

Memorandum

To Council Members

From Chris Haskas - Manager Engineering

Subject Grevillea Way Fire Track

ECM

Date Thursday, 07 September 2023

This memo responds to the following Council resolution of 11 April 2023 and is structured to respond to the questions requested.

That Administration:

- 1. Provide Council Members with an indicative cost (high level estimate without re-allocating or impacting staff resources) to seal the fire track on Grevillea Way so that it meets Australian Standards for a road.*
- 2. Advise Councillors of the processes involved in sealing the fire track on Grevillia Way or having it included in a priority list for a future state or federal election.*
- 3. Undertake a survey to determine how many cars are using the unsealed section of Grevillia Way each day and advise Councillors.*

1. Provide Council Members with an indicative cost (high level estimate without reallocating or impacting staff resources) to seal the fire track on Grevillea Way so that it meets Australian Standards for a road.

A desktop assessment of the potential cost associated with upgrading the existing Grevillea Way fire track to current Australian Standards and Road Design Guidelines has been undertaken and an indicative construction cost is estimated to be approximately **\$4.0m (exc. GST)**. This includes provisional allowance for project management, design, native vegetation offset and service utility works which have a high degree of uncertainty at this stage. A breakdown of the high level estimate is included as **Attachment A**.

The management of this section of Grevillea Way has been the subject of several investigations by Council over a long period of time. In 2011 at a Council briefing, it was presented that a fully constructed road would cost more than \$1m and it was resolved that Administration would continue routine maintenance, collect routine traffic data, review the risk management plan and plan Infrastructure Asset Management Works. After this time a traffic control layout was developed in accordance with industry standards and various traffic control devices installed to warn motorists of the conditions and improve delineation of alignment of the track. Currently the fire track is maintained as required depending on the condition.

The processes involved in sealing the fire track on Grevillea Way will require a significant amount of reconstruction to ensure it is built to current Australian Standards and Road Design Guidelines. A brief overview of this is provided below.

Council Resource

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It is anticipated that upgrading the fire track to the current Australian Standards and Road Design Guidelines for a road will take approximately 2 years from initial investigations to completion and will require a project management resource to oversee the process.

Design and communications

A comprehensive communication plan will be required for this project to consult with the community on the feasibility of reconstructing the road so that they understand the impacts to the local area and the cost to the community.

The design process will need to include survey, geotechnical and drainage investigations, lighting, pavement, geometrical and structural design to ensure the fire track is reconstructed to the current Australian Standards and Road Design Guidelines.

The current fire track is only 5m wide at the widest part, to construct the road to the current Australian Standards and Road Design Guidelines the seal needs to be a minimum of 6m wide, have shoulders either side and in addition to this the stormwater management of the site will need to consider surface water drainage and additional runoff created with retaining and sealing the road. It is anticipated that the widening and drainage requirements will require significant earthworks and retaining which will result in a significant cost.

Native Vegetation

Given the extent of works required the impact to the native vegetation is estimated to be a minimum of 10 metres either side of the current fire track. In addition, this area is a *Eucalyptus microcarpa* Woodland – which has a provisional listing by the Department for Environment and Water which may trigger a referral to the Department of Climate Change, Energy, the Environment and Water under the Environment Protection and Biodiversity Conservation Act 1999, listed as an endangered ecological community.

A clearance application is required under the Native Vegetation Act 1991 by an accredited native vegetation consultant, likely to be a Bushland Assessment with an additional native fauna assessment following certain guidelines. The application will likely require a mandatory referral to the Native Vegetation Council for approval and take approximately 12 weeks to assess. Should this application be approved a Significant Environmental Benefit offset will be required prior to any works.

Preliminaries

During any construction project there are overhead expenses involved in establishing, managing and demobilising the site, they are included in the cost estimate as preliminaries. This is where supervision, insurances, administration costs and project management costs are captured. Management of the site will also include service location, safety, survey, site facilities, traffic management and sediment control.

Services Relocations

A desktop Dial Before You Dig service location of the area has revealed that there is NBN, Telstra, SA Water (water and wastewater) and SA Power Networks services within the road reserve and all are likely to be impacted by the reconstruction of the fire track. This work is difficult to determine without further investigation but has been included in the cost estimate as it will likely be a significant cost and require a lot of time and cost to coordinate with the utilities companies to relocate their assets to facilitate construction.

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Earthworks, roadworks, stormwater, retaining, lighting

As mentioned previously one of the biggest anticipated costs associated with upgrading the fire track is the widening of the road to meet current Australian Standards and Road Design Guidelines. The design assumption is this could be done by excavation and removal of material from the hillside that will then require retaining. Given the location of the fire track it is highly likely that these earthworks will encounter rock, this cost is hard to estimate without undertaking geotechnical investigations. The retaining wall used in the cost estimate is a concrete sleeper retaining wall that is likely to be required for the length of the road in varying heights.

