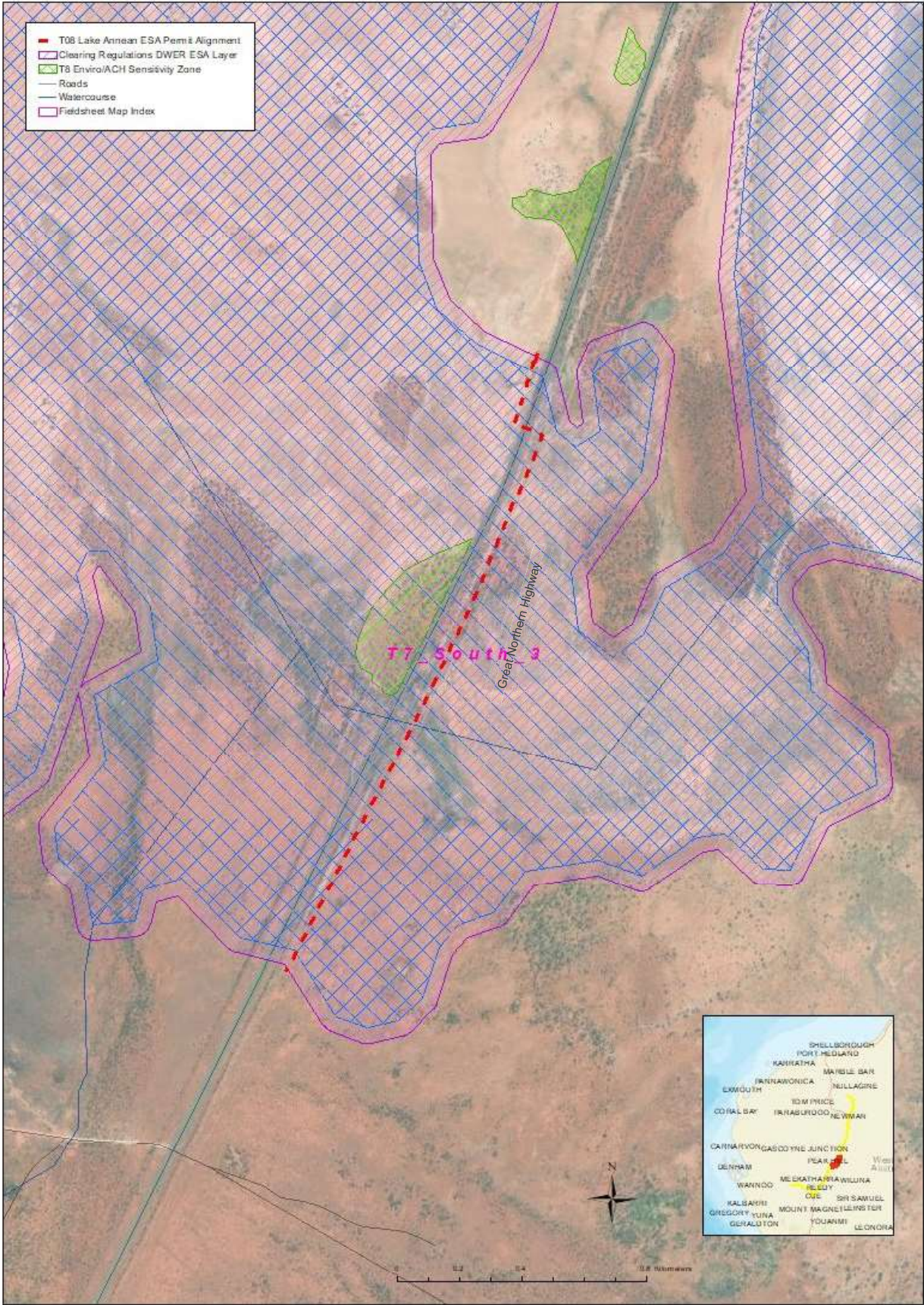


Appendix 1: Overview map of proposed fibre optic cable alignment through road reserve of Lake Anneen ESA



