GANNAWARRA SHIRE COUNCIL

KERANG LAKES ECO-TRAIL FEASIBILITY STUDY

GANNAWARRA Shire Council

TREDWELL

Acknowledgments

Tredwell would like to thank the following people and/or organisations for their contribution to the development of the Gannawarra Shire Council Kerang Lakes Eco-Trail Feasibility Study:

- Paul Fernee, Acting Director Community Wellbeing, Gannawarra Shire Council
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- Kerang Landcare
- David Thompson

Revision	Date	Details
R0	25/01/2023	Final Kerang Lakes Eco-Trail Feasibility Study

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Executive Summary

The Kerang Lakes Eco-Trail is a proposed twenty-one kilometre recreational walking and cycling trail connecting Kerang to Little Lake Charm in Victoria's north west. This Feasibility Study provides analysis into existing land-uses and constraints, potential routes, surface finishes, construction costs, on-going maintenance costs, economic impact, and funding opportunities for the Kerang Lakes Eco-Trail.

Detailed analysis of Gannawarra's community identified that in 2021 the resident population was 10,683. There were 2,842 families in Gannawarra in 2021 with 33.3% of these being families with an average of 1.9 children per family.

The Murray region has grown at a higher rate than the rest of regional Victoria, regional NSW, and the Australian average in the number of nights spent by domestic overnight travelers, international overnight travelers, and the number of domestic day trips taken to the region. This growth in tourism coupled with recreational walking and cycling being ranked highly in AusPlay's 2021 Sport Participation for Victorian adults highlights the opportunity the Kerang Lakes Eco-Trail has to cater to visitors and the local community.

On site GPS mapping, consultation with key local stakeholders, detailed desktop mapping of land-uses, flood zones and constraints, and a review of current best-practice trail guidelines and trail standards were utilised to develop an alignment for the trail.

The concept design for the trail begins in Kerang Regional Park and follows the Loddon River and Washpen Creek to Reedy Lake, Middle Lake and Third Lake. From Third Lake the Trail splits into four options which provide varying challenges and opportunities to reach the Lake Charm Foreshore and Lake Charm Foreshore Caravan Park where a second trail head will be located.

Option One follows the Little Lake Charm Wildlife Reserve's eastern boundary north and onto an existing unused road reserve past the Stevenson Swamp Wildlife Reserve to Lake Charm and Lake Charm Foreshore Caravan Park.

Option Two avoids the Stevenson Swamp Wildlife Reserve by cutting north through private property. The trail then links on to the same alignment as Option One where it travels along the Lake Charm banks to the Lake Charm Foreshore Caravan Park.

Option Three follows the eastern bank of Little Lake charm on Crown Land and a disused road reserve to the Lake Charm East Road where it follows the same alignment as Option One and Two to the Lake Charm Foreshore Caravan Park.

Option Four follows the No. 7 Lakes Channels southern boundary until it intersects with Murray Valleys Highway. The trail then travels through the wide road reserve along the eastern side of Murray Valleys Highway and on to Lake Charm E Road where it then connects up to the Lake Charm Foreshore Caravan Park.

All required supporting infrastructure has been located along the trail, including trail head, waymarking and interpretive signage, rest areas, fencing, road crossing points, bridges, and art installations.

The concept design has been proposed to be constructed of sections of both concrete and asphalt surfaces to reduce the impacts of flooding to the trail and reduce on-going maintenance costs. Flood prone areas have been designed to be of a concrete finish and areas outside of the flood prone areas to be of an asphalt finish.

Rider Levett Bucknall Quantity Surveyors have provided in-depth costings of the concept plan for each option. Additional costings have also been developed which provide costs for the trail to be constructed entirely of asphalt, compacted rubble, and treated compacted rubble to provide a comparison of construction costs. Estimated on-going maintenance costs have been provided to provide a comparison of required repairs and maintenance costs for each surface finish once constructed. The below costs are based off of the concept design plans with concrete and asphalt surface finishes only:

- Option One: $14,806,890.40
- Option Two: $13,664,615.40
- Option Three: $12,674,451.50
- Option Four: $13,123,185.00

A ten-year REMPLAN Economy Report was developed for each option based off of the concept design plans, these detail the total output, employment (year one), wages, salaries, economic expansion, flow-on supply chain, and the total value-added over year one to ten.

01 Introduction

Project Background and Scope

The Kerang Lakes Eco-Trail Feasibility Study has been developed to provide the possible outcomes of developing a recreational walking and cycling trail from the Kerang Township to Lake Charm. The trail head will be located at the Pedestrian Swing Bridge in the Kerang Regional Park and follow the Loddon River and Washpen Creek to Reedy Lake, Middle Lake and Third Lake. From Third Lake, the Trail follows the No.7 Lakes Channel to Little Lake Charm Wildlife Reserve where a number of route options have been developed to ensure that the trail can successfully reach Lake Charm and the Lake Charm Foreshore Caravan Park where a second trail head will be located.

The trail will connect to the Murray River Adventure Trail and will showcase Gannawarra's unique birdlife, cultural heritage and wetlands with the aim of highlighting Gannawarra as Victoria's nature-based tourism destination.

This Feasibility Study builds a community profile for the Gannawarra region, researches current walking and cycling trends and participation numbers, outlines the benefits brought on through walking and cycling, undertakes a literature review of relevant and supporting background documents, and explores the return on investment gained through trail projects such as this.

Best-practice trail development guidelines and an eight stage trail planning process has also been identified. The Feasibility Study uses all the above information alongside on-ground site appraisals, desktop mapping analysis and key stakeholder consultation to develop a concept design for the trail.

The concept design has been costed by Rider Levett Bucknall which provides an overall cost for the trail and its various options. A staging plan has been developed to ensure a sustainable approach to the implementation of the concept plan and funding opportunities have been identified to aid in the construction of the trail which will become a large drawcard to the area and provide a great asset for locals and visitors alike.

Project Methodology

The projects five stage methodology is outlined below, this was developed to ensure that the project incorporates relevant consultation, research and planning processes whilst meeting the project brief requirements.

The five stages are as follows:

Stage 1: Project Start-up and Background Research

Stage 2: Site Appraisal and Consultation

Stage 3: Schematic Design

Stage 4: Draft Feasibility Study

Stage 5: Final Feasibility Study

VISION STATEMENT

"A sustainable and community driven trail that connects Kerang to Lake Charm, providing social, health, economic and environmental benefits whilst showcasing Gannawarra's unique natural flora, fauna and landscapes".

Overview of Gannawarra Shire Council

Gannawarra Shire Council (GSC) covers an area of 3,735 square kilometres and has a population of 10,683 people (ABS 2021). Located in Victoria's north-west on the Murray River, the Shire is just 1.25 hours from Bendigo, 40 minutes from Swan Hill and 3 hours from Melbourne. It contains two large townships including Kerang and Cohuna and several smaller settlements including Koondrook, Quambatook, Leitchville, Lalbert, Lake Charm, Murrabit and Mystic Park (Kangaroo Lake).

The GSC enjoys a diverse economy with representation across all sectors including dairy, cropping, livestock, retail trade, manufacturing, and government services such as healthcare and education. Emerging economic opportunities include nature-based tourism and renewable energy. The GSC is a place of strong community pride where its communities motivate and inspire each other to make the region a great place to live, visit and do business.

Currently there is an extensive network of footpaths and tracks within the GSC that are maintained by Council and community groups. Many of these formalised trails are currently utilised heavily by locals residents and attract tourists to the GSC from neighbouring regions due to their unique flora and fauna and experiences offered. There is however a key missing link which will provide an important green transport connection between Kerang and Lake Charm which has the potential to provide excellent native based tourism opportunities and the potential to dramatically increase visitation and expenditure within the region.

Gannawarra Shire Context Map

Community Profile

An assessment of GSC's community profile and make-up has been undertaken which can aid in developing suitable future directions for active trail planning.

A series of key community statistics have been outlined below that drive decision making processes of the Eco-Trail Feasibility Study. These include items such as age structure, families with children, and household structure.

All data has been sourced from the Australian Bureau of Statistics Census (2021).

Resident Population

- The Gannawarra Shire Resident Population for 2021 was 10,683
- Males make up 49.7% of the population whilst females make up 50.3% of the population
- 2.5% of Gannawarra's population are Aboriginal and/or Torres Strait Islander compared to 1.0% for greater Victoria
- The median age of Gannawarra residents is 51 years old
- There are 2,842 families in Gannawarra. 33.3% of families have children with an average of 1.9 children per family
- There are 5,317 dwellings in Gannawarra with an average of 2.2 people and 2.1 vehicles per household
- 22.9% of Gannawarra's population completed volunteer work in the last 12 months

Tourism and Visitor Economy

The tourism sector in GSC is changing and is being driven by a strengthening regional brand and the development of tourism products that are strongly aligned to nature-based tourism and the regional tourism strategies.

Key Murray Region tourism results for the year ending December 2018 were:

- 6.1 million visitors - up 6.4% on year ending 2017
- 10.0 million nights - up 12.2% on year ending 2017
- $1.8 billion spent by visitors to the region - up 16.7% on year ending 2017

The Murray region has grown at a higher rate than the rest of regional Victoria, regional NSW and the Australian average in the following key areas:

- The number of nights spent in the Murray region by Domestic Overnight Travelers grew by +8.8%. Compared to Regional Victoria (+2.3%) and Regional NSW (+6.1%) and all of Australia (+7.2%)
- The number of nights spent in the Murray region by International Overnight Travelers grew by +34.5%. Compared to Regional Victoria (+2.1%) and Regional NSW (+1.4%) and all of Australia (+3.8%)
- The number of Domestic Day trips taken to the Murray region grew by +9.1%. Compared to Regional Victoria (+6.0%) and Regional NSW (+4.5%) and all of Australia (+7.4%)

Literature Review

An important component in the development of the Feasibility Study is the review of a wide range of background and strategic documents and policy positions to ensure that the Eco-Trail aligns with wider objectives across the state, region and local areas.

The following documents have been reviewed for consideration in the development of the Kerang Lakes Eco-Trail Feasibility Study with key findings being documented from each:

Economic Development Strategy (2019)

- Economic development is a key priority for the Gannawarra Shire
- The Gannawarra Shire has significant natural features which provide a strong foundation for nature-based tourism
- Council recognises tourism as an opportunity to attract new residents, assist to diversify the local economy and improve livability of existing residents

Sport and Recreation Strategy (2019)

- Recognises nature-based and passive recreation opportunities
- Importance of structured sport to the social fabric of communities
- Opportunities for infrastructure improvements and developments to facilities
- Improvements to accessibility to natural environment e.g. along waterways, lakes and bushland
- Improving opportunities for participation is a priority

Council Plan 2021-25

- Seek funding to improve and develop infrastructure that encourages physical and leisure activities
- Develop a framework to guide Council decision making and support community access to sport and recreation funding opportunities
- Increase and support female participation in sport across the Shire
- Advocate for free access to sport and recreation opportunities for disadvantaged children
- Develop a plan to make playgrounds across the shire all-abilities accessible
- Increase support for people with a disability to access physical and leisure activities

Tracks & Trails Strategy Plan (2005)

- Identifies the existing network of tracks and trails within the Shire
- Outlines the opportunities for strategic development of new networks
- Provides advice for their ongoing management and promotion
- The strategy identifies 40 trail opportunities
- Covers trails for a range of recreational users, primarily walking, jogging, road cycling and mountain biking, but also horse riding, canoeing and kayaking
- Upgrading signage to the trails and along the trails to allow visitors easier access of the trail network is also considered

Gannawarra Strategic Tourism Plan (2015)

- Nature based tourism experiences across the many waterways and forests
- Main attractions include fishing, camping, passive recreation and water sports
- Emerging opportunities in adventure tourism with mountain biking, canoeing and orienteering
- The Murray River, Gunbower Forest and Kerang lakes are the key environmental assets
- Target market of the 18 – 45 age group that has a young family, is environmentally aware, enjoys quality food and wine and participates in outdoor recreation

Murray River Adventure Trail Feasibility Study

- Detailed route planning and designs, including relevant technical assessments such as cultural heritage management and native vegetation
- Design, costings and implementation plan
- Consultation with a large group of stakeholders including three Local Government Areas and Regional Partnerships, and Traditional Owner Groups

- Detailed business case and investment prospectus
- Investment Lifecycle guidelines
- Associated economic and visitor impacts

Kerang-Koondrook Rail Trail Feasibility Study (2014)

- Historical significance to the region and offers a number of opportunities for interpretive information
- Two key target audiences, specifically residents and tourists, for use as a recreational trail for walking, cycling and connecting townships
- Included in the Murray River Adventure Trail plan

Bushwalking Victoria Strategic Plan (2020)

- Promote bushwalking for all ages as part of a healthy lifestyle
- Actively encourage more people to bush-walk by providing information on safety, responsible bushwalking and where to walk
- Contribute expertise for community benefit
- Proactively influence decisions that impact on bushwalking and bushwalkers in Victoria
- Support the development of appropriate world class bushwalking experiences and facilities in Victoria

Victorian Trails Strategy (2014-2024)

- A strategic framework for investment into trails that will generate increased economic and social benefit
- The tools to support stakeholders plan, develop, maintain, promote and market trails,
- Trail users with high quality information on trails via a central website (and associated online tools) to both plan and book their trip
- Support to tourism and/or retail businesses create better trail experiences
- Effective marketing of trails to increase awareness and visitation

Victorian Cycling Strategy (2018-2028)

- Improve awareness and acceptance of cycling for transport
- Increase participation of underrepresented groups
- Support cycling to school
- Plan for emerging technologies
- Support for recreational cycling

Demand and Trends

Understanding the rates of participation in walking and cycling related activities and the trends which are likely to influence these rates allows for the development of a forward-thinking Feasibility Study which can effectively plan for the future. A series of indicators and trends are outlined here to help identify potential implications for walking and cycling planning in the GSC.

Victorian Participation Rates

The latest release of AusPlay Participation Data for Victoria outlines that walking (recreational) is the most popular sport/physical activity among Victorian adults, with an estimated 3,023,000 people (53.6% of the population) participating at least once between January 2021 and December 2021.

Cycling (17.8%) and bush walking (8.1%) also featured among the 10 most popular sports/ physical activities.

The following table displays this data with the corresponding participation rates for Victorian adults.

AusPlay Sport Participation Table, Top 10 Adult Activities, 2021

Rank	Activity	VIC Adult Participation Rate	Estimate ('000)
1	Walking (Recreational)	53.6%	3,023.0
2	Fitness/Gym	37.1%	2,091.7
3	Athletics, track and field (includes jogging and running)	22.7%	1,280.9
4	Cycling	17.8%	1,001.8
5	Swimming	14.4%	813.7
6	Bush walking	8.1%	456.5
7	Yoga	7.9%	445.2
8	Tennis	6.0%	340.8
9	Basketball	5.9%	330.3
10	Pilates	5.6%	316.3

The AusPlay Study for Victoria (2021) also shows the participation frequency of children in sport and recreation activities.

The following table displays this data with the corresponding participation rates for Victorian children.

AusPlay Sport and Recreation Participation Table, Children Weekly Frequency of Participation in Sport, 2021

Frequency	VIC Children Participation Rate	Estimate ('000)
1+ Per Week	35.6%	456.3
2+ Per Week	19.7%	252.7
3+ Per Week	11.8%	151.3

Kerang Parkrun. Image: gannawarratimes.com.au

Key Trends and Implications

Indicator	Implication on trail planning
High rates of physical inactivity & obesity Gannawarra has high rates of obesity, physical inactivity, smoking & alcohol consumption, and high incidence of hospitalisation due to diabetes, coronary heart disease & chronic obstructive pulmonary disease.	There is an increasing need to provide accessible and affordable physical activity opportunities across the LGA to encourage regular exercise and healthy lifestyle habits. Trails can contribute to health outcomes through providing both active recreational opportunities & active transport routes.
Evolving tourism trends and target markets Gannawarra Strategic Tourism Plan (2015), encourages the region to extend its visitor experiences in the areas of nature-based tourism experiences across the many waterways and forests.	Residents and businesses in the region can benefit from income generated from trail-related tourism. Higher quality and quantity of trails & associated infrastructure can support these opportunities. Provision and promotion of trail networks and events will attract more visitors and encourage travelers to stay in the area for longer.
Community leadership & volunteerism Analysis of the voluntary work performed by the population in Gannawarra Shire in 2016 compared to Regional VIC shows that there was a higher proportion of people who volunteered for an organisation or group. Overall, 31.3% of the population reported performing voluntary work, compared with 24.3% for Regional VIC.	Trail projects are often dependent on community leadership & volunteer efforts which are invaluable resources. It is imperative that volunteers are effectively supported, recognised & valued enabling them to continue to contribute to the trails network.
Recent population growth & change The population estimate for Gannawarra Shire as of the 30th of June 2021 is 10,438. Since the previous year, the population has grown by 0.37%. Population growth in Regional VIC was 1.02%.	It is essential that the trails network can support the experienced population growth and demand for such facilities. Participation trends and preferences vary across age groups and life stages, particularly among younger and older populations. It is important that recreation opportunities are relevant to the population and target user-groups
Projected population growth According to Victorian in Future (2016) between 2016 and 2028 Gannawarra shire is expected to have an average annual population growth of 38.	It is important that planning initiatives are long-sighted and will support the region to thrive with larger and denser populations. For example, the preservation of natural areas and trail corridors now will provide opportunities for future populations.
Cultural diversity The shire is committed to reducing barriers for groups most at risk of being excluded from the community. These people include those with disability, who are culturally and linguistically diverse (CALD), who are Indigenous, who identify as LGBTIQ, young people, older people and community members facing socioeconomic disadvantage.	It is important that opportunities offered across the region cater for people from different cultural backgrounds to ensure that everybody can enjoy trail-based activities, and that these experiences are welcoming to all. For example, Indigenous people are more likely to engage in trail activities on trails which and acknowledge the region's cultural significance, and new arrivals to Australia are likely to require high levels of information relating to safety requirements in Australia's natural areas.
Levels of disadvantage Generally, people in lower socioeconomic groups are at greater risk of poor health, have higher rates of illness, disability and death, and live shorter lives than people from higher socioeconomic groups. Some groups in Australian society are more vulnerable to disadvantage and/or poverty than others.	Trails provide free physical activity and recreation opportunities to the community, encourage community involvement and participation in physical activity and encourage connections with nature. It is important that trails are promoted as a free physical activity and are accessible to people across the region regardless of their level of socio-economic disadvantage.

Benefits of Walking and Cycling

Recreational walking and cycling offer a diverse range of benefits to communities. Some examples of how the Kerang Lakes Eco-Trail will benefit the community have been provided below.

Health

Improved physical and mental well-being.

Example: The Eco-Trail will offer residents and visitors the opportunity to engage in physical activity by walking or cycling between the two communities or lakes and encourage people to be amongst nature which is proven to reduce stress and improve mental well-being.

Transport

Practical transportation corridors.

Example: The Eco-Trail will provide a key active transport link between Kerang and Lake Charm, which will allow residents the opportunity to utilise green transport (cycling) to travel between the towns for work or recreation purposes.

Conservation

Preservation of natural areas.

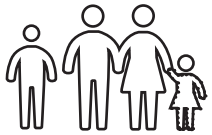
Example: The development of trails within the Kerang regional park, with the help of local landcare groups has provided the opportunity for re-vegetation and conservation of local flora and fauna. These trails provide an opportunity for appreciation of the natural area while having minimal environmental impact and the Eco-Trail will aim to develop and promote this further.

Economy

Positive economic drivers.

Example: Providing and promoting quality trails within towns and parks encourages visitors to stay longer. The link the Eco-Trail will provide from the Lake Charm Caravan Park to the Kerang township will connect tourists to Kerang and promote expenditure at each location.

Cultural Identity



The Eco-Trail will provide access and awareness of historical & cultural features, including Indigenous culture. Walking and cycling trails provide the opportunity to showcase Indigenous connections to country and associated stories through the installation of interpretive signage.

Return on Investment in Trails

High-quality trails and associated activities support public health priorities and the development of nature/adventure-based tourism, resulting in a positive economic impact.

A number of studies have aimed to quantify the return on investment in trails. Through various quantitative methods, the following studies have identified the potential for high quality trails to bring significant tourism and public health benefits.

Return on investment

A study in the United States found that for every US$1 invested into trails, there was US$2.94 in direct public health benefit.

Return on Investment Case Studies

Image source: visitvictoria.com

Murray to Mountains Rail Trail, Victoria

A Longitudinal Study of the Murray to Mountains Rail Trail (2009) found that average direct expenditure was $244 per person per day on the trail over the Easter period. Much of this expenditure is on food and beverages at venues such as local cafe and restaurants. These research findings demonstrate that cycle tourists are high yield visitors, regularly exceeding expenditure in regional areas of other visitors.

Image source: concreteplayground.com

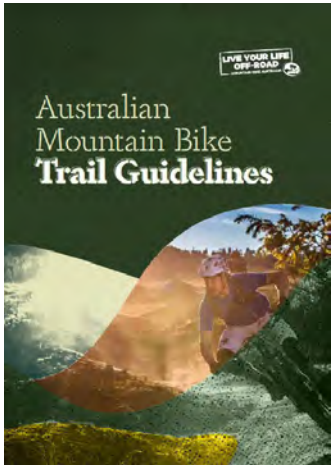
The Riesling Trail, Clare Valley, South Australia

A Trails Research Report (2004) determined that the Riesling Trail (a 35km rail trail) contributed an estimated $1.08 million per year to the local economy, with an average of $216 per person per visit to the region. Much of this economic activity was generated through shopping, accommodation and food/drink expenditure.

02
Trail Planning

Best-Practice Trail Guidelines

The publication Sustainable Recreation Trails Guidelines (2016) provides guidelines for the planning, design, construction and maintenance of recreational trails.



The Australian Mountain Bike Trail Guidelines (2019) provides for a consistent approach to planning, designing, constructing and managing sustainable mountain bike trails across Australia. They support trails which align with landholder & rider expectations & minimise environmental impacts.

As highlighted in the Australian Mountain Bike Trail Guidelines (2019), it is important to develop the right trail, in the right area, the right way and for the right reasons.

It is acknowledged that the word sustainable may mean different outcomes from different perspectives, such as: trail user sustainability, social sustainability, economic sustainability, environmental sustainability, management resources, and land use.

Sustainable trails:

- It is fundamentally important that recreational trails are socially, economically and environmentally sustainable.
- It is vital that high quality recreational trail experiences are developed in landscapes that can support such activities.
- Natural areas can be enhanced through the development of sustainable trails which protect biodiversity and raise environmental awareness.
- Community wellbeing can be enhanced through well-designed and managed trails which improve access & support physical activity.

Accessible trails:

Accessibility is determined by:

- Proximity to populations / visitor attractions
- Proximity to transport facilities (i.e. roads)
- Existing or proposed linkages to other trails
- Presence of existing trail support facilities
- Nature of the terrain and landforms
- Access for emergency vehicles

Sustainable Trails

It is important to develop the right trail in the right area, the right way and for the right reasons.

Eight Stage Trail Planning Process

The following 8 stage trail planning process is regarded across Australia as best-practice and has been outlined in various trail planning guidelines.

While it can be broadly applied to most trail planning projects including upgrades and formalisation of informal trails, each step is specifically relevant to the development of trails in new trail corridors.

This study broadly comprises Stages 1 to 4 of the eight stage trail panning process.

1. Proposal

The proposed area is either supported in principle for trail development, or is not supported due to environmental, social or cultural constraints. Or the proposal may identify suitable areas.

2. Framework

A project outline is developed by the project steering group (stakeholders), including: project objectives, project management model, stakeholder roles, target market, requirements, standards, execution, and ongoing trail management model.

3. Site Assessment

A broad scale study of the area is undertaken which identifies constraints, soil types, vegetation etc.

4. Concept Planning

Opportunities are identified and conceptual trail plan is prepared including infrastructure requirements. Broad trail corridors are physically flagged in the field.

5. Corridor Evaluation

Detailed assessment of trail corridor.

6. Detailed Design and Approvals

Detailed trail design is produced and physically flagged in the field, including: trail classifications, technical trail features, construction types and specifications. Planning for the use of Sustainable Trail Building Techniques to mitigate potential environmental impacts.

Approval processes may include: environmental approvals (refer Legislative Context in Section 02), Development Application (DA), Construction Certificate (CC), and/or Complying Development Certificate (CDC). Where works are proposed within a road reserve, formal approval must be obtained as required under Section 138 of the Roads Act 1993.

7. Construction

Trail is constructed in line with the detailed design.

8. Management

The Trail Management Plan is implemented detailing maintenance and monitoring requirements.

Signage Considerations

There are a range of different types of recreational trail signage. These can be classified into the following:

- Trailhead
- Waymarking
- Directional
- Interpretive
- Management/warning

The requirements of each of these types of recreational trail sign are outlined in Appendix A: Trail Names & Signage.

Key elements for consideration when developing signage for recreational trails are outlined below:

Adherence to Recognised Standards

Information conveyed will comply with recognised Australian standards, thereby ensuring a high quality and safe experience for all trail users.

Consistency and Uniformity

All signs will conform to accepted standards and will maintain a consistent theme along the entire trail.

Quality Information

Quality on-trail information is provided as well as brochures and mapping. It is important that users are confident in the information provided.

Location

Design and placement of signs is determined with consideration to the user's approach speed, impact on the scenic amenity and ability to be seen without obstruction of trees etc.

Visually Attractive and Simple

Signs are visually attractive, easy to comprehend and suitable to the natural surroundings.

Materials

Signs are designed to be resistant to factors such as vandalism and extreme weather events.

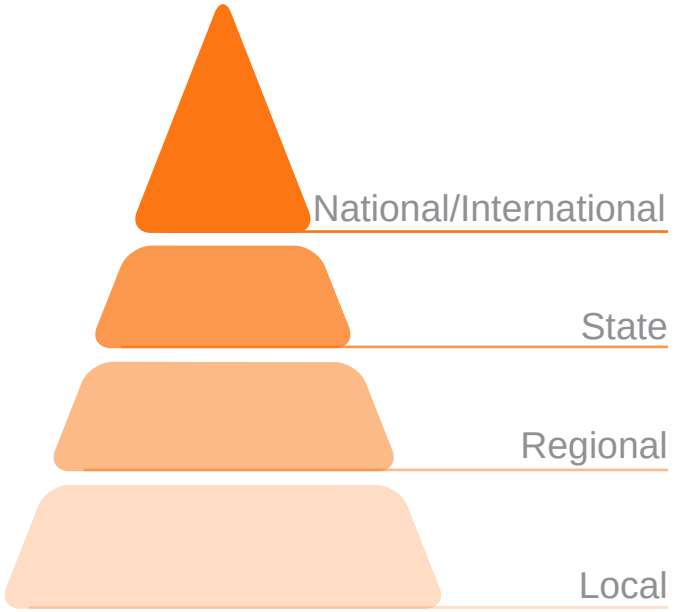
Trails Hierarchy

A successful trails network requires trails of different levels of significance in order to meet the needs of different user group/market segments.

The trails hierarchy provides a guide for the level of infrastructure required for trails to meet the needs of their intended users and to ensure that an appropriate standard of facilities is provided.

A trail's level on the hierarchy indicates the partnerships required to successfully manage the trail, the level of promotion likely to be appropriate and the infrastructure which can be expected by users.

The Kerang Lakes Eco-Trail has been identified as a Regional Level Trail. A breakdown of hierarchical requirements is included on the following pages.



International/National Trails

Characteristics	Attributes	Examples
• World-class trail experiences located within the natural and cultural landscapes, with the highest standard of management and promotion. • Support high yield trail-based tourism products including accommodation. • Destinations, attracting international and interstate visitors. • May include major trail hubs that attract high international and interstate use, high level competitions and event.	• Exemplars of the competitive strengths of VIC and Australia as a trail destination. • Uniquely representative of VIC's natural and cultural landscape values. • High priority government support at the state level for trail development and management and listed as a priority with state plans and strategies. • Support viable high yield trail-based accommodation and associated products and services. • Higher levels of interstate visitation than state significant trails and significant international visitation, interest and appeal. • Directly and indirectly provide economic benefits to the state.	Australian Alps Walking Track (ACT) Overland Track (TAS) Great Ocean Walk (VIC)

State Trails

Characteristics	Attributes	Examples
• Significant trail experiences which represent VIC's varied landscapes, with a high standard of management & promotion. • Support a range of trail-based products and a motivator for intrastate and interstate visitation. • May attract some international visitors. • May include some major trail hubs & attract high level competitions and events.	• Representative of the region's and/or VIC's natural and cultural landscapes. • Government support at a regional level within regional plans and strategies. • Support viable trail-based and associated regional tourism products, services and programs. • Significant intrastate and interstate visitation, interest and appeal. • Directly or indirectly provide economic benefits to a region and/or the State	Murray to Mountains Rail Trail (VIC) Cape Schank Boardwalk (VIC)

Regional Trails

Characteristics	Attributes	Examples
• Trails and facilities used by people across a wider region, including intrastate visitors, for recreation, transport, health and wellbeing. • Generate significant economic benefits to the region. • May include trail hubs accommodating various trail experiences across a region. • Important regional recreational and tourism assets and when combined with other regional scale trail resources they can be state recreation or tourism assets or resources.	• May be located within close proximity to residential areas and/or connected to community services and open space areas. • Representative of the region's natural and cultural landscapes. • Provide access to a diversity of trails of varying difficulty, length and type. • Provide opportunities for different trail-user groups for active recreation, health and wellbeing. • Be recognised across the region as a popular trail and/ or trail network and frequented by people from the surrounding region.	Kerang Lakes Eco-Trail

Local Trails

Characteristics	Attributes	Examples
• Trails and facilities used by residents for recreation, transport, health and wellbeing. • Mainly attract local users primarily for independent trail-based recreation activities. • Generate economic benefits to the local area.	• Many are closely located to residential areas and are often connected to community services and open space areas. • Representative of the local natural and cultural landscapes. • Provide access to trails which are generally accessible by users of varying fitness and/or shorter in length. • Provide opportunities for groups for active recreation, health and wellbeing. • Be recognised by local residents as a trail and/ or trail network and frequented by people from the local area.	Redgum Statue walk Eagle & Turtle Loop (Gunbower Forest) Ski Run Trail

Trail Classification Systems

Trail classifications allow land managers to develop trails that are appropriately designed for the anticipated trail users and to provide suitable levels of facilities and management.

Trail grading systems are a primary means of informing people about the features of trails and assists in their marketing and promotion.

Grading systems are designed to assist people to make informed decisions on route selection to ensure they match their skill level to the difficulty of the trail.

Grading systems

Designed to assist people to make informed decisions on route selection to ensure they match their skill level to the difficulty of the trail.

Walking Trails

Walking trails are classified according to the Australian Standard 2156.1-2001 Walking Tracks – Classification and Signage.

The aim of this system is to encourage people who are not regular or confident bushwalkers to give it a go. It is specifically designed to reassure entry level walkers, particularly persons with a disability or people walking with children, that a particular trail is suitable for their skill level. Under this system, walking trails are graded on a difficulty scale from grades one to five, as outlined below.

Classification: Grade 1

Suitable for persons with a disability with assistance.

Classification: Grade 2

Suitable for families with young children.

Classification: Grade 3

Recommended for people with some bushwalking experience.

Classification: Grade 4

Recommended for experienced bushwalkers.

Classification: Grade 5

Recommended for very experienced bushwalkers.

Mountain Bike Trails

The International Trail Marking System is used universally on ski fields and has been adapted by the International Mountain Bicycling Association (IMBA) for mountain bike trails.

The Australian Mountain Bike Management Guidelines (2019) adopted the IMBA system with some additions and further interpretations, as outlined below.

Classification: Very Easy

Wide trail, no obstacles. Suitable for beginners

Classification: Easy

Wide trail, some obstacles. Suitable for beginners with off-road bikes.

Classification: Easy with intermediate Sections

Single trail, some obstacles. Suitable for mountain bike riders.

Classification: Intermediate

Single trail, obstacles. May include steep sections. Suitable for skilled mountain bike riders.

Classification: Intermediate With Difficult Sections

Challenging & variable, some steep climbs/descents, loose surfaces, & unavoidable obstacles. Suitable for competent mountain bike riders.

Classification: Difficult

Dangerous & unavoidable obstacles, some sections will be easier to walk. Navigation & personal survival skills are highly desirable. Suitable for experienced mountain bike riders.

Classification: Extreme

Dangerous, severe trails & unavoidable obstacles, extreme levels of risk, some sections will be easier to walk. Navigation & personal survival skills are highly desirable. Suitable for experienced mountain bike riders.

Eco-Trail Grading Classification

Due to Gannawarra's flat topographical nature the trail can lend itself to catering to a broader range of users. Surface finishes and widths play a large role in the accessibility and grading of a trail. A trail with a natural surface will provide restrictions and hazards, whereas a gravel or concrete/asphalt surface will provide a safer and more accessible walking environment.

The Eco-trail will aim to have be a Grade 2 walking trail with sections being classified as a Grade 1 walking trail. This will allow for the trail to cater to families with young children and allow for users with disabilities or those in wheelchairs to access parts of the trail.

The trail will classified as an easy trail for mountain biking as it will aim to provide a flat and wide trail with a smooth surface finish and will not feature many inclines or declines. This will allow a broader range of cyclists to utilise the trail and encourage including families with young children.

Australian Standards for Shared-Use Pathways

The Austroads 'Guide to Road Design Part 6A - Paths for Walking and Cycling' outline the requirements for pathways across Australia.

The below table has been taken from the report which suggests acceptable ranges of width for shared use paths. The upper limit of the acceptable range in the table should not discourage providing a greater width where it is needed (e.g. very high volumes that may also result in overtaking in both directions).

The Kerang Lakes Eco-trail is technically a Recreational pathway, however, due to its distance and therefore limited chances of trail user conflict it has been designed to meet the local access path requirements with a desired minimum width of 2.5m. This allows for the trail to be wide enough for both pedestrian and cyclists to travel in both directions and allow enough room for cyclists to overtake safely.

	Shared path width (m)		
	Local access path	Regional path[3]	Recreational path
Desired minimum width	2.5	3.0	3.5
Maximum width - typical maximum	2.0[1]-3.0[2]	2.5[1]-4.0[2]	3.0[1]-4.0[2]

1 - A lesser width should only to be adopted where cyclist volumes and operational speeds will remain low.
2 - A greater width may be required where the numbers of cyclists and pedestrians are very high or there is a high probability of conflict between users (e.g. people walking dogs, in-line skaters etc.).
3 - May be part of a principal bicycle network in some jurisdictions.

03

Mapping and Analysis

Kerang Landcare Stakeholder Meeting

The Kerang Landcare Group were consulted at the beginning of the project to provide sufficient background on the proposed trail alignment. The following feedback is critical to the development of the Feasibility Study and has been considered in the development of the concept design.

- The Gannawarra Kerang Lakes Eco-Trail Feasibility Study was raised by Kerang Landcare with a purpose of highlighting the natural landscape and features of the local area and to provide an approximate 19km link trail between the Kerang township and Lake Charm which is located to Kerang's north-west.
- The Kerang township is well established and provides all required services and accommodation required for both day trip and overnight visitors.
- Lake Charm features several shops and services, three caravan parks, a power boat club and yacht club. There is an information shelter located next to the Lake Charm Hall on service road. This location was identified as the most suitable location for the trail head and the Hall provides public toilet facilities.
- Numerous funding opportunities are currently available at Federal and State levels.
- On-going maintenance of the trail will need to be considered in the development of the feasibility study. Kerang Landcare want Council to maintain the trail. Council will need to undertake an assessment as to whether they can successfully deliver and maintain the trail.
- Sections of the trail are pre-existing and the access tracks are 70% managed by Goulburn-Murray Water.
- Kerang Landcare have spoken to most landowners and have undertaken permissions and consultations previously.
- The topography of the area is predominantly flat with some areas being prone to flooding.
- The trail crosses the Goulburn-Murray Water Outlet. A weir provides a crossing here and is 2 to 3 meters in width.
- Gannawarra Shire Council has been promoting and developing facilities that provide access for all abilities. Select sections of the trail are to be Grade 1 to provide an experience for all user groups and abilities.
- Cycling is included within this Study and the entire proposed trail is to be shared use. The trail is not required to be sealed but should provide a natural compacted surface suitable for both walking and cycling.
- Kerang Landcare presented the project to the local indigenous elders who support the development of the Eco-trail. They have expressed interest in providing funding for works and interpretive signage. The interpretive signage is to note endemic and indigenous flora and fauna along the trail to enhance user experience and education.
- Middle Lake which is located approximately halfway along the proposed trail features the Reedy Lake Bird Rookery which provides excellent viewing of the ibis colony.
- The proposed alignment is to aim to avoid all private property and residents should be informed if the trail is to pass their property. Some residents are unhappy that the trail will pass their properties due to fire restrictions/ risks.

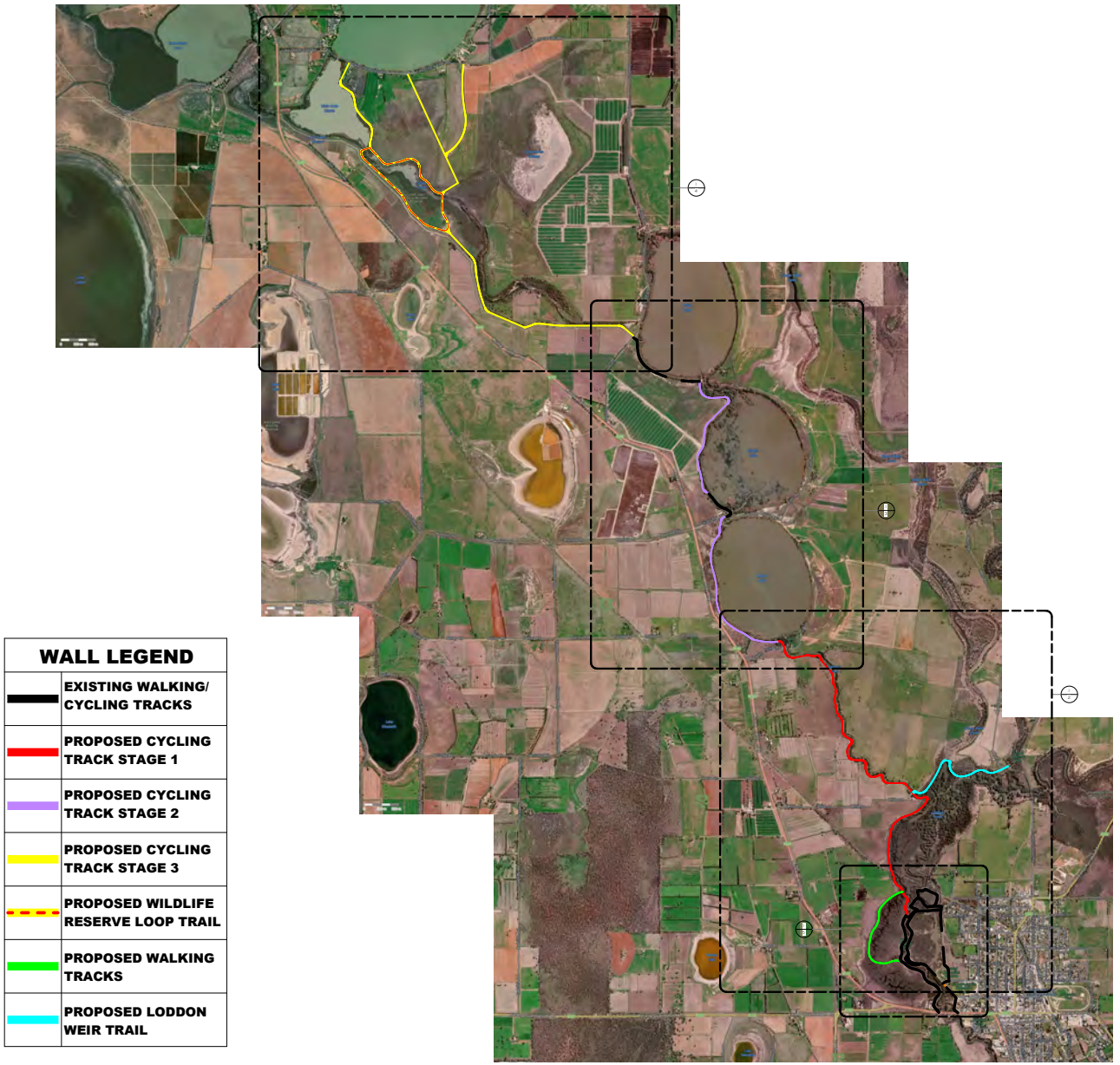
Kerang Landcare Initial Concept

The original ‘Proposed Adventure Cycle Trail & Kerang Regional Park Development Master Plan’ developed by Kerang Landcare and McKnight and Bray has been used as a basis for this study. The works undertaken as part of this project have provided a solid foundation for the development of the trail alignment and options.

After ground-proofing the alignment and options it was discovered that the trail alignment from Kerang to Third Lake was effective and had the possibility to draw both day trippers and overnight visitors to experience the trail, and the natural attractions that are Reedy, Middle and Third Lakes.

From Third Lake to Lake Charm there have been some refinements made to the original proposed options to provide alternate routes that attempt to make use of unused road reserves and levee banks, reduce areas where the trail traverses through private property, and reduce long-term maintenance costs.

The following pages outline the new proposed alignments and provide high-level analysis of the trail route including tenure, vegetation, topographical and flood mapping.



Kerang Lakes Eco-Trail Route Options

Four alignment options have been developed for the Kerang Eco-Trail, these options are all proposed within the northern third of the Eco-Trail.

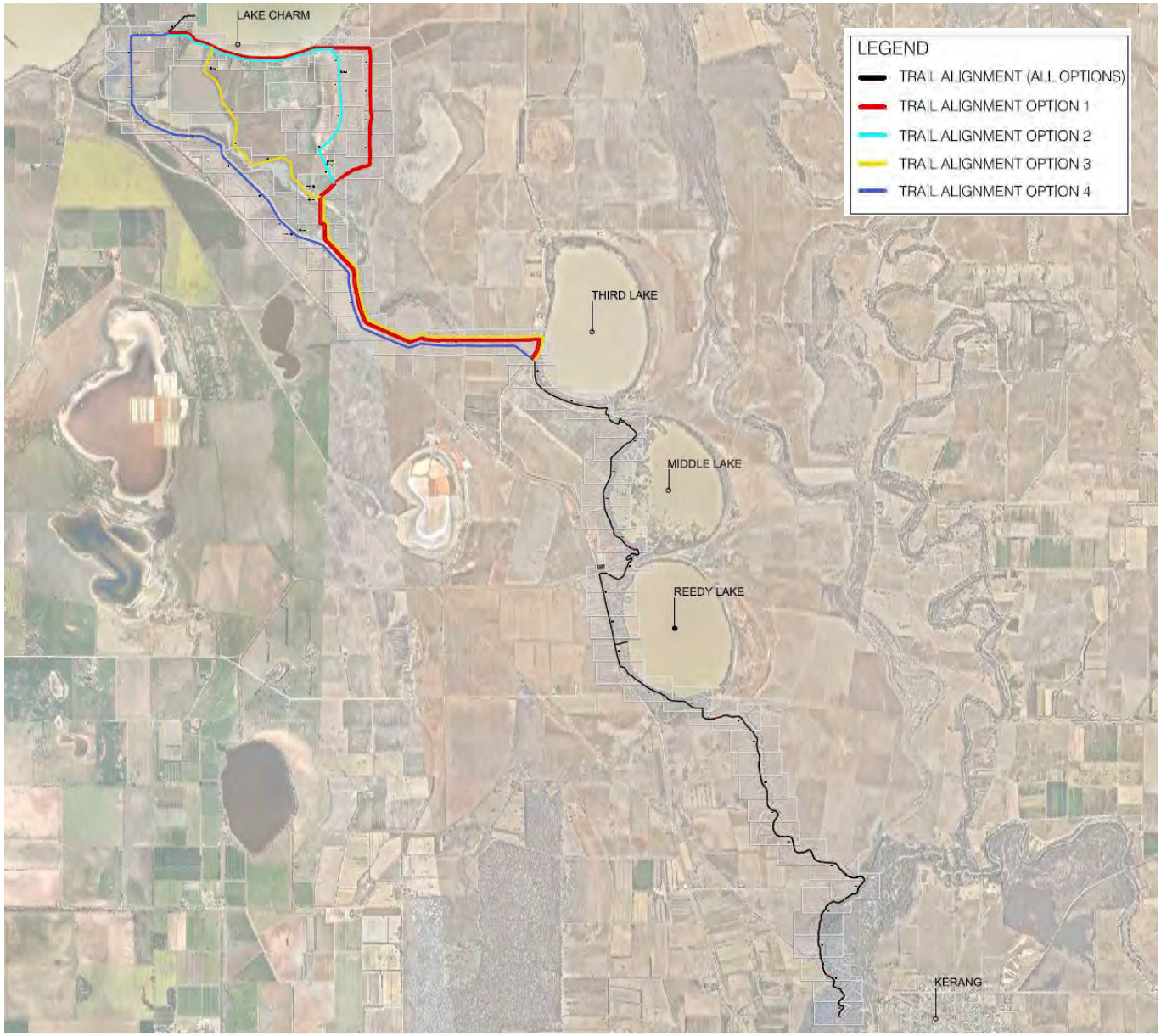
The different alignments are due to multiple possibilities at the northern end which each have various opportunities and constraints. The general alignments have been summarised below and a SWOT analysis has been undertaken for each option in section 05 of this report.

Option 1 follows the northern boundary of No. 7 Lakes Channel from Third Lake to Little Lake Charm Wildlife Reserve. It follows the Wildlife Reserves eastern boundary upwards and onto an existing unused road reserve. The Trail follows the road reserve passed the Stevenson Swamp Wildlife Reserve to the Lake Charm Foreshore and through to the Lake Charm Foreshore Caravan Park.

Option 2 follows the same initial route as Option 1, however, this option follows an existing fenceline through private property until it reaches the Lake Charm foreshore from where it follows the same alignment as option 1.

Option 3 also follows the same route until it reaches the Little Lake Charm Wildlife Reserve where it follows the eastern boundary of Little Lake charm, then along a disused road reserve to the Lake Charm foreshore.

Option 4 follows NO. 7 Lakes Channels southern boundary until it intersects with Murray Valleys Highway. From there it follows the highway on to Lake Charm E Road and then to the Lake Charm Foreshore Caravan Park.



Crown Land Mapping

This map illustrates the approximate Eco-Trail alignment and the Crown Land plots that it traverses through/alongside.

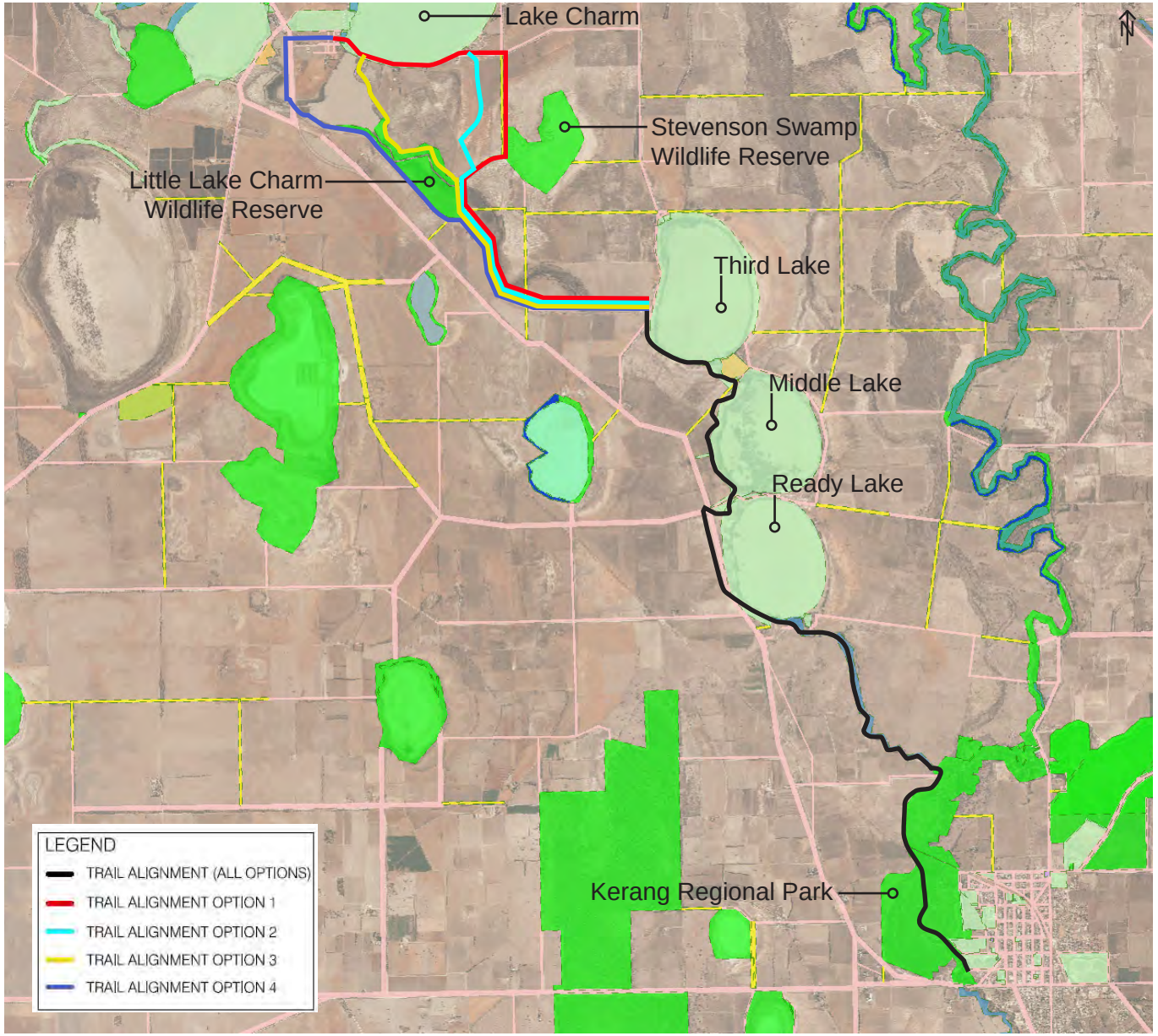
The Kerang Regional Park situated in the south is under direct management of Crown Land, so is the Little Lake Charm Wildlife Reserve and Stevenson Swamp Wildlife Reserve in the north. Reedy Lake, Middle Lake, Third Lake and Lake Charm are under delegated management.

The Eco-Trail proposes to travel through Crown Land in the Kerang Regional Park (all options) through sections of the delegated Crown Land at Reedy, Middle and Third Lake (all options) and border the direct management reserves including Little Lake Charm Wildlife Reserve (option 1,2 and 3) and Stevenson Swamp Wildlife Reserve (option 1) in the north.

The map also illustrates the locations of unused road licences of which options 1, 2 and 3 make use.

Legend

- All tenure outline
- Lease
- General Licence
- Grazing Licence
- Riparian Management Licence
- Water Frontage Licence
- Delegated Management
- Direct Management Reserve
- Unused Road Licence

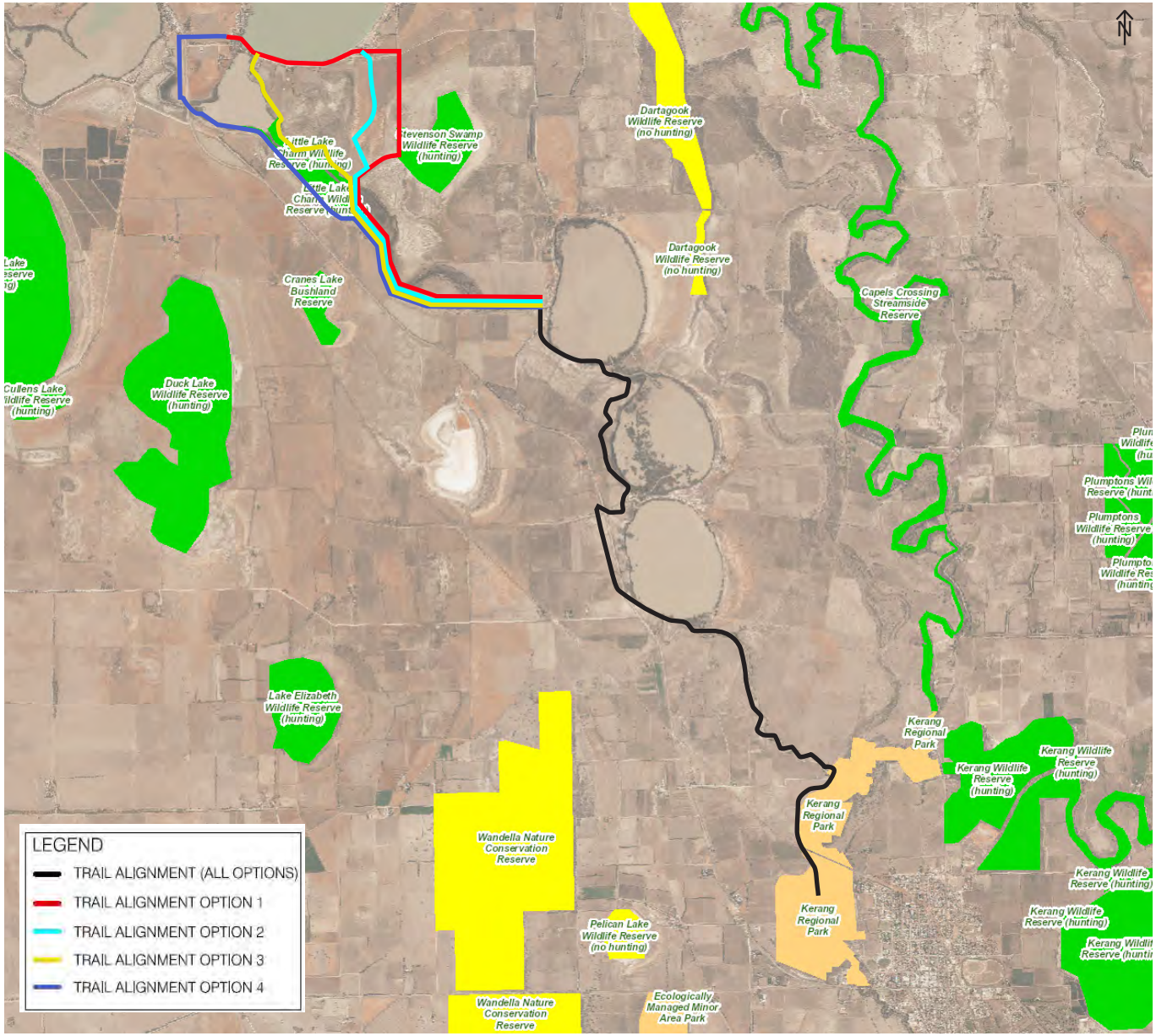


Parks Victoria Managed Land Mapping

There are numerous Parks Victoria managed land parcels situated within Gannawarra, including the Kerang Regional Park, Little Lake Charm Wildlife Reserve and Stevenson Swamp Wildlife Reserve.

The Kerang Lakes Eco-Trail alignment traverses through Parks Victoria Land in the trails northern section along the Little Lake Charm Wildlife Reserves eastern boundary (option 1, 2 and 3) and Stevenson Swamp Wildlife Reserve (option 1) which are both Parks Victoria Land parcels. Parks Victoria will need to be closely consulted with throughout all stages of the project to reduce impact on these sites and to ensure that any required legislations are met to obtain approval.

In the south, the trail is proposed to travel through the Kerang Regional Park. Some portions of the trail are located on existing informal walking tracks which are known to Parks Victoria. The Eco-Trail will need to meet a range of legislations in order to gain Parks Victoria approval. A list of required approvals are outlined in the Consultation section of this report.



