EB3 Commercial Alignment Options

Eastern Busway Alliance

Fletcher | acciona | AECOM | Jacobs

Let's get East Auckland moving

EB3 – Commercial Station Location Options

Technically Preferred option

Burswood Crescent West and East

Option 1

Burswood Crescent West and Howick

Option 2

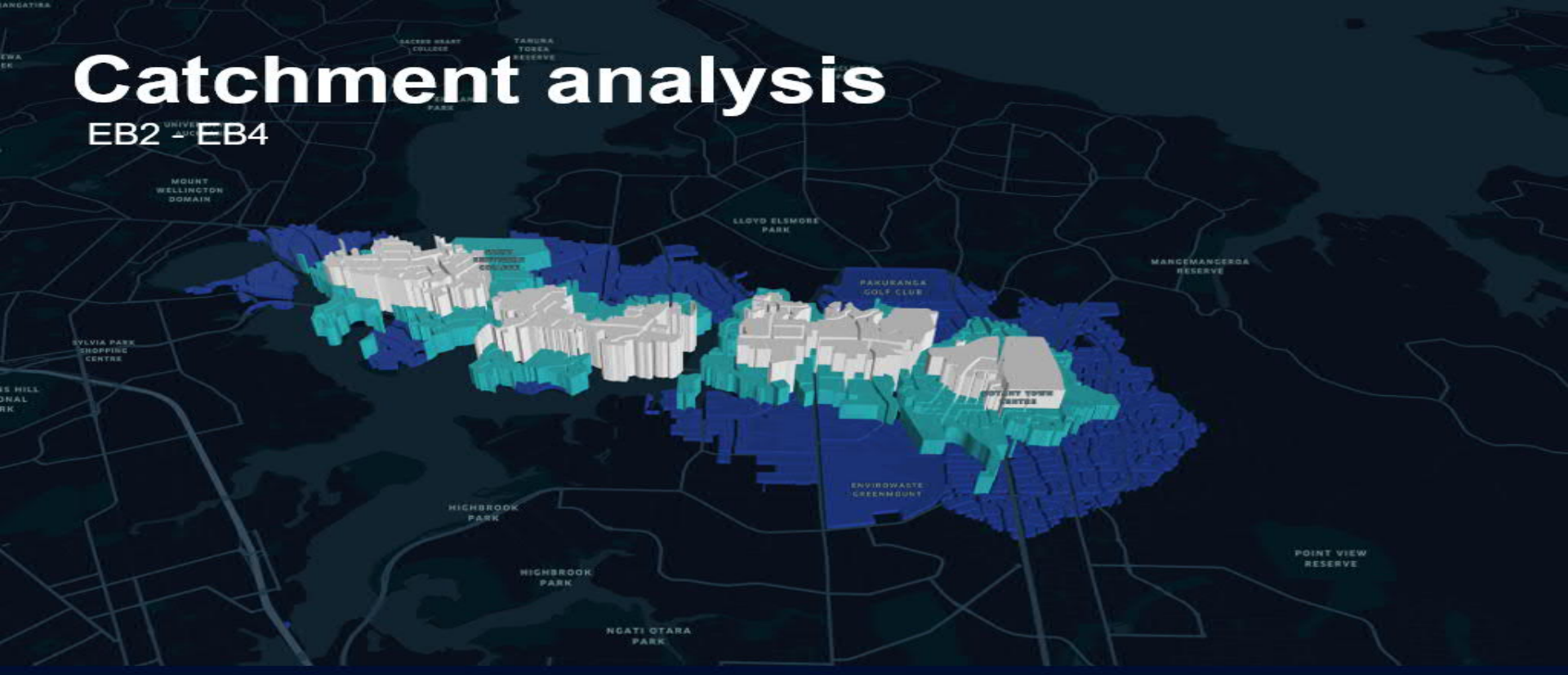
Commercial Central and Howick

Option 3

Commercial Central

Catchment analysis

EB2 – EB4



Eastern Busway Alliance

Fletcher | acciona | AECOM | Jacobs

Let's get East Auckland moving

Proposed Two Stations
Burswood Cr East and West

Option 1 Two Stations
Burswood Cr West and Howick

Option 2 Two Stations
Commercial Central and Howick

Option 3
One Station
Commercial
Central

Option 4
One Station
Commercial
West

Eastern Busway Alliance

Fletcher | acciona | AECOM | Jacobs

Let's get East Auckland moving

Proposed Two Stations
Burswood Cr East and West

Option 1 - Two Stations
Burswood Cr West and Howick

X

Proposed - Two Stations
Burswood Cr East and West

Option 2 - Two Stations Commercial
Central and Howick

?

Proposed -Two Stations
Burswood Cr East and West

Option 3 - One Station
Commercial Central

?

Proposed -Two Stations
Burswood Cr East and West

Option 4 - One Station
Commercial West

?

EB3 – Commercial Comparison of Station Options

Benefits and Disbenefits

Station Options

Item	Proposed	Option 1 Burswood West + Huntington	Option 2 Central + Huntington	Option 3 Central	Option 4 Burswood West
Catchment	Largest catchment coverage	Good catchment coverage Misses small portion of commercial area and small portion of residential area in East Auckland	Good catchment coverage Misses small portion of commercial area and residential area in Burswood and East Auckland	Good catchment coverage Misses small portion of commercial area and residential area in Burswood and East Auckland	Poor catchment coverage Misses large portion of commercial area and small residential area in Burswood and East Auckland
Cost	2 Stations + land	2 Stations + land	2 Stations + land	1 Station + land	1 Station + land
Travel Time	2 Stations - Additional 30 Secs	2 Stations - Additional 30 Secs	2 Stations - Additional 30 Secs	1 Station	1 Station

Merit in pursuing Option 3 lower cost, faster travel time, and only marginal reduction in catchment

Propose -Two Stations
Burswood Cr East and West

Option 3 - One Station
Commercial Central

Two Stations
Burswood

Propose -Two Stations
Burswood Cr East and West

Option 3 - One Station
Commercial Central

One Station
Central

Propose -Two Stations
Burswood Cr East and West

Option 3 - One Station
Commercial Central with
Harris Road Stop

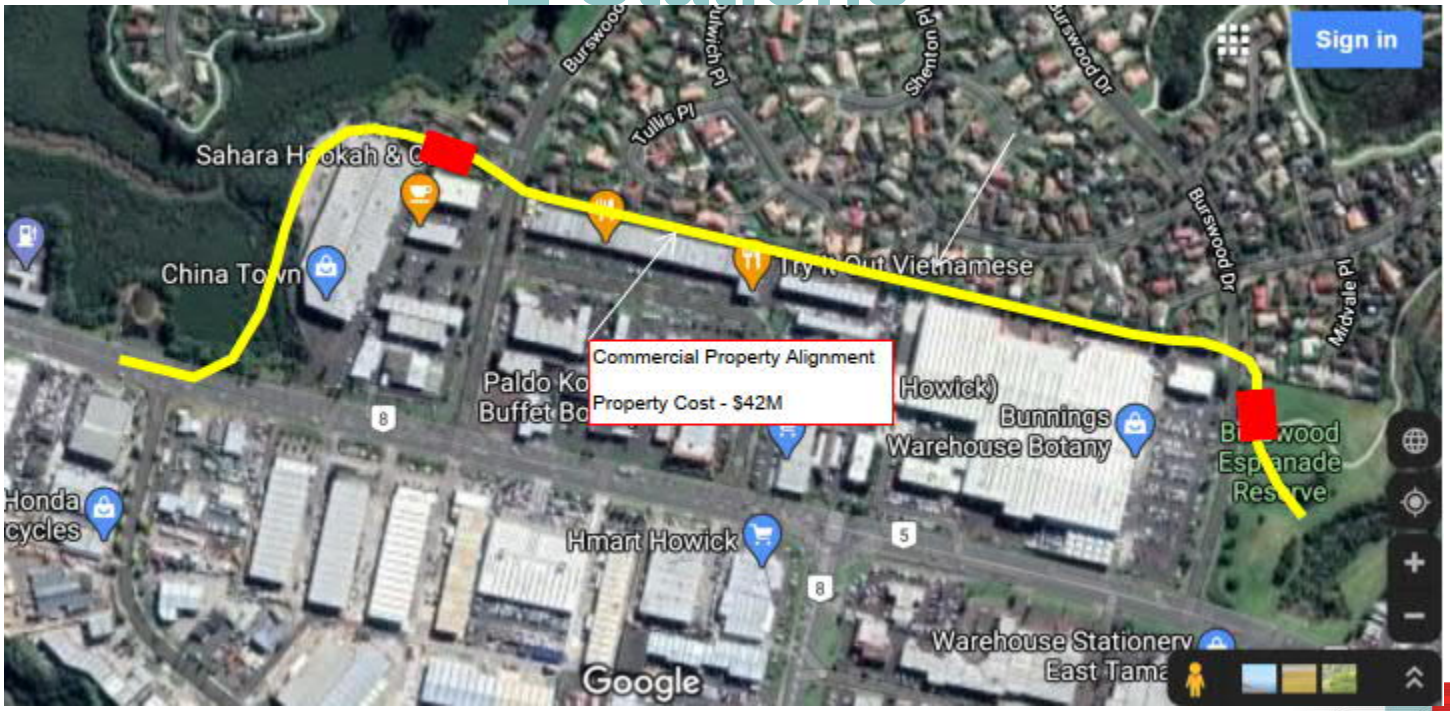
One Station
Central

Option 3

Commercial Central

EB3 – Commercial Alignment Options (Central Station)

Proposed – Commercial Bund Alignment 2 Stations



Eastern Busway Alliance

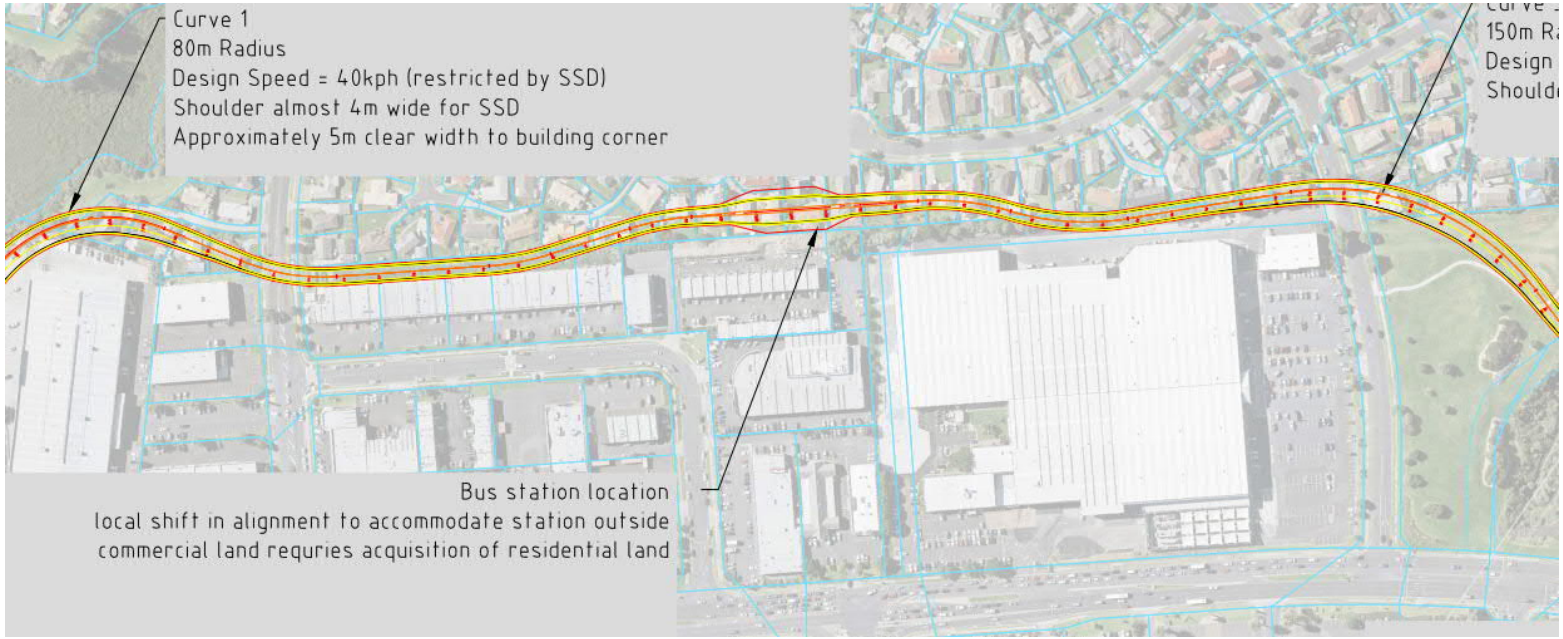
Fletcher | acciona | AECOM | Jacobs

Let's get East Auckland moving

Proposed – Commercial Bund Alignment 2 Stations

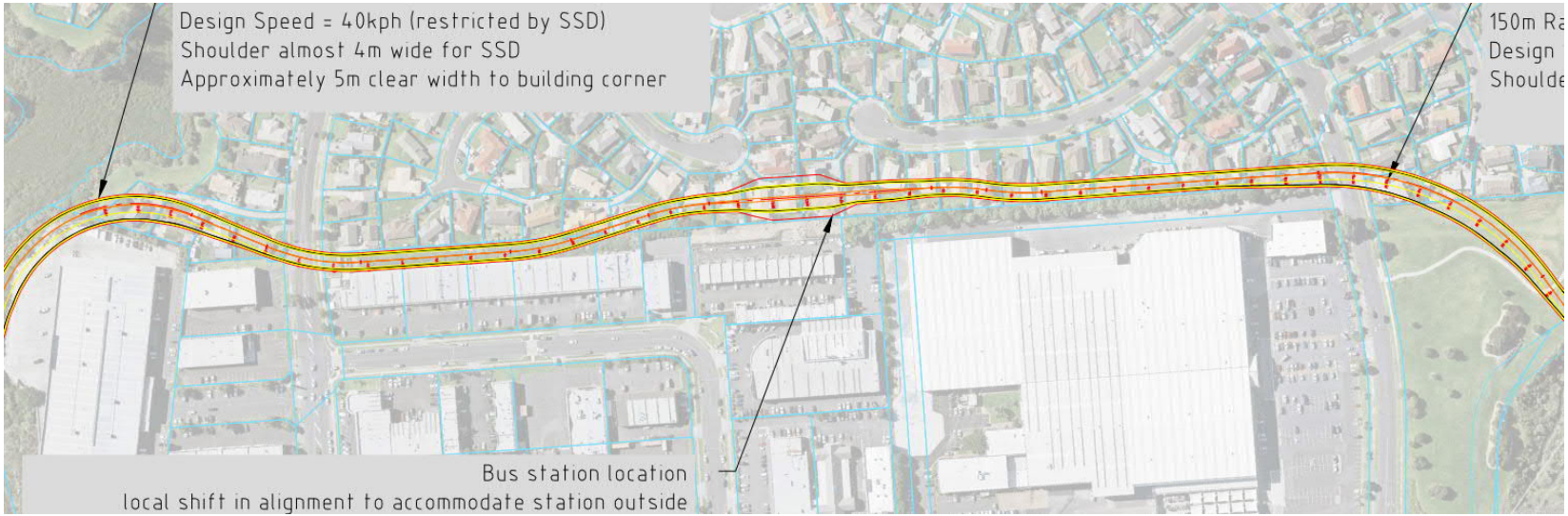
Option A – Commercial Bund Alignment
1 Central Station- schematic