Appendix 2: Representative site photographs



Photo 1: Typical salt scald and scattered vegetation in the roadside of Lake Anneen ESA



Photo 2: Existing disturbed area through road reserve which is to be followed where possible



Photo 3: Lake Anneen, beyond the disturbed road reserve and fence line (foreground)

Appendix 3: Project background and work methodology

1. Project background

Vocus Fibre Pty Ltd (Vocus) are planning the installation of a fibre optic cable in central and northern Western Australia, which is to be installed starting in the south of the project area from a location near Beringarra-Pindar Road, East Murchison, and runs for the most-part along the Great Northern Highway via Cue, Meekatharra, Newman and then terminates near the Fortescue Dave Forrest Airport, near Nullagine.

In addition to long runs of underground cable installations, there will also be controlled environment vault (CEV) installations at set distances along the alignment, generally located at each T-Section junction. The CEV structures will require an access track from the highway to be constructed to the CEV (10 metre wide impact zone with a length generally in the vicinity of 30 to 50 metres) and the CEV facility including the perimeter fence will be dimensions of approximately 20 by 20 metres (0.002 hectares), where secure buildings and solar panels will be situated, all of which will be considered impacted and lost as a result of the development. CEVs will not impact waterways or ESA areas.

2. Description of works methodology

Installation techniques for the fibre optic cable will involve a combination of ripping, trenching and under boring. For the ripping technique, a D-10 bulldozer with a blade width of 5 metres will travel the alignment with a ripping tine on the rear of the machine that rips a trench. A cable installation dozer then follows along the rip line and installs the cable as the machine travels. A dozer with a grid roller follows next and reinstates the rip line by filling and compacting the trench back to the original ground level. This is the main method for the installation, and the technique will involve an

impact/loss zone of a maximum of 5 metres wide. All other associated vehicles and machinery (i.e. a small backhoe for more technical rehabilitation works) will remain within the 5 metre wide dozer footprint, ensuring no additional areas are impacted along the route and while rehabilitating the rip line.

Under boring will take place where the cable must go under roads and other assets encountered along the route, as well as more significant (high flow/deeper channel) waterways and high value environmental and/or culturally sensitive areas/assets. Under boring involves installation of a bore pit at either end of the intended bore shot, then specialised machinery will bore a connection underground at an appropriate depth to avoid the assets on the route alignment. In instances where the bore pits are in native vegetation, the impact/loss area for the bore pads and associated machinery is an area of approximately 10 metres by 5 metres. The maximum under bore shot length is 250 metres in each direction, so if the site allows a central bore to be situated on the alignment, an under bore installation can span a distance of 500 metres. However, in many cases a central bore will not be possible so the maximum shot length will generally be 250 metres. Where under boring installation methodology is adopted, the bore entry and exit points will be set back 30m minimum from the formed banks of a waterway. The conduit will be installed at a minimum of 1200m depth below the bed of the waterway. Refer to figure 1 below.

3. Environmental management credentials of Vocus Pty Ltd

Vocus has been responsible for the construction and deployment of fibre networks throughout Australia and internationally, with the successful completion of Projects such as the following:

- Coral Sea Cable System ([Vocus completes Coral Sea Cable System for the Australian... | Vocus](#));
- Regional Backbone Blackspots Program ([Our Network and Expertise - The Regional Blackspots Program | Vocus](#));
- Australia Singapore Cable ([Vocus ASC: 3 years on and more important than ever](#));
- North West Cable System ([Our Network and Expertise - North West Cable System | Vocus](#))
- Tiwi Islands Fibre Optic Cable Link ([Vocus re-signs as major sponsor of Tiwi Bombers for two years](#))
- National Fibre Program ([Microsoft Word - Leighton Telecommunications Technical Paper.doc \(acaa.net.au\)](#))

These large complex projects have had to account for a vast array of environmental factors such as the following:

- Environmental assessments (by GHD and Jacobs);
- Dry-dock cleaning of vessels;
- Permitting and referrals;
- Cetacean and marine fauna observation;
- Turtle nesting season;
- Aquatic reserves;
- Coastal reefs; and
- Horizontal direction drilling into and out of the sea bed.