Legend

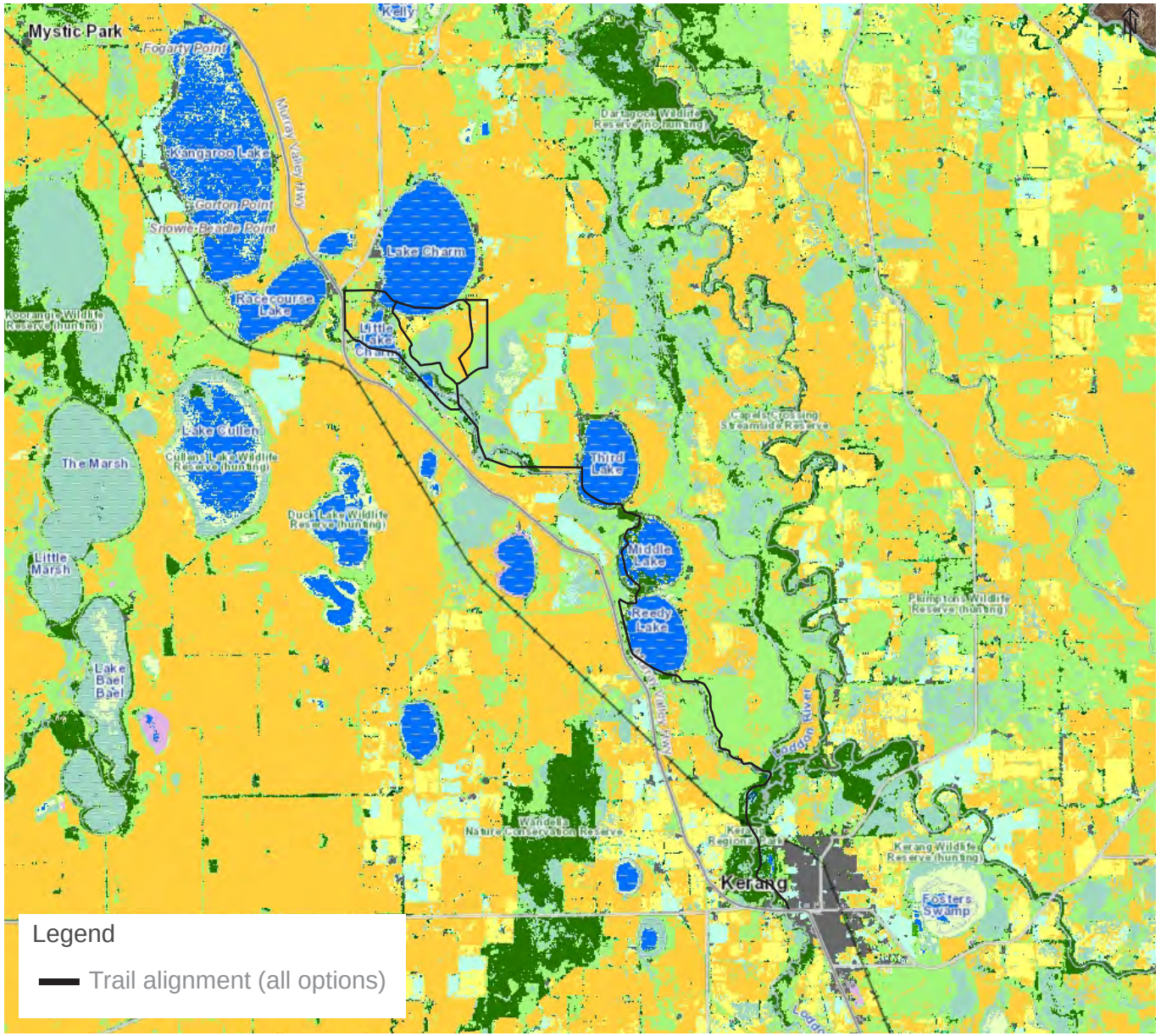
- Parks Victoria Land
- Parks Victoria Land
- Parks Victoria Land

Current Vegetation Mapping

There are a range of various vegetation types located along the length of the Kerang Eco-Trail. The most common vegetation types affecting the Trail include treed native vegetation, native pasture/grassland, dryland dry cropping and seasonal wetlands. It is important that the required legislations and approvals are met to ensure limited impact on these environments, a list of these is included within the Consultation section of this report.

Legend

- Built environment
- Urban area
- Exotic pasture/grassland
- Dryland cropping
- Other exotic tree cover
- Horticulture/irrigated pasture
- Native pasture/grassland
- Native scrubland
- Treed native vegetation
- Scattered native trees
- Natural low cover
- Water
- Wetland - seasonal
- Wetland - perennial

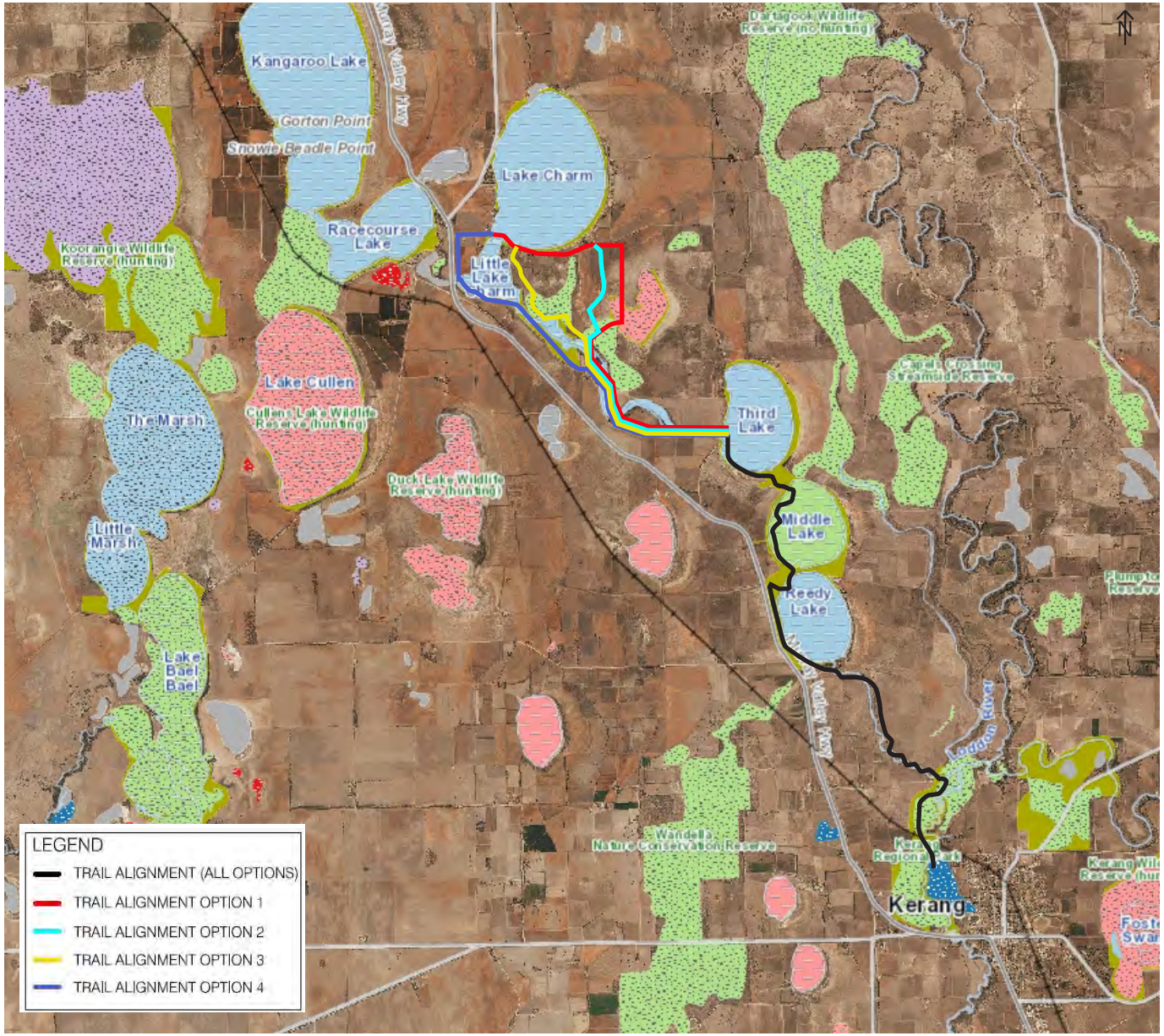


Wetland Mapping

This map illustrates the various types and locations of wetlands located along the Kerang Eco-Trail.

Beginning in the south, the Eco-Trail starts in the Kerang Regional Park which is identified as a Freshwater Swamp, the trail then follows the Loddon River up to Reedy, Middle and Third Lakes, of which Middle Lake is classified a freshwater swamp.

From here the trail splits into the four options, with option 1, 2 and 3 border Little Lake Charm Wildlife Reserve which is classified as a freshwater swamp, in addition to this, option 1 also borders the Stevenson Swamp Wildlife Reserve which is classified a saline lake. Option 4 follows the highway and all options meet at Lake Charm which is classified as a fresh water lake. It is important to consider these wetland types in design to ensure minimal impact.



Legend

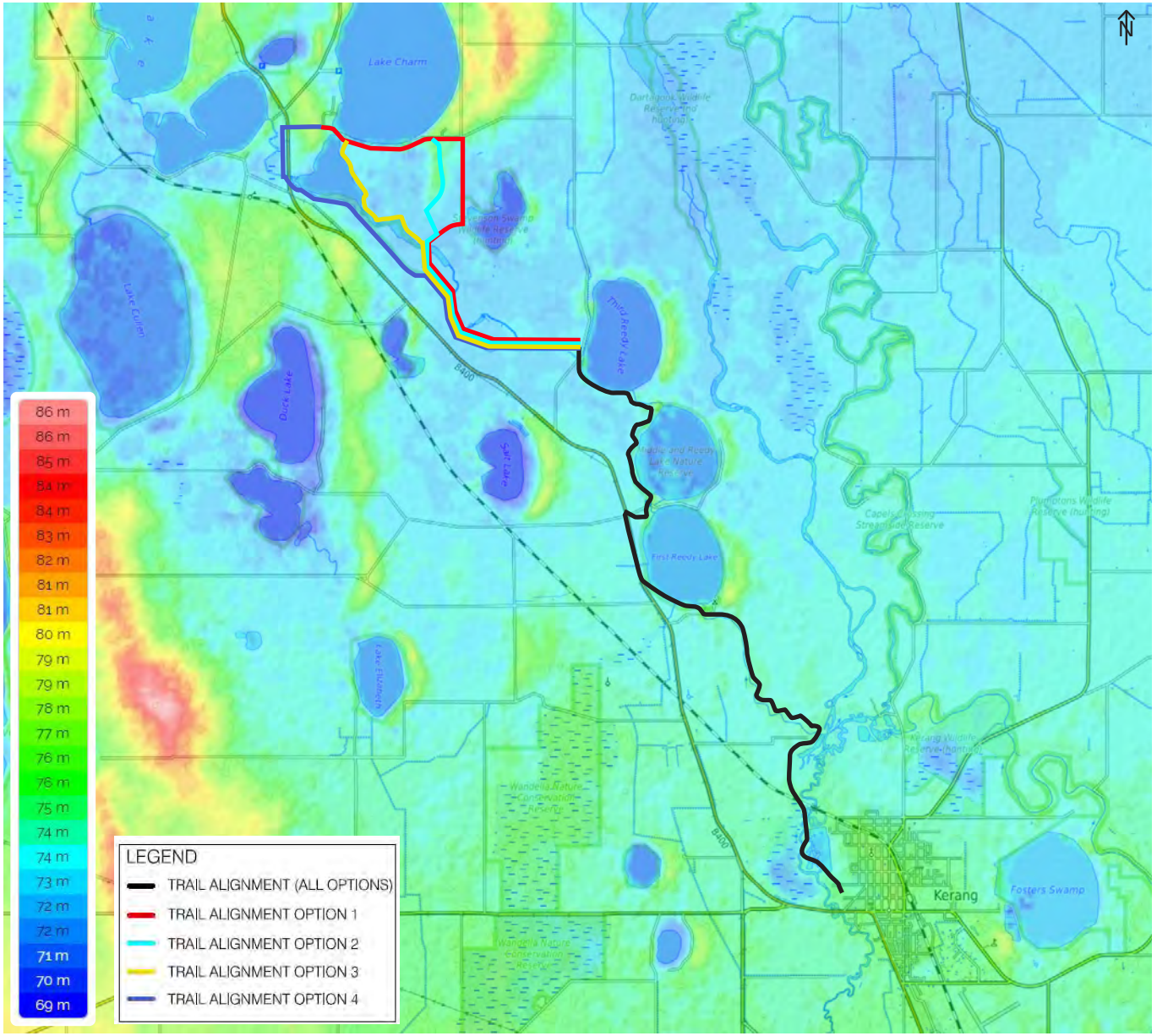
- Freshwater Lakes (temp.)
- Freshwater Marshes/Meadows (temp.)
- Freshwater Swamps (temp.)
- Freshwater Swamps/Marshes/Meadows
- Saline Lakes (temp.)
- Saline Marshes/Meadows (temp.)
- Saline Swamps (temp.)
- Undetermined Wetland Type
- RAMSAR Wetlands

Topographical Mapping

The majority of the landscape around Kerang and Lake Charm is topographically flat, sitting at approximately 74m above sea level. The flat nature of the landscape provides a great basis for the Eco-Trail as the absence of large inclines/ declines means that the trail is able to cater to a broader range of users and abilities, such as families.

The ability to cater to a broad user group and long distance mean that this trail provides similarities to a rail trail. Rail trails have exploded in popularity over the years due to their ability to be tackled by different individuals and abilities of all ages. The popularity of rail trials provide large increases of expenditure at nearby townships and attractions benefiting the local community dramatically. A similar approach to design and promoting connections to the townships has been undertaken for the Eco-Trail.

The flat nature of the landscape does however pose a risk of flooding, which has been mapped and discussed over the following pages.



Flood Mapping - 100 Year Event

This map illustrates the extent of flooding for a one in one hundred year flood event.

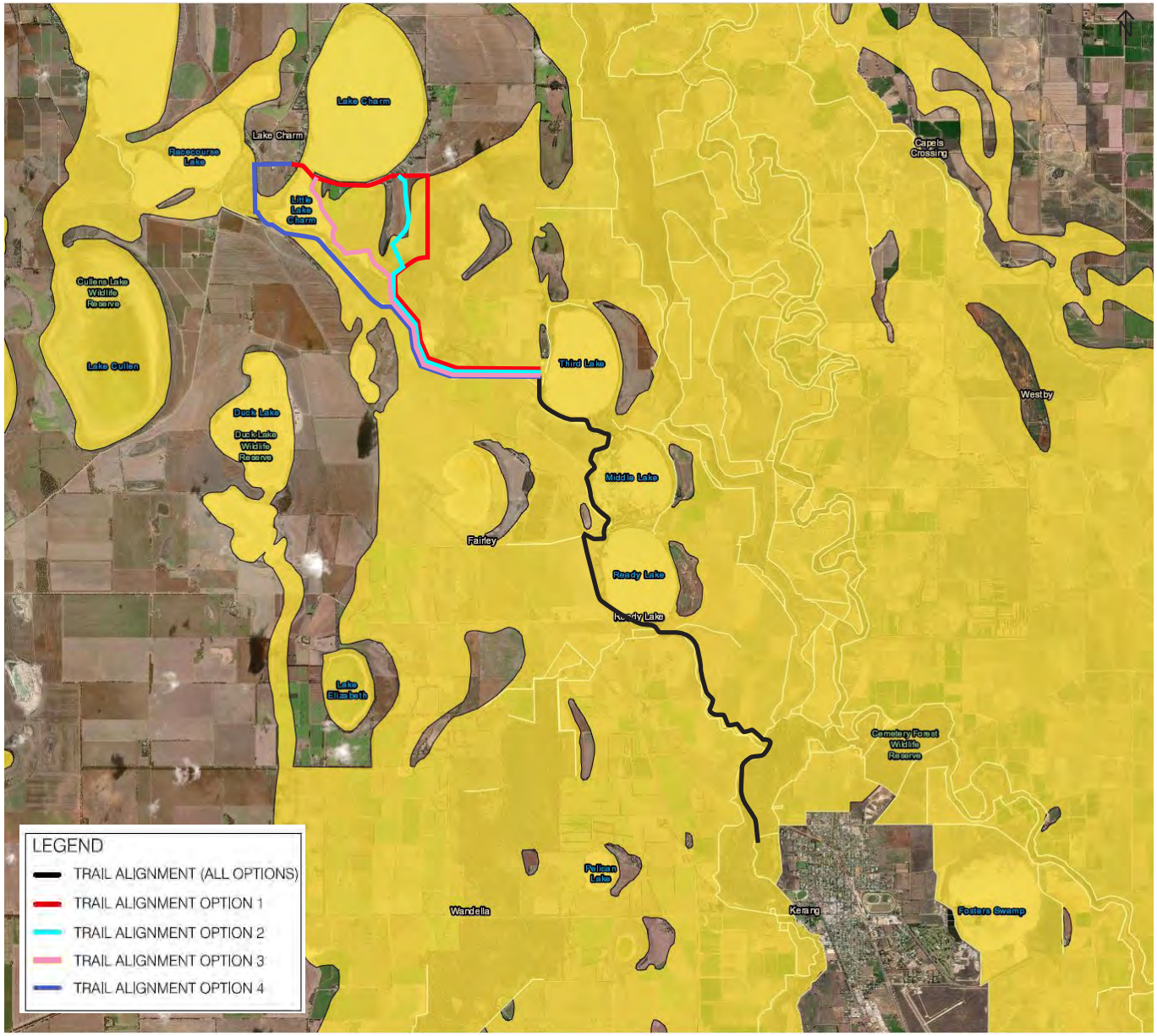
The large extent of flooding is due to the flat topography of the Gannawarra landscape and the water having no where to drain to. During a one hundred year flood event the townships of Kerang and western banks of Lake Charm avoid flood waters, however, the remainder of the area between these locations will be affected, including the entire proposed length of the Eco-Trail.

Careful consideration has been given as to what surface types can withstand flood events and reduce maintenance costs associated with these events. Flood events that happen outside of the one hundred year flooding event and are not as great can still negatively impact the trail surface, particularly if it is of a natural or gravel finish that can be washed away.

Concrete and asphalt surfaces have been specified at various locations along the trail which can withstand high water levels and will still remain once the waters have subsided. The asphalt surface finish has been restricted to the existing levee banks along the length of the trail which manages to avoid being affected by the flood levels, and a concrete surface finish has been specified in all other flood prone locations. Compacted rubble and treated compacted rubble options for the entire trail have also been considered and costed.

Legend

- 100 Year Flood Event Extent
- Levee Bank



Flood Mapping - Historic Event

This map illustrates the extent of an historic flood event that has taken place in Gannawarra. As evident by the red, this flood event was not as extensive as the predicted one in one hundred year flood event, however, almost the entire proposed alignment of the Eco-Trail was under water. The only exclusions being two small sections to the south and west of Lake Charm and raised levee banks.

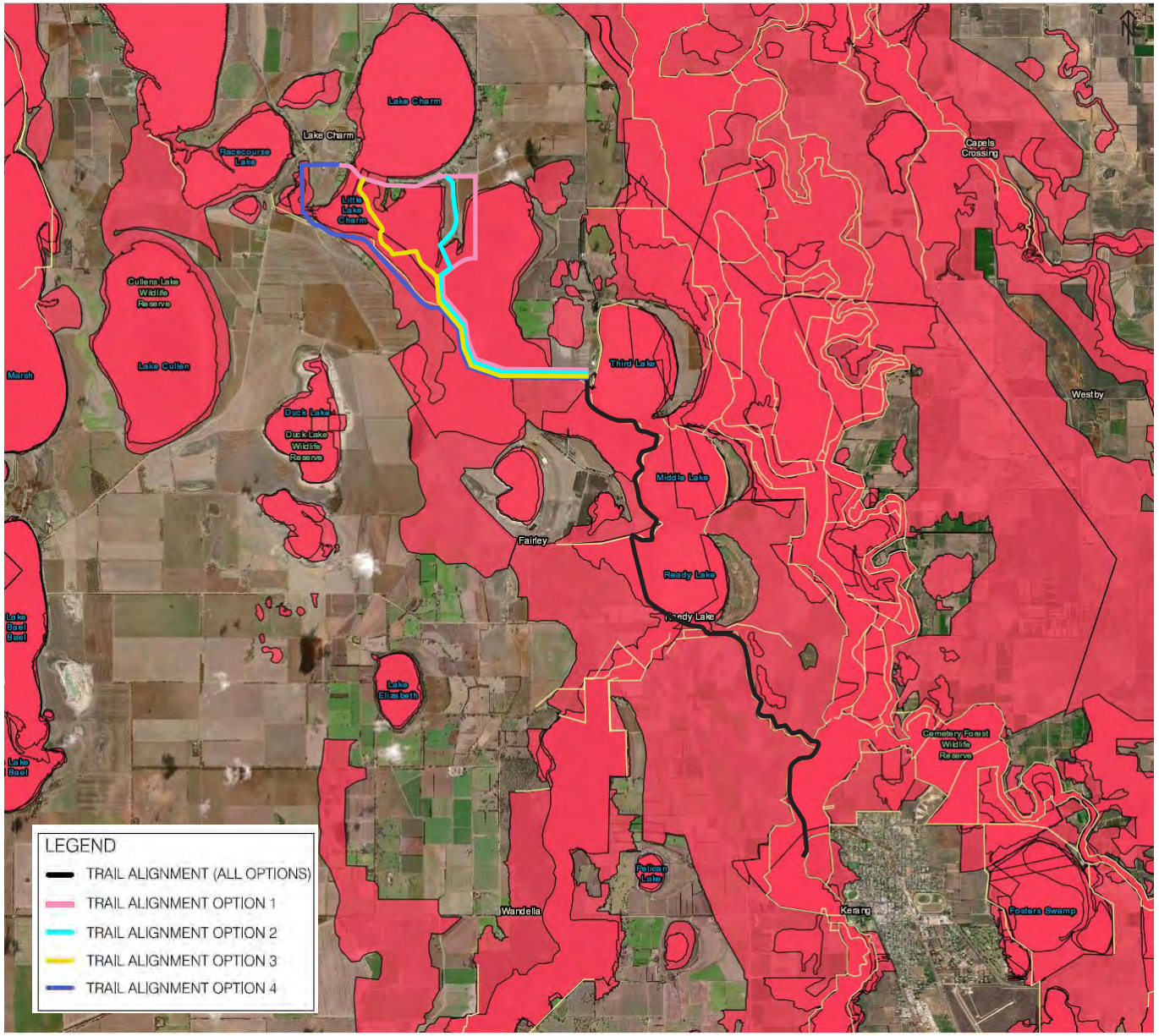
This illustrates the extent of flooding that can happen outside of the one in one hundred year flood event, and further solidifies the need for suitable surface finishes that can withstand these events.

It is important to note that the levee banks were above the flood levels during this flood event.

Aerial image showing historic flood event from Kerang to Middle Lake

Legend

- Historic Flood Event Extent
- Levee Bank

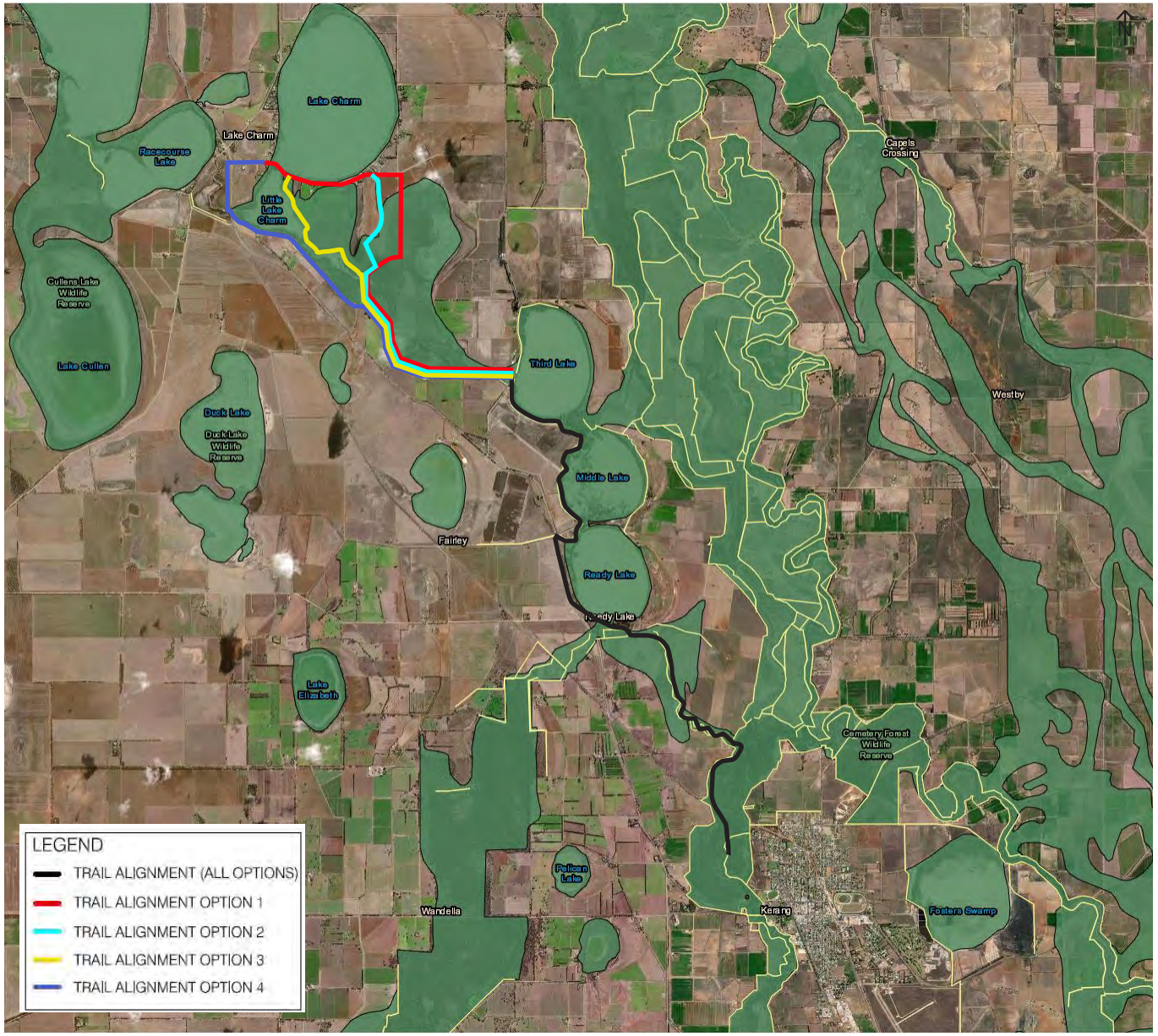


Flood Mapping - Floodways

The green shading indicates the Gannawarra floodways surrounding Kerang and Lake Charm which are designed to control and contain the floodwaters.

These floodways are located along the entire proposed Eco-Trail and need to be considered in the design of the trail. The light yellow lines indicate existing levee banks which contain and are not affected by the floodwater. These should be utilised where possible to reduce the risk of water damage and required maintenance to the trail, however, there may be restrictions in place in some locations which prevent this due to safety and vehicular access reasons.

Goulburn Murray Water and CMA should be approached for input throughout the detailed design phase of the project.



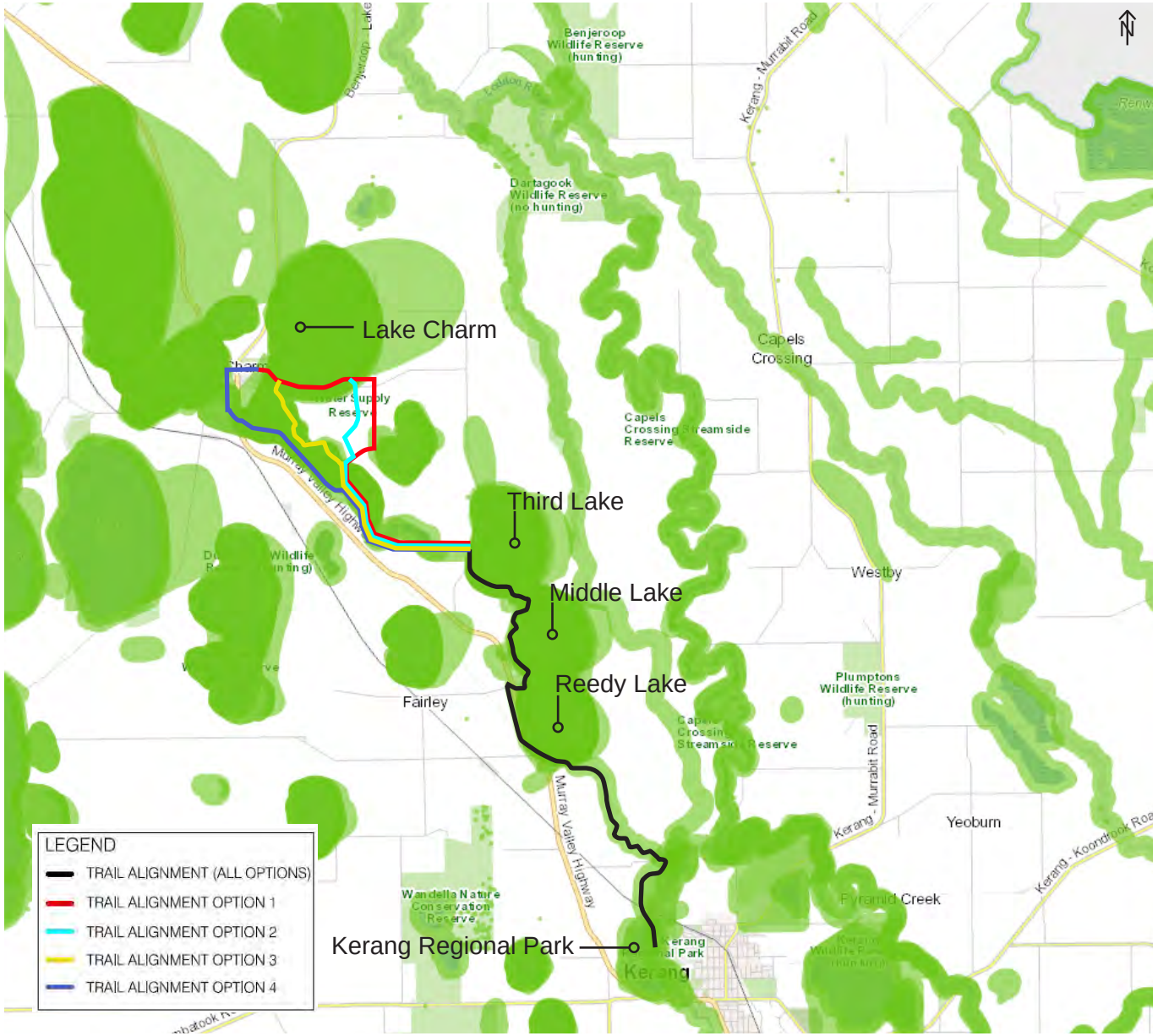
Legend

- Floodways
- Levee Bank

Cultural Significance Mapping

There are numerous areas in Gannawarra Shire that are of Aboriginal cultural sensitivity. These culturally significant areas strongly correlate with lakes, wetland areas, rivers and streams. Due to the Eco-Trails alignment following these types of water bodies the trail may face restrictions to ensure the conservation of these culturally significant areas.

The Kerang Regional Park is also classified as an area of Aboriginal cultural significance. A study will need to be completed for the entire length of the trail to determine the feasibility of developing the Eco-Trail. A Cultural Heritage Management Plan (CHMP) will need to be developed to ensure that trail meets Aboriginal 2018 Heritage Regulations.



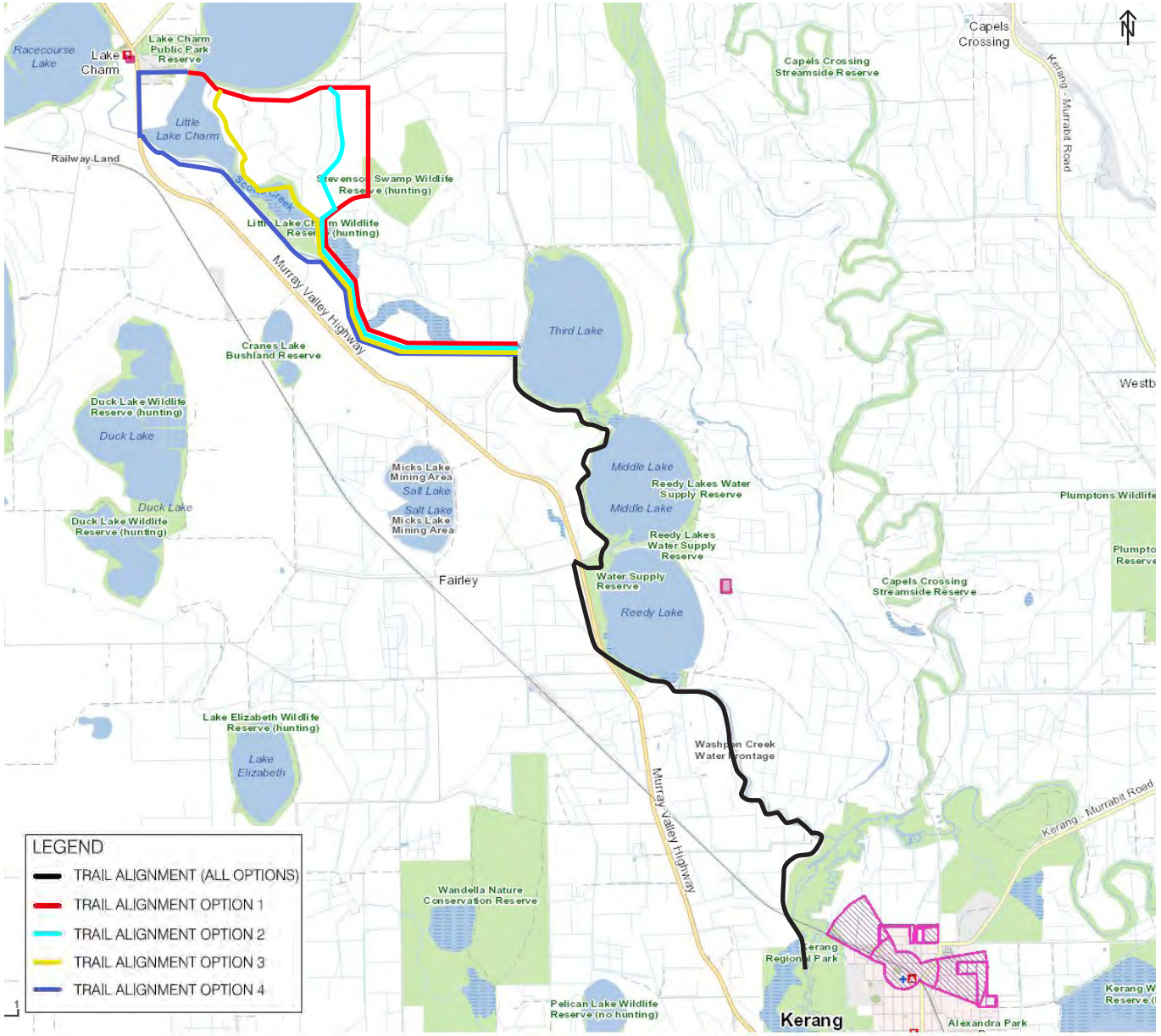
Legend

Areas of cultural heritage sensitivity

Heritage Mapping

There are no heritage overlays along the duration of the Eco-Trail that will restrict the development of the trail.

The only existing heritage overlays are situated at the intersection of Banjeroop-Lake Charm Road and the Murray Valley Highway and to the east of Reedy Lake. There is a large design and development overlay in the township of Kerang, however, these overlays do not impact the trail alignment.



Legend

- Design and Development Overlay
- Heritage Overlay

04
Trail Audit

Trail Audit Methodology

The proposed Kerang Lakes Eco-Trail options were audited through a process involving desktop research and on-ground assessments. Due to access and private property reasons, the trails were only audited on-ground where possible.

The on-ground assessment was undertaken over a one-week period in February 2022, using a GPS device to collect a range of information for the both existing proposed and potential trails. The information collected included GIS tracking of the trail alignment, and geo-located records of key hazards, existing infrastructure, points of interest, proposed infrastructure locations and photographs.

Audit Images

The following images gathered from the trail audit identify some of the trails key points of interests, hazards, and existing infrastructure located along the trail alignment. These have been referenced on the below map.

① **Kerang Trail Head location**

② **Point of Interest - Loddon River**

③ Example of typical existing trail condition

⑤ Point of Interest - Reedy Lake

⑦ Hazard - Example of Road Crossing Points

④ Hazard - Example of fence crossing point

⑥ Point of Interest - Ibis Rookery

⑧ Point of Interest - Lake Charm

Kerang Regional Park Development Opportunities

Kerang Regional Park's proximity to the Kerang Township provides excellent recreational opportunities to residents and visitors. The Park is accessible by a short 30 minute walk from the centre of town to the Park's swing bridge, it is also accessible by car and bicycle. The park features impressive and well established native vegetation, access to the Loddon River, and is home to numerous species of native flora.

Tredwell's site visits to the Kerang Regional Park identified various opportunities for development within the Park to increase visitation, education, and provide recreational opportunities. Some of these opportunities include:

Formalised Short Walks

Short walks are becoming increasingly popular as they attract users with a range of abilities for easy and rewarding short walks. The Kerang Regional Park has the opportunity to provide a short walk to showcase its unique environment and compliment the larger Kerang Lakes Eco-Trail. In the south of the Kerang Regional Park there is the opportunity to include a formalised short walk along the western banks of the Loddon River southwards to the Murray Valley Highway. Another opportunity in the north of Kerang Regional Park includes creating a short walk to and around the Weir located north of the train line around Weir Road.

For successful examples of already established short walks refer to: clarevalley.com.au/explore/short-walks.

Bird Watching

The park's wetlands provide important habitat for waterbirds, making bird watching a rewarding activity. There is an opportunity to promote this further to the general public through the installation of interpretive signs in popular bird spotting locations that identify various species of birds viewers are to look out for. These signs could also be located along existing or future formalised trails such as the short walks.

Another opportunity includes constructing a bird hide to increase the chances of viewing birds for serious bird watchers and the general public.

Canoe Trails

Due to the existing Kerang Regional Park Kayak Launch ramp located just north of the Loddon River Pedestrian Swing Bridge there is an opportunity to include a canoe/kayak trail.

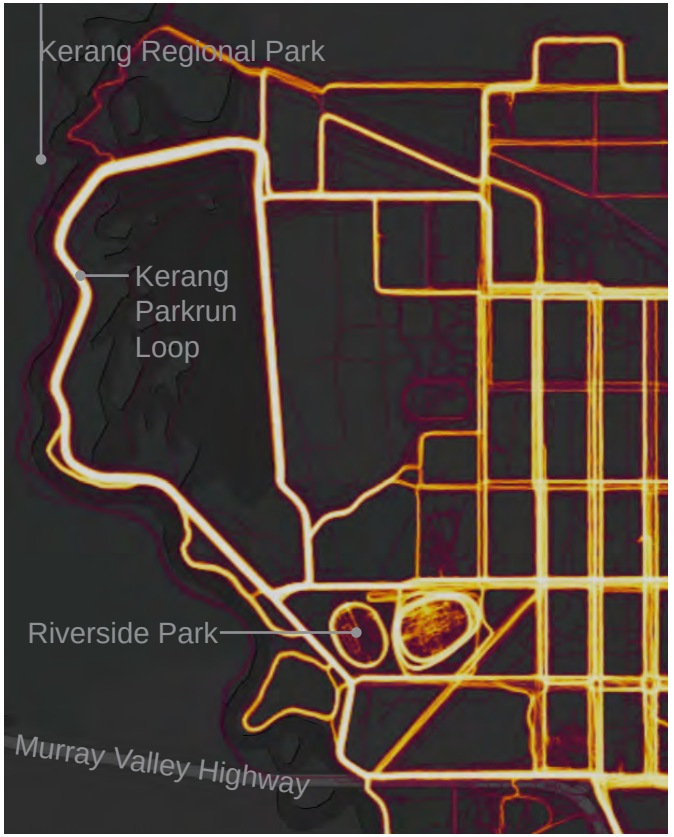
A canoe trail is an interesting or challenging stretch of water which offers public access for canoeists to paddle. The route is indicated on a map showing its associated facilities such as jetties, slipways, car parks and toilets. At designated access points, information panels provide additional details of its features along the trail and of the surrounding area. Canoe trails may be paddled as a whole or in sections.

Fishing

Fishing on the Loddon River is a popular past time for many locals, however, many visitors or tourists may be unaware of this. There may be an opportunity to further promote recreational fishing on the Loddon River within Kerang Regional Park through informative signage, brochures located at the Kerang Information Centre, and through Council's website. These could identify the most suitable and safe areas for recreational fishing within the Park.

Strava Heat Map of Kerang Regional Park (south)

The below heat map identifies current routes utilised by those recording on Strava. Areas of brighter colour represent higher levels of use.



05

Route Option Analysis

Option 1

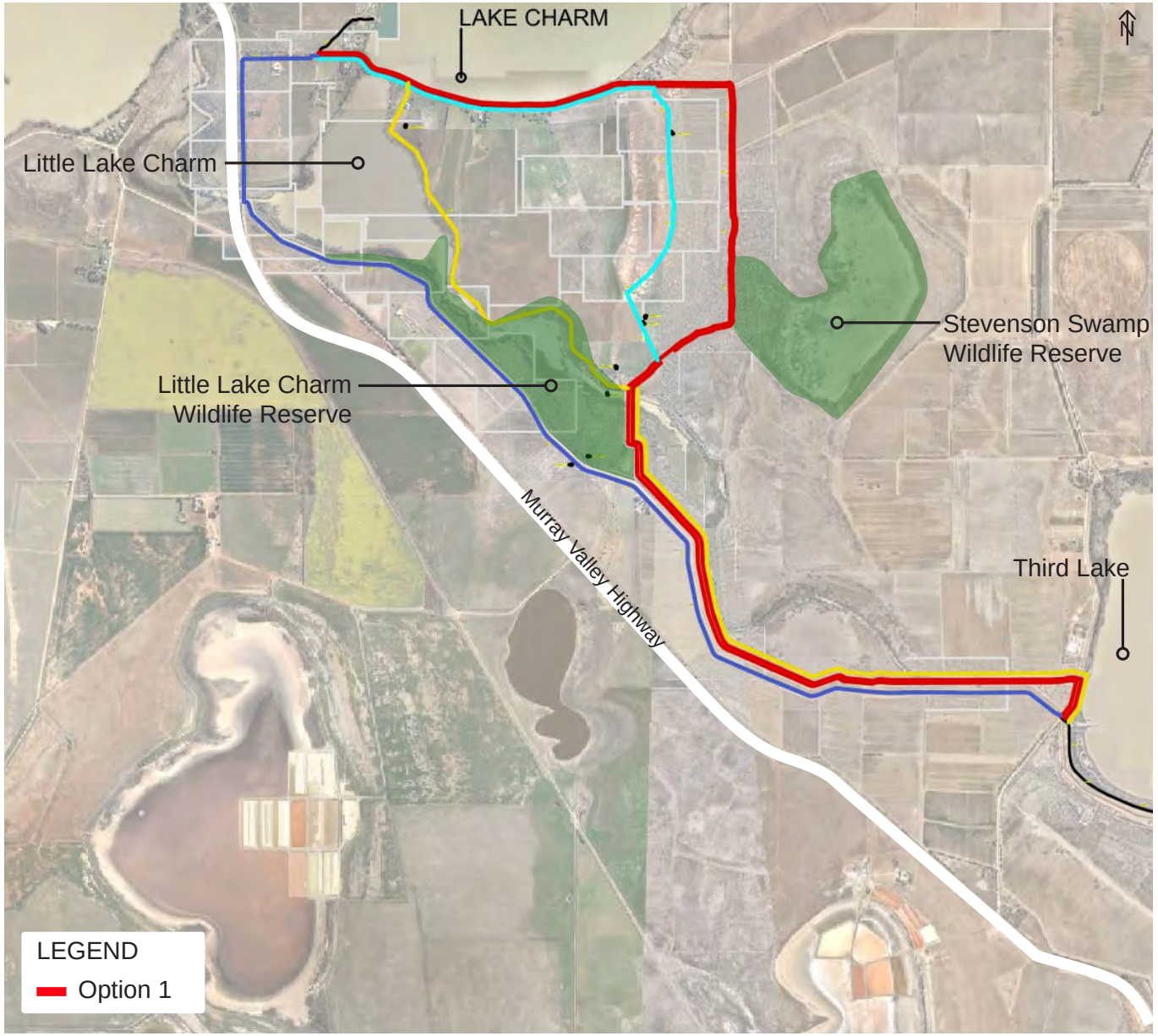
Option 1 (red) follows the northern boundary of No. 7 Lakes Channel from Third Lake to Little Lake Charm Wildlife Reserve. It follows the Wildlife Reserves eastern boundary north and onto an existing unused road reserve. The Trail follows the road reserve past the Stevenson Swamp Wildlife Reserve to Lake Charm E Road where it connects to the banks of Lake Charm and through to the Lake Charm Foreshore Caravan Park.

This option is proposed to be mostly of a concrete surface finish as most of the trail is located in a flood prone area. This may increase the project cost in comparison to Option 4 which sticks to the levee bank for the majority of the trail.

By utilising the existing road reserve, this eliminates issues with crossing private property, although the bordering landowners will need to be consulted to gain approval as part of the projects next step.

This option travels through Parks Victoria land along the Little Lake Charm Wildlife Reserves eastern boundary and will need to minimise impact on the natural environment. It avoids entering Stevenson Swamp Wildlife Reserve which reduces the impact upon the natural environment and the need to meet a range of legislations, although these will still need to be considered.

In comparison to option 3 and 4, this option (and option 2) provide a more interactive experience with Lake Charm as they travel along its foreshore for a greater distance. This option requires three road crossing points and one large wetland crossing point along the eastern boundary of Little Lake Charm Wildlife Reserve.



Option 1 SWOT Analysis

Strengths	Weaknesses
• Provides a more interactive experience with Lake Charm with greater lake front exposure than options 3 and 4. • The path is located along an existing unused road reserve which eliminates tricky issues regarding private property present for options 2, 3 and 4. • Has scenic views of Scott's Creek forest and wetland • Is sheltered from southerly and westerly prevailing winds • The section of the trail located on the G-MW channel reserve is on higher ground on the edge of the floodway and so is less prone to water damage than the central parts of the floodway. • Easily accessible from Lake Charm	• Requires three road crossing points. • Part of option 1 is located in a flood prone area. • Part of option 1 is located in the middle of some intensive Vic Super horticulture operations and Vic Super/Kilter may object to this option. • The section past Stevenson's swamp is not very scenic • Requires a large wetland crossing point where it borders the eastern boundary of the Little Lake Charm Wildlife Reserve. • Highest cost option to construct.
Opportunities	**Threats**
• With improved fencing, options 1, 2 and 3 provide the opportunity to eliminate the illegal cattle grazing in the Little Lake Charm Wildlife reserve. This should improve the conservation value of this reserve.	• Push-back from bordering private landowners. • Threat of flooding to the trail. • Not meeting required legislations and approvals for Parks Victoria land including Little Lake Charm Wildlife Reserve and Stevenson Swamp Wildlife Reserve.

Option 2

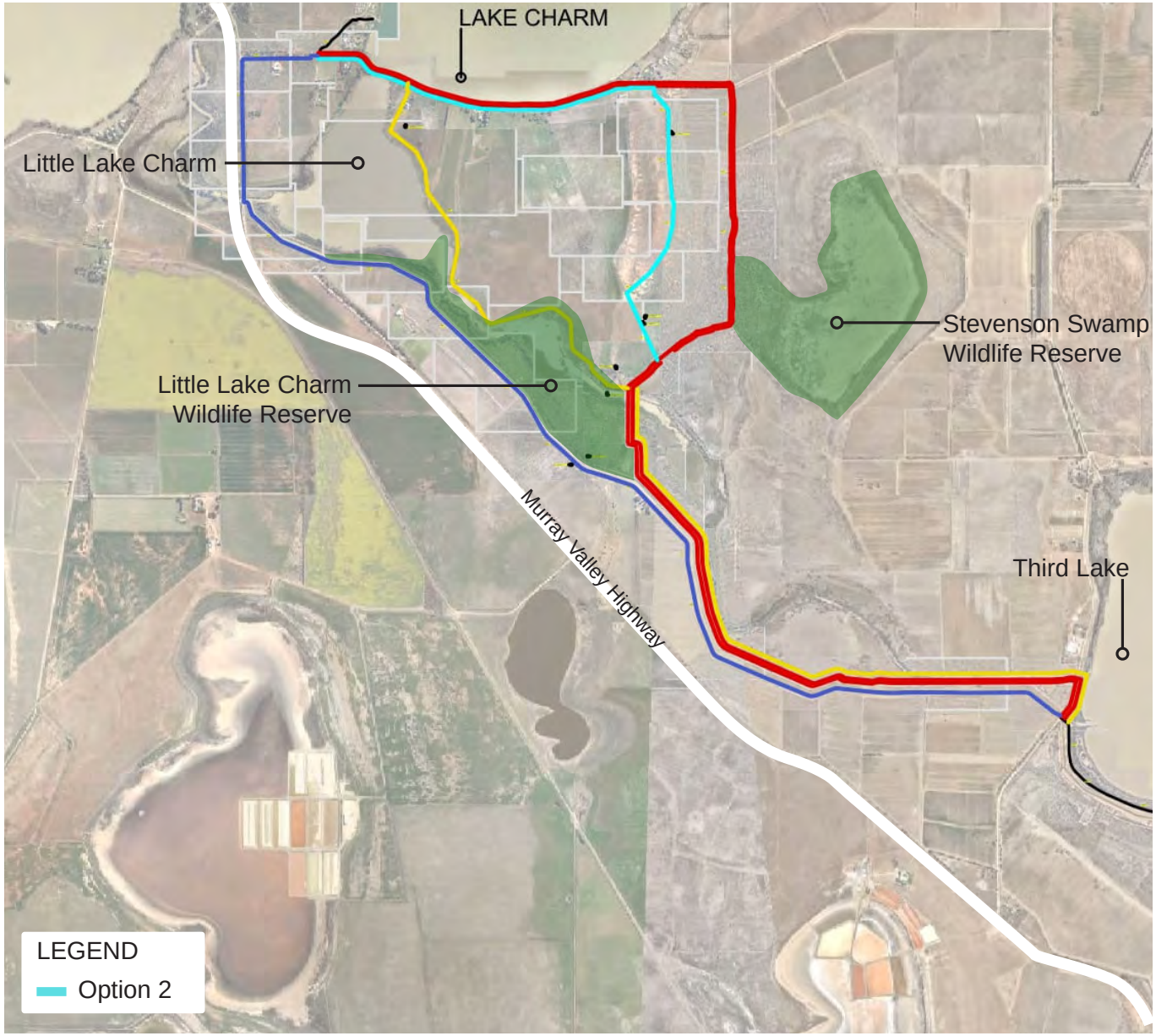
Option 2 (light blue) follows the same initial route as Option 1 along the No. 7 Lakes Channel from Third Lake to the Little Lake Charm Wildlife Reserve. From Little Lake Charm Wildlife Reserve this option avoids the Stevenson Swamp Wildlife Reserve by cutting north through private property prior to reaching it. The trail follows two existing fence lines north to reach the Lake Charm Foreshore. The trail then links on to the same alignment as option 1 where it travels along the Lake Charm banks to the Lake Charm Foreshore Caravan Park.

Similarly to option 1, the trail will requires a large amount of concrete surfacing to withstand flood events. This option does include a portion of the trail which is outside of the one hundred year flood event.

This option travels through Parks Victoria land along the Little Lake Charm Wildlife Reserves eastern boundary and will need to minimise impact on the natural environment. A long boardwalk will be required to cross the Wildlife Reserves bordering wetland.

Due to this option crossing multiple private properties, consultation with the landowners would be required to gain approval prior to commencing any further.

This option requires three road crossing points.



Option 2 SWOT Analysis

Strengths	Weaknesses
• Provides a more interactive experience with Lake Charm with greater lake front exposure than options 3 and 4. • Has scenic views of Scott's Creek forest and wetland • A scenic experience where the trail goes through tree plantations along and south of Lake Charm East Road. • Is sheltered from southerly and westerly prevailing winds • The section of the trail located on the G-MW channel reserve is on higher ground on the edge of the floodway and so is less prone to water damage than the central parts of the floodway. • It is more scenic than options 1 and 4. • Initial discussions with private landowners affected by the alignment in the trails north eastern section have been previously undertaken and they have expressed support for the trail. Solutions including land purchase, licencing and the shifting of boundary fences have been discussed. Further consultation with all affected and adjoining landowners will be required. • Easily accessible from Lake Charm	• Requires three road crossing points. • Part of option 2 is flood prone. • Requires a large wetland crossing point where it borders the eastern boundary of the Little Lake Charm Wildlife Reserve. • Second highest cost option to construct.
Opportunities	**Threats**
• With the fencing proposed, options 1, 2 and 3 provide the opportunity to eliminate the illegal cattle grazing in the Little Lake charm Wildlife reserve. This should improve the conservation value of this reserve. • The section of options 1 to 3 along the G-MW land could be located on top of the spoil bank to make it further above flood level if required.	• Although some consultation with private landowners has been undertaken, there may still be push-back from private landowners through additional consultation phases. • Threat of flooding to the trail. • Not meeting required legislations and approvals for Parks Victoria land including Little Lake Charm Wildlife Reserve.

Option 3

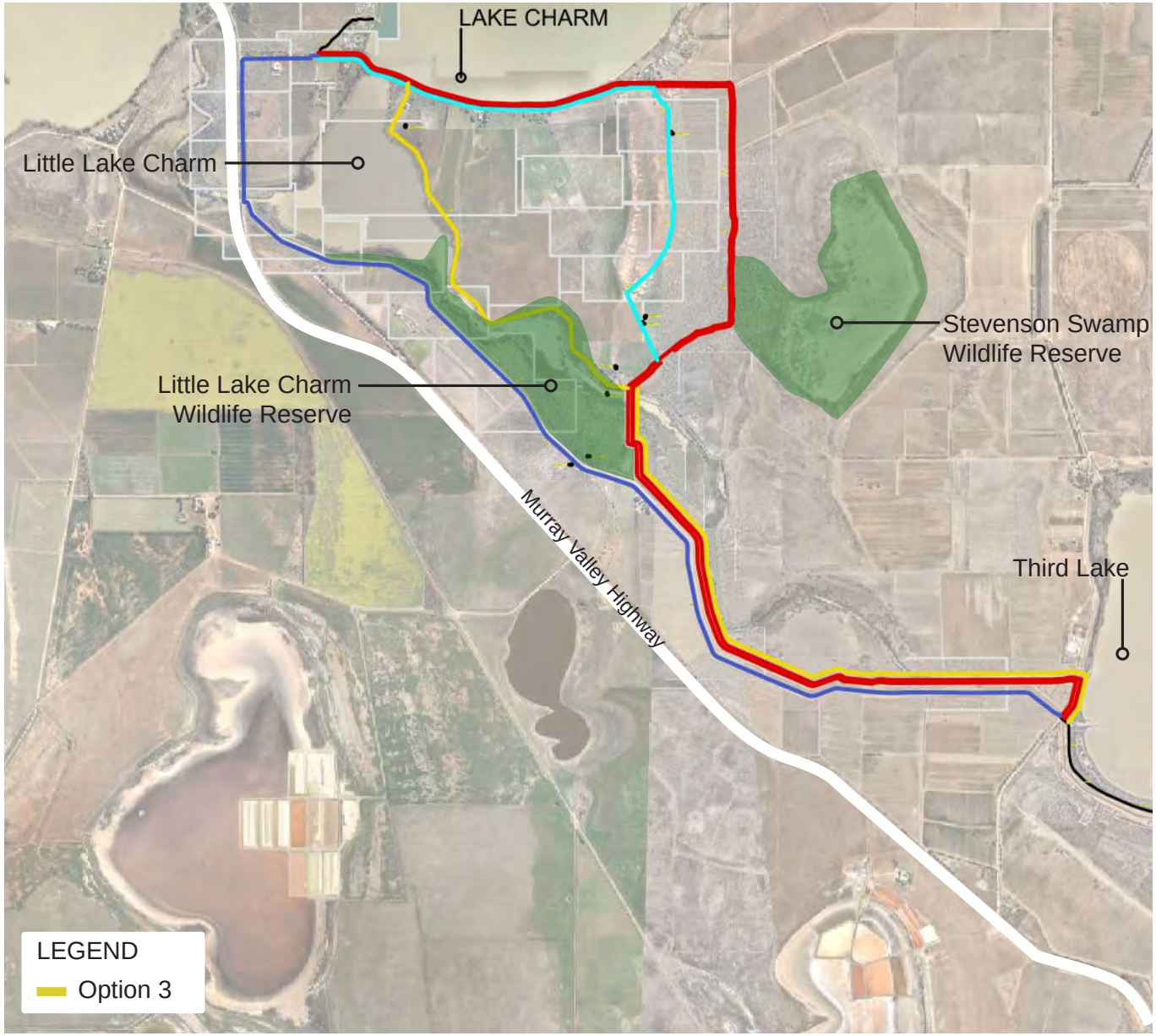
Option 3 (yellow) also follows the same route as options 1 and 2 until it reaches the Little Lake Charm Wildlife Reserve, from here this option travels west along the northern boundary of the Little Lake Charm Wildlife Reserve. The trail then follows the eastern bank of Little Lake charm on crown land and a disused road reserve to the Lake Charm East Road where it follows the same alignment as option 1 and 2 to the Lake Charm Foreshore Caravan Park.

