

Alliance Arterial Report: Increase in Cost to Complete and Impact of Funding Decisions

1 Executive Summary

- Since the previous re-forecast (reported to the Programme Alliance Board at the 31 January 2023 meeting) and subsequent approved increase to budget, the remaining work scope has been fully re-priced and there is a projected increase of \$16m required to complete the project. This reforecast means that the Forecast Final Cost of the project is estimated at \$97m, compared to the previous advice of \$81m.
- At the point of the previous re-forecast and approved budget increase, the remaining work had been re-quantified based on the final design. The final design quantities had been priced with latest rates where possible, but where not possible due to procurement still to be completed, initial TOC rates (initial pricing rates) were used, and a contingency was included. However, as procurement of all remaining work progressed through-out 2023 it became apparent that the current budget was no longer sufficient. The main drivers are; the increased complexity and methodology required to deliver the work, additional risks uncovered that were not known, changes in temporary traffic management 'specification,' cost escalation, and additional programme duration due to the now known complexity.
- Cost saving options have been constantly reviewed all the way through the project. Some options were already implemented earlier in 2023 including removal of the Ballarat Street Pedestrian Overpass and changing concrete footpaths to asphalt. Due to the stage in the project where most scope is now in construction, significant cost saving options are very limited. Remaining viable cost saving options have been included in this report and are being investigated now. They will be implemented where possible. None of these options are able to reduce the final forecast cost to within the current budget. Over and above these cost saving options are two possible scenarios, which are:
 1. Re-organise the project scope delivery so that some work can be completed and opened for use within the current budget. Work outside of the available current budget is put on hold and deferred to a later date.
 2. Approve further funding to complete the project within the current timing, which is the '24/'25 financial year.
- This report contains high-level analysis of these options.

2 Financial summary as at 31/10/23 & reported to PAB 5/12/23

		Limb 1 + 2
0	Initial Target Outturn Cost	\$70.1m
1	Approved variations for additional scope	\$1.1m
2	Current Approved Target Outturn Cost	\$71.2m
3	Final Forecast Cost	\$105.4m
4	Variance to TOC	\$34.2m
5	Other Alliance Participants - OAPs' pain share to be repaid (Limb 2)	-\$8.5m
6	QLDC additional spend	\$25.7m
7		
	Change since last forecast	\$16.0m
8		
	Remaining spend (cost to complete)	\$44.4m

3 Limb 2

- Limb 2 consists of corporate overhead and profit and is capped for each work package.
- Limb 2 is at risk when a project exceeds budget.
- Pain is shared between all participants in an agreed percentage (Limb 3).
- Limb 3 pain share is capped at the total value of Limb 2. Once the Limb 3 cap is reached, all remaining overspend sits fully with QLDC.
- The contractors and designers (Other Alliance Participants - OAPs) will not receive any corporate overhead or make any profit on the Arterial project because the Limb 3 pain share has exceeded the Limb 2 cap.

4 Significant cost movements since last reforecast/funding approval

- **Retaining Walls (\$4.3m)**
 - There has been significant scope increase from July 2021 concept design in TOC, to Issue For Construction (IFC).
 - All quantities have been calculated on IFC design. At last funding approval, quantities had been re-calculated based on final design, but not all procurement had been completed and original TOC (priced) rates had been used to estimate the final cost. Subsequently with procurement now complete, actual rates exceed those in the original TOC / price.
 - A contingency allowance in this re-forecast and the final forecast cost is based on a 10% contingency by value for each wall.
- **3 Waters (\$3.9m)**
 - Air vacuum excavation (air vac) required for all excavation around utilities as hydro vacuum excavation (hydro vac) waste no longer able to be dumped at any dump site due to potential contamination in wet material. This is a statutory requirement.
 - All quantities have been calculated on IFC design. At last funding approval, quantities had been re-calculated based on final design, but not all procurement had been completed and original TOC (priced) rates had been used to estimate the final cost. Subsequently with procurement now complete, actual rates exceed those in the original TOC / price.
 - Side roads (through roads now becoming cul-de-sacs – more complex than TOC design and as per retaining walls, latest quantities were known at last funding approval and original TOC / price rates were used for valuation, but once final procurement has been completed the actual rates have increased which has increased the project final forecast cost.
 - Remaining uncertainty/risk: Ballarat stormwater outfall cost. There has been significant investigation and some contingency included in the forecast. But, given the 1m diameter pipe needs to be laid within the root zone of 2 protected Wellingtonia trees, we remain continuously cautious of the difficulty and cost to construct. Our forecast is based on our recent experience working under the one Wellingtonia on Brecon Street.
- **Escalation (\$3.2m)**
 - This is the estimate of additional escalation within the additional \$16m cost forecast. It is not possible to know exactly the value of escalation due to the complexity and timing of scope change, development and procurement.