Option A – Commercial Bund Alignment
1 Central Station



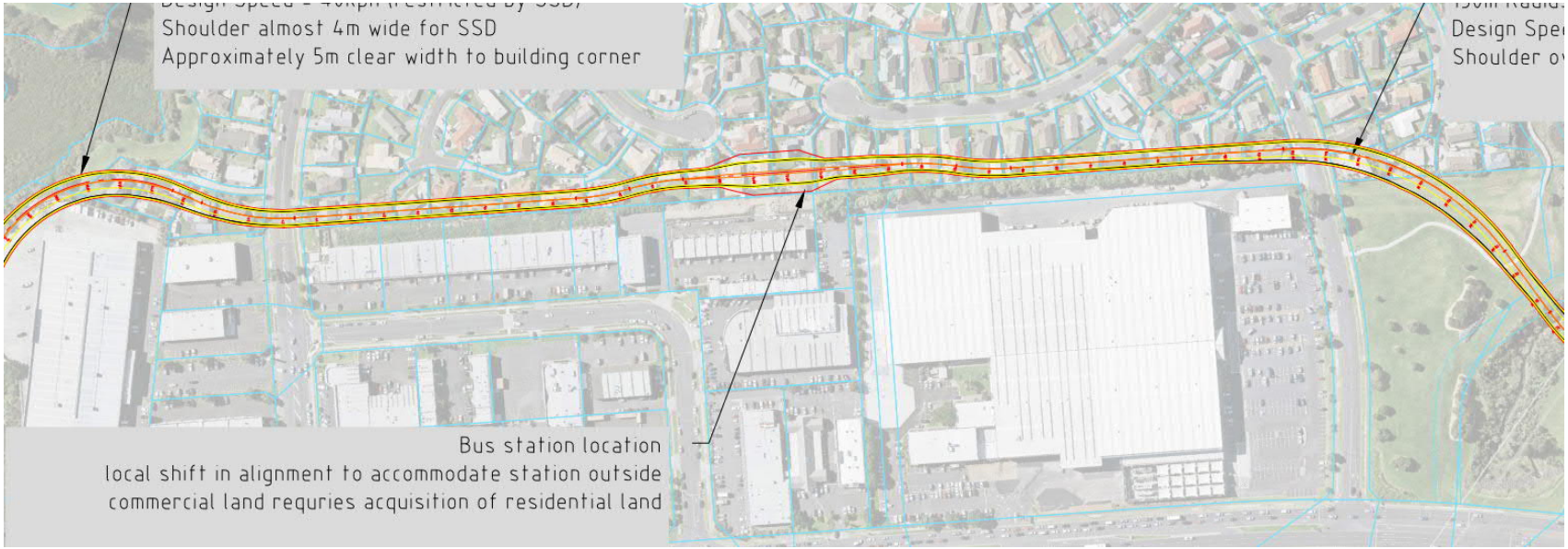
Option B – Commercial & Residential Alignment
1 Central Station - schematic

Option B – Commercial & Residential Alignment
1 Central Station



Option C – Residential Alignment
1 Central Station - schematic

Option C – Residential Alignment
1 Central Station



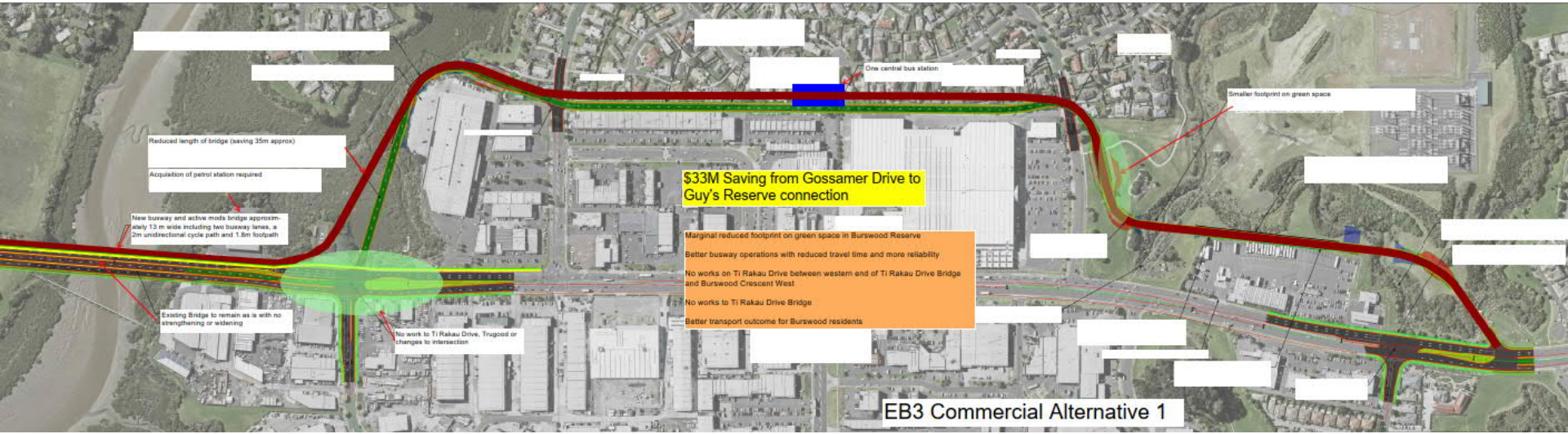
EB3 – Commercial Comparison of Alignment Options

Benefits and Disbenefits

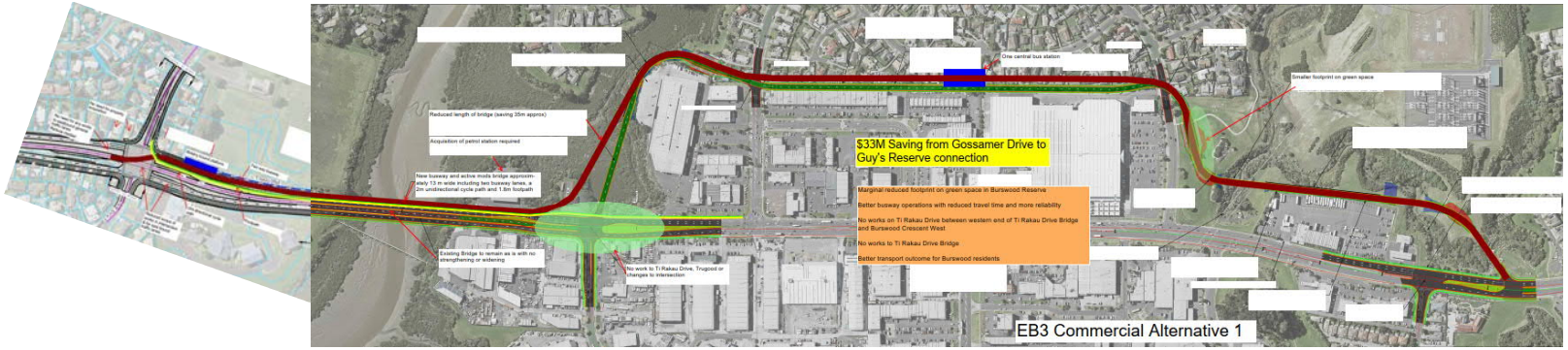
Alignment Options

Item	Proposed Commercial (2 Stations)	Option A Commercial/Commercial (1 Station)	Option B Commercial + Residential (1 Station)	Option C Residential (1 Station)
Construction Cost	$4M	$2M Potential savings in construction Lower noise walls Not as constrained	$2M Potential savings in construction Lower noise walls Not as constrained	$2M Potential savings in construction Lower noise walls Not as constrained
Property Costs	$49M 18 Partial, 8 Full, 4 Reserve 30 Total	$66M 10 Partial, 30 Full, 4 Reserve 44 Total	$61M 9 Partial, 31 Full, 4 Reserve 44 Total	$64M 8 Partial, 35 Full, 4 Reserve 47 Total
Total Costs	$53M	$68M	$63M	$66M
Property Risk Due to construction impacts/damage to residential properties	$40M	$10M	$7M	Low
Total Costs incl Risk due to construction impacts/damage	$93M	$78M	$70M	$66M
Station Accessibility	Access to both stations from Burswood Road Only one access to each Burswood West station platform	Access to Burswood Drive would require additional property (corridor too narrow) – access must be provided via land acquisitions on Heathwood Pl, Dulwich Pl and Torrens St Multiple accesses to each platform	Access cannot be provided to Burswood Drive west without additional property (corridor too narrow) – access can be provided via pathway along alignment to Burswood Dr east and via land acquisitions on Heathwood Pl, Dulwich Pl and Torrens St Multiple accesses to each platform	Access provided along corridor to Burswood Drive as well as Heathridge Pl, Dulwich Pl and Torrens St Multiple accesses to each platform

EB3 Commercial Option C - expanded



EB3 Commercial Option C - expanded



Recommendation

- Progress development of residential alignment with single station (Commercial Alignment Option 3 (Central Station)) to allow further assessment

- Conduct formal option assessment of Commercial Alignment Option 3 against current Technically Preferred Option (Commercial Alignment with 2 Stations) with greater detailed investigations on the following (to be confirmed):
  - Urban regeneration
  - Impacts during construction
  - Operational impact & social impact
  - Safety and CPTED
  - Location and alignment of active mode provisions for potential additional savings

Thank you.

Eastern Busway Alliance

Fletcher | acciona | AECOM | Jacobs

Let's get East Auckland moving

Appendix 9: EB3C – Burswood Alignment MCA

IPAA SHORTLISTED SCHEMES CONSTRUCTION MCA

Eastern Busway Alliance

Item	Topic	Weighting	Description	Scheme 1 - EB3R online		Scheme 2 - EB3R offline		Scheme 3 - EB3C online		
				Score	Notes / Comments	Score	Notes / Comments	Score	Notes / Comments	Score
1	**Health & Safety**	**12**	Assess level of HSE risk in construction activities required in the option beyond BAU risks (i.e. option requires considerable additional working at height, working close to live traffic and live services etc.)	-3	Working in live service and traffic corridor. Considered risk of asbestos removal considered nuetral	-1	Less interaction with Live traffic and Services	-2	Work in live traffic corridor and live services	-3
2	**Quality**	**6**	Does the option require construction methods or contains constraints that results in a higher risk profile in achieving Quality requirements (further costs or resources)	-2	Tieing into exsitng will require more quality	-1	Offline works least quality issues	-1		-2
3	**Environmental**	**6**	Does the option require construction methods or contains constraints that results in a higher risk profile in achieving and maintaining Environmental compliance (further costs or resources)	0	Sediment control considerations etc.	0		-1		-4
4	**Resourcing**	**2**	Assess level of risk in availability of key resources (plant items, trade skills etc,) required to construct option	-1	Additonal profiling / shaping required	0		-1	1 structure for Bus depot	-3
		2	Assess level of risk in availability of key subcontractors required in the option	0		0		-1	1 structure for Bus depot	-3
		2	Assess level of risk in availability of key materials required in the option	0		0		-1	1 structure for Bus depot	-3
5	**COVID Risk**	**6**	Assess level of risk in acquiring any key overseas resources (non-availability due to restrictions)	0		0		0		-1
6	**Access**	**2.7**	Does the options access points result in restrictions to any current traffic movements or access to public areas	-3	Access constaints when central	-1		-3		-2
		2.7	Does the options construction footprint restrict access (consider deliveries to commercial properties, access to amenities, residential properties)	-1		-2	Working on residential boundaries	-4	more impact on commercial frontages working central	-1
		2.7	Does the option have access, work area or method constraints that result in a reduction in productivity (increased cost)	-3	Less productive when central	-1		-3		-4
7	**Out of Hours works**	**8**	Does the option require considerable nightshift or weekend works to construct	-3		-1		-2		-2
8	**Proximity to residential and commercial buildings**	**10**	Does the option require construction works in close proximity to existing commercial and residential buildings (vibration, noise, dust, settlement risk etc.)	-1		-3	Working on residential boundaries	-3		-4
9	**Services**	**10**	Does the option involve interfacing with live services that cannot be eliminated or isolated	-3	More length in online over watermain. Works over HV cable and sewer are considered nuetral	-2		-3	not effecting HV. Watermain and sewer. Overhead lines neutral as structure is in similar location	-2
10	**Ground Conditions**	**4**	Does the option increase the likelihood of unforeseen ground conditions (requiring additional ground improvement works)	0		-1	Latent geotech conditions (~greenfields)	-1		-4
11	**Programme**	**5.0**	Assess the overall programme duration for the option	-2	1 work front / 1 crew. Circa 3 months longer than offline	-1	Limited to 3 work fronts only / 2 crews.	-3	circa 6 months longer than offline. 1 work front / 1 crew (1 structure + 1 civils)	-2
		2.5	Does the programme for the option have flexibility to adjust should constraints arise (ability to amend the critical path)	0	max crew sizes / open work fronts in both options	0		-1	max crew sizes / open work fronts in both options	0
		2.5	Is the resource levelling for the options programme manageable	-1	Lack of ability to move around crews / work areas. Further reliance on traffic control resources	0		-1		0
12	**Traffic**	**2.5**	What are the perceived vehicle traffic / pedestrian / cyclist impacts associated with this scheme? eg. significant road or lane closures, increased congestion, delays, disruptions; for both private vehicles and PT etc.	-3	More traffic impacts working central. Pedestrians / cyclists nuetral	-1		-3	Considerable traffic interfacing - staging / sequencing in busy commercial area. Restrictions to turning movements	-1
		2.5	Does there appear to be excessive temporary pavements required for traffic staging / traffic switches?	0		-1	Temporary pavement due to realignment of where busway comes back online	0		-1
		2.5	Does the scheme result in considerable 'ghost marking' or cost to manage 'ghost arking' due to traffic staging / switches?	-2		-1		-2		-1
		2.5	Does the scheme require perceived prolonged weekend and night closures and major traffic diversions over extended periods?	-3		-1		-3		-1
13	**Constructability**	**2**	Can the scheme be easily built with conventional and traditional methods and with local expertise and materials? Does it appear simple?	0	Construction methodolgies similar. Online has traffic management risks. Offline has potential ground condition issues (subgrade)	0		-1	live traffic, narrow traffic corridor	-2
		2	Does the scheme present opportunities for repetition and re-use of materials if planned correctly? Is it smart and logical?	0		0		-1		0
		100								

