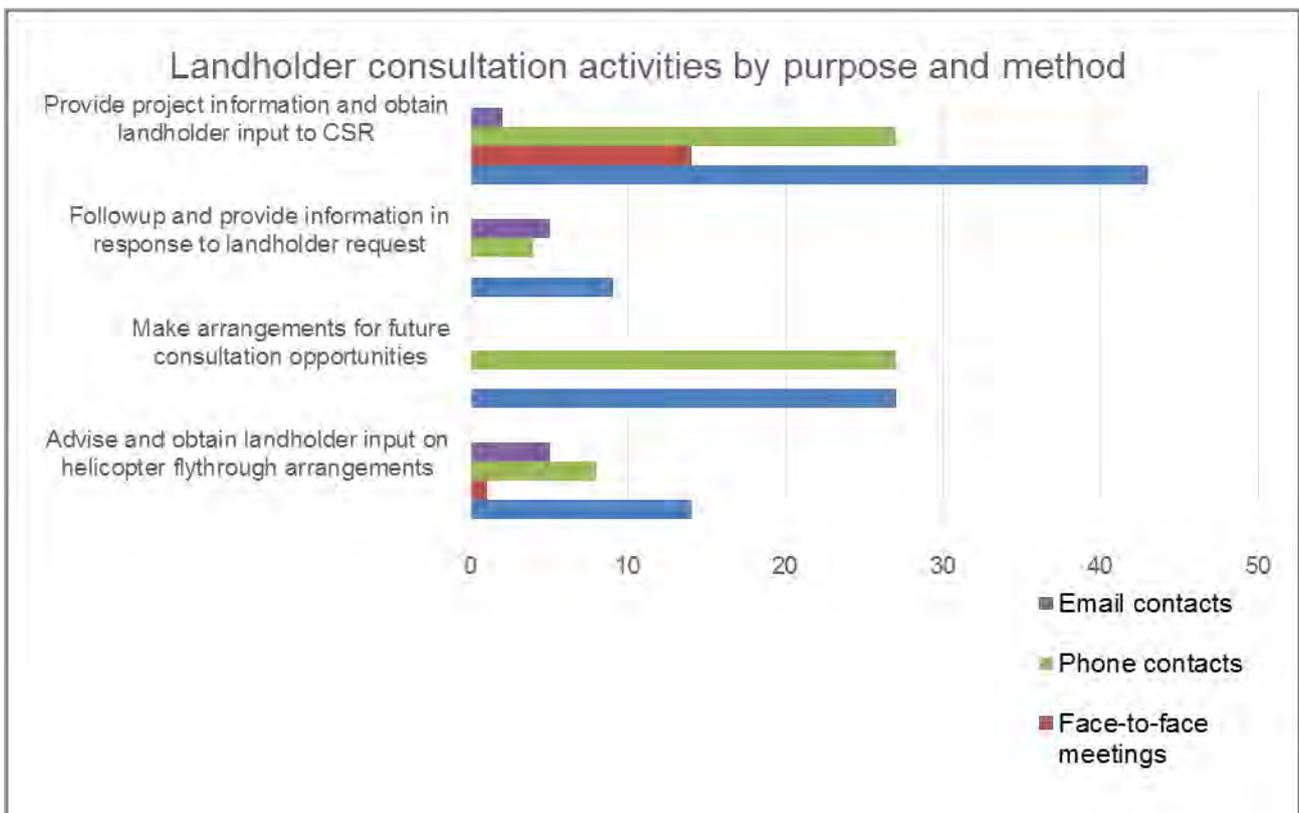


Table 9 – Summary of landholder input to CSR

Topic raised by landholders	Detailed content of topic raised by landholders
Potential impacts on property operations	<p>Landholders identified the potential for impacts on their property operations including:</p> <ul style="list-style-type: none"> • Helicopter work and mustering • Helicopter maintenance of transmission lines • Loss of pasture/grass • Traffic impacts • Gate protocols • Access track maintenance/erosion • Disruption to telephone service • Requirements for working on and traversing registered organic status properties • Potential for landholder owned generation projects • Property value • Biosecurity • Proximity to residences • Electromagnetic fields (EMF) • Ongoing access to maintain the transmission line.
Constraints to the alignment location including existing and planned infrastructure and topography	<p>Landholders identified the locations of existing infrastructure which may be impacted by the transmission line alignment including: dams, buildings, air strips, fences, gates, cattle yards, cattle watering points and associated infrastructure, pipelines, low voltage powerlines, houses, roads, rivers and community areas.</p> <p>Landholders identified the potential impacts on proposed infrastructure including Hell's Gate Dam, and suggested that there could be resumption of properties in the greater Greenvale area by Defence.</p> <p>Landholders identified natural features and topography which may impact the alignment of the proposed structure.</p> <p>Landholders offered up solutions to many of the issues they identified.</p>
Co-location with Ergon transmission lines	<p>Where relevant, most landholders considered co-locating with the existing Ergon transmission lines to have least impact to their operations, by paralleling the Ergon 132kV line all the way until it intersects the 275kV transmission line.</p>
Biosecurity and weed	<p>Landholders stated their concern for the potential transmission of Parthenium weed,</p>

management matters	<p>Grader Grass and other weed seeds during construction and maintenance of the transmission line, and identified the need for wash-down stations.</p> <p>The need for biosecurity procedures and standards during construction and maintenance was identified.</p>
Line design and clearance preferences	<p>Landholders requested that during the design of the transmission line consideration be given to:</p> <ul style="list-style-type: none"> • Line clearance over roads for cattle trucks • Line clearance from air strips • Potential to place the line underground • Heights, spans and tower design.
Importance of communication with landholders	<p>Landholders stated the value of good communication with landholders during planning, construction and maintenance including access to the project decision makers.</p>