Through the delivery of previous successful projects, Vocus and its subsidiaries have demonstrated their high regard to protect environmental values and capabilities when working in complex and sensitive environmental settings.

Vocus have engaged Red-Gum Environmental Consulting Pty Ltd to complete environmental assessments and provide recommendations to protect/mitigate environmental impact from Project Horizon. The key staff working on this project are Damian Wall and Stuart Mendham. Their credentials are outlined below in Table 2. Some of the relevant work experience and projects that Red_Gum have delivered are as follows:

- Since 2005, Red-Gum has conducted Roadside Conservation Value assessments which incorporated GIS mapping of roadside weed infestations in the Indigo, Wangaratta, Greater Shepparton, Towong and Wodonga Shires of Victoria.
- In 2009, Red-Gum delivered the Indigo Shire Council & Rural City of Wangaratta Roadside Conservation Values and Weeds Mapping Project, which saw the field assessment and mapping of over 3,500 km of existing mapped high (and connecting medium) conservation value roadsides and recorded abundance data for regionally controlled and prohibited weeds (weeds declared noxious under legislation).
- More recently, Red-Gum completed a similar assessment for Greater Shepparton City Council and surveyed over 1,000 km for habitat values, weeds and point of interest data (e.g. Scarred Trees, rubbish dumping sites, feral animal harbor etc).
- Red-Gum has also assessed the Wangaratta to Bright Rail Trail, all Council managed roadsides in City of Wodonga Shire (outside of urban areas) on two occasions (2010 & 2014) and all roadsides in Towong Shire on behalf of the Victorian Blackberry Taskforce – funded by VicRoads.
- In WA & the NT, Red-Gum was responsible for the assessment of over 1,200 kilometres of a land-bourne Seismic Program targeting deep shale gas resources in the Beetaloo (NT), Canning Basin (WA) and western Pilbrara. The role required management and coordination of Native Title negotiations, Aboriginal Cultural Heritage clearance and environmental assessment of all 1,200 kms plus all ancillary sites, laydowns and deep drill pads.

Table 2: Credentials of the key Red-Gum Environmental Consulting staff

Assessor name	Contact details	Relevant experience
Damian Wall Bachelor of Applied Science (Parks, Recreation & Heritage), Master Environmental Management & Restoration, Graduate Certificate Cultural Heritage Management.	E: damian.wall@red-gum.com.au P: 0402 344 574	Damian is Managing Director at Red-Gum Environmental Consulting Pty Ltd. Damian has authored 107 Cultural Heritage Due Diligence Assessments, 83 Cultural Heritage Management Plans across 4 states including WA and the NT. Damian has personally negotiated Native Title Agreements for large Petroleum Exploration companies for 6 years in QLD, NT, NSW & WA and is an accredited Biodiversity and Native Vegetation assessor in both NSW and VIC. Damian has 20 years in the environmental industry and has conducted field work throughout the NT, WA and eastern states to author 96 Ecological Assessments (VIC), 49 Assessment of Significance (NSW) reports and 21 Review of Environmental Factor (NSW) documents. Damian is also a Geographic Information Systems (GIS) specialist proficient in all aspects of field data capture and presentation via ArcGIS.

Assessor name	Contact details	Relevant experience
Stuart Mendham Bachelor of Applied Science (Parks, Recreation & Heritage) (Hons).	E: stuart.mendham@red-gum.com.au P: 0482 175 831	Stuart is a field botanist with over 20 years' experience in vegetation assessment, management and research, with an extensive knowledge of the vegetation of south-eastern Australia. Stuart has been a project manager on a number of large ecological assessments and has particular expertise in providing tailored and industry-specific recommendations to avoid and minimise the environmental impacts of major projects. Stuart also has a background in state government environmental management, fire management, pest and weed management and biosecurity portfolios, which affords Stuart the ability to make recommendations to address issues of this nature, as they relate to development and major infrastructure projects.

