

Brisbane Valley Rail Trail – Australia's Longest Trail

A Johnson¹

¹Somerset Regional Council, QLD

Abstract

The Brisbane Valley Rail Trail (BVRT), a 157km long, off-road recreational trail is finished, with the final 27km recently completed by Somerset Regional Council.

It is the longest trail in Australia and follows the disused Brisbane Valley rail corridor. Walkers, cyclists and horse riders now have a unique opportunity to experience the diverse rural landscape of the breath-taking Brisbane Valley.

The project is so much more than a successful engineering outcome – it has recycled a dormant rail corridor into an iconic recreational trail that is attracting visitors and new businesses to the Somerset region.

The final 27km section, Toogoolawah to Moore (T2M), was completed in June 2018, after numerous rounds of unsuccessful funding election commitments, and finally realised through a collaborative funding push by the community, local and state governments.

Council prepared a business case to secure funding from the Australian Government's Better Building Regions Fund. Community support was evident, and the cost/benefit ratio confirmed the project's benefits would clearly outweigh the delivery cost. Council successfully secured funding totaling \$3.35M.

Council delivered a landmark project for Somerset and broader South-East Queensland community - the following overarching objectives were achieved:

- The region is benefitting from the delivery of world-class recreational trail with increased visitation to the region
- It's recycled a dormant corridor with long-term community and economic benefits
- Residents have easy access to a recreational trail delivering health, social and cultural experiences
- Employment growth was achieved during construction, and jobs in rail trail operations and tourism are now created
- The visual outlook of the corridor has been enhanced
- The community's profile is vibrant from increased public exposure
- And Queensland's reputation as a cycling tourism destination has been strengthened.

The BVRT T2M received the 2018 IPWEA Queensland Engineering Excellence Award for projects between \$2-5M.

Exec Summary

The Brisbane Valley Rail Trail, a 157km long, off-road recreational trail is finished, with the final 27km recently completed by Somerset Regional Council.

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The project is so much more than a successful engineering outcome – it has recycled a dormant rail corridor into an iconic recreational trail that is attracting visitors and new businesses to the Somerset region.

The project is a landmark project for Council – complex and challenging, yet delivered successfully on time and on budget.

Planning

The **Brisbane Valley Rail Trail (BVRT)** is an off-road, multi-use recreational trail that follows the disused Brisbane Valley rail line in South East Queensland. The 157km long off-road trail is **the longest rail trail in Australia** and provides walkers, cyclists and horse riders with a unique opportunity to experience the diverse rural landscape of the Brisbane Valley.

The **final 27km section, Toogoolawah to Moore (T2M)**, was completed by Somerset Regional Council in June this year, after numerous rounds of unsuccessful funding election commitments, and finally realised through a collaborative funding push by the community, local and state governments.

The **BVRT T2M is an example of collaboration at its best**. The trail travels through the Somerset, South Burnett, Toowoomba Regional and Ipswich City local government areas linking the towns and communities in Wulkuraka, Fernvale, Lowood, Coominya, Esk, Toogoolawah, Harlin, Moore, Linville, Benarkin, Blackbutt and Yarraman.

The Brisbane Valley rail line was first developed as a branch line from the main Brisbane to Toowoomba line in 1884. The corridor winds its way up the Brisbane Valley from Ipswich to Yarraman, traversing farmland, forests, picturesque rural settings and country towns. The rail line was used to transport freight and passengers over the next 90 years.

Rail transport ceased using the line in 1988. The corridor then lay dormant with the majority of the railway's steel tracks and bridges removed and gradually replaced by overgrown grasses and weeds. The corridor remained wholly owned by the State Government with TMR responsible for the main head lease.

The **reinvigoration** of the Brisbane Valley rail corridor commenced in 1996, with the then Nanango Shire Council approaching the Queensland Government to open up and develop the rail trail for recreational use. The former Esk Shire Council (now Somerset Regional Council) was involved in these early negotiations (80% of the entire 157km corridor sits within Somerset Council's boundary). Nanango Shire Council was successful in securing TMR support and Queensland Government funding, and in 2006, the first stage of the BVRT was officially opened. This achievement was recognised by receiving **The Queensland Outdoor Recreation Federation (QORF), Government Achievement Award (2006)**.

Fast forward to 2006, and the Queensland Government released the **Brisbane Valley Rail Trail Plan**, a long-term plan to upgrade the trail to help deliver a more relaxed, healthy and less stressful lifestyle for Queenslanders. This was a key component in the Government's South-East Queensland Outdoor Recreation Strategy, and identified as a key regional outdoor recreation infrastructure project under the SEQ Infrastructure Plan and Program (2007-2026).

