

# Rattler Restoration Project Review **Draft**

GYMPIE REGIONAL COUNCIL

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# Contents

1.	EXECUTIVE SUMMARY .....	4
2.	BACKGROUND .....	6
3.	SCOPE OF STUDY .....	9
3.1.	PROJECT OBJECTIVES .....	9
4.	PROJECT ASSESSMENT .....	10
4.1	PROJECT BUSINESS CASE REVIEW .....	10
4.2	PROJECT TECHNICAL AND ENGINEERING SUPPORT .....	16
4.3	CONTRACT PROCUREMENT REVIEW .....	18
4.4	ROLLINGSTOCK CONTRACTUAL WORKS .....	20
4.5	CONTRACT MANAGEMENT .....	22
4.6	PROJECT MANAGEMENT PRINCIPLES .....	24
4.7	TAMPING ACTIVITIES .....	27
4.8	COST AND TIME OVERRUNS .....	29
4.9	CHANGE MANAGEMENT AND GOVERNANCE .....	32
5.	GENERAL .....	35
5.1	LEARNINGS FROM OTHER EXTERNAL PROJECTS .....	35
5.2	INTERNAL PROJECT MANAGEMENT .....	40

Appendix A – Definitions

Appendix B - Sleepers

# 1. Executive Summary

The Mary Valley Heritage Railway (MVHR) or the Mary Valley Rattler as it was known was an icon of the Gympie Region from 1998. In October 2012, after 14 years of operation, the MVHR ceased operation of the Mary Valley Rattler when its accreditation was revoked by the Rail Safety Regulator following two minor derailments.

The Gympie Regional Council (GRC) formed the Rattler Rail Company (RRC) in 2014 to re-establish the business operations and manage the delivery of the locomotive, carriages, and ancillary works with the GRC retaining responsibility for delivering the tracks and bridge structures and station infrastructure. The RRC is also the Rail Infrastructure Manager (RIM) for the Mary Valley Branch Line on which the Mary Valley Rattler operates.

GHD was engaged in February 2013 by the then Department of State Development (DSD) to undertake an Infrastructure Condition and Cost Assessment of the complete railway infrastructure from Old Gympie Station to Imbil (40km). GHD undertook another inspection in October 2015, recommending the corridor be upgraded using a mixture of concrete and steel sleepers at a cost of \$10.6M. A business case was developed in March 2016 by EarthCheck for the DSD. The operating model recommended was for trips from Old Gympie Station to Amamoor (23km). Funding to the value of \$10.8M was provided by the State Government and the GRC.

Rail Futures was engaged to provide a detailed scope of works. It was decided at this time to rehabilitate track utilising timber sleepers in lieu of steel. Tenders for this upgrade were sought, and a contract for the works as then scoped, was awarded to CR Rail in July 2017. This covered track and structures rehabilitation works for a total of \$9.1M, to be delivered by end Nov 2017. A rollingstock contract was awarded to the RRC to the value of \$1.42M (excl GST) with the works to be delivered by 30 November 2017.

Since the commencement of rehabilitation works, the project was subject to the discovery of extensive additional works not previously identified. This was mainly due to all inspections not being detailed enough, due to time constraints in an effort to get the Mary Valley Rattler up and running quickly. The project time and costs increased dramatically with the amount of variations required to make the infrastructure safe for rail operations. As a result only as of 29 August 2018 was a formal set of track and structures certifications (with exception of the Amamoor Turntable Mechanical Certification) provided to the RRC.

Recommendations, based on lessons learnt are summarised as:

1. EarthCheck's business case was primarily a marketing document.
2. There was not sufficient technical and engineering analyses undertaken on the rail infrastructure.
3. The budget analysis was not detailed enough due to a lack of detailed information about the asset condition.
4. Contracts were procured, awarded and managed for the construction / rectification of the track and structures work in a correct and proper manner.
5. The contract between the GRC and RRC for the rollingstock works. were procured, awarded in a correct and proper manner.
6. The key issues with cost and time overruns can be mainly attributed to not enough time being provided to undertake detailed inspection works of the rail infrastructure assets.
7. The project required one single point of contact and responsibility

8. As the project has advanced and further defects were uncovered it seems reasonable that utilising resurfacing to correct geometry defects was appropriate.
9. Overall while there are costs available for the three distinct project groups they are quite dispersed and not being managed in one area thus not enabling a clear picture of the overall projects **final** cost variations.
10. A more robust project management structure with responsibilities need to be established
11. The main theme from lessons learnt from other projects to be successful is clearly understand the scope of works, develop a rigorous business case, identify risks and assumptions.
12. Develop a Project Management Office.

## 2. Background

The Mary Valley Heritage Railway (MVHR) or the Mary Valley Rattler as it was known, was an icon of the Gympie region from 1998. It provided a heritage, steam rail journey experience along the 40 kilometres, scenic Mary Valley rail branch line from the Old Gympie Station to Imbil.

Previously owned and maintained by Queensland Rail (QR), the branch was closed in 1994 to all operations. In 1998, the MVHR commenced operations on the infrastructure and provided a continuous tourist operation and service to the Mary Valley community. The MVHR undertook maintenance of the track infrastructure up to 2012, with some assistance provided from local QR staff, generally on a volunteer basis, and particularly in relation to the old bridge structures.

In October 2012, after 14 years of operation, the MVHR ceased operation of the Mary Valley Rattler when its accreditation was revoked by the Rail Safety Regulator following two minor derailments with respect to rail gauge spreading due to the deterioration of the old timber sleepers.

The indications provided by the Rail Safety Regulator was based on a report prepared by TRAM Engineers & Services Pty Ltd in January 2012, following a track inspection which suggested amongst other items that a minimum of 8,000 sleepers were required immediately to be followed by a further 4,000 sleepers per annum for the following two years.

The Rail Safety Regulators determination highlighted the poor condition of some sections of the heritage track, (originally built in 1914), and the operators' lack of an appropriate maintenance program for both track and rollingstock.

The former LNP State Government indicated \$2.3M of funding to support the project in 2012/13, however the funds did not get transferred to the project.

In February 2013 the then Department of State Development (DSD) commissioned GHD, to undertake an Infrastructure Condition and Cost Assessment of the complete railway infrastructure from *Old Gympie Station to Imbil*, (approximately 40km). The assessment was to determine the extent of the work required to re-commission the MVHR, the anticipated cost and the likely annual cost of maintaining the infrastructure in a satisfactory condition. GHD submitted its draft Infrastructure Condition Assessment Report to DSD in February 2013, and DSD endorsed the final Report on 27 March 2013.

The Gympie Regional Council (GRC) formed the Rattler Rail Company (RRC) in 2014 to re-establish the business operations, and manage the delivery of the locomotives, carriages, and ancillary works. GRC retained responsibility for delivering the rehabilitation of the track, bridge structures and station infrastructure. The RRC is also the Rail Infrastructure Manager (RIM) for the Mary Valley Branch Line on which the Mary Valley Rattler operates.

In May 2015, the State Government confirmed a funding contribution of \$2.6 million for capital works to re-commission the track and repair existing rollingstock, subject to the acceptance of a robust business case.

GHD undertook a further site inspection of the railway from *Old Gympie Station to Imbil (40km)* in September 2015, again commissioned by DSD. The report indicated quite clearly (as did the 2013 Report) that its assessment was based on "a walking visual inspection" only. GHD estimated a total cost for track and corridor remediation of \$7.25M, and a bridges remediation cost of \$1.23M with a +/- 25% level of accuracy. The total base cost estimate of \$8.48M, which equates to \$10.6M with the application of the +25% contingency. The GHD estimate did not include any rehabilitation costs for station buildings, rollingstock works and business start-up.

Based on the GHD report and previous documentation, a Business Case (dated 24 March 2016) was developed EarthCheck for DSD. This included input from the Department of Transport and Main Roads (DTMR), Queensland Rail (QR) and was supported by technical advice from GHD. It appears the reports and business case cost approximately \$300,000, leaving the balance of The State Governments \$2.6M



funding (\$2.3M) available for Rattler infrastructure works. The objective of the business case was not to simply focus on getting the Mary Valley Rattler up and running again, but to address the investment required to establish a sustainable business model.

In February 2017, the State Government through the Works for Queensland program contributed \$4.7M, bringing the project capital funding total to \$7.0M. The GRC engaged Rail Futures at the end of May 2017 to carry out detailed inspections of the track and structures within the Mary Valley Railway corridor between *Old Gympie Station and Amamoor (23km)*. This was completed as of 12 May 2017.

On 3 June 2017, the GRC advertised for tenders separately for Track and Structures Restoration works, which closed on 4 July 2017. CR Rail was awarded both contracts separately for the Track and Structures work, totalling \$9,067,063.50, with a completion date of 21 November 2017.

The Gympie Regional Council (GRC) provided an additional \$3.8M of capital funding on 16 June 2017, bringing the total project funding to \$10.8M, with a target project completion date being December 2017.

During the rehabilitation works the contractor, CR Rail, identified multiple issues that were not highlighted in any of the previous inspections undertaken by TRAM, GHD and Rail Futures.

## Time Line Summary

- 1994 - QR closed the MV branch to all operations.
- 1998 - MVHR commenced tourist operations on the infrastructure
- January 2012 – TRAM Engineers & Services Pty Ltd “Report on the Infrastructure Condition and Serviceability – January 2012”, suggested that a minimum of 8,000 sleepers were required immediately in 2012 and 2013.
- August 2012 – First Rattler train derailment
- September 2012 – Second Rattler train derailment
- October 2012 - MVHR ceased operation of Mary Valley Rattler when its accreditation was revoked
- February 2013 - DSD commissioned GHD to undertake an Infrastructure Condition Assessment & Costs
- March 2013 – GHD Report “Strategies to Recommission the Mary Valley Heritage Railway Infrastructure Condition Assessment and Costs”
- 2014 – The GRC formed the Rattler Rail Company (RRC) to re-establish the operations
- May 2015 - Qld Govt funding of \$2.6M for capital works, reports & business case (minus \$300K)
- September 2015 - DSD commissioned GHD to undertake a second Infrastructure Condition Assessment
- October 2015 – GHD Report “Mary Valley Heritage Railway Engineering and Financial Advice Condition of Infrastructure”
- October 2015 – QR undertook Deck/Ground Inspections of Timber Steel & Concrete Bridges, Grids & Drains
- 24 March 2016 – EarthCheck business case developed
- 21 Feb 2017 - State Government through the Works for Queensland program, confirmed contribution of \$4.7M
- 31 March 2017 - GRC provided letter of acceptance for Rail Futures to carry out a detailed inspection

- 6 April 2017 – GRC and Rail Futures pre-start meeting
- 11 April 2017 – GRC SOW variations: Inspections of Deep Creek rail bridge and 4 road over rail bridges
- 5 May 2017 – GRC contract completion date for Rail Futures work
- 12 May 2017 – Rail Futures delivers SOW for rail line restoration
- 3 June 2017 – Tenders advertised separately for Structures Restoration and Track Restoration
- 16 June 2017 - Gympie Regional Council (GRC) added an additional \$3.8M of funding
- 16 June 2017 – Total capital contribution \$10.8M confirmed
- 28 June 2017 - \$2.3M DSD Funding agreement signed – noting project commencement date as per agreement – 4 April 2017
- 4 July 2017 – Tenders closed for Structures Restoration and Track Restoration work: Recommended tenderer prices were:
  - Track \$5,770,386.05
  - Structures \$3,296,677.45
  - Totalling \$9,067,063.50
- 31 July 2017 – Contract for Structures and Track Restoration let to CR Rail
- 21 Nov 2017 – Original completion date for Track and Structures Restoration works, 15 weeks,
- 26 April 2018 – GRC approval of \$2,353,102.55 for additional sleepers, contract administration, replacement of Crescent Road bridge, tamping allowance, minor variations, building variations and locomotive overrun,
- 27 July 2018 - The bulk package of certifications was provided,
- 29 August 2018 – RRC receives track and structures certifications (with exception of the Amamoor Turntable Mechanical Certification).