4. Exemption for vegetation impacts

Statutory approvals are required for the ESA component of the T-08 Section. Despite all works being of low impact and are being completed under Schedule 3 powers (Telecommunications Carrier Powers) and all works will be within the Great Northern Highway road reserve, ESAs are not included in this exemption. There is therefore a permit requirement to clear vegetation associated with the works through the Lake Anneen ESA area.

T-08 Section has undergone an environmental assessment which has been conducted by Red-Gum Environmental Consulting Pty Ltd. As a result of the assessment, efforts have been made in the final designs to avoid and minimise impacts to native vegetation, waterways, ACH and environmentally sensitive areas, including:

- Realignments from the original cable route to avoid significant features on the original route.
- Under bore of high velocity waterways or waterways with high environmental or ACH values.
- Recommendations to minimise the impact footprint through sensitive areas.
- Recommendation to keep dozer blade lifted through sensitive areas and all other areas unless necessary to push large objects off the route.
- For high-value areas, recommendation of micro-siting of route alignment to avoid site-level features such as steep banks, ghost gums, water pools, with the aim of choosing the route with the lowest values and/or the highest existing disturbance levels.
- Recommendation to have an ecologist or wildlife handler on site when ripping through sensitive areas (such as sand dunes) and have systems in place to rescue, rehabilitate and return any injured wildlife to their original location.

5. Environmental controls during construction

Key environmental controls during the installation phase are detailed below.

- Limit access to essential vehicles and machinery.
- Minimize vegetation clearing and excavation of banks.

- Employ micro-siting for waterways wider than 250m with contiguous vegetation and significant landscape features.
- Under boring will be necessary in areas with significant water flow due to recent rain events.
- Pre-ripping is essential to ensure no obstructions to the laying dozer.
- Restore natural soil surface profiles by reinstating the rip line with a clean-up dozer and compacting using a grid roller.
- Sediment control is generally not required in flat T-sections with no occurring rain events.
- Ripped and reinstated waterways with no steep slopes will have vegetation and smaller rocks placed back over the rip line.
- Refer to the section on Restoration and Rehabilitation below for further details.

5.1 No-go zones

- Identify and map out all no-go zones and ensure they are clearly marked on site plans and communicated to all staff and contractors.
- Ensure that all staff and contractors are trained on the location and boundaries of no-go zones.
- Implement physical barriers or signage to prevent access to no-go zones.
- Regularly inspect no-go zones to ensure they are being properly enforced and to identify any potential hazards that may have developed.
- Document all incidents of unauthorised access to no-go zones and investigate to determine the cause and prevent future occurrences.

5.2 Erosion and sedimentation

- Note: sediment control won't generally be necessary in T-sections where the land is flat, and there is no occurring or forecast rain events. Ripped and reinstated waterways won't have steep slopes of any significance that will require sediment controls, other than removed vegetation and/or smaller rocks being placed back over the rip line.
- If waterways are running a waterway will not be ripped and reinstated but instead be bored.
- When bores are greater than 250m, bore entry and exit points will be positioned in locations where there is no flow.

5.3 Pollution and spills

- Refuelling locations shall be planned to minimise any environmental impacts of spills. Refuelling to take place outside of sensitive areas such as PEC, or water catchment areas etc.
- Workers shall conduct appropriate training in fuel and chemical handling, spill response pertaining to works undertaken.
- Inductions to include appropriate fuel locations and chemical storage requirements for the project.
- Appropriate spill response equipment to be available for the duration of works.
- SDS or equivalent should be obtained for any chemicals and available onsite for all chemicals stored and handled.
- Inductions or toolbox meetings should include regular information on spill response processes, to ensure that work crews understand procedures and reporting requirements.
- Appropriate spill kits will be available and maintained for the duration of works.
- Spill kits will be positioned sufficiently close and clearly marked to active construction activities to enable effective deployment in the event of a fuel or chemical spill.
- If a fuel or chemical spill occurs outside a bunded area. Appropriate spill response must be followed to control, isolate, and remediate the spill.
- An inventory of spill response kits, their contents and location should be prepared and checked at least every six months.