Over the next few years, incremental sections of the trail were completed. Funding for this work was **limited and sporadic** – opposing State Governments had different views on funding priorities and no clear plan and timeframe was confirmed for completion of the BVRT. By 2014, the trail had been extended to Toogoolawah, with 130kms of the trail now complete.

The **largest section of the BVRT, 27kms between Toogoolawah and Moore**, which sat squarely within Somerset Council's boundary, remained in limbo. Labelled 'too costly' and 'too difficult', it was the longest section to construct and was technically challenging to upgrade. The corridor was so overgrown that to accurately scope the extent of the necessary works was virtually impossible. What was known however, was that any work on this section would require upgrading three major creek crossings, at least fifteen smaller creek crossings and a major bridge structure over Jimmy's Gully.

The **community's interest** in completing the BVRT became evident when a petition featuring 1400 signatures was presented to the Queensland Deputy Premier's Office in 2016. This was the second petition the community had prepared and public pressure was growing – the community realised the benefits completing the last 27km section would deliver for the region – a social media campaign was established and a series of cycling events to demonstrate the value of the BVRT as a tourism asset were undertaken.

Council, armed with the support of the local community, approached the State Government again and in 2017, was **successful in securing \$1.8 million** to complete the final 27km section, and \$2 million was earmarked to maintain the BVRT over the next 10 years.

However, Council's **concept planning** had identified that \$1.8 million would only cover the upgrade of the three creek crossings and bridge structure – it would not provide for any work required on the paths. Council identified they could contribute \$100,000 towards the project, but no more. Whilst the State Government conveyed their desire for Council to commence the project, Council could not – this was the trigger point for Council to investigate grant funding options.

Council prepared a business case to secure an additional \$1.55 million in funding from the **Australian Government's Better Building Regions Fund**. The business case was solid – community support was evident, and the cost/benefit ratio confirmed the project's benefits would clearly outweigh the delivery cost. However, the 'design' of the required works was high-level and very much in the **concept phase**.

The business case was submitted in July 2017 and in September 2017 the funding grant was approved. Council had **successfully secured a total of \$3.35 million to complete the BVRT T2M**. However, grant funding was dependent upon construction commencing within 12 weeks and all works being completed by 30 June the following year – a nine month construction timeframe.

Despite the **technical challenges and extremely tight delivery timeframes**, construction of the BVRT T2M commenced on-site in December 2017. The project was overseen by Council, administered by GHD Pty Ltd and constructed by A&M Civil and Timber Restoration Systems. It was completed **on schedule and within budget in June 2018**.

"The team from TMR is very impressed with Council's work. I understand the difficulties in working within the parameters that you had in completing the project – achieving works expected by stakeholders and adjoining land owners in a tight monetary budget is not easy by any measure. TMR officers agreed that Council not only achieved but exceeded everyone's expectations with the finished product." Craig England, Manager (Rail Corridor Management), Development Projects
– QLD Department of Transport and Main Roads

Council has delivered a landmark project for the Somerset and broader South-East Queensland community - the **overarching objectives** of the project were achieved plus much more:

- The region is benefitting from the delivery of world-class recreational infrastructure that is resulting in **increased visitation to the region**
- It's **recycled a dormant infrastructure corridor** with long-term community and economic benefits to the region
- Local residents have easy access to a multi-purpose recreational trail delivering **health, social and cultural experiences**
- **Employment growth** was achieved during construction, and jobs relating to rail trail operations and in the tourism sector are now being created

- The **visual outlook** of the corridor has been improved delivering benefits for both users, and adjacent property owners
- The community's profile is flourishing from **increased public exposure** due to the project
- And Queensland's reputation as a **cycling tourism destination** has been strengthened.

Excellence and Innovation

The project presented a number of **management, technical and social challenges** for the project team. Through demonstrated excellence and innovation, the project has successfully been delivered, receiving extensive praise from the local community, BVRT users and political stakeholders.

"When Somerset Council decided to do it, they went ahead and did it and did it brilliantly." Paul Heymans, President, Brisbane Valley Rail Trail Users Association and local community activist responsible for the Change.org petition

The project is considered to be a **landmark project for Somerset Regional Council**. It's been talked about within Council, among the local community and by passionate supporters of the BVRT for a very long time.

Delivering the BVRT T2M has required an **unwavering commitment** to manoeuvre and deliver the project within the tight constraints of the Federal funding grant – as well as confirming the engineering task, the nine month delivery timeframe involved preparing contract documentation, completing the tender review and award process, securing land access agreements from adjacent land owners, site mobilisation and construction delivery.

The project presented Council with an opportunity to **leverage its learnings** from the significant flood mitigation infrastructure work undertaken in the region as a result of the devastating 2011 and 2013 South East Queensland flood events.