## 3. Scope of study

### 3.1. PROJECT OBJECTIVES

The Project Objective was to fully assess the project from the initiation process through to completion and establish why these issues have occurred and what needs to occur to ensure future large and complex projects are delivered as well as possible.

The GRC Statement of Work sought clarification details around the following issues:

1. Provide an assessment of the Project Business case submitted to the GRC for the project.
2. Was sufficient technical, engineering and budget analysis undertaken and appropriate documentation provided to allow the contract for the track and bridges to be tendered and awarded?
3. Review and report how the contracts were procured, awarded and managed for the construction / rectification of the bridge structures and track.
4. Review the basis of the contract between the GRC and RRC for the rolling stock works.
5. Provide some comment as to how this contract was run in accordance with the original contract. Detail whether this contract management contributed to any time or cost overruns.
6. Were the principles of Project Management applied especially around the measurement of progress, payment, risk management, communications, and the employment of suitably qualified & experienced resources ? This is to include works on the Gympie Station site separate to track works and to include both external contractors and council business units.
7. Establish how the tamping activities and budgets were managed. Why were they included in the budget and subsequently not required and are now needed?
8. Identify where the costs & time overruns have occurred and break this down into
  - Locomotive & Carriages
  - Track & Structures
  - Café, retail, stations and ancillary items.
9. Establish how information around change was escalated and communicated to the Council and other delegated authorities to brief them on changes to time and cost.

#### **General**

In providing this information, GRC seeks examples from other Councils who have run major capital projects (over \$15M) and how these succeeded or failed, and what learning's can be taken from these external examples.

In the assessment, does GRC have the necessary project management structure and level of experience and qualified staff to manage projects of similar value and complexity.

#### **Project Deliverables**

GRC requires a detailed report assessing the 9 areas of concern outlined above.

## 4. Project Assessment

### 4.1 PROJECT BUSINESS CASE REVIEW

***Provide an assessment of the Project Business case submitted to the GRC for the Project.***

#### **Business Case Acceptance**

In May 2015, the Queensland Government confirmed a funding contribution of \$2.6M for capital works to recommission the track and repair existing rollingstock, subject to the development and acceptance of a robust business case. (Reference: EarthCheck business case, Executive Summary, Objective page 3).

A business case was prepared by EarthCheck and submitted on 24 March 2016 to DSD for acceptance. Advice from the EarthCheck documents states that it, “was prepared in close consultation with the RRC, MVHR and GRC, and was also supported by technical advice provided by GHD (the government’s independent industry consultant), Department of Transport and Main Roads (DTMR), Queensland Rail (QR), and the Department of State Development (DSD)”.

The EarthCheck business case was centred on the investment required to re-establish rail operations, but also to establish a sustainable commercial business model into the future. Three possible solutions being investigated, specifically:

- Option 1: Trips from Gympie to Amamoor,
- Option 2: Trips from Gympie to Monkland, and
- Option 3: Termination of the Valley Rattler.

The operating model in the business case deviates from the original DSD requirement of re-establishing 40km of heritage rail operations from Old Gympie Station to Imbil, to a reduced project length of 23km from Old Gympie Station to Amamoor.

EarthCheck’s business case stated, “*Initial investigations confirmed that re-establishing the track from Old Gympie Station to Imbil would be cost prohibitive, and following discussions with all stakeholders, it was decided the key objective should be to focus on a solution to re-establish operations of the Valley Rattler to Amamoor*”.

This is supported by the 2015 GHD Report wherein it states, “It was quickly realised that repair of the track to open the full MVHR in one stage is cost prohibitive”. There has been no discoverable documentation that formally states this acceptance by the DSD, other than the DSD’s acceptance of the 2015 GHD Report and the EarthCheck business case and the fact that GHD personnel were accompanied on the first day of their 2015 inspection by members of DSD and Rail Safety Unit (Department of Transport and Main Roads).

The business case does not provide advice of the document status or version control, name of any author, reviewer and more importantly the name of the Approver for issue. There was no supporting documentation that demonstrates that the EarthCheck business case was formally accepted and signed off by the projects end-client namely GRC and RRC.

However, from conversations with RRC and GRC it appears that both entities did work closely with EarthCheck to help formulate the document in a more informal process. GRC did confirm that there was no formal acceptance of the EarthCheck business case. However based on the work put into the project, GRC advised, “*they had no reason not to accept it as DSD had spent \$300,000 and 2-3 years on the project*”. A Council report dated 4 May 2016, did make reference to the EarthCheck business case with the preferred operational model being to run trains from Old Gympie Station to Amamoor.

The project required a \$10.8M, (Business Case states \$10.6M), upfront investment and more importantly the proposal to utilise concrete or steel sleepers (not timber) which significantly reduced the ongoing maintenance costs and associated with timber sleepers.

From this it is reasonable to assume that DSD, GRC and RRC accepted EarthCheck's proposed operating model to run heritage train services from Old Gympie Station to Amamoor rehabilitating the rail corridor with either concrete or steel sleepers.

## Capital Costs

EarthCheck's business case stated, "As a key input to business model preparation, it was essential to identify and quantify all capital and operating costs."

Figures used in calculations were sourced from multiple reports to help form the most accurate picture of the first 10 years including:

- The GHD Infrastructure Condition Assessment and Costs (GHD, 2013; GHD, 2015),
- Economic Value Assessment (EarthCheck, 2014) - Not sighted,
- Business Case (Rattler Rail Company, 2015; Rattler Railway Company, 2014) - Not sighted,
- Analysis of the Proposed RRC Business Plan (Linqage, 2014) - Not sighted,
- Draft Plan for Sustainable Operations (Linqage, 2014) - Not sighted.

Immediate and ongoing capital expenses include the following items:

- Track
- Bridges
- Rollingstock
- Boiler depreciation
- Land and infrastructure
- Buildings.

There are capital costs for the rehabilitation of track, corridor and bridge works but no capital costs estimates that allowed for the upgrade of station buildings, facilities and platforms, workshops, rollingstock refurbishment, project management, general contact administration and business start-up costs over the length of the contract.

The EarthCheck business case did mention that it was estimated that approximately \$785,000 of refurbishment works was required for a locomotive, which was suggested as being best undertaken by QR. It is assumed that this locomotive, C17 No.967, once the refurbishment was complete would be leased back to the RRC as it is understood this locomotive is a GRC asset.

Three heritage carriages also belonged to QR and would be refurbished at QR's expense and leased back to the RRC, no doubt covered as an operating expense. The five remaining heritage carriages were owned variously by the RRC and private individuals. Refurbishment works for these carriages was estimated to be approximately \$50,000 for materials and utilising volunteer labour. The boiler in the locomotive was expected to have a service life of 35 years. Future maintenance costs for rollingstock were estimated to be \$50,000 pa in addition to boiler depreciation of \$28,000 pa. (Reference: EarthCheck business case Section 1.3.2 Rollingstock page 10).

From the business case, Option 1: Old Gympie Station to Amamoor, was detailed as follows:

- \$10.6M - utilising Concrete & Steel sleepers, reduced ongoing maintenance costs,
- \$10.3M - utilising steel sleepers, reduced ongoing maintenance costs,
- \$7.25M - utilising timber sleepers, significantly higher ongoing maintenance costs.

The EarthCheck business case advised that although the preferred option was to utilise steel sleepers it did have a high upfront cost. Timber sleepers had a lower capital cost to start up operations, however the \$7.25M timber option presented greater ongoing maintenance costs for the business and was considered too great a risk.

From the above quoted estimates for the different sleeper options, it is difficult to understand in the business case what was exactly included in the estimate of works. Table 1 below outlines data from the 2015 GHD Report, which includes a mixture of concrete and steel sleepers from Old Gympie Station to Imbil, not Amamoor.

**Table 1 Track Section and Repair Costs Old Gympie Station to Imbil**

Section	Length km	Track Costs	Bridge Costs
Gympie to Monkland	4	\$2.00M – Major Contractor <sup>1,2</sup>	\$0.229M – Major Contractor
Monkland to Dagun	16	\$2.40M – Volunteer <sup>3,4</sup>	\$0.386M - Volunteer
Dagun to Amamoor	3	\$0.45M – Volunteer <sup>3,4</sup>	\$0.282M - Volunteer
Amamoor to Kandanga	6	\$0.90M – Volunteer <sup>3,4</sup>	\$0.139M - Volunteer
Kandanga to Imbil	10	\$1.50M – Volunteer <sup>3,4</sup>	\$0.193M- Volunteer
<b>Sub Totals</b>	<b>39</b>	<b>\$7.250M</b>	<b>\$1.229M</b>
25% Contingency		\$1.813M	\$0.307M
<b>Totals</b>		<b>\$9.063M</b>	<b>\$1.536M</b>
<b>Grand Total</b>	<b>39</b>	<b>\$10.599M say \$10.6M</b>	

Notes:

#1 – Major contractor, is \$500,000 / km which includes concrete sleepers at \$450,000 / km, (i.e. \$300 / concrete sleeper installed x 1,500 slps / km = \$450,000 / km); it also includes \$50,000 / km for Other Corridor works – drainage, vegetation control and possibly level crossing costs.

#2 – Corridor Works only for Gympie – Monkland included that would enable this section to be reopened. Work to other sections would be then gradually completed by cheaper volunteer work force.

#3 – Assume 1,500 steel sleepers / km @ \$100 each, Volunteer labour is free, therefore \$150,000 / km.

#4 - Excludes \$50,000 / km for Other Corridor works – drainage, vegetation control and possibly level crossing costs

The EarthCheck business case advised that, “the complete capital expenses required to bring the operation to working order from Old Gympie Station to Amamoor is listed at approximately \$10.3M utilising only steel sleepers”. (Reference: EarthCheck business case, Section 2.3 Capital Costs page 18). There are no tables or appendices included within the business case to qualify these costs and how they were derived.

As such, the EarthCheck operating model recommended Option1 - Trips from Old Gympie Station to Amamoor. This was also RRC’s preferred solution as it had considerable support within the local community, who had a strong desire to eventually see the Mary Valley Rattler run the entire track to Imbil.