The fire track is currently treated with quarry rubble which causes dust when it is dry and potholing/rutting after substantial rain events which indicates that if the fire track is to be sealed it will require significant drainage investigation and subsequent management. The assumption is to use a spoon drain and grated inlets pits on the high side of the road to capture the runoff and pipe the stormwater runoff under the road at multiple locations using erosion controls to drain the stormwater runoff to the watercourse below.

The road design assumption is that the existing pavement material is not suitable to remain in place to build on top of so will need to be removed so that a new road pavement can be constructed consisting of a subbase, basecourse and asphalt seal.

The upgrade will also include traffic signage, linemarking, guardrail on the low side of the road, lighting for a local road and significant changes to the intersection with Gum Grove including widening to ensure the safety of road users.

Landscaping

Given there will be significant impact to the surrounding native vegetation, landscaping will be required following the road construction to minimise erosion and restore the amenity of the surrounding open space for the community. Irrigation to establish and 12 months maintenance of these plantings is included in the cost estimate.

2. Advise Councillors of the processes involved in sealing the fire track on Grevillia Way or having it included in a priority list for a future state or federal election.

After reviewing the process involved for sealing the fire track to current Australian Standards and Road Design Guidelines the majority of works would be considered an upgrade, or new works, as the extra infrastructure required including retaining, drainage, seal, etc. currently does not exist. If Council want the project to proceed, Council would need to budget and resource the investigation and preliminary design such that the sealing of the fire track can be considered as a new project and budgeted within Council's Long Term Financial Plan and Annual Budget.

Should Council wish to have the project included in a priority list for a future state or federal election it would be recommended to undertake further investigation and preliminary design.

3. Undertake a survey to determine how many cars are using the unsealed section of Grevillia Way each day and advise Councillors.

The results of a traffic count undertaken in May 2016 indicated that the 24 hour two way traffic flow on Grevillea Way in the unsealed section was 540 vehicles. This total was evenly split by direction.

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An updated traffic count undertaken in June 2023 which indicated that the 24 hour two way traffic flow on Grevillea Way in the unsealed section has reduced to 431 vehicles. Again, the total was evenly split by direction.

Whilst an Origin-destination survey has not been undertaken, the even split by direction does suggest that the same drivers used the road for their outward and inward journeys and the track serves to connect the residential areas of the northern and southern sections of Grevillea Way. Given the location and nature of the road it is considered that most of the traffic is local and likely to be aware of the conditions.

A review of traffic data indicates that there have been no recorded crashes along the unsealed section of Grevillea Way during the period 2018 – 2022.

Summary

In summary, the high level cost estimate of approximately **\$4.0m** (exc. GST) is provided based on a number of assumptions with significant potential to impact costs as there are many unknowns. These assumptions include the following:

- Geotechnical investigations will be required to provide input into the design and the construction management i.e. removal of rock required;
- The services alterations estimate takes into account that this will involve liaison with multiple service authorities who will need to quote and schedule the works to undertake themselves prior to or during the works occurring, these impacts are unknown until the design process begins;
- Native vegetation impacts and any offset costs are unknown until the assessment and application are undertaken, the assessment won't be able to occur until the road design is undertaken to see the full extent of the construction;
- The geometric road design required with the natural topography and the retaining requirements to achieve a design compliant with Australian Standards and Road Design Guidelines;
- Stormwater assessment and management is unknown until the road design process is underway to understand the catchment and effective management of the stormwater runoff;
- Resourcing is estimated based on the investigation, design and construction process taking 2 years to complete.

The estimate also includes contingencies of 30% which is an appropriate level of contingency to apply for the stage of the project, its scope, risk (known and unknown) and constructability concerns.

Typical contingency range for the estimate phase are:

1. Pre-Concept Estimate: 30-40%
2. Concept Estimate: 20-30%
3. Preliminary Estimate: 10-20%
4. Detail Estimate: 10%

Encs. Attachment A – Indicative Cost Estimate Breakdown

ATTACHMENT A

Grevillea Way, Belair Fire Track - Road Reconstruction Desktop Cost Estimate 2023