In 2013, Council was granted funding under the Commonwealth-Queensland Natural Disaster Relief and Recovery Arrangements (NDRRA) to complete 11 major bridge infrastructure projects within an 18 month period.

Being able to effectively deliver these major infrastructure upgrades, most of which required complex engineering solutions within tight project funding and delivery conditions, set amongst a back-drop of intense stakeholder scrutiny and community interest, **upskilled Council staff in major infrastructure delivery processes**, engineering **technical excellence** and project **innovation**.

Council's ability to deliver these major infrastructure projects required it to **'lift its project management game'** and resulted in Council being well equipped to deliver the final stage of the BVRT within similar tight funding and time constraints.

One of the **first technical challenges** encountered by Council was the inability to access the full length of the trail. Whilst the corridor lay dormant, it had become considerably overgrown with grasses and weeds making it almost impossible in some locations to determine the exact location of the corridor.

Funds weren't available to clear the length of the track, nor was there the ability to survey the corridor as part of the concept planning phase. So, an unusual and high-risk strategy of undertaking **concept sketches**, underpinned by aerial photography and a physical 'walk-through' of the corridor by the project team, was deployed.

Council could confirm the majority of the corridor's main alignment, that three major water crossings would need to be constructed, along with fifteen smaller creek crossings, a major bridge structure would be required for Jimmy's Gully, 27 private land owners would be directly affected, heritage structures (such as the 100m long Yimbun Railway Tunnel) needed to be retained and celebrated, and that a **cost-effective, resilient, fit-for-purpose engineering solution** would be required.

The **unknowns were considerable** – it was unclear what material in what state lay beneath the overgrown corridor. The 'correct measurements' of the required design features were unknown, cattle frequently crossed the alignment and from which points were unclear, and fencing and gate requirements, that were going to be extensive, had not been identified. There was limited ability for Council to reflect and assess if the design solution was 'right'.

These unknowns resulted in **Council being unable to fully scope the project** – a concern that was felt amongst the project team, but confidence in the project's outcomes, and the strong community support, gave them some reassurance that the business case would be positively received by the Federal Government.

Upon approval of the funding grant, **a clear project delivery approach** was developed. In order to meet the June 2018 project completion deadline, construction had to start before Christmas, giving Council less than three months to prepare for project delivery, liaise with property owners, secure contractors and mobilise on site.

First priority was for Council to sign off on the formal Funding Agreement and to obtain the relative permits from TMR so the team could physically access the site. **Within one month**, Council had completed these tasks and had defined that construction would require three separate works packages. Council utilised their existing purchasing arrangements through their **Local Buy/Local Supplier** panel – this panel was an integral component in Council's ability to deliver 2013 major flood mitigation projects and some features of the panel had been refined as a result of these projects. Having this panel in place enabled Council to identify four potential local contractors to complete the BVRT T2M.

The first of three packages was awarded in October 2017 – **just over one month** after funding was granted. The construction contractor was A&M Civil, a local contractor

based in the region at Fernvale. In addition to A&M's civil construction strengths, they had a strong track record with Council and their commitment to collaborative working relationships and flexibility in the field was going to be essential to complete the work in time.

By November, the second construction contract had also been awarded to A&M Civil, and the bridge contractor, Timber Restoration Systems had been appointed to complete the remaining package of works. **All directly adjacent land owners had been consulted** and fencing requirements and access requirements for cattle movements became clearer.

Work kicked off in earnest and what followed was a **demonstration of grassroots engineering** at its finest. Upon clearing the site, the full extent of works became evident. Original sketches were reviewed and updated. Meetings were held in the field attended by Council, GHD and the contractor – opportunities, constraints and benefits were identified and analysed. Cost estimations were reviewed, and adjustments to the construction program confirmed.

The majority of the **original earthwork formation** for the rail track was still intact and was used as subgrade for the multi-use trail. Work on the first major creek crossing, Ivory Creek, was a priority given the wet season was approaching, and confirming the engineering solution required for the first creek crossing would stand the team in good stead for the remaining two (Emu and Wallaby Creeks). **Bed-level concrete water crossings**, supported by sheet piles, low-flow culverts and rock scour protection were constructed at the three creek locations. These structures needed to be fit-for-purpose – they needed to provide a stable and safe crossing for trail users, and had to be resilient to water flow. The Ivory, Emu and Wallaby Creeks form part of the Brisbane River catchment – when these creeks flow during significant weather events, water volumes can be significant. In the 2011 and 2013 flood events, major bridges and floodways throughout this catchment were destroyed.

Longitudinal **drainage requirements** were identified as construction progressed, with table drains constructed at designated locations on either or both sides of the path.