The rehabilitation costs however were still requiring a full upfront capital investment of \$10.6M, which again was the same capital cost that GHD estimated for rehabilitating the track from Old Gympie Station to Imbil, some 17km longer.

Utilising the costs from Table 1, the capital costs to re-establish the 23km of track from Old Gympie Station to Amamoor would be approximately \$7.162M, as estimated in Table 2 below. Further details with respect to a Program of Works and Section Repair Costs are contained in Appendix B – Sleepers.

**Table 2 Track Section and Repair Costs: Gympie to Amamoor**

Section	Length km	Track Costs	Bridge Costs
Gympie to Monkland	4	\$2.00M – Major Contractor <sup>1,2</sup>	\$0.229M – Major Contractor
Monkland to Dagon	16	\$2.40M – Volunteer <sup>3,4</sup>	\$0.386M - Volunteer
Dagon to Amamoor	3	\$0.45M – Volunteer <sup>3,4</sup>	\$0.282M - Volunteer
<b>Sub Totals</b>	<b>23</b>	<b>\$4.850M</b>	<b>\$0.897M</b>
25% Contingency		\$1.213M	\$0.225M
<b>Totals</b>		<b>\$6.063M</b>	<b>\$1.122M</b>
<b>Grand Total</b>	<b>23</b>	<b>\$7.185M</b>	

Notes: As per Table 1.

Given the EarthCheck business case was accepted by DSD, RRC and GRC it is assumed all stakeholders agreed to the original \$10.6M estimate for rehabilitation costs from Old Gympie Station to Imbil being allocated 100% to the shorter 23km section to Amamoor; however there have been no discoverable documents to confirm this.

In order to become a tourist attraction the railway needed to provide a day out for families including a destination that provided adequate facilities. The 2015 GHD Report provided several alternative cost scenarios of providing a railway from Old Gympie Station to Amamoor including full re-sleeper and 1 in 4 steel sleeper options utilising different labour sources. This information was not listed in the EarthCheck business case, as it simply focused on the 3 options utilising steel sleepers as the cheapest solution in the long term.

### General Comments

Essentially the business model required by the RRC was to re-establish rail operations for a heritage railway which means the use of a steam locomotive and not simply the use of a rail motor. It is this basic requirement that somehow was overlooked by GHD when formulating operating options.

The EarthCheck business case in part was moreover a marketing document, with little documentation substantiating the capital costs for the preferred and more practical option to get the MVHR up and running quickly. As such, EarthCheck simply accepted GHD's proposal to adopt the option of steel sleepers because it simply created a cash flow positive operating model based on track infrastructure with the lowest ongoing maintenance cost.

Some of the pros and cons of utilising steel sleepers were not adequately identified. These issues ranged from what the main aim of using steel sleepers was for (maintain gauge) in the first place, installing a lower cost option of second hand sleepers, specific installation requirements, the type of ballast required and future maintenance issues.

**Key issues identified by this review are as follows:**

- It appears that the inspection undertaken by GHD in March 2013 and September 2015 were only visual walking inspections. This level of inspection for a rail infrastructure upgrade project, would be unlikely to be detailed enough to provide a reasonable estimate for re-commissioning the MVHR.
- The GHD Reports didn't refer to any particular railway standard being used as a benchmark for work requirements.
- The rehabilitation costs from the 2013 GHD Report was for the full 40km from Old Gympie Station to Imbil, and was estimated to be \$2,401,500 itemising only sleepers, drainage, vegetation control and weed control.
- No allowance was made for a detailed review of structures, level crossings, rollingstock repairs nor any essential refurbishment costs for these. This included no allowance for assessing and addressing any requirements to meet disability access compliance provisions.
- The 2013 GHD Report allowed \$978,500 p.a. for on-going maintenance costs, which included a very minimal \$20,000 pa for bridge transom replacement.
- The GRC had good cause to believe the 2015 GHD Report was a reasonable estimate of the condition of the MVHR, as GRC had no expertise in railway asset management, and given GHD were DSD's independent industry consultant, GRC had no cause to question the findings.
- The EarthCheck business case focused mainly on the options to get the Mary Valley Rattler up and running again, and focussed the required investment to establish a sustainable business model on 3 solutions.
- EarthCheck's investigations did establish that the investment in revitalising the Mary Valley Rattler from Old Gympie Station to Amamoor was the recommended option, as it provided a greater value for money day out for families.
- The EarthCheck recommendation did come after initial investigations confirmed that rehabilitating the track from Old Gympie Station to Imbil would be cost prohibitive, and following discussions with all stakeholders, it was decided the key objective should be to focus on a solution to re-establish operations of the Mary Valley Rattler to Amamoor.
- The EarthCheck business case did not detail any analysis undertaken on the infrastructure options detailed in the 2013 GHD Report; but focused more on market assessments with respect to the viability of operations.
- EarthCheck built their business case on the technical support provided not only by GHD, but DTMR, QR and DSD.
- The track condition from Old Gympie Station to Monkland (3.8km) was in especially poor condition and it was suggested that it be completely replaced, (Reference: EarthCheck Business Case page 9 of 52 Section 1.3.1.1)
- The business case stated that the complete rehabilitation from Old Gympie Station to Amamoor was estimated to take approximately 12 months.
- The CR Rail tender estimated it could deliver the project within 15 weeks (Tender award 31 July 2017 with a completion date 21 Nov 2017). This should have been rigorously questioned if this was an achievable target set by CR Rail.
- The business case created a cash positive operating model for Old Gympie Station to Amamoor where the base infrastructure had the lowest ongoing maintenance utilising steel sleepers. (Reference: EarthCheck Business Case page 32 of 52 Section 3, 8<sup>th</sup> dot point).
- Appendix B – Replacement and remediation of the track and bridges (Reference: EarthCheck business case page 35 of 52):

- Sleepers – patching the sleepers for either section is not an option given the current state of the track,
- Replacing the entire section with steel sleepers would ensure long-term viability of the track and full operational capacity.
- Timber v's Steel sleepers
  - Although steel is the preferred option for sleepers, it has a high up-front cost,
  - Timber replacement could be done for a lower start-up cost to get the operations going; but in turn boasts greater annual maintenance cost and reliance on ongoing volunteer labour.
- The 2013 GHD Report stated, “The railway is provided with timber sleepers throughout and at this point it is intended to continue using timber”. (Reference: 2013 GHD Report, page 42 of 58, section 3.2.1 Sleepers), in contrast to the 2015 GHD Report.
- The 2015 GHD Report stated, “*It is our opinion that the track needs to be reconstructed with either steel or concrete sleepers throughout to secure the track provides a life of between 40 to 50 years before sleeper replacement*”. (Reference: 2015 GHD Report, Executive Summary).

## MY CONCLUSIONS

- EarthCheck’s business case was primarily a marketing document.
- Adoption of a final scope with various options – GHD / Business case, was not clear.
- It appears there was no logical linear path from GHD’s early inspections to the EarthCheck’s business case to the Rail Futures scope of work.
- Some of the pros and cons utilising steel sleepers were not clearly identified.
- A requirement to get up and running quickly, reduced the timeframe to develop a detailed project scope of works.
- Visual walking inspections undertaken by GHD was unlikely to be detailed enough to provide a reasonable estimate for rehabilitation and re-commissioning the MVHR.
- There wasn’t sufficient time provided for a detailed technical, engineering and budget analysis to be undertaken.
- The Scope of Works was not definitive enough on the type of sleepers required.
- The Scope of Works under estimated what was specified, and translated to a blow-out of costs and time.



## 4.2 PROJECT TECHNICAL AND ENGINEERING SUPPORT

### ***Was sufficient technical, engineering and budget analysis undertaken and appropriate documentation provided to allow the contract for the track and bridges to be tendered and awarded?***

Technical and engineering advice was provided over the period from January 2012 up to the present date. These included GHD, DTMR, QR, Rail Futures, Projex Partners, Instrada and more recently the Agonis Group. The Agonis Group is an infrastructure services organisation, with the goal to simply “*lift the standard*” in how projects are both developed and delivered.

However, the engagement of various parties to provide technical and engineering advice other than GHD, does not appear to have added value to the project. The issue here is that GHD was independent and not conflicted, as it was not being contracted to undertake further work on the project, nor was it intending to bid for such work.

Of particular note though is the time frame constraints imposed at the project assessment and scoping stage, presumably in the need to respond to State Government funding submission timelines. There was insufficient time provided to undertake detailed condition inspections, or to facilitate the engagement of technical specialists to provide a greater depth of information about the condition of specific assets.

Both GHD and Rail Futures were not provided sufficient time to undertake detailed inspections of the rail assets, and as such, this qualification was clearly identified within their reports that were provided to the GRC.

The 2013 and 2015 GHD Reports did confirm that “*These inspections were only visual walking inspections between Old Gympie Station and Imbil (40km)*”. These inspections only took 3 to 4 days each time, certainly not enough time to undertake a detail review of the rail infrastructure.

Rail Futures was also engaged to undertake detailed inspections of the track and structures between Old Gympie Station and Amamoor (23km), and to deliver a Scope of Works (SOW) within a 6 week timeframe. Rail Futures did confirm that the inspections of track and structures were not detailed inspections due to the limited timeframes and, in some cases were due to blocked access or dense vegetation growth. Rail Futures also stated that “*Overriding factors and time, access and vegetation coverage, and the general degraded state of the infrastructure, restricted the ability to undertake full detailed inspections*”.

Both these comments from GHD early in the project, and again similar comments from Rail Futures later in the project, should have raised concerns within GRC as to the actual level of detail or lack of detail in the scope of work, and the amount of contingency that needed to be applied to cover the unknown risks.

It isn't clear if GRC requested any additional advice on any engineering and technical issues from GHD, as an independent consultant through the course of the project. It is however understood that GRC did make a decision on advice from Rail Futures, supported by QR Track Masters to move away from the EarthCheck business cases recommendation to utilise steel sleepers, reverting to timber sleepers, even though the option was considered a higher risk. Unfortunately there is no formal documentation to substantiate this decision, but it is understood that GRC's CEO was briefed prior to this decision being made by GRC officers.

Given the GRC decision to rehabilitate the Mary Valley Rattler track infrastructure with timber sleepers, contrary to EarthCheck business case recommended option and advice from GHD to use concrete and steel sleepers, DSD should have been advised of this departure and of the corresponding reasons why this decision was made.

The GRC Contracts Manager has confirmed that he was not provided with a full copy of the EarthCheck business case and was only provided with a copy of Appendices A, B and C; Strategies to Recommission the Mary Valley Heritage Railway (GHD 2013), Deck Ground Inspections of Timber Steel & Concrete Bridges Grids and Drains (QR, 2015) and Mary Valley Railway Cost Estimates to Resume Services respectively.

It is a major concern that the GRC Contracts Manager was not provided with a complete copy of the relevant documentation prior to decisions being made on the scope of works.