This option provides a more naturally immersive experience than options 1 and 4 by following both the Lake Charm Wildlife Reserve and Little Lake Charm boundaries, however, it does have reduced exposure to Lake Charm than options 1 and 2.

This option is also located within flood prone areas and like options 1 and 2 will require concrete surfacing to withstand these events.

An issue with this alignment is the proximity to private property where the trail meets Lake Charm E Road. The trail travels along a disused road reserve which one adjoining landowner uses as a driveway. Here the trail comes within 5 metres of the adjoining landowners house and 15 metres away from another house. This may be a privacy issue for one house.

Consultation with private landowners as part of the projects next steps will be required to ensure that the trail has the backing of those directly affected by the trail.



Option 3 SWOT Analysis

Strengths	Weaknesses
• Travels past both the Little Lake Charm Wildlife Reserve, Little Lake Charm and Lake Charm. • Option 3 is the most scenic of all options with scenic views of Little Lake Charm Wildlife Reserve wetland section, Little Lake Charm and Scott's Creek forest and wetland. • Most direct route of the 4 options. • It is sheltered from southerly and westerly prevailing winds • It is located entirely on G-MW land, crown land and a disused road reserve, eliminating the need for land purchase. • The section of the trail located on the G-MW channel reserve is on higher ground on the edge of the floodway and so is less prone to water damage than the central parts of the floodway. • Most of the trail is already fenced so that stock should not be a problem • Some of this option is located on top of a levee bank along the north side of the Little Lake Charm Wildlife Reserve and east side of Little Lake Charm. This levee bank is not flood prone for most flood events. Most of it appears to have been above the 2011 and 2022 floods, based on observation and advice from neighbouring landowners. • Easily accessible from Lake Charm. • Second lowest cost option to construct.	• Requires three road crossing points. • Approximately 65% of option 3 is flood prone. • Requires a large wetland crossing point where it borders the eastern boundary of the Little Lake Charm Wildlife Reserve.
Opportunities	**Threats**
• With the fencing proposed, options 1, 2 and 3 provide the opportunity to eliminate the illegal cattle grazing in the Little Lake charm Wildlife reserve. This should improve the conservation value of this reserve. • The section of options 1 to 3 along the G-MW land could be located on top of the spoil bank to make it further above flood level if required.	• Travels closely to private dwellings potentially affecting the residents privacy. • Push-back from private landowners. • Threat of flooding to the trail. • Not meeting required legislations and approvals for bordering Parks Victoria land including Little Lake Charm Wildlife Reserve.

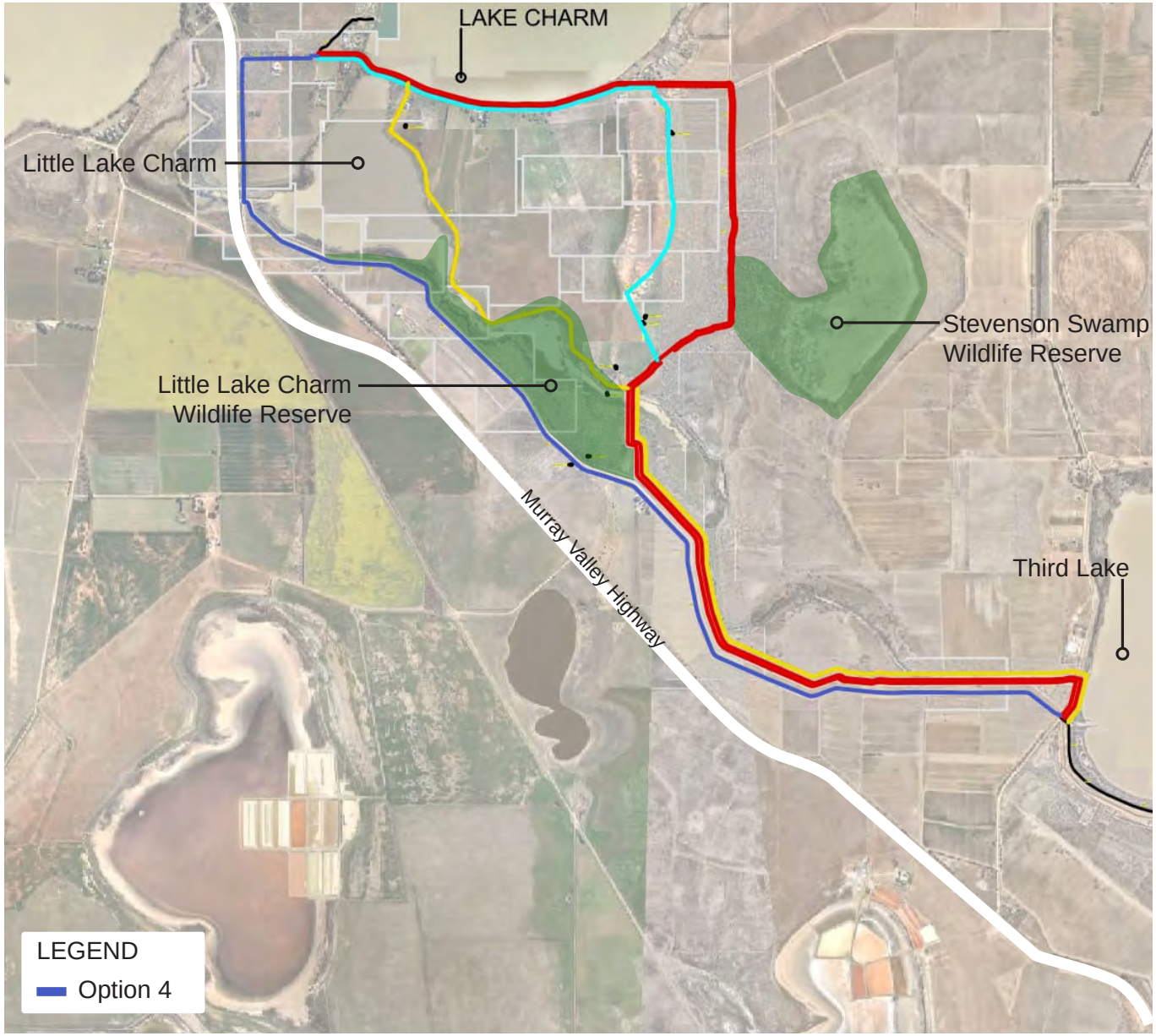
Option 4

Option 4 (purple) provides an alternate beginning to the remainder of the options by following the No. 7 Lakes Channels southern boundary until it intersects with Murray Valley Highway. This allows the trail to be located on top of the levee banks which means it is out of the flood zone and can be treated with an asphalt surface finish rather than a concrete surface finish. From its intersection with Murray Valley Highway, a new pedestrian/ bike bridge will need to be constructed alongside the existing vehicular bridge to cross the No. 7 Lakes Channel. The trail then travels through the wide road reserve along the eastern side of Murray Valley Highway and on to Lake Charm E Road where it then connects up to the Lake Charm Foreshore Caravan Park.

This option provides a more effective alternative to avoiding the potential one hundred year flood event than the other options by sticking to the levee banks. This does come at a cost of sacrificing extended Lake Charm water frontage.

This option will have the least impact on the general publics private property.

This option requires two road crossing points rather then the three required by the other options.



Option 4 SWOT Analysis

Strengths	Weaknesses
• Located outside of private property and in locations that do not impact on private landowners. • Located on top of the existing levee bank for the majority of the trail which mean that the trail is above one hundred year flood levels. • Easily accessible from Lake Charm and from Murray Valley Highway. • Large road reserve allows for trail to be located a safe distance from Murray Valley Highway. • Less requirement for legislations and approvals surrounding Parks Victoria land. • Reduced costs associated with surface finishes. • Lowest cost option to construct.	• Requires a new pedestrian/cycle bride to cross the No.7 Lakes Channel alongside the Murray Valley Highway. • Has limited exposure to Lake Charm in comparison with other options. • Requires two road crossing points. • It is subject to prevailing southerly and westerly winds • Subject to traffic noise from the Murray Valley Highway • It is the least scenic of all the options • This option provides only very poor views of the Little Lake Charm Wildlife Reserve and sacrifices extended water frontage of this reserve. • It provides very poor views of Scott's Creek forest and wetland
Opportunities	**Threats**
	• Gaining approval to construct the trail on the levee banks that border the No. 7 Lakes Channel. Consultation with Goulburn Murray Water and CMA will be required to be on going. • Permissions required from VicRoads and G-MW • Possible push back from a neighbouring landowner who makes some use of the spoil bank and G-MW land.

06
Concept Design

Concept Design Plans

The following pages include the concept design plans for the Kerang Lakes Eco-Trail. The concept design is for the length of the trail from Kerang to Lake Charm and identifies all existing property boundaries, titles and levee banks along the trails route.

The concept plan provides four options at the northern end of the trail which begin from Third Lake and connect to the Lake Charm Foreshore Caravan Park. To the south of Third Lake all of the trail options take the same route connecting to Kerang Regional Park.

The concept plans provide the total distances, infrastructure and supporting infrastructure required for each of the four trail options.

The trail surface has been specified as a mixture of both concrete and asphalt, boardwalks and bridges depending on location. Concrete has been specified in all low lying flood prone areas to reduce damaged caused by flooding events. This will reduce on-going maintenance costs and reduce the need to replace the trail following a flooding event, as a natural or gravel finish has the potential to wash away with the flood waters.

Where the trail is located on a levee bank, it has been specified as an asphalt surface finish as these areas are generally above the flood levels and are not at a great risk of being washed away.

Boardwalks have been specified in all wetland areas to reduce the impact on flora and fauna and to provide suitable crossing infrastructure in or nearby wetland locations such as the Little Lake Charm Wildlife Reserve.

A single pedestrian bridge has been specified along the trail. This is located to the South of Reedy Lake near Apex Park Road to cross a lake inlet point.

Due to the Eco-Trail being shared-use for walkers and cyclists, its width has been designed to be 2.5m wide which is the recommended width as per Australian Standards. This allows a suitable and safe amount of room for walkers and cyclists to travel in both directions and overtake one another safely.

The concept design pinpoints all trail hazards, points of interest and existing and proposed infrastructure which were identified during site visits and captured through GIS geo-referencing software.

The trail has two trail head locations, one being situated in Kerang Regional Park next to the existing swing bridge and one being located at the Lake Charm Foreshore Caravan Park in Lake Charm. These two locations have been chosen as they are easily accessible and provide suitable space to facilitate a trail head.

Trail head, interpretive and wayfinding signage locations have been identified for the length of the trail. The trail head signs have been proposed to be located at the two trail heads in Kerang and Lake Charm.

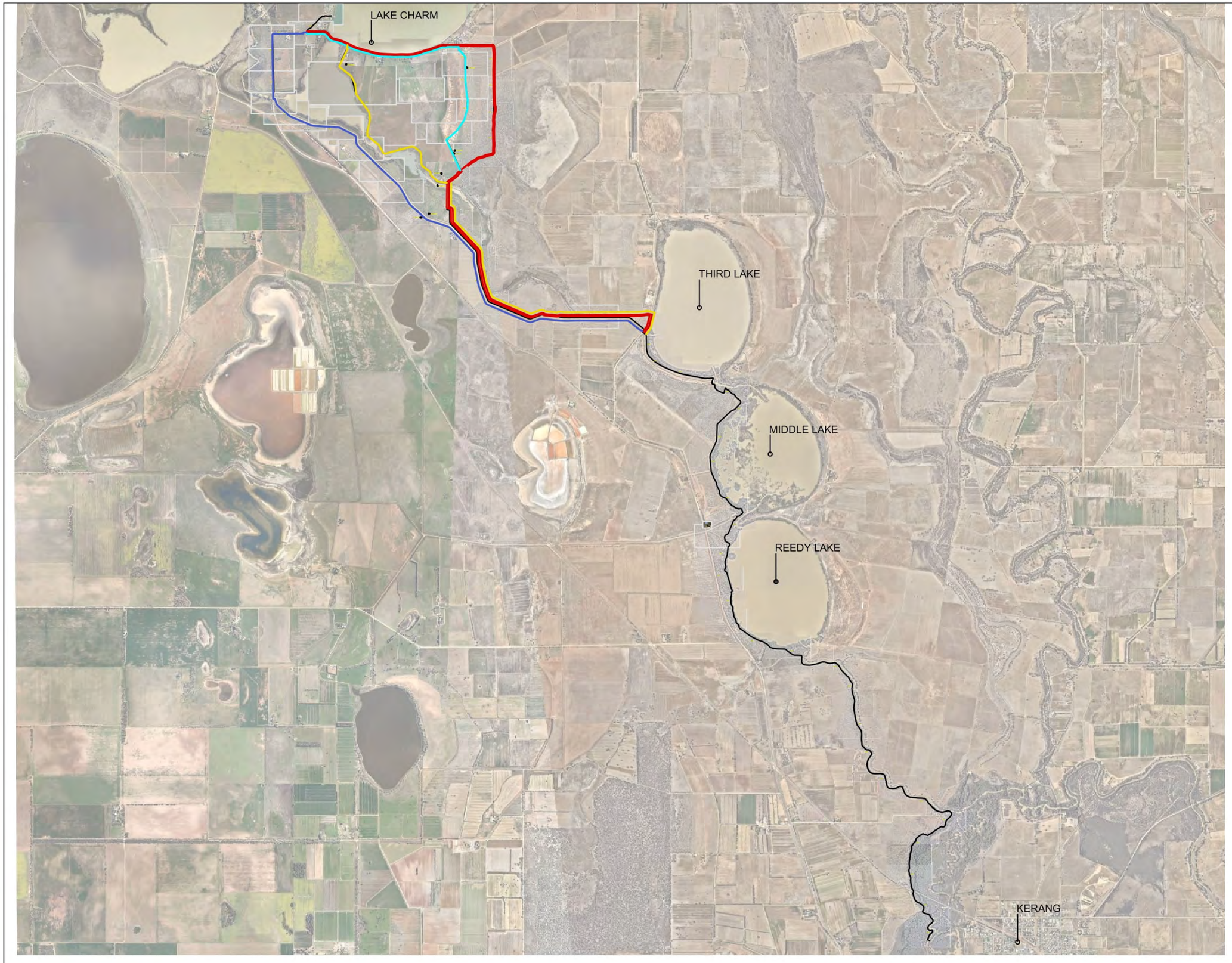
Interpretive signage has been located at all point of interest locations along the trail including, but not limited to, the Loddon River, regulators, bird watching locations, lakes and wetlands.

Waymarkers have been located at specific decision making points along the trail as well as suitable locations to reinforce the user they are traveling in the correct direction. These are proposed to have the remaining trail distance displayed on them.

Supporting infrastructure has been included at various locations along the trail. This includes seating at point of interest locations, and a picnic table and shade shelter at a central rest point on the banks of Third Lake.

All identified hazards have proposed solutions of how to reduce or eradicate these to ensure that the trail is safe for users.

Supporting images of plotted points have also been included in the concept plans.



LEGEND

- TRAIL ALIGNMENT (ALL OPTIONS)
- TRAIL ALIGNMENT OPTION 1
- TRAIL ALIGNMENT OPTION 2
- TRAIL ALIGNMENT OPTION 3
- TRAIL ALIGNMENT OPTION 4

NOTE: CONCEPT DESIGN DRAWINGS HAVE BEEN DEVELOPED WITHOUT A SITE SURVEY, ENGINEERING SURVEYS, TRAFFIC ASSESSMENTS AND ASSESSMENT OF SERVICES. THE PROPOSED TRAIL DESIGN AND ALIGNMENT ARE SUBJECT TO RESULTS OF THESE STUDIES IN THE DETAILED DESIGN PHASE.

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47 Victoria Street,
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Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
ECO-TRAIL OVERVIEW

Drawn: AP
Checked: NT
Scale N/A

N

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_01

Revision -

OPTION 1

TOTAL PROJECT SURFACE AREAS AND SPECIFIED ITEM NUMBERS	
TOTAL DISTANCE (INCLUDING ROAD CROSSINGS/ON-ROAD)	21.73KM
2.5M WIDE CONCRETE SHARED PATHWAY	8.89 KM
2.5M WIDE ASPHALT SHARED PATHWAY	12.38 KM
NEW 2.5M WIDE BOARDWALK	231 M
NEW 2.5M WIDE BRIDGE	30 M
NEW BENCH SEAT	8 NO.
NEW SHADE SHELTER	1 NO.
NEW PICNIC TABLE	1 NO.
NEW ON-PATH 'ROAD CROSSING AHEAD' SIGN	12 NO.
NEW ON-ROAD 'CROSSING AHEAD' SIGN	12 NO.
NEW 'CYCLISTS DISMOUNT SIGN'	14 NO.
NEW CHICANE BARRIER	24 NO.
NEW SHARED-USE PATHWAY SIGN	12 NO.
NEW TRAIL HEAD SIGN	2 NO.
NEW INTERPRETIVE SIGN	12 NO.
NEW WAYMARKER SIGN (INCLUDING REMAINING DISTANCE)	20 NO.
NEW BOX CULVERTS	1 NO.
ALLOWANCE FOR NEW FENCING	11 KM
NEW PUBLIC ART/SCULPTURE LOCATIONS	7 NO.

OPTION 2

TOTAL PROJECT SURFACE AREAS AND SPECIFIED ITEM NUMBERS	
TOTAL DISTANCE (INCLUDING ROAD CROSSINGS/ON-ROAD)	21.18 KM
2.5M WIDE CONCRETE SHARED PATHWAY	7.42 KM
2.5M WIDE ASPHALT SHARED PATHWAY	13.30 KM
NEW 2.5M WIDE BOARDWALK	231 M
NEW 2.5M WIDE BRIDGE	30 M
NEW BENCH SEAT	8 NO.
NEW SHADE SHELTER	1 NO.
NEW PICNIC TABLE	1 NO.
NEW ON-PATH 'ROAD CROSSING AHEAD' SIGN	14 NO.
NEW ON-ROAD 'CROSSING AHEAD' SIGN	14 NO.
NEW 'CYCLISTS DISMOUNT SIGN'	16 NO.
NEW CHICANE BARRIER	28 NO.
NEW SHARED-USE PATHWAY SIGN	14 NO.
NEW TRAIL HEAD SIGN	2 NO.
NEW INTERPRETIVE SIGN	12 NO.
NEW WAYMARKER SIGN (INCLUDING REMAINING DISTANCE)	23 NO.
NEW BOX CULVERTS	1 NO.
ALLOWANCE FOR NEW FENCING	8.5 KM
NEW PUBLIC ART/SCULPTURE LOCATIONS	9 NO.

OPTION 3

TOTAL PROJECT SURFACE AREAS AND SPECIFIED ITEM NUMBERS	
TOTAL DISTANCE (INCLUDING ROAD CROSSINGS/ON-ROAD)	20.42 KM
2.5M WIDE CONCRETE SHARED PATHWAY	6.78 KM
2.5M WIDE ASPHALT SHARED PATHWAY	13.25 KM
NEW 2.5M WIDE BOARDWALK	162 M
NEW 2.5M WIDE BRIDGE	30 M
NEW BENCH SEAT	8 NO.
NEW SHADE SHELTER	1 NO.
NEW PICNIC TABLE	1 NO.
NEW ON-PATH 'ROAD CROSSING AHEAD' SIGN	14 NO.
NEW ON-ROAD 'CROSSING AHEAD' SIGN	14 NO.
NEW 'CYCLISTS DISMOUNT SIGN'	16 NO.
NEW CHICANE BARRIER	28 NO.
NEW SHARED-USE PATHWAY SIGN	14 NO.
NEW TRAIL HEAD SIGN	2 NO.
NEW INTERPRETIVE SIGN	12 NO.
NEW WAYMARKER SIGN (INCLUDING REMAINING DISTANCE)	20 NO.
NEW BOX CULVERTS	1 NO.
ALLOWANCE FOR NEW FENCING	8.2 KM
NEW PUBLIC ART/SCULPTURE LOCATIONS	8 NO.

OPTION 4

TOTAL PROJECT SURFACE AREAS AND SPECIFIED ITEM NUMBERS	
TOTAL DISTANCE (INCLUDING ROAD CROSSINGS/ON-ROAD)	20.75 KM
2.5M WIDE CONCRETE SHARED PATHWAY	6.50 KM
2.5M WIDE ASPHALT SHARED PATHWAY	14.0 KM
NEW 2.5M WIDE BOARDWALK	30 M
NEW 2.5M WIDE BRIDGE	94 M
NEW BENCH SEAT	8 NO.
NEW SHADE SHELTER	1 NO.
NEW PICNIC TABLE	1 NO.
NEW ON-PATH 'ROAD CROSSING AHEAD' SIGN	12 NO.
NEW ON-ROAD 'CROSSING AHEAD' SIGN	12 NO.
NEW 'CYCLISTS DISMOUNT SIGN'	14 NO.
NEW CHICANE BARRIER	24 NO.
NEW SHARED-USE PATHWAY SIGN	12 NO.
NEW TRAIL HEAD SIGN	2 NO.
NEW INTERPRETIVE SIGN	10 NO.
NEW WAYMARKER SIGN (INCLUDING REMAINING DISTANCE)	19 NO.
NEW BOX CULVERTS	1 NO.
ALLOWANCE FOR NEW FENCING	6 KM
NEW PUBLIC ART/SCULPTURE LOCATIONS	8 NO.

REFER TO ORDER OF COST ESTIMATE FOR FURTHER ITEMS AND DETAIL.

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Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
OPTION TOTALS

Drawn: AP
Checked: NT
Scale N/A

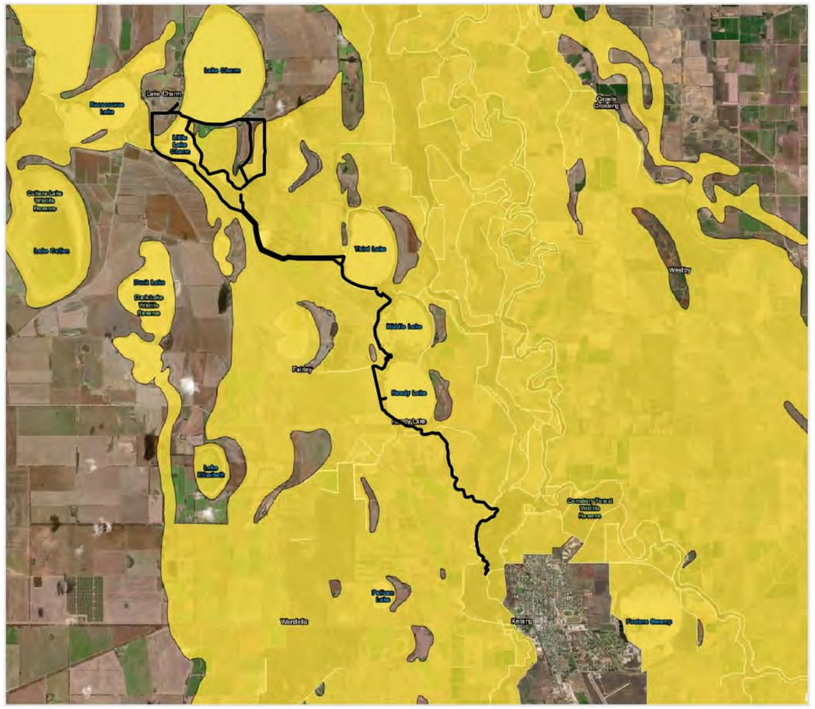
Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_02

Revision -

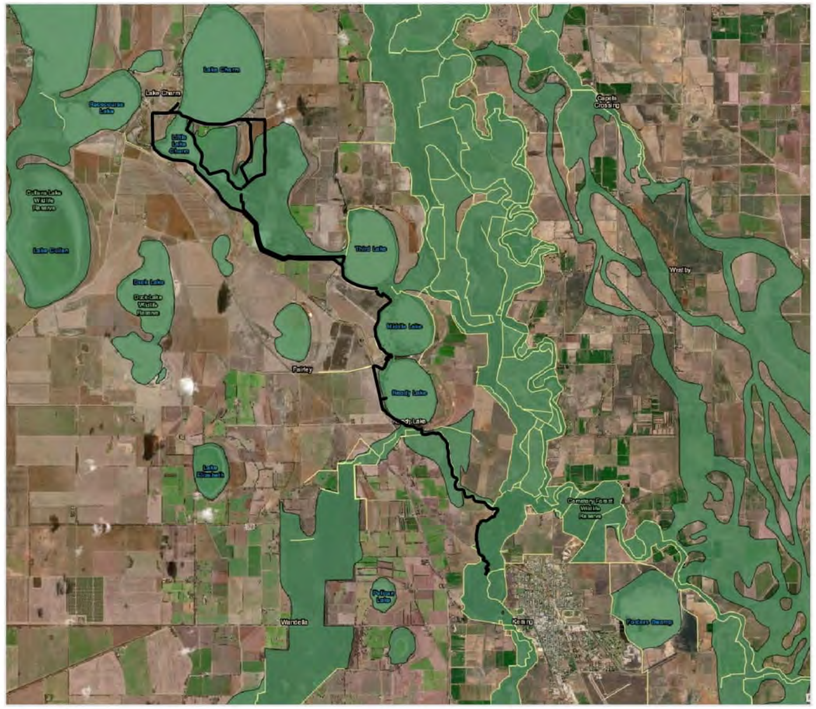
100 YEAR FLOOD EVENT



LEGEND

- 100 YEAR FLOOD EVENT
- EXISTING LEVEE BANK

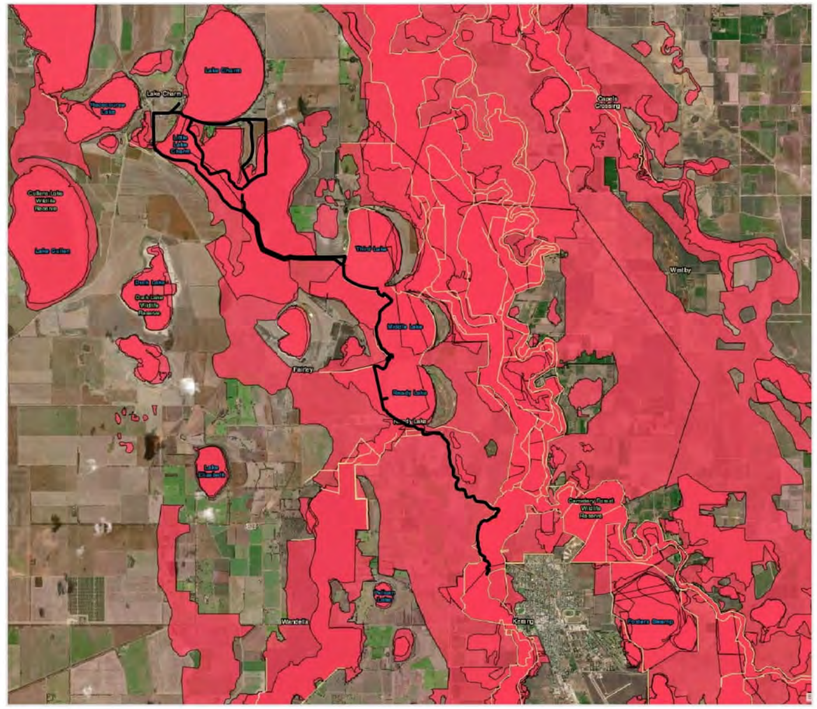
FLOODWAYS



LEGEND

- FLOODWAYS
- EXISTING LEVEE BANK

HISTORIC FLOOD EVENT

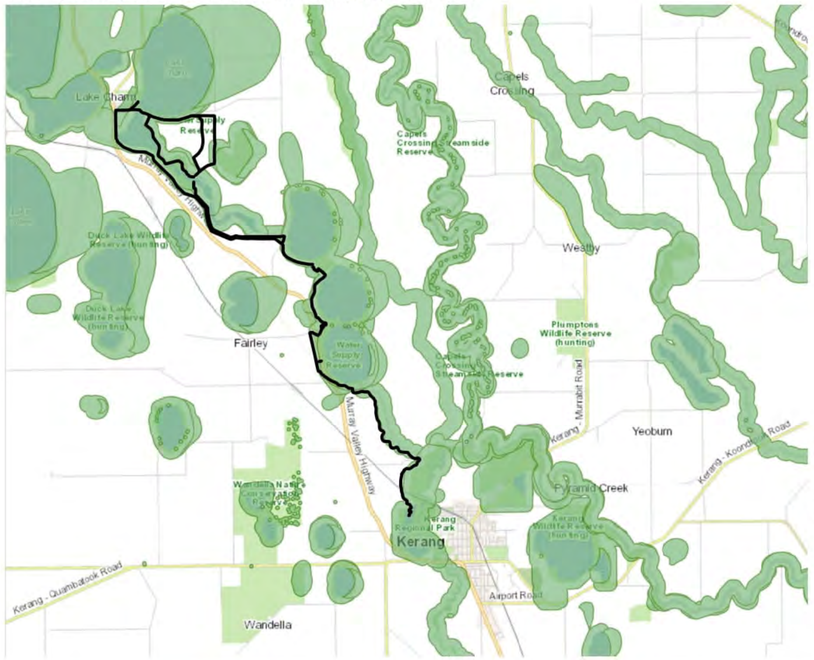


LEGEND

- HISTORIC FLOOD EXTENT
- EXISTING LEVEE BANK

NOTE: PATHWAYS LOCATED IN LOW-LYING FLOOD PRONE AREAS HAVE BEEN SPECIFIED TO HAVE A CONCRETE SURFACE FINISH. PATHWAYS LOCATED IN AREAS NOT AFFECTED BY FLOODING AND/OR FLOODWAYS HAVE BEEN SPECIFIED TO HAVE AN ASPHALT SURFACE FINISH (THIS INCLUDES ALL LEVEE BANKS). THE SURFACE FINISHES HAVE BEEN SELECTED TO IMPROVE THE LONGEVITY, AND REDUCE ON-GOING MAINTENANCE OF THE PATHWAYS.

ABORIGINAL CULTURAL HERITAGE STUDY

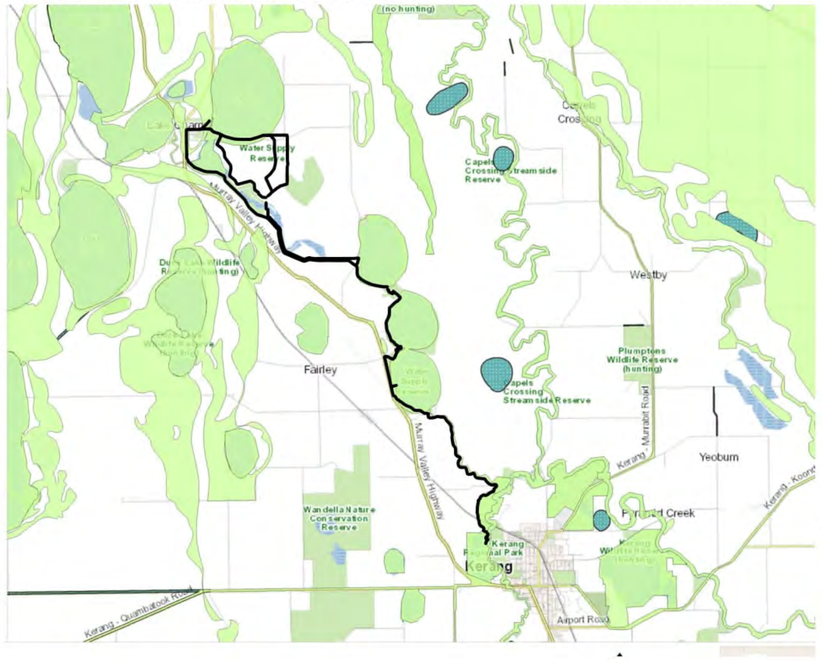


NOTE: AN ABORIGINAL CULTURAL HERITAGE STUDY SHOULD BE COMPLETED AND CONSULTATION IS TO BE UNDERTAKEN WITH LOCAL ABORIGINAL GROUPS AND ELDERS IN THE DEVELOPMENT OF THE KERANG LAKES ECO-TRAIL.

LEGEND

- ABORIGINAL CULTURAL HERITAGE AREA
- KERANG LAKES ECO-TRAIL ALIGNMENT

ENVIRONMENTAL SIGNIFICANCE AND VEGETATION PROTECTION



NOTE: AN ENVIRONMENTAL ASSESSMENT SHOULD BE COMPLETED IN THE DEVELOPMENT OF THE KERANG LAKES ECO-TRAIL. PARTICULARLY WHERE THE TRAIL BORDERS/TRAVERSES THROUGH THE KERANG REGIONAL PARK AND PARKS VICTORIA LAND. NATIVE VEGETATION CLEARING OFFSETS MAY BE REQUIRED AND ANY CLEARING OF EXISTING NATIVE VEGETATION IS TO RECEIVE APPROVAL AND A PLANNING PERMIT FIRST.

LEGEND

- ESO - ENVIRONMENTAL SIGNIFICANCE OVERLAY
- VPPO - VEGETATION PROTECTION OVERLAY
- KERANG LAKES ECO-TRAIL ALIGNMENT

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Gannawarra Shire Council, Victoria

Drawing Title
GANNAWARRA MAPPING ANALYSIS

Drawn: AP
Checked: NT
Scale N/A

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_03

Revision -

TREDWELL MANAGEMENT

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Gannawarra Shire Council, Victoria

Drawing Title
SECTION 01

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_04

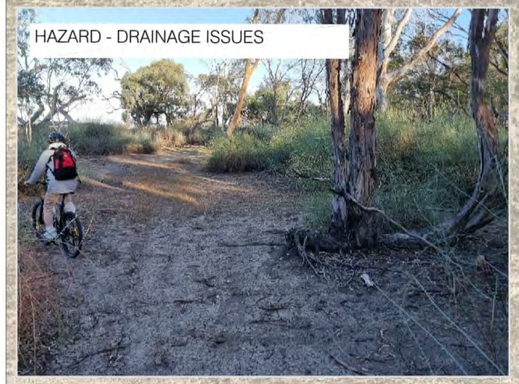
Revision -

UNDERPASS UNDER EXISTING RAILWAY LINE - EXCAVATION WORKS REQUIRED

LOT/PLAN 2C~A\PP3088

WAYMARKER

HAZARD - DRAINAGE ISSUES



HAZARD - EXISTING DRAIN/CULVERT

POINT OF INTEREST - SPLIT IN RIVER

HAZARD - DRAINAGE ISSUES - RESOLVE

OPTION 1, 2, 3, 4

LOT/PLAN 1\TP871162

LOT/PLAN 5\TP871162

LOT/PLAN 2016\PP3088

NEW FENCE TO DRAIN/CULVERT

REPLACE AND WIDEN EXISTING DRAIN/CULVERT

BENCH SEAT (X1)

PROPOSED NEW INTERPRETIVE SIGN - SPLIT IN RIVER

PROPOSED PUBLIC ART/SCULPTURE LOCATION

LOT/PLAN 2019\PP3088

LOT/PLAN 4~31\PP5413

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

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Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 02

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3

0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_05

Revision -

Mon Nov 8 2021

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

LOT/PLAN 2\TP871162

OPTION 1, 2, 3, 4

REMOVE EXISTING DAMAGED GATE AND FENCING

LOT/PLAN 1\TP513924

LOT/PLAN 2021\PP3088

HAZARD - EXISTING GATE

UNDERPASS UNDER EXISTING RAILWAY LINE - EXCAVATION WORKS REQUIRED

nearmap

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Drawing Title
SECTION 03

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_06

Revision -

TREDWELL MANAGEMENT

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Project
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Gannawarra Shire Council, Victoria

Drawing Title
SECTION 04

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

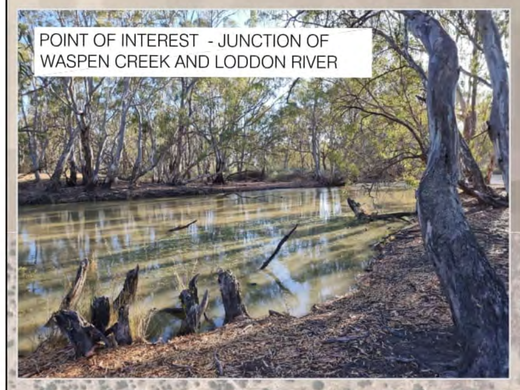
Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_07

Revision -

POINT OF INTEREST - VIEW POINT



POINT OF INTEREST - JUNCTION OF WASPEN CREEK AND LODDON RIVER

POINT OF INTEREST - EXISTING BRIDGE RIVER CROSSING

WAYMARKER

LOT/PLAN 12A~A\PP3088

PROPOSED PUBLIC ART/SCULPTURE LOCATION

NEW ROAD CROSSING POINT
X2 ON-PATH SIGNAGE - 'ROAD CROSSING AHEAD'
X2 ON-ROAD SIGNAGE - 'CROSSING AHEAD' SIGN
X2 ON-PATH SIGNAGE - 'SHARED-USE PATH'
X2 ON-PATH SIGNAGE - 'CYCLISTS DISMOUNT'
X4 CHICANE BARRIERS

BENCH SEAT (X1)

PROPOSED NEW INTERPRETIVE SIGN - WASHPEN/LODDON RIVER JUNCTION AND END OF DREDGING PYRAMID CREEK IN 1960'S

White Ln

White Ln

LOT/PLAN 9A~A\PP3088

OPTION 1, 2, 3, 4

LOT/PLAN 2021\PP3088

Mon Nov 8 2021

Imagery © 2022 Nearmap, HERE

WAYMARKER

PROPOSED INTERPRETIVE SIGN - VIEW POINT

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 05

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_08

Revision -

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

PROPOSED INTERPRETIVE SIGN - WASHPEN CREEK REGULATOR

nearmap

OPTION 1, 2, 3, 4

LOT/PLAN 12A~A\PP3088

POINT OF INTEREST - WASHPEN CREEK REGULATOR

WAYMARKER

LOT/PLAN 12A~A\PP3088

TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 06

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_09

Revision -

HAZARD - EXISTING FENCE

HAZARD - EXISTING FENCE - REMOVE FOR ACCESS

LOT/PLAN 12A~A\PP3088

OPTION 1, 2, 3, 4

nearmap

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
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Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 07

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3

0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_10

Revision -

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

HAZARD - EXISTING FENCE - REMOVE FOR ACCESS

OPTION 1, 2, 3, 4

LOT/PLAN 12A~A\PP3088

TREDWELL MANAGEMENT

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Client
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47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 08

Drawn: AP
Checked: NT

N

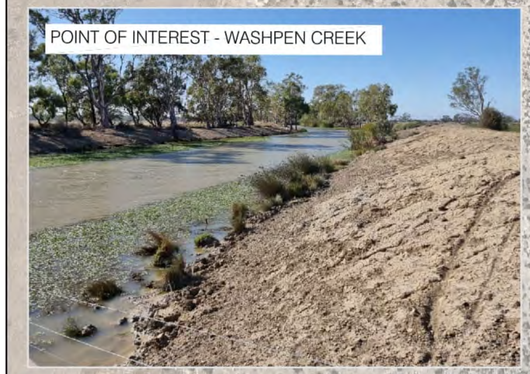
Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_11

Revision -



HAZARD - EXISTING FENCE - REMOVE FOR ACCESS

BENCH SEAT (X1)

PROPOSED PUBLIC ART/SCULPTURE LOCATION

LOT/PLAN 12A~A\PP3088

OPTION 1, 2, 3, 4

nearmap

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

TREDWELL MANAGEMENT

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Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 09

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_12

Revision -

LOT/PLAN 12A~A\PP3088

OPTION 1, 2, 3, 4

Washpen Creek

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

nearmap

HAZARD - EXISTING FENCE

- HAZARD - EXISTING FENCE - REMOVE FOR ACCESS

TREDWELL MANAGEMENT

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47 Victoria Street,
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Gannawarra Shire Council, Victoria

Drawing Title
SECTION 10

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_13

Revision -

Apex Park Rd

HAZARD - EXISTING FENCE - REMOVE FOR ACCESS

LOT/PLAN 12A~A\PP3088

OPTION 1, 2, 3, 4

nearmap

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

nearmap

TREDWELL MANAGEMENT

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Client
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Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 11

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_14

Revision -

REEDY LAKE

WAYMARKER

PROPOSED NEW BRIDGE
TO PROVIDE RIVER CROSSING

LOT/PLAN 26H~G\PP2499

LOT/PLAN 12A~A\PP3088

OPTION 1, 2, 3, 4

LEGEND

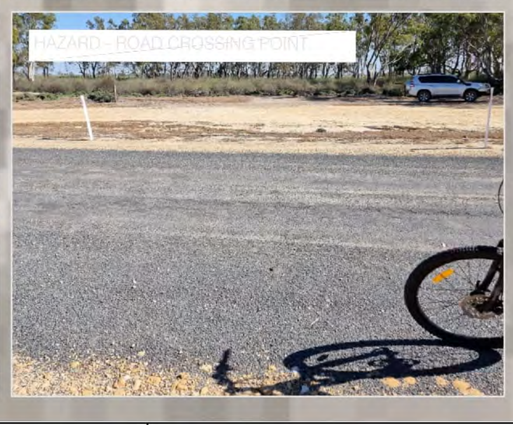
- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

PROPOSED INFRASTRUCTURE - NEW BRIDGE

POINT OF INTEREST - EXISTING BRIDGE RIVER CROSSING

HAZARD - ROAD CROSSING POINT



HAZARD - EXISTING FENCE

BENCH SEAT (X1)

PROPOSED NEW INTERPRETIVE SIGN - APEX PARK

WAYMARKER

HAZARD - ROAD CROSSING POINT

NEW ROAD CROSSING POINT
X2 ON-PATH SIGNAGE - 'ROAD CROSSING AHEAD'
X2 ON-ROAD SIGNAGE - 'CROSSING AHEAD' SIGN
X2 ON-PATH SIGNAGE - 'SHARED-USE PATH'
X2 ON-PATH SIGNAGE - 'CYCLISTS DISMOUNT'
X4 CHICANE BARRIERS

HAZARD - EXISTING FENCE - REMOVE FOR ACCESS

Apex Park Rd

TREDWELL MANAGEMENT

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Phone: 08 8234 6387

Client
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47 Victoria Street,
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KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 12

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_15

Revision -

TREDWELL MANAGEMENT

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Phone: 08 8234 6387

Client
Gannawarra Shire Council
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Gannawarra Shire Council, Victoria

Drawing Title
SECTION 13

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_16

Revision -

PROPOSED PUBLIC ART/SCULPTURE LOCATION

WAYMARKER

PROPOSED INTERPRETIVE SIGN - REEDY LAKE VIEW P

BENCH SEAT (X1)

Murray Valley Hwy

B400

OPTION 1, 2, 3, 4

LOT/PLAN 26H~G\PP2499

REEDY LAKE

ROAD RESERVE

nearmap

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

POINT OF INTEREST - READY LAKE VIEW POINT

PROPOSED INFRASTRUCTURE - NEW BENCH SEAT

TREDWELL MANAGEMENT

Tredwell Management Services
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Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 14

Drawn: AP
Checked: NT

N

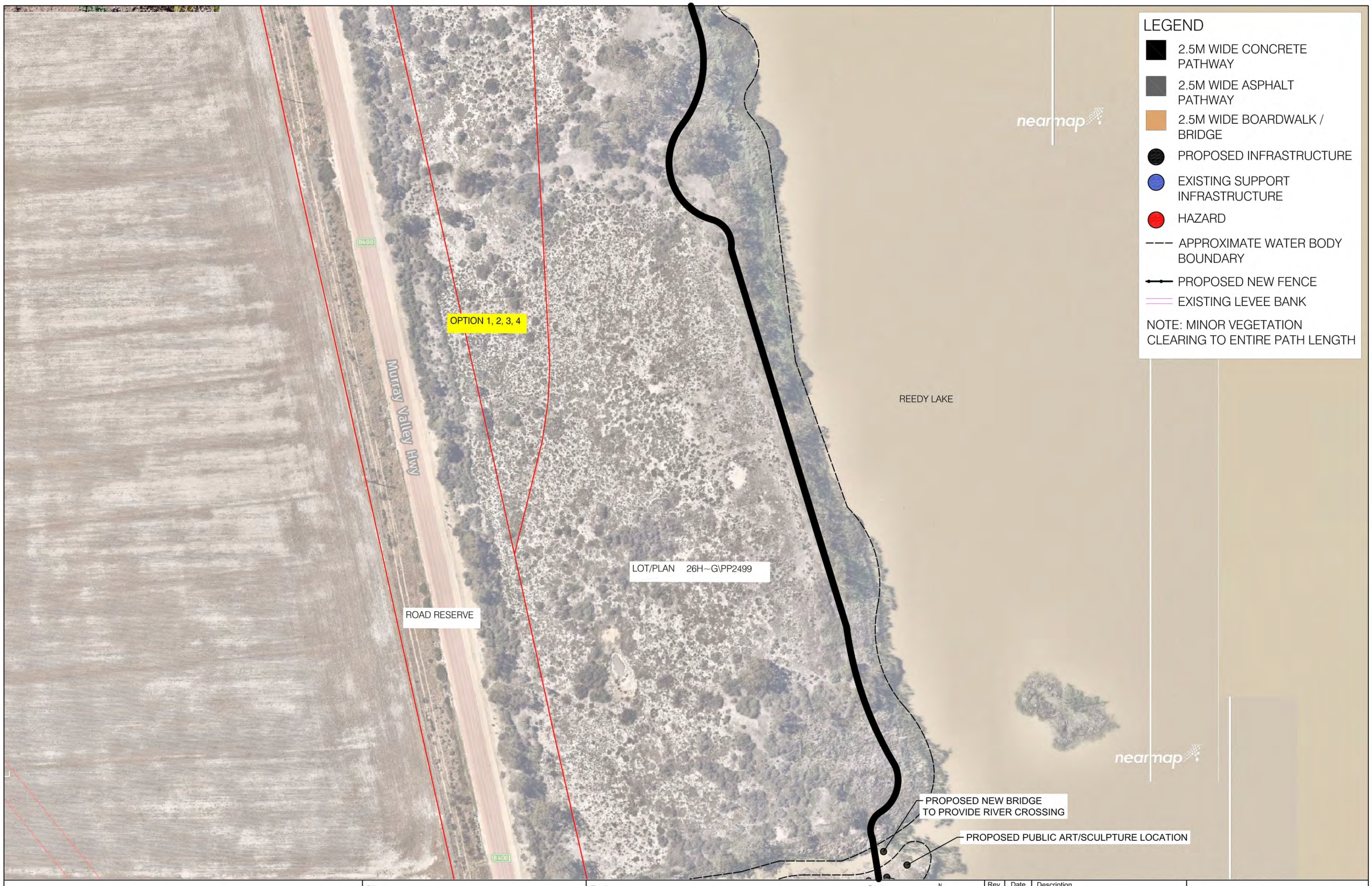
Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_17

Revision -



TREDWELL MANAGEMENT

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Client
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47 Victoria Street,
Kerang VIC 3579, Australia

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Gannawarra Shire Council, Victoria

Drawing Title
SECTION 15

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_18

Revision -

WAYMARKER

ROAD RESERVE

Murray Valley Hwy

B400

REEDY LAKE

OPTION 1, 2, 3, 4

LOT/PLAN 26H~G\PP2499

WAYMARKER

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

PROPOSED INFRASTRUCTURE - DRAIN CULVERT

TREDWELL MANAGEMENT

Tredwell Management Services
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Client
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47 Victoria Street,
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Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 16

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_19

Revision -

EXISTING SUPPORT INFRASTRUCTURE - TOILETS

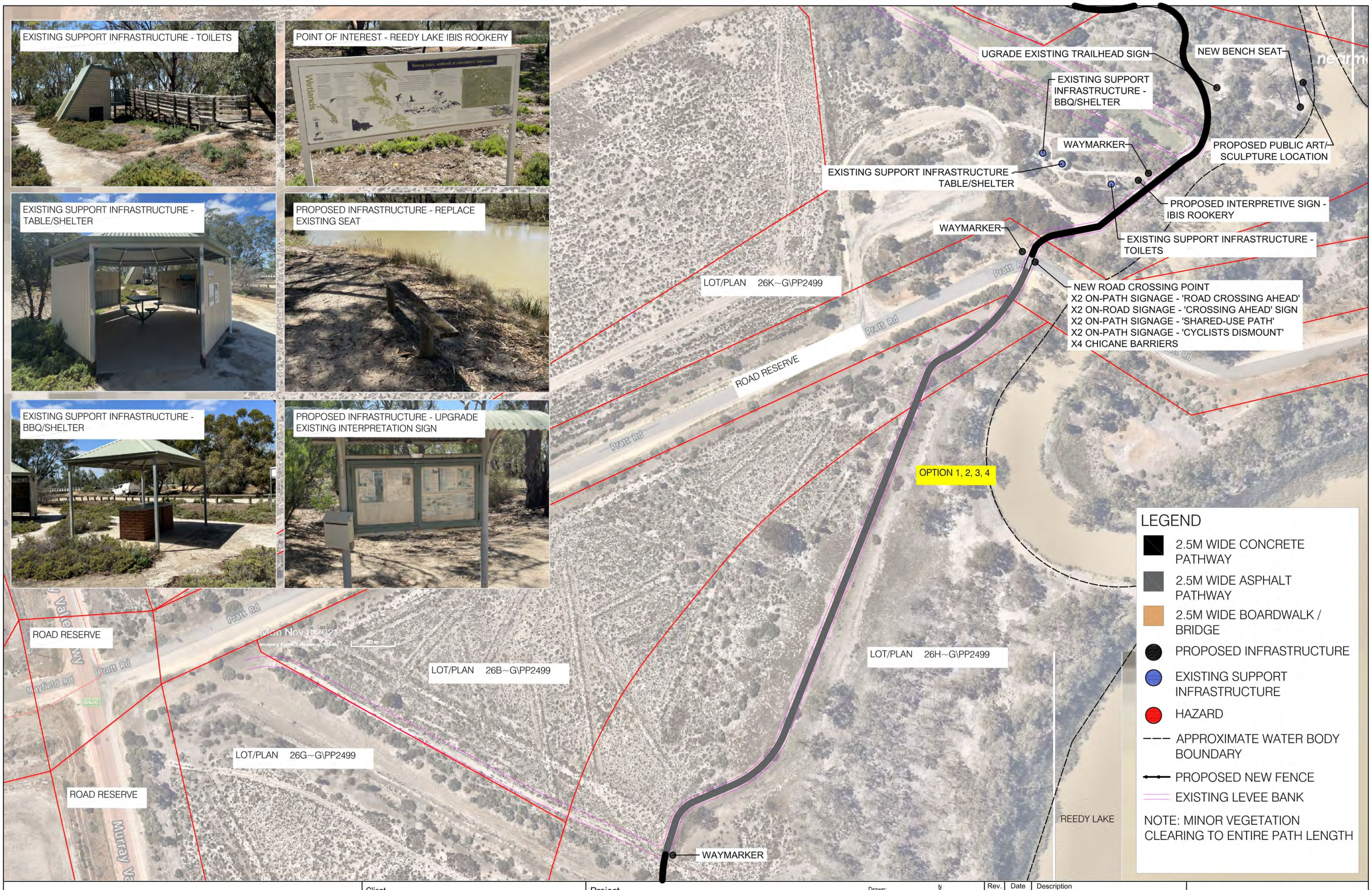
POINT OF INTEREST - REEDY LAKE IBIS ROOKERY

EXISTING SUPPORT INFRASTRUCTURE - TABLE/SHELTER

PROPOSED INFRASTRUCTURE - REPLACE EXISTING SEAT

EXISTING SUPPORT INFRASTRUCTURE - BBQ/SHELTER

PROPOSED INFRASTRUCTURE - UPGRADE EXISTING INTERPRETATION SIGN



LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

TREDWELL MANAGEMENT

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47 Victoria Street,
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Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 17

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_20

Revision -

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH


HAZARD - EXISTING FENCE


HAZARD - OVERGROWN VEGETATION


HAZARD - FALLEN TREE

nearmap

MIDDLE LAKE

HAZARD - EXISTING FENCE - REMOVE FOR ACCESS

OPTION 1, 2, 3, 4

LOT/PLAN 26E~G\PP2499

COMPLETE GAPS IN EXISTING FENCING WHERE REQUIRED

HAZARD - OVERGROWN VEGETATION - REMOVE

HAZARD - FALLEN TREE - REMOVE

TREDWELL MANAGEMENT

Tredwell Management Services
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Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
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Project
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Gannawarra Shire Council, Victoria

Drawing Title
SECTION 18

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_21

Revision -

COMPLETE GAPS IN EXISTING FENCING WHERE REQUIRED

OPTION 1, 2, 3, 4

LOT/PLAN 26E~G\PP2499

MIDDLE LAKE

Nov 8 2021

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LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

TREDWELL MANAGEMENT

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Client
Gannawarra Shire Council
47 Victoria Street,
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Project
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Gannawarra Shire Council, Victoria