Through the successful delivery of the BVRT T2M, the need for, and benefits of, collaborative and proactive working relationships in the field have been made evident for Council. The **collaborative approach to decision making** almost 'on the fly', involving Council, the contract administrator and the contractor was an innovative approach for Council. The ability for Council to use this collaborative model to deliver a technically challenging infrastructure project in an extremely short timeframe has given Council improved capacity and learnings which will be applied to other major infrastructure projects – and these learnings are specific to construction program management, land owner consultation, finance and risk management.

Through an unwavering commitment to delivering **technical excellence**, as well as fostering a **culture of innovation** and 'thinking outside the square', the project was

delivered successfully, receiving extensive praise from project stakeholders and the local community.

Stakeholder Engagement

The BVRT T2M project is a shining example of the benefits of **genuine stakeholder engagement**.

The **local community** played an integral role in delivering this project for the Somerset region. Their unwavering effort to harness the community's support to complete the final section of the BVRT, resulting in two petitions to State Government, a social media campaign and regular interactions with Council and the State Government, is acknowledged by all involved in the project.

Council's **proactive stakeholder engagement approach**, which centred around an honest and open dialogue with project funding partners, contractors and supporters, was a key element in its ability to deliver the project successfully on time and within budget.

The project's stakeholders were far reaching and included Federal and State Government departments, Council staff and elected representatives, public utility providers, adjacent land owners, the local Somerset community (residents and businesses), the BVRT community supporters, and all members of the project team.

A key priority for the project was for **Council to engage internally** to generate project support and to identify potential areas of assistance during delivery. Council's Project Manager escorted Councillors out to inspect and explore the trail corridor, with the goal of 'planting the seed' to see what was possible. Internal departmental staff, such as environment, cultural heritage, natural resources, finance and asset management, were consulted to identify potential project issues and mitigation opportunities.

Council's liaison with the **corridor owner**, TMR, was extensive. Onsite field inspections, comprising rail corridor and road staff, occurred regularly in the lead-up to construction, and continued throughout the nine month construction period. Developing strong relationships with TMR resulted in the timely provision of corridor access and road crossing permits.

For the majority of **adjacent land owners**, establishing project support was relatively effortless. Many understood the benefits that the project would deliver to them as neighbours to this world-class recreational trail and the potential for nearby communities such as Esk, Yarraman and Fernvale to benefit from the rail trail were significant.

The **flow-on social and economic benefits** for local residents and property owners were real. The delivery of tourism-related infrastructure, such as the BVRT T2M, can lead to a real increase in new residents and businesses to the area, potentially resulting in

increased demand for land and property prices in the adjacent areas. This was also understood by the project's neighbours.

"I first visited Toogoolawah whilst walking the BVRT in 2016 – I loved the area so much that I sold up in Caboolture and now enjoy living in the Toogoolawah region. The BVRT is a joy to explore and it's been life changing for me and my family." Ron Grant OAM, 75-year old new resident of Toogoolawah, long-distance runner and 1983 Queensland and Australian Sportsman of the Year

However, some adjacent **land owners expressed concerns** about the potential impact of the trail on their property. Some dwellings were located close to the trail and **privacy** was a concern for some. **Biosecurity** was also an issue, particularly relating to contractors and end users of the trail potentially spreading weeds along the corridor and into adjacent properties.

Council identified these issues early. Several meetings were held with land owners concerned about privacy to identify mutually acceptable solutions – as a result **vegetation screenings** were installed at several locations to obscure trail users' views from the corridor into private dwellings.

The entire length of the trail was independently surveyed to identify pre-existing weeds and **weed and pest management strategies** were formulated. Adjacent land owners were communicated with and concerns alleviated once the project team's proactive approach to mitigating these potential impacts was conveyed.

In the short window before construction commenced, land owners needed to be consulted extensively about the way in which they used the existing corridor, if at all. Some areas between the corridor and private land were **fenced** and others were not. Some land owners expressed a desire to keep it unfenced, and later changed their mind once they had discussed the project with other land owners. Fencing was a major risk to the project's program and budget – fencing some of these properties could result in 4km stretches of fencing – timely and expensive to install.

Staging construction was meticulously planned to **minimize impacts to adjacent land owners**. The dormant state of the rail corridor meant it was regularly used to move cattle from one side of the corridor to the other - this required one-on-one consultation with 27 land owners to ensure residents and businesses could still access their properties and work their land. Plus, the construction team would need to traverse private property to access the rail corridor. Access agreements and plans were developed by the project team and presented to land owners for review and feedback before being implemented.