The tender documentation for track and structures work was compiled within 3 weeks and was drafted by Rail Futures. The GRC Contracts Manager had only 3 days to review and incorporate the Rail Futures documents into the correct formatted volumes and parts for the tender documentation. This left little opportunity to alter any documentation.

Coupled within this tight timeframe the Civil Infrastructure Manuals for both Track and Structures needed to be completed and the GRC Contracts Manager undertook this task as well. The development of the Civil Infrastructure Manuals should have been undertaken by the RRC as the responsible Rail Infrastructure Manager (RIM) and not the GRC.

Given the information above, there wasn't sufficient time provided for a detailed technical, engineering and budget analysis to be undertaken. As such, the appropriate documentation provided was likely to be lacking to allow the contract for the track and structures to be tendered and awarded, without incurring cost and time overruns within the project.

## MY CONCLUSIONS

- There was not sufficient technical and engineering analyses undertaken on the rail infrastructure.
- The budget analysis was not detailed enough due to a lack of detailed information about the asset condition.
- The GRC or RRC should have engaged an engineer / project manager with rail experience to help manage the project.
- The GRC did not utilise the rail expertise from GHD that was available as the DSD's independent rail industry consultant.
- Key documents were not provided to key personnel.
- Projex Partners was a positive key element in managing the track and structures contract alongside the GRC Contracts Manager.
- The development of the Civil Infrastructure Manuals should have been undertaken by the RRC as the responsible Rail Infrastructure Manager (RIM) and not the GRC.

## 4.3 CONTRACT PROCUREMENT REVIEW

### ***Review and report how the contracts were procured, awarded and managed for the construction / rectification of the bridge structures and track.***

The GRC contracted Rail Futures on 31 March 2017 to undertake:

- Detailed engineering inspection of:
  - Track to determine spacing for all sleeper replacements
  - Bridges and structures
- Identification / confirmation of general earthworks required including slip/washout reinstatement and re-establishment of drainage lines to ensure longevity of sleepers.

Rail Futures was provided with a number of reports for consideration as listed below; but this did not include the latest 2015 GHD Report.

- Strategies to Recommission the Mary Valley Heritage Railway (GHD 2013),
- Deck Ground Inspections of Timber Steel & Concrete Bridges Grids and Drains (QR, 2015) and
- Mary Valley Railway Cost Estimates to Resume Services.

On the 12 May 2017, Rail Futures delivered a scope of works document to the GRC to enable the development of tender documents for the rail line restoration, specifically for track and structures.

An external consultancy Projex Partners was contracted to assist with contract administration of the two main rail contracts for track and structures restoration works. The basic requirements of Projex Partners role were to undertake the following:

- Contract meeting agendas & reports,
- Fortnightly contract progress reports,
- Monthly contract progress reports,
- Variation & EoT registers,
- Variation price assessment and
- Progress Certificates for both these contracts.

Projex Partners was commissioned to prepare a Tender Evaluation Plan (TEP), assemble a Tender Assessment Panel (TAP) to undertake an assessment of tenders received against the nominated assessment criteria and associated weightings. These were specified in the tender documents to allow the ranking of tenders for consideration by GRC in determining a successful tenderer for the project.

The Tender Package, RFT2016-2017-T026 related to the restoration of approximately 23km of track of the Mary Valley Rattler Railway. The restoration of defects was also identified in 2016-2017-Q072 Mary Valley Rattler – Rail Line Restoration, Track and Structure Inspections and Reporting document included as an attachment with the request for tender.

Tenders were advertised on the Queensland Government' tendering website (QTender) on 3 June 2017 Tenders closed at 2:00pm on 4 July 2017.

The tender assessment was prepared by Projex Partners and was based on the tender documentation provided by the GRC. The assessment was guided by an evaluation methodology accepted by GRC prior to tendering. The tender assessment was completed independently of input by GRC and the tenderers themselves. All post tender correspondence and TAP meetings were conducted under the supervision of a Probity Advisor.

Five tenders were received, with the tenderers comprising John Holland, CR Rail, Abergeldie, JWB and Rail Futures.

No procurement process documentation has been provided by GRC for review. However based on the level of detail provided by GRC, and considering the level of information and due diligence undertaken by Projex Partners in reviewing all tenders for the restoration works for track and structures, it is assumed that GRC did follow an ethical process for awarding the contract. The Tender Assessment Report (TAR) undertaken by Projex Partners is considered to be very detailed and thorough.

Projex Partners identified multiple discrepancies in the tenders received, and qualified them with Request For Information (RFI) being sent to the respective tenderers. One tender was found to be abnormally high and therefore not considered any further. Compliance checking was also undertaken with only one tender found to be compliant. All other tenders were found to have fatal non-compliances, and were not able to be considered further.

GRC provided a monthly project report from Projex Partners titled, "2016-2017-T025 & 2016-2017-T026 Monthly Progress Report 011 for June: Mary Valley Heritage Railway – Structures Restoration and Track Restoration", during the finalisation of this review. (Initial requests for project monthly reports indicated that the Reports were not available.)

Given the June 2018 monthly report is 181 pages long it has not been reviewed in detail. However the sections within the document are comprehensive and included reporting on the following aspects:

- Site Summary
- Project Summary
- Financials
- Variations
- Documentation
- Quality Management
- Safety
- Environmental Management
  - Non-Conformances
  - Audits, Cultural Heritage
  - Environmental issues, &
  - Environmental Permits and Licences
- Contract progress
- Contract Administration Services
- Appendices:
  - Current Construction Progress
  - Project Registers
    - Defects
    - Non-conformances
    - Extension of Claims
    - Variations
    - Outgoing Correspondence
    - Audits
    - Design Review Request &
    - Contract Notices
  - Site Surveillance Reports.

The only item that seems to be excluded from the Projex Partners monthly report was the inclusion of an up-to-date Risk Register.

## MY CONCLUSIONS

- It is my opinion that the contracts were procured, awarded and managed for the construction /

rectification of the track and structures work in a correct and proper manner.

- Projex Partners were very detailed in their tender review identifying multiple discrepancies in the tenders received and followed due process.

#### 4.4 ROLLINGSTOCK CONTRACTUAL WORKS

##### ***Review the basis of the contract between the GRC and RRC for the rollingstock works.***

Part of the Mary Valley Rattler rehabilitation project related to works to refurbish and upgrade rollingstock including a number of carriages and steam locomotive C17 No.967.

With funding for the rehabilitation of the Mary Valley Rattler fully secured, an Ordinary GRC Committee meeting held on 29 March 2017, resolved to award a contract for the restoration of heritage rollingstock (Contract 2016-2017-T019) to the RRC to the value of \$1.42M (excluding GST). Works were to be delivered by 30 November 2017 in accordance with the schedule of works provided by RRC.

Given this and the need to follow a due process for procurement requirements, GRC proposed to enter into an arrangement directly with RRC to facilitate the rollingstock works. The awarding of a contract for expenditure of this amount for services or works by GRC was required by legislation to advertise for this work via public tender.

However, the Local Government Regulation 2012 Section 6 'Contracting' Part 3, Division 2, Section 235 'Other exceptions' states that: "A local government may enter into a large-sized contractual arrangement (> \$220,000 GST Inclusive) without first inviting written quotes or tenders if:

- (a) The local government resolves it is satisfied that there is only one supplier who is reasonably available; and/or
- (b) The Local Government resolves that, because of the specialised and confidential nature of the services that are sought, it would be impractical or disadvantageous for the local government to invite quotes or tenders.

It is not unusual for entities to request special considerations for a contract to negate the need for a public tender and be awarded to others based on a specialised skill set, confidential nature or service to be supplied, previous experience, financial savings, be impractical or disadvantageous for the local government to invite quotes or tenders and restricted project timeframes. In this case, GRC's resolution for approval under Section 235 was more than reasonable and are as listed below:

- Existing and capable staff, management, workshop services and infrastructure currently exist and are in place under the provision of RRC,
- An extensive volunteer service network is provided by RRC that covers key locations and sites that is unique in nature and cost efficiency not available elsewhere,
- Through RRC facilitation of this project, key employment and economic opportunities and growth in the region are maximised, and
- Project time constraints.

Due diligence checks were observed and procedures established to control the flow of funds from GRC to RRC via an overseeing GRC Project Officer with regular reporting to GRC.

Contract documents were prepared and executed for works to commence, based on a "services based" contract and a schedule of agreed outcomes which met the time constraints of the funding provided to GRC. There were a large range of components within the project which were subject to a normal tendering process in line with general GRC requirements.

A quotation and cost estimate was provided by RRC for the restoration of rollingstock including a breakdown of the works. The quotation supplied by RRC also included a range of contingency costs, ranging up to and including 30% on the selected sub-categories of works.

To manage this risk, a clause was included in the contract to the extent that all contingency claims that fall within this clause were only to be considered if:

- The Contractor was to bring this consideration for variation to the attention of GRC's Project Officer within 7 days,
- The case for contingency and variation was provided in writing to GRC's Project Officer, and
- GRC's Project Officer had the right to reject a claim if it fell outside the scope of the contract.

The Procurement Section of GRC provided ongoing support through access to common use contract arrangements, including inventory and stock, contract rates of supplies, and access to pre-approved suppliers during and after the handover date of 30 November 2017.

#### MY CONCLUSIONS

- It is my opinion that the contracts contract between the GRC and RRC for the rollingstock works. were procured, awarded in a correct and proper manner.
- Management of this contract was not undertaken with the same rigour that was applied to the track and structures work and should have been managed in the same way.

## 4.5 CONTRACT MANAGEMENT

**Provide some comment as to how this contract was run in accordance with the original contract. Detail whether this contract management contributed to any time or cost overruns**

From the information provided by GRC it seems the key issues with cost and time overruns can be mainly attributed to not enough time being provided initially to GHD and Rail Futures to undertake detailed inspection works of the rail infrastructure assets.

As mention in Section 4.2, both GHD and Rail Futures were not provided sufficient time to undertake detailed inspections of the rail assets at the critical scoping stage, and as such comments were quite clearly listed within their respective reports that were provided to GRC.

The 15 week time frame that CR Rail proposed with their tender was unachievable. The EarthCheck business case advised of a suggested 12 month period to complete the proposed works. A check of the other 4 tenderers would have provided a benchmark of timeframes to understand if a 15 week timeframe was reasonable. Given that the tenders were let at the end of July 2017 and the Rattler Restoration works have only recently been completed, a 12 month timeframe seemed more appropriate.

It has been mention in discussions with the GRC that the timeframe for the State Government's funding contribution of \$4.7M via the *Works for Queensland* program wherein projects were to be completed by December 2017 could have had an influence on the short 15 week timeframe. However there was no evidence sighted to support this position.

The 2015 GHD Report (Reference: page 1), "*Discussions on the ownership of railway assets delayed any rehabilitation program and the Department (DSD) asked GHD to undertake a further inspection as part of this submission to determine the level of works now required*". While GRC contract management did not delay the project, the time delay from when operations ceased in October 2012 until now has contributed to a significant deterioration of timber sleepers and no doubt the bridge structures, which weren't subject to a detailed investigation until later in the project.