- Estimates provided in the January 2024 PAB report note that total escalation over the whole project scope is in the order of \$12m.
- **Preliminaries & General (P&G) (\$2.6m)**
 - \$1.8m relates to cost of additional scope in the TOC Adjustment register (this contains details and cost of additional scope requested by QLDC or scope that was not originally included in the TOC (budget) but is QLDC's cost eg. access agreements). Items such as additional costs relating to stakeholder property works.
 - Salaries across the country have increased and to not lose people rates have needed to increase accordingly. This is generally in the construction engineer roles.
- **Traffic Management (\$1.9m)**
 - Significantly more resource required than allowed for in original TOC/price due to Traffic Management Plan (TMP) requirements and Traffic Management (TM) site audits.
 - There has been a governing specification change from Code of Practice for Temporary Traffic Management (COPTM) to risk-based approach that has resulted in additional required TM resources so as to pass the regular audits. In order to meet requirements, additional resources are required, which costs more than allowed in the previous funding application.
 - There is now more work to deliver in the similar timeframe with increased complexity so works are occurring concurrently rather than sequentially which requires additional TM resource.
 - The completed risk adjustment exercise indicates a potential increase to the duration of site traffic management of 1.8 months, the cost of this potential additional traffic management has been added to this re-forecast.
- **Pavement (\$1.0m)**
 - Through-roads being converted to cul-de-sacs priced on a detailed take-off have increased the cost by \$520k. At last budget approval, final quantities were known, and original TOC / price rates were used for valuation. Final procurement complete and latest rates are higher than original rates.
 - General tie ins of Arterial and its cul-de-sacs and side roads to the existing network, including asphalt ramps, kerb replacement, footpath replacement and the like. \$478k
 - The previous re-forecast had pavement productivities based on original TOC / priced productivities for granular pavement construction. This re-forecast is based on actual productivities being achieved which are less than originally estimated based on the complex site and the limitations on access and transport. The increased tourism is having an impact on productivity as we work to keep a balance between keeping work progressing, but also trying to satisfy accommodation providers.
- **Utilities (\$140k)**
 - At TOC / estimating, price was based on an assessment of existing services because there was no scope to get a quote on. GIS was very inaccurate with its identification of utilities, and there was not time in the TOC process to pothole for all utilities and then do clash detection on all utilities, so an assessment was made of the likely clashes needed to be dealt with We have only discovered the full extent once we have uncovered them. Utility clashes and subsequent resolutions have been an ongoing challenge through the life of the project.

- Asbestos watermain removal has increased the Forecast Final Cost (FFC.) Information available at TOC setting time which included GIS information did not identify that this was asbestos. There is significant cost in dealing with removal and disposal of asbestos that has been incurred in the last year since the last budget approval.
- Third party utility design progressed following IFC, it resulted in more scope than had been allowed for at TOC time. TOC was based on a high level assessment based on third party utilities present and scale of works from previous example projects. A number of significant utility design packages were not finalised and priced prior to the previous forecast update.