Potential impacts on property values	<p>Landholders stated their concern that the proposed transmission line would impact their property value.</p>
Desire for local benefits from the project	<p>Landholders questioned whether the proposed transmission line would provide local benefits including:</p> <ul style="list-style-type: none"> • Improved reliability of their power supply • Access into the electricity grid for their own solar projects • Impacts to their power bills • Opportunities for the location of construction base/camp • Use of local contractors.
Compensation	<p>Landholders raised fair compensation as a concern.</p>
Potential environmental impacts	<p>Extent of vegetation clearing that would be required for the project and erosion control measures.</p>
Potential impacts on visual amenity	<p>The need for screening the substation at Mt Fox.</p>

The vast majority of the topics raised during landholder engagement were issues to be managed in latter impact assessment phases. The top five topics included potential impacts to property operations, existing infrastructure/ topography, biosecurity, co-location and design/ clearance preferences.

The only one of these top five topics that influences the selection of a preferred study corridor from the study area discussed with landholders at the current, broad level of investigation is the desire from landholders that linear impacts are co-located. In this regard, study corridor C is preferred. All study corridor options are likely to have some level of interaction with, and potential impact on the other topics raised.



Powerlink provided a detailed record of discussion to landholders, with a duplicate copy retained by Powerlink for its records. The records of discussion are not included in this CSR because they represent confidential discussions between Powerlink and the landholder.

Powerlink's commitment to landholders was that feedback would be included in the CSR. The CSR also serves as a record of the issues raised, which informs latter impact assessment processes. A copy of the finalised CSR will be made available to all landholders consulted on the project.

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14 STUDY FINDINGS

14.1 PREFERRED STUDY CORRIDOR

Study Corridor option C is the preferred study corridor based on the assessment in this CSR. Study Corridor option C is broadly preferred because it:

- Offers the lowest potential for environmental impact based on systematic and independent ecological assessment
- Offers the highest potential to further reduce overall impacts through refinement of design and route selection, maximising the benefits of co-location.

This CSR and the recommended corridor were developed based on a range of intensive desktop investigations, stakeholder and landholder engagement, along with virtual and aerial reconnaissance. No material constraint or opportunity was revealed during any of these investigations that would alter the preference for study corridor option C.