Item	Description	Unit	Rate	Quantity	Amount	Assumptions
2 PRELIMINARIES						
2.1	Establishment	item	\$ 5,000.00	1	\$ 5,000.00	Construction
2.2	Service locations	item	\$ 10,000.00	1	\$ 5,000.00	A DBYD has revealed there is NBN, Telstra, SA Water (water and wastewater) and SA Power Network cables in the vicinity of the road
2.3	Insurance	item	\$ 3,000.00	1	\$ 3,000.00	Construction contractor
2.4	Superintendent	item	\$ 20,000.00	1	\$ 10,000.00	For construction
2.5	Site supervisor	item	\$ 30,000.00	1	\$ 20,000.00	For construction
2.6	Quality control/site admin/safety	item	\$ 5,000.00	1	\$ 5,000.00	Construction contractor
2.8	Survey					
2.8.1	Initial set out & offset pegging	item	\$ 10,000.00	1	\$ 10,000.00	
2.8.2	Survey during construction	item	\$ 15,000.00	1	\$ 10,000.00	
2.8.3	As constructed survey	item	\$ 5,000.00	1	\$ 5,000.00	
2.9	Site compound	item	\$ 10,000.00	1	\$ 10,000.00	Construction contractor
2.10	Traffic management	item	\$ 15,000.00	1	\$ 15,000.00	Road would be completely closed during construction - risk assessment required for Emergency access
2.11	Demobilise & cleanup	item	\$ 5,000.00	1	\$ 5,000.00	
2.12	Sediment control	item	\$ 20,000.00	1	\$ 20,000.00	During construction
Total					\$ 123,000.00	
3 EARTHWORKS/DEMOLITION						
3.1	Saw cut asphalt	m	\$ 50.00	40	\$ 2,000.00	Match existing surface
3.2	Boxout pavement (excavation)	m3	\$ 21.00	948	\$ 19,908.00	Existing surface - (assume 500mm thick)
3.3	Disposal of existing material	t	\$ 75.00	1744.32	\$ 130,824.00	
3.4	Excavation of hillside to widen road	m3	\$ 21.00	1777.5	\$ 37,327.50	
3.5	Disposal of existing hillside material	t	\$ 75.00	2435.175	\$ 182,638.13	
3.6	Tree Removal	day	\$ 4,000.00	10	\$ 40,000.00	If Native Vegetation application approved. Day rate based on area if road can be closed, if it can't be this would take longer
3.7	Rock Breaking	day	\$ 6,000.00	15	\$ 90,000.00	Given location assume rock will be present and difficult to excavate
Total					\$ 502,697.63	
4 ROADWORKS						
Pavement						
4.1	Sub-base course - 200mm PM1/20	m2	\$ 70.00	1896	\$ 132,720.00	237m long, 8m wide
4.2	Base Course - 120mm PM2/20	m2	\$ 70.00	1896	\$ 132,720.00	237m long, 8m wide
4.3	Asphalt AC10L - 40 mm	t	\$ 202.98	182.016	\$ 36,945.61	237m long, 6m wide seal
Kerbing						
4.4	Upright kerb and gutter (inc. Base)	lm	\$ 300.00	100	\$ 30,000.00	100lm at intersections
4.5	Spoon drain/swale on high side	lm	\$ 275.00	250	\$ 68,750.00	237m, on high side of road
4.6	Edgestrip (inc. Base)	lm	\$ 250.00	250	\$ 62,500.00	237m, on low side
Traffic Items						
4.7	Traffic signs - New	item	\$ 5,000.00	1	\$ 5,000.00	Grade, curve, hazard
4.5	Traffic signs - Remove	item	\$ 500.00	1	\$ 500.00	Remove existing
4.6	Linemarking	item	\$ 15,000.00	1	\$ 15,000.00	
4.00	Guardrail	4m length	\$ 1,500.00	80	\$ 120,000.00	Recent quote estimate 4m length for \$1500 including installation on low side
Total					\$ 604,135.61	
5 STORMWATER						
Stormwater pits						
5.1	Grated inlet pit	each	\$ 3,000.00	8	\$ 24,000.00	Multiple locations along road
5.2	Stormwater pipes	lm	\$ 400.00	64	\$ 25,600.00	Under road drains
5.3	Erosion control	each	\$ 20,000.00	8	\$ 160,000.00	At cut off drains for low side
Total					\$ 209,600.00	
7 RETAINING						
7.1	quality control/site admin/safety	lm	\$ 2,500.00	237	\$ 592,500.00	3m high estimate along length
Total					\$ 592,500.00	
8 ELECTRICAL						
8.1	Lighting column and luminaire	each	\$ 8,000.00	20	\$ 160,000.00	Lighting for road
8.2	Electrical conduit	lm	\$ 200.00	200	\$ 40,000.00	
Total					\$ 200,000.00	
9 LANDSCAPING						
9.1	Mulch	m2	\$ 45.00	750	\$ 33,750.00	Around new planting
9.2	Trees	each	\$ 50.00	300	\$ 15,000.00	Tube stock
10.3	General Planting	item	\$ 50,000.00	1	\$ 50,000.00	For amenity and stabilisation
10.4	Irrigation	item	\$ 20,000.00	1	\$ 20,000.00	
10.5	12 month maintenance	months	\$ 2,000.00	12	\$ 24,000.00	
Total					\$ 142,750.00	
11 MISCELLANEOUS						
11.1	Compaction testing	item	\$ 500.00	20	\$ 10,000.00	
Total					\$ 10,000.00	
SUB-TOTAL CONSTRUCTION COST					\$ 2,384,683.23	
CITB LEVY (0.25%)					\$ 5,961.71	
30% CONTINGENCY					\$ 717,193.48	
TOTAL CONSTRUCTION COST					\$ 3,107,838.42	
PROVISIONAL SUM - PM & DESIGN					\$ 300,000.00	
PROVISIONAL SUM - NATIVE VEGETATION					\$ 110,000.00	
PROVISIONAL SUM - SERVICE RELOCATIONS					\$ 500,000.00	
TOTAL PROJECT COST					\$ 4,017,838.42	