5 Contingency forecast

- The forecast contains \$5.7m of contingency (13% of remaining forecast cost.) This includes contingency for risks identified in the risk register (\$2.6m) and additional allowances within each trade forecast costs (\$2.9m)

Risk Management Area	Contingency Value	Comment
Cost To Complete (CTC) certainty	\$1.2m	Covers risks around remaining forecast accuracy, incl. overlooked or additional scope items, escalation, productivity assumptions, works to replace 'Performing Arts Centre (PAC) Wall' removal, and potential additional TTM cost.
Physical works delivery	\$1.1m	Covers risks that may eventuate through remaining construction incl. most notably resource challenges, additional tie in scope and service clashes.
Liability	\$120k	Covers damage events and/or insurance related items.
Design and Construction Phase Services (on-site designer supervision)	\$18k	Covers potential additional CPS team involvement
Programme	\$163k	Covers weather, supply, and access related programme delay
Contingency allowed from Risk Register in forecast	\$2.6m	

Trade Description	Contingency Value	Comment
3-Waters (water supply, wastewater, stormwater drainage)	\$1.6m	Allowance for unforeseen underground conditions, service conflicts, archaeological discoveries weather and other delays causing standing time and associated subcontractor claims, also covers material wastage and methodology adjustments related to actual service location.
P&G	\$74k	Contingency figure to cover forward comms/engagement cost until this can be more accurately forecast.

Pavements	\$329k	Covers for subgrade quality uncertainties, productivity risks and potential material wastage through stockpile losses, pavement interface construction losses.
Structures	\$891k	Covers weather and other delays causing standing time, site interfacing conflicts and congestion inefficiency, ground condition risk, ground water risk and detailed forecast scope gaps and supplier and subcontractor letting (procurement) risk.
Utilities	\$48k	Covers additional 3 rd party utility works to facilitate the completion of works.
Contingency allowed in main remaining work scope items	\$2.9m	
TOTAL CONTINGENCY IN REMAINING COST	\$5.7m	

6 Risks Not Included in Forecast

- There are risks that have not been included in the Alliance forecast. The rationale for this is that the events are too uncertain and would result in an inflated and inaccurate forecast. These lower likelihood / higher consequence items include the likes of third party costs, private property mitigation costs (exceeding what is forecast), additional conditions that may be imposed during consent application for Lower Ballarat stormwater works, and further Covid type impacts on the supply chain, including unanticipated escalation.
- The Alliance recommend that QLDC as Owner Participant hold contingency for these types of events.

7 Cost saving options considered to date

- There have been ongoing cost saving workshops involving both the Alliance and QLDC staff during the life of the Arterial project. The latest workshop taking place in December 2023. Options considered included:

Date	Options for cost reduction	Value	Notes	QLDC decision
Accepted				
Feb-23	<i>Rationalise stormwater network, removal of manholes</i>	<i>\$55K</i>	<i>Some manholes removed which does not compromise the network or maintenance thereof but removes capital investment cost.</i>	<i>Approved</i>
Feb-23	<i>Change footpath from concrete to asphalt</i>	<i>\$1.7M</i>	<i>Delivers the similar functionality, with a less architectural finish.</i>	<i>Approved</i>
Mar-23	<i>Removal of oxide concrete tinting from kerb and channel</i>	<i>\$33K</i>	<i>Instead of a dark coloured concrete, there will be standard grey coloured concrete.</i>	<i>Approved</i>