Drawing Title
SECTION 19

Drawn: AP
Checked: NT

N

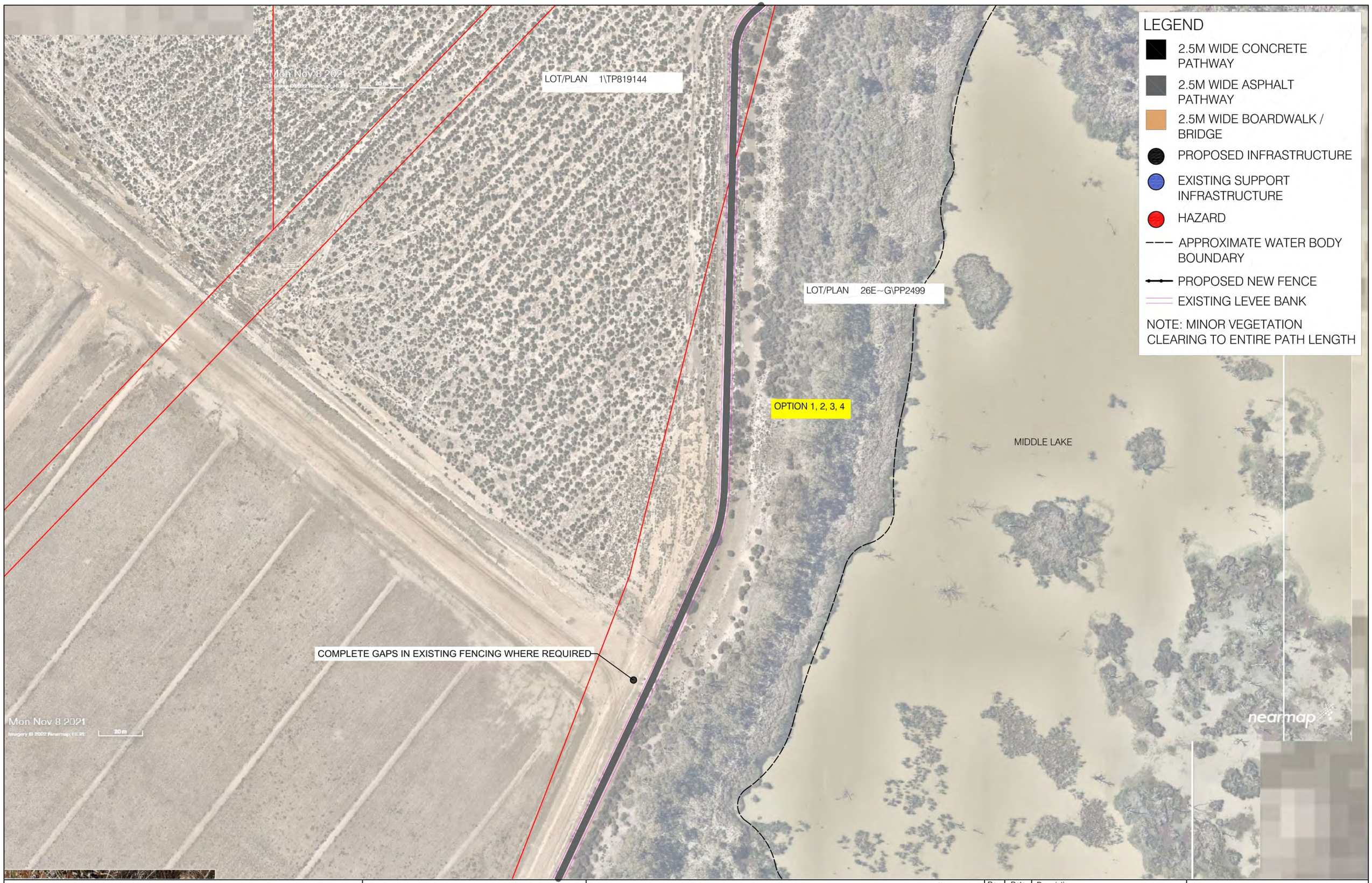
Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_22

Revision -



TREDWELL MANAGEMENT

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Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

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KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 20

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_23

Revision -

LOT/PLAN 6D~G\PP2499

ROAD RESERVE

HAZARD - EXISTING FENCE - REMOVE

OPTION 1, 2, 3, 4

COMPLETE GAPS IN EXISTING FENCING WHERE REQUIRED

LOT/PLAN 26E~G\PP2499

MIDDLE LAKE

LOT/PLAN 1\TP819144

nearmap

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
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Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
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Gannawarra Shire Council, Victoria

Drawing Title
SECTION 21

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_24

Revision -

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

WAYMARKER

X1 ON-PATH SIGNAGE - 'CYCLISTS DISMOUNT'

WAYMARKER

PROPOSED NEW INTERPRETIVE SIGN - CHANNEL REGULATOR

X1 ON-PATH SIGNAGE - 'CYCLISTS DISMOUNT'

LOT/PLAN 6A~G\PP2499

nearmap

LOT/PLAN 6D~G\PP2499

PROPOSED INTERPRETIVE SIGN - CREEK/CHANNEL BETWEEN MIDDLE LAKE AND THIRD LAKE

PROPOSED BENCH SEAT

PROPOSED PUBLIC ART/SCULPTURE LOCATION

OPTION 1, 2, 3, 4

COMPLETE GAPS IN EXISTING FENCING WHERE REQUIRED

TREDWELL MANAGEMENT

Tredwell Management Services
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Client
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47 Victoria Street,
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Project
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Gannawarra Shire Council, Victoria

Drawing Title
SECTION 22

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_25

Revision -

TREDWELL MANAGEMENT

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Gannawarra Shire Council, Victoria

Drawing Title
SECTION 23

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_26

Revision -

X2 ON-PATH SIGNAGE - 'ROAD CROSSING AHEAD'
X2 ON-ROAD SIGNAGE - 'CROSSING AHEAD' SIGN
X2 ON-PATH SIGNAGE - 'SHARED-USE PATH'
X2 ON-PATH SIGNAGE - 'CYCLISTS DISMOUNT'
X4 CHICANE BARRIERS

EXISTING SUPPORT INFRASTRUCTURE - BRIDGE (2)

WAYMARKER

EXISTING SUPPORT INFRASTRUCTURE - BRIDGE (1)

LOT/PLAN 1\TP881062

PROPOSED PUBLIC ART/SCULPTURE LOCATION

PROPOSED INTERPRETIVE SIGN - VALUE OF THIRD LAKE AND WORK DONE TO PROTECT ENDANGERED NATIVE FISH

PROPOSED REST STOP - SHELTER AND PICNIC TABLE

HAZARD - EXISTING FENCE - REMOVE 3M FOR ACCESS AND INSTALL PEDESTRIAN/BIKE FRIENDLY CATTLE STOP

REPAIR FENCING WHERE REQUIRED (APPROX. 30M)

LOT/PLAN 1\TP215627

OPTION 1, 2, 3, 4

THIRD LAKE

LOT/PLAN 7A~G\PP2499

Flood Lp

No 7 Lakes Channel

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

SUPPORT INFRASTRUCTURE - BRIDGE (2)

SUPPORT INFRASTRUCTURE - BRIDGE (1)

PROPOSED INFRASTRUCTURE - INTERPRETIVE SIGN ON RARE GUDGEON FISH

SUPPORT INFRASTRUCTURE - GATE

PROPOSED INFRASTRUCTURE - REST STOP INCLUDING SHELTER AND PICNIC TABLE

nearmap

TREDWELL MANAGEMENT

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Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 24

Drawn: AP
Checked: NT

N

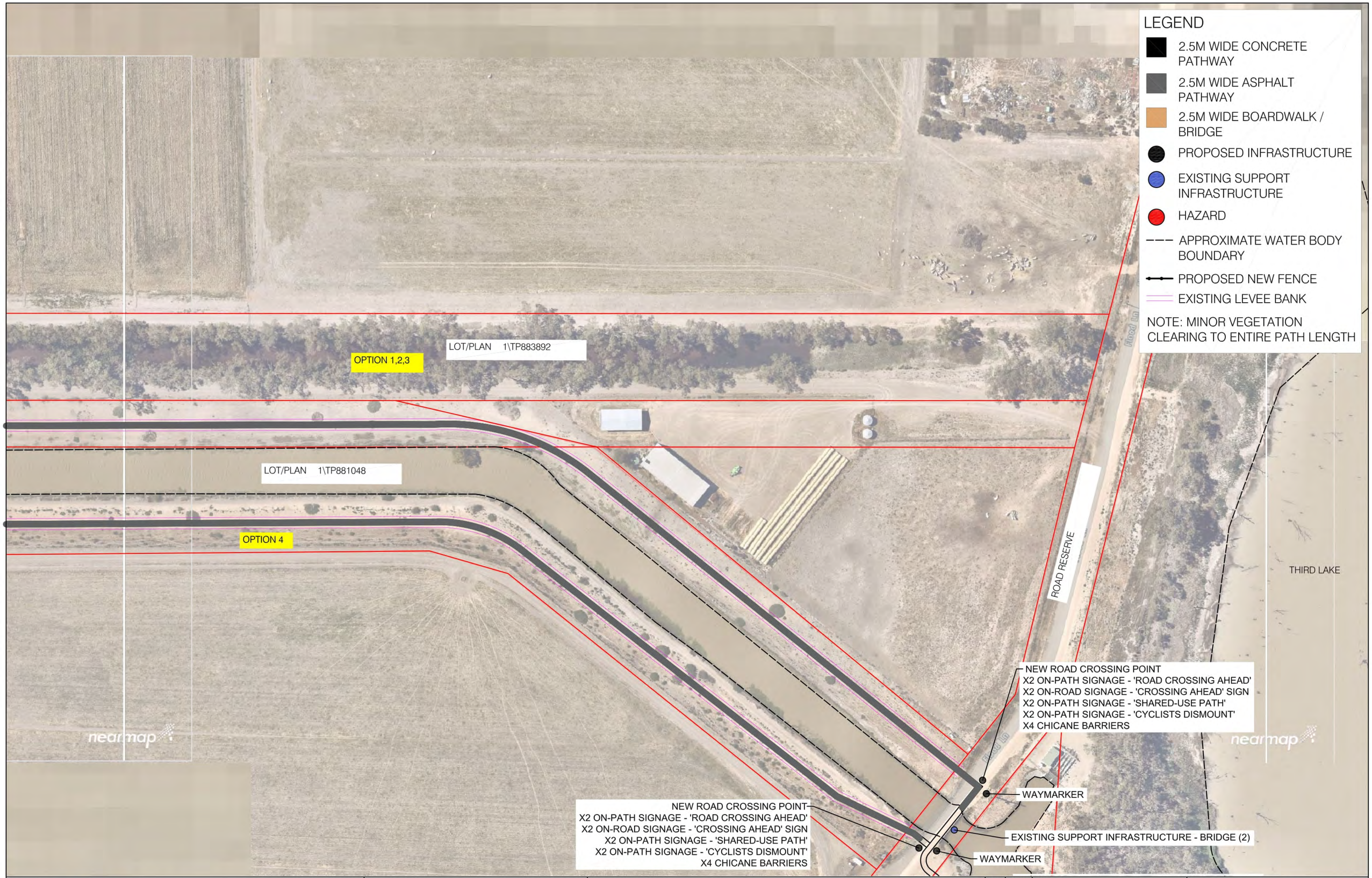
Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_27

Revision -



TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 25 - OPTION 1,2,3,4

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_28

Revision -

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

REPAIR GAPS IN FENCING ALONG ENTIRE BOUNDARY

LOT/PLAN 1\TP883892

OPTION 1,2,3

LOT/PLAN 1\TP881048

OPTION 4

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Tredwell Management Services
209b Henley Beach Road
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Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 26 - OPTION 1,2,3,4

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_29

Revision -

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

LOT/PLAN 1\TP171679

REPAIR GAPS IN FENCING ALONG ENTIRE BOUNDARY

OPTION 1,2,3

LOT/PLAN 1\TP883892

LOT/PLAN 1\TP881044

ROAD RESERVE

LOT/PLAN 1\TP881048

OPTION 4

LOT/PLAN 1\TP881048

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Mon Nov 8 2021

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Client
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47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 27 - OPTION 1,2,3,4

Drawn: AP
Checked: NT

N

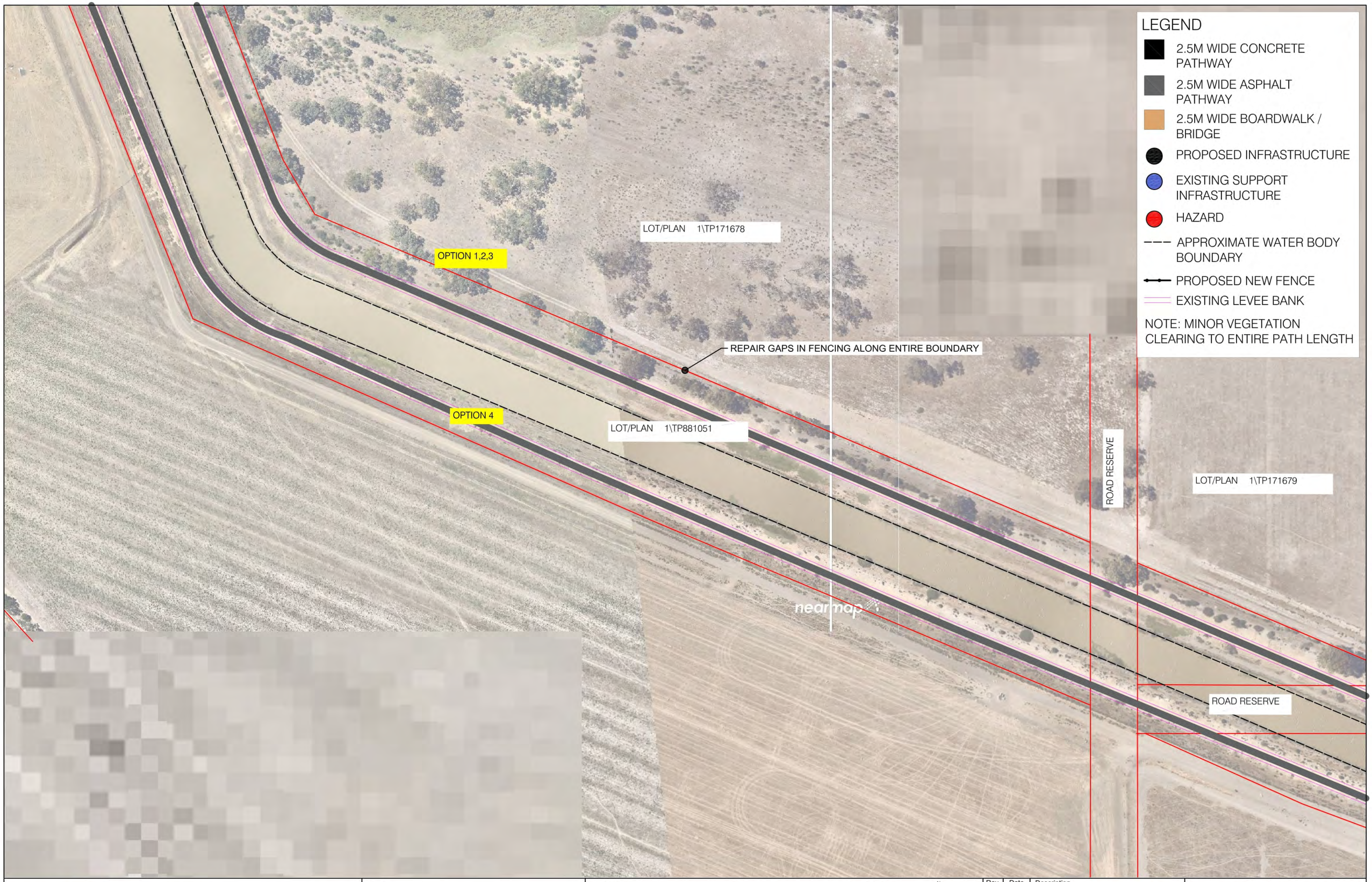
Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_30

Revision -



TREDWELL MANAGEMENT

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209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 28 - OPTION 1,2,3,4

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_31

Revision -

TREDWELL MANAGEMENT

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Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 29 - OPTION 1,2,3,4

Drawn: AP
Checked: NT

N

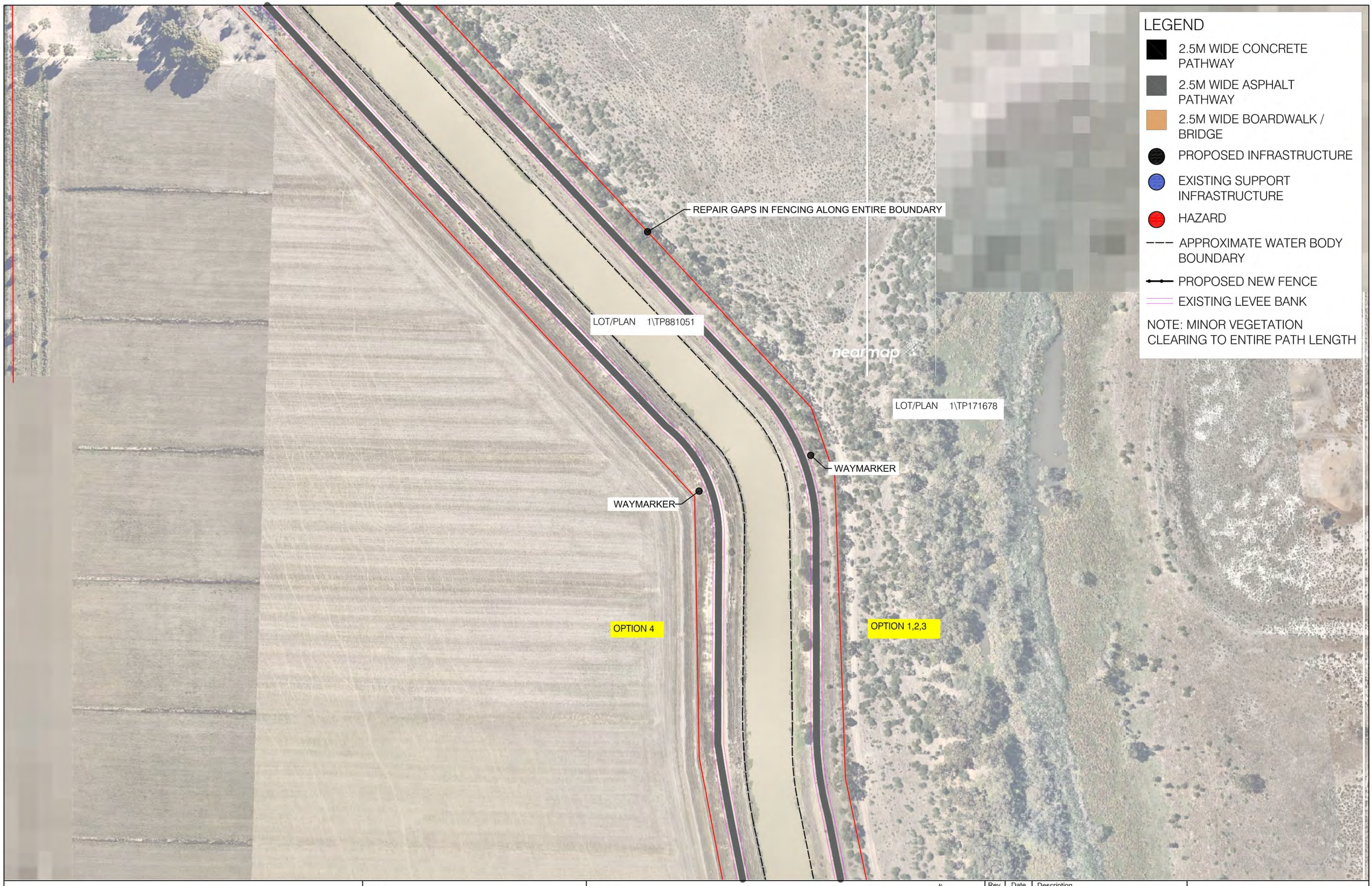
Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_32

Revision -



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209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 30 - OPTION 1,2,3,4

Drawn: AP
Checked: NT

N

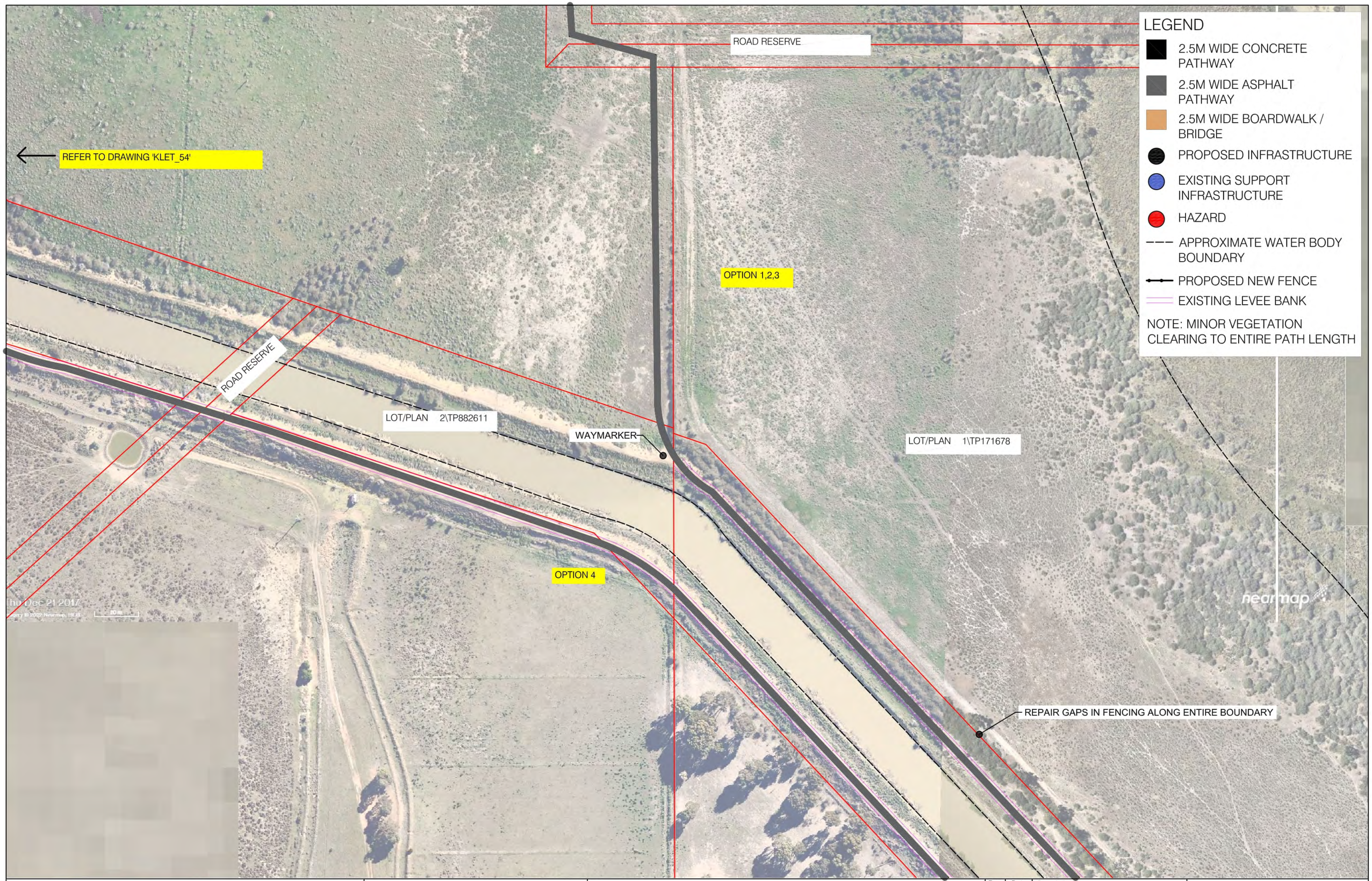
Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_33

Revision -



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Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 31 - OPTION 1,2,3,4

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_34

Revision -

LOT/PLAN 2001\PP2499

OPTION 3

OPTION 1,2

WAYMARKER

Thu Dec 21 2017

REFER TO DRAWING 'KLET_48'

PROPOSED INTERPRETIVE SIGN - SCOTTS CREEK

PROPOSED NEW RAISED BOARDWALK

LOT/PLAN 2002\PP2499

OPTION 1,2,3

ROAD RESERVE

LOT/PLAN 7\PS712015

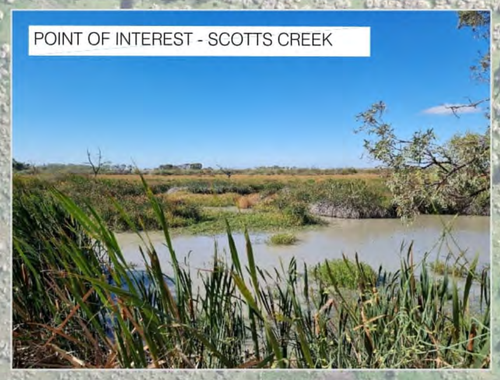
LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

PROPOSED INFRASTRUCTURE - NEW BRIDGE

POINT OF INTEREST - SCOTTS CREEK



TREDWELL MANAGEMENT

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Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 32 - OPTION 1,2,3

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_35

Revision -

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

REFER TO DRAWING 'KLET_44'

OPTION 2

LOT/PLAN 7\PS712015

LOT/PLAN 7\PS712015

OPTION 1

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LOT/PLAN 2\LP218729

WAYMARKER

ROAD RESERVE

OPTION 1,2

LOT/PLAN 7\PS712015

EXISTING SUPPORT INFRASTRUCTURE - GATE

2001\PP2499

OPTION 1,2

SUPPORT INFRASTRUCTURE - EXISTING GATE

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Client
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47 Victoria Street,
Kerang VIC 3579, Australia

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Gannawarra Shire Council, Victoria

Drawing Title
SECTION 33 - OPTION 1,2

Drawn: AP
Checked: NT

N

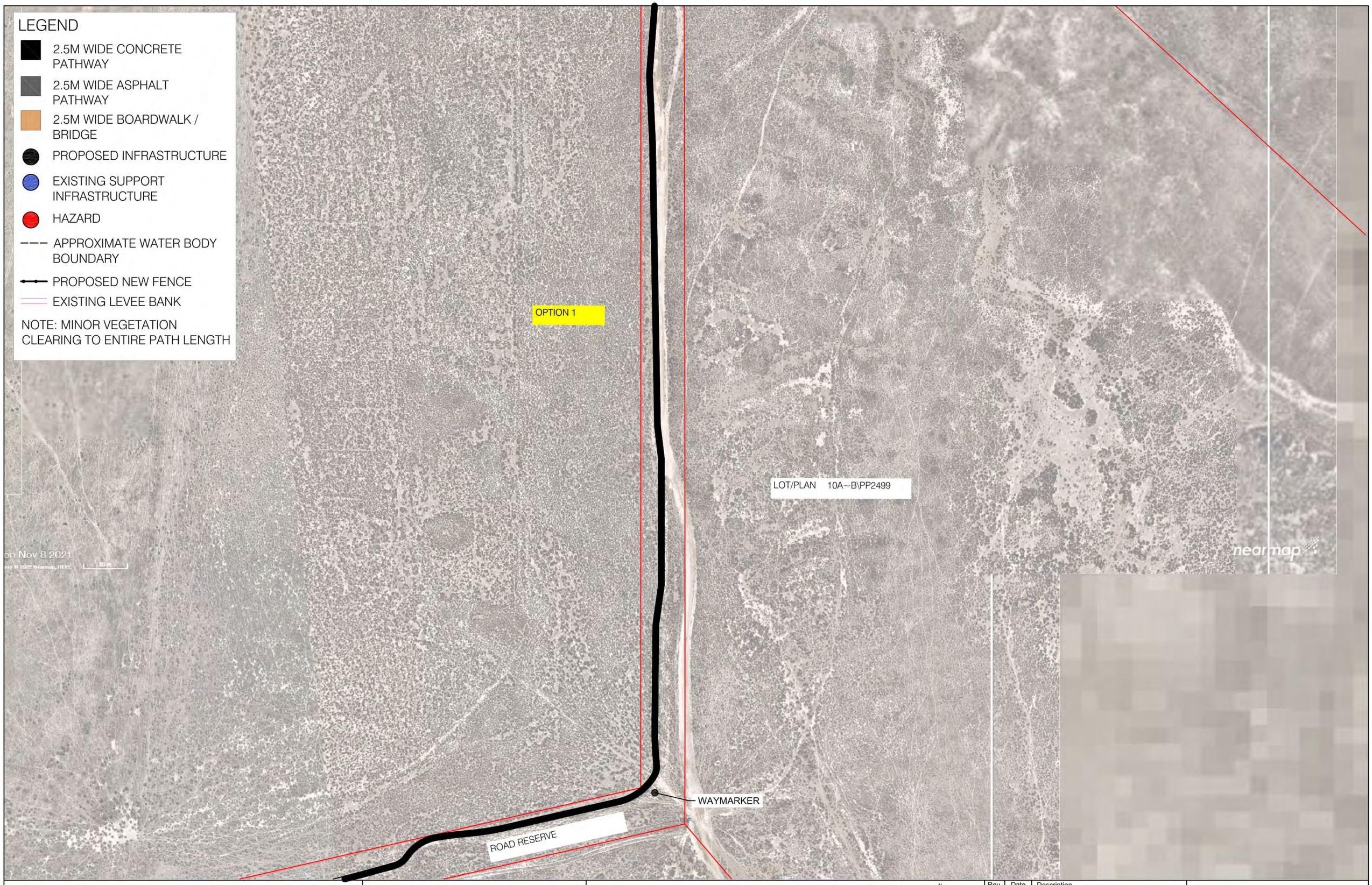
Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_36

Revision -



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209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 34 - OPTION 1

Drawn: AP
Checked: NT

N

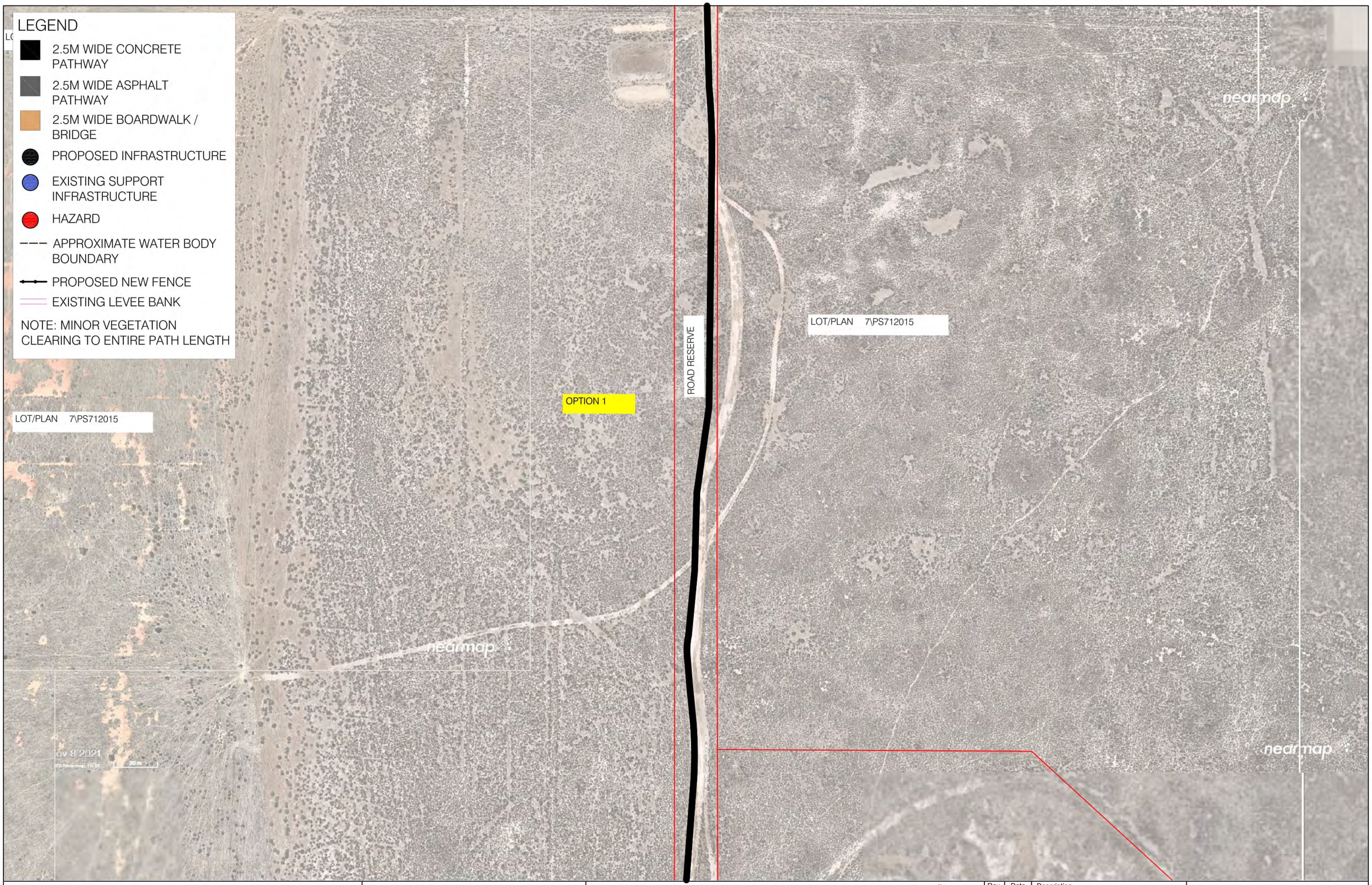
Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_37

Revision -



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Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 35 - OPTION 1

Drawn: AP
Checked: NT

N

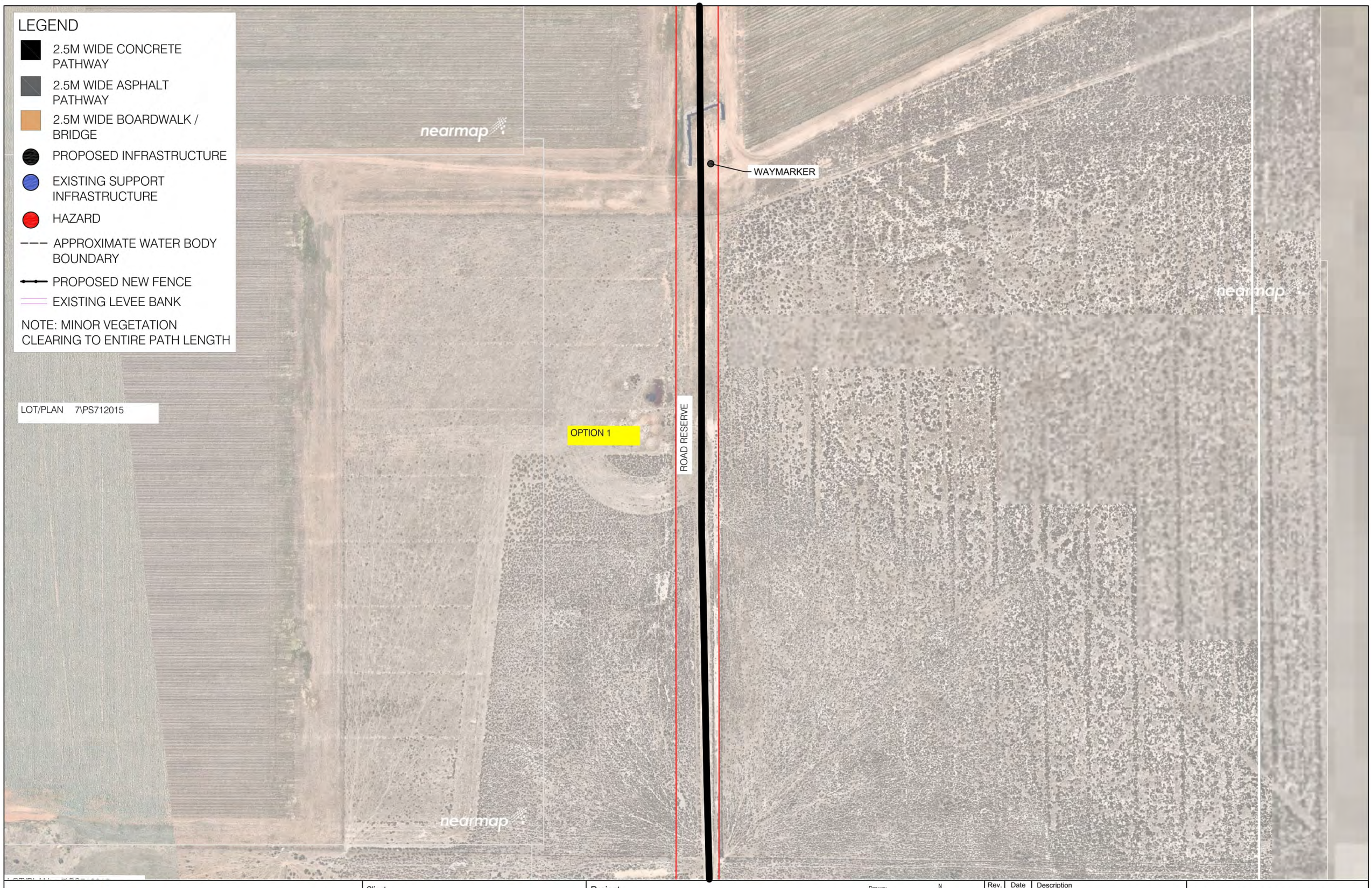
Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No.
KLET_38

Revision
-



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Tredwell Management Services
209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 36 - OPTION 1

Drawn: AP
Checked: NT

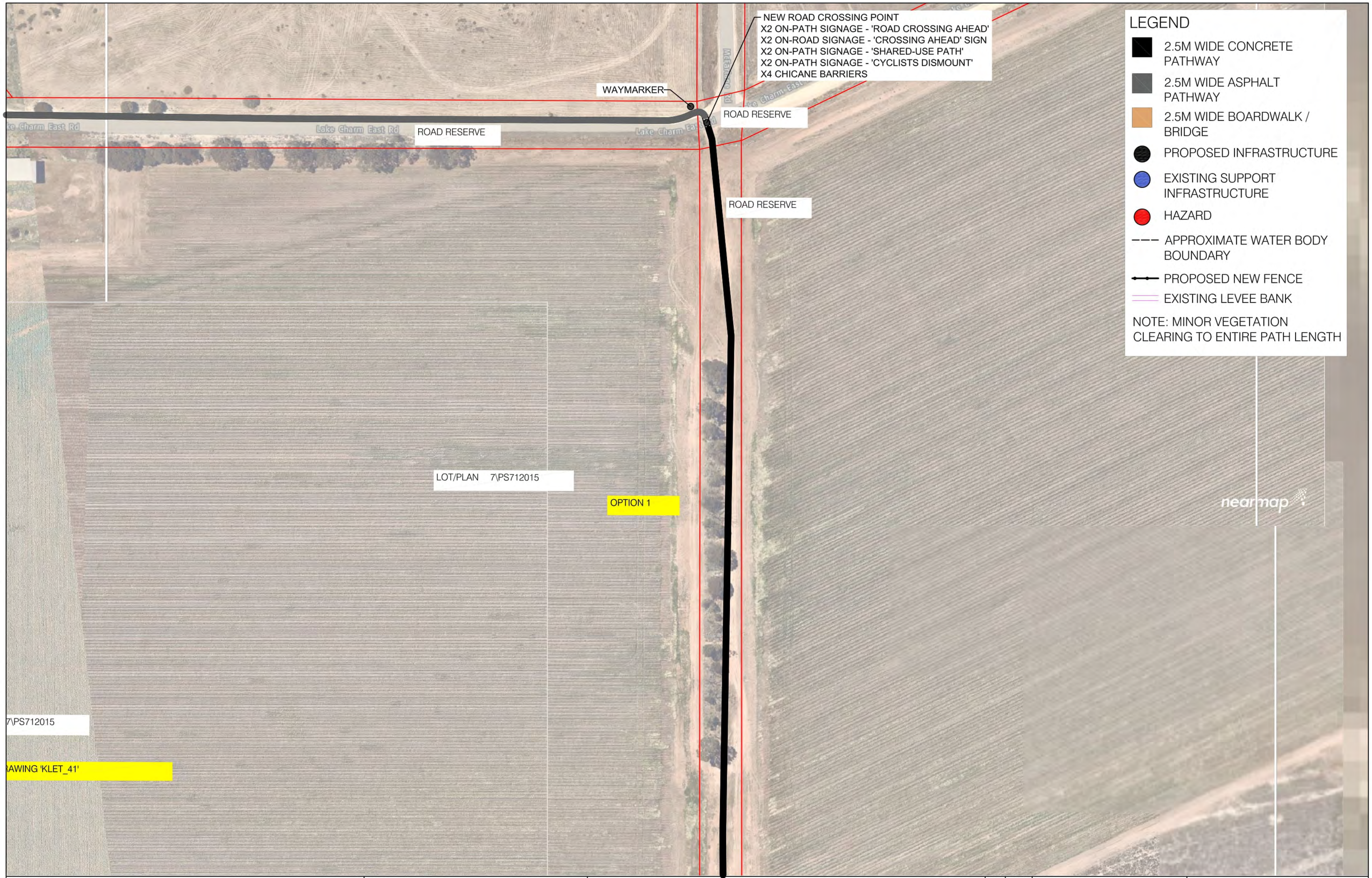
Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_39

Revision -



TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 37 - OPTION 1

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_40

Revision -

LAKE CHARM

PROPOSED INTERPRETIVE SIGN - LAKE CHARM

PROPOSED PUBLIC ART/SCULPTURE LOCATION

NEW ROAD CROSSING POINT
X2 ON-PATH SIGNAGE - 'ROAD CROSSING AHEAD'
X2 ON-ROAD SIGNAGE - 'CROSSING AHEAD' SIGN
X2 ON-PATH SIGNAGE - 'SHARED-USE PATH'
X2 ON-PATH SIGNAGE - 'CYCLISTS DISMOUNT'
X4 CHICANE BARRIERS

OPTION 1

WAYMARKER

Lake Charm East Rd

ROAD RESERVE

WAYMARKER

HAZARD - EXISTING FENCE - REMOVE 3M FOR ACCESS AND INSTALL NEW PEDESTRIAN/BIKE FRIENDLY GATE

LOT/PLAN 21A~A\PP2499

OPTION 2

OPTION 1, 2

LOT/PLAN 1\PS602528

LOT/PLAN 7\PS712015

OPTION 2

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 38 - OPTION 1,2

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_41

Revision -

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

LAKE CHARM

LOT/PLAN 21A~A\PP2499

OPTION 1, 2

Lake Charm East Rd

Lake Charm East Rd

Lake Charm East Rd

Lake Charm East Rd

Lake Charm East Rd

Lake Charm East Rd

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TREDWELL MANAGEMENT

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Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
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Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 39 - OPTION 1,2

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_42

Revision -

TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
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Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 40 - OPTION 1,2,3

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_43

Revision -

X2 ON-PATH SIGNAGE - 'CYCLISTS DISMOUNT'
X4 CHICANE BARRIERS

OPTION 1, 2, 3, 4

LOT/PLAN 2~6\PP5445

LOT/PLAN 9~5\PP5445

NEW ROAD CROSSING POINT
X2 ON-PATH SIGNAGE - 'ROAD CROSSING AHEAD'
X2 ON-ROAD SIGNAGE - 'CROSSING AHEAD' SIGN
X2 ON-PATH SIGNAGE - 'SHARED-USE PATH'
X2 ON-PATH SIGNAGE - 'CYCLISTS DISMOUNT'
X4 CHICANE BARRIERS

LAKE CHARM

LOT/PLAN 21A~A\PP2499

WAYMARKER

WAYMARKER

WAYMARKER

LOT/PLAN 8~5\PP5445

Lake Charm East Rd

OPTION 4

LOT/PLAN 2001\PP5445

OPTION 1, 2, 3

WAYMARKER

OT/PLAN 3~6\PP5445

OPTION 1, 2, 3

LITTLE LAKE CHARM

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

TREDWELL MANAGEMENT

Tredwell Management Services
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Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 41 - OPTION 1,2,3,4

Drawn: AP
Checked: NT

N

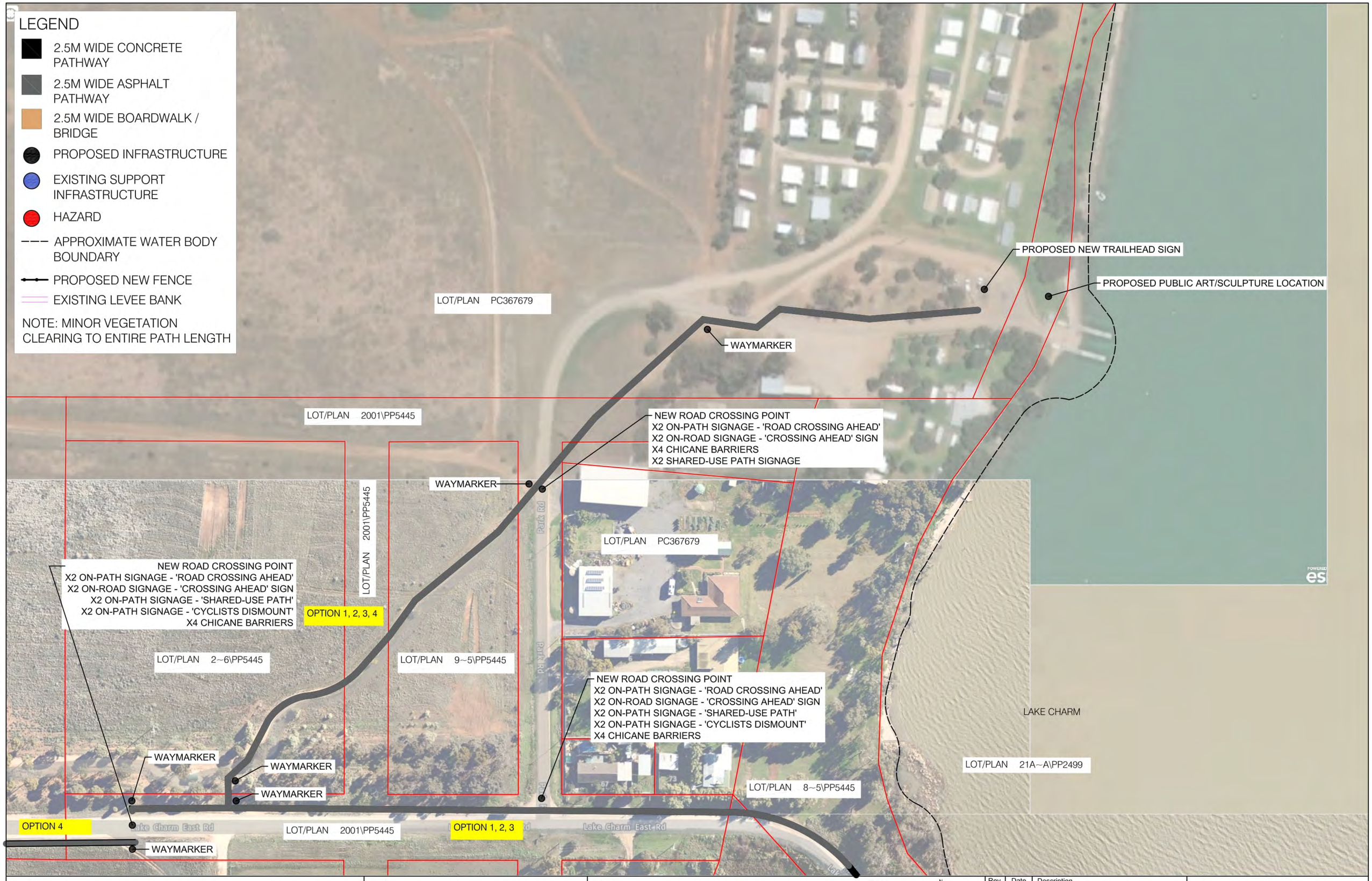
Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_44

Revision -



TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
SECTION 42 - OPTION 1,2,3,4

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_45

Revision -

OPTION 2

TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
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Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
TITLE PAGE - OPTION 2

Drawn: AP
Checked: NT

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No.
KLET_43

Revision
-

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

LOT/PLAN 1\PS602528

LOT/PLAN 7\PS712015

OPTION 2

WAYMARKER

LOT/PLAN 7\PS712015

LOT/PLAN 2\LP218729

SUPPORT INFRASTRUCTURE - EXISTING GATE

REFER TO DRAWING "KLET_36'

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47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
OPTION 2 - SECTION 1

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_44

Revision -

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

HAZARD - EXISTING FENCE - REMOVE 3M FOR ACCESS AND INSTALL PEDESTRIAN/BIKE FRIENDLY CATTLE STOP

LOT/PLAN 1\PS602528

LOT/PLAN 7\PS712015

OPTION 2

LOT/PLAN 1\PS602528

LOT/PLAN 7\PS712015

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TREDWELL MANAGEMENT

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Gannawarra Shire Council, Victoria

Drawing Title
OPTION 2 - SECTION 2

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_45

Revision -

TREDWELL MANAGEMENT

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Gannawarra Shire Council
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Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
OPTION 2 - SECTION 3

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_46

Revision -

OPTION 3

TREDWELL MANAGEMENT

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47 Victoria Street,
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Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
TITLE PAGE - OPTION 3

Drawn: AP
Checked: NT

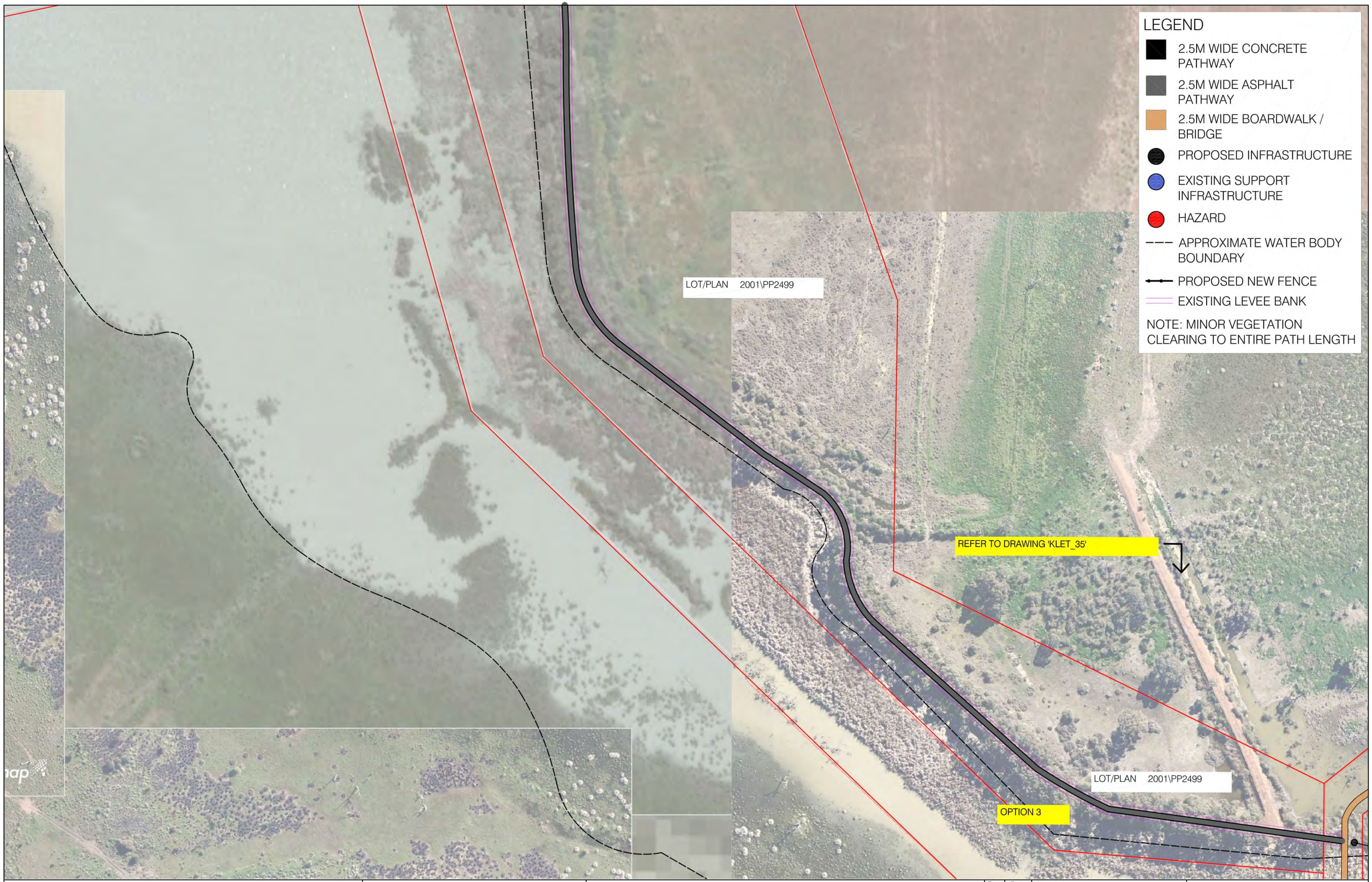
Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_47

Revision -



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Phone: 08 8234 6387

Client
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47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
OPTION 3 - SECTION 1

Drawn: AP
Checked: NT

N

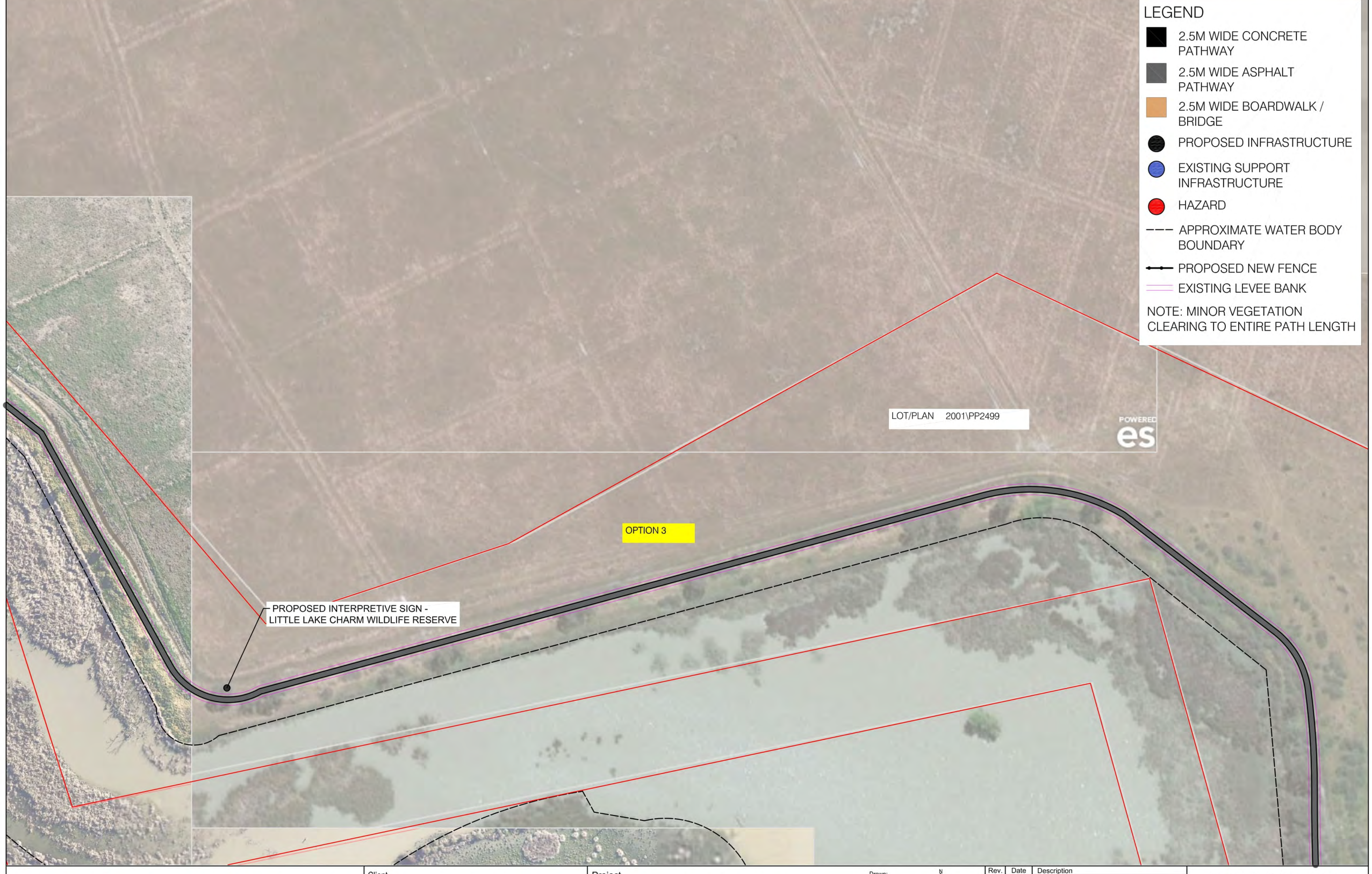
Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No.
KLET_48

Revision
-



TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
OPTION 3 - SECTION 2

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No.
KLET_49

Revision
-

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

LOT/PLAN 2001\PP2499

LOT/PLAN 1\TP881246

OPTION 3

WAYMARKER

nearmap

TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
OPTION 3 - SECTION 3

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_50

Revision -

ROAD RESERVE

LOT/PLAN 2\LP218729

OPTION 3

HAZARD - EXISTING FENCE - REMOVE 3M FOR ACCESS

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

HAZARD - EXISTING FENCE - REMOVE

TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
OPTION 3 - SECTION 4

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_51

Revision -

OPTION 3

ROAD RESERVE

REFER TO DRAWING 'KLET_43'

