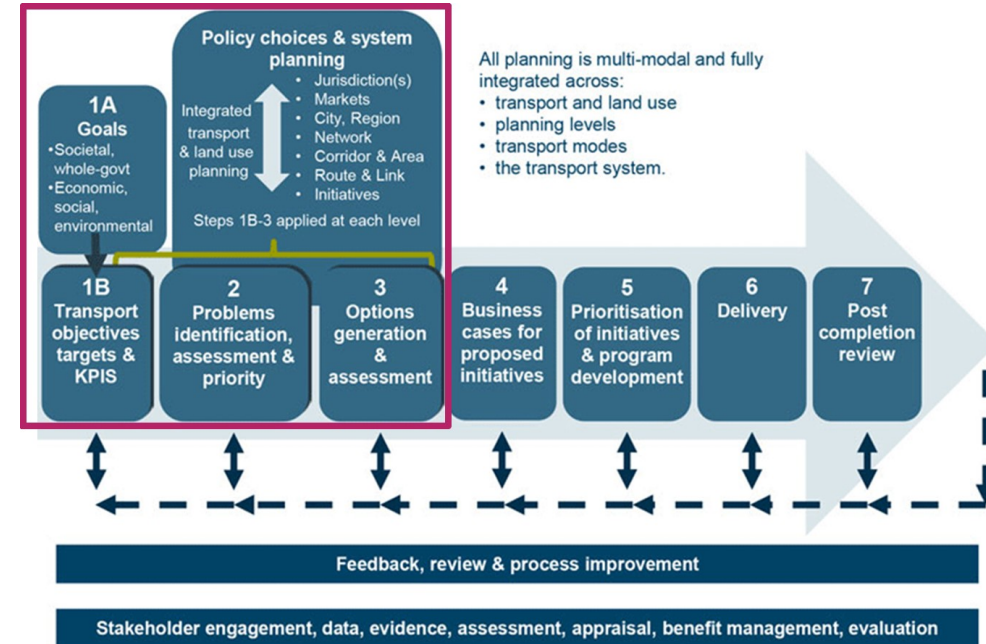


CRAIGBURN FARM WESTERN BYPASS FEASIBILITY STUDY

STUDY APPROACH, KEY FINDINGS AND RECOMMENDATIONS



Score Description	Strong Positive	Weak Positive	Neutral	Weak Negative	Strong Negative
Score Value	●5	●4	●3	●2	●1



CITY OF MITCHAM



Tuesday 17th September 2019



Government of South Australia
Department of Planning,
Transport and Infrastructure

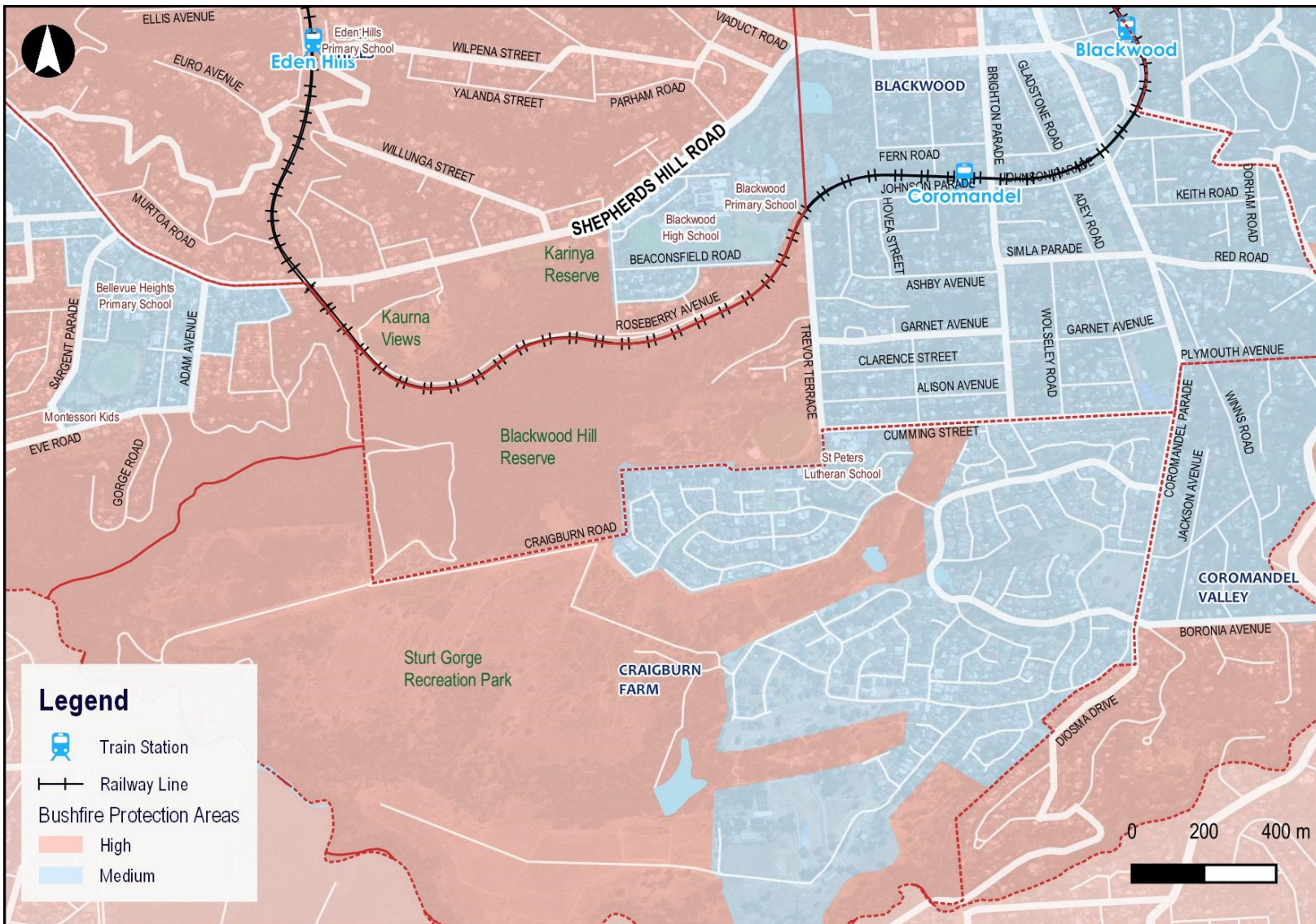
AGENDA FOR COUNCIL PRESENTATION

- Introductions
- Study background and constraints mapping
- Strategic Merit Test approach to assess the road alignment options
- Western bypass and link road alignment options
- Multi-Criteria Analysis (MCA) scores and assessment results
- Key findings and study recommendations