Engaging with these stakeholders, and particularly **confirming the project's requirement to meet their expectations**, was challenging. Commencing this process early was key and having one clear point of contact with Council (the project's Project

Manager) was imperative to keep the dialogue flowing and identifying emerging issues as soon as possible.

The project team had a strong commitment to **‘take stakeholders on the journey’** – project supporters, particularly those involved in the funding petitions, were regular visitors to site. Their interaction with the construction crew and ability to see progress first-hand was beneficial in them providing regular updates to the project’s supporter base. The relationship between the project team and the community was important - the entire team acknowledged that community support was one of the main drivers of the project ever eventuating.

As with infrastructure projects of this nature, a fair effort was required to fulfil regulatory approvals and reporting processes. Both the State and Federal Government’s infrastructure funding arms required regular detailed project reports.

Given the disused state of the corridor, liaison with public utility providers was minimal but nonetheless critical given the tight project timeframe. The majority of the corridor accommodates the main fibre optic telecommunications cable that services the Somerset region. Early and consistent engagement with Telstra was imperative.

Council has **learned from the successes** of the stakeholder engagement process undertaken for this project. A commitment to open, honest and timely communication with all stakeholders, particular funding partners and adjacent land owners, provided Council with the opportunity to deliver the project successfully. It has also given Council the confidence to tackle time poor and challenging infrastructure projects with a positive outlook.

Community and Economic Contribution

It was clear from the outset that completing the final section of the trail would deliver a raft of **community and economic benefits** to the Somerset and broader South-East Queensland community.

By their very nature and location, rail trails are **very effective recreational and tourism drawcards** due the fact that there is existing or easily developed tourism infrastructure in or near townships along the rail trail. There are places to eat, places to stay, nearby destinations to explore.

The best rail trails are located in highly scenic surrounds. The entire length of the BVRT, and particularly the final stretch between Toogoolawah and Moore, features an abundance of **local history**, and **spectacular diverse landscapes** that showcase the Brisbane Valley.

There are also **significant heritage aspects** to the BVRT T2M including the Yimbun Tunnel, a 1910-built, 100 metre long stone tunnel, and original timber bridge structures, which provide a competitive marketing advantage compared to other trails.

Council's research during the project's concept planning and business case phase identified that the \$3.35 million investment in the construction of the final stage of the rail trail would likely **attract socio-economic benefit** to the region that is quantifiable by reference to other rail trails in Australia and New Zealand.

Unemployment and median household income indicators for the Somerset and South Burnett target areas are significantly worse than those for Queensland as a whole. The business case concluded that at five years post construction it is estimated the Brisbane Valley Rail Trail would **increase direct tourism expenditure** in the region by \$1.5 million per annum and as a result improve employment opportunities in the region.

In addition, the Queensland Government has pledged to contribute \$2 million towards maintenance of the rail trail over the first 15 years following construction. The flow-on impacts of this expenditure in the region are expected to be significant. This increase in economic activity is estimated to **support 49 jobs** in the region at the median income level for Queensland.

"Families and youth are a strong focus for our cycling business and we first started visiting the BVRT in 2016. We decided to relocate our business from Brisbane to the Somerset region in 2016 and really enjoy engaging with passionate locals and look forward to rolling out the next stage of Out There Cycling to national and international tourists. We promote the diversity of the BVRT as a safe trail for all users and look forward to seeing the trail grow in the near future." Josie Sheehan, owner of Out There Cycling, based in the Somerset region.

The impact of the Brisbane Valley Rail Trail is expected to become progressively greater at ten and fifteen years post construction due to greater usage rates.

At fifteen years post construction the Brisbane Valley Rail Trail is estimated to increase economic output in the region by \$2.2 million per annum and **support 58 jobs**.

The **positive employment impact** of the rail trail will be significant for the communities of Somerset and South Burnett given that a large proportion of the jobs created would be within the local region. Employment opportunities in regional areas can be limited and the rail trail will provide a well-needed boost to these communities.

Participation in rail trail activities are also delivering many **social, health-related and cultural benefits** to residents of Somerset, South Burnett and other areas. It is envisaged that the participation rate in off-road cycling in South East Queensland will increase with the development of the rail trail. In addition, the trail has the capacity to increase social morale as well as providing health benefits for the local population.

The benefits of the project have been far reaching. While the project's primary task of recycling a dormant transport corridor into a multi-user recreational and tourism asset has been achieved, the community's feedback upon project completion has highlighted that the project is seen by many as **much more than an 'infrastructure project'**.