When GRC engaged Rail Futures to develop a scope of works back in March 2017, it overlooked the inclusion of works required for the Deep Creek rail bridge and four road overpasses. A variation was provided to Rail Futures on 11 April 2017 to include these additional works in scope. Whilst this initial oversight did not materially affect the contract with CR Rail, it would have compounded the timeframe that Rail Futures had to deliver a detailed scope of works document.

As advised in Section 4.2, a major concern was that GRC Contracts Manager and Rail Futures were not provided with the 2015 GHD Report. More time could have been taken initially with the tender documentation for track and structures works. This information was compiled in 3 weeks and only provided the GRC Contracts Manager with 3 days to review and incorporate the documents into tender documents.

The recently discovered monthly report from Projex Partners is very detailed and it would be expected that any delays and cost overruns would be detailed within their reports. It also appears that the contract works for rollingstock, station building and amenities were not subjected to the same contractual management process provided by Projex Partners for track and structures work. If this had occurred a much clearer picture would have been provided for timeframe and cost overruns for the whole project.

Overall the issue that has compounded the project with delays is the fact that the initial inspections and thus estimations were not detailed enough for a project of this size, and especially with an asset of a heritage nature with infrastructure essentially built in 1914. This lack of adequate inspections issue covers all aspects of the project, and is not only limited to track and structures work.



## MY CONCLUSIONS

- The key issues with cost and time overruns can be mainly attributed to not enough time being provided to undertake detailed inspection works of the rail infrastructure assets.
- The recently discovered monthly report from Projex Partners is very detailed. Any delays and cost overruns is detailed within this report.
- A full review of the Projex Partners most recent report is yet to be undertaken to understand final costs.
- The initial inspections and thus estimations were not detailed enough for a project of this size, and nature.
- A 15 week timeframe to deliver all the contracted works for track and structures in my opinion was grossly underestimated.

## 4.6 PROJECT MANAGEMENT PRINCIPLES

***Were the principles of Project Management applied especially around the measurement of progress, payment, risk management, communications, and the employment of suitably qualified & experienced resources? This to include works on the Gympie Station site separate to track works and to include both external contractors and council business units.***

Project management principles that GRC could align with can be found in the Project Management Book of Knowledge (PMBOK). It was also identified in part with respect to the governance of a project from the Queensland Governments, Department of Main Roads, which detailed the following:

A project is a temporary endeavour to create a unique product or service. Temporary means that every project has a definite beginning and a definite end. Unique means that the product or service is different in some distinguishing way from all other products or service.

Projects are undertaken at all levels of the organisation and can involve a single person or many hundreds of people. The duration can range from a few weeks to several years. Project Management is the application of knowledge, skills and experience to achieve the project objectives. Projects produce predetermined deliverables, often within a changeable time frame and budget. They require significant resource planning and management effort which warrants a structured management approach and set of management tools and techniques as set out in the framework, which expresses the following seven principles.

### Project Management Principles

- Both customer and team must be committed to the project,
- Measures of success must be pre-determined,
- Planning — first plan, then do,
- Single point of responsibility,,
- Procedures must be established before work commences
- Trade-off — scope, time, cost and quality must be mutually consistent and attainable, and
- Management must provide an informed and supportive environment.

This can be further defined by five phases of project management including:

- Concept / initiation,
- Planning,
- Execution,
- Performance / monitoring and
- Project closure.

After interviewing various GRC employees including the Mayor and CEO there is no doubt that they are all committed 100% to the Mary Valley Rattler project. Their measure of success is no less than the Valley Rattler becoming operational again and being economically viable into the future.

Since the closure of the Mary Valley Rattler back in October 2012 there have been many reviews and inspections of the rail corridor assets. Unfortunately as previously mentioned there was a lack of detailed inspections in the planning phase, that did not produce an accurate scope of works. It's unfortunate that

when undertaking a restoration project of any kind that there will be certain areas where you simply may not be able to undertake detailed inspections without removing specific base materials.

This issue was evident in some of the steel bridges such as Crescent Road Rail Bridge, 130 years old and constructed in 1887. Reports advised that upon closer inspection after water blasting key components of a steel structure, it identified further significant defects. *“It was evident that this bridge had been in a very bad condition for quite some time, with the defects masked by the extent of the corrosion, protective coatings and difficulties in accessing to inspect the key locations”.*

GRC provided a copy of the project structure, however it was not clear who the project manager was as a specific point of contact and responsible for project decisions on a day to day basis. There was a Project Co-ordinator working across all infrastructure works and a General Manager Operations. These people worked across 10 work management areas, 7 and 3 respectively and reported to a Project Control Group (PCG).

Essentially there were three main groups of work, Building & Stations, Track & Structure and Rollingstock all being managed separately. The Mary Valley Rattler Project structure detailed a Project Co-ordinator, this position was not however the main project manager responsible for all works and the main conduit to the PCG. This position also does not manage the Rollingstock component as that was managed separately by the General Manager Operations from RRC.

Any major project decisions involving significant cost variations impacting the project timeframe needed to be referred to the PCG for further instructions and clearly documented as such. It should also be noted that the people managing the work directly and signing off on work completed for payment had little or no rail experience whatsoever.

There were no major documented procedures provided for review as part of any project controls or financial payment. It is assumed that work was verified by the responsible manager before payment, similar to the process that Projex Partners employed. A good example of this is in the management of variations wherein every variation should be documented, costed including impacts on project timeframes, risks and consequences detailed, other options provided (if any) and a recommendation.

This process was not followed by CR Rail with respect to the installation of an additional 400 sleepers, and as such was simply billed to the project. This issue was picked up, verified and subsequently the quantity negotiated down to 300 additional sleepers, with the cost of the remaining 100 incurred by CR Rail.

Projex Partners provided a detailed construction programme contained in Appendix A. for the Track and Structures works. A simple graph of current progress against the original plan could be contained within the summary documentation similar to their financial tracking graphs (pages 19 & 20) rather than the Project Planner graph provided on page 3 of the monthly report. Overall these graphs are more than adequate and as described previously, the Projex Partners monthly report was very detailed, possibly too detailed for the GRC's upper management to review.

With respect to the other works for stations, rollingstock and the like, no information was provided for review or comment on. It would have been appropriate to have Projex Partners manage these works to the same level of detail to provide consistency through the project, rather than silos of information in various formats. It is understood however that due to time constraints, work on the stations etc commenced before having a clear scope of works.

Several risk management documents were provided and are listed below:

- Mary Valley Rattler Key Risk Area Management Plan (5 risks identified),
- GRC – Risk Management Plan,
- GRC – Enterprise Risk Management Policy, and
- GRC – Risk Management Policy.

While these documents set up the Risk Management Framework it is not a specific project risk register which is a very dynamic and live document being continually updated by the project manager or a specific project management officer (PMO) as required.

With 3 separate projects under the one banner of the Mary Valley Rattler project, each of these sub-projects should be managing their own risk register, with the main project manager managing this overall.

No information has been made available in respect of project communications, with the exception of the Projex Partners' documentation, therefore no comments are able to be provided.

It should be said that none of the GRC employees had rail maintenance or rail management experience. In hindsight, GRC or RRC who is the actual RIM should have an accredited RPEQ with rail experience as a full time employee or at least contracted over the term of the Mary Valley Rattler project. GRC staff involved seem to have reasonable project management experience given the projects they currently manage on behalf of GRC; but overall seem to have very little understanding of Asset Management.

From an asset management point of view, effective asset management is about managing the overall asset lifecycle through coherent planning and management control. GRC would benefit by undertaking asset management training.

## MY CONCLUSIONS

- The project required one single point of contact and responsibility.
- The use of project management principles aligned to PMBOK was varied across the project.
- A consistent Variations register was required for all 3 areas of work - Building & Stations, Track & Structures and Rollingstock.
- A Risk Register was required for all 3 areas of work.
- Measures of progress was only detailed in the monthly report provided by Projex Partners.
- No details were provided on the progress of payments or communications in a wider sense to the community.
- Minimal information was available of the employment of suitably qualified & experienced resources.
- There is a need to understand future Life Cycle Costs and develop Asset Management Plans.

## 4.7 TAMPING ACTIVITIES

### **Establish how the tamping activities and budgets were managed. Why were they included in the budget and subsequently not required and are now needed?**

In the 2013 GHD Report it advised that the ballast structure was inspected. It advised that the majority of the line appeared to have been originally constructed without graded crushed rock, as the material appeared to be a mixture of earth, locomotive ash, and sand. Some areas appeared to have some ballast, but on further inspection, found this to be only a superficial layer and at a depth of no more than 50mm.

In areas where the MVHR had undertaken sleeper replacement it appeared that a single size stone of 20mm was used to pack sleepers but with a wash of material through the ballast this simply formed an earth stone mix.

In general GHD advised that the lack of a full ballast layer did not seem to detract from the performance of the railway, as most of the alignment was found to be within the alignment of maintenance standards defined in QR Civil Engineering Standards and credit was due to the MVHR to have maintained the track within an acceptable standard.

No further comments were made in the 2013 GHD Report as to whether new ballast was required as part of the rehabilitation requirements, however at that time GHD was proposing to utilise timber sleepers.

The 2015 GHD Report then changed tack and recommended the use of either concrete or steel sleepers for the rehabilitation works, providing a lower future lifecycle cost. The report did state that, *"When the steel sleepers are inserted into the location of the existing timber sleepers there will be a large void surrounding the sleepers. It is advised that a small portable stone blower be used to fill the surrounding void with coarse sand rather than attempting to pack the void by hand tools. As the steel sleeper profiles consist of a hollow body the stone blower would ensure the void under the sleeper is filled to provide a firm support"*. (Reference: 2015 GHD Report, page 18).

From the correspondence received to date it appears that the GRC Contracts Manager managing the Track and Structures contract did not receive a copy of the 2015 GHD Report.

Resurfacing or tamping works were not part of the original scope of works specified in the tender documents. It is understood CR Rail proposed resurfacing as an additional option to achieve an improved end product. It was not proposed as nor consider to be an essential component of work at the time of tendering nor award of contract.

The contractor CR Rail and the project team became aware of the need for some resurfacing as each party reached an improved understanding of the requirements of RRC's Civil Infrastructure Maintenance Manual with respect to compliance with the specified geometric tolerances. As such, the project and contractor teams worked cooperatively with Agonis Group (RRC's Technical Advisor - Track) to mutually agree a methodology to achieve the specified geometric outcomes to satisfy the requirements of RRC's Civil Infrastructure Maintenance Manual – Track. This cost requirement has been managed within the provisional sum allocated for resurfacing.

A summary of resurfacing works IN and OUT of scope is listed below:

- ◆ IN - as per award optional sum,
- ◆ OUT - based on advice from CR Rail as to the potential to further damage the track,
- ◆ IN - based on the necessity to correct identified geometric defects,
- ◆ OUT - based on advice from Aurizon who were to provide the tamping machine and ballast regulator, and

- ◆ IN - based on advice from Aurizon and CR Rail that spot resurfacing with excavators and crews would deliver the required outcomes with respect to correction of geometric defects – consistent with similar advice provided by QR Track Masters.