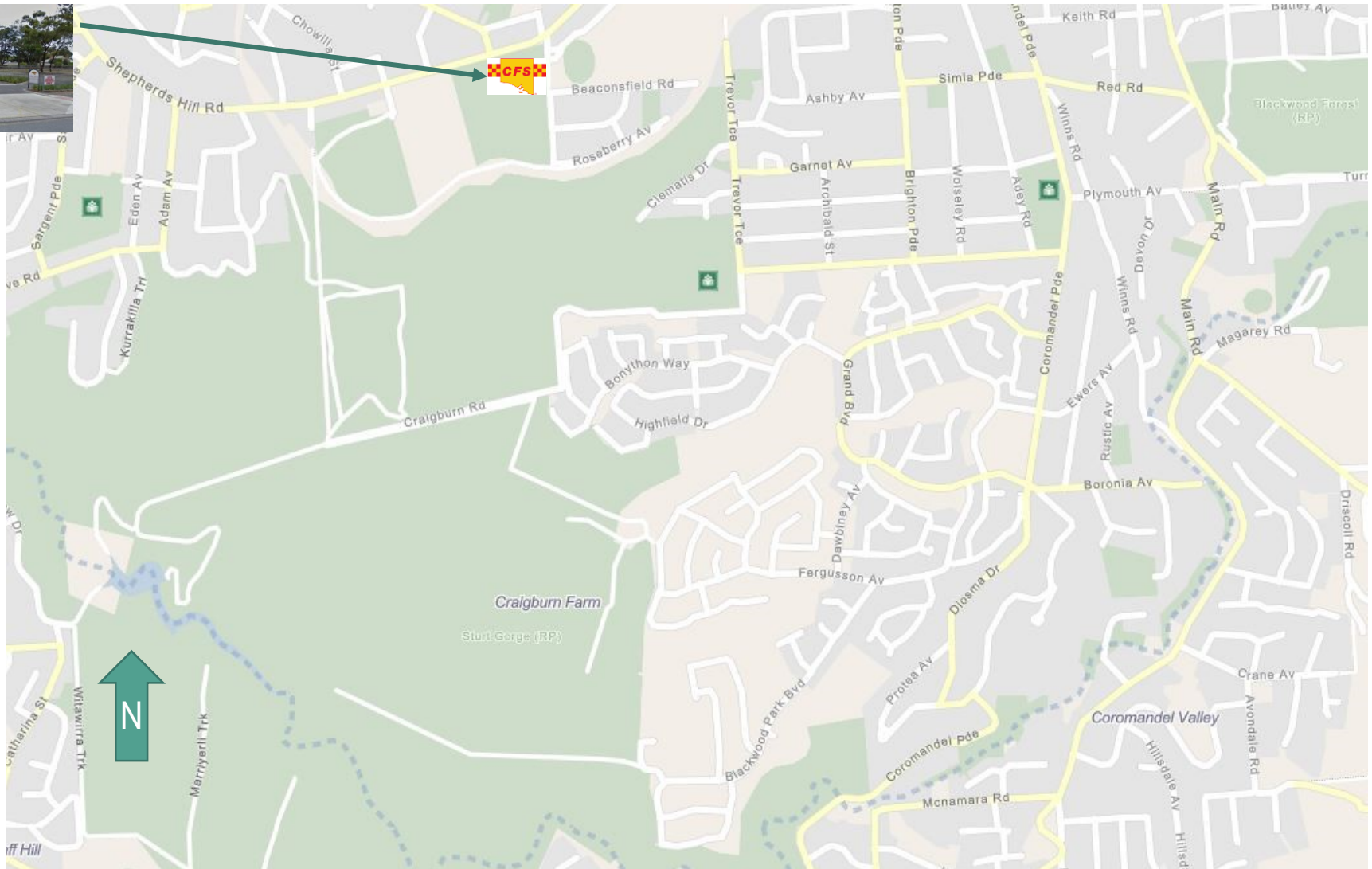
STUDY AREA WITH EXISTING ROADS AND TRAFFIC



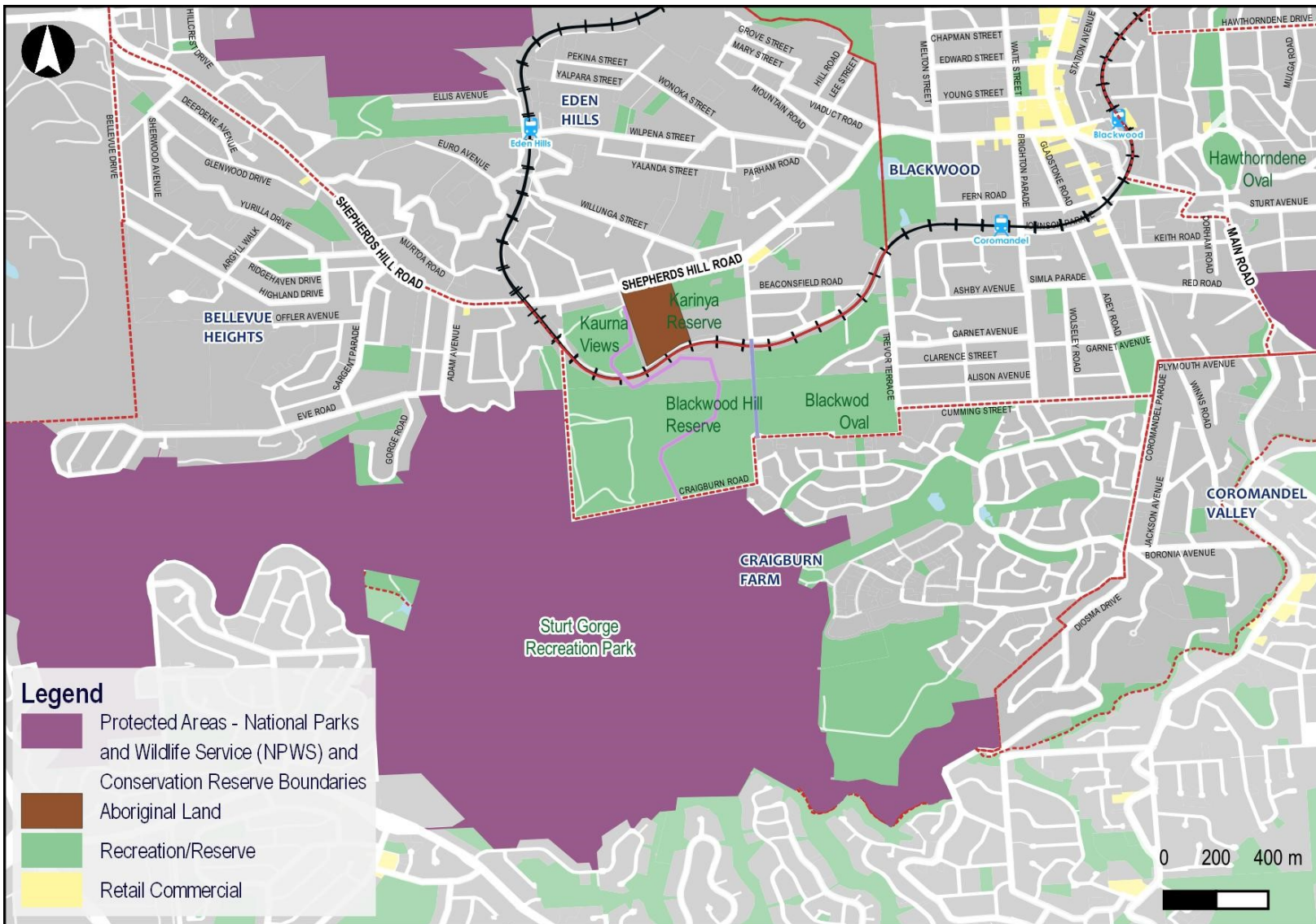
BUSHFIRE PROTECTION AREAS IN CRAIGBURN FARM



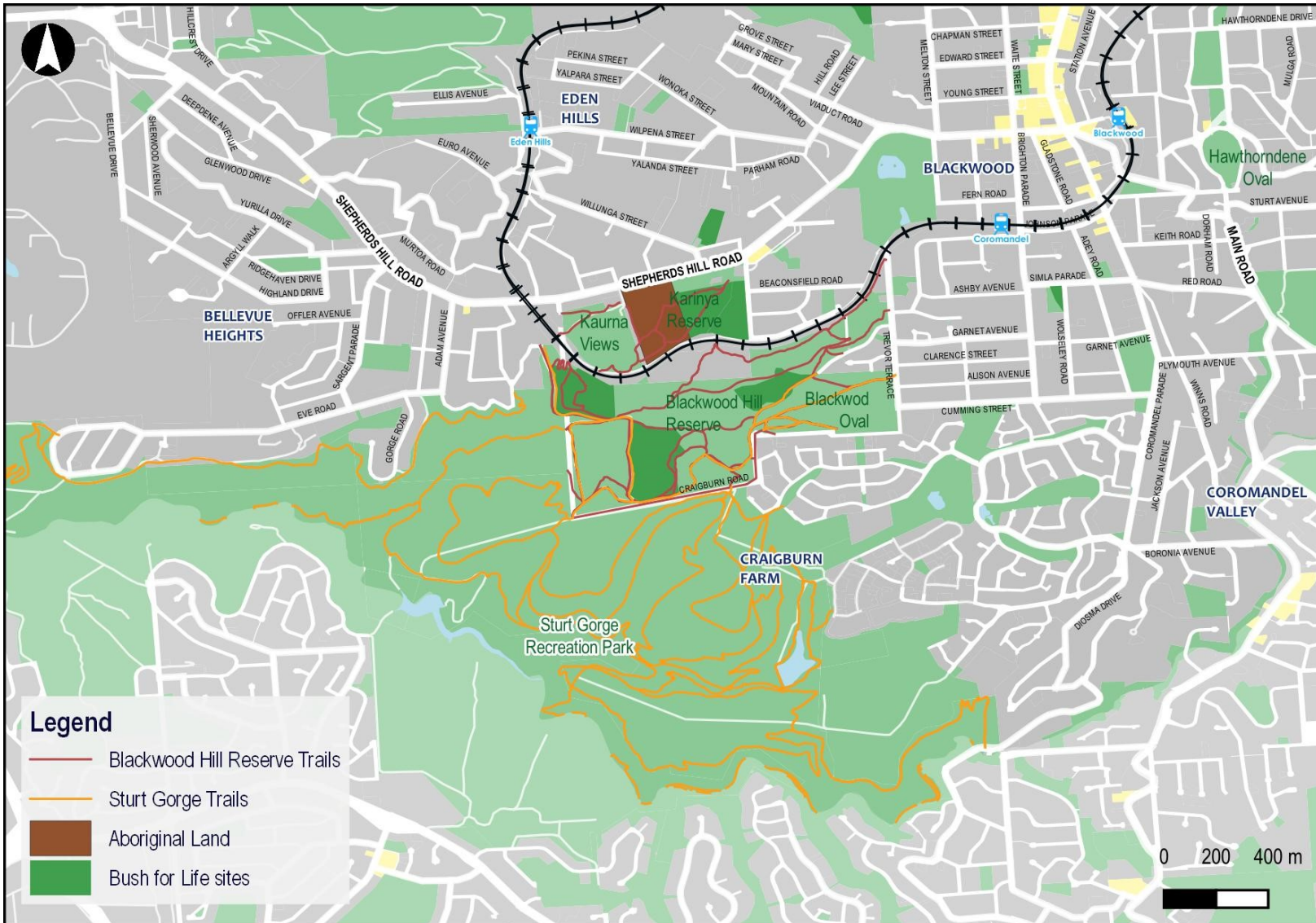
BUSHFIRE REFUGE AREAS FOR CRAIGBURN FARM