"This final section is the switch that enables the whole rail trail to light up – established businesses are seeing an influx in business due to increased visitors to the region and new businesses are opening. We've got three major cycling events planned for the second half of 2018 attracting new visitors to the region – it's an exciting time." Paul Heymans, President, Brisbane Valley Rail Trail Users Association and local community activist responsible for the Change.org petition

Economic benefits were also delivered throughout the **construction period**. The on-site construction team ranged from 15 to 25 staff and the majority of goods and services required for project delivery were sourced locally. Supplies from the local quarry, a local concrete batching plant, along with fencing and gates were all sourced locally. A local photographer was engaged to capture construction progress and final delivery of this landmark project for the region.

The **project's successful delivery model** has directly benefited Council in enabling it to have confidence in undertaking high-risk and constrained infrastructure projects.

Council is now a key member of the **BVRT Steering Group**, consisting of the asset owner (TMR) and lessees (Local Government). Planning is underway to establish one body to manage and coordinate the use of and major recreational activities along the trail, and programs to help support local businesses to take advantage of the BVRT are in the pipeline.

Project (business) Sustainability

The design and construction of the BVRT T2M was underpinned by a number of sustainability principles, most notably:

- Council's objective to **deliver excellence** in project management to ensure that decisions made during the concept planning and business case phase of the project resulted in the construction of a community asset with a minimal ongoing maintenance cost to Council, and ultimately the local community as ratepayers.
- A strong commitment by Council's project team to **minimize the cost** of the capital works. Council was proactive in seeking a commitment from the Queensland Government to maintain the corridor and infrastructure asset once complete. Council was successful with the Queensland Government pledging to contribute \$2 million towards maintenance of the rail trail over the first 15 years following construction.

- **Leveraging Council's skill-base** developed during the delivery of major flood mitigation works throughout the region (between 2011 to 2015), and capitalizing on opportunities to **build workforce capacity** and broaden Council staff's skill-base.
- Council's role in **leading the growth and shape of a sustainable** Somerset region for future generations – Council need to lead by example by incorporating sustainable practices through all of its developments and activities.
- Utilising the **natural amenity and celebrating local history** to create an asset that is appropriate to the area, is easy and attractive to access, and is embraced by the local community.

These principles underpinned the project team's commitment to ensure sustainable practices were delivered. Examples of this include:

- Designing a fit-for-purpose, multi-use recreational trail that **delivers long-term benefits** to the Somerset community.
- **Utilising existing and recycled materials** wherever possible during construction. Identifying and utilising the original substructure of the Jimmy's Gully Bridge is demonstrated evidence that this was a key focus of the project team. Remnants of the original rail infrastructure is present throughout the corridor – this not only celebrates the cultural heritage of the area, it adds value to the user's experience and naturally beautifies the infrastructure corridor.
- Ensuring the **design of bridge and crossing structures** resulted in a functional, long-serving and sustainable infrastructure asset.
- The engineering solutions devised for all creek and gully crossings provides the infrastructure with high levels of flood resilience. Time and effort spent on identifying the most appropriate solution for each location **delivered a raft of environmental and sustainability benefits** – crossings align with creek banks to reduce environmental impacts and will limit deterioration over time.
- **All land owner issues were resolved before project completion** - there are no outstanding land owner issues for Council to resolve or tackle in the future. Opportunities to deliver sustainable project outcomes resulting in flow-on benefits to adjacent land owners were explored and delivered as part of the project. Examples of this include:
 - consulting with an adjacent land owner to utilise a small portion of their un-used land for rail trail infrastructure –in-kind works such as driveway improvement works on their property were delivered as part of the project – these new driveway works now facilitate reliable transport deliveries to the property (eg milk tanker, livestock carriers) where they

couldn't before. This has resulted in the land owner's farming practices becoming more sustainable; and

- identifying an opportunity to minimise land impacts on an adjacent property by altering the alignment of the trail – this deviation resulted in the dwelling situated on the property being out of view from the trail, and delivered a more environmentally friendly, and sustainable crossing alignment for Ivory Creek.
- Using **low-cost, low-maintenance native shrubs** that would have a high chance of establishing and require minimal maintenance visits by Council post-construction. Koala-friendly vegetation was also planted – Council is committed to strong sustainable fauna practices in the region that help protect the local Koala population.

The **project management systems** developed and deployed to manage the delivery of this project are being conveyed back to Council's other project delivery teams, thus ensuring continued improvement and the sharing of knowledge.

Regulatory Environment, and Environmental Impact Management

An integral part of Council's role is to maintain and enhance the Somerset region's natural assets, liveability and environmental credentials. The project team were committed to **sustainable practices to meet the environmental needs** of the project and the broader Somerset community.

Environmental investigations were undertaken during the project's concept planning phase which identified a range of issues requiring analysis and management.