## MY CONCLUSIONS

- While the above series of events is frustrating as to resurfacing requirements, as the project has advanced and further defects were uncovered it seems reasonable that utilising resurfacing to correct geometry defects was appropriate.
- There was no formal correspondence in the form of agreed variations In or Out detailing the specific reasons why resurfacing works was required / or not, other than contract instructions confirming the agreed outcomes.

## 4.8 COST AND TIME OVERRUNS

**Identify where the costs & time overruns have occurred and break this down into**

- **Locomotive & Carriages**
- **Track & Structures**
- **Café, Retail, Stations and Ancillary items.**

Given the three main groups of work, Building & Stations, Track & Structures and Rollingstock were all being managed separately, it is difficult to get a clear picture of cost overruns without a formal variation register for each project group.

Projex Partners in its monthly project report, provided a detailed variations register for Track and Structures work which is summarised as follows:

**Track Contract 2016-2017-T026:** From 28 Aug 2017 to 22 Mar 2018

Variation Amount \$46,683.67 (excl GST); Variation Amount \$51,352.04 (incl GST)

Additional Cost Exposure:

Variation Amount \$410,000 (excl GST); Variation Amount \$451,000 (incl GST)

Total Variation Amount \$456,683.67 (excl GST); Variation Amount \$502,352.04 (incl GST)

**Structures Contract 2016-2017-T025:** From 28 Sep 2017 to 12 Jun 2018

Variation Amount \$2,283,800.18 (excl GST); Variation Amount \$2,512,180.20 (incl GST)

**Track and Structures Variations Total** (as of 12 Jun 2018)

Variation Amount \$2,740,483.85 (excl GST); Variation Amount \$3,014,532.24 (incl GST)

The GRC Contracts Manager has advised that the current variations outstanding are still to be agreed, and includes the following:

- Additional ballast (required during tamping),
- Additional sleepers,
- Drainage line at Lagoon Pocket,
- Clearing of the track and
- NDT testing.

This provides for an additional exposure total of approximately \$750,000 (excl GST) which includes the provisional item of tamping at \$350,000, and an additional 1,380 sleepers required to rectify the cluster defects valued at \$350,000.

A variation claim to the Rollingstock restoration scope of works dated 7 July 2017 from Peter Blashki General Manager Rattler Railway Company Limited, provided a revised quotation totalling \$1,420,035 (excl GST) of which \$1,268,800 is for RRC Steam Locomotive C17 967. The balance of \$151,235 for other rollingstock works and staff costs. The original cost estimate from the RRC was \$830,704, an increase of \$589,331 or 71%.

The EarthCheck business case detailed in Appendix C - Old Gympie Station, it advised that while the buildings were generally sound, age and deferred maintenance had taken their toll and would require attention prior to recommencing services.



Items requiring immediate repair (as provided by GRC) are listed below:

- Compliant car parking space for disabled persons,
- Fully compliant disabled access ramp,
- Replacement of two existing sets of steps providing principal points of entry,
- Upgrades to non-compliant disabled toilet facility and an approved path,
- Upgrades to uneven and deteriorated surfaces on the main platforms,
- Installation of threshold ramps at any doorway required to be accessible to a disabled person,
- Tactile indicators and approved signage alerting users to ramps, steps, uneven surfaces and the like,
- Remediate structural damage by termites to awnings over the railway platforms,
- Compliant and sealed travel path between the station and the workshop,
- Repair of workshop roof previously damaged by fire,
- Installation of barriers to prevent falls onto the track,
- Upgrades to portable ramp used to convey disabled persons into the carriages,
- Installation of emergency lighting and illuminated exit signs where public has access,
- Provision of appropriate amount of portable fire extinguishers,
- Plumbing compliance,
- Potential to upgrade service pits in the workshop to connect to oil separation equipment and connection to storm water systems,
- Ensure 1,000 bulk oil container has bunding and tanks are covered properly, and
- A major renovation would be required for commercial food handling activities, including a complete strip out and re-fit to current construction standards.

There was no further mention in the EarthCheck business case of additional works to be undertaken at Monkland, Dagon, or Amamoor. An estimate of refurbishment and upgrading (Compliance for all corridor buildings) totalled \$500,000.

Once a Station and Building project manager was assigned to manage the refurbishments an additional \$250,000 allowance for Amamoor station was identified to develop a platform and car parking. Minimal money was spent at Amamoor painting the building, building a compliant access ramp, a 60m platform and some landscaping. Total spend approx. \$200,000, a saving of \$50,000.

It was also identified that Dagon station required paint and some platform works, replacing retaining sleepers and coping sleepers at a cost of approximately \$30,000.

At Monkland rehabilitation works replaced a length of retaining and coping sleepers to accommodate the Silver Bullet, costing approximately \$10,000.

Old Gympie Station had a refit to develop a functioning café, accessible toilet, compliant access ramp, car parking, volunteer training room, air conditioning, tactile platform markers and a full repaint to contain flaking lead based paint. Funds were spent on the Workshop replacing the asbestos roof sheeting, an oil separator and a number of safety modifications, totalling \$800,000.

On top of all this additional work was a requirement to increase the contract value for Contract 2016-2017-T017A | Mary Valley Heritage Railway – Contract Administration Services from \$180,204.45 (excl GST),

\$198,224.90 (incl GST) to \$390,850.05 (excl GST), or \$429,935.06 (incl GST) which was duly endorsed by the GRC.

## MY CONCLUSIONS

- Overall while there are costs available for the three distinct project groups they are quite dispersed and not being managed in one area thus not enabling a clear picture of the overall projects final cost variations.
- The variation register information should be detailed as part of the project managers Post Implementation Review & Project Closure Report which is due in mid-September 2018.
- More detailed comments on cost and time overruns can be commented on once the most current Projex Partners monthly report has been provided for Track and Structures work.
- More detailed information on costs needs to be provided by the GRC for Locomotives & Carriages and Café, Retail, Stations and Ancillary Items for an opinion to be provided.

## 4.9 CHANGE MANAGEMENT AND GOVERNANCE

### ***Establish how information around change was escalated and communicated to the Council and other delegated authorities to brief them on changes to time and cost.***

There was no formal documented process discovered to understand how change management was to occur. There was however regular formal meetings with the CEO to keep him up to date with changes to the project from key project personnel.

Projex Partners provided a very detailed monthly report to the GRC's Contracts Manager for Track and Structures work. There was however no discoverable documents for the Building and Stations or Rollingstock works.

The Office of the CEO did have formal documentation provided to other members of GRC, wherein updates were provided. It is assumed that they are called Ordinary In Committee Meeting Minutes which advised the background of the project, status of the project, any major variations, policy complications, consultation required, a conclusion and recommendations. It is not understood if these meetings occur on a regular or more ad hoc basis.

Not having a single project manager responsible for all three groups was a fundamental error in the project management process of the Mary Valley Rattler project. If this would have occurred it would have provided a greater and more consistent approach from all three groups in order to manage the project goals and outcomes. It is also not understood how often project managers met with the PCG or other stakeholders.

The GRC did provide a Stakeholder structure document which listed the associated stakeholders being QR, the Rail Safety Regulator, DTMR, Community Groups, DSD, and MVHR. It is not clear what format of reporting was provided to these stakeholders as the GRC has provided no information on this.

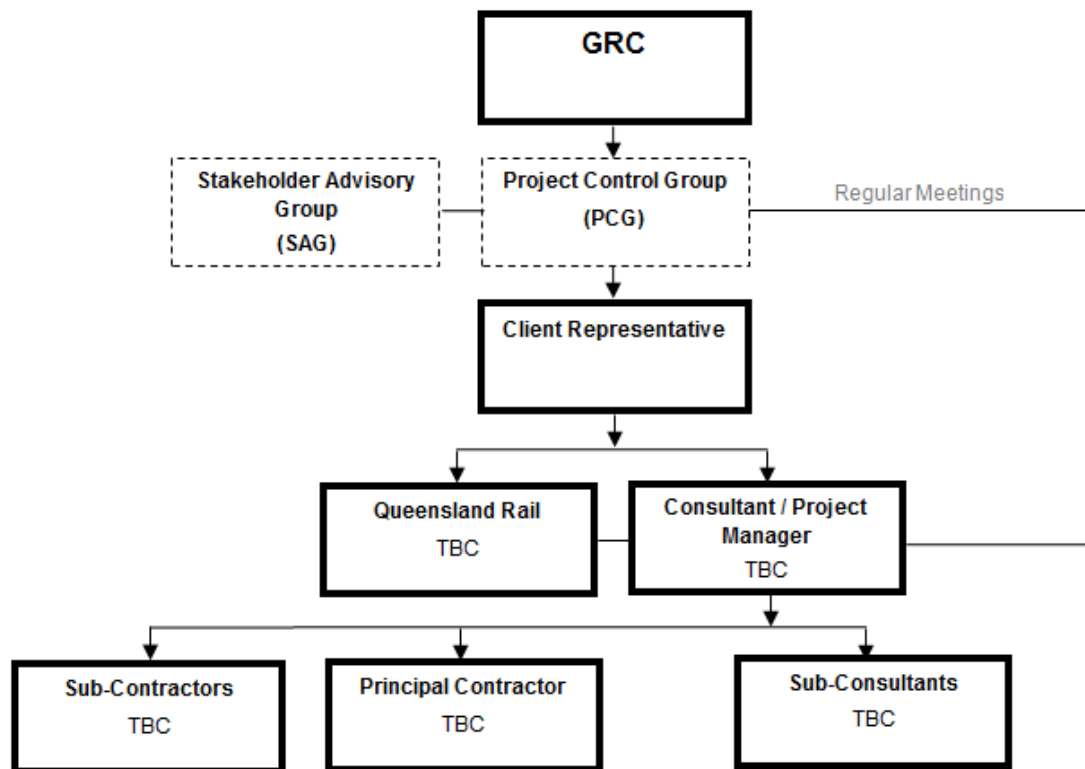
A clear project management structure needed to be established for the project management and delivery of the Mary Valley Rattler project. Here GRC would be the client responsible for the appointment of a consultant reporting directly to the Project Control group (PCG) and the Client's Representative.

Ideally the Consultant / Project Manager would have specific experience in the design, documentation and project management of community facilities in a Local Government environment, together with significant experience in engineering consultancy services relating to railways, managing specialist sub-consultants, and working with a PCG and a Stakeholder Advisor Group (SAG). See Figure 1 Project Management Organisational.

As part of a project management snapshot or overview generally:

- GRC would provide a building surveyor and a construction certifier for the project,
- The Consulting Project Management services would be responsible for coordination of the building contractors and building surveyor. The GRC would also nominate a client representative,
- The Consulting Project Management services would report to the GRC, nominated representative, attend regular meetings as directed by GRC,
- The Consultant would also allow for regular meetings with the PCG and a broader community consultation,

- The Consulting Project Management services would provide monthly status reporting throughout the project duration to GRC and nominated representative,
- The Consulting Project Management services would engage and manage all sub-consultants,
- The Consultant would be the single point of contact and responsible for all project coordination issues,
- The Consulting Project Management services would be responsible for the preparation of all tender documentation and management of the tender process as the GRC's representative,
- The Consulting Project Management services would administer and execute all relevant Australian Standards construction contracts, and
- The Consulting Project Management services would act as the superintendent under the contract as required for project delivery.