Assumptions

Ratings can be up to + or - 4 considering Regional effects

Pavement overlay only on EastBound EB3R and EB3C, otherwise new

Not considering effects / impacts of Ti Rakau Dr. Bridge

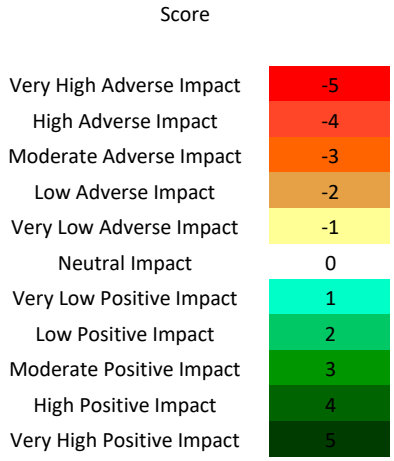
Aquistion of Property is included in Property team MCA

obs

Let's get East Auckland moving

			Weighted score				
Scheme 4 - EB3C offline (bund)	Scheme 4 - EB3C offline (preferred)		Scheme 1 - EB3R online	Scheme 2 - EB3R offline	Scheme 3 - EB3C online	Scheme 4 - EB3C offline (bund)	Scheme 4 - EB3C offline (preferred)
Notes / Comments	Score	Notes / Comments					
Working at heights. More craneage. Working over water. Need to do online works for tie ins	-3	Working at heights. More craneage. Working over water. Need to do online works for tie ins	-36	-12	-24	-36	-36
Controlled environment, but restricted by property	-1	Controlled environment, less restricted by property - wider corridor	-12	-6	-6	-12	-6
CMA, noise and vibration, dust	-4	CMA, noise and vibration, dust	0	0	-6	-24	-24
More plant & eqiuipment / specialist skills for structures. Piling over water	-3	More plant & eqiuipment / specialist skills for structures. Piling over water	-2	0	-2	-6	-6
Piling	-3	Piling	0	0	-2	-6	-6
Precast bridge elements, temporary works	-3	Precast bridge elements, temporary works	0	0	-2	-6	-6
more items to construct	-1	more items to construct	0	0	0	-6	-6
online ties in and local business	-2	online ties in and local business	-8	-3	-8	-5	-5
	0	wider access, not restricted by bund corridor	-3	-5	-11	-3	0
constrained corridor, highly restricted due to limited access	-3	constrained corridor, however more room than bund option	-8	-3	-8	-11	-8
material movements / deliveries at night. Tie in works at night	-2	material movements / deliveries at night. Tie in works at night	-24	-8	-16	-16	-16
We will be working back to back with residential properties. Will still effect commercial properties. Slightly worse than the online option because of the skinny corridor	-3	We will be working back to back with residential properties. Will still effect commercial properties. Slightly better than the bund option due to wider corridor	-10	-30	-30	-40	-30
	-2		-30	-20	-30	-20	-20
CMA, earth bund (potentially contaiminated). Latent geotech conditions (~greenfields)	-3	CMA, ground conditions more certain on vacant land. Latent geotech conditions (~greenfields)	0	-4	-4	-16	-12
Limited to 3 work fronts only / 2 crews (2 structres + 2 civils).	-2	Limited to 3 work fronts only / 2 crews (2 structres + 2 civils).	-10	-5	-15	-10	-10
more structures / less flexibility. More linear programme. Ability to open up more work fronts with additional crews	0	more structures / less flexibility. More linear programme. Ability to open up more work fronts with additional crews	0	0	-3	0	0
Ability to open up more work fronts with additional crews	0	Ability to open up more work fronts with additional crews	-3	0	-3	0	0
Tie in work online but maintaining original traffic	-1	Tie in work online but maintaining original traffic	-8	-3	-8	-3	-3
Temporary pavement due to realignment of where busway comes back online	-1	Temporary pavement due to realignment of where busway comes back online	0	-3	0	-3	-3
	-1		-5	-3	-5	-3	-3
	-1		-8	-3	-8	-3	-3
potential ground improvements. Convential bridge methods	-2	potential ground improvements. Convential bridge methods	0	0	-2	-4	-4
Introduction of multiple structures leads to repitition of formwork etc. but more work	0	Introduction of multiple structures leads to repitition of formwork etc. but more work	0	0	-2	0	0
			-165	**-106**	**-193**	**-231**	**-205**
Net Difference		**Net Difference**		**-60**		**38**	

Score	Description/ indicators for assessment
-5 Very High Adverse Impact	**National or Greater**: May impact on a nationally significant resource/ or may be experienced by a national scale audience; *and/or* May have a substantial/ complete impact (destruction) on the feature/ resource/ community identified; *and/or* **Long Term/ Permanent** = 20+ years.
-4 High Adverse Impact	**Regional**: May impact on a regionally significant resource or may be experienced by a regional or wider audience; *and/or* May have a high extent of impact on features/ resource/ community identified; *and/or* **Long Term/ Permanent** = 10 -20+ years.
-3 Moderate Adverse Impact	**Local Area Level Impact ()**: May impact on a locally significant resource (e.g. significant within an ecological district or within a catchment) or may impact on a local board community/ geographic scale; *and/or* May have a moderate extent of impact on the feature/ resource/ community identified; *and/or* **Medium term** = 5 -10 years
-2 Low Adverse Impact	**Local Area/ or Individual Level Impact ()**: May impact on a locally prevalent resource (e.g. site specific significant within an ecological district but only local effect or within a catchment) or may impact on a local board community/ geographic scale; *and/or* May have some extent of impact on the feature/ resource/ community identified; *and/or* **Short term** = 1 -5 years
-1 Very Low Adverse Impact	**Individual level impact**: May impact on resources not otherwise identified for their values or with otherwise innominate value or may impact a limited number of households (i.e. 20 households/ 50 people); *and/or* May have a low extent of impact on the feature/ resource/ community identified; *and/or* **Very Short Term** = <1 years.
0 Neutral Impact	Negligible impact or change from current situation/ natural
+1 Very Low Positive Impact	**Individual level benefit**: Benefits may be experienced for resources not otherwise identified for their values or with otherwise innominate value. Benefits may be experienced by a limited number of households (i.e. 20 households/ 50 people); *and/or* May have a very limited and confined extent of benefits on the feature/ resource/ community identified;
	and/or **Very Short Term** = < 1 years.
+2 Low Positive Impact	**Local level Benefits (2):** Benefits may be experienced by defined local environment or sub-catchment. Benefits may be on Census Area Unit or experienced by a limited number of households (i.e. 20-50 people); *and/or* May have a low extent of benefits on the feature/ resource/ community identified; *and/or* **Short Term** = 1-5 years.
+3 Moderate Positive Impact	**Local Level Benefits (1)**: Benefits may be experienced for values of an ecological district or within a catchment, or at a local board community/ geographic scale; And/or May have some extent of benefits on the feature/ resource/ community identified; And/or **Medium Term** = 5-10 years.
+4 High Positive Impact	**Regional Benefits**: Benefits may be experienced for a sub-regionally significant resource/ experienced by a sub-regional audience; *and/or* May have a high extent of benefits on the feature/ resource/ community identified (and confident of benefits being realised); *and/or* **Long Term Permanent** = 10-20+ years
+5 Very High Positive Impact	**Regional or Greater Benefit**: Benefits may be experienced by a whole region or across regions (including national) or may be to a regionally or nationally significant resource; *and/or* May have substantial benefits on features/ resources/ community identified. High degree of confidence of benefits being realised; *and/ or* **Long Term/ Permanent** = 20+ years.


Score
Very High Adverse Impact
-5
High Adverse Impact
-4
Moderate Adverse Impact
-3
Low Adverse Impact
-2
Very Low Adverse Impact
-1
Neutral Impact
0
Very Low Positive Impact
1
Low Positive Impact
2
Moderate Positive Impact
3
High Positive Impact
4
Very High Positive Impact
5

EB3 C Scoring Sheet update Nov 22							
Participant	Area of Expertise	OPTION 3		OPTION 4		OPTION 5	
		COM ONLINE		COM OFFLINE		COM Burswood OFFLINE	
		NO MITIGATION	WITH MITIGATION	NO MITIGATION	WITH MITIGATION	No Mitigation	With Mitigation
Andrew Gibbard/Stephen Power	Constructability	-1	-1	-2	-2	-1	-1
James Arman / Sikander Malik	Impact upon utilities	-4	0	-2	0	-2	0
Joe Grimes /Shivam Jakhu	Acoustics	-1	0	-3	-2	-3	-2
Bruce Clarke / Tracy freeman	Air Quaility	0	0	-3	-3	-3	-3
Fenella Fisher	Property	-4	-4	-2	-2	-3	-3
Jacqui Bell / Sharon De luca	Marine Ecology	-2	-2	-2	-2	-2	-2
Fiona Davies and Morgan Witton	Freshwater and Terrestrial	-3	-2	-4	-3	-2	-1
Chris Bentley	Urban Design	0	0	-2	-1	2	3
Tom Lines / Chris Bentley	Landscape and Visual	-1	0	-3	-2	-3	-2
John Daly and James Gibson	Social Impact	-2	1	-2	1	-3	1
Tim Brown / Shane Doran	Traffic and Transport (temp. effects)	-3	-2	-1	-1	-2	-2
Tim Brown / Shane Doran	Traffic and Transport (permanent effects)	3	3	4	4	5	5
Paul May	Stormwater	-1	2	-1	0	0	1
Laura Laurenson / Roger McDonald	Planning, consenting and legislation	3	4	-1	0	-1	0
Shane Doran	provide a multi modal transport corridor that connects Pakuranga and Botany to the Wider network and increases choice of transport options	2	2	2	2	4	4
Chris Bentley	Provide Transport Infrastructure that integrates with existing landuse and supports a quality compact urban form	1	1	-2	-2	1	1
Chris Bentley	Contributes to accessibility and place shaping by providing better transport connections between, within and to the town centre	-1	-1	1	1	1	1
Shane Doran	Contributes to accessibility and place shaping by providing better transport connections between, within and to the town centre	2	2	2	2	4	4
Shane Doran	Provide Transport Infrastructure that improves linkages, journey time and raliability of the public transport network	2	2	5	5	5	5
Shane Doran	Provide Transport Infrastructure that is safe for everyone	1	1	1	1	4	4
		-9	6	-15	-4	1	13

EB3 C Scoring Sheet update Nov 22				
Participant	Area of Expertise	OPTION COM ONLINE With Mitigation	OPTION COM OFFLINE With Mitigation	OPTION COM Burswood OFFLINE With Mitigation
Andrew Gibbard/Stephen Power	Constructability	-1	-2	-1
James Arman / Sikander Malik	Impact upon utilities	0	0	0
Joe Grimes /Shivam Jakhu	Acoustics	0	-2	-2
Bruce Clarke / Tracy freeman	Air Quaility	0	-3	-3
Fenella Fisher	Property	-4	-2	-3
Jacqui Bell / Sharon De luca	Marine Ecology	-2	-2	-2
Fiona Davies and Morgan Witton	Freshwater and Terrestrial	-2	-3	-1
Chris Bentley	Urban Design	0	-1	3
Tom Lines / Chris Bentley	Landscape and Visual	0	-2	-2
John Daly and James Gibson	Social Impact	1	1	1
Tim Brown / Shane Doran	Traffic and Transport (temp. effects)	-2	-1	-2
Tim Brown / Shane Doran	Traffic and Transport (permanent effects)	3	4	5
Paul May	Stormwater	2	0	1
Laura Laurenson / Roger McDonald	Planning, consenting and legislation	4	0	0
Shane Doran	provide a multi modal transport corridor that connects Pakuranga and Botany to the Wider network and increases choice of transport options	2	2	4

Chris Bentley	Provide Transport Infrastructure that integrates with existing landuse and supports a quality compact urban form	1	-2	1
Chris Bentley	Contributes to accessibility and place shaping by providing better transport connections between, within and to the town centre	-1	1	1
Shane Doran	Contributes to accessibility and place shaping by providing better transport connections between, within and to the town centre	2	2	4
Shane Doran	Provide Transport Infrastructure that improves linkages, journey time and raliability of the public transport network	2	5	5
Shane Doran	Provide Transport Infrastructure that is safe for everyone	1	1	4

EB3 C Scoring Sheet update Nov 22							
Participant	Area of Expertise	OPTION 3		OPTION 4		OPTION 5	
		COM ONLINE		COM OFFLINE		COM Burswood	
		NO MITIGATION	'H MITIGAT	NO MITIGATION	'H MITIGAT	No Mitigation	ith Mitigatio
Andrew Gibbard/Stephen Power	Constructability	-1	-1	-2	-2	-1	-1
James Arman / Sikander Malik	Impact upon utilities	-4	0	-2	0	-2	0
Joe Grimes /Shivam Jakhu	Acoustics	-1	0	-3	-2	-3	-2
Bruce Clarke / Tracy freeman	Air Quaility	0	0	-3	-3	-3	-3
Fenella Fisher	Property	-4	-4	-2	-2	-3	-3
Jacqui Bell / Sharon De luca	Marine Ecology	-2	-2	-2	-2	-2	-2
Fiona Davies and Morgan Witton	Freshwater and Terrestrial	-3	-2	-4	-3	-2	-1
Chris Bentley	Urban Design	0	0	-2	-1	2	3
Tom Lines / Chris Bentley	Landscape and Visual	-1	0	-3	-2	-3	-2
John Daly and James Gibson	Social Impact	-2	1	-2	1	-3	1
Tim Brown / Shane Doran	Traffic and Transport (temp. effects)	-3	-2	-1	-1	-2	-2
Tim Brown / Shane Doran	Traffic and Transport (permanent effects)	3	3	4	4	5	5
Paul May	Stormwater	-1	2	-1	0	0	1
Laura Laurenson / Roger McDonald	Planning, consenting and legislation	3	4	-1	0	-1	0
		-16	-1	-24	-13	-18	-6

Multi Criteria Assessment Scoring Sheet
Name of assessor: Shivam Jakhu
Area of assessment: Acoustics
Guidance criteria considered:
EB3C – Offline Burswood Option

Notes:

Comments

For construction noise and vibration, there will be adverse effects since the works will be taking place in proximity to existing residential receivers. Adverse effects will be less at receivers set back further from the works and as the works progress along the alignment. Construction noise and vibration effects will be temporary and can be mitigated/managed through the Construction Noise and Vibration Management Plan.

For road traffic noise, the busway will introduce a new noise source to the Burswood residential area, and will be close to the receivers immediately adjacent, however a noise barrier is already proposed in the preliminary design, which will help to reduce noise effects at these receivers.

Due to the adverse effect on residential properties to the north of the alignment, this option has been scored -3 without mitigation and -2 with mitigation.

Assumptions

- AC-14 or similar low-noise road surface used for busway.
- Noise barriers along the northern side of the busway.
- Existing properties along the busway extent demolished.