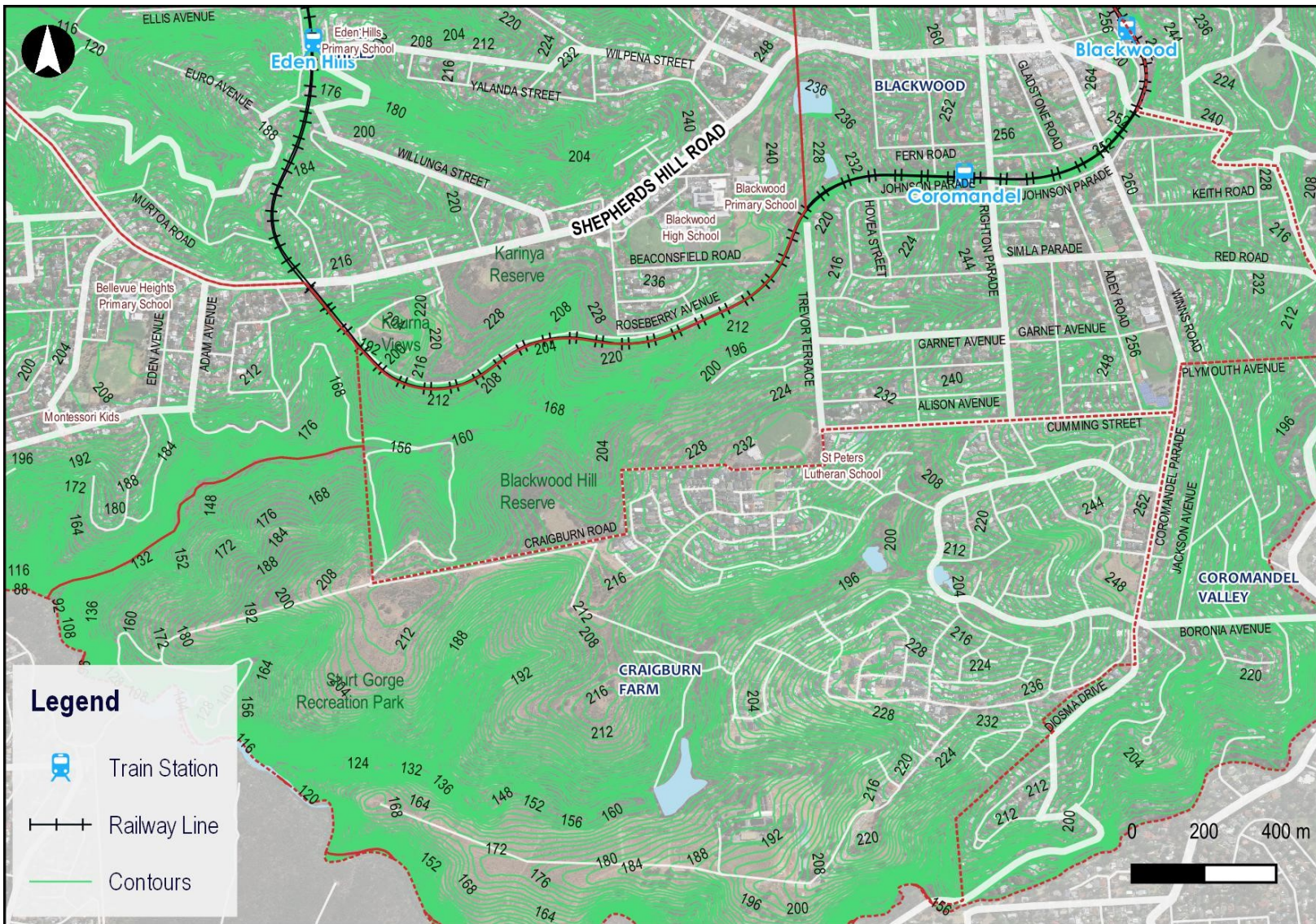
PROTECTED CONSERVATION RESERVES AND PARKS



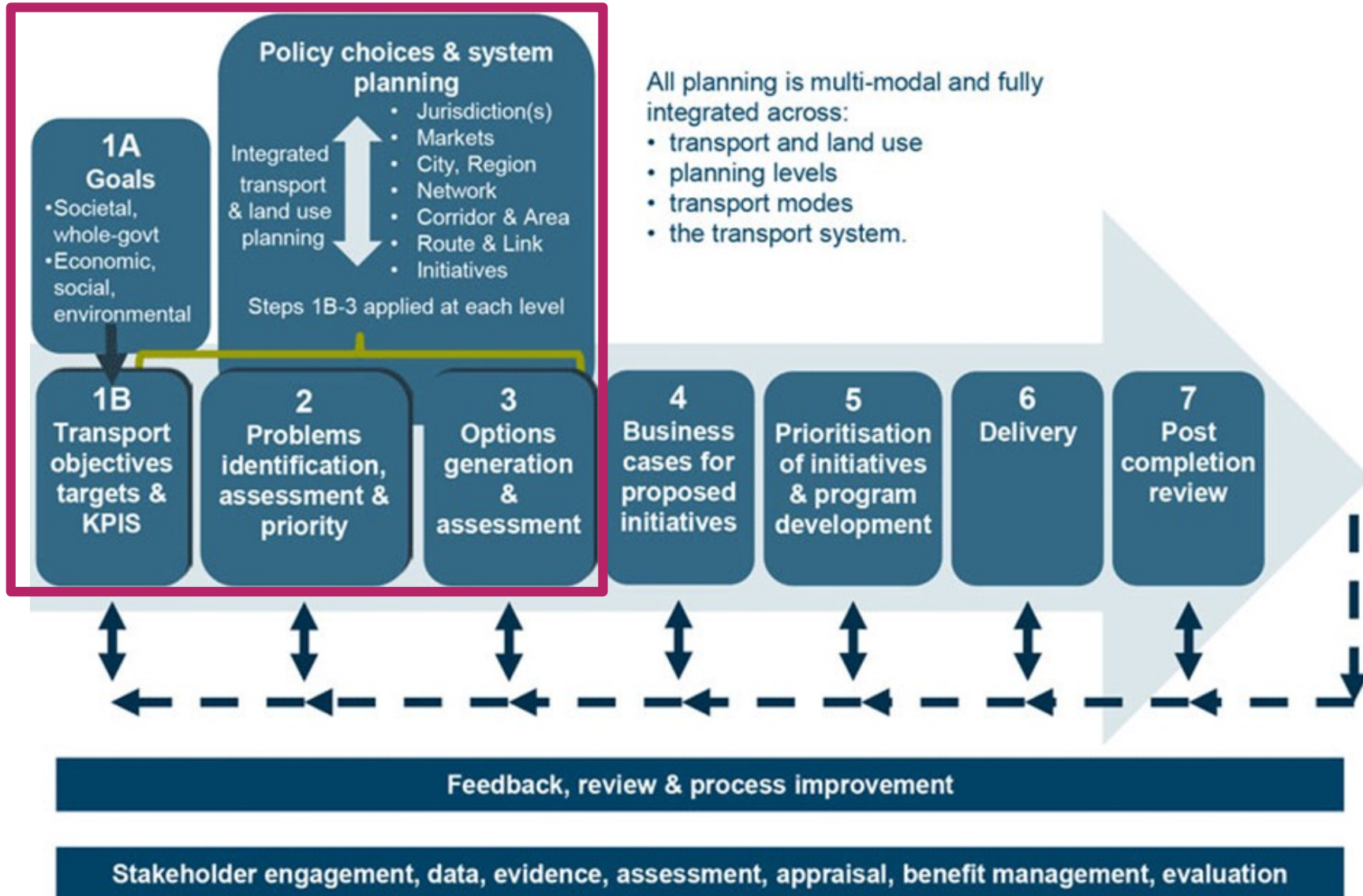
WALKING/CYCLING TRAILS AND BUSH FOR LIFE SITES



TOPOGRAPHIC CONSTRAINTS IN CRAIGBURN FARM



ATAP ASSESSMENT FRAMEWORK AND GUIDELINES



ALIGNMENT OPTIONS ASSESSMENT FRAMEWORK

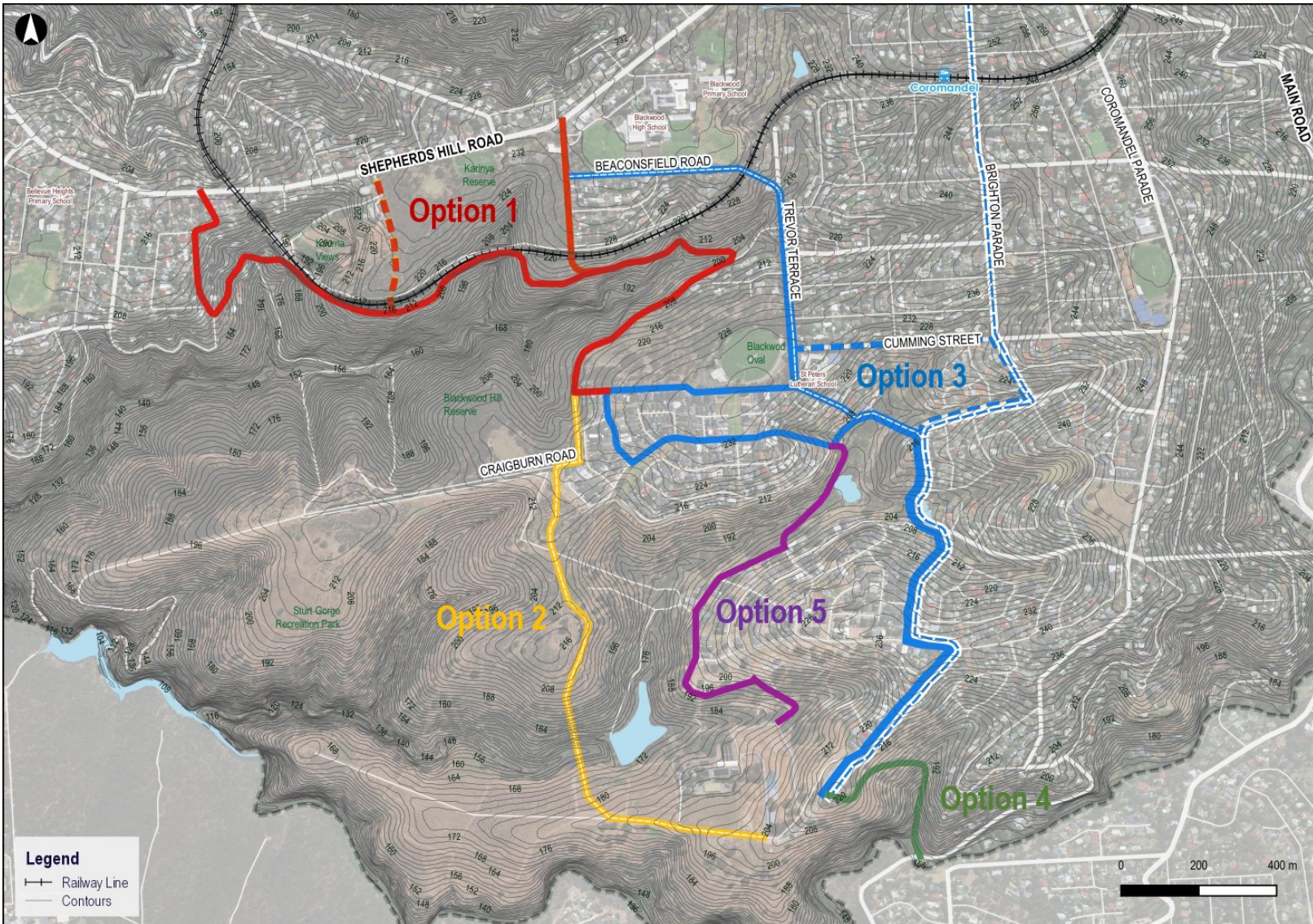
Step	Assessment Framework Task
1	Map the physical constraints to determine the potential roadway alignment options
2	Determine a long list of potential road alignment options for the western bypass route of Craighburn Farm based on the constraints analysis
3	Conduct a "fatal flaw" assessment of the potential alignment options to filter out the options and develop a short list
4	Develop and confirm the MCA assessment criteria based on a Triple Bottom Line approach
5	Score the roadway alignment options for MCA criteria