**Figure 1: Project management organisation**

## MY CONCLUSIONS

- A more robust project management structure with responsibilities need to be established.
- There was no formal documented process discovered to understand how change management was to occur.
- The RRC as the RIM needed to be more involved in the development of scope of works, delivery and

maintenance.

- Projex Partners provided very detailed information in their monthly report and managed the variations more than adequately.
- A single project manager as point of contact for the project was required.

## 5. General

### 5.1 LEARNINGS FROM OTHER EXTERNAL PROJECTS

***In providing this information, GRC seeks examples from other Councils who have run major capital projects (over \$15M) and how these succeeded or failed, and what learning's can be taken from these external examples.***

It is difficult to set a monetary threshold for what constitutes a 'major project' for local government, given the range in size and capability of Councils in Australia. As a general guide, a project with a capital value of \$10 million or more may be regarded as a major project.

The planning and delivery of a major infrastructure project requires a significant investment of time and resources. A realistic timetable for developing a project is critical to managing the expectations of stakeholders. The time invested in upfront planning and project development activities can minimise the risk of costly mistakes and delays. Table 3 provides an indicative timetable for the planning stages of the project up to contract award. However, it is important to note that the particular timeline of a project will differ for a wide variety of reasons.

**Table 3: Project Planning Timeline**

Project Life Cycle Stage	Approximate Duration
Strategic assessment - process of identifying, validating and scoping a project	1 - 3 months
Business case	2 - 6 months
Project development	4 - 8 months
Tender process	3 - 6 months

Here are just some of the most common causes of project failure:

- Poorly defined project scope,
- Inadequate risk management, and
- Failure to identify key assumptions.

#### **Example 1: Project Learnings from the Victorian Department of Transport**

A 2010 audit examined how well the Victorian Department of Transport (VDoT) had managed recent rail projects.

Effective management means:

- Deciding whether a project should proceed and how it should be procured based on a sound understanding of the costs, benefits and risks,
- Managing risks to deliver the intended benefits on time and within budget, and
- Using the experience to better manage future projects.

Previous Victoria Auditor General's Office (VAGO) rail audits found that the department had not effectively managed:

- The feasibility work because it under estimated the costs, overestimated the benefits and inadequately assessed the risk,
- The projects' delivery because its response to emerging risks was inadequate, and
- The outcomes because there were cost and time overruns and, in two cases, it did not deliver the benefits as projected.

## Conclusion

- Improvements to the VDoT's project development processes mean there is greater assurance that major projects are appropriately justified and provide value-for-money,
- The VDoT should strengthen the work that underpins final business cases and improve the quality of these documents so they provide adequate assurance that projects, if endorsed, are ready for implementation, and
- The VDoT is still unable to reliably demonstrate how well projects realise their intended benefits.

## Findings

The use of business cases and structured reviews to check their content have been positive steps forward,

The VDoT needs to build on this foundation to further improve the quality of the business case documentation and the reliability of the information underpinning this. In particular the department needs to improve the following:

- Rigour of the analysis of the costs, benefits and risks supporting the business case recommendation,
- Level of assurance provided in support of deciding to use project alliances, and
- Comprehensiveness of the business case and procurement documentation.

The VDoT's improved management of project risks during delivery has been reflected in better performance against planned time lines and approved budgets. The three completed projects had met the required time frames and two had delivered within their approved budgets.

However, the VDoT was not able to demonstrate how well projects have realised their intended benefits. It also does not consistently document and apply the lessons learnt from past projects.

## Recommendations

1. Better analyse, substantiate and document the investment need, project objectives, cost estimates, risk assessments, critical success factors and measures of project benefits,
2. Improve the scope and rigour of project cost estimates and risk assessments,
3. Strengthen quality assurance and improve the documentation of the cost-benefit analyses.
4. Clearly document procurement decisions and their supporting information,
5. When considering project alliances:
  - a. compare the risk-weighted costs of alternative procurement options, including the estimated direct procurement costs,
  - b. independently review the procurement decisions.
6. Apply outcomes realisation plans and post-implementation reviews for the projects examined in this audit and other rail projects completed after the department mandated these in November 2009.

## Example 2: Queensland Health – Government of Queensland – Australia

Project type : Payroll (ERP)



Synopsis : In an effort to save costs, the Queensland Government initiated a “shared services” program in 2003. The program aimed to centralize, standardize and integrate the management of basic HR functions across all government departments. Due to the urgent need to replace legacy payroll systems in the Queensland Health (QH) authority, systems used by QH became the initial focus of the program.

Contributing factors as reported that lead to project failure:

- Lack of planning and failure to put in place a robust tendering process,
- Unclear roles and responsibilities and a weak governance structure,
- Failure to engage stakeholders effectively,
- Tensions between government departments,
- Failure to clean up complex business processes prior to implementing new system,
- Requirements management and alignment of the project to business needs,
- Poorly design team structure (main integrator was 6 layers down the org chart),
- Poorly managed cut-over and lack of communications and training,
- Go-live decision made despite high defect counts (in fact severity definitions were apparently downgraded part way through the project to allow the project to proceed despite serious problems being present), and
- Lack of risk management and contingency planning.

## **Two Examples of Tools to Help with Project Management:**

### **Example 1: Queensland Government’s Department of Treasury Project Assessment Framework – Policy Overview 2015**

This policy overview document provides information on the Project Assessment Framework’s (PAF) application and its alignment with certain Queensland Government legislation, standards, frameworks, policies and guidelines including the National PPP Guidelines. The PAF suite of documents is designed to be read in conjunction with this policy overview.

The PAF provides tools and techniques to assess projects throughout the project lifecycle and is not limited to infrastructure projects or public private partnership (PPP) projects. The PAF defines the lifecycle of a project to include:

- Strategic assessment of service requirement (what is the need?),
- Preliminary evaluation (development and assessment of options),
- Business case development (detailed assessment of options and option recommendation),
- Supply strategy development,
- Source supplier/s
- Establish service capability,
- Deliver service, and
- Benefits realisation.

The PAF document provides a more detailed summary of each stage. Assessment tools and techniques include, but are not limited to, the following:

- option definition and analysis
- cost estimate development
- scenario and sensitivity analysis
- cost benefit analysis
- risk analysis
- funding and financing model assessment

- delivery model assessment
- market sounding
- public interest assessment.

In addition to dedicated guidance material on each lifecycle stage, the PAF suite of documents also includes supplementary guidance material on Cost-benefit analysis and Alliance establishment and management. Queensland public private partnership supporting guidelines and Guidelines for the assessment of market-led proposals are also available.

### Example 2: Why do most major projects fail and what can we do about it? Analysing research on major projects

Another day, another project over budget, over time or failing to deliver the expected outcomes. The Forrest Highway in WA and the Hunter Expressway in NSW both cost over five times the initial forecasted amounts<sup>1</sup>.

Major projects fall short across all domains, whether it be technology, infrastructure, resources or mergers and acquisitions. Suggested ‘failure’ rates for major projects typically vary between 50 and 90 percent<sup>2</sup>.

Success appears to be the exception to the rule, particularly for bigger and more complex projects. Research suggests that we have made little to no improvements over the years. What are the main causes for project failure and what can we do about it? Might we be more successful if we looked at major projects differently? A review of research (see Table 4) suggests an array of causes for project failure

**Table 4 Causes and remedies for project failure**

Category	Causes	Remedies
External context	<ul style="list-style-type: none"> <li>• Market conditions</li> <li>• Material/labour cost</li> <li>• Demand uncertainty</li> <li>• Currency fluctuations</li> <li>• Unforeseen events</li> </ul>	<ul style="list-style-type: none"> <li>• Sensitivity analysis</li> <li>• Long term contracts</li> <li>• Hedging</li> <li>• Insure against selected events</li> <li>• Avoid projects with significant external risk</li> </ul>
Project characteristics	<ul style="list-style-type: none"> <li>• Project complexity</li> <li>• Scope clarity or changes</li> <li>• Non-standard design</li> <li>• Length of implementation phase</li> <li>• Inefficient procurement practices, contract types/ ambiguity, or poor documentation</li> <li>• Rework</li> </ul>	<ul style="list-style-type: none"> <li>• Simplify or modularize the project</li> <li>• Flexible development models</li> <li>• Design reviews, checks, verifications</li> <li>• Shift from competitive tendering processes</li> <li>• Organizational learning</li> <li>• Understand contract terms and claim causes</li> <li>• Integrated knowledge management systems</li> <li>• Measure and prevent rework</li> </ul>
Technology	<ul style="list-style-type: none"> <li>• Technological uncertainty, or technical difficulties</li> <li>• Non-standard technology</li> <li>• New technology</li> <li>• Unexpected geological features</li> <li>• Ground conditions</li> </ul>	<ul style="list-style-type: none"> <li>• Front-end loading (i.e. detailed design/ planning during the earliest stages of a project)</li> <li>• Pilot projects</li> <li>• Adequate sampling</li> <li>• Technical skill acquisition across team</li> <li>• Future proofing</li> </ul>
Psychological	<ul style="list-style-type: none"> <li>• Delusion</li> </ul>	<ul style="list-style-type: none"> <li>• Comprehensive, rigorous decision process</li> </ul>

(cognitive) bias	<ul style="list-style-type: none"> <li>• Planning fallacy (over optimism)</li> <li>• Anchoring and adjustment</li> <li>• Hubris</li> <li>• Sensitivity analysis for overly narrow ranges</li> </ul>	<ul style="list-style-type: none"> <li>• Reference Class Forecasting and bias uplift</li> <li>• Good learning environment</li> <li>• Independent Peer or Expert Review</li> <li>• Broader range for sensitivity analysis, and probable outcome range (not single point)</li> </ul>
Political and economic factors	<ul style="list-style-type: none"> <li>• Deception</li> <li>• Misaligned interests</li> <li>• Corruption or foul play</li> <li>• Promoter “postpone” appearance of cost during project construction</li> <li>• Overprice scope increases</li> <li>• Pressure from politics, superiors or other organizational pressures</li> <li>• Misrepresentation may help obtain funding</li> <li>• Premature announcement</li> <li>• Failure of professional ethics</li> <li>• Tendering method</li> <li>• Different risk profile</li> <li>• Different time horizons</li> <li>• Asymmetric accountability or information</li> </ul>	<ul style="list-style-type: none"> <li>• Accountability, incl. criminal penalty</li> <li>• Transparency, (e.g. incentives for planners to disclose project information and assumptions; public hearings and presentations of forecasts to community)</li> <li>• Governance structures &amp; procedures (e.g. strict audits of costs and benefits)</li> <li>• Alignment of incentives (e.g. proposing and approving institutions share financial responsibility; private financiers participate with own capital at risk; no sovereign guarantee; contractors share pain for delays and scope; incentives for planners and bidders for forecasting accuracy)</li> <li>• Alliance contracting</li> <li>• Shared purpose statement</li> <li>• Interest-based negotiation</li> </ul>
Leadership	<ul style="list-style-type: none"> <li>• Poor relationship management/ communication</li> <li>• Managerial incompetence</li> <li>• Overestimation of ability and control</li> <li>• Lack of learning/ feedback from previous projects</li> <li>• Cultural differences<sup>1</sup></li> <li>• Misaligned organizational structures</li> </ul>	<ul style="list-style-type: none"> <li>• Stakeholder alignment &amp; collaborative engagement</li> <li>• Early non-adversarial communication and genuine dialogue</li> <li>• Select, retain and develop project leaders.</li> <li>• Courage</li> <li>• Organizational learning and feedback mechanisms</li> <li>• Flow of information/ interface management</li> <li>• Organizational structure redesign</li> </ul>

Sources:<sup>1</sup> Marion Terrill, Grattan Institute (2016), Cost overruns in transport infrastructure.