Dec-22	Removal of pedestrian overpass bridge on Ballarat Street	\$3M		Approved
Sep-22	Removal of decorative facing panels from retaining wall behind the Manawa site.	\$230K	Given the likelihood of the wall being obscured by a new future building, it was deemed not necessary to face the structural wall with an architectural wall panel.	Approved
Jul-23	Reduction in planting density	\$59K	Reduction in plant density agreed, also shrub pot size reviewed. Replaced with performance criteria for end of establishment period.	Approved
Jul-23	Reduction in size of specimen trees	\$117K	Reduction in specimen size of trees, two categories larger on main arterial alignment and smaller on side roads.	Approved
Considered, not accepted, no longer available as construction has progressed				
Feb-23	Rationalise side road turning head / cul-de-sacs	Not valued	Given the scale of redesign and associated programme implications, this was not progressed. Spend too much on redesign verses minimal cost saving.	
Mar-23	Upslope boundary channel drain rationalisation	\$326K	Channels intercept overland flow and prevent it from entering the pavement stormwater network. A water discharge quality improvement requirement. This was a minimum requirement identified in the Design Philosophy Statement.	Declined
Jan-23	Rationalisation of retaining wall structures steel corrosion coating	\$75K	Cost saving came with a 25-year design life reduction and was not seen as good value for money. These types of structures typically designed for 100 year design life.	Declined
Mar-23	Consideration of granular pavement and thin asphalt surfacing in lieu of structural asphalt pavement.	\$53K	Not progressed due to very short areas in which this was possible.	Declined
Apr-23	Proposed changes to luminaires and omittance of spotlights	Not valued	Options were tabled after items were procured, so too late to take advantage of idea.	Declined

8 Remaining cost saving options

In the final year of construction (2024), the remaining options for cost savings taken from the those in the above table that are still available, plus recently identified new opportunities are:

Option	Value	Final date for decision
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Replace concrete and cobblestone thresholds with small asphalt raised tables	\$121k	Jan 2024
Schist decorative wall cladding removal	\$300K	Jan 2024
Remove decorative fascia panels from Glebe wall	\$100K (approx.)	Jan 2024
Stormwater pipe removal under Stanley St	\$503K	Apr 2024
Tetra Traps removal	\$128K	Aug 2024
Use of locally sourced soil in lieu of imported soil.	Can't determine savings until after soil testing has been completed to determine quality of available local soil and possible conditioning required.	Agreed subject to soil testing. Depending on testing will depend on final cost saving.
Omittance of irrigation to garden beds	Being priced now. Agreed in principle as plant species chosen are drought resistant. Being priced, with amendments to subcontract to follow.	

9 Current status of the project



Figure 1 Melbourne - Beetham intersection looking towards Gorge Road at top of photo.

- 54% of the construction is complete (Life to Date / Final Forecast Cost)
- 46% by value of construction remaining. Current status is as follows:
 - On Frankton Rd underground (3 waters and utility work) scope is effectively complete in Stage B (upslope half), a smaller volume of underground scope remains in Stage C (downslope half). Above ground scope (Kerb, footpath and roading) has commenced in stage B with significant roading work commencement imminent.
 - On Melbourne St underground scope is complete, above ground scope on the downslope half of the road is approx. 90% complete with final layers of asphalt remaining. On the upslope side of the road and at Sydney St intersection above ground works are underway with all work excluding the final asphalt surface and commissioning of traffic signals expected to be completed prior to the winter surfacing moratorium.
 - Through the section between St Joseph's Church and Henry St, 10 of 12 of the notable walls are underway and in varying stages of progress. Underground work is approximately 45% complete, with relocation and decommissioning works to enable the walls complete and primary works succeeding wall install underway. No above ground works have commenced yet in this section.
 - Gorge Rd including the intersection with Shotover St has all of the underground scope and the bulk of the above ground scope completed, remaining items include median island, Turner Street roading, street furniture, final asphalt surfacing and traffic signal commissioning.
- 15 months construction duration remaining

- Target opening of Arterial Road is December 2024
- Remaining works to be completed by March 2025, which includes Ballarat stormwater outfall, street furniture, planting, construction of 2 side road cul-de-sacs which cannot be constructed until after the Arterial is open to traffic. Note that Ballarat stormwater outfall cannot be constructed until after the Arterial mainline is open.

10 Options for consideration

Option	Description
Option 1	Further funding is approved to complete the full project scope in line with the current programme
Option 2	No further funding is approved. Descope the project and prioritise the scope to be completed within the remaining approved budget and defer work that sits outside the current approved funding.