The key environmental impacts/issues identified were:

- **Vegetation clearing** - the extent of the vegetation clearing required was unclear upon project inception. However, it was well understood and was visually obvious that it contained 20 years of overgrown weeds and shrubs. Council was certain it did not want to remove any more vegetation than was absolute necessary. Retaining as many medium to large sized trees and shrubs alongside the alignment would minimise environmental disturbance and would provide elements of shade for BVRT users. Pre-clearance surveys were undertaken by an independent provider and determined the extent of the vegetation clearing task and appropriate clearing methods. Copies of the **pre-clearance surveys** and the contractor's Environmental Management Plan were provided to some land owners to successfully alleviate their concerns about the vegetation removal and weed spraying process.

- Protection of private property from **potential weeds and pests** traversed through the site by construction traffic and/or trail users - strict usage guidelines have been developed for trail users which is effectively managing the potential spread of weeds and pests, particularly via horses using the trail. The responsibility of weed and pest management through the corridor resides with the asset owner, TMR.
- Construction **impacts to Ivory, Emu and Wallaby Creeks** (location of the three creek crossings) and to Jimmy's Gully (location of the new bridge structure) – in addition to considering the impacts of installing the new infrastructure, the team needed to ensure the design of the new structures were fit-for-purpose, cost effective, complementary to the aesthetics of the natural environment, maintained water flow and did not negatively impact the area's environmental landscape. Jimmy's Gully is very steep and the project team spent time developing four alternatives to bypass it – the environmental impacts of bypassing the gully would result in considerable scours on the landscape to traverse across the gully. Hence, upgrading the existing bridge structure was identified as the most appropriate solution.
- A considerable amount of energy was invested by the project team to safeguard the **environmental integrity of the area's waterways** - soil types, steepness of the banks, existing rail/bridge infrastructure, anticipated water flows and end-user needs were also considered by the team.
- The removal of vegetation and opening up the corridor for use raised a potential privacy issue for adjacent land owners - as a result **vegetation screening** was installed along several sections of the corridor to shield the view to private dwellings from the road corridor. This vegetation featured native tree and flower plantings that were **appropriate for the local environment** and provided a **suitable habitat for local wildlife**, particularly Koalas. Vegetation included large, medium and small plantings of Eucalyptus, Jacksonia Scoparia (Dogwood), Cassinia Laevis (Cough Bush), Brachychiton Populneus (Kurrajong), and Erythrina Vespertilio (Grey Corkwood).
- Input from cultural heritage stakeholders during the concept planning phase identified the requirement to **protect the culturally significant and heritage** listed **Yimbun Railway Tunnel** - this structure was built in 1910 and is 100m in the length and features local stone. The structure is visually one of the key features of the corridor that all project stakeholders agreed needed to be protected and celebrated. The project team liaised with the Queensland Department of Environment and Heritage Protection to ensure all **cultural heritage regulatory requirements** to preserve this valuable structure had been met. Strict construction processes were identified that were implemented and monitored at all times during the construction process:

- No excavation was to be undertaken in the tunnel with construction machinery.
 - Table drains were to be constructed via the placement of the pavement material in the centre section of the tunnel - the existing drains could not be excavated.
 - Small-sized construction equipment was to be used in the tunnel to place the pavement material. No vibrating rollers used could be used within the tunnel, only static rollers.
 - A spotter was required to be present at all times during the works in the tunnel and the spotter was to have two-way communications with the construction machinery operators at all times.
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- While the remnants of several timber bridges were dotted throughout the rail corridor alignment, the most significant of these was the **Jimmy's Gully Crossing Bridge**. Jimmy's Gully is steep and required a new bridge structure to complete the upgraded trail. Council engaged a specialist bridge engineer to inspect the bridge to determine the condition of the existing timber components. It was identified that the sub-structure (piles) were in reasonable condition, however, the superstructure (the deck) was in very poor condition.

Armed with this information, Council explored opportunities to retain as much of the sub-structure as possible – this would reduce project costs but more importantly, would retain the structure's heritage value. Council liaised with the bridge contractor to determine the best solution to replace the bridge deck to ensure it met a design life of at least 75 years. To minimise the cost of bridge works, the length and height of the existing bridge was slightly reduced – this was possible as the new structure did not need to provide the longitudinal grade for train movements and flood immunity was not an issue.

The result of this effort is the delivery of an upgraded structure that **celebrates the area's cultural heritage**, showcases the original engineering effort and provides an effective crossing of Jimmy's Gully.

Project Management

To ensure the project was successfully delivered within cost, time and budget constraints, **effective and efficient planning and control** of the project's scope, program and budget was essential.

Council invested significant time and effort in considering the **most effective delivery methods** for the construction of the project. Project risks and opportunities were identified early, with a strong emphasis on finding innovative and effective methods to overcome the challenges associated with delivery.