Score Description	Strong Positive	Weak Positive	Neutral	Weak Negative	Strong Negative
Score Value	●5	●4	●3	●2	●1

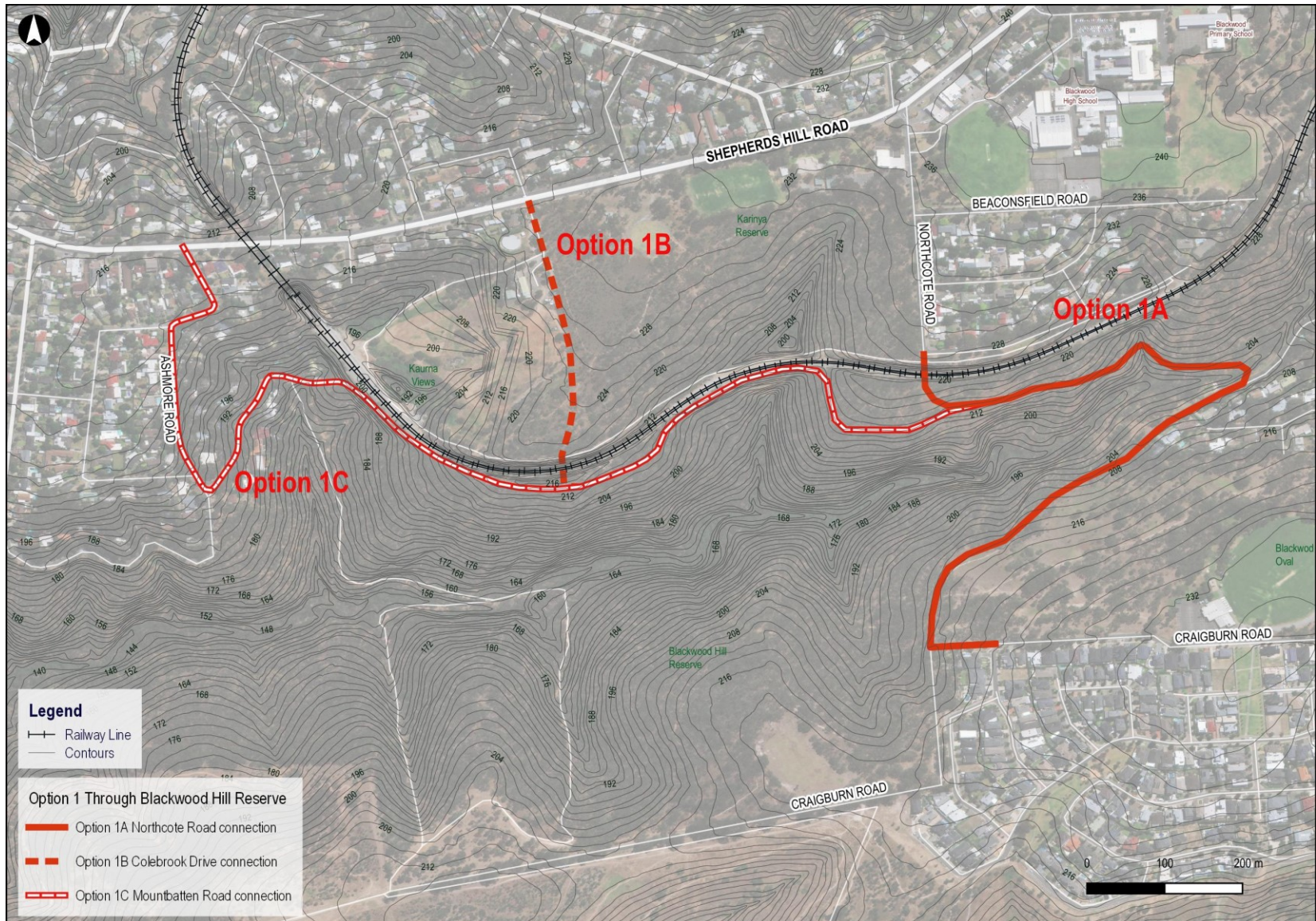
KEY OBJECTIVES FOR THE WESTERN ROAD BYPASS

Objective	Objective Description	Type of Objective
A	Provide Craighburn Farm residents with safe egress to mitigate bushfire risks	Benefit
B	Maximise improvement for local access and amenity for walking and cycling in the bushland and to bus stops	Benefit
C	Maximise travel time benefits for Craighburn Farm residents to access Shepherds Hill Road	Benefit
D	Minimise cost to Government (City of Mitcham, DPTI and Infrastructure Australia in the Australian Federal Government)	Disbenefit
E	Minimise impact on local streets in Craighburn Farm with through traffic	Disbenefit
F	Minimise environmental and heritage impacts of a new roadway	Disbenefit