Other information relied upon

No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet
Name of assessor: Roger McDonald
Area of assessment: Legislative consideration
Guidance criteria considered: Guidance for EB3 Options Assessment Workshop (EB234-1-PL-GL-Z3-00000-1)
EB3C – Offline Burswood Option

Notes:

- Provides improved public transport connections/opportunity to a sub-region of Auckland because of a dedicated busway
- Increased use of public transport will support an overall reduction in traffic volume, particularly single-occupant private vehicles
- Offers dedicated walking and cycling facilities
- Affects approx. 37 residential properties (in Burswood) and 2 commercial properties (Mobil and pet shop)
- Provision of infrastructure in land zoned for commercial residential use/development
- Will contribute to a reduction in the effects of climate change through dedicated busway and enhanced pedestrian connectivity/ and dedicated cycleway resulting in a reduction in overall traffic volume
- Includes significant works and structures in the coastal and wetland environment (bridge structures for busway) noting in particular the AUP significant ecological area (SEA) overlay - SEA-M2-45b, Marine 2. Will involve mangrove removal in the CMA (deemed wetland under the NES: Freshwater) and works in freshwater wetlands
- Includes provision of infrastructure in coastal inundation zone (1% AEP +1m sea level rise)
- Works are anticipated to be required in the following relevant Auckland Unitary Plan zones/overlays/designations:

  - Residential – Mixed Housing Suburban zone

  - Business – light industrial zone – Business

  – neighbourhood centre zone

  - Open space – Conservation zone (majority of esplanade reserves on coastal fringe in option corridor)

  - Open Space Informal recreation zone (esplanade reserve north of China Town and Burswood reserve)

  - Coastal – general coastal marine zone

  - Coastal – general coastal transition zone

  - Designation – 8507 - Electricity transmission, Transpower New Zealand Ltd

  - Infrastructure – national grid corridor overlay

  - Built environment - identified growth corridor overlay

  - Natural resources – significant ecological a (SEA) overlay - SEA-M2-45b, Marine 2

  - Historic heritage and special character – historic heritage overlay (extent of place 2114), McCallum's Wharf and Quarry R11_1263

- Mana Whenua: sites and places of significance to mana whenua overlay (024 - Urupā 1)

Assumptions

- The option will result in positive effects experienced by a sub-regional audience
- The option requires the use of natural resources
- This option doesn't include any stream works or bridging works (over the stream) in the Burswood reserve. This is required in the Commercial Offline option
- The following will be managed accordingly (construction and operation):

  - Potential adverse effects resulting to freshwater and coastal environments because of stormwater (quality/quantity)

  - Potential adverse effects (including temporary disruption during construction) to national telecom facilities/network

  - Potential adverse effects (including temporary disruption during construction) to the national grid/overhead electricity transmission infrastructure

  - Potential discharges resulting from the disturbance of contaminated soil

Other information relied upon

· Knowledge and review of the critical elements of the project

· Workshop participation

· Specialist knowledge

· Eastern Busway Alliance's Geocortex Viewer

· Auckland Council's GeoMaps

· The Resource Management Act (RMA) 1991 (specifically Part 2 matters)

· High level policy documents/frameworks relevant to the project e.g. NZCPS and relevant NPS, RPS and NES

Summary of outcomes

- NPS on Urban Development 2020: Auckland Council has prepared and notified Plan Change 78. This proposed plan change responds to the government's NPS on Urban Development 2020 (amended in 2022) and requirements of the Resource Management Act. These mean the council must:
  - enable more development in the city centre and at least six-storey buildings within walkable catchments from the edge of the City Centre, Metropolitan Centres and Rapid Transit Stops
  - enable development in and around neighbourhood, local and town centres
  - incorporate Medium Density Residential Standards that enable three storey housing in relevant residential zones in urban Auckland
  - implement qualifying matters to reduce the height and density of development required by the RMA to the extent necessary to accommodate a feature or value that means full intensification is not appropriate.

- The option includes removal of approx. 37 residential dwellings (in Burswood) and 2 commercial properties (Mobil and Pet shop). Although 37 houses will be removed there are opportunities under Plan Change 78 to intensify residual land and other properties within proximity of the bus station adjacent Burswood residential area. It is also understood that once the bus way is in place, the Council will up-zone the corridor to enable further uplift in housing density (possibly up to six storeys).
- NPS for Freshwater Management 2020: Includes works in CMA wetlands (mangrove areas are deemed wetlands in the NPS). Stormwater upgrades may require works in freshwater wetlands as well. It has been assumed that stormwater can be managed appropriately and water quality can potentially be improved overall.
- NPS on Electricity Transmission and NES for Electricity Transmission Activities: Option impacts national grid yard/overhead and underground transmission cables. Impacts limited to construction and can be managed/mitigated
- NZ Coastal Policy Statement (NZCPS): Both temporary works and permanent structures will be required in the CMA to accommodate the busway. This option (offline Burswood option) and the offline commercial option require the same extent of works in the CMA. Both options may require a small reclamation between the Mobil service station and the pet shop. The NZCPS sets out a statutory framework (Policy 10) that generally dissuades the use of reclamation unless specific criteria can be met. Policy 11 of the NZCPS seeks to protect indigenous biological diversity in the coastal environment. The bridge structures sit within a significant ecological (SEA) overlay - SEA-M2-45b, Marine 2.
- The option will manage stormwater and other indirect effects to CMA. Potential for water quality to be improved overall.
- NES for Air Quality: Impacts can be managed to achieve requirements during both construction and operation overall.
- NES for Telecommunications Facilities: Impacts can be managed to achieve requirements during both construction and operation overall
- NES for Assessing and Managing Contaminants in Soil to Protect Human Health: Impacts can be managed to achieve requirements during both construction and operation overall.
- Auckland Unitary Plan: impacts reserve land, significant ecological area (SEA) in CMA, historic heritage (McCallum's Wharf and Quarry) and a site/place of significance to mana whenua (urupā). Includes provision of infrastructure in overland flow paths (2000m2 to >3ha), flood prone areas and flood plains and areas susceptible to coastal inundation, the 1% AEP (plus 1m), and sea level rise. Construction of bridges in the CMA to accommodate busway has functional need to be in these areas. Engineering/ecological mitigation measures can mitigate potential effects.

No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet
Name of assessor: John Daly
Area of assessment: Social Impacts
Guidance criteria considered: Guidance for EB3 Options Assessment Workshop (EB234-1-PL-GL-Z3-00000-1)
EB3C – Offline Burswood Option – Commercial Alignment including one central bus station

Notes:

List of community facilities and open spaces within Study area (non-exhaustive)

- 219 Burswood Drive: East City Wesleyan Church
- 2 Torrens Road: Wonderkids Childcare and Pre School
- 272 Ti Rakau Drive: BotanyLife Community Trust
- 262 Ti Rakau Drive: Yans Chinese Medicine
- 316 Ti Rakau Drive: The Doctors Ti Rakau
- 316 Ti Rakau Drive: Auckland Radiology Group
- 12 Amera Place: Botany Dental Practice | Lumino The Dentists
- Corner of Burswood Drive and Ti Rakau Drive: Burswood Esplanade Reserve
- Opposite bus depot: Greenmount Drainage Reserve
- Off Burswood Drive: Burswood Park
- 150C Harris Road: FCNZ Evangelical Formosan Church of New Zealand
- 154 / 160 Harris Road: Korean Peace Church

Comments

Impacts upon Community Facilities / Open Space

Construction Phase

Community Facilities

- Community facilities within vicinity of Project are largely unaffected directly. Wonderkids Childcare and Pre School, Fulton Swim School and East City Wesleyan Church maybe affected more than others as they are located close to the busway construction and could be impacted by construction impacts (e.g. noise and air). This would be to a similar extent as the offline bund option albeit with a greater buffer zone due to land acquisitions.
- Accessibility for school buses around Burswood residential community and access to local primary schools and community facilities will be impacted due to construction but these impacts could be managed via communication and transport management plans.

Open Space

- Burswood Esplanade Reserve will be impacted during construction as it will be the location of the laydown area as well as having the proposed busway and active transport route through it. This will impact the amenity value (communities' enjoyment and use) of Burswood Esplanade Reserve and will be greater pressure on other local open spaces.

Permanent

- Loss of open space (Burswood Esplanade Reserve) – reduction in usable space and less attractive for park users, (however this alignment has a far greater amount of usable space available to park to users than the offline bund option).
- Potential operational noise disruption impacts from busway on Wonderkids Childcare and Pre School and East City Wesleyan Church (noting land is zoned light industrial, so reduced amenity levels (noise)).
- The centralised bus station will be convenient for some local community facilities.

Impacts upon viability / productivity of business land areas

Construction phase

- Proposed busway and cycleway construction will result in some construction disruption impacts for local businesses. This can typically be managed via a construction management plan and communication.
- Impacts on Ti Rakau Drive are less significant, which reduces impacts on the business in terms of customer access.
- There will still be some loss to China Town Shopping Centre's car park/service yard, but this does not appear to impact the viability of the business.

Permanent

- Part of the rear service yard and some parking at China Town will be lost by busway alignment.
- Centralised bus station closer to businesses than the offline bund option (2 stations) providing the potential for greater convenience and options for both workers and customers. This may help mitigate the loss of car parking at China Town.

Impacts upon social connectivity and amenity

Construction Phase

- Construction impacts (noise, air quality and visual impacts) experienced by Burswood residential properties, north of proposed busway.
- Temporary Burswood community severance/inconvenience during road closures.
- Noise mitigation required for Burswood residents and potentially businesses to the south but the land buffer will provide room for mitigation.

Permanent

- Loss of approximately 115 residents from Burswood community due to the direct impacts on 37 properties.
- Busway alignment will be close to Burswood residential properties and are likely to have a degree of on going amenity impacts (noise and visual), which will require mitigation. With mitigation in place the impact may reduce to changes in residential character (although it is noted that the existing backdrop in business zoned land).
- Creation of a continuous cycling route and enhanced walking facilities – provides more transport choice for users albeit the cycling route isn't as direct as the online option.
- Busway alignment and bus station located closer to residential area (Burswood). Creating choice for the community.
- Additional intersections creating some minor severance for Burswood residents north of proposed busway alignment however there will also be greater connectivity to the wider catchment from active and public transport options.

Reason for Score

Adverse impacts

- Property acquisition – greater displacement of people due to the busway alignment being located further north into the Burswood residential community. This option removes 37 residential properties and approximately 115 residents from an established community.
- No resilience for the Burswood residential community (as there has been no early purchase and the community have only recently been made aware of the off-line option). Associated impacts will include fear/stress/concern about being displaced.
- Burswood Esplanade Reserve reduced in space and severed (people need to cross the busway to access it from the west) but much improved from the offline bund option.
- Construction disruption to residents / businesses during construction.

Positive impacts

- Centralised bus station located very close to residents living in Burswood, potential for enhanced Public Transport use. Also serves industrial/business community north of Ti Rakau Drive as well as becoming a hub for routes from the south of Ti Rakau Drive.
- Creation of a continuous safe cycling route, which follows the busway, and enhanced walking facilities.
- Majority of benefits likely to be realised at a local catchment level (i.e. local jobs, employing local industry/businesses and Burswood residents).
- Some severance at intersections, but greater connectivity to the wider catchment area.
- The Project is consistent with the directives in the NPS-UD in improving accessibility for people by way of public or active transport.

No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation:

With effective mitigation in place, as shown below, the negative impacts would be off-set and complement the positive impacts of the Project.

- Regular communication with affected residents, community facilities and business owners through a Communication and Consultation Plan (CCP) and a Local Business and Community Facilities Management Plan.
- Displacement strategy for impacted residents.
- Public Works Act compensation with information on the process provided to residents.
- New or upgraded facilities to be included within the local parks including Burswood Esplanade Reserve.
- Provision of Traffic Management Plans (TMPs) to ensure access to residential properties, businesses and community facilities are provided throughout construction. Construction Management Plan (CMP's) to limit disruption impacts. Development response initiatives.

- Restrictions to hours of operation / restrictions during sensitive hours in order to reduce amenity impacts during construction.
- Wayfinding and urban design features to increase connectivity and public realm around the bus station.
- Undertake mitigation proposed in specialist reports (e.g. noise, air quality and visual).

Multi Criteria Assessment Scoring Sheet
Name of assessor: Paul May
Area of assessment: Stormwater (Water Quality, Flooding and Overland Flows)
Guidance criteria considered: Auckland Transport TDM (EDC Road Drainage) Auckland Council Stormwater Code of Practice Auckland Unity Plan and Network Discharge Consents
EB3C – Offline Burswood Option (Residential)
Notes: <u>Comments</u> • Offline from Ti Rakau Drive reduces the interaction with overland flow and flooding issues. • Avoids crossing Burswood Reserve waterways which avoids potential reduction of flood carrying capacity • The busway is treated by green infrastructure (best practice GD01). • Discretionary treatment of other carriageways by green infrastructure <u>Assumptions</u> • Detailed flood modelling results confirm preliminary modelling results • Geometric design doesn't change significantly • Provides less improvement to flooding and overland flow issues (on Ti Rakau Drive) • Less stormwater from other busway roads is treated. <u>Other information relied upon</u> • Reference Design Flood Model

No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

EB3C – Commercial Bund Alignment
Notes: <u>Comments</u> • Offline from Ti Rakau Drive reduces the interaction with overland flow and flooding issues. • Crossing Burswood Reserve waterways has potential to reduce flood carrying capacity • The busway is mostly treated by green infrastructure (best practice GD01), some is via a GPT.

Assumptions

- Detailed flood modelling results confirm preliminary modelling results
- Geometric design doesn't change significantly
- Provides less flood improvement outcomes (Ti Rakau Drive)
- Less stormwater from other busy roads is treated.

Other information relied upon

- Pre-Reference Design Flood Model (less developed)

No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

EB3C – Online Ti Rakau Drive

Notes:

Comments

- Online Ti Rakau Drive alignment will interact with overland flow and flooding issues more than offline options.
- Not crossing Burswood Reserve waterways avoids reducing flood carrying capacity
- The busway is mostly treated by green infrastructure (best practice GD01) along with one carriageway, the rest via GPTs.
- Mitigation would involve similar approach to management of overland flow and flooding in EB2/EB3R.

Assumptions

- Geometric design would be similar to other parts of Ti Rakau Drive (i.e. EB3R) with opportunity for treating some of the busway and similar amount of one carriageway via green infrastructure. Remaining areas treated by GPT
- Provides better mitigation outcomes for flooding
- Provides better stormwater treatment outcomes (water Quality) by providing opportunity to treat Ti Rakau Drive.