WAYMARKER

LOT/PLAN 2\LP218729

HAZARD - EXISTING FENCE - REMOVE 3M FOR ACCESS

LOT/PLAN 2\LP218729

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

HAZARD - EXISTING FENCE - REMOVE

HAZARD - FENCE UNDER CONSTRUCTION

TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
OPTION 3 - SECTION 5

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_52

Revision -

OPTION 4

TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
TITLE PAGE - OPTION 4

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_53

Revision -

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

OPTION 4

LOT/PLAN 1\TP882611

REFER TO DRAWING 'KLET_34'

TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
OPTION 4 - SECTION 1

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3

0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_54

Revision -

TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
OPTION 4 - SECTION 2

Drawn: AP
Checked: NT

N

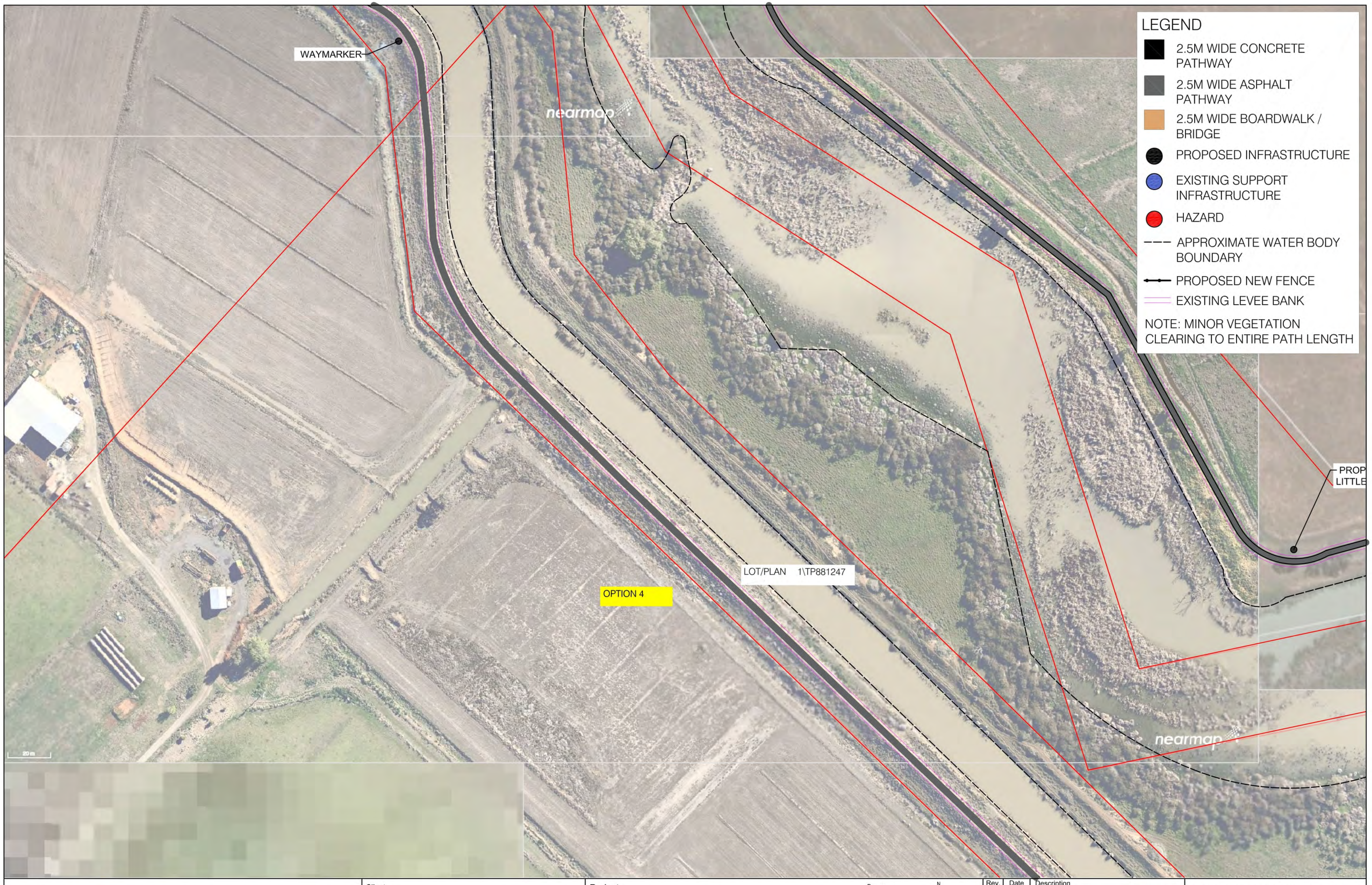
Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_55

Revision -



TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
OPTION 4 - SECTION 3

Drawn: AP
Checked: NT

N

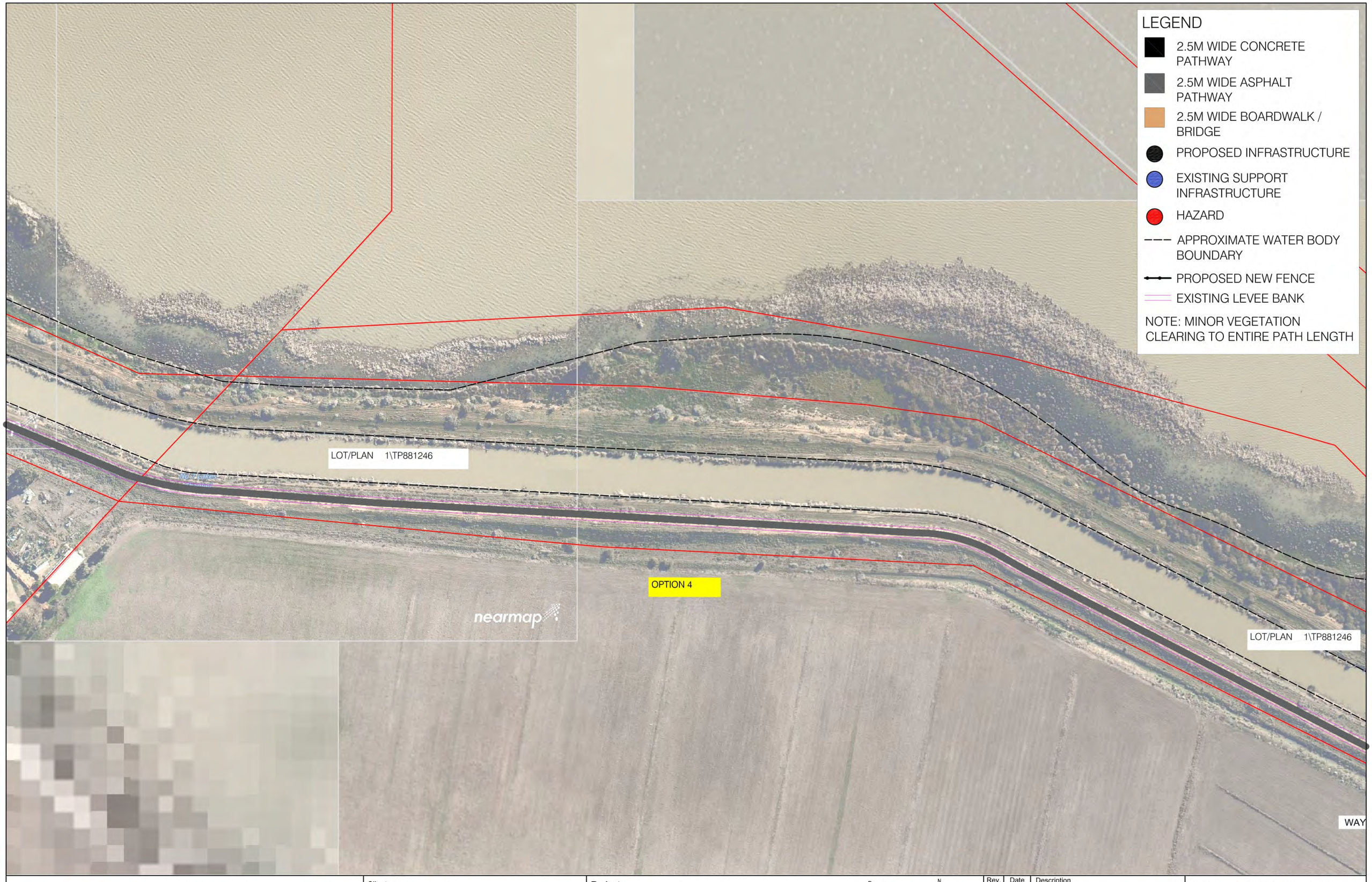
Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_56

Revision -



TREDWELL MANAGEMENT

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209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
OPTION 4 - SECTION 4

Drawn: AP
Checked: NT

N

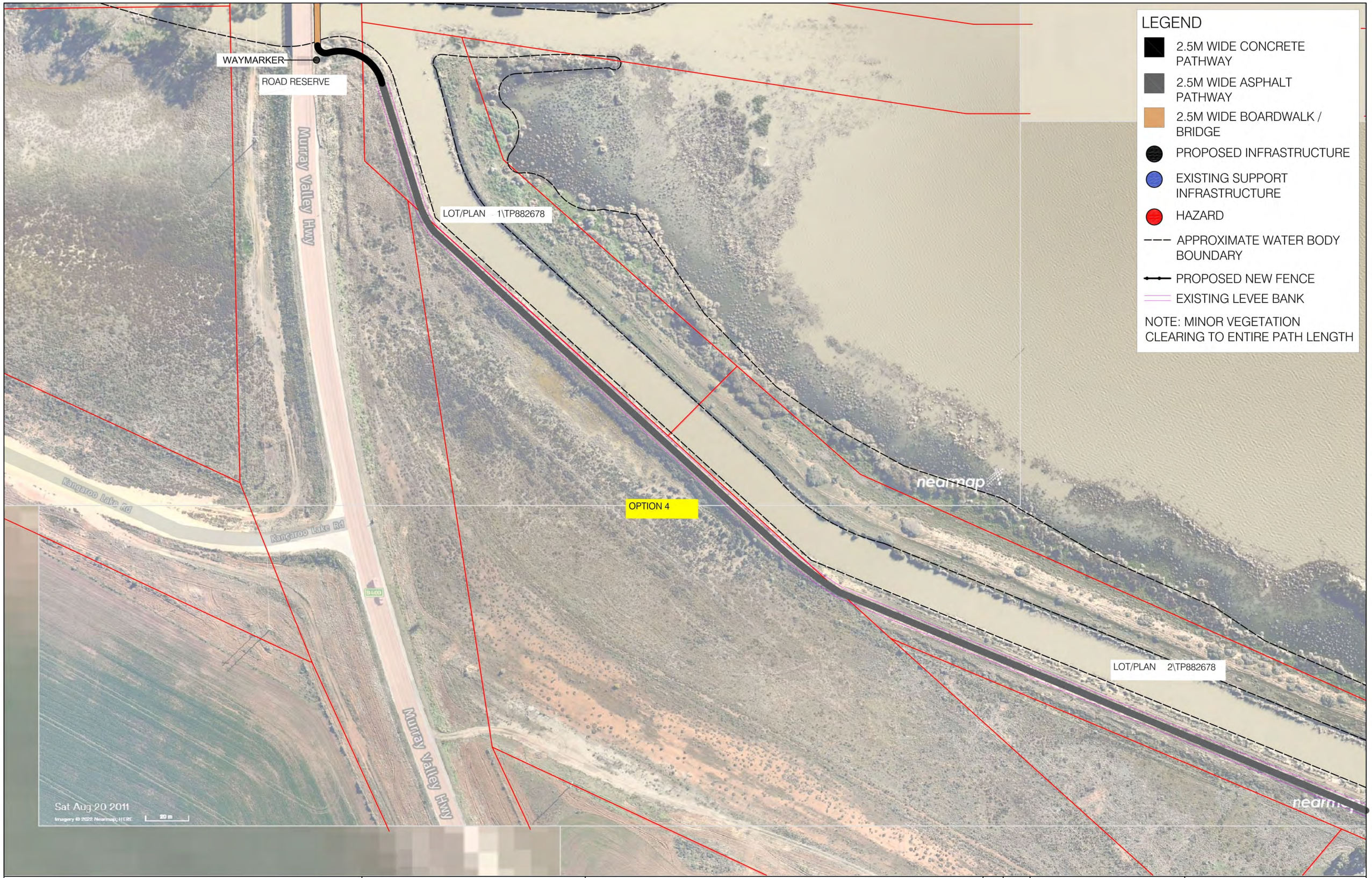
Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No.
KLET_57

Revision
-



TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
OPTION 4 - SECTION 5

Drawn: AP
Checked: NT

N

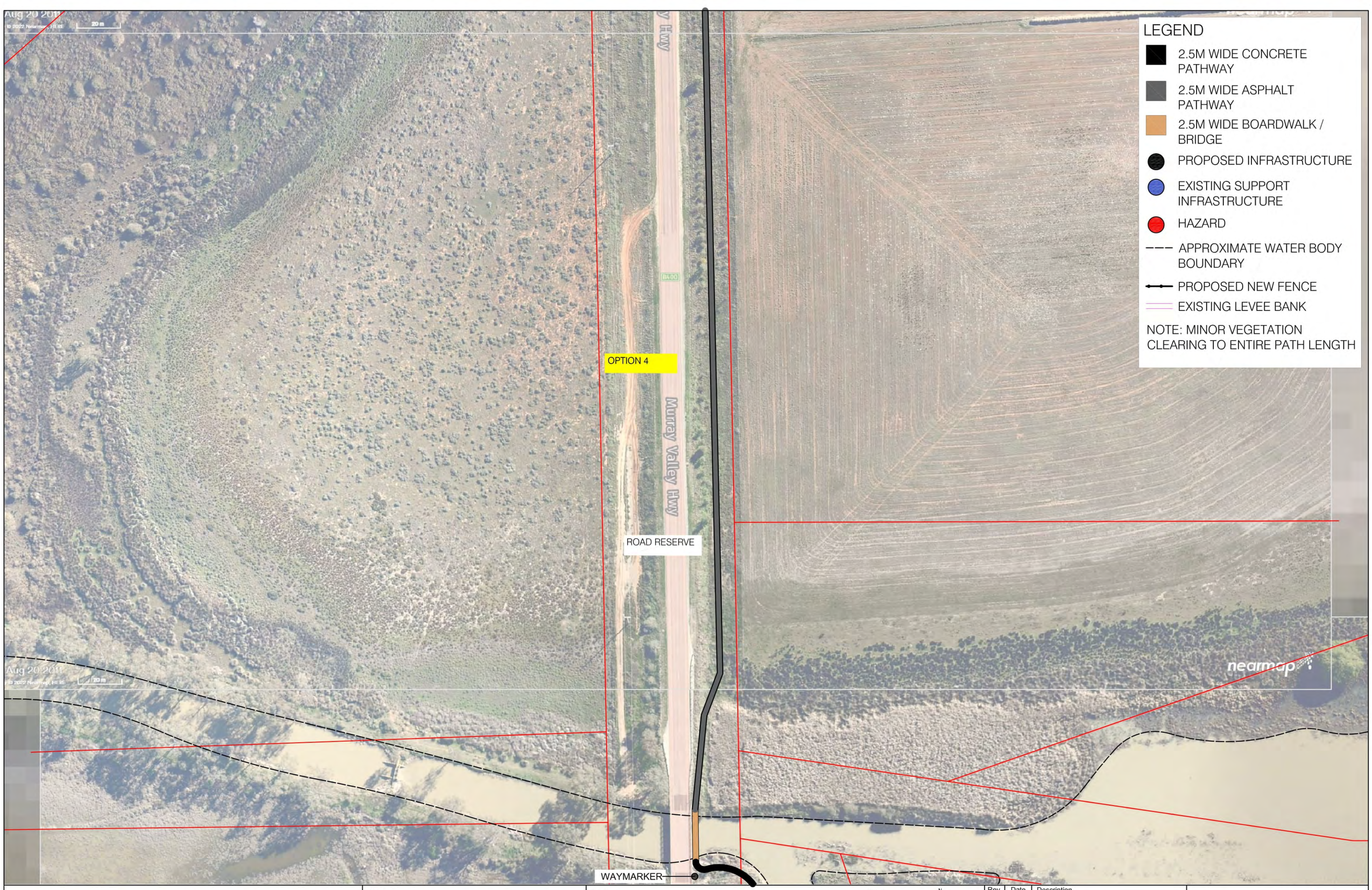
Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_58

Revision -



LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
OPTION 4 - SECTION 6

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_59

Revision -

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
OPTION 4 - SECTION 7

Drawn: AP
Checked: NT

N

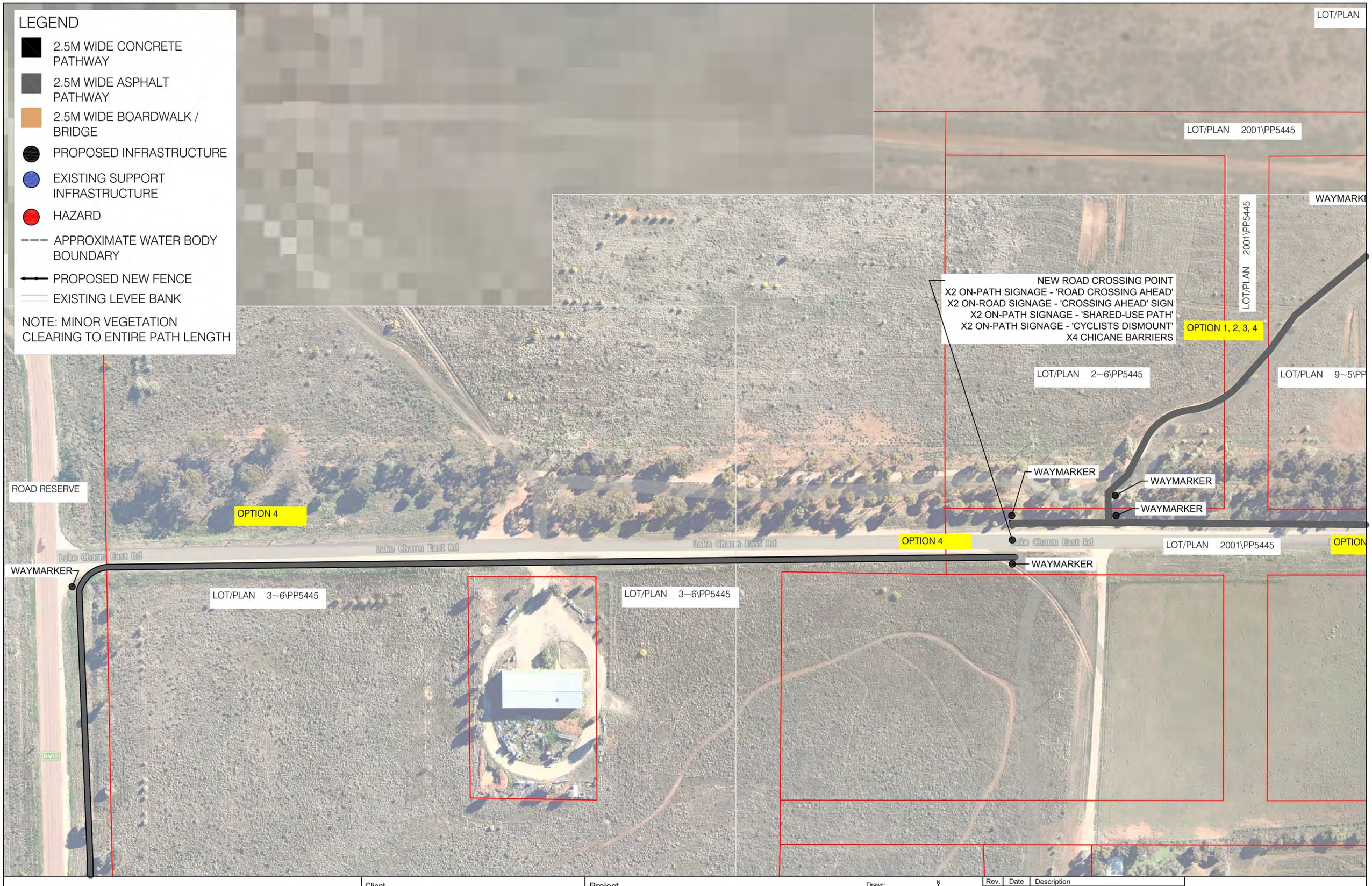
Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No.
KLET_60

Revision
-



TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
OPTION 4 - SECTION 8

Drawn: AP
Checked: NT

N

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_61

Revision -

LEGEND

- 2.5M WIDE CONCRETE PATHWAY
- 2.5M WIDE ASPHALT PATHWAY
- 2.5M WIDE BOARDWALK / BRIDGE
- PROPOSED INFRASTRUCTURE
- EXISTING SUPPORT INFRASTRUCTURE
- HAZARD
- APPROXIMATE WATER BODY BOUNDARY
- PROPOSED NEW FENCE
- EXISTING LEVEE BANK

NOTE: MINOR VEGETATION CLEARING TO ENTIRE PATH LENGTH

PROPOSED NEW TRAILHEAD SIGN

PROPOSED PUBLIC ART/SCULPTURE LOCATION

LOT/PLAN PC367679

WAYMARKER

LOT/PLAN 2001\PP5445

NEW ROAD CROSSING POINT
X2 ON-PATH SIGNAGE - 'ROAD CROSSING AHEAD'
X2 ON-ROAD SIGNAGE - 'CROSSING AHEAD' SIGN
X4 CHICANE BARRIERS
X2 SHARED-USE PATH SIGNAGE

WAYMARKER

Park Rd

LOT/PLAN PC367679

LOT/PLAN 2001\PP5445

NEW ROAD CROSSING POINT
X2 ON-PATH SIGNAGE - 'ROAD CROSSING AHEAD'
X2 ON-ROAD SIGNAGE - 'CROSSING AHEAD' SIGN
X2 ON-PATH SIGNAGE - 'SHARED-USE PATH'
X2 ON-PATH SIGNAGE - 'CYCLISTS DISMOUNT'
X4 CHICANE BARRIERS

OPTION 1, 2, 3, 4

LOT/PLAN 2~6\PP5445

LOT/PLAN 9~5\PP5445

Park Rd

NEW ROAD CROSSING POINT
X2 ON-PATH SIGNAGE - 'ROAD CROSSING AHEAD'
X2 ON-ROAD SIGNAGE - 'CROSSING AHEAD' SIGN
X2 ON-PATH SIGNAGE - 'SHARED-USE PATH'
X2 ON-PATH SIGNAGE - 'CYCLISTS DISMOUNT'
X4 CHICANE BARRIERS

LAKE CHARM

LOT/PLAN 21A~A\PP2499

LOT/PLAN 8~5\PP5445

WAYMARKER

WAYMARKER

WAYMARKER

OPTION 4

Lake Charm East Rd

LOT/PLAN 2001\PP5445

OPTION 1, 2, 3

Lake Charm East Rd

WAYMARKER

OPTION 1, 2, 3

Lake Charm East Rd

TREDWELL MANAGEMENT

Tredwell Management Services
209b Henley Beach Road
Torrensville, SA 5031
Phone: 08 8234 6387

Client
Gannawarra Shire Council
47 Victoria Street,
Kerang VIC 3579, Australia

Project
KERANG LAKES ECO-TRAIL
Gannawarra Shire Council, Victoria

Drawing Title
OPTION 4 - SECTION 9

Drawn: AP
Checked: NT

Scale 1:1500 @ A3
0 20 40m

Rev.	Date	Description

FINAL CONCEPT

Drawing No. KLET_62

Revision -

07

Key Stakeholder Consultation

Key Stakeholder Consultation

The development of the Kerang Lakes Eco-Trail Feasibility Study was informed through key stakeholder engagement. The concept design was issued to key stakeholders for review and then targeted stakeholder meetings were held via interviews and video-conference for each of the key stakeholders to provide feedback.

Some of the key stakeholders consulted as part of this process included:

- Kerang Landcare
- Parks Victoria
- Department of Environment, Land, Water and Planning (DELWP)

It is important to note that we were unable to contact and consult some key stakeholders and these organisations/groups should be consulted as part of the next phase of the project. These included:

- Goulburn Murray Water
- Local Elders and Aboriginal groups
- CMA

The following feedback was provided on the concept plans from each of the identified key stakeholders.

Kerang Landcare

Kerang Landcare provided the following key feedback on the draft concept design. The remainder of the Kerang Landcare feedback has been included as an appendix to this report.

- The feasibility is achievable and the project is achievable in the short, medium, and long term
- 3/4 concrete is different in the options
- Fencing length looks out relative between options
- Rail underpass should be a separate item on asset capture
- Width may be reduced to 1.5m to reduce construction costs
- Why move to road side from Lakeside? Is it flood zone, cost of timber removal
- Check if the existing surface is upholding to current flood conditions and whether this can impact on surface recommendations
- Consider longitudinal Fencing
- Review cattle stops
- Check why route option 1, 2, 3 stays with road reserve, is title for crown land or private property for shed
- Trail to come onto small bank along No. 7 channel, inside fence off private property
- Minor track realignment at Little Lake Charm options with title boundaries and road reserve
- Illegal flood and fencing works on road reserve near Little Lake Charm

Parks Victoria

Parks Victoria (PV) provided the following feedback into the Kerang Lakes Eco-Trail Concept Design, to be considered as part of next stage of assessing feasibility.

- The current high river height is just cm's under small pedestrian bridges over river, and we are not in a flood. There may need to be a realignment of trail route, and consultants should visit and review
- The southern end of Kerang Regional Park is in negotiation for Council to be a Committee of Management
- PV advised the proposed surfaces are beyond our ability to maintain, PV don't have the equipment/budget and would require Council to be the ongoing manager of the Eco- Trail
- PV acknowledged that the Kerang Landcare track alignment is the basis, and helped to understand they are supportive
- VEAC recommendation from the RIVER RED GUMS FORESTS INVESTIGATION (2008) allows for mountain bike and trailbike riding on formed roads and tracks (which will be one of the activity uses of the Eco Trail.) This is consistent with Council's proposal. If PV permits the development, pursuant to the Crown Land (Reserves) Act 1978, PV would require Council to be appointed as Committee of Management (CoM) or enter into a licence or lease with PV. The southern end of the park could be formalised at the same time.
- Prior to considering a request PV would be required to submit a Future Act notification

under the Native Title Act 1993 and ensure compliance with the Aboriginal Heritage Act 2008 (CHMP). The area is designated as an area of Aboriginal Cultural Significance, a CHMP is most likely to be required. It is Council's responsibility to determine if a CHMP is required pursuant to the Aboriginal Heritage Regulations 2018.

- Council would have to comply with other legislation (if required) including:
  - Planning and Environment Act 1987
  - Heritage Act 2017
  - Water Act 1989
  - Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)
  - Environmental Effects Act 1978 (EE Act)
  - Flora and Fauna Guarantee Act 1988
  - Flora and Fauna Guarantee Amendment Act 2019 (FFG Act) and Catchment
  - Land Protection Act 1994 (CaLP Act).

In summary, PV support the Concept in principle, with the following conditions:

- conditional on Council being the ongoing Manager of the Eco-Trail
- conditional on requirements of the Native Title Act 1993 and other legislation outlined above
- conditional on community engagement prior to detailed design - to show support for the route and surface type to be installed in the Regional Park
- conditional on PV being engaged at concept/ detailed design/construction stages

DELWP

Department of Environment, Land, Water and Planning (DELWP) provided the following feedback on the concept design plans.

Environment:

- Recommend early consultation with DCCEEW with regards to significant impacts to the function of the Ramsar wetland system of the Kerang lakes and any other EPBC Act requirements
- Assessment is required against the Environment Effects Act 1978 (Victoria)
- The construction of new levees is unlikely to be supported without significant hydrological assessment determining there will not be any material detriment to the wetland system.
- A wide range of assessments will be required (Cultural Heritage, Native Title, Ecology, Hydrology etc)
- The use of boardwalks in a wetland setting will require native vegetation offsets due to shading of native vegetation.
- Permeable construction materials are the preference.
- Threatened species surveys are recommended in appropriate seasonal windows for a wide range of threatened species.

Land Management:

- Comprehensive discussions and agreement would be required to confirm land and asset management responsibilities prior to the commencement of any construction.

Cultural Heritage:

- The Kerang Lakes are mapped as being an area of Aboriginal Cultural Heritage Sensitivity and will require in-depth assessments.

Permits:

- An FFG permit would be required.
- A planning permit may be required
- It is envisaged a referral under the Environment Effects Act 1978 would be necessary
- It is envisaged a referral under the Environment Protection Biodiversity Conservation Act 1999 would be necessary
- Works within Waterways
- Permits under Road Management Act
- Native title considerations
- Relevant tenure establishments.

08 Costings

Order of Probable Costs

Rider Levett Bucknall has provided costing estimates based off of the final concept plan options 1, 2, 3, and 4 included in this report. The summary pages for each of these costings are provided on the following pages. The full costing reports have been included as appendices to this report.

An additional three costings have been prepared which provide estimate costs for alternate surface finishes to the entire trail in place of the concrete and asphalt surfaces proposed as part of the final concept plan. This provides an excellent base for comparison in regard to total cost and on-going maintenance costs.

The three additional costings include:

- Asphalt
- Compacted rubble with boxing out
- Treated compacted rubble with boxing

Asphalt and Concrete Surfaces

This summary of costs provides the total order of probable costs for options 1, 2, 3, and 4 if they were to be constructed with concrete and asphalt surfaces (as per the final concept plans).

KERANG LAKES ECO TRAIL

UPDATED CONCEPT DESIGN OPTIONS

RLB Rider Levett Bucknall

LOCATION SUMMARY

Rates Current At January 2023

Ref	Location	Total Cost $
1	Option 1	14,806,890.40
2	Option 2	13,664,615.40
3	Option 3	12,674,451.50
4	Option 4	13,123,185.00

MARGINS & ADJUSTMENTS

Goods and Services Tax	Excl.

Asphalt Surface to Entire Trail

This summary of costs provides the order of probable costs for options 1, 2, 3, and 4 if they were to be constructed with an asphalt surface only. This includes boxing out to the entire length of the trail.

KERANG LAKES ECO TRAIL

UPDATED CONCEPT DESIGN OPTIONS - ASPHALT PAVEMENT

Rider Levett Bucknall

LOCATION SUMMARY

Rates Current At January 2023

Ref	Location	Total Cost $
1	Option 1	11,295,677.90
2	Option 2	10,740,540.40
3	Option 3	9,997,776.50
4	Option 4	10,555,560.00

MARGINS & ADJUSTMENTS

Goods and Services Tax	Excl.

Compacted Rubble Surface to Entire Trail

This summary of costs provides the order of probable costs for options 1, 2, 3, and 4 if they were to be constructed with a compacted rubble surface only. This includes boxing out to the entire length of the trail.

KERANG LAKES ECO TRAIL

CONCEPT DESIGN OPTIONS - COMPACTED RUBBLE OPTIONS

Rider Levett Bucknall

LOCATION SUMMARY

Rates Current At January 2023

Ref	Location	Total Cost $
1	Option 1	11,658,332.90
2	Option 2	11,074,281.70
3	Option 3	10,439,412.40
4	Option 4	10,880,064.60
ESTIMATED NET COST		**44,052,091.60**
MARGINS & ADJUSTMENTS		
Goods and Services Tax		Excl.
ESTIMATED TOTAL COST		**44,052,091.60**

Cement Treated Compact Rubble Surface to Entire Trail

This summary of costs provides the order of probable costs for options 1, 2, 3, and 4 if they were to be constructed with a cement treated compacted rubble surface only. This includes boxing out to the entire length of the trail. The cement treatment is mixed through the wearing course to provide a more durable finish than a standard compacted rubble finish.

KERANG LAKES ECO TRAIL

CONCEPT DESIGN OPTIONS - CEMENT TREATED COMPACTED RUBBLE OPTIONS

Rider Levett Bucknall

LOCATION SUMMARY

Rates Current At January 2023

Ref	Location	Total Cost $
1	Option 1	15,228,705.40
2	Option 2	14,546,790.20
3	Option 3	13,856,765.40
4	Option 4	14,329,316.60
ESTIMATED NET COST		**57,961,577.60**
MARGINS & ADJUSTMENTS		
Goods and Services Tax		Excl.
ESTIMATED TOTAL COST		**57,961,577.60**

Estimated Maintenance Costs

The estimated maintenance costs have been developed by RLB and are based on one visit only. The frequency of visits will need to be determined (e.g. annually, biennially, triennially).

The estimated costs are based on a local contractor undertaking the works does not include an allowance for living away from home (LAFHA) and accommodation etc.

Allowances are based on a 2-week work period to complete the works.

Surface Maintenance	Unit	Visit	Total
Asphalt / Concrete Surface Maintenance - per visit	No	1	$52,415.00
Asphalt Surface Maintenance - per visit	No	1	$51,282.00
Compacted Rubble Surface Maintenance - per visit	No	1	$69,960.00
Compacted Cement Treated Rubble Surface Maintenance - per visit	No	1	$113,960.00

Asphalt Surfaces

For asphalt surface maintenance, the following assumptions have been made:

- Minor materials to patch and repair surface
- Assume majority of works would be to clean surface

Compacted Rubble Surfaces

For compacted rubble surface maintenance, the following assumptions have been made:

- Allowance for 1,000 tonne of rubble – this will allow for a 20mm skim across 50% of the total path
- Rate is inclusive of roller, skid steer, water truck and excavator
- Assume the works for the compacted rubble surface maintenance will be more intensive to fill in pot-holes, top up pathways, fix edges, etc.

Vegetation Offsets

A Vegetation Quality Assessment (VQA) will need to be undertaken by an accredited native vegetation assessor to determine the extent of vegetation offsets required. This will then be able to be quantified and costed.

A list of current 2022 VQA consultants for Victoria can be found via: https://www.environment.vic.gov.au/__data/assets/pdf_file/0035/546974/DELWP-VQA-AccreditedAssessorListJuly2022.pdf

Staging Plan

Due to the high costs associated with the construction of the Kerang Lakes Eco-Trail, a staged approach can be utilised to provide a cost effective and realistic approach to achieve the project. This can include both detailed design and construction phases.

If a staged approach is taken, it is recommended to stage the project in the following order.

Stage 1: Kerang Regional Park to Reedy Lake

Stage 2: Reedy Lake to Third Lake

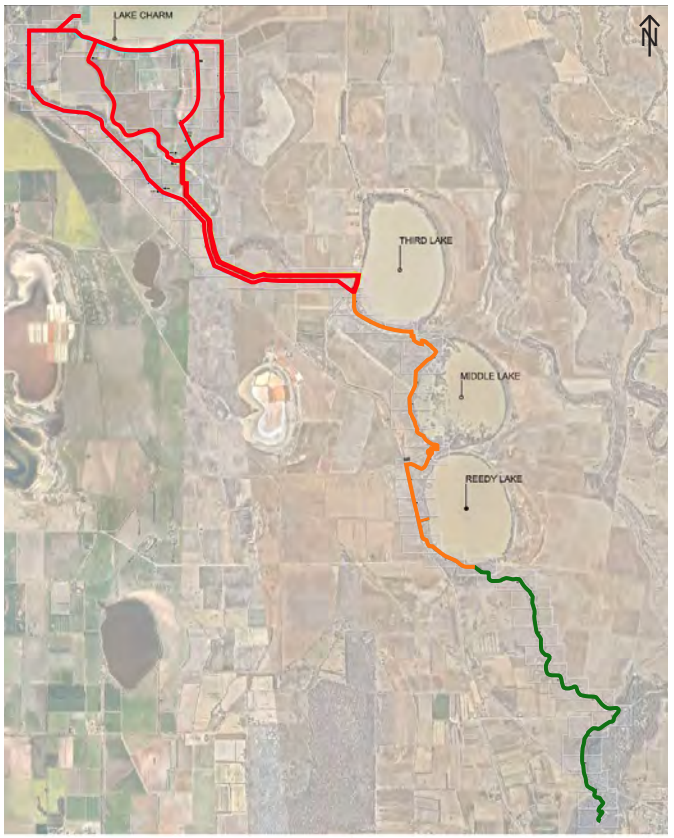
Stage 3: Third Lake to Lake Charm

This staged approach will allow for the connection of Kerang to Reedy Lake in stage 1 which would receive the highest levels of use due to its connection to the more populated Kerang township.

Stage 2 will be the extension of the trail from Reedy Lake to Third Lake which will include the connection to the Ibis Rookery.

Stage 3 will be the connection from Third Lake to Lake Charm, completing the trail.

Staged Plan



LEGEND

- Stage 1
- Stage 2
- Stage 3

09

Economic Impact Analysis

Economic Impact Analysis

A 10-year REMPLAN Economy Report has been developed for Options 1, 2, 3, and 4. These assessments have assumed that the Kerang Lakes Eco-Trail will be constructed with a concrete and asphalt surface only. This economic impact assessment excludes the additional options of compacted rubble, and treated compacted rubble.

The Economy Report Impact Summaries for each option have been included on the following pages and detail the total output, employment (year 1), wages and salaries, and total value-added over year 1 to year 10. The economic expansion, flow-on supply chain effects have also been identified for each option.

The full REMPLAN Economy report for each option have also been included within the Appendices of this report.

REMPLAN Economy Report Option 1

The total output over the 10-year period for Option 1, including all direct, supply-chain, and consumption effects is estimated to increase by up to $29.877 million. This represents a Type 2 output multiplier of 1.704.

In year 1, under this scenario, there is an expansion in overall employment, including all direct, supply-chain and consumption effects, estimated at 8 jobs. This represents a Type 2 Employment multiplier of 2,000.

Total wages and salaries over the 10-year period, including all direct, supply-chain and consumption effects is estimated to increase by up to $6.280 million. This represents a Type 2 Wages and Salaries multiplier of 1.755.

The total value-added over the 10-year period, including all direct, supply chain and consumption effects is estimated to increase by up to $11.809 million. This represents a Type 2 Value-added multiplier of 1.847.

Under this scenario Gross Regional Product is estimated to increase by $11.809 million over the 10-year period. Contributing to this is a direct increase in output of $17.530 million, $3.579 million more in wages and salaries and a boost in value-added of $6.393 million.

From this direct expansion in the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in a further increase to output valued at $9.078 million, $1.993 million more paid in wages and salaries, and a gain of $3.421 million in terms of value-added.

Impact Summary - Year 1 to Year 10

Impact Summary	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Output ($M)	$17.530	$9.078	$3.269	$29.877	1.518	1.704
Employment (Jobs) Peak Gain - Year 1	4	3	1	8	1.750	2.000
Wages and Salaries ($M)	$3.579	$1.993	$0.708	$6.280	1.557	1.755
Value-added ($M)	$6.393	$3.421	$1.995	$11.809	1.535	1.847

REMPLAN Economy Report Option 2

The total output over the 10-year period for Option 2, including all direct, supply-chain, and consumption effects is estimated to increase by up to $28.638 million. This represents a Type 2 output multiplier of 1.703.

In year 1, under this scenario, there is an expansion in overall employment, including all direct, supply-chain and consumption effects, estimated at 7 jobs. This represents a Type 2 Employment multiplier of 1,750.

Total wages and salaries over the 10-year period, including all direct, supply-chain and consumption effects is estimated to increase by up to $6.025 million. This represents a Type 2 Wages and Salaries multiplier of 1.754.

The total value-added over the 10-year period, including all direct, supply chain and consumption effects is estimated to increase by up to $11,339 million. This represents a Type 2 Value-added multiplier of 1.844.

Under this scenario Gross Regional Product is estimated to increase by $11.339 million over the 10-year period. Contributing to this is a direct increase in output of $16.820 million, $3.434 million more in wages and salaries and a boost in value-added of $6.148 million.

From this direct expansion in the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in a further increase to output valued at $8.682 million, $1.912 million more paid in wages and salaries, and a gain of $3.277 million in terms of value-added.

Impact Summary - Year 1 to Year 10

Impact Summary	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Output ($M)	$16.820	$8.682	$3.136	$28.638	1.516	1.703
Employment (Jobs) Peak Gain - Year 1	4	2	1	7	1.500	1.750
Wages and Salaries ($M)	$3.434	$1.912	$0.679	$6.025	1.557	1.754
Value-added ($M)	$6.148	$3.277	$1.914	$11.339	1.533	1.844

REMPLAN Economy Report Option 3

The total output over the 10-year period for Option 3, including all direct, supply-chain and consumption effects is estimated to increase by up to $28.354 million. This represents a Type 2 Output multiplier of 1.704..

In year 1, under this scenario, there is an expansion in overall employment, including all direct, supply-chain and consumption effects, estimated at 7 job. This represents a Type 2 Employment multiplier of 1.750.

Total wages and salaries over the 10-year period, including all direct, supply-chain and consumption effects is estimated to increase by up to $5.959 million. This represents a Type 2 Wages and Salaries multiplier of 1.754.

Total value-added over the 10-year period, including all direct, supply-chain and consumption effects is estimated to increase by up to $11.206 million. This represents a Type 2 Value-added multiplier of 1.847.

Under this scenario Gross Regional Product is estimated to increase by $11.206 million over the 10-year period. Contributing to this is a direct increase in output of $16.639 million, $3.397 million more in wages and salaries and a boost in value-added of $6.067 million.

From this direct expansion in the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in a further increase to output valued at $8.612 million, $1.891 million more paid in wages and salaries, and a gain of $3.246 million in terms of value-added.

Impact Summary - Year 1 to Year 10

Impact Summary	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Output ($M)	$16.639	$8.612	$3.102	$28.354	1.518	1.704
Employment (Jobs) Peak Gain - Year 1	4	2	1	7	1.500	1.750
Wages and Salaries ($M)	$3.397	$1.891	$0.671	$5.959	1.557	1.754
Value-added ($M)	$6.067	$3.246	$1.893	$11.206	1.535	1.847

REMPLAN Economy Report Option 4

The total output over the 10-year period for option 4, including all direct, supply-chain and consumption effects is estimated to increase by up to $22.488 million. This represents a Type 2 Output multiplier of 1.702.

In year 1, under this scenario, there is an expansion in overall employment, including all direct, supply-chain and consumption effects, estimated at 6 job. This represents a Type 2 Employment multiplier of 2.000.

Total wages and salaries over the 10-year period, including all direct, supply-chain and consumption effects is estimated to increase by up to $4.723 million. This represents a Type 2 Wages and Salaries multiplier of 1.754.

Total value-added over the 10-year period, including all direct, supply-chain and consumption effects is estimated to increase by up to $8.879 million. This represents a Type 2 Value-added multiplier of 1.847.

Under this scenario Gross Regional Product is estimated to increase by $8.879 million over the 10-year period. Contributing to this is a direct increase in output of $13.210 million, $2.693 million more in wages and salaries and a boost in value-added of $4.808 million.

From this direct expansion in the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in a further increase to output valued at $6.820 million, $1.498 million more paid in wages and salaries, and a gain of $2.571 million in terms of value-added.

Impact Summary - Year 1 to Year 10

Impact Summary	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Output ($M)	$13.210	$6.820	$2.458	$22.488	1.516	1.702
Employment (Jobs) Peak Gain - Year 1	3	2	1	6	1.667	2.000
Wages and Salaries ($M)	$2.693	$1.498	$0.532	$4.723	1.556	1.754
Value-added ($M)	$4.808	$2.571	$1.500	$8.879	1.535	1.847

10

Funding Opportunities

Resourcing

An ongoing commitment of funds and resources will be required to achieve the objectives of the Strategy. A range of funding options will need to be considered, together with the sourcing of potential grant programs.

Opportunities to form partnerships with other potential stakeholders will need to be sought where this would deliver synergies and successful outcomes assisting in the completion of the Action Plan.

Potential external funding sources are available through federal and state government programs which could support the development of trail projects. In addition to government funding programs, private and commercial sector opportunities may also be available. Government funding programs continually change so it is recommended that the relevant websites are frequently reviewed.

Australian Government Funding

Building Better Regions Fund

Supports the Australian Government's commitment to create jobs, drive economic growth and build stronger regional communities into the future.

Refer www.business.gov.au/Assistance/Building-Better-Regions-Fund

Infrastructure Stream

The Infrastructure Projects Stream supports projects which involve the construction of new infrastructure, or the upgrade or extension of existing infrastructure that provide economic and social benefits to regional and remote areas.

Community Investments Stream

The Community Investments Stream funds the following community activities: new or expanded local events, strategic regional plans, and leadership and capability strengthening activities. These projects will deliver economic and social benefits to regional and remote communities.

Stronger Communities Programme

Provides each of the 151 federal electorates with up to $150,000 to fund small capital projects that improve local community participation and contribute to vibrant and viable communities.

Refer www.business.gov.au/assistance/stronger-communities-programme

Move It AUS - Participation Grant Program

Provides support to help organisations get Australians moving and to support the aspiration to make Australia the world's most active and healthy nation.

Refer www.sportaus.gov.au/grants_and_funding/participation

Volunteer Grants

Support the efforts of volunteers - can be used towards the cost of essential items that help make the work of volunteers easier, safer, and more enjoyable, such as equipment, training, transport and background screening.

Refer www.communitygrants.gov.au/grants/volunteer-grants-2018

Victorian Government Funding

TAC - Local Government Grant Program

This grant program encourages Victorian local governments to improve road safety issues in their local communities as laid out in the Victorian Road Safety Strategy 2021-2030

The TAC and our road safety partners recognise the important role Local Governments play in road safety and they are key contributors to achieving road safety targets across the State. Local Governments are well-placed to identify specific problems, especially for walking and cycling, and to develop and implement solutions.

This grant program provides funding opportunities for Local Governments to support projects that have the potential to reduce, and where possible eliminate, the likelihood of death and serious injury for pedestrians and cyclists in their local area.

Sport and Recreation Victoria – Access for All Abilities Program

Access for All Abilities is a Victorian Government program that has supported inclusive sport and recreation opportunities for people with a disability for over 15 years.

Eligible organisations are invited to apply for funding through the Victorian Government's Access for All Abilities Program 2021–2023 which aims to increase participation opportunities for people with disability to get involved in all aspects of sport and active recreation.

Sport and Recreation Victoria are calling on sport, recreation, local government, and wider community-based organisations to help kickstart innovative ways for people of all abilities to get active, establishing connection to community and all the benefits it brings.

Regional Development Victoria - Regional Infrastructure Fund

The Regional Infrastructure Fund Round Two seeks to assist the growth of rural Victoria by providing grants for infrastructure projects that have the potential to stimulate economic and community activity, including those that seek to support recovery from COVID-19 and other major economic challenges, in regional Victoria.

Regional Development Victoria - Stronger Regional Communities Program

The Stronger Regional Communities Program aims to support rural and regional towns in attracting families and young people to live and work in regional Victoria. It will do so by investing in community-led initiatives and partnerships that create or enhance the conditions for economic growth and build resilient, diversified and sustainable economies.

Regional Development Victoria - Regional Tourism Infrastructure Fund

This fund helps grow and realise the potential of regional Victoria's visitor economy which attracts more than 14 million domestic and international visitors every year.

Regional Development Victoria – Enabling Tourism Fund

The Enabling Tourism Fund supports regional and rural Victorian tourism projects to reach investment ready status. It will do this by funding activities such as feasibility studies, master planning and business case development. This fund is part of the Victorian Government's plan to accelerate tourism investment and recovery.

Parks Victoria – Volunteering Innovation Fund

The Victorian Government has an exciting new opportunity to inspire ideas and encourage innovation by funding community-led projects that consider new ways of volunteering in and for the environment. Parks and forests in Victoria are supported and enhanced by a host of passionate volunteers. The Volunteering Innovation Fund is building on this incredible work and inviting everyone to enjoy Victoria's Great Outdoors through volunteering.

Commercial and Private Sector Funding

Commercial and private sector funding is often used by organisations to assist with facility developments and ongoing operations. Opportunities such as facility naming rights and in-kind donations of labour and materials are a potential resource for new facility developments and upgrades.

Yancoal's Community Support Program

Invests in community groups working in the areas of:

- Health
- Social and community
- Environment
- Education and training

In 2018, the Yancoal Community Support Program

invested more than $1 million into local initiatives across Australia. Applications submitted in January are considered annually.

Refer https://www.yancoal.com.au/page/en/sustainability/community/

Australian Rail Track Corporation (ARTC) Community Partnerships

Provides support to initiatives that fit into the following focus areas:

- Rail Safety
- Mental Health/Wellbeing
- Environment

Refer https://www.artc.com.au/community/community-investment/

Jetstar's Flying Start Program

Provides grants of up to $30,000 to support community groups and organisations to fund a project that will enrich their local community.

Refer www.jetstar.com/au/en/flyingstart

Sunsuper's Community Grants Program

Assist not-for-profit organisations or community group dreams of helping to create brighter futures for Australians or a more active community or support others to live better.

Refer https://dreamsforabetterworld.com.au/community-grants

Other Funding Opportunities

Not-For-Profit Organisations

Australian Sports Foundation - The foundation operates the Fundraising4Sport Program to increase opportunities for Australians to participate in sport or excel in sport performance.

Refer www.asf.org.au

Foundation for Rural and Regional Renewal

Provides grant funding for charitable purposes that benefits the residents of Australia's rural, regional or remote communities.

Refer www.frrr.org.au/cb_pages/grants.php

Trusts and Foundations

There are numerous trusts and foundations established in Australia and a number provide funding for projects such as this. Often they are established by large corporations.

Refer www.philanthropy.org.au

Peak Bodies, Associations and Clubs

Contributions from clubs and associations developing facilities and other initiatives is common. This may include funds generated through fundraising efforts, loans and savings. Peak bodies and associations may also have funds which could be contributed towards the projects.

Other Trail Resourcing Mechanisms

There are other not for profit organisations that provide on the ground support in relation to trail maintenance and development, such as:

- Green Corps
- Conservation Volunteers Australia
- “Friends of” Groups

11 Appendices

Appendix 1 - Order of Probable Costs for Concrete and Asphalt Surface Finishes

KERANG LAKES ECO TRAIL

UPDATED CONCEPT DESIGN OPTIONS

LOCATION SUMMARY

Rates Current At January 2023

Ref	Location	Total Cost $
1	Option 1	14,806,890.40
2	Option 2	13,664,615.40
3	Option 3	12,674,451.50
4	Option 4	13,123,185.00

MARGINS & ADJUSTMENTS

Goods and Services Tax	Excl.