5.4 Air quality & Dust Suppression

Due to the nature of construction activities involving earthworks, dust emissions, plant and equipment exhaust emissions may result. Emissions that may have an adverse effect on air quality include:

- Vehicle and machinery exhaust emissions;
- Emissions from generators supporting on-site works, site camps or offices;
- Dust blown off exposed areas during construction works; and dust emissions from vehicle and equipment movement.
- Air Quality and dust suppression will be adequately identified and controlled by completing the Project Pre-Commencement HSE Assessment to ensure that:
- All vehicles and machinery be properly serviced and maintained to ensure that they do not cause undue air pollution.
- Dust will be controlled on site, if necessary, by using acceptable dust suppression techniques, which may include the dampening down of the site, minimising the disturbance to ground cover and retaining, where possible, existing trees and shrubs to act as windbreaks.
- All vehicles transporting fill to and from a construction site, shall be covered to prevent the emission of dust and other particles; and
- Any long-term stockpiles will be placed on a flat, grassed area where possible and covered to prevent dust generation.

5.5 Noise & Vibration

Construction noise will generally be within normal working hours and will be controlled by the site-specific specifications. Those likely to be affected by excessive noise (e.g., generator noise. Excavation machinery etc.) will be notified prior to any work commencing. Noise will be adequately managed and reduced on Vocus worksites by implementing the following techniques:

Objectives:

- To minimise disturbance on nearby residents and other land users, biodiversity and sensitive locations from noise and dust. Sensitive locations may include childcare centres, schools, hospitals, health centres, businesses and or wildlife and habitats.
- To minimise vibration impacts on nearby buildings, particularly heritage buildings; and
- To minimise greenhouse gas emissions.

Controls:

- Don't leave your vehicle idling.
- Drive slowly on dirt roads to keep the dust down.
- Check and maintain your vehicle, plant and equipment regularly, paying particular attention to exhaust emissions,

Construction plant & equipment (noise, dust)

- Equipment must be fitted with appropriate noise abatement devices (e.g. mufflers, silencers and screens) and shall be maintained in good working order.
- Limit noisy works to within standard hours in accordance with local government bylaws, unless otherwise specified in approvals. Standard hours within residential areas are generally 7am – 7pm Monday to Friday and 8am to 3pm on Saturday. Works outside the prescribed times generally needs an out of hours permit from the local government and/or notice to occupants in close proximity to the affected area.
- Limit the use of reversing alarms or use 'low tone' alarms where practicable.

During excavation activities:

- Minimise dust generating activities. Consider using water if dust is likely to impact on surrounding properties and areas.
- Development approvals, or permits, may include requirements for dust suppression.
- Secure your load to prevent loss of material i.e. dust and spills.
- Remove debris for offsite disposal and reinstate site as soon as possible.
- Ensure that vehicles leaving the site are free of mud and other debris.

Avoiding risk of non-compliance with permit conditions (noise and vibration):

- Ensure all required permits have been obtained to undertake construction works outside standard hours prior to commencing onsite.
- Construction activities to comply with all relevant regulatory requirements and permit conditions and guidelines pertaining to noise control.
- Landowners and local residents shall receive adequate notice of all noisy activities associated with the project, prior to their commencement.
- Where vibration is likely to be an issue, dilapidation surveys shall be undertaken to record pre-construction condition of buildings in proximity to work areas that might be affected.

6. Rehabilitation techniques

The process for rehabilitating the dozer rip line is as follows:

- The clean-up dozer reinstates the rip-line and tows a grid roller through to compact the rip line.
- Any vegetation that may have been removed is pulled back across the rip line.
- Any large rocks that are brought to the surface will be maintained on site but off the rip line.
- Smaller rocks will be left on the rip line to mitigate possible erosion if/when there is water flow