Other information relied upon

- Existing Council flood mapping on GeoMaps

No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet
Name of assessor: Chris Bentley
Area of assessment: Landscape Visual
Guidance criteria considered:
EB3C – Offline Burswood Option

Notes:

Comments

This option has been assessed as to the potential Urban Design and Landscape effects and against the Project Objectives, specifically ;

- Increases access to a choice of transport options
- Integrates with landuses and supports a compact urban form
- Contributes to place-shaping

Potential Effects Landscape & Visual

Impact on residential community –

Landscape impacts -

Bridge over CMA - ,

Loss of open space Burswood Reserve -

Visual impact of China Town bridge on adjacent residential properties, coastal cycleway and Riverhills Park –

Assumptions

Other information relied upon

No Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet
Name of assessor: Chris Bentley
Area of assessment: Landscape Visual
Guidance criteria considered:
EB3C – Offline Commercial Option
Notes: Comments This option has been assessed as to the potential Urban Design and Landscape effects and against the Project Objectives, specifically ; • Increases access to a choice of transport options • Integrates with landuses and supports a compact urban form • Contributes to place-shaping **Potential Effects Landscape & Visual** Amenity impact on residential community – Environmental impacts, bridge over CMA and impact on landform-, wetland and vegetation in Burwood Reserve - loss of open space Burswood Reserve – Assumptions Two Bus Stations instead of one centralised one. Busway extends through Burswood Reserve Other information relied upon

No Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet
Name of assessor: Shane Doran
Area of assessment: Project Objective – Provide a multi-modal corridor that connects Pakuranga and Botany to the wider network and increases access to a choice of transport options
Guidance criteria considered: • Quality of multi-modal facilities
EB3C – Offline Commercial Option
Notes: <u>Comments</u> • The Offline Commercial Option provides good quality facilities for buses as well as providing for private and freight vehicles • Cycling and walking facilities marginal improvement compared to existing facilities with cycling facilities provided on verge along Ti Rakau Drive. • The quality of walking and cycling facilities in particular are significantly worse than the Offline Burswood which provides off road high quality facilities. <u>Assumptions</u> • N/A <u>Other information relied upon</u> • <u>Plan of Offline Commercial Option</u> • <u>Specialist knowledge</u>
No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet
Name of assessor: Shane Doran
Area of assessment: Project Objective – Contribute to accessibility and place shaping by providing better transport connections between, within and to the town centres
Guidance criteria considered: • Network condition – walking and cycling • Directness of connections with surrounding areas/communities

EB3C – Offline Commercial Option

Notes:

Comments

- The Offline Commercial Option provides moderate quality walking and cycling facilities.
- The location of the busway stations provide convenient, safe and direct connection with the commercial precinct and good access to the Burswood residential community.

Assumptions

- N/A

Other information relied upon

- Plan of Offline Commercial Option
- Specialist knowledge

No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet

Name of assessor: Shane Doran

Area of assessment: Project Objective – Provide transport infrastructure that improves linkages, journey time and reliability of the public transport network.

Guidance criteria considered:

- Average travel time by public transport
- Travel time reliability for public transport

EB3C – Offline Commercial Option

Notes:

Comments

- The Offline Commercial Option through the 'bund' behind the commercial properties on the northern side of Ti Rakau drive will provide faster and more reliable travel times for buses as they avoid 5 sets of traffic signals along Ti Rakau Drive than the Online Commercial option. In addition, bus services will be able to be provided with a 'green wave' from Guys Reserve through to west of Gossamer Drive through signal pre-emption. In terms of bus travel time and reliability this option is similar to the Offline Burswood option with the exception that this option has two stations at Burswood and therefore would be marginally slower/less reliable.

Assumptions

- N/A

Other information relied upon

- Plan of Offline Commercial Option
- Specialist knowledge

No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet

Name of assessor: Shane Doran

Area of assessment: Project Objective – Provide transport infrastructure that is safe for everyone.

Guidance criteria considered:

-

EB3C – Online Commercial Option

Notes:

Comments

- Provides cycling and walking facilities along Ti Rakau Drive on verge with improvement to existing facilities, particularly cycling facilities provision on verge
- Cycling on verge along Ti Rakau Drive with multiple accesses into and out of businesses increases potential for vehicle to cycle conflict.
- The quality of walking and cycling facilities are significantly worse than the Offline Burswood option.

Assumptions

- N/A.

Other information relied upon

- Plan of Offline Commercial Option
- Specialist knowledge

No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet
Name of assessor: Chris Bentley
Area of assessment: Landscape Visual
Guidance criteria considered:
EB3C – Online Commercial Option

Notes:

Comments

This option has been assessed as to the potential Urban Design and Landscape effects and against the Project Objectives, specifically ;

- Increases access to a choice of transport options
- Integrates with landuses and supports a compact urban form
- Contributes to place-shaping

Potential Effects Landscape Visual

Located within an existing business environment +

Limited visual audience and very limited visual amenity effects +

Very limited / no impact on landscape, landform, vegetation +

Impact on access and frontages to businesses -

Assumptions

Other information relied upon

No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet										
Name of assessor: Shane Doran										
Area of assessment: Project Objective – Provide a multi-modal corridor that connects Pakuranga and Botany to the wider network and increases access to a choice of transport options										
Guidance criteria considered: • Quality of multi-modal facilities										
EB3C – Online Commercial Option										
Notes: Comments • The Online Commercial Option provides good quality facilities for buses as well as providing for private and freight vehicles • Cycling and walking facilities improvement compared to existing facilities with cycling facilities provided on verge along Ti Rakau Drive. • The quality of walking and cycling facilities in particular are significantly worse than the Offline Burswood which provides off road high quality facilities. Assumptions • N/A Other information relied upon • Plan of Online Commercial Option • Specialist knowledge										
No Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet
Name of assessor: Shane Doran
Area of assessment: Project Objective – Contribute to accessibility and place shaping by providing better transport connections between, within and to the town centres
Guidance criteria considered: • Network condition – walking and cycling • Directness of connections with surrounding areas/communities

EB3C – Online Commercial Option

Notes:

Comments

- The Online Commercial Option provides moderate quality walking and cycling facilities.
- The location of the busway stations provides convenient, safe and direct connection with the commercial precinct with good access to the Burswood residential community.

Assumptions

- N/A

Other information relied upon

- Plan of Online Commercial Option
- Specialist knowledge

No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet

Name of assessor: Shane Doran

Area of assessment: Project Objective – Provide transport infrastructure that improves linkages, journey time and reliability of the public transport network.

Guidance criteria considered:

- Average travel time by public transport
- Travel time reliability for public transport

EB3C – Online Commercial Option

Notes:

Comments

- The Online Commercial Option along Ti Rakau Drive requires buses to pass through 5 sets of traffic signals along Ti Rakau Drive. The buses being in a dedicated busway will improve travel times compared with the existing situation where buses mix with general traffic however the travel times and reliability will not be as good as the Offline Commercial or Offline Burswood options.

Assumptions

- N/A

Other information relied upon

- Plan of Online Commercial Option
- Specialist knowledge

No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet

Name of assessor: Shane Doran

Area of assessment: Project Objective – Provide transport infrastructure that is safe for everyone.

Guidance criteria considered:

-

EB3C – Online Commercial Option

Notes:

Comments

- Provides cycling and walking facilities along Ti Rakau Drive on verge with improvement to existing facilities, particularly cycling facilities provision on verge
- Cycling on verge along Ti Rakau Drive with multiple accesses into and out of businesses increases potential for vehicle to cycle conflict.
- The quality of walking and cycling facilities are significantly worse than the Offline Burswood option.

Assumptions

- N/A.

Other information relied upon

- Plan of Online Commercial Option
- Specialist knowledge

No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet
Name of assessor: John Daly
Area of assessment: Social Impacts
Guidance criteria considered: Guidance for EB3 Options Assessment Workshop (EB234-1-PL-GL-Z3-00000-1)
Option 3: EB 3 – Online Commercial

Notes:

List of community facilities within Study area (non-exhaustive)

- 219 Burswood Drive: East City Wesleyan Church / Wesleyan Methodist Church of New Zealand
- 2 Torrens Road: Protestant Church
- 325 Ti Rakau Drive: Stirred Water Christian Fellowship
- 380 Ti Rakau Drive: Howick and Eastern Bus Depot
- 150C Harris Road: FCNZ Evangelical Formosan Church of New Zealand
- 154 / 160 Harris Road: Korean Peace Church
- 272 Ti Rakau Drive: BotanyLife Community Trust
- 262 Ti Rakau Drive: Yans Chinese Medicine
- 316 Ti Rakau Drive: The Doctors Ti Rakau
- 316 Ti Rakau Drive: Auckland Radiology Group
- 12 Amera Place: Botany Dental Practice | Lumino The Dentists
- Corner of Burswood Drive and Ti Rakau Drive: Burswood Esplanade Reserve
- Opposite bus depot: Greenmount Drainage Reserve

Impacts upon Community Facilities / Open Space

Construction Phase

- Significant construction disruption due to proposed busway being located within the existing roading alignment. Driving times along Ti Rakau Drive will increase, adversely impacting accessibility and connectivity to community facilities within and outside the study area in the short / medium term.

Permanent

- Most community facilities are setback from Ti Rakau Drive and will be largely unaffected by the proposed widening.
- A number of road fronting properties to the south of Ti Rakau Drive will lose some car parking / servicing space. This includes Lumino the Dentists (12 Amera Place).
- Once operational, accessibility to community facilities within study area will be improved (transport choice (bus, walking, cycling facilities)).

Impacts upon viability / productivity of business land areas

Construction Phase

- Significant construction disruption due to proposed busway being located within the existing roading alignment. Driving times along Ti Rakau Drive will increase, adversely impacting

accessibility and connectivity to businesses within and outside the study area in the short / medium term.

- Filling required on corner of Trugood Drive and Huntington Drive – construction related impacts only (assumed land will be returned post construction). Businesses impacted include Piccolo Park and Lighting Plus.

Permanent

- Car parking and servicing areas for road fronting properties south of Ti Rakau Drive will be affected. Access and service arrangements may be required).
- Frontages and carparking of many businesses along the southern side of Ti Rakau will be impacted, impacting customer numbers (but bus providing alternative).
- Small businesses, including 'the chocolate cake company' and 'Pots More' (257 Ti Rakau Drive) will potentially need to be relocated.
- Carparking and servicing areas for businesses located at 166c Harris Road will be permanently acquired – alternative parking / servicing arrangements will be required.
- Parking and servicing for businesses located at 12 Amera Place (and vicinity) impacted by road widening south.

long term, better transit with alternative transport modes for customers but less car parking on site. Short term, construction impacts will deter customers.

Impacts upon social connectivity

Construction Phase:

· Significant construction disruption due to proposed busway being located within the existing roading alignment. Driving times along Ti Rakau Drive will increase, adversely impacting accessibility and connectivity to communities within and outside the study area in the short /medium term

· Asian business community – particularly businesses and facilities on northern side of Ti Rakau Drive (including China Town). Accessibility to businesses facilities enjoyed by the Asian community will be impacted in the short term.

· North-south severance created due to construction along Ti Rakau Drive.

Permanent

· Assumed centrally located bus Stop will enhance pedestrian/cycling crossing / connectivity, thereby addressing severance issues created by the existing road layout (Ti Rakau Drive).

· Continuous cycleways and footpaths provided. Bus only lane – more transport choice for users.

· Some access points will be restricted to Left in Left out, but existing road is heavily trafficked reducing right turns, so may not be a big barrier for businesses / customers.

Assumptions

· Crossing points are provided at bus stops along Ti Rakau Drive to provide accessibility to each bus stop along the route. Results in reduced severance and improved north-south connections.

· Existing signalled traffic lights will remain and continue to enable north south access.

· Existing limitations of turning right out of certain streets remain.

Reason for Score

· Major construction disruption in the short medium term.

· Permanent loss of carparking with potential to create operational impacts for businesses.

· Provision of continuous walking / cycling facilities and enhanced bus service provides travel choice, likely to benefit those living in Pakuranga, Botany and Howick. Long term benefits expected given continuous transport choice options offered.

· Busway close to business / industrial community (but further away from residential community).

· Severance issues improved near bus stops. Severance created during construction and mitigated by implementation of CMP / TMP

No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation:

- Regular communication with affected community facilities / business owners / residents
- Public Works Act compensation with information on the process provided to businesses, where sites are fully acquired or face significant hardship.
- Displacement strategy for impacted businesses
- Provision of Traffic Management Plans (TMPs) to ensure access to key community facilities are provided throughout construction. Construction Management Plan (CMP's) to limit disruption impacts. Development response initiatives.
- Restrictions to hours of operation / restrictions during sensitive hours in order to reduce impacts during construction.

W*ith effective mitigation in place (direct busway, cycling and walking facilities provided, improvement to severance on Ti Rakau Drive, less businesses / community facilities permanently affected, no additional severance created as Ti Rakau Drive is a busy arterial road. Catchment is centred on business land, less residential focused.*

Option 4: EB 3 – Offline Commercial

<u>Impacts upon Community Facilities / Open Space</u>

Construction Phase

- Proposed roading upgrades along bridge, east of the bridge (stopping just west of the Ti Rakau / Burswood Drive intersection) results in construction disruption impacts.
    - Community facilities within vicinity of Project are largely unaffected (with the exception of):
        - East City Wesleyan Church located close to bus way – construction disruption impacts likely.
        - Burswood Esplanade Reserve dissected by busway – impacting on useability of this green space.
        - Laydown area to also be located at Burswood Esplanade Reserve.

Permanent

- Loss of park space (Burswood Esplanade Reserve) – less attractive for park users as cuts Reserve into two. Creating severance as well as less useable space.

- Potential operation noise disruption impacts from busway on Wesleyan Church (noting land is zoned light industrial, so reduced amenity value expected).

Impacts upon viability / productivity of business land areas

Construction phase

- Proposed roading upgrades along bridge, east of the bridge (stopping just west of the Ti Rakau / Burswood Drive intersection) results in construction disruption impacts.
- Businesses east of Hunting Drive impacted by road widening and fill works.
- Businesses east of Trugood Drive impacted by road widening and fill works.
- Chinatown (and associated businesses) likely impacted by construction due to location of busway.
- A number of businesses south of proposed busway (running parallel to Torrens Road) impacted by busway construction. This includes a gym, swim school, childcare centre which are sensitive to excessive noise. Less overall impacts on Ti Rakau Drive

Permanent

- Minor loss of rear service yard of China Town and some car parking by busway alignment.
- Parking, access and service areas of businesses in light industrial area south of proposed alignment unaffected.
- Businesses remain operational with alternative travel choices created for customers and staff, but less convenient busway access for businesses located to the south of Ti Rakau Drive

Impacts upon social connectivity

Construction Phase

- Construction impacts experienced by residential properties north of proposed busway.
- Significant noise mitigation likely required (residents and potentially businesses to the south).

Permanent

- Additional intersections created for residents north of proposed busway alignment (creating severance).
- Lack of continuous cycling and walking facilities – option does not provide transport choice for users.
- Property acquisition - removing 4 residential properties and approximately 12 residents.
- Busway alignment located closer to residential areas (Burswood). Creating choice for the community.
- Severance of Burswood Esplanade Reserve from community and loss of open space.
- Two stations located behind China Town and within Burswood Esplanade Reserve increasing connectivity.

Reason for Score

- Reduced transport movement due to disruption along offline alignment (parallel to Torrens Road) during construction.
- Amenity impacts to Burswood residents and businesses during construction and from the operation of the busway which will require a large privacy/noise attenuation wall.
- Lack of continuous walking / cycling facilities (less people benefit from the Project and reduces longevity of Project).
- Benefits likely to be realised at a local catchment level (i.e. employees of local industry / businesses, Burswood residents).
- Some severance at intersections, but greater connectivity to the wider catchment area.

• Burswood reserve severed (people need to cross busway to access reserve from the west and north) and loss of open space. • Bus stops located close to residents living in Burswood, potentially enhancing PT use. Also serves industrial / business community north of Ti Rakau Drive. • Relatively low number of businesses / community facilities impacted, and people displaced.										
No Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation:

- Regular communication with affected community facilities / business owners / residents
- Public Works Act compensation with information on the process provided to residents.
- Displacement strategy for impacted residents.
- Provision of Traffic / Construction Management Plan (CMP's) to limit disruption impacts.
- Development response initiatives.
- Restrictions to hours of operation / restrictions during sensitive hours in order to reduce impacts during construction.
- Undertake mitigation proposed in specialist reports (e.g. noise, air quality and visual).
- Urban design to reduce severance.