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM
1 Option 1

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
DE	**DEMOLITION**				
13	Minor site clearing and preparation for new works including disposal of spoil off site	m²	53,753	1.80	96,755.40
15	Remove existing fence for access and install pedestrian / bike friendly cattle stop	No	8	2,850.00	22,800.00
14	Remove existing damaged gate and dispose debris off site	No	1	950.00	950.00
16	Remove existing fallen tree and relocate elsewhere	No	1	750.00	750.00
17	Take down and remove existing vegetation and dispose off site	No	1	500.00	500.00
18	Remove existing fence and dispose debris off site	No	1	500.00	500.00
20	Allowance for sundry and additional demolition	Item			5,000.00
52	No allowance for excavation, handling, cartage and dumping of contaminated materials	Note			Excl.
53	No allowance for excavation, handling, cartage and dumping of rock	Note			Excl.
	DE - DEMOLITION				**127,255.40**
SD	**STORMWATER DRAINAGE**				
44	Supply and install new box culvert including excavation, bedding and backfill	No	1	6,500.00	6,500.00
	SD - STORMWATER DRAINAGE				**6,500.00**
PV	**PAVEMENTS**				
CSP	**2.5m Wide Concrete Shared Pathway**				
23	Minor box out, trim and grade existing subgrade in preparation for new pavement	m²	22,225	6.50	144,462.50
21	Prepare, proof roll, trim and compact exising subgrade	m²	22,225	8.00	177,800.00
22	Supply and place 150mm thick compacted rubble base preparation including trimming and compacting	m²	22,225	20.50	455,612.50
24	Construct reinforced concrete path including formwork, reinforcement, concrete, joints, etc.	m²	22,225	135.00	3,000,375.00
25	No allowance for exposed aggregate finish	Note			Excl.
26	No allowance for concrete sealing	Note			Excl.
	CSP - 2.5m Wide Concrete Shared Pathway				3,778,250.00
ASP	**2.5m Wide Asphalt Shared Pathway**				
27	Minor box out, trim and grade existing subgrade in preparation for new pavement	m²	30,950	6.50	201,175.00
29	Prepare, proof roll, trim and compact existing subgrade	m²	30,950	8.00	247,600.00
30	Supply and place 150mm thick compacted rubble base preparation including trimming and compacting	m²	30,950	20.50	634,475.00
31	Supply and place 30mm thick asphalt wearing course	m²	30,950	38.50	1,191,575.00
	ASP - 2.5m Wide Asphalt Shared Pathway				2,274,825.00
	PV - PAVEMENTS				**6,053,075.00**

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM
1 Option 1 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
STR	**STRUCTURES**				
BW	**2.5m Wide Boardwalk**				
33	Construct galvanised steel substructure (posts, bearers, joists) including concrete footings	m²	578	650.00	375,700.00
34	Supply and install FRP grating including fixings	m²	578	320.00	184,960.00
35	Supply and install stainless steel handrail	m	462	750.00	346,500.00
	BW - 2.5m Wide Boardwalk				907,160.00
BR	**2.5m Wide Bridge**				
36	Construct bridge structure including footings, structure, decking, handrails etc. (PC Sum)	m²	75	6,500.00	487,500.00
	BR - 2.5m Wide Bridge				487,500.00
	STR - STRUCTURES				**1,394,660.00**
FU	**FURNITURE**				
5	Supply and install new proprietary bench seat including fixings	No	8	3,250.00	26,000.00
37	Supply and install new proprietary shade structure including concrete footings	No	1	22,500.00	22,500.00
38	Supply and install new proprietary picnic table including fixings and fittings	No	1	5,200.00	5,200.00
	FU - FURNITURE				**53,700.00**
FE	**FENCING & GATES**				
54	Supply and install new fence (assume timber post and wire)	m	11,000	110.00	1,210,000.00
19	Allowance for new fence around drain culvert	No	1	2,500.00	2,500.00
	FE - FENCING & GATES				**1,212,500.00**
SI	**SIGNAGE AND LINE MARKING**				
8	Supply and install new chicane barriers	No	24	1,800.00	43,200.00
6	Supply and install new waymarker sign including concrete footing	No	20	2,850.00	57,000.00
28	Supply and install new cyclist dismount sign including post and concrete footing	No	14	550.00	7,700.00
39	Supply and install new on-path 'Road Crossing Ahead' sign including post and concrete footing	No	12	350.00	4,200.00
40	Supply and install new on-road 'Crossing Ahead' sign including post and concrete footing	No	12	350.00	4,200.00
41	Supply and install new shared-use pathway sign including post and concrete footing	No	12	350.00	4,200.00
7	New Public Art / sculpture locations including footing / foundation structure (PC Sum)	No	7	4,200.00	29,400.00
42	Supply and install new trail head sign including post and concrete footing	No	2	2,800.00	5,600.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM
1 Option 1 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
43	Supply and install new interpretive sign including post and concrete footing	No	12	2,850.00	34,200.00
	SI - SIGNAGE AND LINE MARKING				**189,700.00**
PR	**PRELIMINARIES**				
45	Contractors Preliminaries and Overheads (10%)	Item			905,000.00
46	Traffic and Pedestrian Management (2%)	Item			199,500.00
	PR - PRELIMINARIES				**1,104,500.00**
PF	**PROFESSIONAL FEES**				
51	Professional Fees (4%)	Item			570,000.00
	PF - PROFESSIONAL FEES				**570,000.00**
CT	**CONTINGENCIES**				
47	Design Development Contingency (7.5%)	Item			765,000.00
48	Construction Contingency (7.5%)	Item			765,000.00
	CT - CONTINGENCIES				**1,530,000.00**
ES	**ESCALATION**				
49	Escalation for construction beyond end of 2023 (6%)	Item			705,000.00
	ES - ESCALATION				**705,000.00**
LL	**LOCALITY LOADING**				
50	Locality Loading (15%)	Item			1,860,000.00
	LL - LOCALITY LOADING				**1,860,000.00**
OPTION 1					**14,806,890.40**

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM
2 Option 2

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
DE	**DEMOLITION**				
13	Minor site clearing and preparation for new works including disposal of spoil off site	m²	52,378	1.80	94,280.40
15	Remove existing fence for access and install pedestrian / bike friendly cattle stop	No	11	2,850.00	31,350.00
14	Remove existing damaged gate and dispose debris off site	No	1	950.00	950.00
16	Remove existing fallen tree and relocate elsewhere	No	1	750.00	750.00
17	Take down and remove existing vegetation and dispose off site	No	1	500.00	500.00
18	Remove existing fence and dispose debris off site	No	1	500.00	500.00
20	Allowance for sundry and additional demolition	Item			5,000.00
52	No allowance for excavation, handling, cartage and dumping of contaminated materials	Note			Excl.
53	No allowance for excavation, handling, cartage and dumping of rock	Note			Excl.
	DE - DEMOLITION				**133,330.40**
SD	**STORMWATER DRAINAGE**				
44	Supply and install new box culvert including excavation, bedding and backfill	No	1	6,500.00	6,500.00
	SD - STORMWATER DRAINAGE				**6,500.00**
PV	**PAVEMENTS**				
CSP	**2.5m Wide Concrete Shared Pathway**				
23	Minor box out, trim and grade existing subgrade in preparation for new pavement	m²	18,550	6.50	120,575.00
21	Prepare, proof roll, trim and compact exising subgrade	m²	18,550	8.00	148,400.00
22	Supply and place 150mm thick compacted rubble base preparation including trimming and compacting	m²	18,550	20.50	380,275.00
24	Construct reinforced concrete path including formwork, reinforcement, concrete, joints, etc.	m²	18,550	135.00	2,504,250.00
25	No allowance for exposed aggregate finish	Note			Excl.
26	No allowance for concrete sealing	Note			Excl.
	CSP - 2.5m Wide Concrete Shared Pathway				3,153,500.00
ASP	**2.5m Wide Asphalt Shared Pathway**				
27	Minor box out, trim and grade existing subgrade in preparation for new pavement	m²	33,250	6.50	216,125.00
29	Prepare, proof roll, trim and compact existing subgrade	m²	33,250	8.00	266,000.00
30	Supply and place 150mm thick compacted rubble base preparation including trimming and compacting	m²	33,250	20.50	681,625.00
31	Supply and place 30mm thick asphalt wearing course	m²	33,250	38.50	1,280,125.00
	ASP - 2.5m Wide Asphalt Shared Pathway				2,443,875.00
	PV - PAVEMENTS				**5,597,375.00**

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM
2 Option 2 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
STR	**STRUCTURES**				
BW	**2.5m Wide Boardwalk**				
33	Construct galvanised steel substructure (posts, bearers, joists) including concrete footings	m²	578	650.00	375,700.00
34	Supply and install FRP grating including fixings	m²	578	320.00	184,960.00
35	Supply and install stainless steel handrail	m	462	750.00	346,500.00
	BW - 2.5m Wide Boardwalk				907,160.00
BR	**2.5m Wide Bridge**				
36	Construct bridge structure including footings, structure, decking, handrails etc. (PC Sum)	m²	75	6,500.00	487,500.00
	BR - 2.5m Wide Bridge				487,500.00
	STR - STRUCTURES				**1,394,660.00**
FU	**FURNITURE**				
5	Supply and install new proprietary bench seat including fixings	No	8	3,250.00	26,000.00
37	Supply and install new proprietary shade structure including concrete footings	No	1	22,500.00	22,500.00
38	Supply and install new proprietary picnic table including fixings and fittings	No	1	5,200.00	5,200.00
	FU - FURNITURE				**53,700.00**
FE	**FENCING & GATES**				
54	Supply and install new fence (assume timber post and wire)	m	8,500	110.00	935,000.00
19	Allowance for new fence around drain culvert	No	1	2,500.00	2,500.00
	FE - FENCING & GATES				**937,500.00**
SI	**SIGNAGE AND LINE MARKING**				
8	Supply and install new chicane barriers	No	28	1,800.00	50,400.00
6	Supply and install new waymarker sign including concrete footing	No	23	2,850.00	65,550.00
28	Supply and install new cyclist dismount sign including post and concrete footing	No	16	550.00	8,800.00
39	Supply and install new on-path 'Road Crossing Ahead' sign including post and concrete footing	No	14	350.00	4,900.00
40	Supply and install new on-road 'Crossing Ahead' sign including post and concrete footing	No	14	350.00	4,900.00
41	Supply and install new shared-use pathway sign including post and concrete footing	No	14	350.00	4,900.00
7	New Public Art / sculpture locations including footing / foundation structure (PC Sum)	No	9	4,200.00	37,800.00
42	Supply and install new trail head sign including post and concrete footing	No	2	2,800.00	5,600.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM
2 Option 2 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
43	Supply and install new interpretive sign including post and concrete footing	No	12	2,850.00	34,200.00
	SI - SIGNAGE AND LINE MARKING				**217,050.00**
PR	**PRELIMINARIES**				
45	Contractors Preliminaries and Overheads (10%)	Item			835,000.00
46	Traffic and Pedestrian Management (2%)	Item			184,500.00
	PR - PRELIMINARIES				**1,019,500.00**
PF	**PROFESSIONAL FEES**				
51	Professional Fees (4%)	Item			530,000.00
	PF - PROFESSIONAL FEES				**530,000.00**
CT	**CONTINGENCIES**				
47	Design Development Contingency (7.5%)	Item			705,000.00
48	Construction Contingency (7.5%)	Item			705,000.00
	CT - CONTINGENCIES				**1,410,000.00**
ES	**ESCALATION**				
49	Escalation for construction beyond end of 2023 (6%)	Item			650,000.00
	ES - ESCALATION				**650,000.00**
LL	**LOCALITY LOADING**				
50	Locality Loading (15%)	Item			1,715,000.00
	LL - LOCALITY LOADING				**1,715,000.00**
OPTION 2					**13,664,615.40**

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM
3 Option 3

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
DE	**DEMOLITION**				
13	Minor site clearing and preparation for new works including disposal of spoil off site	m²	50,480	1.80	90,864.00
15	Remove existing fence for access and install pedestrian / bike friendly cattle stop	No	11	2,850.00	31,350.00
14	Remove existing damaged gate and dispose debris off site	No	1	950.00	950.00
16	Remove existing fallen tree and relocate elsewhere	No	1	750.00	750.00
17	Take down and remove existing vegetation and dispose off site	No	1	500.00	500.00
18	Remove existing fence and dispose debris off site	No	1	500.00	500.00
20	Allowance for sundry and additional demolition	Item			5,000.00
52	No allowance for excavation, handling, cartage and dumping of contaminated materials	Note			Excl.
53	No allowance for excavation, handling, cartage and dumping of rock	Note			Excl.
	DE - DEMOLITION				**129,914.00**
SD	**STORMWATER DRAINAGE**				
44	Supply and install new box culvert including excavation, bedding and backfill	No	1	6,500.00	6,500.00
	SD - STORMWATER DRAINAGE				**6,500.00**
PV	**PAVEMENTS**				
CSP	**2.5m Wide Concrete Shared Pathway**				
23	Minor box out, trim and grade existing subgrade in preparation for new pavement	m²	16,950	6.50	110,175.00
21	Prepare, proof roll, trim and compact exising subgrade	m²	16,950	8.00	135,600.00
22	Supply and place 150mm thick compacted rubble base preparation including trimming and compacting	m²	16,950	20.50	347,475.00
24	Construct reinforced concrete path including formwork, reinforcement, concrete, joints, etc.	m²	16,950	135.00	2,288,250.00
25	No allowance for exposed aggregate finish	Note			Excl.
26	No allowance for concrete sealing	Note			Excl.
	CSP - 2.5m Wide Concrete Shared Pathway				2,881,500.00
ASP	**2.5m Wide Asphalt Shared Pathway**				
27	Minor box out, trim and grade existing subgrade in preparation for new pavement	m²	33,125	6.50	215,312.50
29	Prepare, proof roll, trim and compact existing subgrade	m²	33,125	8.00	265,000.00
30	Supply and place 150mm thick compacted rubble base preparation including trimming and compacting	m²	33,125	20.50	679,062.50
31	Supply and place 30mm thick asphalt wearing course	m²	33,125	38.50	1,275,312.50
	ASP - 2.5m Wide Asphalt Shared Pathway				2,434,687.50
	PV - PAVEMENTS				**5,316,187.50**

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM
3 Option 3 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
STR	**STRUCTURES**				
BW	**2.5m Wide Boardwalk**				
33	Construct galvanised steel substructure (posts, bearers, joists) including concrete footings	m²	405	650.00	263,250.00
34	Supply and install FRP grating including fixings	m²	405	320.00	129,600.00
35	Supply and install stainless steel handrail	m	324	750.00	243,000.00
	BW - 2.5m Wide Boardwalk				635,850.00
BR	**2.5m Wide Bridge**				
36	Construct bridge structure including footings, structure, decking, handrails etc. (PC Sum)	m²	75	6,500.00	487,500.00
	BR - 2.5m Wide Bridge				487,500.00
	STR - STRUCTURES				**1,123,350.00**
FU	**FURNITURE**				
5	Supply and install new proprietary bench seat including fixings	No	8	3,250.00	26,000.00
37	Supply and install new proprietary shade structure including concrete footings	No	1	22,500.00	22,500.00
38	Supply and install new proprietary picnic table including fixings and fittings	No	1	5,200.00	5,200.00
	FU - FURNITURE				**53,700.00**
FE	**FENCING & GATES**				
54	Supply and install new fence (assume timber post and wire)	m	8,200	110.00	902,000.00
19	Allowance for new fence around drain culvert	No	1	2,500.00	2,500.00
	FE - FENCING & GATES				**904,500.00**
SI	**SIGNAGE AND LINE MARKING**				
8	Supply and install new chicane barriers	No	28	1,800.00	50,400.00
6	Supply and install new waymarker sign including concrete footing	No	20	2,850.00	57,000.00
28	Supply and install new cyclist dismount sign including post and concrete footing	No	16	550.00	8,800.00
39	Supply and install new on-path 'Road Crossing Ahead' sign including post and concrete footing	No	14	350.00	4,900.00
40	Supply and install new on-road 'Crossing Ahead' sign including post and concrete footing	No	14	350.00	4,900.00
41	Supply and install new shared-use pathway sign including post and concrete footing	No	14	350.00	4,900.00
7	New Public Art / sculpture locations including footing / foundation structure (PC Sum)	No	8	4,200.00	33,600.00
42	Supply and install new trail head sign including post and concrete footing	No	2	2,800.00	5,600.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM
3 Option 3 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
43	Supply and install new interpretive sign including post and concrete footing	No	12	2,850.00	34,200.00
	SI - SIGNAGE AND LINE MARKING				**204,300.00**
PR	**PRELIMINARIES**				
45	Contractors Preliminaries and Overheads (10%)	Item			775,000.00
46	Traffic and Pedestrian Management (2%)	Item			171,000.00
	PR - PRELIMINARIES				**946,000.00**
PF	**PROFESSIONAL FEES**				
51	Professional Fees (4%)	Item			490,000.00
	PF - PROFESSIONAL FEES				**490,000.00**
CT	**CONTINGENCIES**				
47	Design Development Contingency (7.5%)	Item			655,000.00
48	Construction Contingency (7.5%)	Item			655,000.00
	CT - CONTINGENCIES				**1,310,000.00**
ES	**ESCALATION**				
49	Escalation for construction beyond end of 2023 (6%)	Item			600,000.00
	ES - ESCALATION				**600,000.00**
LL	**LOCALITY LOADING**				
50	Locality Loading (15%)	Item			1,590,000.00
	LL - LOCALITY LOADING				**1,590,000.00**
OPTION 3					**12,674,451.50**

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM
4 Option 4

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
DE	**DEMOLITION**				
13	Minor site clearing and preparation for new works including disposal of spoil off site	m²	51,325	1.80	92,385.00
15	Remove existing fence for access and install pedestrian / bike friendly cattle stop	No	8	2,850.00	22,800.00
14	Remove existing damaged gate and dispose debris off site	No	1	950.00	950.00
16	Remove existing fallen tree and relocate elsewhere	No	1	750.00	750.00
17	Take down and remove existing vegetation and dispose off site	No	1	500.00	500.00
18	Remove existing fence and dispose debris off site	No	1	500.00	500.00
20	Allowance for sundry and additional demolition	Item			5,000.00
52	No allowance for excavation, handling, cartage and dumping of contaminated materials	Note			Excl.
53	No allowance for excavation, handling, cartage and dumping of rock	Note			Excl.
	DE - DEMOLITION				**122,885.00**
SD	**STORMWATER DRAINAGE**				
44	Supply and install new box culvert including excavation, bedding and backfill	No	1	6,500.00	6,500.00
	SD - STORMWATER DRAINAGE				**6,500.00**
PV	**PAVEMENTS**				
CSP	**2.5m Wide Concrete Shared Pathway**				
23	Minor box out, trim and grade existing subgrade in preparation for new pavement	m²	16,250	6.50	105,625.00
21	Prepare, proof roll, trim and compact exising subgrade	m²	16,250	8.00	130,000.00
22	Supply and place 150mm thick compacted rubble base preparation including trimming and compacting	m²	16,250	20.50	333,125.00
24	Construct reinforced concrete path including formwork, reinforcement, concrete, joints, etc.	m²	16,250	135.00	2,193,750.00
25	No allowance for exposed aggregate finish	Note			Excl.
26	No allowance for concrete sealing	Note			Excl.
	CSP - 2.5m Wide Concrete Shared Pathway				2,762,500.00
ASP	**2.5m Wide Asphalt Shared Pathway**				
27	Minor box out, trim and grade existing subgrade in preparation for new pavement	m²	35,000	6.50	227,500.00
29	Prepare, proof roll, trim and compact existing subgrade	m²	35,000	8.00	280,000.00
30	Supply and place 150mm thick compacted rubble base preparation including trimming and compacting	m²	35,000	20.50	717,500.00
31	Supply and place 30mm thick asphalt wearing course	m²	35,000	38.50	1,347,500.00
	ASP - 2.5m Wide Asphalt Shared Pathway				2,572,500.00
	PV - PAVEMENTS				**5,335,000.00**

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM
4 Option 4 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
STR	**STRUCTURES**				
BW	**2.5m Wide Boardwalk**				
33	Construct galvanised steel substructure (posts, bearers, joists) including concrete footings	m²	75	650.00	48,750.00
34	Supply and install FRP grating including fixings	m²	75	320.00	24,000.00
35	Supply and install stainless steel handrail	m	60	750.00	45,000.00
	BW - 2.5m Wide Boardwalk				117,750.00
BR	**2.5m Wide Bridge**				
36	Construct bridge structure including footings, structure, decking, handrails etc. (PC Sum)	m²	235	6,500.00	1,527,500.00
	BR - 2.5m Wide Bridge				1,527,500.00
	STR - STRUCTURES				**1,645,250.00**
FU	**FURNITURE**				
5	Supply and install new proprietary bench seat including fixings	No	8	3,250.00	26,000.00
37	Supply and install new proprietary shade structure including concrete footings	No	1	22,500.00	22,500.00
38	Supply and install new proprietary picnic table including fixings and fittings	No	1	5,200.00	5,200.00
	FU - FURNITURE				**53,700.00**
FE	**FENCING & GATES**				
54	Supply and install new fence (assume timber post and wire)	m	6,000	110.00	660,000.00
19	Allowance for new fence around drain culvert	No	1	2,500.00	2,500.00
	FE - FENCING & GATES				**662,500.00**
SI	**SIGNAGE AND LINE MARKING**				
8	Supply and install new chicane barriers	No	24	1,800.00	43,200.00
6	Supply and install new waymarker sign including concrete footing	No	19	2,850.00	54,150.00
28	Supply and install new cyclist dismount sign including post and concrete footing	No	14	550.00	7,700.00
39	Supply and install new on-path 'Road Crossing Ahead' sign including post and concrete footing	No	12	350.00	4,200.00
40	Supply and install new on-road 'Crossing Ahead' sign including post and concrete footing	No	12	350.00	4,200.00
41	Supply and install new shared-use pathway sign including post and concrete footing	No	12	350.00	4,200.00
7	New Public Art / sculpture locations including footing / foundation structure (PC Sum)	No	8	4,200.00	33,600.00
42	Supply and install new trail head sign including post and concrete footing	No	2	2,800.00	5,600.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM
4 Option 4 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
43	Supply and install new interpretive sign including post and concrete footing	No	10	2,850.00	28,500.00
	SI - SIGNAGE AND LINE MARKING				**185,350.00**
PR	**PRELIMINARIES**				
45	Contractors Preliminaries and Overheads (10%)	Item			805,000.00
46	Traffic and Pedestrian Management (2%)	Item			177,000.00
	PR - PRELIMINARIES				**982,000.00**
PF	**PROFESSIONAL FEES**				
51	Professional Fees (4%)	Item			505,000.00
	PF - PROFESSIONAL FEES				**505,000.00**
CT	**CONTINGENCIES**				
47	Design Development Contingency (7.5%)	Item			675,000.00
48	Construction Contingency (7.5%)	Item			675,000.00
	CT - CONTINGENCIES				**1,350,000.00**
ES	**ESCALATION**				
49	Escalation for construction beyond end of 2023 (6%)	Item			625,000.00
	ES - ESCALATION				**625,000.00**
LL	**LOCALITY LOADING**				
50	Locality Loading (15%)	Item			1,650,000.00
	LL - LOCALITY LOADING				**1,650,000.00**
OPTION 4					**13,123,185.00**

Appendix 2 - Order of Probable Costs for Asphalt Surface Finish Only

KERANG LAKES ECO TRAIL

UPDATED CONCEPT DESIGN OPTIONS - ASPHALT PAVEMENT

LOCATION SUMMARY

Rates Current At January 2023

Ref	Location	Total Cost $
1	Option 1	11,295,677.90
2	Option 2	10,740,540.40
3	Option 3	9,997,776.50
4	Option 4	10,555,560.00

MARGINS & ADJUSTMENTS

Goods and Services Tax	Excl.

KERANG LAKES ECO TRAIL

UPDATED CONCEPT DESIGN OPTIONS - ASPHALT PAVEMENT

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

1 Option 1

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
DE	**DEMOLITION**				
13	Minor site clearing and preparation for new works including disposal of spoil off site	m²	53,753	1.80	96,755.40
15	Remove existing fence for access and install pedestrian / bike friendly cattle stop	No	8	2,850.00	22,800.00
14	Remove existing damaged gate and dispose debris off site	No	1	950.00	950.00
16	Remove existing fallen tree and relocate elsewhere	No	1	750.00	750.00
17	Take down and remove existing vegetation and dispose off site	No	1	500.00	500.00
18	Remove existing fence and dispose debris off site	No	1	500.00	500.00
20	Allowance for sundry and additional demolition	Item			5,000.00
52	No allowance for excavation, handling, cartage and dumping of contaminated materials	Note			Excl.
53	No allowance for excavation, handling, cartage and dumping of rock	Note			Excl.
	DE - DEMOLITION				**127,255.40**
SD	**STORMWATER DRAINAGE**				
44	Supply and install new box culvert including excavation, bedding and backfill	No	1	6,500.00	6,500.00
	SD - STORMWATER DRAINAGE				**6,500.00**
PV	**PAVEMENTS**				
ASP	**2.5m Wide Asphalt Shared Pathway**				
27	Minor box out, trim and grade existing subgrade in preparation for new pavement	m²	53,175	6.50	345,637.50
29	Prepare, proof roll, trim and compact existing subgrade	m²	53,175	8.00	425,400.00
30	Supply and place 150mm thick compacted rubble base preparation including trimming and compacting	m²	53,175	20.50	1,090,087.50
31	Supply and place 30mm thick asphalt wearing course	m²	53,175	38.50	2,047,237.50
	ASP - 2.5m Wide Asphalt Shared Pathway				3,908,362.50
	PV - PAVEMENTS				**3,908,362.50**
STR	**STRUCTURES**				
BW	**2.5m Wide Boardwalk**				
33	Construct galvanised steel substructure (posts, bearers, joists) including concrete footings	m²	578	650.00	375,700.00
34	Supply and install FRP grating including fixings	m²	578	320.00	184,960.00
35	Supply and install stainless steel handrail	m	462	750.00	346,500.00
	BW - 2.5m Wide Boardwalk				907,160.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

1 Option 1 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
BR	**2.5m Wide Bridge**				
36	Construct bridge structure including footings, structure, decking, handrails etc. (PC Sum)	m²	75	6,500.00	487,500.00
	BR - 2.5m Wide Bridge				487,500.00
	STR - STRUCTURES				**1,394,660.00**
FU	**FURNITURE**				
5	Supply and install new proprietary bench seat including fixings	No	8	3,250.00	26,000.00
37	Supply and install new proprietary shade structure including concrete footings	No	1	22,500.00	22,500.00
38	Supply and install new proprietary picnic table including fixings and fittings	No	1	5,200.00	5,200.00
	FU - FURNITURE				**53,700.00**
FE	**FENCING & GATES**				
54	Supply and install new fence (assume timber post and wire)	m	11,000	110.00	1,210,000.00
19	Allowance for new fence around drain culvert	No	1	2,500.00	2,500.00
	FE - FENCING & GATES				**1,212,500.00**
SI	**SIGNAGE AND LINE MARKING**				
8	Supply and install new chicane barriers	No	24	1,800.00	43,200.00
6	Supply and install new waymarker sign including concrete footing	No	20	2,850.00	57,000.00
28	Supply and install new cyclist dismount sign including post and concrete footing	No	14	550.00	7,700.00
39	Supply and install new on-path 'Road Crossing Ahead' sign including post and concrete footing	No	12	350.00	4,200.00
40	Supply and install new on-road 'Crossing Ahead' sign including post and concrete footing	No	12	350.00	4,200.00
41	Supply and install new shared-use pathway sign including post and concrete footing	No	12	350.00	4,200.00
7	New Public Art / sculpture locations including footing / foundation structure (PC Sum)	No	7	4,200.00	29,400.00
42	Supply and install new trail head sign including post and concrete footing	No	2	2,800.00	5,600.00
43	Supply and install new interpretive sign including post and concrete footing	No	12	2,850.00	34,200.00
	SI - SIGNAGE AND LINE MARKING				**189,700.00**
PR	**PRELIMINARIES**				
45	Contractors Preliminaries and Overheads (10%)	Item			690,000.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

1 Option 1 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
46	Traffic and Pedestrian Management (2%)	Item			153,000.00
	PR - PRELIMINARIES				**843,000.00**
PF	**PROFESSIONAL FEES**				
51	Professional Fees (4%)	Item			435,000.00
	PF - PROFESSIONAL FEES				**435,000.00**
CT	**CONTINGENCIES**				
47	Design Development Contingency (7.5%)	Item			585,000.00
48	Construction Contingency (7.5%)	Item			585,000.00
	CT - CONTINGENCIES				**1,170,000.00**
ES	**ESCALATION**				
49	Escalation for construction beyond end of 2023 (6%)	Item			535,000.00
	ES - ESCALATION				**535,000.00**
LL	**LOCALITY LOADING**				
50	Locality Loading (15%)	Item			1,420,000.00
	LL - LOCALITY LOADING				**1,420,000.00**
OPTION 1					**11,295,677.90**

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

2 Option 2

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
DE	**DEMOLITION**				
13	Minor site clearing and preparation for new works including disposal of spoil off site	m²	52,378	1.80	94,280.40
15	Remove existing fence for access and install pedestrian / bike friendly cattle stop	No	11	2,850.00	31,350.00
14	Remove existing damaged gate and dispose debris off site	No	1	950.00	950.00
16	Remove existing fallen tree and relocate elsewhere	No	1	750.00	750.00
17	Take down and remove existing vegetation and dispose off site	No	1	500.00	500.00
18	Remove existing fence and dispose debris off site	No	1	500.00	500.00
20	Allowance for sundry and additional demolition	Item			5,000.00
52	No allowance for excavation, handling, cartage and dumping of contaminated materials	Note			Excl.
53	No allowance for excavation, handling, cartage and dumping of rock	Note			Excl.
	DE - DEMOLITION				**133,330.40**
SD	**STORMWATER DRAINAGE**				
44	Supply and install new box culvert including excavation, bedding and backfill	No	1	6,500.00	6,500.00
	SD - STORMWATER DRAINAGE				**6,500.00**
PV	**PAVEMENTS**				
ASP	**2.5m Wide Asphalt Shared Pathway**				
27	Minor box out, trim and grade existing subgrade in preparation for new pavement	m²	51,800	6.50	336,700.00
29	Prepare, proof roll, trim and compact existing subgrade	m²	51,800	8.00	414,400.00
30	Supply and place 150mm thick compacted rubble base preparation including trimming and compacting	m²	51,800	20.50	1,061,900.00
31	Supply and place 30mm thick asphalt wearing course	m²	51,800	38.50	1,994,300.00
	ASP - 2.5m Wide Asphalt Shared Pathway				3,807,300.00
	PV - PAVEMENTS				**3,807,300.00**
STR	**STRUCTURES**				
BW	**2.5m Wide Boardwalk**				
33	Construct galvanised steel substructure (posts, bearers, joists) including concrete footings	m²	578	650.00	375,700.00
34	Supply and install FRP grating including fixings	m²	578	320.00	184,960.00
35	Supply and install stainless steel handrail	m	462	750.00	346,500.00
	BW - 2.5m Wide Boardwalk				907,160.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

2 Option 2 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
BR	**2.5m Wide Bridge**				
36	Construct bridge structure including footings, structure, decking, handrails etc. (PC Sum)	m²	75	6,500.00	487,500.00
	BR - 2.5m Wide Bridge				487,500.00
	STR - STRUCTURES				**1,394,660.00**
FU	**FURNITURE**				
5	Supply and install new proprietary bench seat including fixings	No	8	3,250.00	26,000.00
37	Supply and install new proprietary shade structure including concrete footings	No	1	22,500.00	22,500.00
38	Supply and install new proprietary picnic table including fixings and fittings	No	1	5,200.00	5,200.00
	FU - FURNITURE				**53,700.00**
FE	**FENCING & GATES**				
54	Supply and install new fence (assume timber post and wire)	m	8,500	110.00	935,000.00
19	Allowance for new fence around drain culvert	No	1	2,500.00	2,500.00
	FE - FENCING & GATES				**937,500.00**
SI	**SIGNAGE AND LINE MARKING**				
8	Supply and install new chicane barriers	No	28	1,800.00	50,400.00
6	Supply and install new waymarker sign including concrete footing	No	23	2,850.00	65,550.00
28	Supply and install new cyclist dismount sign including post and concrete footing	No	16	550.00	8,800.00
39	Supply and install new on-path 'Road Crossing Ahead' sign including post and concrete footing	No	14	350.00	4,900.00
40	Supply and install new on-road 'Crossing Ahead' sign including post and concrete footing	No	14	350.00	4,900.00
41	Supply and install new shared-use pathway sign including post and concrete footing	No	14	350.00	4,900.00
7	New Public Art / sculpture locations including footing / foundation structure (PC Sum)	No	9	4,200.00	37,800.00
42	Supply and install new trail head sign including post and concrete footing	No	2	2,800.00	5,600.00
43	Supply and install new interpretive sign including post and concrete footing	No	12	2,850.00	34,200.00
	SI - SIGNAGE AND LINE MARKING				**217,050.00**
PR	**PRELIMINARIES**				
45	Contractors Preliminaries and Overheads (10%)	Item			660,000.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

2 Option 2 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
46	Traffic and Pedestrian Management (2%)	Item			145,500.00
	PR - PRELIMINARIES				**805,500.00**
PF	**PROFESSIONAL FEES**				
51	Professional Fees (4%)	Item			415,000.00
	PF - PROFESSIONAL FEES				**415,000.00**
CT	**CONTINGENCIES**				
47	Design Development Contingency (7.5%)	Item			555,000.00
48	Construction Contingency (7.5%)	Item			555,000.00
	CT - CONTINGENCIES				**1,110,000.00**
ES	**ESCALATION**				
49	Escalation for construction beyond end of 2023 (6%)	Item			510,000.00
	ES - ESCALATION				**510,000.00**
LL	**LOCALITY LOADING**				
50	Locality Loading (15%)	Item			1,350,000.00
	LL - LOCALITY LOADING				**1,350,000.00**
OPTION 2					**10,740,540.40**

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

3 Option 3

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
DE	**DEMOLITION**				
13	Minor site clearing and preparation for new works including disposal of spoil off site	m²	50,480	1.80	90,864.00
15	Remove existing fence for access and install pedestrian / bike friendly cattle stop	No	11	2,850.00	31,350.00
14	Remove existing damaged gate and dispose debris off site	No	1	950.00	950.00
16	Remove existing fallen tree and relocate elsewhere	No	1	750.00	750.00
17	Take down and remove existing vegetation and dispose off site	No	1	500.00	500.00
18	Remove existing fence and dispose debris off site	No	1	500.00	500.00
20	Allowance for sundry and additional demolition	Item			5,000.00
52	No allowance for excavation, handling, cartage and dumping of contaminated materials	Note			Excl.
53	No allowance for excavation, handling, cartage and dumping of rock	Note			Excl.
	DE - DEMOLITION				**129,914.00**
SD	**STORMWATER DRAINAGE**				
44	Supply and install new box culvert including excavation, bedding and backfill	No	1	6,500.00	6,500.00
	SD - STORMWATER DRAINAGE				**6,500.00**
PV	**PAVEMENTS**				
ASP	**2.5m Wide Asphalt Shared Pathway**				
27	Minor box out, trim and grade existing subgrade in preparation for new pavement	m²	50,075	6.50	325,487.50
29	Prepare, proof roll, trim and compact existing subgrade	m²	50,075	8.00	400,600.00
30	Supply and place 150mm thick compacted rubble base preparation including trimming and compacting	m²	50,075	20.50	1,026,537.50
31	Supply and place 30mm thick asphalt wearing course	m²	50,075	38.50	1,927,887.50
	ASP - 2.5m Wide Asphalt Shared Pathway				3,680,512.50
	PV - PAVEMENTS				**3,680,512.50**
STR	**STRUCTURES**				
BW	**2.5m Wide Boardwalk**				
33	Construct galvanised steel substructure (posts, bearers, joists) including concrete footings	m²	405	650.00	263,250.00
34	Supply and install FRP grating including fixings	m²	405	320.00	129,600.00
35	Supply and install stainless steel handrail	m	324	750.00	243,000.00
	BW - 2.5m Wide Boardwalk				635,850.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

3 Option 3 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
BR	**2.5m Wide Bridge**				
36	Construct bridge structure including footings, structure, decking, handrails etc. (PC Sum)	m²	75	6,500.00	487,500.00
	BR - 2.5m Wide Bridge				487,500.00
	STR - STRUCTURES				**1,123,350.00**
FU	**FURNITURE**				
5	Supply and install new proprietary bench seat including fixings	No	8	3,250.00	26,000.00
37	Supply and install new proprietary shade structure including concrete footings	No	1	22,500.00	22,500.00
38	Supply and install new proprietary picnic table including fixings and fittings	No	1	5,200.00	5,200.00
	FU - FURNITURE				**53,700.00**
FE	**FENCING & GATES**				
54	Supply and install new fence (assume timber post and wire)	m	8,200	110.00	902,000.00
19	Allowance for new fence around drain culvert	No	1	2,500.00	2,500.00
	FE - FENCING & GATES				**904,500.00**
SI	**SIGNAGE AND LINE MARKING**				
8	Supply and install new chicane barriers	No	28	1,800.00	50,400.00
6	Supply and install new waymarker sign including concrete footing	No	20	2,850.00	57,000.00
28	Supply and install new cyclist dismount sign including post and concrete footing	No	16	550.00	8,800.00
39	Supply and install new on-path 'Road Crossing Ahead' sign including post and concrete footing	No	14	350.00	4,900.00
40	Supply and install new on-road 'Crossing Ahead' sign including post and concrete footing	No	14	350.00	4,900.00
41	Supply and install new shared-use pathway sign including post and concrete footing	No	14	350.00	4,900.00
7	New Public Art / sculpture locations including footing / foundation structure (PC Sum)	No	8	4,200.00	33,600.00
42	Supply and install new trail head sign including post and concrete footing	No	2	2,800.00	5,600.00
43	Supply and install new interpretive sign including post and concrete footing	No	12	2,850.00	34,200.00
	SI - SIGNAGE AND LINE MARKING				**204,300.00**
PR	**PRELIMINARIES**				
45	Contractors Preliminaries and Overheads (10%)	Item			615,000.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

3 Option 3 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
46	Traffic and Pedestrian Management (2%)	Item			135,000.00
	PR - PRELIMINARIES				**750,000.00**
PF	**PROFESSIONAL FEES**				
51	Professional Fees (4%)	Item			385,000.00
	PF - PROFESSIONAL FEES				**385,000.00**
CT	**CONTINGENCIES**				
47	Design Development Contingency (7.5%)	Item			515,000.00
48	Construction Contingency (7.5%)	Item			515,000.00
	CT - CONTINGENCIES				**1,030,000.00**
ES	**ESCALATION**				
49	Escalation for construction beyond end of 2023 (6%)	Item			475,000.00
	ES - ESCALATION				**475,000.00**
LL	**LOCALITY LOADING**				
50	Locality Loading (15%)	Item			1,255,000.00
	LL - LOCALITY LOADING				**1,255,000.00**
OPTION 3					**9,997,776.50**

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

4 Option 4

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
DE	**DEMOLITION**				
13	Minor site clearing and preparation for new works including disposal of spoil off site	m²	51,325	1.80	92,385.00
15	Remove existing fence for access and install pedestrian / bike friendly cattle stop	No	8	2,850.00	22,800.00
14	Remove existing damaged gate and dispose debris off site	No	1	950.00	950.00
16	Remove existing fallen tree and relocate elsewhere	No	1	750.00	750.00
17	Take down and remove existing vegetation and dispose off site	No	1	500.00	500.00
18	Remove existing fence and dispose debris off site	No	1	500.00	500.00
20	Allowance for sundry and additional demolition	Item			5,000.00
52	No allowance for excavation, handling, cartage and dumping of contaminated materials	Note			Excl.
53	No allowance for excavation, handling, cartage and dumping of rock	Note			Excl.
	DE - DEMOLITION				**122,885.00**
SD	**STORMWATER DRAINAGE**				
44	Supply and install new box culvert including excavation, bedding and backfill	No	1	6,500.00	6,500.00
	SD - STORMWATER DRAINAGE				**6,500.00**
PV	**PAVEMENTS**				
ASP	**2.5m Wide Asphalt Shared Pathway**				
27	Minor box out, trim and grade existing subgrade in preparation for new pavement	m²	51,250	6.50	333,125.00
29	Prepare, proof roll, trim and compact existing subgrade	m²	51,250	8.00	410,000.00
30	Supply and place 150mm thick compacted rubble base preparation including trimming and compacting	m²	51,250	20.50	1,050,625.00
31	Supply and place 30mm thick asphalt wearing course	m²	51,250	38.50	1,973,125.00
	ASP - 2.5m Wide Asphalt Shared Pathway				3,766,875.00
	PV - PAVEMENTS				**3,766,875.00**
STR	**STRUCTURES**				
BW	**2.5m Wide Boardwalk**				
33	Construct galvanised steel substructure (posts, bearers, joists) including concrete footings	m²	75	650.00	48,750.00
34	Supply and install FRP grating including fixings	m²	75	320.00	24,000.00
35	Supply and install stainless steel handrail	m	60	750.00	45,000.00
	BW - 2.5m Wide Boardwalk				117,750.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

4 Option 4 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
BR	**2.5m Wide Bridge**				
36	Construct bridge structure including footings, structure, decking, handrails etc. (PC Sum)	m²	235	6,500.00	1,527,500.00
	BR - 2.5m Wide Bridge				1,527,500.00
	STR - STRUCTURES				**1,645,250.00**
FU	**FURNITURE**				
5	Supply and install new proprietary bench seat including fixings	No	8	3,250.00	26,000.00
37	Supply and install new proprietary shade structure including concrete footings	No	1	22,500.00	22,500.00
38	Supply and install new proprietary picnic table including fixings and fittings	No	1	5,200.00	5,200.00
	FU - FURNITURE				**53,700.00**
FE	**FENCING & GATES**				
54	Supply and install new fence (assume timber post and wire)	m	6,000	110.00	660,000.00
19	Allowance for new fence around drain culvert	No	1	2,500.00	2,500.00
	FE - FENCING & GATES				**662,500.00**
SI	**SIGNAGE AND LINE MARKING**				
8	Supply and install new chicane barriers	No	24	1,800.00	43,200.00
6	Supply and install new waymarker sign including concrete footing	No	19	2,850.00	54,150.00
28	Supply and install new cyclist dismount sign including post and concrete footing	No	14	550.00	7,700.00
39	Supply and install new on-path 'Road Crossing Ahead' sign including post and concrete footing	No	12	350.00	4,200.00
40	Supply and install new on-road 'Crossing Ahead' sign including post and concrete footing	No	12	350.00	4,200.00
41	Supply and install new shared-use pathway sign including post and concrete footing	No	12	350.00	4,200.00
7	New Public Art / sculpture locations including footing / foundation structure (PC Sum)	No	8	4,200.00	33,600.00
42	Supply and install new trail head sign including post and concrete footing	No	2	2,800.00	5,600.00
43	Supply and install new interpretive sign including post and concrete footing	No	10	2,850.00	28,500.00
	SI - SIGNAGE AND LINE MARKING				**185,350.00**
PR	**PRELIMINARIES**				
45	Contractors Preliminaries and Overheads (10%)	Item			645,000.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

4 Option 4 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
46	Traffic and Pedestrian Management (2%)	Item			142,500.00
	PR - PRELIMINARIES				**787,500.00**
PF	**PROFESSIONAL FEES**				
51	Professional Fees (4%)	Item			410,000.00
	PF - PROFESSIONAL FEES				**410,000.00**
CT	**CONTINGENCIES**				
47	Design Development Contingency (7.5%)	Item			545,000.00
48	Construction Contingency (7.5%)	Item			545,000.00
	CT - CONTINGENCIES				**1,090,000.00**
ES	**ESCALATION**				
49	Escalation for construction beyond end of 2023 (6%)	Item			500,000.00
	ES - ESCALATION				**500,000.00**
LL	**LOCALITY LOADING**				
50	Locality Loading (15%)	Item			1,325,000.00
	LL - LOCALITY LOADING				**1,325,000.00**
OPTION 4					**10,555,560.00**

Appendix 3 - Order of Probable Costs for Compacted Rubble Surface Finish Only

KERANG LAKES ECO TRAIL

CONCEPT DESIGN OPTIONS - COMPACTED RUBBLE OPTIONS

LOCATION SUMMARY

Rates Current At January 2023

Ref	Location	Total Cost $
1	Option 1	11,658,332.90
2	Option 2	11,074,281.70
3	Option 3	10,439,412.40
4	Option 4	10,880,064.60
ESTIMATED NET COST		**44,052,091.60**
MARGINS & ADJUSTMENTS		
Goods and Services Tax		Excl.
ESTIMATED TOTAL COST		**44,052,091.60**

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

1 Option 1

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
DE	**DEMOLITION**				
13	Minor site clearing and preparation for new works including disposal of spoil off site	m²	57,263	1.80	103,073.40
15	Remove existing fence for access and install pedestrian / bike friendly cattle stop	No	8	2,850.00	22,800.00
14	Remove existing damaged gate and dispose debris off site	No	1	950.00	950.00
16	Remove existing fallen tree and relocate elsewhere	No	1	750.00	750.00
17	Take down and remove existing vegetation and dispose off site	No	1	500.00	500.00
18	Remove existing fence and dispose debris off site	No	1	500.00	500.00
20	Allowance for sundry and additional demolition	Item			5,000.00
52	No allowance for excavation, handling, cartage and dumping of contaminated materials	Note			Excl.
53	No allowance for excavation, handling, cartage and dumping of rock	Note			Excl.
	DE - DEMOLITION				**133,573.40**
SD	**STORMWATER DRAINAGE**				
44	Supply and install new box culvert including excavation, bedding and backfill	No	1	6,500.00	6,500.00
	SD - STORMWATER DRAINAGE				**6,500.00**
PV	**PAVEMENTS**				
CRP	**2.5m Wide Compacted Rubble Pathway**				
55	Minor box out, trim and grade existing subgrade in preparation for new pavement	m²	56,685	6.50	368,452.50
56	Prepare, proof roll, trim and compact existing subgrade	m²	56,685	8.00	453,480.00
57	Supply and place 100mm thick compacted rubble base preparation including trimming and compacting	m²	56,685	20.50	1,162,042.50
58	Supply and place 150mm thick compacted rubble wearing course including trimming and compacting	m²	56,685	26.50	1,502,152.50
59	Supply and install timber edge restraint to comacted rubble path	m	22,674	28.00	634,872.00
	CRP - 2.5m Wide Compacted Rubble Pathway				4,120,999.50
	PV - PAVEMENTS				**4,120,999.50**
STR	**STRUCTURES**				
BW	**2.5m Wide Boardwalk**				
33	Construct galvanised steel substructure (posts, bearers, joists) including concrete footings	m²	578	650.00	375,700.00
34	Supply and install FRP grating including fixings	m²	578	320.00	184,960.00
35	Supply and install stainless steel handrail	m	462	750.00	346,500.00
	BW - 2.5m Wide Boardwalk				907,160.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

1 Option 1 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
BR	**2.5m Wide Bridge**				
36	Construct bridge structure including footings, structure, decking, handrails etc. (PC Sum)	m²	75	6,500.00	487,500.00
	BR - 2.5m Wide Bridge				487,500.00
	STR - STRUCTURES				**1,394,660.00**
FU	**FURNITURE**				
5	Supply and install new proprietary bench seat including fixings	No	8	3,250.00	26,000.00
37	Supply and install new proprietary shade structure including concrete footings	No	1	22,500.00	22,500.00
38	Supply and install new proprietary picnic table including fixings and fittings	No	1	5,200.00	5,200.00
	FU - FURNITURE				**53,700.00**
FE	**FENCING & GATES**				
54	Supply and install new fence (assume timber post and wire)	m	11,000	110.00	1,210,000.00
19	Allowance for new fence around drain culvert	No	1	2,500.00	2,500.00
	FE - FENCING & GATES				**1,212,500.00**
SI	**SIGNAGE AND LINE MARKING**				
8	Supply and install new chicane barriers	No	24	1,800.00	43,200.00
6	Supply and install new waymarker sign including concrete footing	No	20	2,850.00	57,000.00
28	Supply and install new cyclist dismount sign including post and concrete footing	No	14	550.00	7,700.00
39	Supply and install new on-path 'Road Crossing Ahead' sign including post and concrete footing	No	12	350.00	4,200.00
40	Supply and install new on-road 'Crossing Ahead' sign including post and concrete footing	No	12	350.00	4,200.00
41	Supply and install new shared-use pathway sign including post and concrete footing	No	12	350.00	4,200.00
7	New Public Art / sculpture locations including footing / foundation structure (PC Sum)	No	8	4,200.00	33,600.00
42	Supply and install new trail head sign including post and concrete footing	No	2	2,800.00	5,600.00
43	Supply and install new interpretive sign including post and concrete footing	No	12	2,850.00	34,200.00
	SI - SIGNAGE AND LINE MARKING				**193,900.00**
PR	**PRELIMINARIES**				
45	Contractors Preliminaries and Overheads (10%)	Item			715,000.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

1 Option 1 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
46	Traffic and Pedestrian Management (2%)	Item			157,500.00
	PR - PRELIMINARIES				**872,500.00**
PF	**PROFESSIONAL FEES**				
51	Professional Fees (4%)	Item			450,000.00
	PF - PROFESSIONAL FEES				**450,000.00**
CT	**CONTINGENCIES**				
47	Design Development Contingency (7.5%)	Item			600,000.00
48	Construction Contingency (7.5%)	Item			600,000.00
	CT - CONTINGENCIES				**1,200,000.00**
ES	**ESCALATION**				
49	Escalation for construction beyond end of 2023 (6%)	Item			555,000.00
	ES - ESCALATION				**555,000.00**
LL	**LOCALITY LOADING**				
50	Locality Loading (15%)	Item			1,465,000.00
	LL - LOCALITY LOADING				**1,465,000.00**
OPTION 1					**11,658,332.90**

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

2 Option 2

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
DE	**DEMOLITION**				
13	Minor site clearing and preparation for new works including disposal of spoil off site	m²	55,799	1.80	100,438.20
15	Remove existing fence for access and install pedestrian / bike friendly cattle stop	No	11	2,850.00	31,350.00
14	Remove existing damaged gate and dispose debris off site	No	1	950.00	950.00
16	Remove existing fallen tree and relocate elsewhere	No	1	750.00	750.00
17	Take down and remove existing vegetation and dispose off site	No	1	500.00	500.00
18	Remove existing fence and dispose debris off site	No	1	500.00	500.00
20	Allowance for sundry and additional demolition	Item			5,000.00
52	No allowance for excavation, handling, cartage and dumping of contaminated materials	Note			Excl.
53	No allowance for excavation, handling, cartage and dumping of rock	Note			Excl.
	DE - DEMOLITION				**139,488.20**
SD	**STORMWATER DRAINAGE**				
44	Supply and install new box culvert including excavation, bedding and backfill	No	1	6,500.00	6,500.00
	SD - STORMWATER DRAINAGE				**6,500.00**
PV	**PAVEMENTS**				
CRP	**2.5m Wide Compacted Rubble Pathway**				
55	Minor box out, trim and grade existing subgrade in preparation for new pavement	m²	55,221	6.50	358,936.50
56	Prepare, proof roll, trim and compact existing subgrade	m²	55,221	8.00	441,768.00
57	Supply and place 100mm thick compacted rubble base preparation including trimming and compacting	m²	55,221	20.50	1,132,030.50
58	Supply and place 150mm thick compacted rubble wearing course including trimming and compacting	m²	55,221	26.50	1,463,356.50
59	Supply and install timber edge restraint to comacted rubble path	m	22,089	28.00	618,492.00
	CRP - 2.5m Wide Compacted Rubble Pathway				4,014,583.50
	PV - PAVEMENTS				**4,014,583.50**
STR	**STRUCTURES**				
BW	**2.5m Wide Boardwalk**				
33	Construct galvanised steel substructure (posts, bearers, joists) including concrete footings	m²	578	650.00	375,700.00
34	Supply and install FRP grating including fixings	m²	578	320.00	184,960.00
35	Supply and install stainless steel handrail	m	462	750.00	346,500.00
	BW - 2.5m Wide Boardwalk				907,160.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

2 Option 2 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
BR	**2.5m Wide Bridge**				
36	Construct bridge structure including footings, structure, decking, handrails etc. (PC Sum)	m²	75	6,500.00	487,500.00
	BR - 2.5m Wide Bridge				487,500.00
	STR - STRUCTURES				**1,394,660.00**
FU	**FURNITURE**				
5	Supply and install new proprietary bench seat including fixings	No	8	3,250.00	26,000.00
37	Supply and install new proprietary shade structure including concrete footings	No	1	22,500.00	22,500.00
38	Supply and install new proprietary picnic table including fixings and fittings	No	1	5,200.00	5,200.00
	FU - FURNITURE				**53,700.00**
FE	**FENCING & GATES**				
54	Supply and install new fence (assume timber post and wire)	m	8,500	110.00	935,000.00
19	Allowance for new fence around drain culvert	No	1	2,500.00	2,500.00
	FE - FENCING & GATES				**937,500.00**
SI	**SIGNAGE AND LINE MARKING**				
8	Supply and install new chicane barriers	No	28	1,800.00	50,400.00
6	Supply and install new waymarker sign including concrete footing	No	23	2,850.00	65,550.00
28	Supply and install new cyclist dismount sign including post and concrete footing	No	16	550.00	8,800.00
39	Supply and install new on-path 'Road Crossing Ahead' sign including post and concrete footing	No	14	350.00	4,900.00
40	Supply and install new on-road 'Crossing Ahead' sign including post and concrete footing	No	14	350.00	4,900.00
41	Supply and install new shared-use pathway sign including post and concrete footing	No	14	350.00	4,900.00
7	New Public Art / sculpture locations including footing / foundation structure (PC Sum)	No	8	4,200.00	33,600.00
42	Supply and install new trail head sign including post and concrete footing	No	2	2,800.00	5,600.00
43	Supply and install new interpretive sign including post and concrete footing	No	12	2,850.00	34,200.00
	SI - SIGNAGE AND LINE MARKING				**212,850.00**
PR	**PRELIMINARIES**				
45	Contractors Preliminaries and Overheads (10%)	Item			680,000.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

2 Option 2 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
46	Traffic and Pedestrian Management (2%)	Item			150,000.00
	PR - PRELIMINARIES				**830,000.00**
PF	**PROFESSIONAL FEES**				
51	Professional Fees (4%)	Item			430,000.00
	PF - PROFESSIONAL FEES				**430,000.00**
CT	**CONTINGENCIES**				
47	Design Development Contingency (7.5%)	Item			570,000.00
48	Construction Contingency (7.5%)	Item			570,000.00
	CT - CONTINGENCIES				**1,140,000.00**
ES	**ESCALATION**				
49	Escalation for construction beyond end of 2023 (6%)	Item			525,000.00
	ES - ESCALATION				**525,000.00**
LL	**LOCALITY LOADING**				
50	Locality Loading (15%)	Item			1,390,000.00
	LL - LOCALITY LOADING				**1,390,000.00**
OPTION 2					**11,074,281.70**

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

3 Option 3

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
DE	**DEMOLITION**				
13	Minor site clearing and preparation for new works including disposal of spoil off site	m²	54,583	1.80	98,249.40
15	Remove existing fence for access and install pedestrian / bike friendly cattle stop	No	11	2,850.00	31,350.00
14	Remove existing damaged gate and dispose debris off site	No	1	950.00	950.00
16	Remove existing fallen tree and relocate elsewhere	No	1	750.00	750.00
17	Take down and remove existing vegetation and dispose off site	No	1	500.00	500.00
18	Remove existing fence and dispose debris off site	No	1	500.00	500.00
20	Allowance for sundry and additional demolition	Item			5,000.00
52	No allowance for excavation, handling, cartage and dumping of contaminated materials	Note			Excl.
53	No allowance for excavation, handling, cartage and dumping of rock	Note			Excl.
	DE - DEMOLITION				**137,299.40**
SD	**STORMWATER DRAINAGE**				
44	Supply and install new box culvert including excavation, bedding and backfill	No	1	6,500.00	6,500.00
	SD - STORMWATER DRAINAGE				**6,500.00**
PV	**PAVEMENTS**				
CRP	**2.5m Wide Compacted Rubble Pathway**				
55	Minor box out, trim and grade existing subgrade in preparation for new pavement	m²	54,178	6.50	352,157.00
56	Prepare, proof roll, trim and compact existing subgrade	m²	54,178	8.00	433,424.00
57	Supply and place 100mm thick compacted rubble base preparation including trimming and compacting	m²	54,178	20.50	1,110,649.00
58	Supply and place 150mm thick compacted rubble wearing course including trimming and compacting	m²	54,178	26.50	1,435,717.00
59	Supply and install timber edge restraint to comacted rubble path	m	21,672	28.00	606,816.00
	CRP - 2.5m Wide Compacted Rubble Pathway				3,938,763.00
	PV - PAVEMENTS				**3,938,763.00**
STR	**STRUCTURES**				
BW	**2.5m Wide Boardwalk**				
33	Construct galvanised steel substructure (posts, bearers, joists) including concrete footings	m²	405	650.00	263,250.00
34	Supply and install FRP grating including fixings	m²	405	320.00	129,600.00
35	Supply and install stainless steel handrail	m	324	750.00	243,000.00
	BW - 2.5m Wide Boardwalk				635,850.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

3 Option 3 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
BR	**2.5m Wide Bridge**				
36	Construct bridge structure including footings, structure, decking, handrails etc. (PC Sum)	m²	75	6,500.00	487,500.00
	BR - 2.5m Wide Bridge				487,500.00
	STR - STRUCTURES				**1,123,350.00**
FU	**FURNITURE**				
5	Supply and install new proprietary bench seat including fixings	No	8	3,250.00	26,000.00
37	Supply and install new proprietary shade structure including concrete footings	No	1	22,500.00	22,500.00
38	Supply and install new proprietary picnic table including fixings and fittings	No	1	5,200.00	5,200.00
	FU - FURNITURE				**53,700.00**
FE	**FENCING & GATES**				
54	Supply and install new fence (assume timber post and wire)	m	8,200	110.00	902,000.00
19	Allowance for new fence around drain culvert	No	1	2,500.00	2,500.00
	FE - FENCING & GATES				**904,500.00**
SI	**SIGNAGE AND LINE MARKING**				
8	Supply and install new chicane barriers	No	28	1,800.00	50,400.00
6	Supply and install new waymarker sign including concrete footing	No	20	2,850.00	57,000.00
28	Supply and install new cyclist dismount sign including post and concrete footing	No	16	550.00	8,800.00
39	Supply and install new on-path 'Road Crossing Ahead' sign including post and concrete footing	No	14	350.00	4,900.00
40	Supply and install new on-road 'Crossing Ahead' sign including post and concrete footing	No	14	350.00	4,900.00
41	Supply and install new shared-use pathway sign including post and concrete footing	No	14	350.00	4,900.00
7	New Public Art / sculpture locations including footing / foundation structure (PC Sum)	No	8	4,200.00	33,600.00
42	Supply and install new trail head sign including post and concrete footing	No	2	2,800.00	5,600.00
43	Supply and install new interpretive sign including post and concrete footing	No	12	2,850.00	34,200.00
	SI - SIGNAGE AND LINE MARKING				**204,300.00**
PR	**PRELIMINARIES**				
45	Contractors Preliminaries and Overheads (10%)	Item			640,000.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

3 Option 3 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
46	Traffic and Pedestrian Management (2%)	Item			141,000.00
	PR - PRELIMINARIES				**781,000.00**
PF	**PROFESSIONAL FEES**				
51	Professional Fees (4%)	Item			405,000.00
	PF - PROFESSIONAL FEES				**405,000.00**
CT	**CONTINGENCIES**				
47	Design Development Contingency (7.5%)	Item			540,000.00
48	Construction Contingency (7.5%)	Item			540,000.00
	CT - CONTINGENCIES				**1,080,000.00**
ES	**ESCALATION**				
49	Escalation for construction beyond end of 2023 (6%)	Item			495,000.00
	ES - ESCALATION				**495,000.00**
LL	**LOCALITY LOADING**				
50	Locality Loading (15%)	Item			1,310,000.00
	LL - LOCALITY LOADING				**1,310,000.00**
OPTION 3					**10,439,412.40**

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

4 Option 4

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
DE	**DEMOLITION**				
13	Minor site clearing and preparation for new works including disposal of spoil off site	m²	54,627	1.80	98,328.60
15	Remove existing fence for access and install pedestrian / bike friendly cattle stop	No	8	2,850.00	22,800.00
14	Remove existing damaged gate and dispose debris off site	No	1	950.00	950.00
16	Remove existing fallen tree and relocate elsewhere	No	1	750.00	750.00
17	Take down and remove existing vegetation and dispose off site	No	1	500.00	500.00
18	Remove existing fence and dispose debris off site	No	1	500.00	500.00
20	Allowance for sundry and additional demolition	Item			5,000.00
52	No allowance for excavation, handling, cartage and dumping of contaminated materials	Note			Excl.
53	No allowance for excavation, handling, cartage and dumping of rock	Note			Excl.
	DE - DEMOLITION				**128,828.60**
SD	**STORMWATER DRAINAGE**				
44	Supply and install new box culvert including excavation, bedding and backfill	No	1	6,500.00	6,500.00
	SD - STORMWATER DRAINAGE				**6,500.00**
PV	**PAVEMENTS**				
CRP	**2.5m Wide Compacted Rubble Pathway**				
55	Minor box out, trim and grade existing subgrade in preparation for new pavement	m²	54,552	6.50	354,588.00
56	Prepare, proof roll, trim and compact existing subgrade	m²	54,552	8.00	436,416.00
57	Supply and place 100mm thick compacted rubble base preparation including trimming and compacting	m²	54,552	20.50	1,118,316.00
58	Supply and place 150mm thick compacted rubble wearing course including trimming and compacting	m²	54,552	26.50	1,445,628.00
59	Supply and install timber edge restraint to comacted rubble path	m	21,821	28.00	610,988.00
	CRP - 2.5m Wide Compacted Rubble Pathway				3,965,936.00
	PV - PAVEMENTS				**3,965,936.00**
STR	**STRUCTURES**				
BW	**2.5m Wide Boardwalk**				
33	Construct galvanised steel substructure (posts, bearers, joists) including concrete footings	m²	75	650.00	48,750.00
34	Supply and install FRP grating including fixings	m²	75	320.00	24,000.00
35	Supply and install stainless steel handrail	m	60	750.00	45,000.00
	BW - 2.5m Wide Boardwalk				117,750.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