OVERVIEW OF WESTERN BYPASS/LINK ROAD OPTIONS



OPTION 1 ALIGNMENTS THROUGH BLACKWOOD HILL RESERVE



OPTION 1 ALIGNMENTS THROUGH BLACKWOOD HILL RESERVE



OPTION 2 ALIGNMENTS VIA STURT GORGE RECREATION PARK



OPTION 2 ALIGNMENTS VIA STURT GORGE RECREATION PARK



OPTION 3 ALIGNMENTS VIA TREVOR TCE/BEACONSFIELD ROAD



OPTION 3 ALIGNMENTS VIA TREVOR TCE/BEACONSFIELD ROAD



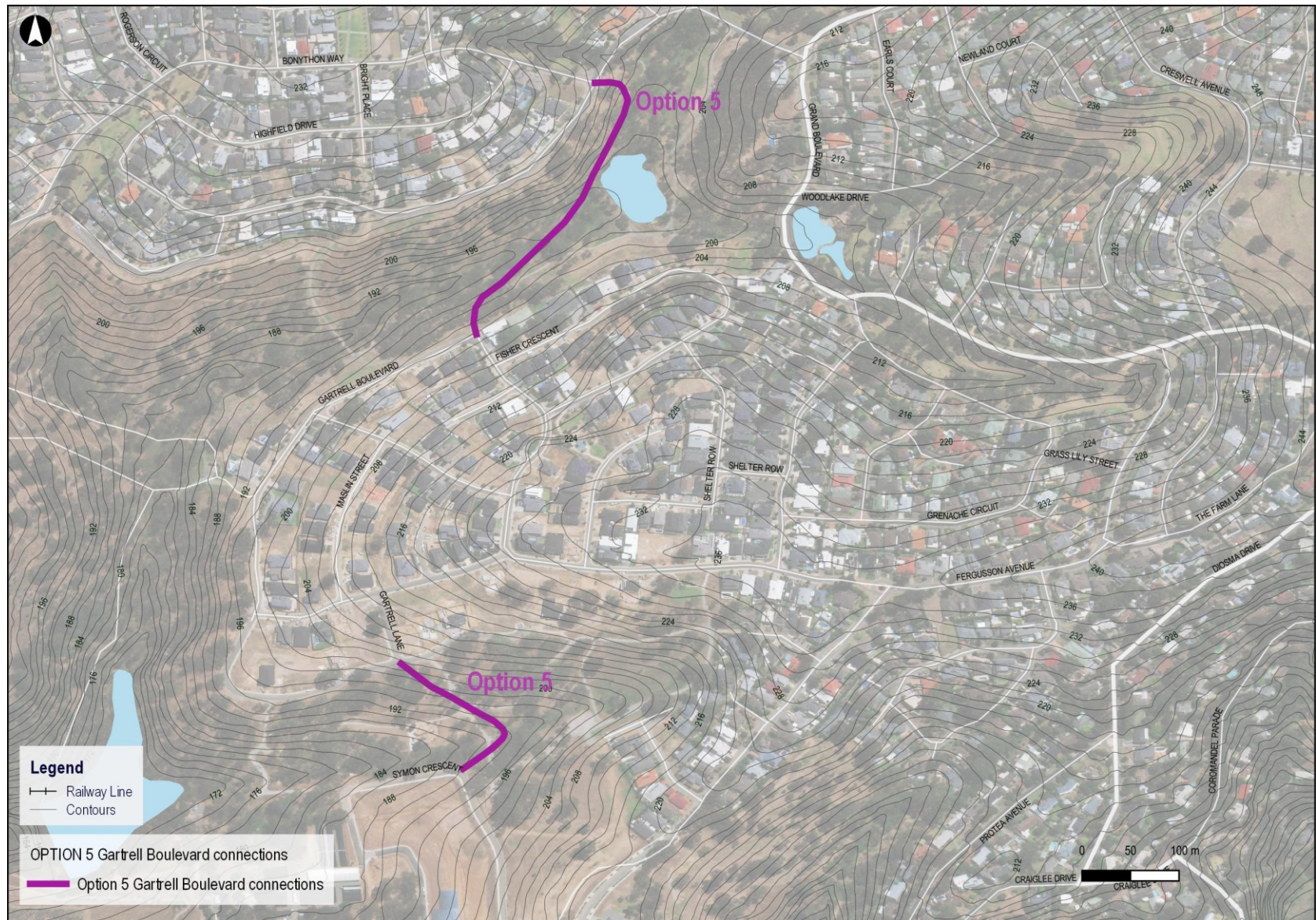
OPTION 4 ALIGNMENT THROUGH HORNERS CORNERS BUSHLAND



OPTION 4 ALIGNMENT THROUGH HORNERS CORNERS BUSHLAND



OPTION 5 INTERNAL ROAD CONNECTIONS IN CRAIGBURN FARM



CRAIGBURN FARM ROAD ALIGNMENT OPTIONS

Option	Option Description
1A	Connector from Craighburn Road to Northcote Road via Blackwood Hill Reserve
1B	Connector from Craighburn Road to Colebrook Drive via Blackwood Hill Reserve
1C	Connector from Craighburn Road to Mountbatten Road via Blackwood Hill Reserve
2A	Connector from Blackwood Park Boulevard to Northcote Rd via Sturt Gorge Recreation Park
2B	Connector from Blackwood Park Boulevard to Colebrook Drive via Sturt Gorge Recreation Park
2C	Connector from Blackwood Park Boulevard to Mountbatten Road via Sturt Gorge Recreation Park
3A	Trevor Terrace to Beaconsfield Road from Craighburn Road
3B	Trevor Terrace to Beaconsfield Road from Cumming Street and Star Lily Street
3C	Trevor Terrace to Beaconsfield Road via Lutheran School access
3D	Connection from Creswell Avenue to Brighton Parade via Star Lily Street
4	Blackwood Park Boulevard to Murrays Hill Road/Coromandel Parade via Horners Corners
5	Connections between Highfield Drive and Gartrell Boulevard and Symon Crescent

MCA CRITERIA FOR THE STRATEGIC MERIT TEST

Number	Criterion Name	Strategic Objective for the MCA Assessment Criterion	Triple Bottom Line Category	Proposed Weighting
1	Bushfire Emergency Egress	Maximise safe egress for residents during a bushfire emergency	Social	10%
2	Accessibility Improvements	Maximise public transport patronage and active transport opportunities	Social	10%
3	Impacts to Craigburn Farm Residents	Minimise impacts on residents from traffic and noise	Social	10%
4	Impacts on Property and Bushland Trails	Minimise property acquisition and loss of use of walking/cycling trails	Social	10%
5	Fire Risk to Human Life and Property	Minimise impacts to residents and property from fire damage	Environmental	10%
6	Impacts on Bushland, Flora and Fauna	Minimise environmental impacts	Environmental	10%
7	Traffic Relief on Arterial Roads	Minimise traffic impacts	Economic	10%
8	Road Infrastructure Costs	Minimise cost	Economic	10%
9	Impacts during Construction	Minimise cost	Economic	10%
10	Road Design Complexity and Constructability	Minimise cost	Economic	10%

CRITERION 1: BUSHFIRE EMERGENCY EGRESS

Score	Option	Combined bushfire emergency egress score
5	3A, 3B, 3C, 3D, 5	0 to 25 per cent
3	1A, 4	50 to 75 per cent
2	1B, 1C, 2A	75 to 100 per cent
1	2B, 2C	> 100 per cent

The criterion measure was calculated as the length of roads for residents to travel to their nearest bushfire safer places via the proposed new road option and the existing roads. The proportion of roads within the high risk bushfire areas were calculated as percentages.

The safer bushfire places were the Tonsley Innovation District and Blackwood Village Shopping Centre.