10.1 Option 1 - Further funding is approved to complete the full project scope in line with the current programme

10.1.1 Acknowledged Project Issues

- Additional funding is required as per reforecast.
- Pressure on QLDC budget
- Other planned capital works need to be deferred, frustrating sectors of the community
- Divisive across the community due to cost increase

10.1.2 Project Outcomes

- Arterial Stage 1 is delivered
- Much needed infrastructure upgrade completed to enable Queenstown to meet future visitor and resident use demand.
- Arterial Stage 1 delivered with investment from central government, which otherwise might not have been able to be delivered at this time.
- Even though completed with increased cost pressure, it is still the most cost effective to build now rather than defer. Costs are always increasing. Resident numbers are always increasing. Visitor numbers are always increasing.
- The Arterial Stage project delivers a step change in Queenstown's ageing 3-waters network which includes meeting new water quality discharge requirements. The following lengths of new 3 Waters infrastructure installed to date are:

Network	Length (m)
Stormwater	3,410m
Wastewater	1,209m
Potable water	2,694m

Total pipework installed	7,313m
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10.1.3 Community Outcomes

- Through the Queenstown integrated Transport Business Case, and previous studies, the Queenstown Town Centre Arterial Road has been identified as a key component of the overall (Whakatipu Basin) transport solution.
- The Queenstown Town Centre Arterial Road will provide improved access to, and through the town, increased economic performance, improved liveability and visitor experience in the town centre by reassigning the traffic from the 'Historic Core' to the new corridor, thus freeing the town centre for pedestrians, cyclists and other road users.
- The objectives for the Queenstown Town Centre Arterial Road are to:
 - To develop an alternative route enabling increased priority for pedestrians, urban environment, introduce traffic calming and reduce traffic volume on Stanley Street
 - Allow through traffic to avoid the town centre
 - Support Public Transport access to the town centre
 - Act as an arterial route (as an urban street and not an expressway) and
 - Support liveability, visitor experience and amenity while supporting a pedestrianised town core by limiting through traffic within the town centre.
- Specifically, construction of Stage 1 results in:
 - Providing more capacity in the transport network
 - Enabler for Stage 2 and 3 of the Arterials to be constructed at a later date
 - An alternative through route to the CBD, and an alternative route for Arthurs Point – Frankton (or vice versa) without having to go through town centre
 - Enabler to open Stanley Street as a PT Hub
 - Providing more resilience for stormwater management on Queenstown Hill
 - An upgrade of existing utilities including supporting new alternative power supplies (PowerNet) to Queenstown.

10.2 Option 2 – No further funding is approved. Descope the project and prioritise the scope to be completed within the remaining approved budget, and defer work that sits outside the current approved funding.