It was evident early that a **collaborative working relationship** would be required by all involved in the construction task – it was front of mind that several design elements, namely the engineering solutions required for the creek and gully crossings, were yet to be fully scoped and confirmed.

The project team established a **management reporting structure** that ensured all governance, probity and reporting requirements were effectively met, both within Council and to State and Federal Government departments.

Council engaged GHD Pty Ltd early to help facilitate project delivery and administer the civil construction contracts. Council involved GHD in the preparation of the contract documentation and they were actively involved in the tender evaluation process.

The **appointment of a single Council Project Manager** from inception to delivery ensured that all components of project management were understood, controlled and effectively managed.

Council's Management Team was first hand listening to the community's requests for action, was responsible for preparing the business case and securing funding from the Commonwealth Government. Council Project Manager then managed all aspects of project delivery, including the construction tender process and daily project management.

From the early planning stages, it was clear to Council that **exceptional project management** skills, underlined by a **strong collaborative approach** by all parties, would be critical to deliver the project.

As the project lifecycle progressed, risks were identified, analysed and managed from both a technical and on-site perspective.

Attention to detail ensured that various engineering disciplines were closely managed to deliver an exceptional recreational infrastructure solution within a constrained footprint and under challenging conditions.

To ensure the project was delivered within cost and time constraints, effective and efficient **program planning and control** was essential.

Project risks and opportunities were identified early, with a strong emphasis on achieving project innovations and sustainable features that would deliver cost benefits and result in an asset that is fit for purpose, value for money and future-proofed to provide long-lasting returns to the community.

Construction pre-start workshops ensured that all expectations about what the team was delivering was clear – **setting clear expectations** about the quality of the end product, but constraints and challenges the team were dealing with was essential.

It is a testament to the successful delivery of the project, entirely by Council, that construction was officially completed on 30 June 2018. This date was reviewed and tracked weekly at the project progress meetings.

Financial procedures and controls were implemented for the project. Whilst Council was clear that no additional funding could be contributed by Council to the project, the directive to the team was clear – **utilise all the funding provided but do not spend one dollar over.**

Any **savings identified were re-invested** by the team to enhance project deliverables. Longer crossings, additional rock treatments and fencing were some of the areas that attracted increased investment due to savings identified elsewhere.

Every decision in the field was made with **cost implications in mind** – the entire project team understood the imperative need to keep costs as low as possible.

Rigorous and regular financial reviews were undertaken by the project team and Council's finance department, to ensure effective control of the project budget at all times. Project progress and financial positioning was **reported monthly** to the Project Manager. Project cash flows were developed and monitored against actual expenditure providing a key indicator on overall project progress versus expenditure.

Effective financial management processes resulted in a tightly controlled and managed budget. This ensured that Council's goal of delivering a value-for-money, high quality infrastructure project was achieved within the project budget.

Effective **logistics planning and control** was crucial to the successful delivery of the project. The appointment of a single Council Project Manager, who saw the project through from detailed design, construction and commissioning, can be attributed to the delivery of the project ahead of time and within budget.

A continual review of project opportunities and challenges, together with effective monthly reporting was integral to the successful completion of the project. Effective and efficient communication across the project team, all contractual parties and with key stakeholders was vital.

Risk management and maintaining the safety of workers and the community was the highest priority for Council's project team. This was reflected in the culture and attitude of the entire project team.

The risks and opportunities identified were continually considered and managed by all levels of the project team, from onsite staff to senior management. One of the major risk factors for the project was the delivery timeframes. Securing contractors, obtaining permits and delivering the project less than 12 months after funding was granted was always going to be a major challenge. A strong commitment by the entire project delivery team ensured that the 30 June 2018 deadline was always front of mind and was

achieved – without compromising safety or the delivery of a high-quality, fit-for-purpose engineering outcome.

Project risks, **OH&S and safety** were standard agenda items at weekly construction meetings. The team was constantly reminded about the need to be proactive in identifying and effectively managing potential risks and issues. Team members were encouraged to turn risks into opportunities and challenges – resulting in an enthusiastic and innovative approach to risk management.

Council's strong commitment to **risk management** while maintaining the **safety** of everyone involved resulted in Zero (0) Lost Time Injuries recorded during the project. Daily toolbox talks were integral in reminding staff of the need to be safety aware. All visitors and sub-contractors were inducted, a process which focussed on Council's commitment to achieving high project performance, and above all else, a safe working environment.

The way in which Council structured the delivery of this project, made possible through its learnings on the major flood mitigation work in the region, and delivered all aspects of construction within the tight nine month construction window, is being celebrated by Council as a major achievement.