Criterion Objective	Score	5	4	3	2	1
Maximise safety egress for residents during a bushfire emergency	Combined bushfire emergency egress score	0-25%	25% - 50%	50% -75%	75% - 100%	> 100%

CRITERION 2: ACCESSIBILITY IMPROVEMENTS

Score	Option	Access to public transport, bush trails from north of railway line and bush trails from Node 3
5	2A	New bridge connection to bush trails for Northcote Road residents via bridge over railway line Better walking access to bush trails for residents in Node 3
4	2C	New walking connection to bush trails for Mountbatten Road residents Better walking access to bush trails for residents in Node 3
3	1A	New bridge connection to bush trails for Northcote Road residents via bridge over railway line
3	2B	New bridge connection to Colebrook Drive Better walking access to bush trails for residents in Node 3
2	1C	New walking connection to bush trails for Mountbatten Road residents
1	1B	New bridge connection to Colebrook Drive
1	3A, 3B	No accessibility improvements to public transport or trails
1	3C	Shorter walk access to public transport
1	3D	No accessibility improvements to public transport or trails
1	4	Slight improvement on walking access to bus stops on Murrays Hill Road
1	5	Slight improvement on walking access between Node 2 and Node 3

Criterion Objective	Score	5	4	3	2	1
Maximise public transport patronage and active transport opportunities	Combined accessibility values	5	4	3	2	0 or 1

CRITERION 3: IMPACTS TO CRAIGBURN FARM RESIDENTS

Score	Option	Number of houses in the residential estates along the roadway
5	4	11 houses
5	1B	27 houses
5	1A	60 houses
4	5	75 houses
4	1C	81 houses
3	3C	138 houses
3	3B	176 houses
2	3D	199 houses
2	3A	216 houses
2	2B	238 houses
1	2A	271 houses
1	2C	292 houses

Criterion Objective	Score	5	4	3	2	1
Minimise impacts on residents from traffic and noise	Number of houses from the residential estates along and to the new roadway	0 to 60	60 to 120	120 to 180	180 to 240	> 240

CRITERION 4: IMPACTS TO PROPERTY & BUSHLAND TRAILS

Score	Option	Number of properties affected and number of tracks and trails crossed or removed
5	3D, 4, 5	No property acquisition required; 0 to 1 trails crossed
4	1A, 1C, 3A, 3B, 3C	No property required or 1 to 2 properties required; 1 to 3 trails crossed
3	1B	No property acquisition required; 4 trails crossed
1	2A, 2B, 2C	No property acquisition required; 9 to 10 trails crossed

Criterion Objective	Score	5	4	3	2	1
Minimise property acquisition and loss of use of walking/cycling trails	Number of properties affected and number of tracks and trails crossed or removed	0	1 to 3	4 to 6	7 to 9	10 to 12

CRITERION 5: FIRE RISK TO HUMAN LIFE AND PROPERTY

Score	Option	Length of roads through high risk bushfire protection area
5	3D	0 m
5	3B	100 m
5	3A, 3C	200 m
5	4	450 m
5	5	600 m
4	1A	1,200 m
3	1B	2,100 m
2	1C	2,500 m
2	2A	2,600 m
1	2B	3,500 m
1	2C	3,900 m

Criterion Objective	Score	5	4	3	2	1
Minimise impacts to residents and property from fire damage	Length of road in km through the red bushfire zone	0-800	800-1,600	1,600-2,400	2,400-3,200	>3,200

CRITERION 6: IMPACTS ON BUSHLAND, FLORA AND FAUNA

Score	Option	Area of bushland to be cleared for new roads
5	3D	No impact
5	3A	2,400 sq. m
5	3B, 3C	2,700 sq. m
5	4	9,300 sq. m
5	5	12,500 sq. m
4	1A	20,600 sq. m
3	1C	39,700 sq. m
3	1B	40,600 sq. m
2	2A	51,400 sq. m
1	2C	70,500 sq. m
1	2B	71,300 sq. m

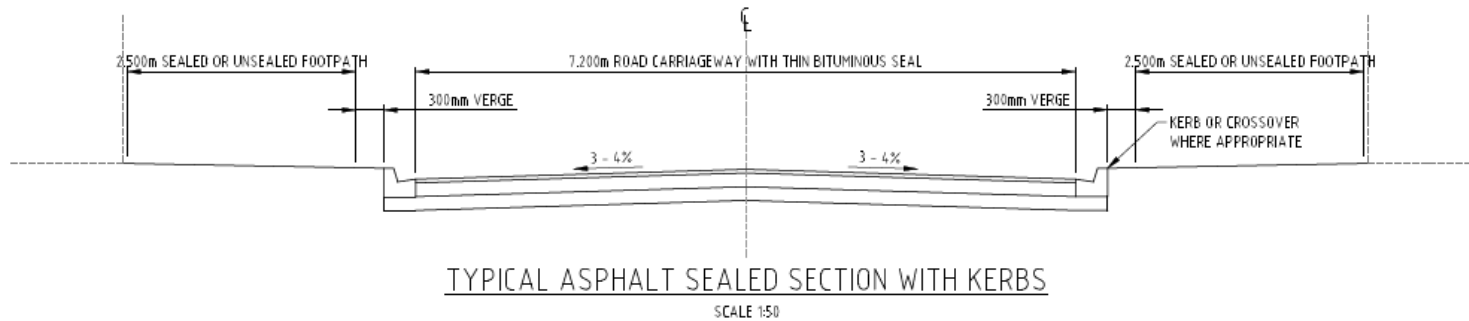
Criterion Objective	Score	5	4	3	2	1
Minimise environmental impacts	Total sq. m of land within a 20 m buffer along the new road in the bushland areas	< 14,000	14,000 to 28,000	28,000 to 42,000	42,000 to 56,000	> 56,000

CRITERION 7: TRAFFIC RELIEF ON ARTERIAL ROADS

Score	Option	Amount of diverted traffic (daily) from Blackwood roundabout or Coromandel Parade (assuming 25% of traffic generated by residential developments along the road will use this bypass)
5	3B, 3C	3,000 vpd (diverting to Shepherds Hill Road via Trevor Terrace, Beaconsfield Road and Northcote Road)
5	3A	3,000 vpd (diverting traffic from most of Craighburn Farm to Shepherds Hill Road via Trevor Terrace, Beaconsfield Road and Northcote Road)
4	3D	2,300 vpd (diverting to Brighton Parade)
3	2A, 2B, 2C	1,000 vpd (diverting traffic from Node 1 and Node 3 to Shepherds Hill Road via new road and Northcote Road, Colebrook Drive or Ashmore Road respectively)
2	1A, 1B, 1C	600 vpd (diverting traffic from Node 1 to Shepherds Hill Road via new road and Northcote Road, Colebrook Drive or Ashmore Road respectively)
1	4	400 vpd (connection between node 3 and Murrays Hill Road)
1	5	0 (local connections between Node 2 and Node 3)