With effective mitigation in place (direct busway, cycling and walking facilities provided, improvement to severance issue (but not sufficient to warrant an increase in scoring), less businesses/ community facilities permanently affected, no additional severance created.

Multi Criteria Assessment Scoring Sheet
Name of assessor: Chris Bentley
Area of assessment: Project Objectives
Guidance criteria considered:
EB3C – Offline Burswood Option

Comments

This option has been assessed against the Project Objectives, specifically ;

Project Objectives

"Provide Transport Infrastructure that integrates with existing land use and supports a quality compact urban form".

The offline Burswood option integrates with the residential area by providing a convenient bus station within easy walking distance for the Burswood Peninsular. It will support future urban intensification and the creation of a new compact urban form.

Score of **+1** for this objective.

"Contributes to accessibility and place shaping by providing better transport connections between, within and to the town centre."

Provides a bus station that is accessible for the residential community and the adjacent business areas. +

Score of **+1** for this objective

Assumptions

One central bus station

Cycleway only through Burswood Reserve

Other information relied upon

No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet
Name of assessor: Chris Bentley
Area of assessment: Urban Design
Guidance criteria considered:
EB3C – Offline Burswood Option

Comments

This option has been assessed as to the potential Urban Design effects, specifically;

Potential Effects Urban Design

Catalyst for intensification & urban regeneration +

Provides Burswood residents accessible transport options+

Assumptions

One central bus station

Cycleway only through Burswood Reserve

Other information relied upon

No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet										
Name of assessor: Chris Bentley										
Area of assessment: Project Objectives										
Guidance criteria considered:										
EB3C – Offline Commercial Option										
Comments This option has been assessed against the Project Objectives, specifically; **Project Objectives** *"Provide Transport Infrastructure that integrates with existing land use and supports a quality compact urban form".* The offline Commercial option does not integrate with the existing residential or with the commercial landuses and it extends through Burswood Reserve. - It does not result in a compact urban form. – Score of **-2** for this Objective. *"Contributes to accessibility and place shaping by providing better transport connections between, within and to the town centre*." Provides better transport connections with two bus stations each side of the Burswood peninsula. + Score of **+1** for this objective Assumptions Two Bus Stations instead of one centralised one. Busway extends through Burswood Reserve Other information relied upon										
No Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet										
Name of assessor: Chris Bentley										
Area of assessment: Urban Design										
Guidance criteria considered:										
EB3C – Offline Commercial Option										
Comments This option has been assessed as to the potential Urban Design effects, specifically; **Potential Effects Urban Design** Impact on residential community – CPTED issues with busway behind houses - Catalyst for intensification & urban regeneration. Less than Burswood option + Provides Burswood residents accessible transport options, not central as with Burwood Option+ Loss of open space, Burswood Reserve - Busway severs Burswood Reserve - Assumptions Two Bus Stations instead of one centralised one. Busway extends through Burswood Reserve Other information relied upon										
No Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet
Name of assessor: Chris Bentley
Area of assessment: Project Objectives
Guidance criteria considered:
EB3C – Online Commercial Option
Notes: Comments This option has been assessed against the Project Objectives, specifically ; **Project Objectives** *"Provide Transport Infrastructure that integrates with existing land use and supports a quality compact urban form".* The online option integrates with the existing Ti Rakau Drive, road corridor, commercial landuse and therefore results in a compact urban form. + Score of **+1** for this objective *"Contributes to accessibility and place shaping by providing better transport connections between, within and to the town centre*." Is not very accessible, being separated from the residential catchment. – Score of **-1** for this objective. Assumptions Other information relied upon

No Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet										
Name of assessor: Chris Bentley										
Area of assessment: Urban Design										
Guidance criteria considered:										
EB3C – Online Commercial Option										
Notes: Comments This option has been assessed as to the potential Urban Design effects specifically ; **Potential Effects Urban Design** Impact on businesses in terms of operational disruption, access and parking – Transport options not as accessible for Burswood residents but better than existing environment + Assumptions Other information relied upon										
No Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet										
Name of assessor: Fenella Fischer										
Area of assessment: Property										
Guidance criteria considered: Impact on property.										
EB3C – Offline Burswood Option										
Notes: Comments Properties impacted: 37 full residential properties, 2 full commercial properties, 4 partial properties (2 residential, 2 commercial) required. Total properties impacted 43. The option along the residential section of Burswood impacts the most properties and the base cost is higher than what was assessed along either of the Ti Rakau Drive or the Offline options. The base cost for the full residential properties has been established by a valuation desktop exercise. Under this option, there is significantly less mitigation or business loss cost assumptions, by comparison with Ti Rakau Drive, which has been identified as a significant component of those costs. The disruption to businesses at Ti Rakau Drive during construction, access to the businesses and loss of carparking will be significant and the cost of this may far exceed the base cost. Property ownership under this option is predominately freehold and single titles, not multiple ownerships, i.e body corporates, experienced at Ti Rakau Drive. These acquisitions are considered more straight forward than those that are held in multiple ownership, which will result in savings from the Owners cost of acquisition. Assumptions The offline version at the rear of Bunnings has the least impact on property, however there are a lot of assumptions in this option, some being the busway being able to be constructed in this compact area and having no impact on the residential dwellings that are in close proximity. Other information relied upon None										
No Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet
Name of assessor: Morgan Witton/Fiona Davies
Area of assessment: Ecology
Guidance criteria considered:
EB3C – Offline 'bund' Burswood Option (Previously assessed Feb 2021 - Fiona Davies)

Notes:

- Four stream crossings – along Ti Rakau Drive and within Burswood Reserve
- There are at least four potential NPS-FM 'Natural' wetlands within Burswood Reserve (one may be directly impacted and two indirectly impacted by this option). Some of the wetland habitat is classified as 'Endangered' and 'Critically Endangered' (Singers et al, 2017). This is considered to have a very high/high ecological value.
- Terrestrial vegetation is made up of a mixture of exotic and native – roadside, residential, amenity plantings, parkland trees, planted native vegetation along Burswood – Low ecological value.
- There is the potential loss of habitat connectivity within Burswood Reserve streams/wetlands as a result of the road and bridge infrastructure.
- Lizard habitat – two lizard species are potentially present within this habitat type – copper
- skink (*Oligosoma aeneum*; threat status = 'at risk - declining') and ornate skink (*Oligosoma ornatum*; threat status = 'at risk - declining').
- The presence of native bat populations in Burswood has been assessed and deemed not present.
- Some vegetation may provide roosting and/or nesting habitat for birds, although birds present are either 'introduced or naturalised' or native and not threatened. Effects to fauna are considered moderate (particularly if vegetation removal is timed to be completed outside of nesting season).
- Nearby fish records list eight species within the Pakuranga Creek. Of these, three are 'introduced and naturalised', three are 'not threatened' (banded kokopu (*Galaxias fasciatus*), common bully (*Gobiomorphus cotidianus*) and shortfin eel (*Anguilla australis*) and two are 'at risk - declining' (longfin eel (*Anguilla dieffenbachia*) and inanga (*Galaxias maculatus*)). The riparian and estuarine wetland within Burswood Reserve would potentially be suitable spawning habitat for inanga (*Galaxias maculatus*). Inanga spawn amongst riparian vegetation in estuarine areas, near the upper limit of the saltwater influence, associated with spring high tides. Nearby macroinvertebrate communities are considered to be indicative of low to moderate water quality. Effect to fish habitat considered to be high as a result of stream realignment.

The old commercial offline option traverses directly over Burswood reserve. Situated <10m from natural wetlands. Riparian vegetation consists predominantly of native plantings.

Comments

- Design of bridge structures within the stream in Burswood Reserve should be hydrologically sensitive, to allow natural flow. Round or oval shaped piers should be considered rather than square piers. Bridge pylons can be a site for local scour and morphology changes.
- The opportunity to relocate the busway (within Burswood Reserve) to the south (as per the design drawings), encroaching further into the bus depot should be considered to avoid stream and wetland impacts.

- This assessment is based on the ecological value only of wetland/stream habitats.

Assumptions:

- Assume culverts along existing road alignment are not being extended but there will be
- approximately 80m of stream/riparian realignment and 50m stream impacts from bridge or multi cell box culvert (at Burswood Reserve).
- There will be some discharge of treated stormwater to the stream system at several locations (where there is likely to be existing untreated runoff occurring currently). Stormwater will be appropriately treated.
- At least four potential NPS-FM 'Natural' wetlands of very high/high ecological value within Burswood Reserve - one directly impacted and two indirectly impacted by this option.
- Coastal ecology (i.e. habitat and fauna below the Mean Highwater Springs) has not been considered in this assessment (to be covered by Coastal Ecologist).
- Direct impact on Burswood reserve
- Requirement for bridge structure to comply with E3.6.1.14 and E3.6.1.16 of AUP(OP), no piles in wetland habitat.
- The loss of riparian vegetation.

Mitigation proposed (if any):

- Lizard salvage will be required where habitat for native skinks is identified and will be
- removed.
- Avoid bird nesting season (September to February) during vegetation removal, where
- possible.
- Stormwater treatment.
- Appropriate erosion and sediment control measures must be in place during construction.
- Hydrologically sensitive design of bridge structures within Burswood Reserve to allow natural
- stream flow. As far as possible bridge piers should be placed outside of the active stream channel. Round or oval shaped piers should be considered rather than square piers.
- A bridge structure should be considered for the stream crossing on the western end of the
- Burswood Reserve rather than box culverts.
- Offset/compensation for loss in ecological value due to stream realignment. Preferably
- stream/wetland system should be bridged, rather than realigned.
- Offset/compensation for loss in ecological value of wetlands, but ideally should be avoided
- through design.
- Ensure hydrological balance to wetlands are maintained.

Other information relied upon

- Auckland Council Geomaps (AUP(OP)– rivers and streams, significant ecological areas overlay, aerial imagery. DOC Bioweb records. NZ Freshwater Fish Database.
- A site walkover to Burswood Reserve was undertaken on 26/01/21.

No Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

EB3C – Online Burswood Option (Previously assessed Feb 2021 - Fiona Davies)

Notes: Least impact on Burswood Reserve.

- Lizard habitat – two lizard species are potentially present within this habitat type – copper skink (*Oligosoma aeneum*; threat status = 'at risk - declining') and ornate skink (*Oligosoma ornatum*; threat status = 'at risk - declining').
- Riparian vegetation consists predominantly of native plantings. Some vegetation may provide roosting and/or nesting habitat for birds, although birds present are either 'introduced or naturalised' or native and not threatened. Effects to fauna are considered moderate (particularly if vegetation removal is timed to be completed outside of nesting season).
- Nearby fish records list eight species within the Pakuranga Creek. Of these, three are 'introduced and naturalised', three are 'not threatened' (banded kokopu (*Galaxias fasciatus*), common bully (*Gobiomorphus cotidianus*) and shortfin eel (*Anguilla australis*) and two are 'at risk - declining' (longfin eel (*Anguilla dieffenbachia*) and inanga (*Galaxias maculatus*)). The riparian and estuarine wetland within Burswood Reserve would potentially be suitable spawning habitat for inanga (*Galaxias maculatus*). Inanga spawn amongst riparian vegetation in estuarine areas, near the upper limit of the saltwater influence, associated with spring high tides. Nearby macroinvertebrate communities are considered to be indicative of low to moderate water quality. Effect to fish habitat considered to be high as a result of stream realignment.
- Situated >10m from NPS-F natural wetlands.

Comments

This assessment is based on the ecological value only of stream/wetland habitats and status under NPS-FM/NES-FM.

This is the preferred commercial option.

Assumptions:

- Assume culverts along existing road alignment are not being extended, except for bridge added over existing stormwater culvert in Ti Rakau Drive on Greenmount Drainage Reserve crossing but will not have structures within the stream channel or riparian zone.
- There will be approximately 80 m of stream realigned (in Burswood Reserve) which may

potentially include areas of riparian wetland (stream/wetland system of moderate ecological value). No bridges. There will be some discharge of treated stormwater to the stream system at several locations (where there is likely to be existing untreated runoff occurring currently). Stormwater will be appropriately treated.

- Coastal ecology (i.e., habitat and fauna below the Mean Highwater Springs) has not been considered in this assessment (to be covered by Coastal Ecologist).

Mitigation proposed (if any):

- Lizard salvage will be required where habitat for skink is identified and will be removed.
- Avoid bird nesting season (September to February) during vegetation removal, where possible.
- Stormwater treatment.
- Appropriate erosion and sediment control measures must be in place during construction.
- Offset/compensation for loss in ecological value (wetland/stream) due to stream realignment. Preferably stream/wetland system should be bridged, rather than realigned.
- Ensure hydrological balance to wetlands are maintained.

Other information relied upon

- Auckland Council Geomaps (AUP(OP)– rivers and streams, significant ecological areas overlay, aerial imagery. DOC Bioweb records. NZ Freshwater Fish Database.
- A site walkover to Burswood Reserve was undertaken on 26/01/21.

No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

EB3C – Current reference Design

Notes: The current reference design option travers directly adjacent to Burswood reserve.

- Lizard habitat – two lizard species are potentially present within this habitat type – copper skink (*Oligosoma aeneum*; threat status = 'at risk - declining') and ornate skink (*Oligosoma ornatum*; threat status = 'at risk - declining').
- Riparian vegetation consists predominantly of native plantings. Some vegetation may provide roosting and/or nesting habitat for birds, although birds present are either 'introduced or naturalised' or native and not threatened. Effects to fauna are considered moderate (particularly if vegetation removal is timed to be completed outside of nesting season).
- Nearby fish records list eight species within the Pakuranga Creek. Of these, three are 'introduced and naturalised', three are 'not threatened' (banded kokopu (*Galaxias fasciatus*),

common bully (*Gobiomorphus cotidianus*) and shortfin eel (*Anguilla australis*) and two are 'at risk - declining' (longfin eel (*Anguilla dieffenbachia*) and inanga (*Galaxias maculatus*)). The riparian and estuarine wetland within Burswood Reserve would potentially be suitable spawning habitat for inanga (*Galaxias maculatus*). Inanga spawn amongst riparian vegetation in estuarine areas, near the upper limit of the saltwater influence, associated with spring high tides. Nearby macroinvertebrate communities are considered to be indicative of low to moderate water quality. Effect to fish habitat considered to be high as a result of stream realignment.

- Within proximity (>10m) to NPS-FW natural wetlands Some of the wetland habitat is classified as 'Endangered' and 'Critically Endangered' (Singers et al, 2017). This is considered to have a very high/high ecological value.
- Operational effects are closer to sensitive ecological features (wetlands and streams).

Comments

This assessment is based on the ecological value only of stream/wetland habitats and status under NPS-FM/NES-FM.