## 5.2 INTERNAL PROJECT MANAGEMENT

***In the external auditors assessment, does GRC have the necessary project management structure and level of experience and qualified staff to manage projects of similar value and complexity.***

As part of the GRC's project management structure I would suggest that a Director or General Manager – Projects be considered as part of a future structure. The GRC would benefit from a project management office (PMO) structure that standardises the project related governance processes and facilitates the sharing of resources, methodologies, tools, and techniques.

As previously discussed what was lacking in the Mary Valley Rattler project was one clearly identified project manager responsible for managing all the sub-projects underneath.

Accompanying this structure should be a good but simplistic project management framework. The framework should basically utilise a combination of standard processes, tasks, and tools that are used to transition a project from start to finish. Project Management Principles and a further five phases of project management was included in Section 4.6. The Queensland Government's Department of Treasury Project Assessment Framework – Policy Overview 2015 provides a good basic foundation to build on.

GRC staff that have provided input do have good project management skills but they needed a good project management framework to work with. None had rail experience which was required to manage a project of this type. No doubt working in their own environment on council business they would manage complex projects very successfully as they would be topics they are very familiar with.

Given the complex nature of the Mary Valley Rattler project the GRC staff tasked to make the project a success did a good job coming from a low rail knowledge base and used all their skills to achieve a very successful project outcome.

### MY CONCLUSIONS

- The main theme from lessons learnt from other projects to be successful is clearly understand the scope of works, develop a rigorous business case, identify risks and assumptions.
- Develop a Project Management Office.
- Develop a good project structure and identify individual responsibilities.

## Appendix A: DEFINITIONS

Terms, abbreviations and acronyms	Meaning
GRC	Gympie Regional Council
RRC	Rattler Railway Company Limited
MVHR	Mary Valley Heritage Railway
DTMR	Department of Transport and Main Roads
QR	Queensland Rail
DSD	Department of State Development
GHD	DSD's independent rail industry consultant
MVRCH	Mary Valley Railway Community Holdings Limited
DDA	Disability Discrimination Act 1992
RIM	Rail Infrastructure Manager
SAG	Stakeholder Advisor Group
PCG	Project Control Group
VAGO	Victorian Auditor General's Office
VDoT	Victorian Department of Transport
TEP	Tender Evaluation Plan
TAP	Tender Assessment Plan
TAR	Tender Assessment Report
RFI	Request for Information
PMBOK	Project Management Book of Knowledge



## APPENDIX B: Sleepers

The business case did qualify that the use of steel sleepers would help with the longevity of the track and had significant improvement on the life span when compared to timber sleepers. While timber sleepers had a more attractive lower start-up cost, the continuous maintenance and sleeper replacement was likely to impose future cash flow restrictions.

The 2015 GHD report estimated that the total costs to re-establish the rail corridor between *Old Gympie Station and Imbil* was \$10.6M which included track, corridor and bridge work with a ±25% accuracy. This total was made up of track costs of \$7.25M, bridge costs of \$1.229M, totalling \$8.479M, adding on a 25% contingency provided a total of \$10.6M. (Reference: GHD 2015 Report, Executive Summary, Table 1, Track Section and Repair Costs page i). The GHD estimate did not include any rehabilitation costs for station buildings and rollingstock works.

**Table B-1 Program of Works** (Data referenced from the GHD 2015 Report, Table 4, page 22)

Options	Length (Km)	Cost per kilometre	Sleeper Type	Total	Timescale <sup>7</sup>	Operations <sup>8</sup>
<b>Full Resleeper (100%)</b>						
<i>Gympie to Monkland</i> Contractor total resleeper	4	\$500,000 <sup>1 &amp; 2</sup>	Concrete	\$2,000,000	2 weeks	Locomotive and railmotor
<i>Monkland to Amamoor</i> Resleeper by volunteers with equipment	19	\$150,000 <sup>3</sup>	Steel	\$2,850,000	36 months	Locomotive and railmotor
<b>Total</b>				<b>\$4,850,000</b>		
<b>Alternative A</b>						
<i>Gympie to Monkland</i> Contractor total resleeper	4	\$500,000 <sup>1 &amp; 2</sup>	Concrete	\$2,000,000	2 weeks	Locomotive and railmotor
<i>Monkland to Amamoor</i> Resleeper 1 in 4 by volunteers	19	\$37,500 <sup>4</sup>	Steel	\$712,500	6 months	Railmotor
3 passes on 1 in 4 by volunteers <sup>6</sup>	19	\$37,500 (per pass)	Steel	\$2,137,500	27 months	Railmotor and limited Loco
<b>Total</b>				<b>\$4,850,000</b>		
<b>Alternative B</b>						
<i>Gympie to Monkland</i> Contractor total resleeper	4	\$500,000 <sup>1 &amp; 2</sup>	Concrete	\$2,000,000	2 weeks	Locomotive and railmotor
<i>Monkland to Amamoor</i> Resleeper 1 in 4 by smaller contractor	19	\$67,500 <sup>5</sup>	Steel	\$1,290,000	3 months	Railmotor
3 passes on 1 in 4 by volunteers	19	\$37,500 (per pass)	Steel	\$2,137,500	27 months	Railmotor and limited Loco
<b>Total</b>				<b>\$5,427,000</b>		

Notes:

#1 – *Major contractor*, is \$500,000 / km which includes *concrete sleepers* at \$450,000 / km, (i.e. \$300 / concrete sleeper installed x 1,500 slps / km = \$450,000 / km); it also includes \$50,000 / km for *Other Corridor works* – drainage, vegetation control and possibly level crossing costs.



#2 - *Major contractor*, if *steel sleepers* used, at \$400,000 / km, (i.e. \$230 / steel sleeper installed x 1,500 slps / km = \$345,000 / km), it also includes \$50,000 / km for Other Corridor works – drainage, vegetation control and possibly level crossing costs.

#3 – Assume 1,500 steel sleepers / km @ \$100 each, *Volunteer labour* is free, therefore \$150,000 / km.

#4 – Only 375 steel sleepers (1 in 4 pattern) / km @ \$100 each is \$37,500 / km.

#5 – *Smaller contractor*, steel sleepers at \$270,000 / km or \$67,500 (1 in 4 pattern), (i.e. \$230 / steel sleeper installed x 1,500 slps / km = \$345,000 / km).

#6 – 3 passes on a 1 in 4 sleeper pattern provides 75% steel sleepers between Monkland & Amamoor.

#7 – Different time scales wrt the different sleeper types and labour sources.

#8 – Different modes of operation wrt the sleepers and quantities thereof installed.

**Table B-2 Section and Repair Costs** (Data referenced from GHD 2015 Report Exec Summary Table 1, page i)

Section	Section Name	Length km	Track Costs	Bridge Costs	Other Corridor Works (\$50/km)
<b>Section A : Gympie to Amamoor (23km)</b>					Incl in Track Costs
1	Gympie to Monkland	4	\$2.00 M - Contractor	\$0.229 M - Contractor	\$200k
2	Monkland to Dagun	16	\$2.40 M - Volunteer	\$0.386 M – Volunteer	\$800k
3	Dagun to Amamoor	3	\$0.45 M - Volunteer	\$0.282 M – Volunteer	\$150k
	<b>Sub-Totals A</b>		<b>\$4.850 M</b>	<b>\$0.897 M</b>	<b>\$1.150 M</b>
	<i>25% Contingency</i>		<i>\$1.213 M</i>	<i>\$0.225 M</i>	<i>\$0.288 M</i>
	<b>Sub-Totals A</b>	<b>23</b>	<b>\$6.063 M</b>	<b>\$1.122 M</b>	<b>\$1.438 M</b>
<b>1, 2 &amp; 3</b>	<b>Total A</b>		<b>\$7.185 M</b>		
<b>Section B – Gympie to Imbil (39km)</b>					
4	Amamoor to Kandanga	6	\$0.90 M - Volunteer	\$0.139 M - Volunteer	\$300k
5	Kandanga to Imbil	10	\$1.50 M - Volunteer	\$0.193 M - Volunteer	\$500k
	<b>Sub-Totals B</b>		<b>\$2.400 M</b>	<b>\$0.332 M</b>	<b>\$0.800M</b>
	<i>25% Contingency</i>		<i>\$0.600M</i>	<i>\$0.083 M</i>	<i>\$0.200 M</i>
	<b>Sub-Totals B</b>		<b>\$3.000 M</b>	<b>\$0.415 M</b>	<b>\$1.000 M</b>
<b>4 &amp; 5</b>	<b>Total B</b>		<b>\$3.415</b>		
<b>Grand Total A &amp; B</b>		<b>40</b>	<b>\$10.6 M</b>		

Notes:

- Section 1 - Gympie to Monkland works undertaken by an experienced contractor,
- Sections 2 – 5 Monkland – Imbil works undertaken by volunteer labour.

To reduce the operating costs the EarthCheck business case required the existing sleepers from Gympie to Amamoor being replaced with steel sleepers, resulting in the need for a minimum upfront capital and start-up

investment of approximately \$10.3 million. This effectively replaced the concrete sleepers from Gympie to Monkland (4km) with steel sleepers.

The EarthCheck business case makes two statements with respect to track costs. These were

- ◆ "identified that repair of the track between Gympie and Amamoor would cost approximately \$7 million and \$897,000 for repair work to the bridges in the same stretch of railway.
- ◆ Overall, the bridges appear to be in good condition and several are maintained by Gympie Regional Council". (Reference: EarthCheck business case, Section 1.3 What are the Issue? Page 9).

It is unclear how EarthCheck calculated the \$7M for the restoration of track work, when GHD clearly listed the estimated costs in Table 1 contained in its Executive Summary.

EarthCheck further advised that Option 1 could be reduced to an investment of \$7.25 million with timber sleepers, however this presented a greater ongoing maintenance costs for the business and was considered too great a risk. (Reference: EarthCheck business case, Section 2.6.1 Option1: Gympie to Amamoor, page 19). The \$7.25M cost for timber has not been substantiated.