4 Option 4 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
BR	**2.5m Wide Bridge**				
36	Construct bridge structure including footings, structure, decking, handrails etc. (PC Sum)	m²	235	6,500.00	1,527,500.00
	BR - 2.5m Wide Bridge				1,527,500.00
	STR - STRUCTURES				**1,645,250.00**
FU	**FURNITURE**				
5	Supply and install new proprietary bench seat including fixings	No	8	3,250.00	26,000.00
37	Supply and install new proprietary shade structure including concrete footings	No	1	22,500.00	22,500.00
38	Supply and install new proprietary picnic table including fixings and fittings	No	1	5,200.00	5,200.00
	FU - FURNITURE				**53,700.00**
FE	**FENCING & GATES**				
54	Supply and install new fence (assume timber post and wire)	m	6,000	110.00	660,000.00
19	Allowance for new fence around drain culvert	No	1	2,500.00	2,500.00
	FE - FENCING & GATES				**662,500.00**
SI	**SIGNAGE AND LINE MARKING**				
8	Supply and install new chicane barriers	No	24	1,800.00	43,200.00
6	Supply and install new waymarker sign including concrete footing	No	19	2,850.00	54,150.00
28	Supply and install new cyclist dismount sign including post and concrete footing	No	14	550.00	7,700.00
39	Supply and install new on-path 'Road Crossing Ahead' sign including post and concrete footing	No	12	350.00	4,200.00
40	Supply and install new on-road 'Crossing Ahead' sign including post and concrete footing	No	12	350.00	4,200.00
41	Supply and install new shared-use pathway sign including post and concrete footing	No	12	350.00	4,200.00
7	New Public Art / sculpture locations including footing / foundation structure (PC Sum)	No	8	4,200.00	33,600.00
42	Supply and install new trail head sign including post and concrete footing	No	2	2,800.00	5,600.00
43	Supply and install new interpretive sign including post and concrete footing	No	10	2,850.00	28,500.00
	SI - SIGNAGE AND LINE MARKING				**185,350.00**
PR	**PRELIMINARIES**				
45	Contractors Preliminaries and Overheads (10%)	Item			665,000.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

4 Option 4 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
46	Traffic and Pedestrian Management (2%)	Item			147,000.00
	PR - PRELIMINARIES				**812,000.00**
PF	**PROFESSIONAL FEES**				
51	Professional Fees (4%)	Item			420,000.00
	PF - PROFESSIONAL FEES				**420,000.00**
CT	**CONTINGENCIES**				
47	Design Development Contingency (7.5%)	Item			560,000.00
48	Construction Contingency (7.5%)	Item			560,000.00
	CT - CONTINGENCIES				**1,120,000.00**
ES	**ESCALATION**				
49	Escalation for construction beyond end of 2023 (6%)	Item			515,000.00
	ES - ESCALATION				**515,000.00**
LL	**LOCALITY LOADING**				
50	Locality Loading (15%)	Item			1,365,000.00
	LL - LOCALITY LOADING				**1,365,000.00**
OPTION 4					**10,880,064.60**

Appendix 4 - Order of Probable Costs for Treated Compacted Rubble Surface Finish Only

KERANG LAKES ECO TRAIL

CONCEPT DESIGN OPTIONS - CEMENT TREATED COMPACTED RUBBLE OPTIONS

LOCATION SUMMARY

Rates Current At January 2023

Ref	Location	Total Cost $
1	Option 1	15,228,705.40
2	Option 2	14,546,790.20
3	Option 3	13,856,765.40
4	Option 4	14,329,316.60
ESTIMATED NET COST		**57,961,577.60**
MARGINS & ADJUSTMENTS		
Goods and Services Tax		Excl.
ESTIMATED TOTAL COST		**57,961,577.60**

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

1 Option 1

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
DE	**DEMOLITION**				
13	Minor site clearing and preparation for new works including disposal of spoil off site	m²	57,263	1.80	103,073.40
15	Remove existing fence for access and install pedestrian / bike friendly cattle stop	No	8	2,850.00	22,800.00
14	Remove existing damaged gate and dispose debris off site	No	1	950.00	950.00
16	Remove existing fallen tree and relocate elsewhere	No	1	750.00	750.00
17	Take down and remove existing vegetation and dispose off site	No	1	500.00	500.00
18	Remove existing fence and dispose debris off site	No	1	500.00	500.00
20	Allowance for sundry and additional demolition	Item			5,000.00
52	No allowance for excavation, handling, cartage and dumping of contaminated materials	Note			Excl.
53	No allowance for excavation, handling, cartage and dumping of rock	Note			Excl.
	DE - DEMOLITION				**133,573.40**
SD	**STORMWATER DRAINAGE**				
44	Supply and install new box culvert including excavation, bedding and backfill	No	1	6,500.00	6,500.00
	SD - STORMWATER DRAINAGE				**6,500.00**
PV	**PAVEMENTS**				
CRP	**2.5m Wide Cement Treated Compacted Rubble Pathway**				
55	Minor box out, trim and grade existing subgrade in preparation for new pavement	m²	56,685	6.50	368,452.50
56	Prepare, proof roll, trim and compact existing subgrade	m²	56,685	8.00	453,480.00
57	Supply and place 100mm thick compacted rubble base preparation including trimming and compacting	m²	56,685	20.50	1,162,042.50
58	Supply and place 150mm thick 4% cement treated compacted rubble wearing course including trimming and compacting	m²	56,685	65.00	3,684,525.00
59	Supply and install timber edge restraint to comacted rubble path	m	22,674	28.00	634,872.00
	CRP - 2.5m Wide Cement Treated Compacted Rubble Pathway				6,303,372.00
	PV - PAVEMENTS				**6,303,372.00**
STR	**STRUCTURES**				
BW	**2.5m Wide Boardwalk**				
33	Construct galvanised steel substructure (posts, bearers, joists) including concrete footings	m²	578	650.00	375,700.00
34	Supply and install FRP grating including fixings	m²	578	320.00	184,960.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

1 Option 1 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
35	Supply and install stainless steel handrail	m	462	750.00	346,500.00
	BW - 2.5m Wide Boardwalk				907,160.00
BR	**2.5m Wide Bridge**				
36	Construct bridge structure including footings, structure, decking, handrails etc. (PC Sum)	m²	75	6,500.00	487,500.00
	BR - 2.5m Wide Bridge				487,500.00
	STR - STRUCTURES				**1,394,660.00**
FU	**FURNITURE**				
5	Supply and install new proprietary bench seat including fixings	No	8	3,250.00	26,000.00
37	Supply and install new proprietary shade structure including concrete footings	No	1	22,500.00	22,500.00
38	Supply and install new proprietary picnic table including fixings and fittings	No	1	5,200.00	5,200.00
	FU - FURNITURE				**53,700.00**
FE	**FENCING & GATES**				
54	Supply and install new fence (assume timber post and wire)	m	11,000	110.00	1,210,000.00
19	Allowance for new fence around drain culvert	No	1	2,500.00	2,500.00
	FE - FENCING & GATES				**1,212,500.00**
SI	**SIGNAGE AND LINE MARKING**				
8	Supply and install new chicane barriers	No	24	1,800.00	43,200.00
6	Supply and install new waymarker sign including concrete footing	No	20	2,850.00	57,000.00
28	Supply and install new cyclist dismount sign including post and concrete footing	No	14	550.00	7,700.00
39	Supply and install new on-path 'Road Crossing Ahead' sign including post and concrete footing	No	12	350.00	4,200.00
40	Supply and install new on-road 'Crossing Ahead' sign including post and concrete footing	No	12	350.00	4,200.00
41	Supply and install new shared-use pathway sign including post and concrete footing	No	12	350.00	4,200.00
7	New Public Art / sculpture locations including footing / foundation structure (PC Sum)	No	8	4,200.00	33,600.00
42	Supply and install new trail head sign including post and concrete footing	No	2	2,800.00	5,600.00
43	Supply and install new interpretive sign including post and concrete footing	No	12	2,850.00	34,200.00
	SI - SIGNAGE AND LINE MARKING				**193,900.00**

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

1 Option 1 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
PR	**PRELIMINARIES**				
45	Contractors Preliminaries and Overheads (10%)	Item			930,000.00
46	Traffic and Pedestrian Management (2%)	Item			205,500.00
	PR - PRELIMINARIES				**1,135,500.00**
PF	**PROFESSIONAL FEES**				
51	Professional Fees (4%)	Item			590,000.00
	PF - PROFESSIONAL FEES				**590,000.00**
CT	**CONTINGENCIES**				
47	Design Development Contingency (7.5%)	Item			785,000.00
48	Construction Contingency (7.5%)	Item			785,000.00
	CT - CONTINGENCIES				**1,570,000.00**
ES	**ESCALATION**				
49	Escalation for construction beyond end of 2023 (6%)	Item			725,000.00
	ES - ESCALATION				**725,000.00**
LL	**LOCALITY LOADING**				
50	Locality Loading (15%)	Item			1,910,000.00
	LL - LOCALITY LOADING				**1,910,000.00**
OPTION 1					**15,228,705.40**

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

2 Option 2

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
DE	**DEMOLITION**				
13	Minor site clearing and preparation for new works including disposal of spoil off site	m²	55,799	1.80	100,438.20
15	Remove existing fence for access and install pedestrian / bike friendly cattle stop	No	11	2,850.00	31,350.00
14	Remove existing damaged gate and dispose debris off site	No	1	950.00	950.00
16	Remove existing fallen tree and relocate elsewhere	No	1	750.00	750.00
17	Take down and remove existing vegetation and dispose off site	No	1	500.00	500.00
18	Remove existing fence and dispose debris off site	No	1	500.00	500.00
20	Allowance for sundry and additional demolition	Item			5,000.00
52	No allowance for excavation, handling, cartage and dumping of contaminated materials	Note			Excl.
53	No allowance for excavation, handling, cartage and dumping of rock	Note			Excl.
	DE - DEMOLITION				**139,488.20**
SD	**STORMWATER DRAINAGE**				
44	Supply and install new box culvert including excavation, bedding and backfill	No	1	6,500.00	6,500.00
	SD - STORMWATER DRAINAGE				**6,500.00**
PV	**PAVEMENTS**				
CRP	**2.5m Wide Cement Treated Compacted Rubble Pathway**				
55	Minor box out, trim and grade existing subgrade in preparation for new pavement	m²	55,221	6.50	358,936.50
56	Prepare, proof roll, trim and compact existing subgrade	m²	55,221	8.00	441,768.00
57	Supply and place 100mm thick compacted rubble base preparation including trimming and compacting	m²	55,221	20.50	1,132,030.50
58	Supply and place 150mm thick 4% cement treated compacted rubble wearing course including trimming and compacting	m²	55,221	65.00	3,589,365.00
59	Supply and install timber edge restraint to comacted rubble path	m	22,089	28.00	618,492.00
	CRP - 2.5m Wide Cement Treated Compacted Rubble Pathway				6,140,592.00
	PV - PAVEMENTS				**6,140,592.00**
STR	**STRUCTURES**				
BW	**2.5m Wide Boardwalk**				
33	Construct galvanised steel substructure (posts, bearers, joists) including concrete footings	m²	578	650.00	375,700.00
34	Supply and install FRP grating including fixings	m²	578	320.00	184,960.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

2 Option 2 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
35	Supply and install stainless steel handrail	m	462	750.00	346,500.00
	BW - 2.5m Wide Boardwalk				907,160.00
BR	**2.5m Wide Bridge**				
36	Construct bridge structure including footings, structure, decking, handrails etc. (PC Sum)	m²	75	6,500.00	487,500.00
	BR - 2.5m Wide Bridge				487,500.00
	STR - STRUCTURES				**1,394,660.00**
FU	**FURNITURE**				
5	Supply and install new proprietary bench seat including fixings	No	8	3,250.00	26,000.00
37	Supply and install new proprietary shade structure including concrete footings	No	1	22,500.00	22,500.00
38	Supply and install new proprietary picnic table including fixings and fittings	No	1	5,200.00	5,200.00
	FU - FURNITURE				**53,700.00**
FE	**FENCING & GATES**				
54	Supply and install new fence (assume timber post and wire)	m	8,500	110.00	935,000.00
19	Allowance for new fence around drain culvert	No	1	2,500.00	2,500.00
	FE - FENCING & GATES				**937,500.00**
SI	**SIGNAGE AND LINE MARKING**				
8	Supply and install new chicane barriers	No	28	1,800.00	50,400.00
6	Supply and install new waymarker sign including concrete footing	No	23	2,850.00	65,550.00
28	Supply and install new cyclist dismount sign including post and concrete footing	No	16	550.00	8,800.00
39	Supply and install new on-path 'Road Crossing Ahead' sign including post and concrete footing	No	14	350.00	4,900.00
40	Supply and install new on-road 'Crossing Ahead' sign including post and concrete footing	No	14	350.00	4,900.00
41	Supply and install new shared-use pathway sign including post and concrete footing	No	14	350.00	4,900.00
7	New Public Art / sculpture locations including footing / foundation structure (PC Sum)	No	8	4,200.00	33,600.00
42	Supply and install new trail head sign including post and concrete footing	No	2	2,800.00	5,600.00
43	Supply and install new interpretive sign including post and concrete footing	No	12	2,850.00	34,200.00
	SI - SIGNAGE AND LINE MARKING				**212,850.00**

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

2 Option 2 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
PR	**PRELIMINARIES**				
45	Contractors Preliminaries and Overheads (10%)	Item			890,000.00
46	Traffic and Pedestrian Management (2%)	Item			196,500.00
	PR - PRELIMINARIES				**1,086,500.00**
PF	**PROFESSIONAL FEES**				
51	Professional Fees (4%)	Item			560,000.00
	PF - PROFESSIONAL FEES				**560,000.00**
CT	**CONTINGENCIES**				
47	Design Development Contingency (7.5%)	Item			750,000.00
48	Construction Contingency (7.5%)	Item			750,000.00
	CT - CONTINGENCIES				**1,500,000.00**
ES	**ESCALATION**				
49	Escalation for construction beyond end of 2023 (6%)	Item			690,000.00
	ES - ESCALATION				**690,000.00**
LL	**LOCALITY LOADING**				
50	Locality Loading (15%)	Item			1,825,000.00
	LL - LOCALITY LOADING				**1,825,000.00**
OPTION 2					**14,546,790.20**

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

3 Option 3

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
DE	**DEMOLITION**				
13	Minor site clearing and preparation for new works including disposal of spoil off site	m²	54,583	1.80	98,249.40
15	Remove existing fence for access and install pedestrian / bike friendly cattle stop	No	11	2,850.00	31,350.00
14	Remove existing damaged gate and dispose debris off site	No	1	950.00	950.00
16	Remove existing fallen tree and relocate elsewhere	No	1	750.00	750.00
17	Take down and remove existing vegetation and dispose off site	No	1	500.00	500.00
18	Remove existing fence and dispose debris off site	No	1	500.00	500.00
20	Allowance for sundry and additional demolition	Item			5,000.00
52	No allowance for excavation, handling, cartage and dumping of contaminated materials	Note			Excl.
53	No allowance for excavation, handling, cartage and dumping of rock	Note			Excl.
	DE - DEMOLITION				**137,299.40**
SD	**STORMWATER DRAINAGE**				
44	Supply and install new box culvert including excavation, bedding and backfill	No	1	6,500.00	6,500.00
	SD - STORMWATER DRAINAGE				**6,500.00**
PV	**PAVEMENTS**				
CRP	**2.5m Wide Cement Treated Compacted Rubble Pathway**				
55	Minor box out, trim and grade existing subgrade in preparation for new pavement	m²	54,178	6.50	352,157.00
56	Prepare, proof roll, trim and compact existing subgrade	m²	54,178	8.00	433,424.00
57	Supply and place 100mm thick compacted rubble base preparation including trimming and compacting	m²	54,178	20.50	1,110,649.00
58	Supply and place 150mm thick 4% cement treated compacted rubble wearing course including trimming and compacting	m²	54,178	65.00	3,521,570.00
59	Supply and install timber edge restraint to comacted rubble path	m	21,672	28.00	606,816.00
	CRP - 2.5m Wide Cement Treated Compacted Rubble Pathway				6,024,616.00
	PV - PAVEMENTS				**6,024,616.00**
STR	**STRUCTURES**				
BW	**2.5m Wide Boardwalk**				
33	Construct galvanised steel substructure (posts, bearers, joists) including concrete footings	m²	405	650.00	263,250.00
34	Supply and install FRP grating including fixings	m²	405	320.00	129,600.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

3 Option 3 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
35	Supply and install stainless steel handrail	m	324	750.00	243,000.00
	BW - 2.5m Wide Boardwalk				635,850.00
BR	**2.5m Wide Bridge**				
36	Construct bridge structure including footings, structure, decking, handrails etc. (PC Sum)	m²	75	6,500.00	487,500.00
	BR - 2.5m Wide Bridge				487,500.00
	STR - STRUCTURES				**1,123,350.00**
FU	**FURNITURE**				
5	Supply and install new proprietary bench seat including fixings	No	8	3,250.00	26,000.00
37	Supply and install new proprietary shade structure including concrete footings	No	1	22,500.00	22,500.00
38	Supply and install new proprietary picnic table including fixings and fittings	No	1	5,200.00	5,200.00
	FU - FURNITURE				**53,700.00**
FE	**FENCING & GATES**				
54	Supply and install new fence (assume timber post and wire)	m	8,200	110.00	902,000.00
19	Allowance for new fence around drain culvert	No	1	2,500.00	2,500.00
	FE - FENCING & GATES				**904,500.00**
SI	**SIGNAGE AND LINE MARKING**				
8	Supply and install new chicane barriers	No	28	1,800.00	50,400.00
6	Supply and install new waymarker sign including concrete footing	No	20	2,850.00	57,000.00
28	Supply and install new cyclist dismount sign including post and concrete footing	No	16	550.00	8,800.00
39	Supply and install new on-path 'Road Crossing Ahead' sign including post and concrete footing	No	14	350.00	4,900.00
40	Supply and install new on-road 'Crossing Ahead' sign including post and concrete footing	No	14	350.00	4,900.00
41	Supply and install new shared-use pathway sign including post and concrete footing	No	14	350.00	4,900.00
7	New Public Art / sculpture locations including footing / foundation structure (PC Sum)	No	8	4,200.00	33,600.00
42	Supply and install new trail head sign including post and concrete footing	No	2	2,800.00	5,600.00
43	Supply and install new interpretive sign including post and concrete footing	No	12	2,850.00	34,200.00
	SI - SIGNAGE AND LINE MARKING				**204,300.00**

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

3 Option 3 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
PR	**PRELIMINARIES**				
45	Contractors Preliminaries and Overheads (10%)	Item			850,000.00
46	Traffic and Pedestrian Management (2%)	Item			187,500.00
	PR - PRELIMINARIES				**1,037,500.00**
PF	**PROFESSIONAL FEES**				
51	Professional Fees (4%)	Item			535,000.00
	PF - PROFESSIONAL FEES				**535,000.00**
CT	**CONTINGENCIES**				
47	Design Development Contingency (7.5%)	Item			715,000.00
48	Construction Contingency (7.5%)	Item			715,000.00
	CT - CONTINGENCIES				**1,430,000.00**
ES	**ESCALATION**				
49	Escalation for construction beyond end of 2023 (6%)	Item			660,000.00
	ES - ESCALATION				**660,000.00**
LL	**LOCALITY LOADING**				
50	Locality Loading (15%)	Item			1,740,000.00
	LL - LOCALITY LOADING				**1,740,000.00**
OPTION 3					**13,856,765.40**

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

4 Option 4

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
DE	**DEMOLITION**				
13	Minor site clearing and preparation for new works including disposal of spoil off site	m²	54,627	1.80	98,328.60
15	Remove existing fence for access and install pedestrian / bike friendly cattle stop	No	8	2,850.00	22,800.00
14	Remove existing damaged gate and dispose debris off site	No	1	950.00	950.00
16	Remove existing fallen tree and relocate elsewhere	No	1	750.00	750.00
17	Take down and remove existing vegetation and dispose off site	No	1	500.00	500.00
18	Remove existing fence and dispose debris off site	No	1	500.00	500.00
20	Allowance for sundry and additional demolition	Item			5,000.00
52	No allowance for excavation, handling, cartage and dumping of contaminated materials	Note			Excl.
53	No allowance for excavation, handling, cartage and dumping of rock	Note			Excl.
	DE - DEMOLITION				**128,828.60**
SD	**STORMWATER DRAINAGE**				
44	Supply and install new box culvert including excavation, bedding and backfill	No	1	6,500.00	6,500.00
	SD - STORMWATER DRAINAGE				**6,500.00**
PV	**PAVEMENTS**				
CRP	**2.5m Wide Cement Treated Compacted Rubble Pathway**				
55	Minor box out, trim and grade existing subgrade in preparation for new pavement	m²	54,552	6.50	354,588.00
56	Prepare, proof roll, trim and compact existing subgrade	m²	54,552	8.00	436,416.00
57	Supply and place 100mm thick compacted rubble base preparation including trimming and compacting	m²	54,552	20.50	1,118,316.00
58	Supply and place 150mm thick 4% cement treated compacted rubble wearing course including trimming and compacting	m²	54,552	65.00	3,545,880.00
59	Supply and install timber edge restraint to comacted rubble path	m	21,821	28.00	610,988.00
	CRP - 2.5m Wide Cement Treated Compacted Rubble Pathway				6,066,188.00
	PV - PAVEMENTS				**6,066,188.00**
STR	**STRUCTURES**				
BW	**2.5m Wide Boardwalk**				
33	Construct galvanised steel substructure (posts, bearers, joists) including concrete footings	m²	75	650.00	48,750.00
34	Supply and install FRP grating including fixings	m²	75	320.00	24,000.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

4 Option 4 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
35	Supply and install stainless steel handrail	m	60	750.00	45,000.00
	BW - 2.5m Wide Boardwalk				117,750.00
BR	**2.5m Wide Bridge**				
36	Construct bridge structure including footings, structure, decking, handrails etc. (PC Sum)	m²	235	6,500.00	1,527,500.00
	BR - 2.5m Wide Bridge				1,527,500.00
	STR - STRUCTURES				**1,645,250.00**
FU	**FURNITURE**				
5	Supply and install new proprietary bench seat including fixings	No	8	3,250.00	26,000.00
37	Supply and install new proprietary shade structure including concrete footings	No	1	22,500.00	22,500.00
38	Supply and install new proprietary picnic table including fixings and fittings	No	1	5,200.00	5,200.00
	FU - FURNITURE				**53,700.00**
FE	**FENCING & GATES**				
54	Supply and install new fence (assume timber post and wire)	m	6,000	110.00	660,000.00
	FE - FENCING & GATES				**660,000.00**
SI	**SIGNAGE AND LINE MARKING**				
8	Supply and install new chicane barriers	No	24	1,800.00	43,200.00
6	Supply and install new waymarker sign including concrete footing	No	19	2,850.00	54,150.00
28	Supply and install new cyclist dismount sign including post and concrete footing	No	14	550.00	7,700.00
39	Supply and install new on-path 'Road Crossing Ahead' sign including post and concrete footing	No	12	350.00	4,200.00
40	Supply and install new on-road 'Crossing Ahead' sign including post and concrete footing	No	12	350.00	4,200.00
41	Supply and install new shared-use pathway sign including post and concrete footing	No	12	350.00	4,200.00
7	New Public Art / sculpture locations including footing / foundation structure (PC Sum)	No	8	4,200.00	33,600.00
42	Supply and install new trail head sign including post and concrete footing	No	2	2,800.00	5,600.00
43	Supply and install new interpretive sign including post and concrete footing	No	10	2,850.00	28,500.00
	SI - SIGNAGE AND LINE MARKING				**185,350.00**
PR	**PRELIMINARIES**				
45	Contractors Preliminaries and Overheads (10%)	Item			875,000.00

LOCATION MAIN HEADINGS/SUB HEADINGS ITEM

4 Option 4 (continued)

Rates Current At January 2023

Ref	Description	Unit	Qty	Rate $	Total Cost $
46	Traffic and Pedestrian Management (2%)	Item			193,500.00
	PR - PRELIMINARIES				**1,068,500.00**
PF	**PROFESSIONAL FEES**				
51	Professional Fees (4%)	Item			555,000.00
	PF - PROFESSIONAL FEES				**555,000.00**
CT	**CONTINGENCIES**				
47	Design Development Contingency (7.5%)	Item			740,000.00
48	Construction Contingency (7.5%)	Item			740,000.00
	CT - CONTINGENCIES				**1,480,000.00**
ES	**ESCALATION**				
49	Escalation for construction beyond end of 2023 (6%)	Item			680,000.00
	ES - ESCALATION				**680,000.00**
LL	**LOCALITY LOADING**				
50	Locality Loading (15%)	Item			1,800,000.00
	LL - LOCALITY LOADING				**1,800,000.00**
OPTION 4					**14,329,316.60**

Appendix 5 - REMPLAN Economy Report Option 1

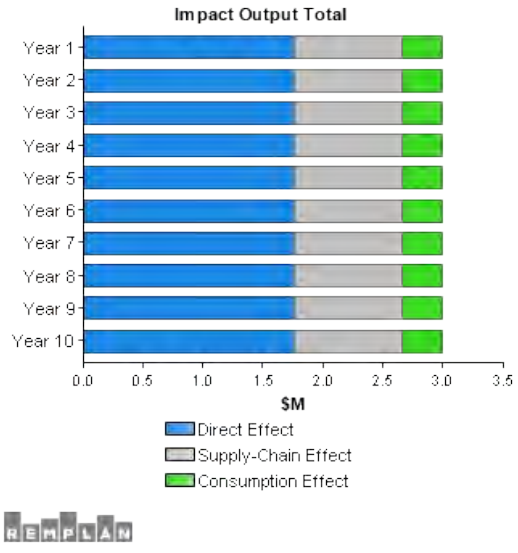
Impact Summary Report for Gannawarra (S)

10 Year Impact Scenario

Year	Industry Sector	Direct Change Jobs	Direct Change Output ($M)
1	Forestry & Logging		$0.010
1	Furniture Manufacturing		$0.005
1	Water Supply, Sewerage & Drainage Services		$0.001
1	Construction		$1.359
1	Professional, Scientific & Technical Services		$0.158
1	Other Services		$0.220
2	Forestry & Logging		$0.010
2	Furniture Manufacturing		$0.005
2	Water Supply, Sewerage & Drainage Services		$0.001
2	Construction		$1.359
2	Professional, Scientific & Technical Services		$0.158
2	Other Services		$0.220
3	Forestry & Logging		$0.010
3	Furniture Manufacturing		$0.005
3	Water Supply, Sewerage & Drainage Services		$0.001
3	Construction		$1.359
3	Professional, Scientific & Technical Services		$0.158
3	Other Services		$0.220
4	Forestry & Logging		$0.010
4	Furniture Manufacturing		$0.005
4	Water Supply, Sewerage & Drainage Services		$0.001
4	Construction		$1.359
4	Professional, Scientific & Technical Services		$0.158
4	Other Services		$0.220
5	Forestry & Logging		$0.010
5	Furniture Manufacturing		$0.005
5	Water Supply, Sewerage & Drainage Services		$0.001
5	Construction		$1.359
5	Professional, Scientific & Technical Services		$0.158
5	Other Services		$0.220
6	Forestry & Logging		$0.010
6	Furniture Manufacturing		$0.005
6	Water Supply, Sewerage & Drainage Services		$0.001
6	Construction		$1.359
6	Professional, Scientific & Technical Services		$0.158
6	Other Services		$0.220
7	Forestry & Logging		$0.010
7	Furniture Manufacturing		$0.005
7	Water Supply, Sewerage & Drainage Services		$0.001
7	Construction		$1.359

Year	Industry Sector	Direct Change Jobs	Direct Change Output ($M)
7	Professional, Scientific & Technical Services		$0.158
7	Other Services		$0.220
8	Forestry & Logging		$0.010
8	Furniture Manufacturing		$0.005
8	Water Supply, Sewerage & Drainage Services		$0.001
8	Construction		$1.359
8	Professional, Scientific & Technical Services		$0.158
8	Other Services		$0.220
9	Forestry & Logging		$0.010
9	Furniture Manufacturing		$0.005
9	Water Supply, Sewerage & Drainage Services		$0.001
9	Construction		$1.359
9	Professional, Scientific & Technical Services		$0.158
9	Other Services		$0.220
10	Forestry & Logging		$0.010
10	Furniture Manufacturing		$0.005
10	Water Supply, Sewerage & Drainage Services		$0.001
10	Construction		$1.359
10	Professional, Scientific & Technical Services		$0.158
10	Other Services		$0.220

Impact on Output



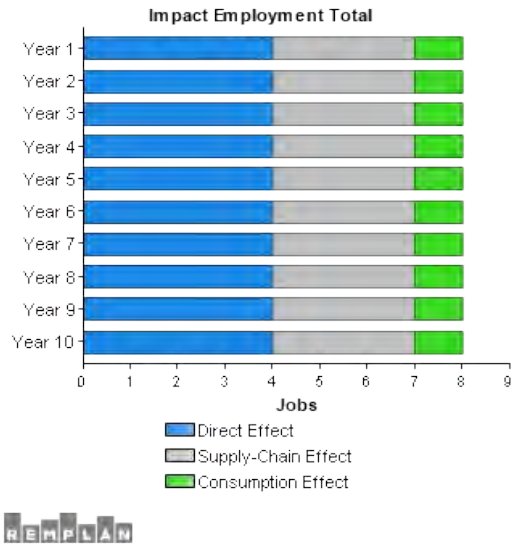
	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Year 1	$1.753	$0.908	$0.327	$2.987	1.518	1.704
Year 2	$1.753	$0.908	$0.327	$2.988	1.518	1.704
Year 3	$1.753	$0.908	$0.327	$2.988	1.518	1.704
Year 4	$1.753	$0.908	$0.327	$2.988	1.518	1.704
Year 5	$1.753	$0.908	$0.327	$2.988	1.518	1.704
Year 6	$1.753	$0.908	$0.327	$2.988	1.518	1.704
Year 7	$1.753	$0.908	$0.327	$2.988	1.518	1.704
Year 8	$1.753	$0.908	$0.327	$2.988	1.518	1.704
Year 9	$1.753	$0.908	$0.327	$2.988	1.518	1.704
Year 10	$1.753	$0.908	$0.327	$2.988	1.518	1.704
Years 1 - 10	$17.530	$9.078	$3.269	$29.877	1.518	1.704

From a direct increase in output of $17.530 million over the 10-year period, it is estimated that the demand for intermediate goods and services would rise by $9.078 million. This represents a Type 1 Output multiplier of 1.518. These supply-chain effects include multiple rounds of flow-on effects, as servicing sectors increase their own output and demand for local goods and services in response to the direct change to the economy.

The increases in direct and indirect output would typically correspond to the creation of jobs in the economy. Corresponding to this change in employment would be an increase in the total of wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are estimated at $3.269 million.

Total output over the 10-year period, including all direct, supply-chain and consumption effects is estimated to increase by up to $29.877 million. This represents a Type 2 Output multiplier of 1.704.

Impact on Employment



	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Year 1	4	3	1	8	1.750	2.000
Year 2	4	3	1	8	1.750	2.000
Year 3	4	3	1	8	1.750	2.000
Year 4	4	3	1	8	1.750	2.000
Year 5	4	3	1	8	1.750	2.000
Year 6	4	3	1	8	1.750	2.000
Year 7	4	3	1	8	1.750	2.000
Year 8	4	3	1	8	1.750	2.000
Year 9	4	3	1	8	1.750	2.000
Year 10	4	3	1	8	1.750	2.000

There is a net direct increase in output of $17.530 million over the 10-year period.

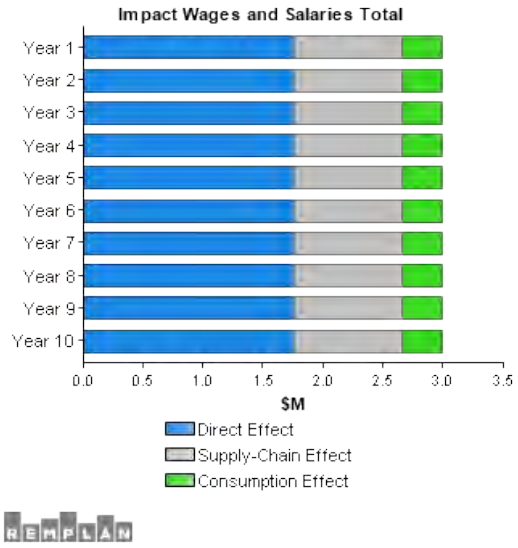
Peak Employment Gain occurs in year 1

In year 1 there is an estimated net 4 direct jobs supported. From this direct expansion in employment, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts will support 3 jobs. This represents a Type 1 Employment multiplier of 1.750.

The direct and indirect output and the corresponding jobs in the economy are expected to support the payment of wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are estimated to support 1 job in year 1.

In year 1, under this scenario, there is an expansion in overall employment, including all direct, supply-chain and consumption effects, estimated at 8 job. This represents a Type 2 Employment multiplier of 2.000.

Impact on Wages and Salaries



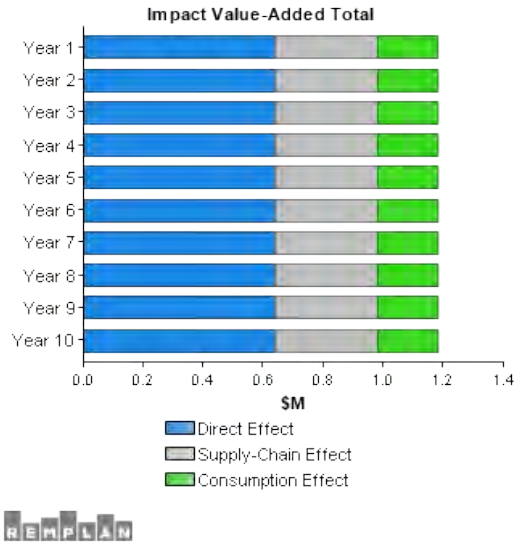
	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Year 1	$0.358	$0.199	$0.071	$0.628	1.557	1.755
Year 2	$0.358	$0.199	$0.071	$0.628	1.557	1.755
Year 3	$0.358	$0.199	$0.071	$0.628	1.557	1.755
Year 4	$0.358	$0.199	$0.071	$0.628	1.557	1.755
Year 5	$0.358	$0.199	$0.071	$0.628	1.557	1.755
Year 6	$0.358	$0.199	$0.071	$0.628	1.557	1.755
Year 7	$0.358	$0.199	$0.071	$0.628	1.557	1.755
Year 8	$0.358	$0.199	$0.071	$0.628	1.557	1.755
Year 9	$0.358	$0.199	$0.071	$0.628	1.557	1.755
Year 10	$0.358	$0.199	$0.071	$0.628	1.557	1.755
Years 1 - 10	$3.579	$1.993	$0.708	$6.280	1.557	1.755

From a direct increase in output of $17.530 million over the 10-year period, it is estimated that direct wages and salaries would increase by $3.579 million. From this direct impact on the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in the net increase in wages and salaries of $1.993 million paid to workers. This represents a Type 1 Wages and Salaries multiplier of 1.557.

The net increase in direct and indirect output and the corresponding jobs in the economy are expected to correspond to an increase in the wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are expected to result in an overall increase in wages and salaries by $0.708 million.

Total wages and salaries over the 10-year period, including all direct, supply-chain and consumption effects is estimated to increase by up to $6.280 million. This represents a Type 2 Wages and Salaries multiplier of 1.755.

Impact on Value-Added



	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Year 1	$0.639	$0.342	$0.199	$1.181	1.535	1.847
Year 2	$0.639	$0.342	$0.200	$1.181	1.535	1.847
Year 3	$0.639	$0.342	$0.200	$1.181	1.535	1.847
Year 4	$0.639	$0.342	$0.200	$1.181	1.535	1.847
Year 5	$0.639	$0.342	$0.200	$1.181	1.535	1.847
Year 6	$0.639	$0.342	$0.200	$1.181	1.535	1.847
Year 7	$0.639	$0.342	$0.200	$1.181	1.535	1.847
Year 8	$0.639	$0.342	$0.200	$1.181	1.535	1.847
Year 9	$0.639	$0.342	$0.200	$1.181	1.535	1.847
Year 10	$0.639	$0.342	$0.200	$1.181	1.535	1.847
Years 1 - 10	$6.393	$3.421	$1.995	$11.809	1.535	1.847

From a direct increase in output of $17.530 million over the 10-year period, the corresponding increase in direct value-added is estimated at $6.393 million. From this direct expansion in the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in a further increase to value-added of $3.421 million. This represents a Type 1 Value-added multiplier of 1.535.

The increase in direct and indirect output and the corresponding boost to jobs in the economy are expected to result in an increase in the wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are expected to further boost value-added by $1.995 million.

Total value-added over the 10-year period, including all direct, supply-chain and consumption effects is estimated to increase by up to $11.809 million. This represents a Type 2 Value-added multiplier of 1.847.

Impact Summary - Year 1 to Year 10

Impact Summary	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Output ($M)	$17.530	$9.078	$3.269	$29.877	1.518	1.704
Employment (Jobs) Peak Gain - Year 1	4	3	1	8	1.750	2.000
Wages and Salaries ($M)	$3.579	$1.993	$0.708	$6.280	1.557	1.755
Value-added ($M)	$6.393	$3.421	$1.995	$11.809	1.535	1.847

Under this scenario Gross Regional Product is estimated to increase by $11.809 million over the 10-year period. Contributing to this is a direct increase in output of $17.530 million, $3.579 million more in wages and salaries and a boost in value-added of $6.393 million.

From this direct expansion in the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in a further increase to output valued at $9.078 million, $1.993 million more paid in wages and salaries, and a gain of $3.421 million in terms of value-added.

These supply-chain effects represent the following Type 1 economic multipliers:

Impact	Type 1 Multipliers
Output	1.518
Employment Peak Gain - Year 1	1.750
Wages and Salaries	1.557
Value-added	1.535

The increase in direct and indirect output and the corresponding change in jobs in the economy are expected to result in an increase in the wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under the scenario are expected to further boost output by $3.269 million, wages and salaries by $0.708 million, and value-added by $1.995 million.

Under this scenario, total output is expected to rise by $29.877 million. Corresponding to this are anticipated increases in employment of jobs, $6.280 million wages and salaries, and $11.809 million in terms of value-added.

The total changes to economic activity represent the following Type 2 economic multipliers:

Impact	Type 2 Multipliers
Output	1.704
Employment Peak Gain - Year 1	2.000
Wages and Salaries	1.755
Value-added	1.847

Disclaimer

All figures, data and commentary presented in this report are based on data sourced from the Australian Bureau of Statistics (ABS), most of which relates to the 2016, 2011, 2006 and 2001 Censuses.

Using ABS datasets and an input / output methodology industrial economic data estimates for defined geographic regions are generated.

This report is provided in good faith with every effort made to provide accurate data and apply comprehensive knowledge. However, REMPLAN does not guarantee the accuracy of data nor the conclusions drawn from this information. A decision to pursue any action in any way related to the figures, data and commentary presented in this report is wholly the responsibility of the party concerned. REMPLAN advises any party to conduct detailed feasibility studies and seek professional advice before proceeding with any such action and accept no responsibility for the consequences of pursuing any such action.

Appendix 6 - REMPLAN Economy Report Option 2

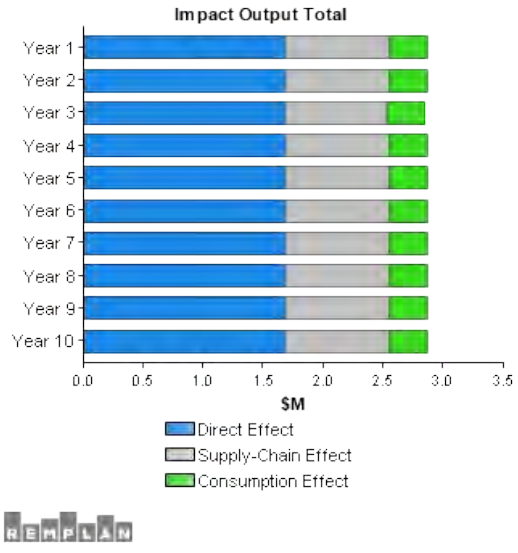
Impact Summary Report for Gannawarra (S)

10 Year Impact Scenario

Year	Industry Sector	Direct Change Jobs	Direct Change Output ($M)
1	Forestry & Logging		$0.010
1	Furniture Manufacturing		$0.005
1	Water Supply, Sewerage & Drainage Services		$0.001
1	Construction		$1.303
1	Professional, Scientific & Technical Services		$0.152
1	Other Services		$0.211
2	Forestry & Logging		$0.010
2	Furniture Manufacturing		$0.005
2	Water Supply, Sewerage & Drainage Services		$0.001
2	Construction		$1.303
2	Professional, Scientific & Technical Services		$0.152
2	Other Services		$0.211
3	Forestry & Logging		$0.010
3	Furniture Manufacturing		$0.005
3	Water Supply, Sewerage & Drainage Services		$0.001
3	Construction		$1.303
3	Professional, Scientific & Technical Services		$0.152
3	Other Services		$0.211
4	Forestry & Logging		$0.010
4	Furniture Manufacturing		$0.005
4	Water Supply, Sewerage & Drainage Services		$0.001
4	Construction		$1.303
4	Professional, Scientific & Technical Services		$0.152
4	Other Services		$0.211
5	Forestry & Logging		$0.010
5	Furniture Manufacturing		$0.005
5	Water Supply, Sewerage & Drainage Services		$0.001
5	Construction		$1.303
5	Professional, Scientific & Technical Services		$0.152
5	Other Services		$0.211
6	Forestry & Logging		$0.010
6	Furniture Manufacturing		$0.005
6	Water Supply, Sewerage & Drainage Services		$0.001
6	Construction		$1.303
6	Professional, Scientific & Technical Services		$0.152
6	Other Services		$0.211
7	Forestry & Logging		$0.010
7	Furniture Manufacturing		$0.005
7	Water Supply, Sewerage & Drainage Services		$0.001
7	Construction		$1.303

Year	Industry Sector	Direct Change Jobs	Direct Change Output ($M)
7	Professional, Scientific & Technical Services		$0.152
7	Other Services		$0.211
8	Forestry & Logging		$0.010
8	Furniture Manufacturing		$0.005
8	Water Supply, Sewerage & Drainage Services		$0.001
8	Construction		$1.303
8	Professional, Scientific & Technical Services		$0.152
8	Other Services		$0.211
9	Forestry & Logging		$0.010
9	Furniture Manufacturing		$0.005
9	Water Supply, Sewerage & Drainage Services		$0.001
9	Construction		$1.303
9	Professional, Scientific & Technical Services		$0.152
9	Other Services		$0.211
10	Forestry & Logging		$0.010
10	Furniture Manufacturing		$0.005
10	Water Supply, Sewerage & Drainage Services		$0.001
10	Construction		$1.303
10	Professional, Scientific & Technical Services		$0.152
10	Other Services		$0.211

Impact on Output



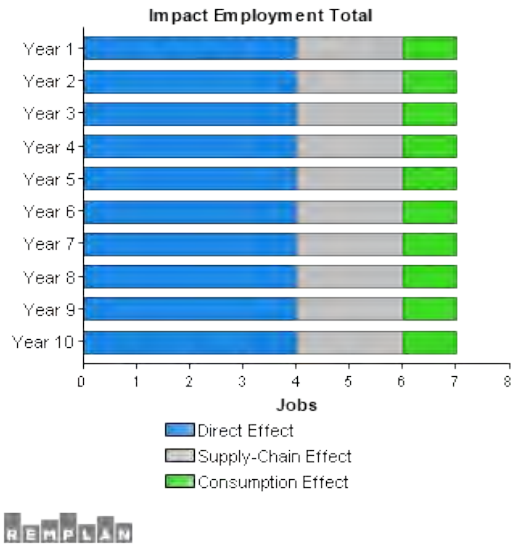
	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Year 1	$1.682	$0.871	$0.314	$2.866	1.518	1.704
Year 2	$1.682	$0.871	$0.314	$2.866	1.518	1.704
Year 3	$1.682	$0.846	$0.314	$2.842	1.503	1.690
Year 4	$1.682	$0.871	$0.314	$2.866	1.518	1.704
Year 5	$1.682	$0.871	$0.314	$2.866	1.518	1.704
Year 6	$1.682	$0.871	$0.314	$2.866	1.518	1.704
Year 7	$1.682	$0.871	$0.314	$2.866	1.518	1.704
Year 8	$1.682	$0.871	$0.314	$2.866	1.518	1.704
Year 9	$1.682	$0.871	$0.314	$2.866	1.518	1.704
Year 10	$1.682	$0.871	$0.314	$2.866	1.518	1.704
Years 1 - 10	$16.820	$8.682	$3.136	$28.638	1.516	1.703

From a direct increase in output of $16.820 million over the 10-year period, it is estimated that the demand for intermediate goods and services would rise by $8.682 million. This represents a Type 1 Output multiplier of 1.516. These supply-chain effects include multiple rounds of flow-on effects, as servicing sectors increase their own output and demand for local goods and services in response to the direct change to the economy.

The increases in direct and indirect output would typically correspond to the creation of jobs in the economy. Corresponding to this change in employment would be an increase in the total of wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are estimated at $3.136 million.

Total output over the 10-year period, including all direct, supply-chain and consumption effects is estimated to increase by up to $28.638 million. This represents a Type 2 Output multiplier of 1.703.

Impact on Employment



	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Year 1	4	2	1	7	1.500	1.750
Year 2	4	2	1	7	1.500	1.750
Year 3	4	2	1	7	1.500	1.750
Year 4	4	2	1	7	1.500	1.750
Year 5	4	2	1	7	1.500	1.750
Year 6	4	2	1	7	1.500	1.750
Year 7	4	2	1	7	1.500	1.750
Year 8	4	2	1	7	1.500	1.750
Year 9	4	2	1	7	1.500	1.750
Year 10	4	2	1	7	1.500	1.750

There is a net direct increase in output of $16.820 million over the 10-year period.

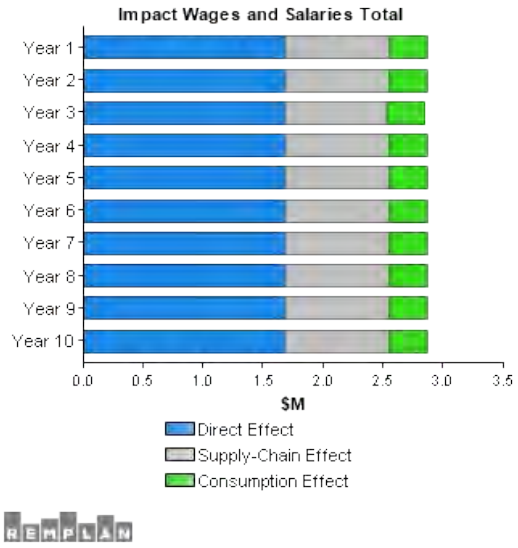
Peak Employment Gain occurs in year 1

In year 1 there is an estimated net 4 direct jobs supported. From this direct expansion in employment, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts will support 2 jobs. This represents a Type 1 Employment multiplier of 1.500.

The direct and indirect output and the corresponding jobs in the economy are expected to support the payment of wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are estimated to support 1 job in year 1.

In year 1, under this scenario, there is an expansion in overall employment, including all direct, supply-chain and consumption effects, estimated at 7 job. This represents a Type 2 Employment multiplier of 1.750.

Impact on Wages and Salaries



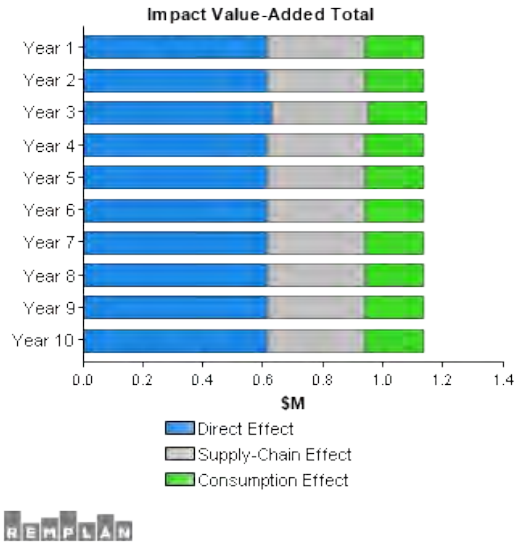
	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Year 1	$0.343	$0.191	$0.068	$0.603	1.557	1.754
Year 2	$0.343	$0.191	$0.068	$0.603	1.557	1.754
Year 3	$0.344	$0.191	$0.068	$0.602	1.556	1.753
Year 4	$0.343	$0.191	$0.068	$0.603	1.557	1.754
Year 5	$0.343	$0.191	$0.068	$0.603	1.557	1.754
Year 6	$0.343	$0.191	$0.068	$0.603	1.557	1.754
Year 7	$0.343	$0.191	$0.068	$0.603	1.557	1.754
Year 8	$0.343	$0.191	$0.068	$0.603	1.557	1.754
Year 9	$0.343	$0.191	$0.068	$0.603	1.557	1.754
Year 10	$0.343	$0.191	$0.068	$0.603	1.557	1.754
Years 1 - 10	$3.434	$1.912	$0.679	$6.025	1.557	1.754

From a direct increase in output of $16.820 million over the 10-year period, it is estimated that direct wages and salaries would increase by $3.434 million. From this direct impact on the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in the net increase in wages and salaries of $1.912 million paid to workers. This represents a Type 1 Wages and Salaries multiplier of 1.557.

The net increase in direct and indirect output and the corresponding jobs in the economy are expected to correspond to an increase in the wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are expected to result in an overall increase in wages and salaries by $0.679 million.

Total wages and salaries over the 10-year period, including all direct, supply-chain and consumption effects is estimated to increase by up to $6.025 million. This represents a Type 2 Wages and Salaries multiplier of 1.754.

Impact on Value-Added



	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Year 1	$0.613	$0.328	$0.191	$1.133	1.535	1.847
Year 2	$0.613	$0.328	$0.191	$1.133	1.535	1.847
Year 3	$0.628	$0.323	$0.191	$1.143	1.515	1.819
Year 4	$0.613	$0.328	$0.191	$1.133	1.535	1.847
Year 5	$0.613	$0.328	$0.191	$1.133	1.535	1.847
Year 6	$0.613	$0.328	$0.191	$1.133	1.535	1.847
Year 7	$0.613	$0.328	$0.191	$1.133	1.535	1.847
Year 8	$0.613	$0.328	$0.191	$1.133	1.535	1.847
Year 9	$0.613	$0.328	$0.191	$1.133	1.535	1.847
Year 10	$0.613	$0.328	$0.191	$1.133	1.535	1.847
Years 1 - 10	$6.148	$3.277	$1.914	$11.339	1.533	1.844

From a direct increase in output of $16.820 million over the 10-year period, the corresponding increase in direct value-added is estimated at $6.148 million. From this direct expansion in the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in a further increase to value-added of $3.277 million. This represents a Type 1 Value-added multiplier of 1.533.

The increase in direct and indirect output and the corresponding boost to jobs in the economy are expected to result in an increase in the wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are expected to further boost value-added by $1.914 million.

Total value-added over the 10-year period, including all direct, supply-chain and consumption effects is estimated to increase by up to $11.339 million. This represents a Type 2 Value-added multiplier of 1.844.

Impact Summary - Year 1 to Year 10

Impact Summary	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Output ($M)	$16.820	$8.682	$3.136	$28.638	1.516	1.703
Employment (Jobs) Peak Gain - Year 1	4	2	1	7	1.500	1.750
Wages and Salaries ($M)	$3.434	$1.912	$0.679	$6.025	1.557	1.754
Value-added ($M)	$6.148	$3.277	$1.914	$11.339	1.533	1.844

Under this scenario Gross Regional Product is estimated to increase by $11.339 million over the 10-year period. Contributing to this is a direct increase in output of $16.820 million, $3.434 million more in wages and salaries and a boost in value-added of $6.148 million.

From this direct expansion in the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in a further increase to output valued at $8.682 million, $1.912 million more paid in wages and salaries, and a gain of $3.277 million in terms of value-added.

These supply-chain effects represent the following Type 1 economic multipliers:

Impact	Type 1 Multipliers
Output	1.516
Employment Peak Gain - Year 1	1.500
Wages and Salaries	1.557
Value-added	1.533

The increase in direct and indirect output and the corresponding change in jobs in the economy are expected to result in an increase in the wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under the scenario are expected to further boost output by $3.136 million, wages and salaries by $0.679 million, and value-added by $1.914 million.

Under this scenario, total output is expected to rise by $28.638 million. Corresponding to this are anticipated increases in employment of jobs, $6.025 million wages and salaries, and $11.339 million in terms of value-added.

The total changes to economic activity represent the following Type 2 economic multipliers:

Impact	Type 2 Multipliers
Output	1.703
Employment Peak Gain - Year 1	1.750
Wages and Salaries	1.754
Value-added	1.844

Disclaimer

All figures, data and commentary presented in this report are based on data sourced from the Australian Bureau of Statistics (ABS), most of which relates to the 2016, 2011, 2006 and 2001 Censuses.

Using ABS datasets and an input / output methodology industrial economic data estimates for defined geographic regions are generated.

This report is provided in good faith with every effort made to provide accurate data and apply comprehensive knowledge. However, REMPLAN does not guarantee the accuracy of data nor the conclusions drawn from this information. A decision to pursue any action in any way related to the figures, data and commentary presented in this report is wholly the responsibility of the party concerned. REMPLAN advises any party to conduct detailed feasibility studies and seek professional advice before proceeding with any such action and accept no responsibility for the consequences of pursuing any such action.