Assumptions:

- Assume no culvert or stream realignment.
- No bridges. There will be some discharge of treated stormwater to the stream system at several locations (where there is likely to be existing untreated runoff occurring currently). Stormwater will be appropriately treated.
- Coastal ecology (i.e., habitat and fauna below the Mean Highwater Springs) has not been considered in this assessment (to be covered by Coastal Ecologist).
- There will be some discharge of treated stormwater to the stream system at several locations (where there is likely to be existing untreated runoff occurring currently). Stormwater will be appropriately treated. Inclusive of stormwater design and hydrological impacts to wetlands.
- More impervious surface in hydrologically sensitive areas.

Mitigation proposed (if any):

- Lizard salvage will be required where habitat for skink is identified and will be removed.
- Avoid bird nesting season (September to February) during vegetation removal, where possible.
- Stormwater treatment.
- Ensure hydrological balance to wetlands are maintained.
- Appropriate erosion and sediment control measures must be in place during construction.

Other information relied upon

- Auckland Council Geomaps (AUP(OP)– rivers and streams, significant ecological areas overlay, aerial imagery. DOC Bioweb records. NZ Freshwater Fish Database.
- A site walkover to Burswood Reserve was undertaken on 26/01/21.

No Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet										
Name of assessor: Shane Doran										
Area of assessment: Traffic and Transport – Temporary Effects										
Guidance criteria considered: • Impact on traffic • Access to businesses • Impact on active transport										
EB3C – Offline Burswood Option										
Notes: <u>Comments</u> • The Offline Burswood Option through the row of homes adjacent to the commercial properties on the northern side of Ti Rakau drive has no/minimal impact on traffic between Burswood Drive East and West during construction as most of the construction of the busway and active transport infrastructure is offline. • East of Burswood Drive East the number of traffic lanes will be reduced from three in each direction to two in each direction to allow for the construction of the busway on the northern side of Ti Rakau Drive. The reduction of traffic lanes will increase travel times for traffic during construction of this section. • Access to businesses along Ti Rakau Drive are not changed from the current situation, with the exception of the Mobil and Gull petrol stations where access to the petrol stations will be disrupted. • This impact is significantly less than the online busway option but worse than the Offline Commercial option through the 'bund' just north of the commercial properties and north of the Howick and Eastern Depot through Burswood Reserve. <u>Assumptions</u> • Access to Burswood is maintained during construction. • Access to Amera Place shops is maintained during construction. • Access to Howick and Eastern Bus Depot is maintained during construction. <u>Other information relied upon</u> • <u>Plan of Offline Burswood Option</u> • <u>Specialist knowledge</u>										
No Mitigation Score (please circle or highlight score):										
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
Mitigation Score (please circle or highlight score):										

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet

Name of assessor: Shane Doran

Area of assessment: Traffic and Transport – Permanent Effects

Guidance criteria considered:

- Travel time for buses, cars and freight vehicles
- Reliability for buses, cars and trucks
- Pedestrian and cyclist connectivity and infrastructure quality
- Safety
- Access to RTN
- Access to the road network
- Access to properties
- Loss of parking

EB3C – Offline Burswood Option

Notes:

Comments

- Travel time and reliability for cars and freight will be better than the Online Commercial option and similar to the Offline Commercial option as a result of the reduction of traffic lanes between Guys Reserve and Greenmount Drive but no change to traffic arrangements between Greenmount Drive and Pakuranga Creek.
- The Offline Burswood Option through the row of homes adjacent to the commercial properties on the northern side of Ti Rakau drive will provide faster and more reliable travel times for buses as they avoid 5 sets of traffic signals along Ti Rakau Drive than the Online Commercial option. In addition, bus services will be able to be provided with a 'green wave' from Guys Reserve through to west of Gossamer Drive through signal pre-emption. In terms of bus travel time and reliability this option is similar to the Offline Commercial option with the exception that this option has only one station at Burswood and therefore would be marginally faster/more reliable.
- Pedestrian and cyclist facilities are far better with the Offline Burswood option than the other two options as the Offline Burswood Option provides a dedicated bi-directional cycleway and footpath between Gossamer Drive and Guys Reserve.
- The Offline Burswood Option provides a safer option than both the other two options particularly for vulnerable users with off road cycle and pedestrian facilities.
- The busway station located away from Ti Raku Drive provides better access to residents in the Burswood area than the Online Commercial option and maintains a reasonable access to the commercial properties with a dedicated link between the station and Torrens Road. Further with the single station it allows passengers on buses from Harris Road to interchange conveniently increasing the effective catchment of the busway. This service operation is not achievable with either the Commercial Online or Commercial Offline options.
- Access to the road network is maintained as per the existing conditions with the Offline Burswood option.
- Access to properties is maintained as per the existing situation with the exceptions that the Mobil service station just east of Pakuranga Creek and the Gull petrol station just east of Howick

and Eastern Depot will be removed. Access to all other businesses along Ti Rakau Drive are maintained.
- The Offline Burswood option has no impact on parking.

Assumptions

- All bus services use the busway.
- Bus pre-emption will be implemented.
- Connections with the Burwood Reserve shared path will be maintained.

Other information relied upon

- Plan of Offline Burswood Option
- Specialist knowledge
- High level analysis

No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet

Name of assessor: Shane Doran

Area of assessment: Project Objective – Provide a multi-modal corridor that connects Pakuranga and Botany to the wider network and increases access to a choice of transport options

Guidance criteria considered:

- Quality of multi-modal facilities

EB3C – Offline Burswood Option

Notes:

Comments

- The Offline Burswood Option provides high quality facilities for buses, cycling and walking as well as providing for private and freight vehicles.
- The quality of walking and cycling facilities in particular are significantly better than the Offline Commercial and Online Commercial options.

Assumptions

- N/A

Other information relied upon

- Plan of Offline Burswood Option
- Specialist knowledge

No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet

Name of assessor: Shane Doran

Area of assessment: Project Objective – Contribute to accessibility and place shaping by providing better transport connections between, within and to the town centres

Guidance criteria considered:

- Network condition – walking and cycling
- Directness of connections with surrounding areas/communities

EB3C – Offline Burswood Option

Notes:

Comments

- The Offline Burswood Option provides high quality walking and cycling facilities.
- The location of the busway station provides a convenient, safe and direct connection with the Burswood community and commercial precinct.

Assumptions

- An access path is provided between the busway station and Torrens Road that provides direct access between the station and the commercial precinct.

Other information relied upon

- Plan of Offline Burswood Option
- Specialist knowledge

No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet
Name of assessor: Shane Doran
Area of assessment: Project Objective – Provide transport infrastructure that improves linkages, journey time and reliability of the public transport network.
Guidance criteria considered: • Average travel time by public transport • Travel time reliability for public transport
EB3C – Offline Burswood Option
Notes: <u>Comments</u> • The Offline Burswood Option through the row of homes adjacent to the commercial properties on the northern side of Ti Rakau drive will provide faster and more reliable travel times for buses as they avoid 5 sets of traffic signals along Ti Rakau Drive than the Online Commercial option. In addition, bus services will be able to be provided with a 'green wave' from Guys Reserve through to west of Gossamer Drive through signal pre-emption. In terms of bus travel time and reliability this option is similar to the Offline Commercial option with the exception that this option has only one station at Burswood and therefore would be marginally faster/more reliable. <u>Assumptions</u> • N/A <u>Other information relied upon</u> • <u>Plan of Offline Burswood Option</u> • <u>Specialist knowledge</u>
No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Multi Criteria Assessment Scoring Sheet
Name of assessor: Shane Doran
Area of assessment: Project Objective – Provide transport infrastructure that is safe for everyone.
Guidance criteria considered:

-

EB3C – Offline Burswood Option

Notes:

Comments

- The Offline Burswood Option provides high quality off road walking and cycling facilities which removes vulnerable users from conflicts with vehicles.
- The location of the busway station provides a convenient, safe and direct connection with the Burswood community and commercial precinct removing the need for residents to interact with the high volumes of traffic on Ti Rakau Drive.

Assumptions

- N/A.

Other information relied upon

- Plan of Offline Burswood Option
- Specialist knowledge

No Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Mitigation Score (please circle or highlight score):

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Appendix 10: EB3C Burswood Alignment Sensitivity Analysis

Criteria	Sub Criteria	Further Guidance
Performance against Business Case Objectives	Provide a multi modal transport corridor that connects Pakuranga and Botany to the wider network and increases access to a choice of transport options	Provide for all modes (walking, cycling, bus, freight, general traffic). Connect Pakuranga and Botany together and to the wider network, with adequate linkages and connectivity between modes.
	Provide transport infrastructure that integrates with land uses and supports a quality, compact urban form in Pakuranga and along the Pakuranga to Botany Busway Corridor	The proposed option integrates well (in terms of form and access) with land uses anticipated under the AUP (part operative). Aligns well with proposed town centre development plans. Option provides for good accessibility to and supports a high quality, compact urban form in Pakuranga and along the busway corridor to Botany. Accounts for number of residential and commercial properties affected by the corridor. Overlay of future proposed land use under the AUP (part operative) Colocation with existing infrastructure (e.g. utilises existing Arterial routes)
	Improve the efficiency and resilience of the transport network surrounding Pakuranga town centre and between Pakuranga and Botany by providing a dedicated route for public transport to and from the eastern suburbs	Demonstrates efficiency and resilience in transport network by providing a dedicated public transport route Efficiency based on - Length of corridor, number of intersections, arterials vs local roads. Resilience: sensitivity to flow breakdown/alternative routes
	Provide transport infrastructure that improves the linkages, relieves network constraints and improves journey time, frequency and reliability of the transport network.	Demonstrates improvements in transport network reliability of connection, journey time and frequency of service. Length of corridor Journey time (approx.)
	Maximise the benefits of investment in transport infrastructure by extending network connections and delivering network improvements.	Demonstrates optimal use of existing infrastructure and proposed (new) network connections and network improvements. Supports other transport investment priorities and demonstrates a strategic fit i.e. where investment has already been made in the network (e.g. Panmure station). Does not preclude future connectivity into the Botany Busway Station (EB4) and onwards connection to Manukau.
	Contribute to place shaping in Pakuranga town centre and along the Busway Corridor by providing better connections and accessibility between and within the centre and along the corridor for all transport users, including public transport users, pedestrians and cyclists.	Supports future amenity and public realm improvements to the town centre and along the corridor. Provides legible and desirable connections to the town centre and land uses along the corridor. Provides a continuous corridor connection for all modes to the town centre and along the corridor. Minimises impact on existing place.
	Create a corridor that is safe for all road users, including public transport passengers, cyclists and pedestrians.	Ability to provide for accessible, legible, connected and (as far as practicable) safe general traffic, bus, pedestrian and cyclist infrastructure. Ability to provide separation of modes where necessary for safety
	Enables and safeguards the future implementation of the Airport to Botany transit line and associated interchange modifications	
Legislative and consenting considerations	Assessment against critical legislative requirements	Qualitative assessment of the consistency of the proposal with the Resource Management Act (1991), especially Part 2 matters, and high-level policy framework relevant to the Project e.g. NZCPS, NPS's, RPS, NES. Impacts on specifically scheduled and protected Archaeology, Built heritage, scheduled trees and features within AUP.
Constructability	Can the option be constructed within reasonable and known construction constraints? Impact on utilities and civil infrastructure	Constructability incl. volume/balance of earthworks, construction risks and general degree of difficulty Disruption to existing services and utilities Traffic management Programme Disruption - effects on network utilities and continuity of service Requirements for relocation / design of alternative major infrastructure, including consideration of safety impacts of such requirements and risk of continuity of service over construction - e.g. Transpower National Grid, Watercare, Telecoms etc - account for cost of relocations if necessary
Transportation effects	Temporary traffic and transport effects Permanent/ operational traffic and transport effects	Temporary intersection layouts, acceptable level of delay, property access, pedestrian and cyclist facilities, detours etc. PT reliability during construction phase Journey time improvement / Congestion/queue length within corridor / congestion and queue lengths outside of corridor / PT reliability Effects on existing network - positive and adverse Levels of service of key intersections Operational performance of busway Effects on surrounding network
Natural environment/ ecological effects	Ecology	Freshwater ecology – adverse physical effects on freshwater receiving environment (any work within or in proximity to a stream or wetland) Extent of effects (and ability to manage effects) on indigenous vegetation Extent of effects on significant habitats of indigenous fauna (terrestrial) Extent of effects on landscapes and natural features including geological features, landform, vegetation (including trees), watercourses etc.
Built environment	Property implications Stormwater and Flooding effects Permanent effects – activities/ use Permanent effects – visual amenity	Qualitative assessment of the scale of likely / anticipated effects from land take. Reasonable necessity and requirement for operation and construction. Considering extent to which additional land required has already been acquired for the Project and risk of acquiring land still needed. Number of properties to be acquired. Degree of difficulty of property acquisition (includes nature of land use, consideration of common land acquisition i.e. land owned by multiple parties). Type of property e.g. commercial versus residential versus parks/heritage. Consideration of future land use (residual land use). The extent of the effects relating to stormwater and flooding generated by the proposal. Understanding of potential mitigation requirement. The extent of effects on (or compatibility with) surrounding activities, with particular regard to public activities (such as town centres), land use, and character. The extent of effects on visual amenity taking into account the character and visibility (prominence) of the proposal, the proposed built form, the character of the existing environment, the sensitivity of audiences, duration of view, magnitude of visual change and the experience of future road users.
Social effects	Noise and Vibration Air Quality – Operational Social – community facilities/ open space Social – viability productivity of business land areas Social – social connectivity	Operational noise and vibration effects upon sensitive receivers. Construction noise and vibration effects upon sensitive receivers. Scoring of potential operational air quality impacts of each option taking account of the following factors: Relative scale of traffic emissions from each option characterised from: - Traffic volumes (whole fleet and HCV) - Level of service Relative scale of sensitivity of receiving environment for each option is this in a polluted/non-compliant airshed? The extent to which community facilities in the study area (including educational, health and leisure facilities) will be affected. During construction and permanent. Consideration of business disruption effects during construction and operation. Discussion on the potential impacts on patterns of movement or communities of interest that might be affected by the construction/operation works, such that there may be a loss of social cohesion or fragmentation of existing community structures (e.g. disruption or severance of school zones, electoral catchments, etc).
Costs	Capital Costs Operating Costs Whole of Life Costs Present Day Value of WOL Costs	The cost to construct plus property costs of the option The bus operating costs associated with station form, driver rest and layover patterns of the option Financial outlay NPV of financial outlay

Score		Description
5	Very High Positive Effect	Regional or Greater Benefit: Benefits will be experienced by a whole region or across regions (including national) or may be to a regionally or nationally significant resource; and/or May have substantial benefits on features/ resources/ community identified. High degree of confidence of benefits being realised; and/ or
4	High Positive Effect	Regional Benefits: Benefits will be experienced for a sub-regionally significant resource/ experienced by a subregional audience; and/or May have a high extent of benefits on the feature/ resource/ community identified (and confident of benefits being realised); and/or
3	Moderate Positive Effect	Local Level Benefits (1): Benefits will be experienced for values of an ecological district or within a catchment, or at a local board community/ geographic scale; And/or May have some extent of benefits on the feature/ resource/ community identified; And/or Medium Term = 5-10 years.
2	Low Positive Effect	Local level Benefits (2): Benefits will be experienced by defined local environment or sub-catchment. Benefits may be on Census Area Unit or experienced by a limited number of households (i.e. 20-50 people); and/or May have a low extent of benefits on the feature/ resource/ community identified; and/or Short Term = 1-5 years
1	Very Low Positive	Individual level benefit: Benefits will be experienced for resources not otherwise identified for their values or with otherwise innominate value. Benefits may be experienced by a limited number of households (i.e. 20 households/ 50 people); and/or May have a very limited and confined extent of benefits on the feature/ resource/ community identified; and/or Very Short Term = < 1 year.
0	Neutral Effect	Negligible effects from current situation/ natural
-1	Very Low Adverse Effect	Individual level impact: Will have adverse effects on resources not otherwise identified for their values or with otherwise innominate value or may impact a limited number of households (i.e. 20 households/ 50 people); and/or May have a low extent of impact on the feature/ resource/ community identified; and/or Very Short Term = <1 year
-2	Low Adverse Effect	specific significant within an ecological district but only local effect or within a catchment) or may impact on a local board community/ geographic scale; and/or May have some extent of impact on the feature/ resource/ community identified; and/or Short term = 1 -5 years
-3	Moderate Adverse Effect	Local Area Level Impact: Will have adverse effects on a locally significant resource (e.g. significant within an ecological district or within a catchment) or may impact on a local board community/ geographic scale; and/or May have a moderate extent of impact on the feature/ resource/ community identified; and/or Medium term = 5 -10 years
-4	High Adverse Effect	Regional: Will have adverse effects on a regionally significant resource or may be experienced by a regional or wider audience; and/or May have a high extent of impact on features/ resource/ community identified; and/or Long Term/ Permanent = 10 -20+ years.
-5	Very High Adverse Effect	National or Greater: Will have adverse effect on a nationally significant resource/ or may be experienced by a national scale audience; and/or May have a substantial/ complete effect (destruction) on the feature/ resource/ community identified; and/or Long Term/ Permanent = 20+ years.