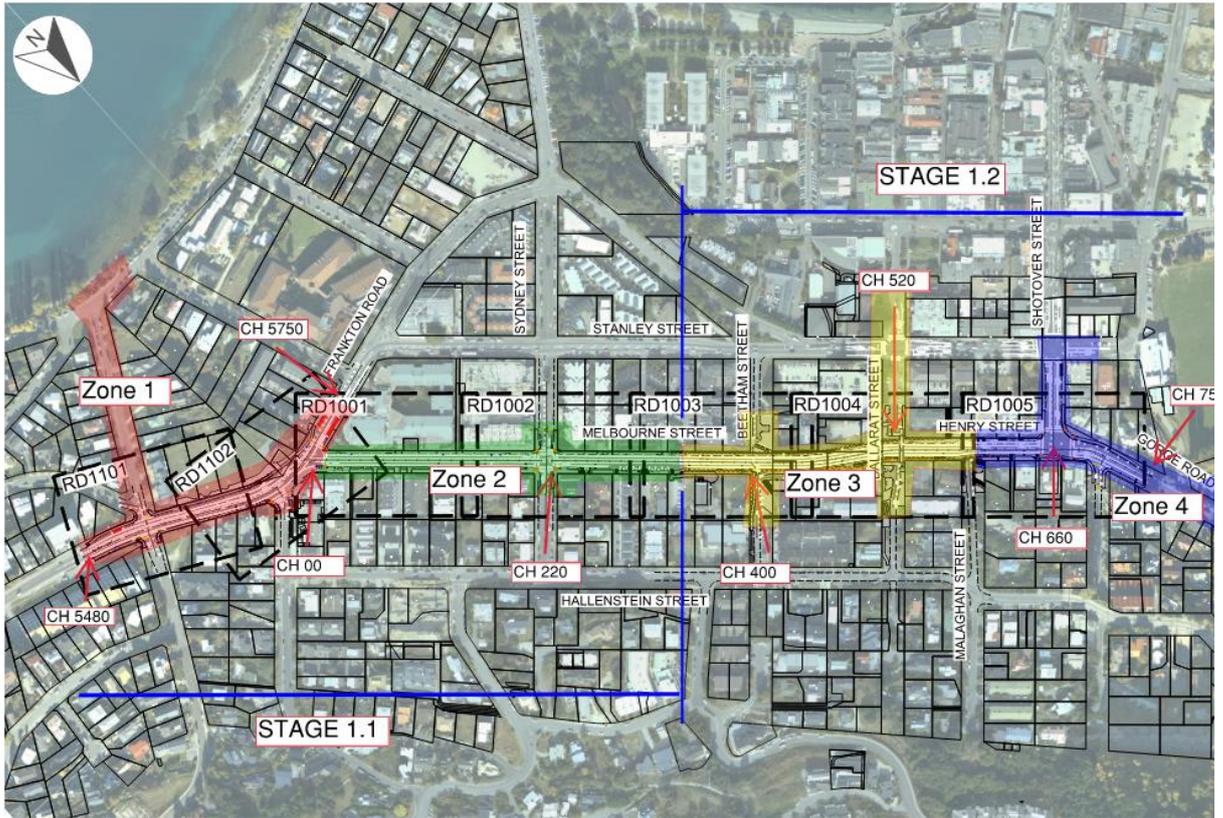


Figure 2 Plan view of general arrangement of Arterial Stage 1 final design – Zones 1-4 extents are indicated through coloured overlay

10.2.1 Remaining Cost to be spent of the current approved budget: \$28.4m

	Scope	Cost per line item	Cumulative total cost to complete	Comment
1	Zone 1 all remaining scope	\$8.5m	\$8.5m	Fits in current budget
2	Complete retaining wall scope	\$11.2m	\$19.6m	Fits in current budget
3	Complete Zone 2 – all scope	\$4.9m	\$24.5m	Fits in current budget
4	Complete Zone 3 – 3 waters	\$4.1m	\$28.6m	Does not fit current budget. Can finish a portion of this.
5	Complete Zone 3 – main alignment	\$2.6m	\$31.3m	Does not fit current budget
6	Complete side roads and balance of works	\$13.1m	\$44.4m	Does not fit current budget

Figure 3 Individual and cumulative costs compared to current remaining available funding.

10.2.2 Comments on this option

- This option is at present a raw view. There are a number of iterations of this option that could be considered, and if any are considered, the unintended consequences of the options would need to be explored. For the purposes of the report, the main high-level message with this option is that some work could be deferred to a later date, but there would be some costs

associated with ensuring that the unfinished works were made safe and some environmental controls put in place, with an ongoing maintenance budget to ensure the unfinished works did not degrade.