Appendix 7 - REMPLAN Economy Report Option 3

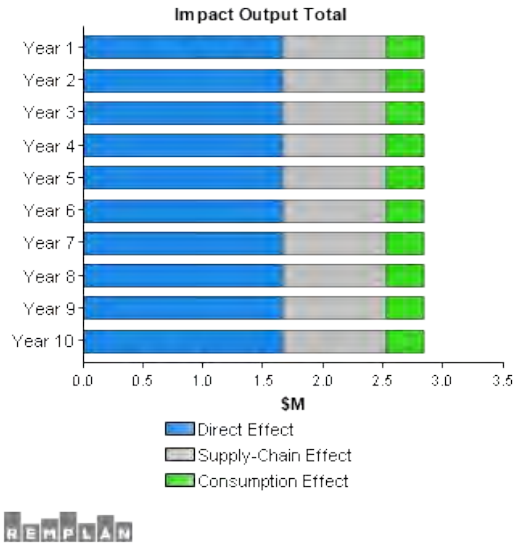
Impact Summary Report for Gannawarra (S)

10 Year Impact Scenario

Year	Industry Sector	Direct Change Jobs	Direct Change Output ($M)
1	Forestry & Logging		$0.010
1	Furniture Manufacturing		$0.005
1	Water Supply, Sewerage & Drainage Services		$0.001
1	Construction		$1.289
1	Professional, Scientific & Technical Services		$0.150
1	Other Services		$0.209
2	Forestry & Logging		$0.010
2	Furniture Manufacturing		$0.005
2	Water Supply, Sewerage & Drainage Services		$0.001
2	Construction		$1.289
2	Professional, Scientific & Technical Services		$0.150
2	Other Services		$0.209
3	Forestry & Logging		$0.010
3	Furniture Manufacturing		$0.005
3	Water Supply, Sewerage & Drainage Services		$0.001
3	Construction		$1.289
3	Professional, Scientific & Technical Services		$0.150
3	Other Services		$0.209
4	Forestry & Logging		$0.010
4	Furniture Manufacturing		$0.005
4	Water Supply, Sewerage & Drainage Services		$0.001
4	Construction		$1.289
4	Professional, Scientific & Technical Services		$0.150
4	Other Services		$0.209
5	Forestry & Logging		$0.010
5	Furniture Manufacturing		$0.005
5	Water Supply, Sewerage & Drainage Services		$0.001
5	Construction		$1.289
5	Professional, Scientific & Technical Services		$0.150
5	Other Services		$0.209
6	Forestry & Logging		$0.010
6	Furniture Manufacturing		$0.005
6	Water Supply, Sewerage & Drainage Services		$0.001
6	Construction		$1.289
6	Professional, Scientific & Technical Services		$0.150
6	Other Services		$0.209
7	Forestry & Logging		$0.010
7	Furniture Manufacturing		$0.005
7	Water Supply, Sewerage & Drainage Services		$0.001
7	Construction		$1.289

Year	Industry Sector	Direct Change Jobs	Direct Change Output ($M)
7	Professional, Scientific & Technical Services		$0.150
7	Other Services		$0.209
8	Forestry & Logging		$0.010
8	Furniture Manufacturing		$0.005
8	Water Supply, Sewerage & Drainage Services		$0.001
8	Construction		$1.289
8	Professional, Scientific & Technical Services		$0.150
8	Other Services		$0.209
9	Forestry & Logging		$0.010
9	Furniture Manufacturing		$0.005
9	Water Supply, Sewerage & Drainage Services		$0.001
9	Construction		$1.289
9	Professional, Scientific & Technical Services		$0.150
9	Other Services		$0.209
10	Forestry & Logging		$0.010
10	Furniture Manufacturing		$0.005
10	Water Supply, Sewerage & Drainage Services		$0.001
10	Construction		$1.289
10	Professional, Scientific & Technical Services		$0.150
10	Other Services		$0.209

Impact on Output



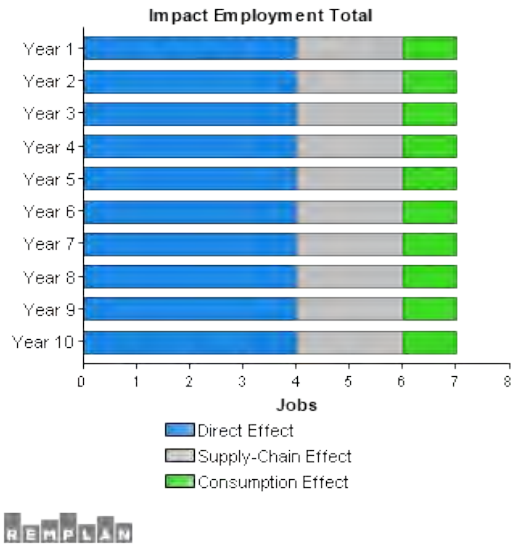
	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Year 1	$1.664	$0.861	$0.310	$2.835	1.518	1.704
Year 2	$1.664	$0.861	$0.310	$2.835	1.518	1.704
Year 3	$1.664	$0.861	$0.310	$2.835	1.518	1.704
Year 4	$1.664	$0.861	$0.310	$2.835	1.518	1.704
Year 5	$1.664	$0.861	$0.310	$2.835	1.518	1.704
Year 6	$1.664	$0.861	$0.310	$2.835	1.518	1.704
Year 7	$1.664	$0.861	$0.310	$2.835	1.518	1.704
Year 8	$1.664	$0.861	$0.310	$2.835	1.518	1.704
Year 9	$1.664	$0.861	$0.310	$2.835	1.518	1.704
Year 10	$1.664	$0.861	$0.310	$2.835	1.518	1.704
Years 1 - 10	$16.639	$8.612	$3.102	$28.354	1.518	1.704

From a direct increase in output of $16.639 million over the 10-year period, it is estimated that the demand for intermediate goods and services would rise by $8.612 million. This represents a Type 1 Output multiplier of 1.518. These supply-chain effects include multiple rounds of flow-on effects, as servicing sectors increase their own output and demand for local goods and services in response to the direct change to the economy.

The increases in direct and indirect output would typically correspond to the creation of jobs in the economy. Corresponding to this change in employment would be an increase in the total of wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are estimated at $3.102 million.

Total output over the 10-year period, including all direct, supply-chain and consumption effects is estimated to increase by up to $28.354 million. This represents a Type 2 Output multiplier of 1.704.

Impact on Employment



	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Year 1	4	2	1	7	1.500	1.750
Year 2	4	2	1	7	1.500	1.750
Year 3	4	2	1	7	1.500	1.750
Year 4	4	2	1	7	1.500	1.750
Year 5	4	2	1	7	1.500	1.750
Year 6	4	2	1	7	1.500	1.750
Year 7	4	2	1	7	1.500	1.750
Year 8	4	2	1	7	1.500	1.750
Year 9	4	2	1	7	1.500	1.750
Year 10	4	2	1	7	1.500	1.750

There is a net direct increase in output of $16.639 million over the 10-year period.

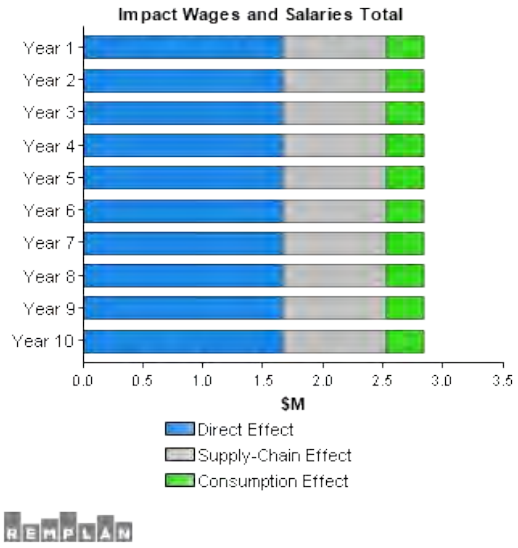
Peak Employment Gain occurs in year 1

In year 1 there is an estimated net 4 direct jobs supported. From this direct expansion in employment, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts will support 2 jobs. This represents a Type 1 Employment multiplier of 1.500.

The direct and indirect output and the corresponding jobs in the economy are expected to support the payment of wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are estimated to support 1 job in year 1.

In year 1, under this scenario, there is an expansion in overall employment, including all direct, supply-chain and consumption effects, estimated at 7 job. This represents a Type 2 Employment multiplier of 1.750.

Impact on Wages and Salaries



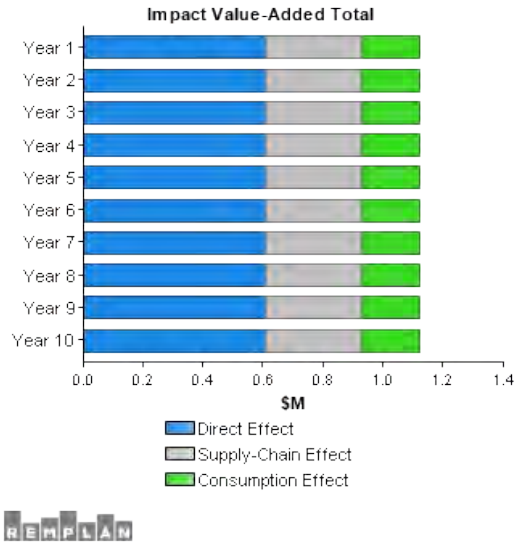
	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Year 1	$0.340	$0.189	$0.067	$0.596	1.557	1.754
Year 2	$0.340	$0.189	$0.067	$0.596	1.557	1.754
Year 3	$0.340	$0.189	$0.067	$0.596	1.557	1.754
Year 4	$0.340	$0.189	$0.067	$0.596	1.557	1.754
Year 5	$0.340	$0.189	$0.067	$0.596	1.557	1.754
Year 6	$0.340	$0.189	$0.067	$0.596	1.557	1.754
Year 7	$0.340	$0.189	$0.067	$0.596	1.557	1.754
Year 8	$0.340	$0.189	$0.067	$0.596	1.557	1.754
Year 9	$0.340	$0.189	$0.067	$0.596	1.557	1.755
Year 10	$0.340	$0.189	$0.067	$0.596	1.557	1.755
Years 1 - 10	$3.397	$1.891	$0.671	$5.959	1.557	1.754

From a direct increase in output of $16.639 million over the 10-year period, it is estimated that direct wages and salaries would increase by $3.397 million. From this direct impact on the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in the net increase in wages and salaries of $1.891 million paid to workers. This represents a Type 1 Wages and Salaries multiplier of 1.557.

The net increase in direct and indirect output and the corresponding jobs in the economy are expected to correspond to an increase in the wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are expected to result in an overall increase in wages and salaries by $0.671 million.

Total wages and salaries over the 10-year period, including all direct, supply-chain and consumption effects is estimated to increase by up to $5.959 million. This represents a Type 2 Wages and Salaries multiplier of 1.754.

Impact on Value-Added



	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Year 1	$0.607	$0.325	$0.189	$1.121	1.535	1.847
Year 2	$0.607	$0.325	$0.189	$1.121	1.535	1.847
Year 3	$0.607	$0.325	$0.189	$1.121	1.535	1.847
Year 4	$0.607	$0.325	$0.189	$1.121	1.535	1.847
Year 5	$0.607	$0.325	$0.189	$1.121	1.535	1.847
Year 6	$0.607	$0.325	$0.189	$1.121	1.535	1.847
Year 7	$0.607	$0.325	$0.189	$1.121	1.535	1.847
Year 8	$0.607	$0.325	$0.189	$1.121	1.535	1.847
Year 9	$0.606	$0.325	$0.189	$1.120	1.535	1.847
Year 10	$0.607	$0.325	$0.189	$1.120	1.535	1.847
Years 1 - 10	$6.067	$3.246	$1.893	$11.206	1.535	1.847

From a direct increase in output of $16.639 million over the 10-year period, the corresponding increase in direct value-added is estimated at $6.067 million. From this direct expansion in the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in a further increase to value-added of $3.246 million. This represents a Type 1 Value-added multiplier of 1.535.

The increase in direct and indirect output and the corresponding boost to jobs in the economy are expected to result in an increase in the wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are expected to further boost value-added by $1.893 million.

Total value-added over the 10-year period, including all direct, supply-chain and consumption effects is estimated to increase by up to $11.206 million. This represents a Type 2 Value-added multiplier of 1.847.

Impact Summary - Year 1 to Year 10

Impact Summary	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Output ($M)	$16.639	$8.612	$3.102	$28.354	1.518	1.704
Employment (Jobs) Peak Gain - Year 1	4	2	1	7	1.500	1.750
Wages and Salaries ($M)	$3.397	$1.891	$0.671	$5.959	1.557	1.754
Value-added ($M)	$6.067	$3.246	$1.893	$11.206	1.535	1.847

Under this scenario Gross Regional Product is estimated to increase by $11.206 million over the 10-year period. Contributing to this is a direct increase in output of $16.639 million, $3.397 million more in wages and salaries and a boost in value-added of $6.067 million.

From this direct expansion in the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in a further increase to output valued at $8.612 million, $1.891 million more paid in wages and salaries, and a gain of $3.246 million in terms of value-added.

These supply-chain effects represent the following Type 1 economic multipliers:

Impact	Type 1 Multipliers
Output	1.518
Employment Peak Gain - Year 1	1.500
Wages and Salaries	1.557
Value-added	1.535

The increase in direct and indirect output and the corresponding change in jobs in the economy are expected to result in an increase in the wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under the scenario are expected to further boost output by $3.102 million, wages and salaries by $0.671 million, and value-added by $1.893 million.

Under this scenario, total output is expected to rise by $28.354 million. Corresponding to this are anticipated increases in employment of jobs, $5.959 million wages and salaries, and $11.206 million in terms of value-added.

The total changes to economic activity represent the following Type 2 economic multipliers:

Impact	Type 2 Multipliers
Output	1.704
Employment Peak Gain - Year 1	1.750
Wages and Salaries	1.754
Value-added	1.847

Disclaimer

All figures, data and commentary presented in this report are based on data sourced from the Australian Bureau of Statistics (ABS), most of which relates to the 2016, 2011, 2006 and 2001 Censuses.

Using ABS datasets and an input / output methodology industrial economic data estimates for defined geographic regions are generated.

This report is provided in good faith with every effort made to provide accurate data and apply comprehensive knowledge. However, REMPLAN does not guarantee the accuracy of data nor the conclusions drawn from this information. A decision to pursue any action in any way related to the figures, data and commentary presented in this report is wholly the responsibility of the party concerned. REMPLAN advises any party to conduct detailed feasibility studies and seek professional advice before proceeding with any such action and accept no responsibility for the consequences of pursuing any such action.

Appendix 8 - REMPLAN Economy Report Option 4

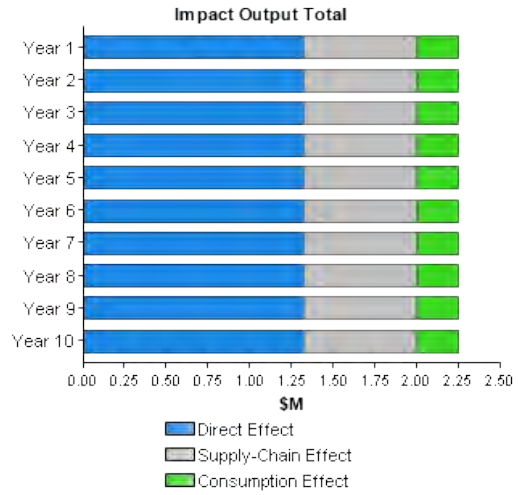
Impact Summary Report for Gannawarra (S)

10 Year Impact Scenario

Year	Industry Sector	Direct Change Jobs	Direct Change Output ($M)
1	Forestry & Logging		$0.010
1	Furniture Manufacturing		$0.005
1	Water Supply, Sewerage & Drainage Services		$0.001
1	Construction		$1.020
1	Professional, Scientific & Technical Services		$0.119
1	Other Services		$0.166
2	Forestry & Logging		$0.010
2	Furniture Manufacturing		$0.005
2	Water Supply, Sewerage & Drainage Services		$0.001
2	Construction		$1.020
2	Professional, Scientific & Technical Services		$0.119
2	Other Services		$0.166
3	Forestry & Logging		$0.010
3	Furniture Manufacturing		$0.005
3	Water Supply, Sewerage & Drainage Services		$0.001
3	Construction		$1.020
3	Professional, Scientific & Technical Services		$0.119
3	Other Services		$0.166
4	Forestry & Logging		$0.010
4	Furniture Manufacturing		$0.005
4	Water Supply, Sewerage & Drainage Services		$0.001
4	Construction		$1.020
4	Professional, Scientific & Technical Services		$0.119
4	Other Services		$0.166
5	Forestry & Logging		$0.010
5	Furniture Manufacturing		$0.005
5	Water Supply, Sewerage & Drainage Services		$0.001
5	Construction		$1.020
5	Professional, Scientific & Technical Services		$0.119
5	Other Services		$0.166
6	Forestry & Logging		$0.010
6	Furniture Manufacturing		$0.005
6	Water Supply, Sewerage & Drainage Services		$0.001
6	Construction		$1.020
6	Professional, Scientific & Technical Services		$0.119
6	Other Services		$0.166
7	Forestry & Logging		$0.010
7	Furniture Manufacturing		$0.005
7	Water Supply, Sewerage & Drainage Services		$0.001
7	Construction		$1.020

Year	Industry Sector	Direct Change Jobs	Direct Change Output ($M)
7	Professional, Scientific & Technical Services		$0.119
7	Other Services		$0.166
8	Forestry & Logging		$0.010
8	Furniture Manufacturing		$0.005
8	Water Supply, Sewerage & Drainage Services		$0.001
8	Construction		$1.020
8	Professional, Scientific & Technical Services		$0.119
8	Other Services		$0.166
9	Forestry & Logging		$0.010
9	Furniture Manufacturing		$0.005
9	Water Supply, Sewerage & Drainage Services		$0.001
9	Construction		$1.020
9	Professional, Scientific & Technical Services		$0.119
9	Other Services		$0.166
10	Forestry & Logging		$0.010
10	Furniture Manufacturing		$0.005
10	Water Supply, Sewerage & Drainage Services		$0.001
10	Construction		$1.020
10	Professional, Scientific & Technical Services		$0.119
10	Other Services		$0.166

Impact on Output



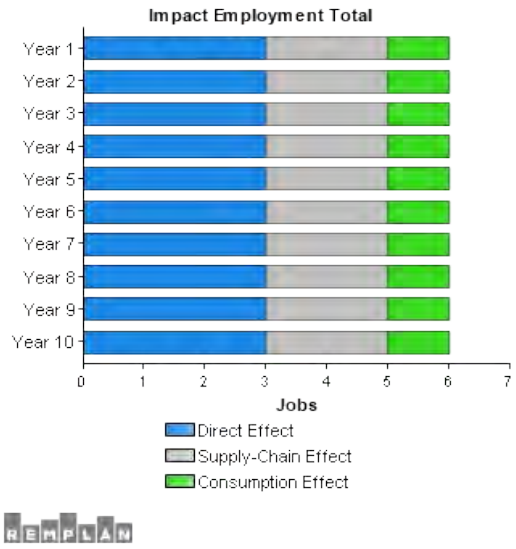
	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Year 1	$1.321	$0.682	$0.246	$2.248	1.516	1.703
Year 2	$1.321	$0.682	$0.246	$2.249	1.516	1.702
Year 3	$1.321	$0.682	$0.246	$2.249	1.516	1.702
Year 4	$1.321	$0.682	$0.246	$2.249	1.516	1.702
Year 5	$1.321	$0.682	$0.246	$2.249	1.516	1.702
Year 6	$1.321	$0.682	$0.246	$2.249	1.516	1.702
Year 7	$1.321	$0.682	$0.246	$2.249	1.516	1.702
Year 8	$1.321	$0.682	$0.246	$2.249	1.516	1.702
Year 9	$1.321	$0.682	$0.246	$2.249	1.516	1.702
Year 10	$1.321	$0.682	$0.246	$2.249	1.516	1.702
Years 1 - 10	$13.210	$6.820	$2.458	$22.488	1.516	1.702

From a direct increase in output of $13.210 million over the 10-year period, it is estimated that the demand for intermediate goods and services would rise by $6.820 million. This represents a Type 1 Output multiplier of 1.516. These supply-chain effects include multiple rounds of flow-on effects, as servicing sectors increase their own output and demand for local goods and services in response to the direct change to the economy.

The increases in direct and indirect output would typically correspond to the creation of jobs in the economy. Corresponding to this change in employment would be an increase in the total of wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are estimated at $2.458 million.

Total output over the 10-year period, including all direct, supply-chain and consumption effects is estimated to increase by up to $22.488 million. This represents a Type 2 Output multiplier of 1.702.

Impact on Employment



	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Year 1	3	2	1	6	1.667	2.000
Year 2	3	2	1	6	1.667	2.000
Year 3	3	2	1	6	1.667	2.000
Year 4	3	2	1	6	1.667	2.000
Year 5	3	2	1	6	1.667	2.000
Year 6	3	2	1	6	1.667	2.000
Year 7	3	2	1	6	1.667	2.000
Year 8	3	2	1	6	1.667	2.000
Year 9	3	2	1	6	1.667	2.000
Year 10	3	2	1	6	1.667	2.000

There is a net direct increase in output of $13.210 million over the 10-year period.

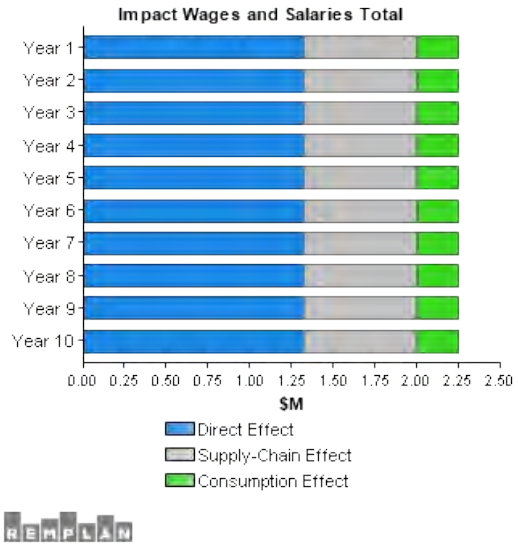
Peak Employment Gain occurs in year 1

In year 1 there is an estimated net 3 direct jobs supported. From this direct expansion in employment, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts will support 2 jobs. This represents a Type 1 Employment multiplier of 1.667.

The direct and indirect output and the corresponding jobs in the economy are expected to support the payment of wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are estimated to support 1 job in year 1.

In year 1, under this scenario, there is an expansion in overall employment, including all direct, supply-chain and consumption effects, estimated at 6 job. This represents a Type 2 Employment multiplier of 2.000.

Impact on Wages and Salaries



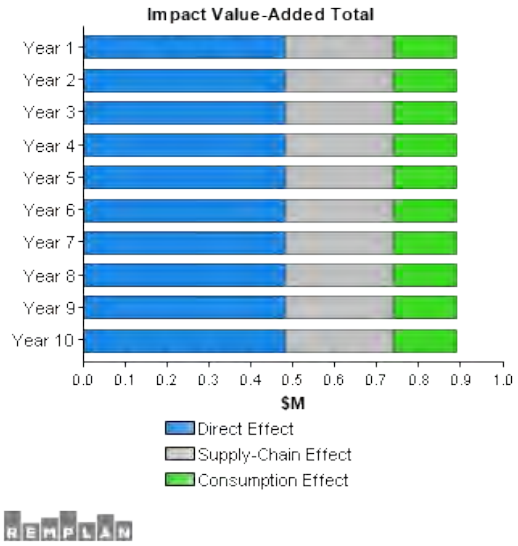
	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Year 1	$0.269	$0.150	$0.053	$0.472	1.556	1.754
Year 2	$0.269	$0.150	$0.053	$0.472	1.556	1.754
Year 3	$0.269	$0.150	$0.053	$0.472	1.556	1.754
Year 4	$0.269	$0.150	$0.053	$0.472	1.556	1.754
Year 5	$0.269	$0.150	$0.053	$0.472	1.556	1.754
Year 6	$0.269	$0.150	$0.053	$0.472	1.556	1.754
Year 7	$0.269	$0.150	$0.053	$0.472	1.556	1.754
Year 8	$0.269	$0.150	$0.053	$0.472	1.556	1.754
Year 9	$0.269	$0.150	$0.053	$0.472	1.556	1.754
Year 10	$0.269	$0.150	$0.053	$0.472	1.556	1.754
Years 1 - 10	$2.693	$1.498	$0.532	$4.723	1.556	1.754

From a direct increase in output of $13.210 million over the 10-year period, it is estimated that direct wages and salaries would increase by $2.693 million. From this direct impact on the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in the net increase in wages and salaries of $1.498 million paid to workers. This represents a Type 1 Wages and Salaries multiplier of 1.556.

The net increase in direct and indirect output and the corresponding jobs in the economy are expected to correspond to an increase in the wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are expected to result in an overall increase in wages and salaries by $0.532 million.

Total wages and salaries over the 10-year period, including all direct, supply-chain and consumption effects is estimated to increase by up to $4.723 million. This represents a Type 2 Wages and Salaries multiplier of 1.754.

Impact on Value-Added



	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Year 1	$0.481	$0.257	$0.150	$0.888	1.535	1.847
Year 2	$0.481	$0.257	$0.150	$0.888	1.535	1.847
Year 3	$0.481	$0.257	$0.150	$0.888	1.535	1.847
Year 4	$0.481	$0.257	$0.150	$0.888	1.535	1.847
Year 5	$0.481	$0.257	$0.150	$0.888	1.535	1.847
Year 6	$0.481	$0.257	$0.150	$0.888	1.535	1.847
Year 7	$0.481	$0.257	$0.150	$0.888	1.535	1.847
Year 8	$0.481	$0.257	$0.150	$0.888	1.535	1.847
Year 9	$0.481	$0.257	$0.150	$0.888	1.535	1.847
Year 10	$0.481	$0.257	$0.150	$0.888	1.535	1.847
Years 1 - 10	$4.808	$2.571	$1.500	$8.879	1.535	1.847

From a direct increase in output of $13.210 million over the 10-year period, the corresponding increase in direct value-added is estimated at $4.808 million. From this direct expansion in the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in a further increase to value-added of $2.571 million. This represents a Type 1 Value-added multiplier of 1.535.

The increase in direct and indirect output and the corresponding boost to jobs in the economy are expected to result in an increase in the wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are expected to further boost value-added by $1.500 million.

Total value-added over the 10-year period, including all direct, supply-chain and consumption effects is estimated to increase by up to $8.879 million. This represents a Type 2 Value-added multiplier of 1.847.

Impact Summary - Year 1 to Year 10

Impact Summary	Direct Effect	Supply-Chain Effect	Consumption Effect	Total Effect	Type 1 Multiplier	Type 2 Multiplier
Output ($M)	$13.210	$6.820	$2.458	$22.488	1.516	1.702
Employment (Jobs) Peak Gain - Year 1	3	2	1	6	1.667	2.000
Wages and Salaries ($M)	$2.693	$1.498	$0.532	$4.723	1.556	1.754
Value-added ($M)	$4.808	$2.571	$1.500	$8.879	1.535	1.847

Under this scenario Gross Regional Product is estimated to increase by $8.879 million over the 10-year period. Contributing to this is a direct increase in output of $13.210 million, $2.693 million more in wages and salaries and a boost in value-added of $4.808 million.

From this direct expansion in the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in a further increase to output valued at $6.820 million, $1.498 million more paid in wages and salaries, and a gain of $2.571 million in terms of value-added.

These supply-chain effects represent the following Type 1 economic multipliers:

Impact	Type 1 Multipliers
Output	1.516
Employment Peak Gain - Year 1	1.667
Wages and Salaries	1.556
Value-added	1.535

The increase in direct and indirect output and the corresponding change in jobs in the economy are expected to result in an increase in the wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under the scenario are expected to further boost output by $2.458 million, wages and salaries by $0.532 million, and value-added by $1.500 million.

Under this scenario, total output is expected to rise by $22.488 million. Corresponding to this are anticipated increases in employment of jobs, $4.723 million wages and salaries, and $8.879 million in terms of value-added.

The total changes to economic activity represent the following Type 2 economic multipliers:

Impact	Type 2 Multipliers
Output	1.702
Employment Peak Gain - Year 1	2.000
Wages and Salaries	1.754
Value-added	1.847

Disclaimer

All figures, data and commentary presented in this report are based on data sourced from the Australian Bureau of Statistics (ABS), most of which relates to the 2016, 2011, 2006 and 2001 Censuses.

Using ABS datasets and an input / output methodology industrial economic data estimates for defined geographic regions are generated.

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Appendix 9 - Kerang Landcare Draft Concept Feedback

Kerang Landcare Feedback on Draft Concept Drawings – October 2022, David Thompson

The following comments were provided by David Thompson on behalf of Kerang Landcare on the Draft Concept Design. These were discussed and resolved where possible via a Microsoft Teams discussion on Friday 13th January 2023. They formed the development of the Final Concept Design Plans included within the report.

Surface Finishes	
Landcare Comments	**Tredwell Comments**
• In assessing the surface material for flood prone trails I think the frequency of flooding and also the velocity of flood waters passing over a trail should be considered. • Considerable sections of the trail only flood every 20 to 100 years. • The section of trail that floods most frequently is along the Loddon River. • For example we currently have a moderate flood on the Loddon River. • This is flooding most of the route From Kerang to Whites Lane. • However, the remainder of the trail is not currently flooded and not likely to.	Discussed with David Thompson via Microsoft Teams on Friday 13th January 2023.
• The eco trail on **sections 23 and 24** has been located on what is currently a 3 metre wide access track, built on top of a levee bank, surfaced with crushed rock and used by G-MW vehicles for access to their regulator. • This section would only be flood prone in a 1 in 100-year flood event. It hardly warrants a concrete surface. • I recommend that this section be top dressed with sand to make it user friendly for bicycles.	Discussed with David Thompson via Microsoft Teams on Friday 13th January 2023. Would recommend that the trail be dressed with crushed rock rather than sand for bicycles.
• For **the trail west of Flood Lane** options 1 to 3 are along the north side of the channel and option 4 on the south side of the G-MW channel. • The ground level on both sides of the channel are very similar. • Larger floods going down Scott's Creek also travel down the G-MW channel and sometimes along the south side of the channel. The 100 year flood map shows this.	Discussed with David Thompson via Microsoft Teams on Friday 13th January 2023.

• The Scott's Creek floodway operates on many occasions without flooding the trail route along the north side of the G-MW channel • Therefore option 4 for most of its length is just as flood prone as options 1 to 3 along the north side of the same channel. • The different surface treatment for option four therefore does not make sense.	
• The sections of **options 1 to 3** further north of the G-MW channel are on lower ground than the channel route. • However, most of option 3 on the north side of the wildlife reserve is on top of a levee bank which would only flood every 20 to 50 years. • This should guide the surface treatment. • The frequency of flooding on most of options 1 to 3 don't justify a special surface treatment.	Updated to levee north side of Wildlife Reserve.
• A concrete surface will be an expensive option. Given the low frequency of flooding for most of the trail the cost of concrete would seem prohibitive. • Bitumen or sand/sandstone would be better value for money. • A concrete surface is also not a good idea for Kerang/lake charm soils. It will be subject to heaving with the expansive clays along the route. • I think that the only section of trail justifying a special flood surface is along the Loddon River using maybe asphalt but not concrete	Ideally a sandstone/rubble surface would be preferred as this is a more natural and cost-effective finish in the short term and would suit the eco-trail. We are definitely not against this but as mentioned above, Council have indicated that they prefer concrete and asphalt surfaces and therefore we have retained the concepts with the original surface finishes. In addition to this we have provided costs for the trail to be constructed of compacted rubble and treated compacted rubble. Although a higher initial cost, concrete and asphalt have lower estimated on-going maintenance costs than compacted rubble or treated compacted rubble. The below estimated maintenance costs have been developed by Rider Levett Bucknall and are based on one visit only. The frequency of visits will need to be determined (e.g. annually, biennially, triennially…). The estimated costs are based on a local contractor undertaking the works and no allowance for LAFHA, accommodation etc. has been made. Allowances are based on a 2-week work period to complete the works

Asphalt Surfaces

For asphalt surface maintenance, the following assumptions have been made:

- Minor materials to patch and make good
- Assume majority of works would be to clean surface

Compacted Rubble Surfaces

For compacted rubble surface maintenance, the following assumptions have been made:

- Allowance for 1,000 tonne of rubble – this will allow for a 20mm skim across 50% of the total path
- Rate is inclusive of roller, skid steer, water truck and excavator
- Assume the works for the compacted rubble surface maintenance will be more intensive to fill in pot-holes, top up pathways, fix edges, etc.

Surface Maintenance		Unit	Visit	Total
1.1	Asphalt / Concrete Surface Maintenance - per visit	No	1	$52,415.00
1.2	Compacted Rubble Surface Maintenance - per visit	No	1	$69,960.00
1.3	Compacted Cement Treated Rubble Surface Maintenance - per visit	No	1	$113,960.00

We have recently completed work in Logan City Council in NSW. In flood prone areas they have constructed concrete surfaces which have been proven to withstand the effects of flooding.

<table>
<tr><td></td><td>  </td></tr>
<tr><td>A 2.5m wide surface seems excess for the expected amount of traffic. Two meters would seem and adequate width.</td><td>We have used the Austroads ‘Guide to Road Design Part 6A - Paths for Walking and Cycling’ to determine the trail width.
The below table has been taken from the report which suggests acceptable ranges of width for shared use paths.
The Kerang Lakes Eco-trail is technically a Recreational pathway, however, due to its distance and therefore limited chances of trail user conflict it has been designed to meet the local access path requirements with a desired minimum width of 2.5m. This allows for the trail to be wide enough for both pedestrian and cyclists to travel in both directions and allow enough room for cyclists to overtake safely.
We agree that the trail could be potentially reduced to 2m, however, for the purpose of the feasibility study, the trail has been designed to the desired minimum width.
<table><tr><td></td><td colspan="3">Shared path width (m)</td></tr><tr><td></td><td>Local access path</td><td>Regional path[3]</td><td>Recreational path</td></tr><tr><td>Desired minimum width</td><td>2.5</td><td>3.0</td><td>3.5</td></tr><tr><td>Maximum width - typical maximum</td><td>2.0[1]-3.0[2]</td><td>2.5[1]-4.0[2]</td><td>3.0[1]-4.0[2]</td></tr></table></td></tr>
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Fencing	
Longitudinal boundary fencing appears not to be mentioned on the drawings except for section 19.	Updated fencing to reflect comments made throughout.
Broken down boundary fencing needing to be replaced and should be shown on sheets 03, 04 and 05	Noted in section 03. Unsure where fences are located in 04 and 05. 04 + 05 needing fencing – Replacement.

New Longitudinal fencing needs to be constructed along the crown reserve boundary on sheets 06 to 12 to prevent cattle damage to the eco trail.	Included on sheets 06 to 12.
Bike friendly cattle stops are not needed if boundary fencing is installed. This applies to sections 08, 09, 10, 11 and a small section in the south east corner of section 12	Cattle stops have been removed due to proposed new fencing mentioned above.
Sections 18 to 22 have some gaps in the longitudinal fencing. Kilter has offered to fence those sections of the trail that are currently not fenced. This will remove the need for any cattle grids	Unsure where these gaps are but have allowed your specified fencing distances in the totals and included notes on plans. Cattle stops have been removed.
Option Totals (KLET_02)	
Option 1 is shown on the table as shorter than option 2. In fact option 1 is one kilometre longer. I measure option one at 22.6 km, option two at 21.6 km.	Discussed with David Thompson via Microsoft Teams on Friday 13th January 2023.
Based on the sections of trail shown black on the drawings, option 4 should have 11.0 km of concrete pathway, not the 8.2 km listed.	There is more asphalt than concrete on this option.
I disagree with the amount of fencing listed. My measurement of fencing required is: • Option 1, 11 km • Option 2, 8.5 km • Option 3, 8.2 km not 9 km • Option 4, 6.0 km, not the 3.5 km shown in the drawings. This 6 km is all between Kerang and Flood Lane. The distances can be found in my scope of works, which you should have.	Updated to specified distances.

Option 1	
Landcare Comments	**Tredwell Comments**
Section 02	
Existing culvert on Section 02 needs widening	Updated on plans.
Underpass to be excavated under rail line	Noted on plans.
Section 05	
A Point of interest with an interpretive sign at the junction of the Loddon River and Washpen Creek is a good idea. It is also marks the location of the end of the dredging of the Pyramid Creek in the 1960's	Added an interpretive sign here for all options.
A Point of interest for the bridge is not significant and probably not worth a sign	Removed 'Point of interest'.

Longitudinal fencing needs to be constructed along the crown reserve boundary to prevent cattle damage to the eco trail. This is covered in the quantities	Included fence.
Section 06	
Longitudinal fencing to be constructed along crown reserve boundary and shown on the drawing	Included fence.
A Point of interest for the Washpen creek regulator is good	Added an interpretive sign here.
Section 08	
A bike friendly cattle stop is not needed if longitudinal fencing is installed	Included fence and cattle stop removed.
Section 09	
There is no Washpen creek regulator on section 09	Removed.
Section 12	
A Point of interest sign at the Washpen Creek Bridge could also mention Apex Park at Reedy Lake	Updated to include interpretive sign here mentioning Apex Park.
The proposed new bridge to provide a river crossing is over the Wandella Creek. Probably about a 10 to 15 metre span.	This is specified as 15m.
Sections 14, 15, 16 and 17	
Locating the trail along the highway is a very poor route. • On these sections it is shown running right beside the highway on VicRoads land. This is an unsightly and noisy location and potentially dangerous beside highway traffic. • The route next to the highway would also potentially require tree removal and probably a bridge over the farm channel. Was there a special reason for putting it there? • We did discuss the need to locate the eco trail along the edge of Reedy Lake. • A bike trail along the edge of the lake is no more flood prone and will have the same vegetation approval requirements. The route can also deviate slightly to the left and right to avoid tree removal • The eco trail could also be shortened by 400 metres by locating it closer to the lake and away from the highway. No structures would be required if it located near the small fenced pump station. Alternately if located at the edge of the lake then a small bridge	Relocated off main road and along Reedy Lake edge.

over the farm channel would be needed	
The point of interest location shown at the north end of section 14 is a good location for a small bridge or pipe culvert for the eco trail.	New bridge added here.
On section 17 there is a levee bank on the edge of the Lake with shade trees. It would be a more scenic route. I recommend using this route.	Unsure exactly where this is and retained in existing location for now.
Section 17	
The Point of interest at the Ibis Rookery information area is a good idea	Added interpretive sign here.
The route could possibly be shortened to save looping it through the car park	Agree. Route has been shortened. This reduces interactions with vehicles and still allows access to the Ibis Rookery facilities.
Section 18	
A bike friendly cattle stop is not needed if longitudinal fencing is installed	Seems from aerials there may already be a fence on the eastern side of irrigation channel. Have removed cattle stop.
Section 19 to 22	
The proposed culvert shown is not needed as this is an old farm channel that has been disused for decades	Removed.
The eco trail is shown located mainly on top of the levee bank. We discussed locating the eco trail closer to the lake edge where there is some shade from trees. Please consider.	Have kept trail on levee bank for now.
Section 22	
The point of interest at the regulator is a good idea. This location justifies an interpretive sign.	Added an interpretive sign here.
The footbridge over the regulator is less than one metre wide and may need to be widened. Safety fencing will probably be required by G-MW around the regulator, similar to that shown in the photo below of the Cohuna Weir which is also operated by G-MW. Cohuna weir is a similar size structure to the regulator on the trail and has plenty of pedestrian traffic.	Safety fence added around regulator (north and south).
The trail on the north and south sides of the regulator are both located on top of levee banks at a similar elevation. One is shown as concrete and the other as asphalt. This is inconsistent. Both only justify sand/sandstone.	Discussed with David Thompson via Microsoft Teams on Friday 13th January 2023.
Section 24	

A short section of approximately 30 metres of longitudinal fencing needs to be repaired	Discussed with David Thompson via Microsoft Teams on Friday 13th January 2023.
The interpretive sign at the north end of section 24 is an excellent idea. This could highlight the ecological value of Third Reedy Lake including the work done to save some endangered native fish	Retained and have noted suggested topics.
What is the difference between an interpretive sign and a point of interest sign. Will all the points of interest have an interpretive sign?	Updated to include an interpretive sign at each point of interest.
Section 25	
Options 1, 2 and 3 should be located on the G-MW channel reserve as we discussed in February. Locating it on the road reserve as shown would result in one very unhappy farmer and the trail being destroyed by his machinery and cattle. It appears that this route follows the route the car travelled on the day we surveyed it.	Relocated onto G-MW channel reserve.
Locating option 4 on the south side of the channel would not be very scenic and would be subject to prevailing south westerly winds. It would be more scenic and protected from winds if on the north side of the channel	Discussed with David Thompson via Microsoft Teams on Friday 13th January 2023.
Section 26 to 31	
Options 1 to 3 located on the G-MW reserve is a very scenic route with views over the Scott's Creek wetland and with shade trees along the route. The eco trail shown on these sections wanders between the G-MW reserve and private land which makes for complications with land acquisition with an additional party and more fencing. There is room to locate the trail on the G-MW channel reserve where I suggested. It will also be much better located on the G-MW land where G-MW has given in-principle approval.	Relocated onto G-MW reserve.
On section 31 the intention was to locate the north south section of the trail on the wildlife reserve land which is where I think we drove in February. The drawing shows it on private land which will cost more with land acquisition. I recommend this be changed.	Updated. This will need to be discussed and approved by Parks Victoria in the next stage of concept development.

Section 27	
I think that Kilter will object to option one as it goes through the middle of their irrigation farm operations.	Relocated to G-MW reserve .
Section 33	
The north south section of option 2 should be on the east side of the boundary which is on Kilter land where we walked, not on the west side of the boundary. Kilter is a lot more cooperative than the landowner on the west side of the boundary	Relocated to eastern side of boundary.
Option 2 on SECTIONS 33 and 38: I intended this section to be fenced to prevent stock damage to the trail. This has been agreed with the landowners (Hogg's)	These sections have been relocated to the eastern side (as noted above). Fencing has also now been included.
Section 38, 39 and 40	
These sections show the trail as concrete when it is located on top of a lunette and not flood prone. Sheet 40 also shows a concrete trail on the road reserve/driveway between two houses which is obviously not flood prone.	Discussed with David Thompson via Microsoft Teams on Friday 13th January 2023.
The title boundaries shown on section 40 don't look right in comparison to the road and fences. Not sure what's going on there.	These have been sourced from https://mapshare.vic.gov.au/mapsharevic/
The same issue might be a factor in my comments on sections 31 and 33 where the trail is on the opposite side of the fence compared with where we surveyed it.	As above.
Section 42	
This shows options 1 to 3 as concrete but option 4 as asphalt when there is no difference in the ground level. None of the four options are flood prone in this section	Discussed with David Thompson via Microsoft Teams on Friday 13th January 2023.

Option 2	
Landcare Comments	**Tredwell Comments**
Option 2 Section 2	
All of option 2 was intended to be fenced. The cattle grid will not be needed if option 2 is to be fenced.	Now fenced and cattle grid removed

Option 3	
Landcare Comments	**Tredwell Comments**

Option 3 is a highlight of the Eco Trail and should be the recommended route if it can be achieved.	Discussed with David Thompson via Microsoft Teams on Friday 13th January 2023.
Most of option 3 is on top of a levee bank which would only flood every 20 to 50 years reducing the need for a concrete surface.	We have costed concrete/asphalt, treated compacted rubble, asphalt, and compacted rubble. Councils' preference at this stage is concrete/asphalt.
It would be good to have an interpretive sign on the north side of Little Lake Charm Wildlife Reserve, Say on option 3 section 2.	New interpretive sign included in section 2 of option 3.
Option 3 Section 5	
The fencing mentioned on this sheet has been constructed without any permissions during 2022. There are two rows of fencing creating a cattle lane that crosses the road reserve, the neighbours land and into the lake. This landowner also appears to have carried out earth removal and levee bank works on the road reserve. The neighbour is very unhappy about the fencing across her land. This fencing really legally and morally should be removed.	Noted.
The road reserve boundary on section 5 was intended to be fenced so a bike friendly cattle stop is not needed.	Cattle stop removed.
Neil you were going to check whether the recently constructed levee bank on this section is on the road reserve or not. Could you let me know please?	Discussed with David Thompson via Microsoft Teams on Friday 13th January 2023.

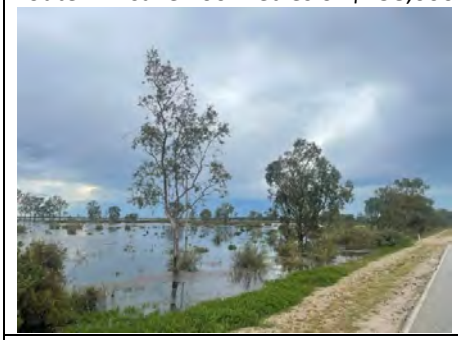
Option 4	
Landcare Comments	**Tredwell Comments**
Most of option 4 is no less flood prone than the section of options 1 to 3 along the G-MW channel. Therefore the surface treatment for all four options along the G-MW channel should be the same. • The proposed route for option 4 is very boring and more subject to the prevailing south west winds in this area.	Discussed with David Thompson via Microsoft Teams on Friday 13th January 2023.

• On section 5 the G-MW channel on the highway reserve is probably 3 metres deep or more, so a bridge over the channel will be a significant structure • If option 4 was located on the north side of the G-MW channel it would be more scenic and no more flood prone. A bridge over the outlet creek of Little Lake Charm should be no more expensive a bridge on the highway reserve.	

COMMENTS ON DRAFT FEASIBILITY STUDY REPORT ON ECO TRAIL - David Thompson, 19 November 2022

Flood Prone Issues	
Landcare Comments	**Tredwell Comments**
In determining special surface treatments for flood prone sections of the trail, the report makes no distinction about the frequency of flooding or the velocity of water passing over the trail. Some sections of the trail may be flood prone but are infrequently flooded and have low velocity water passing over them. Hence the need for a special surface treatment is low in those cases. The use of a concrete surface for much of the trail seems to be an overkill.	Discussed with David Thompson via Microsoft Teams on Friday 13th January 2023.
Furthermore the following drawings show sections of the trail as flood prone when in fact they are clearly not flood prone. This should reduce the cost of options 1 to 3 and option 4 to a lesser quantity. • Sections 22, 23, 24 (all options). The 1.3 km. section of the trail north of the channel is located on top of a levee bank adjacent to Third Lake. It did not go under in the 2022 flood. It is inconsistent that the levee bank south of the G-MW channel is shown as flood free and the same levee bank north of the channel is shown as flood prone. • Option 3, sections 1, 2 and 3. The trail is located on top of a levee bank (1750 m) most of which did not go under in the 2022 flood. • Option 3, section 5. The section between the two houses (274 m) is	Discussed with David Thompson via Microsoft Teams on Friday 13th January 2023.

not flood prone. It did not flood in either the 2011 or 2022 floods. • Options 1, 2, 3 sections 9, 38, 39, 40, 41 and 42, along Lake Charm East Road. Some of this section of the trail is up to two metres above flood level. (670 m for option 3, 2020 m for option 2)	
Option 4, section 5. A section of trail for approximately 100 metres on the north side of the No. 7 channel shown as flood free is in fact flood prone and was still under water on 13 November 2022	Discussed with David Thompson via Microsoft Teams on Friday 13th January 2023.

Errors in Trail Alignment	
Landcare Comments	**Tredwell Comments**
On section 31 the intention was to locate the north south section of the trail on the wildlife reserve land. The drawing shows it on private land which will cost more with land acquisition.	Relocated to Wildlife Reserve land.
Section 33. The north south section of option 2 should be on the east side of the boundary which is on Kilter land where we walked, not on the west side of the boundary. Kilter is a lot more cooperative than the landowner on the west side of the boundary	Updated to be on eastern side of boundary.
Section 40. The north south section should align with the road reserve	These have been sourced from https://mapshare.vic.gov.au/mapsharevic/
Sections 14 to 17. The agreed location was next to the lake, not the highway. The lake route will save 400 metres or $258,000. 	Redirected away from highway and along lakeside.
Section 25. The agreed location was on the G-MW channel reserve where we have permission in principle from G-MW. Locating it on the road reserve (which is used as a farm laneway) as shown on the drawings would result in one very unhappy farmer and the trail being destroyed by his	Updated to be within G-MW channel reserve

machinery and cattle. Going along the G-MW land will also reduce the distance by 180 m, saving $61,000	
Sections 26 to 30. The trail should be on the G-MW land, not private land.	Have re-aligned the trail here.

Errors in Drawings	
Landcare Comments	**Tredwell Comments**
Longitudinal boundary fencing is not mentioned on the drawings except for section 19, even though it is shown in the cost estimates. There should be fencing on sections 3 to 12 and 18 to 22, 26 to 38, option 2 and option 3 sections 4 and 5. Fencing option 1 is desirable but would interfere with the landowner's intensive horticulture operations.	Sections 3 to 12 included. Sections 18 to 22 – noted on plans to complete gaps in fencing where required. Sections 26 to 38 22 – noted on plans to complete gaps in fencing where required.
Section 9 refers to a Washpen Creek regulator. There is no regulator on this section.	Removed.

RECOMMENDED ADDITIONS TO THE EXISTING WORDING AND COMMENTS	
Landcare Comments	**Tredwell Comments**
Page 25, there are three caravan parks in Lake Charm, not one. There is also a power boat club and yacht club	Updated.
Page 27, Option 3 ……..follows the eastern boundary of Little Lake charm, then along a disused road reserve to the Lake Charm foreshore. [The report does not refer to the road reserve, which is misleading.]	Updated.
PAGE 28. The last sentence should read: The map also illustrates the locations of unused road licences of which **options 1, 2 and 3 make use**. [The report only refers to option 1.]	Updated.
Pages 29 and 44 says the trail does not traverse Parks Vic land and the Wildlife reserve. This is not correct as the drawings clearly show the trail on the crown land and reserve. This is also what we agreed	Updated.
PAGE 33, the report incorrectly states that that only the western bank of lake charm avoids flood waters. The southern and eastern banks also avoid flood waters as	Updated.

evidenced by site inspection, local knowledge and flood mapping.	

PAGE 42. OPTION 1 SWOT Analysis	
Landcare Comments	**Tredwell Comments**
Strengths • Delete reference to option 2. Passing by Stevenson's Swamp does not provide a more naturally immersive walk than option 2. Stevenson's swamp has little vegetation and only dead trees. • Has scenic views of Scott's Creek forest and wetland • Is sheltered from southerly and westerly prevailing winds • The section of the trail located on the G-MW channel reserve is on higher ground on the edge of the floodway and so is less prone to water damage than the central parts of the floodway. • Easily accessible from Lake Charm	Updated.
Weaknesses • Only part of option 1 is located in a flood prone area. • Part of option 1 is located in the middle of some intensive Vic Super horticulture operations. Vic Super/Kilter may object to this option. • The section past Stevenson's swamp is not very scenic	Updated.
Opportunities • With the fencing proposed, options 1, 2 and 3 provide the opportunity to eliminate the illegal cattle grazing in the Little Lake charm Wildlife reserve. This should improve the conservation value of this reserve.	Updated.
Threats • Drawing section 31 shows the trail on private land on the east side of the Wildlife Reserve. It was supposed to be in the Wildlife Reserve. The threat with the location on the drawing is dealing with a difficult landowner to acquire the land needed for the trail. • Drawing section 25 shows the trail on a disused road reserve just west	Noted. Trail now located in Wildlife Reserve and section 25 has been re-aligned.

of Flood Lane. This is used by the adjacent landowner as a laneway for machinery and cattle. Options 1, 2 and 3 should be located on the G-MW channel reserve. This is a shorter route and avoids conflict with the neighbouring landowner. G-MW are agreeable to the use of their land.	

PAGE 45. OPTION 2 SWOT Analysis	
Landcare Comments	**Tredwell Comments**
Strengths • Has scenic views of Scott's Creek forest and wetland • A scenic experience where the trail goes through tree plantations along and south of Lake Charm East Road. • Is sheltered from southerly and westerly prevailing winds • The section of the trail located on the G-MW channel reserve is on higher ground on the edge of the floodway and so is less prone to water damage than the central parts of the floodway. • It is more scenic than options 1 and 4 • Agreement has already been reached with one landowner to use their land with a land purchase or licence and with fencing. The trail passes through a scenic tree plantation on this landowners property • This landowner has even offered to shift their boundary fence along Lake Charm East road in order to provide enough width for the trail. • It is proposed to fence the trail on the private land, so stock should not be a problem • The other landowner is very supportive of the project. • Easily accessible from Lake Charm	Updated.
Weaknesses • Only part of option 2 is flood prone.	Updated.
Opportunities	Updated.

• With the fencing proposed, options 1, 2 and 3 provide the opportunity to eliminate the illegal cattle grazing in the Little Lake charm Wildlife reserve. This should improve the conservation value of this reserve. • The section of options 1 to 3 along the G-MW land could be located on top of the spoil bank to make it further above flood level. I don't think this is necessary but could be done	
Threats • Push back from landowners is a low probability given the discussions and agreements made with them.	Have still included this as there is still a possibility of this occurring due to the time in which it will take to receive funding, undertake further consultation, and undertake detailed design prior to construction.

Page 46, OPTION 3	
Landcare Comments	**Tredwell Comments**
The second sentence should read: The trail then follows the eastern bank of Little Lake charm **on crown land and a disused road reserve to the Lake Charm** East Road where it follows……. The sentence currently does not mention the road reserve which is over one km. long. The current statement is not accurate and will create a false impression with readers of the report.	Updated.
Paragraph 2 should read: This option provides a more naturally immersive experience than **options 1 and 4 by** ……	Updated.
The second sentence in paragraph 3 should read: **The trail travels along a disused road reserve which one adjoining landowner uses as a driveway. Here the trail comes within 5 metres of this neighbours house and 15 metres away from another house. This may be a privacy issue for one house.**	Updated.

PAGE 47. OPTION 3 SWOT Analysis	
Landcare Comments	**Tredwell Comments**
Strengths • Option 3 is the most scenic of all options with scenic views of Little Lake Charm Wildlife Reserve wetland section, Little Lake Charm	Updated.

and Scott's Creek forest and wetland • It is sheltered from southerly and westerly prevailing winds • It is located entirely on G-MW land, crown land and a disused road reserve, eliminating the need for land purchase. • The section of the trail located on the G-MW channel reserve is on higher ground on the edge of the floodway and so is less prone to water damage than the central parts of the floodway. • Most of the trail is already fenced so that stock should not be a problem • Some of this option is located on top of a levee bank along the north side of the Little Lake Charm Wildlife Reserve and east side of Little Lake Charm. This levee bank is not flood prone for most flood events. Most of it appears to have been above the 2011 and 2022 floods, based on observation and advice from neighbouring landowners • Easily accessible from Lake Charm	
Weaknesses • Approximately 65 % of option 3 is flood prone.	Updated.
Opportunities • With the fencing proposed, options 1, 2 and 3 provide the opportunity to eliminate the illegal cattle grazing in the Little Lake charm Wildlife reserve. This should improve the conservation value of this reserve. • The section of options 1 to 3 along the G-MW land could be located on top of the spoil bank to make it further above flood level. I don't think this is necessary but could be done	Updated.

PAGE 48 Option 4	
Landcare Comments	**Tredwell Comments**
This option is proposed to be located on top of the spoil bank on the south side of the No. 7 channel. It is not a levee bank and in fact has a break in it where flood water has recently gone through. Refer to the photo.	Discussed with David Thompson via Microsoft Teams on Friday 13th January 2023.

Approximately 100 metres of this option on the north side of the MV Highway Bridge is flood prone. This is not shown on the drawings.	To update.
Paragraph two is not correct. This option provides only very poor views of the Little Lake Charm Wildlife Reserve and sacrifices extended water frontage of this reserve. Refer to photo.	Removed reference to views of Little Lake Charm.

PAGE 49. OPTION 4 SWOT Analysis	
Landcare Comments	**Tredwell Comments**
Strengths • Point 4 is not correct. Option 4 is not very scenic	Updated.
Weaknesses • It is subject to prevailing southerly and westerly winds • Subject to traffic noise from the MV Highway • It is the least scenic of all the options • This option provides only very poor views of the Little Lake Charm Wildlife Reserve and sacrifices extended water frontage of this reserve. • It provides very poor views of Scott's Creek forest and wetland	Updated.
Threats • Permissions required from VicRoads and G-MW • Possible push back from a neighbouring landowner who makes some use of the spoil bank and G-MW land.	Updated.

PAGE 118 key Stakeholder consultation	
Landcare Comments	**Tredwell Comments**
This shows only 20% of the feedback from Kerang Landcare.	We will include the remainder of Kerang Landcare feedback within the Appendices due to the number of comments.

COST ESTIMATES	
Landcare Comments	**Tredwell Comments**
The quantities shown for longitudinal fencing are not correct. Refer to the Scope of Works dated September 2021 for details. Corrections are shown in the following table.	Updated as per previous comments received in September (Notes on page 5).

Option 1 – 9km should be 11km Option 2 – 9km should be 9km Option 3 – 9km should be 8.2km Option 4 – 3.5km should be 5.7km	
There is no allowance for safety fencing at the G-MW regulator on Drawing Section 22	Included safety fencing here.
The unit rate for construction of an asphalt trail is $73.50/m2 compared with $89.50/m2 for a compacted rubble trail. If the entire trail was built from asphalt it would save the following amounts compared with compacted rubble: Option 1 – $1,378,600 Option 2 – $1,342,900 Option 3 – $1,317,600 Option 4 - $1,326,700	Noted.

KERANG REGIONAL PARK	
Landcare Comments	**Tredwell Comments**
The consultants brief asked for investigation and comment on development opportunities for Kerang Regional Park. This appears not to have been done.	To be included within final report.

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