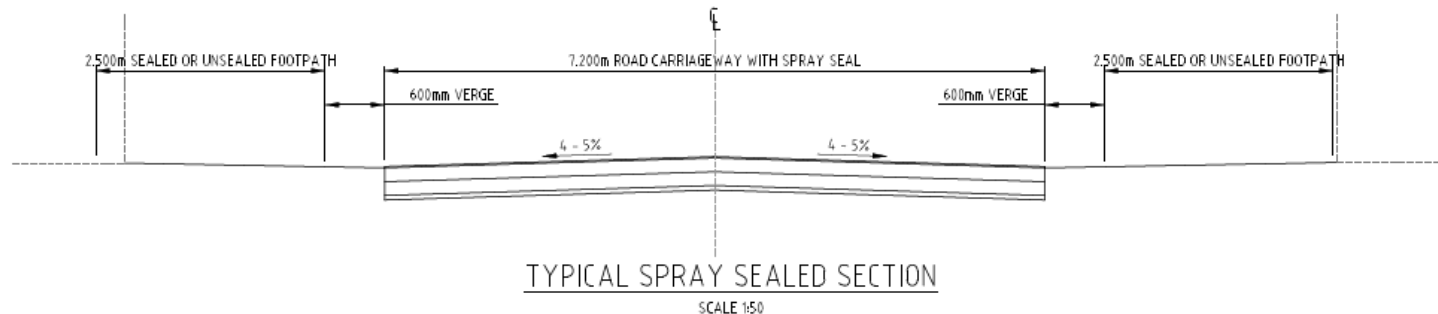
Criterion Objective	Score	5	4	3	2	1
Minimise traffic impacts	amount of diverted traffic from Blackwood roundabout or Coromandel Parade	>2,400	1,800-2,400	1,200-1,800	600-1,200	0-600

TYPICAL CROSS-SECTION FOR THE BYPASS ROAD OR LINK



Road Design Parameters:

- 7.2 m sealed road
- Posted speed of 50 km/h



SCALE 0 0.5 1.0 1.5 2.0 2.5 METRES

CRITERION 8: ROAD INFRASTRUCTURE COSTS

Score	Option	Description and Value
5	3D	< \$ 2 million – Civil works to punch through to Brighton Parade, possible upgrades to existing roads
4	4	\$ 2 – 4 million – Bridge over creek, property purchases required
4	5	\$ 2 – 4 million – Small bridges over culverts required
3	1C	\$ 4 – 6 million – Embankment works, small bridges over culverts
3	3A	\$ 5 – 7 million – Bridge over rail only, property purchases required
3	3B	\$ 5 – 7 million – Bridge over rail, property purchases required, civil works at school
3	3C	\$ 5 – 7 million – Bridge over rail, property purchases required, civil works to punch through to Brighton Parade
2	1A	\$ 7 – 9 million – Bridge over rail, small bridges over culverts
2	1B	\$ 9 – 12 million – Bridge over rail, small bridges over culverts, embankment works
1	2A, 2B, 2C	> \$ 50 million – Significant bridge (up to 25 m height and other small bridges and other infrastructure

CRITERION 9: IMPACTS DURING CONSTRUCTION

Score	Option	Description for the Score
5	3D	Increased traffic in streets from construction traffic, increased noise due to construction, minimal environmental impacts on creeks and vegetation
3	4, 5	Impact on walking / cycling trails, increased noise due to construction, potential environmental impacts on creeks and vegetation
2	1C	Impact on walking / cycling trails, increased local traffic in streets from construction traffic, increased noise due to construction, potential environmental impacts on creeks and vegetation
2	1A, 1B	Train line disruption during bridge construction, impact on walking / cycling trails, increased traffic in streets from construction traffic, increased noise due to construction, potential environmental impacts on creeks and vegetation
2	3A, 3B, 3C	Train line disruption during bridge construction, increased traffic in streets from construction traffic, increased noise due to construction, minimal environmental impacts on creeks and vegetation
1	2C	Significant impact on walking / cycling trails, increased noise due to construction, potential environmental impacts on creeks and vegetation
1	2A, 2B	Train line disruption during bridge construction, significant impact on walking / cycling trails, increased noise due to construction, potential environmental impacts on creeks and vegetation

CRITERION 10: DESIGN COMPLEXITY & CONSTRUCTABILITY

Score	Option	Description for the Score
5	3D	Roundabout design required, Road upgrades including potential revisions to kerbs, cross-section and signage
4	5	Culvert bridge required, stormwater to be assessed
3	4	Close to complying to Austroads, switchbacks may be required
2	1A	Can comply to Austroads, bridge design required
2	1B	Can comply to Austroads, bridge design required, embankments to be designed, possible retaining structures
2	1C	Can comply to Austroads, embankments to be designed, possible retaining structures
1	3A, 3B, 3C	Does not comply with Austroads at bridge, too steep and too long and not enough clearance for train, bridge design required
1	2A	Marginal with regards to Austroads, significant bridge design required
1	2B, 2C	Marginal with regards to Austroads, significant bridge design required, embankments to be designed, possible retaining structures

MCA RESULTS WITH EQUAL WEIGHTINGS

Ranking	Option	Craigburn Farm Road Bypass Alignment Options	Percent Score
1	3D	3D Star Lily St connection to Brighton Pde	84%
2	4	4 Horners Corners connection	72%
3	5	5 Blackwood Park Node 1, 2 and 3 connections	72%
4	3B	3B Beaconsfield Rd connection via Cumming St	68%
5	3C	3C Beaconsfield Rd connection via Lutheran School	68%
6	3A	3A Beaconsfield Rd connection via Craigburn Rd	66%
7	1A	1A Northcote Rd connection	62%
8	1C	1C Mountbatten Rd connection	52%
9	1B	1B Colebrook Dr connection	50%
10	2A	2A Blackwood Park to Northcote Rd	38%
11	2B	2B Blackwood Park to Colebrook Dr	30%
12	2C	2C Blackwood Park to Mountbatten Rd	30%

STUDY RECOMMENDATIONS

Options 1A, 1B, 1C, 2A, 2B and 2C are not viable because:

- Significant environmental impacts to the bushland flora and fauna habitats, recreational walking and cycling trails in the parks west of Craighburn Farm
- Social impacts on additional traffic and noise for residents in Craighburn Farm
- High capital costs for a new roadway with bridges that will be unlikely to function as a traffic bypass route of the Blackwood roundabout due to the indirect alignment to connect with Shepherds Hill Road
- Bushfire emergency egress via a road through the bushland west of Craighburn Farm may increase the risk to human life, instead of reducing it.

The safest fire exit route for Craighburn Farm residents is the existing situation via Grand Boulevard to Coromandel Parade to travel north to Shepherds Hill Road via the Blackwood roundabout or south to Murrays Hill Road and Black Road.

STUDY RECOMMENDATIONS

- The existing emergency bushfire egress for Craigburn Farm residents, in particular west of Grand Boulevard and south of Fergusson Avenue, exists **via Craigburn Road and Cumming Street or Grand Boulevard to Coromandel Parade**. It is considered adequate for the size of the residential population and none of the alternative bushfire bypass emergency egress alignments are safer than the existing situation.
- The City of Mitcham may consider **Option 3D** with the opening of Star Lily Street to connect more directly with Brighton Parade. However, with the likely issues for the residents of Star Lily Street and Brighton Parade with additional traffic and loss of local amenity, it is not recommended for the City of Mitcham or the State Government to pursue a detailed feasibility study or business case for this road connection.