It is noted that a deviation from the original extent of study corridor option C is required between approximately Greenvale and Conjuboy to manage large escarpments identified during the development of this CSR. No new additional properties are impacted by the amendment (Section 5.1.4) and the preliminary alignment will reflect this deviation (Section 14.2).

14.2 PRELIMINARY ALIGNMENT

This CSR seeks to select both a preferred study corridor from the broader study area and a preliminary alignment to serve as the basis of further investigation during subsequent assessment processes. The preliminary alignment is an area of nominal width that can contain the final 60m easement required for the proposed 275kV transmission line.

The preliminary alignment is depicted in Figure 21 and is mapped at a nominal 120m wide around the centreline of the existing Ergon lines. The width of 120m represents sufficient area to place the proposed 275kV line either north or south of the existing Ergon lines depending on terrain and other local constraints. This width facilitates a notional clearance of 30m between both the centreline of the two transmission lines and the edge of a new easement for the 275kV line and is retained across the entire preliminary alignment for consistency.

The nominal 120m may require variation in specific areas where more than one Ergon line exists (local distribution lines were noted in parts of the Ergon transmission corridors). It may also require local variation where Ergon distribution transformers are present, where existing Ergon lines are heavily stayed or where topography dictates amendment. These areas cannot be defined with any certainty at the current level of investigation but are noted for completeness.

The preliminary alignment within study corridor option C is generally anchored by the existing Ergon transmission lines, which offer opportunity to reduce overall impacts through co-location. There are two areas where alternative alignments are required.

14.2.1 MT FOX

The final substation location at Mt Fox will be identified during latter stages of project development. For the purposes of the preliminary alignment in the CSR, a general area of interest is identified for the substation.

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As noted in Section 12.3 it is likely that a substation with suitable grade and proximity to the existing Powerlink and Ergon network can be procured within the area of interest. The area of interest is depicted in Figure 21.

14.2.2 GREENVALE TO CONJUBOY

There is an area of approximately 62 km between Greenvale and Conjuboy where the landholder engagement and aerial survey process provided an enhanced understanding of the local environment. In this region an alternative alignment is required to avoid terrain not identified in the DCSR, to minimise potential conflicts with the SCONI Phase 1 Project (Section 10.1.2.1) and to maximise colocation with the existing Ergon network. This area is depicted in Figure 4

14.2.2.1 SCONI PHASE 1 PROJECT

Figure 9 shows graphically the minor deviation to avoid conflict with the SCONI Phase 1 Project. The preliminary alignment is currently located between the existing Stenhouse Dam in and the identified resource areas.

As noted in Section 10.1.2.1 direct contact with the tenement holder could not be established during the production of this CSR. There appears from desktop and aerial investigations however to be ample room for the mining use and transmission line to co-exist.

14.2.2.2 WEST OF GREENVALE

As noted in Section 5.1.4 a study area amendment was adopted west of Greenvale to avoid escarpments not identified in the DCSR phase. The preliminary alignment in this area necessarily deviates from study corridor C as identified in the DCSR.

Figure 4 shows the preliminary alignment in this area. It is noted that no new properties were affected by the amendment. It is also noted that this area was not reflected in the third party ecological advice due to late identification of the need for alteration to the study area. Advice from the third party undertaking the ecological assessment is that the amendment would not materially affect the results of the investigation, with MNES and MSES occurring across the study area in a largely homogenous manner. The third party ecological advice reflects this in its Section 1.

The preliminary alignment also departs from study corridor C immediately west of the amended study area discussed above. The departure of approximately 8 km is designed to maximise co-location with the existing network, which was contained in study corridor B from the DCSR for this localise region. The deviation from study corridor C, like the larger deviation west of Greenvale has no effect on the results of this CSR. It is likely instead to reduce overall impacts by maximising co-location opportunities.

Figure 21 – Preliminary Alignment