10.2.3 Outcome

- Rationalised remaining work to complete some areas and make safe other areas until future funding supports completion. Outcomes are broadly as follows:
 1. SH6A Frankton Rd complete i.e. all side street interfaces are complete eg. Dublin, Suburb etc.
 2. Melbourne St finished.
 3. Slopes stabilised / made safe with retaining walls finished in the Melbourne – Henry link section (in red below)
 4. Melbourne St to Henry St link not finished and not useable.
 5. Beetham, Ballarat and Malaghan remain closed and uncomplete – no rubbish trucks up and down to the cul-de-sacs due to turning heads not finished.
 6. Permanent pedestrian links from up slope to down slope along Beetham, Ballarat and Malaghan not complete
 7. Intersections at both Frankton/Melbourne and Gorge/Shotover continue to operate in a temporary configuration as per the current operating environment. i.e. new traffic signals not installed.
- The likely completion date of this de-scoped project option is Christmas 2024. However, it may be that the Ballarat stormwater pipe that crosses Stanley Street may still need to be completed following the 2024 Christmas holiday period when traffic is slightly quieter to enable us to trench across the Ballarat – Stanley intersection with the 1m diameter pipe and minimise disruption to what is a busy main road through town.

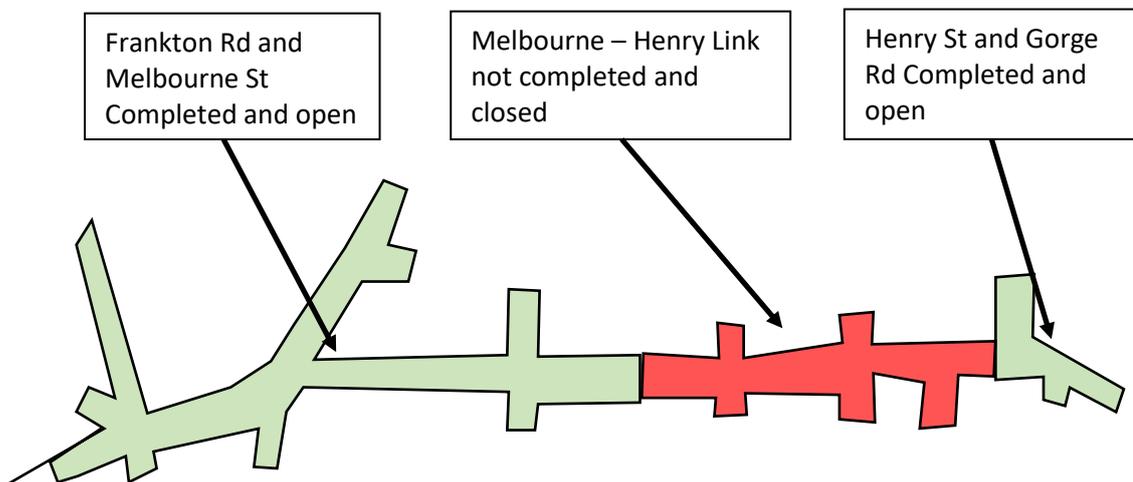


Figure 4 Pictorial plan view of Arterial alignment



Figure 5 Melbourne - Sydney intersection looking towards SH6a - in this option, Melbourne St reconstruction would be completed.

10.2.4 Issues

- Long term Site safety implication:
 1. Site will need robust security fencing around the uncompleted Melbourne – Henry link.
 2. Slopes and holes will need to be made safe for the medium term.
 3. Site will need stabilisation to deal with erosion and dust – environmental controls.
 4. Site controls will need to be maintained.
 5. Visually unappealing – unfinished works start to look derelict as time progresses.
- Intersections at both Frankton/Melbourne and Gorge/Shotover continue to operate in a temporary configuration as per the current operating environment. i.e., new traffic signals not installed, temporary line marking and other delineation required.
- No medium-term permanent pedestrian links through red area, which is currently how this area works during the construction phase. Pedestrian links have been severed to facilitate construction. Possibly install temporary pedestrian links.
- Likely costs associated with severing subcontracts.
- Costs associated with restarting in the future. Re-mobilisation costs. Cost increases on scheduled and priced items – remaining work pricing will likely end up void and need to be wholly re-priced which will introduce cost increases above current rates.
- Cost associated with full Alliance demobilisation from site.