Multi Criteria Assessment Stage 1

Eastern Busway

EB3 Commercial

Stage 1 Criteria and Equal Weightings

Criteria	Weighting		Options					
			Option A		Option B		Option C	
			Raw	Weighted	Raw	Weighted	Raw	Weighted
Performance against Business Case objectives	13		1.2	15.0	1.5	18.8	3.2	40.0
Legislative and Consenting Considerations	13		4	50.0	0	0.0	0	0.0
Constructability	13		-0.5	-6.3	-1	-12.5	-0.5	-6.3
Transportation Effects	13		0.5	6.3	1.5	18.8	1.5	18.8
Natural environment/ ecological effe	13		-2	-25.0	-2.5	-31.3	-1.5	-18.8
Built Environment	13		-0.5	-6.3	-1.25	-15.6	-0.25	-3.1
Social Effects	13		0.3	3.8	-1.3	-16.3	-1.3	-16.3
Costs	13		2	25.0	4	50.0	3	37.5
Total	100	Score		63		12		52
		Rank		**1**		**3**		**2**

Options
Option A EB3 Commercial Online
Option B EB3 Commercial Offline
Option C EB3 Commercial Burswood Offline
Option D
Option E
Option F

Scenario Balanced

Stage 2 Criteria and Sensitivty Scenarios

Stage 2 Criteria	Weighting Scenario					
	Equal	Transport Benefits	Environmental Effects	Effects	Cost	Other
Transport Benefits	25	50	16	16	16	45
Environmental Effects	25	16	50	17	17	15
Effects	25	17	17	50	17	10
Cost	25	17	17	17	50	30
	100	100	100	100	100	100

Notes for use

Cells coloured green are able to be adjusted
Cells coloured orange are not able to be adjusted

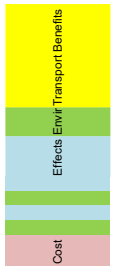
Score		Description
5	Very High Positive Effect	Regional or Greater Benefit: Benefits will be experienced by a whole region or across regions (including national) or may be to a regionally or nationally significant resource; and/or May have substantial benefits on features/ resources/ community identified. High degree of confidence of benefits being realised; and/ or
4	High Positive Effect	Regional Benefits: Benefits will be experienced for a sub-regionally significant resource/ experienced by a subregional audience; and/or May have a high extent of benefits on the feature/ resource/ community identified (and confident of benefits being realised); and/or
3	Moderate Positive Effect	Local Level Benefits (1): Benefits will be experienced for values of an ecological district or within a catchment, or at a local board community/ geographic scale; And/or May have some extent of benefits on the feature/ resource/ community identified; And/or Medium Term = 5-10 years.
2	Low Positive Effect	Local level Benefits (2): Benefits will be experienced by defined local environment or sub-catchment. Benefits may be on Census Area Unit or experienced by a limited number of households (i.e. 20-50 people); and/or May have a low extent of benefits on the feature/ resource/ community identified; and/or Short Term = 1-5 years
1	Very Low Positive	Individual level benefit: Benefits will be experienced for resources not otherwise identified for their values or with otherwise innominate value. Benefits may be experienced by a limited number of households (i.e. 20 households/ 50 people); and/or May have a very limited and confined extent of benefits on the feature/ resource/ community identified; and/or Very Short Term = < 1 year.
0	Neutral Effect	Negligible effects from current situation/ natural
-1	Very Low Adverse Effect	Individual level impact: Will have adverse effects on resources not otherwise identified for their values or with otherwise innominate value or may impact a limited number of households (i.e. 20 households/ 50 people); and/or May have a low extent of impact on the feature/ resource/ community identified; and/or Very Short Term = <1 year
-2	Low Adverse Effect	Local Area/ or Individual Level Impact: Will have adverse effects on a locally prevalent resource (e.g. site specific significant within an ecological district but only local effect or within a catchment) or may impact on a local board community/ geographic scale; and/or May have some extent of impact on the feature/ resource/ community identified; and/or
-3	Moderate Adverse Effect	Local Area Level Impact: Will have adverse effects on a locally significant resource (e.g. significant within an ecological district or within a catchment) or may impact on a local board community/ geographic scale; and/or May have a moderate extent of impact on the feature/ resource/ community identified; and/or Medium term = 5 -10 years
-4	High Adverse Effect	Regional: Will have adverse effects on a regionally significant resource or may be experienced by a regional or wider audience; and/or May have a high extent of impact on features/ resource/ community identified; and/or Long Term/ Permanent = 10 -20+ years.
-5	Very High Adverse Effect	National or Greater: Will have adverse effect on a nationally significant resource/ or may be experienced by a national scale audience; and/or May have a substantial/ complete effect (destruction) on the feature/ resource/ community identified; and/or Long Term/ Permanent = 20+ years.

Multi Criteria Assessment Stage 2
Eastern Busway

EB3 Commercial — **Stage 1 Scores**

Criteria	Weighting		Options					
			Option A		Option B		Option C	
			Raw	Weighted	Raw	Weighted	Raw	Weighted
Performance against Business Case objectives	13		1.2	15.0	1.5	18.8	3.2	40.0
Legislative and Consenting Considerations	13		4	50.0	0	0.0	0	0.0
Constructability	13		-0.5	-6.3	-1	-12.5	-0.5	-6.3
Transportation Effects	13		0.5	6.3	1.5	18.8	1.5	18.8
Natural environment/ ecological effe	13		-2	-25.0	-2.5	-31.3	-1.5	-18.8
Built Environment	13		-0.5	-6.3	-1.25	-15.6	-0.25	-3.1
Social Effects	13		0.3	3.8	-1.3	-16.3	-1.3	-16.3
Costs	13		2	25.0	4	50.0	3	37.5
Total	100	Score		63		12		52
		Rank		**1**		**3**		**2**

Stage 2 Criteria



Options

Option A	EB3 Commercial Online
Option B	EB3 Commercial Offline
Option C	EB3 Commercial Burswood Offline
Option D	0
Option E	0
Option F	0

Scenario: Equal

Notes for use
Cells coloured green are able to be adjusted
Cells coloured orange are not able to be adjusted

Scoring

5
4
3
2
1
0
-1
-2
-3
-4
-5

Stage 2 - Equal

Stage 2 Criteria	Weighting		Options					
			Option A		Option B		Option C	
			Raw	Weighted	Raw	Weighted	Raw	Weighted
Transportation Benefits	25		1.20	30.0	1.50	37.5	3.20	80.0
Environmental	25		0.77	19.2	-1.27	-31.7	-0.93	-23.3
Effects	25		-0.17	-4.2	-0.25	-6.3	0.25	6.3
Cost	25		2.00	50.0	4.00	100.0	3.00	75.0
	100	Score		95		100		138
		Rank		**3**		**2**		**1**

Multi Criteria Assessment Stage 2
Eastern Busway

EB3 Commercial

Stage 1 Scores

Criteria	Weighting		Options					
			Option A		Option B		Option C	
			Raw	Weighted	Raw	Weighted	Raw	Weighted
Performance against Business Case objectives	13		1.2	15.0	1.5	18.8	3.2	40.0
Legislative and Consenting Considerations	13		4	50.0	0	0.0	0	0.0
Constructability	13		-0.5	-6.3	-1	-12.5	-0.5	-6.3
Transportation Effects	13		0.5	6.3	1.5	18.8	1.5	18.8
Natural environment/ ecological effects	13		-2	-25.0	-2.5	-31.3	-1.5	-18.8
Built Environment	13		-0.5	-6.3	-1.25	-15.6	-0.25	-3.1
Social Effects	13		0.3	3.8	-1.3	-16.3	-1.3	-16.3
Costs	13		2	25.0	4	50.0	3	37.5
Total	100	Score		63		12		52
		Rank		1		3		2

Stage 2 Criteria

Stage 2 - Transport Benefits

Stage 2 Criteria	Weighting		Options					
			Option A		Option B		Option C	
			Raw	Weighted	Raw	Weighted	Raw	Weighted
Transportation Benefits	50		1.20	60.0	1.50	75.0	3.20	160.0
Environmental	16		0.77	12.3	-1.27	-20.3	-0.93	-14.9
Effects	17		-0.17	-2.8	-0.25	-4.3	0.25	4.3
Cost	17		2.00	34.0	4.00	68.0	3.00	51.0
	100	Score		103		118		200
		Rank		3		2		1

Options

Option A	EB3 Commercial Online
Option B	EB3 Commercial Offline
Option C	EB3 Commercial Burswood Offline
Option D	0
Option E	0
Option F	0

Scenario: Equal

Notes for use
Cells coloured green are able to be adjusted
Cells coloured orange are not able to be adjusted

Scoring

5
4
3
2
1
0
-1
-2
-3
-4
-5

Multi Criteria Assessment Stage 2
Eastern Busway

EB3 Commercial

Stage 1 Scores

Criteria	Weighting		Options					
			Option A		Option B		Option C	
			Raw	Weighted	Raw	Weighted	Raw	Weighted
Performance against Business Case objectives	13		1.2	15.0	1.5	18.8	3.2	40.0
Legislative and Consenting Considerations	13		4	50.0	0	0.0	0	0.0
Constructability	13		-0.5	-6.3	-1	-12.5	-0.5	-6.3
Transportation Effects	13		0.5	6.3	1.5	18.8	1.5	18.8
Natural environment/ ecological effects	13		-2	-25.0	-2.5	-31.3	-1.5	-18.8
Built Environment	13		-0.5	-6.3	-1.25	-15.6	-0.25	-3.1
Social Effects	13		0.3	3.8	-1.3	-16.3	-1.3	-16.3
Costs	13		2	25.0	4	50.0	3	37.5
Total	100	Score		63		12		52
		Rank		**1**		**3**		**2**

Stage 2 Criteria

Transport I
Env
Effects
Cost

Stage 2 - Environment

Stage 2 Criteria	Weighting		Options					
			Option A		Option B		Option C	
			Raw	Weighted	Raw	Weighted	Raw	Weighted
Transportation Benefits	16		1.20	19.2	1.50	24.0	3.20	51.2
Environmental	50		0.77	38.3	-1.27	-63.3	-0.93	-46.7
Effects	17		-0.17	-2.8	-0.25	-4.3	0.25	4.3
Cost	17		2.00	34.0	4.00	68.0	3.00	51.0
	100	Score		89		24		60
		Rank		**1**		**3**		**2**

Options
Option A EB3 Commercial Online Scenario Equal
Option B EB3 Commercial Offline
Option C EB3 Commercial Burswood Offline
Option D 0
Option E 0
Option F 0

Notes for use
Cells coloured green are able to be adjusted
Cells coloured orange are not able to be adjusted

Scoring

5
4
3
2
1
0
-1
-2
-3
-4
-5

Multi Criteria Assessment Stage 2
Eastern Busway

EB3 Commercial

Stage 1 Scores

Criteria	Weighting		Options					
			Option A		Option B		Option C	
			Raw	Weighted	Raw	Weighted	Raw	Weighted
Performance against Business Case objectives	13		1.2	15.0	1.5	18.8	3.2	40.0
Legislative and Consenting Considerations	13		4	50.0	0	0.0	0	0.0
Constructability	13		-0.5	-6.3	-1	-12.5	-0.5	-6.3
Transportation Effects	13		0.5	6.3	1.5	18.8	1.5	18.8
Natural environment/ ecological effects	13		-2	-25.0	-2.5	-31.3	-1.5	-18.8
Built Environment	13		-0.5	-6.3	-1.25	-15.6	-0.25	-3.1
Social Effects	13		0.3	3.8	-1.3	-16.3	-1.3	-16.3
Costs	13		2	25.0	4	50.0	3	37.5
Total	100	Score		63		12		52
		Rank		**1**		**3**		**2**

Stage 2 Criteria

Stage 2 - Effects

Stage 2 Criteria	Weighting		Options					
			Option A		Option B		Option C	
			Raw	Weighted	Raw	Weighted	Raw	Weighted
Transportation Benefits	16		1.20	19.2	1.50	24.0	3.20	51.2
Environmental	17		0.77	13.0	-1.27	-21.5	-0.93	-15.9
Effects	50		-0.17	-8.3	-0.25	-12.5	0.25	12.5
Cost	17		2.00	34.0	4.00	68.0	3.00	51.0
	100	Score		58		58		99
		Rank		**3**		**2**		**1**

Options
Option A EB3 Commercial Online Scenario Equal
Option B EB3 Commercial Offline
Option C EB3 Commercial Burswood Offline
Option D 0
Option E 0
Option F 0
7.692308

Notes for use
Cells coloured green are able to be adjusted
Cells coloured orange are not able to be adjusted

Scoring

5
4
3
2
1
0
-1
-2
-3
-4
-5

Multi Criteria Assess Stage 2
Eastern Busway

EB3 Commercial — **Stage 1 Scores**

Criteria	Weighting		Options					
			Option A		Option B		Option C	
			Raw	Weighted	Raw	Weighted	Raw	Weighted
Performance against Business Case objectives	13		1.2	15.0	1.5	18.8	3.2	40.0
Legislative and Consenting Considerations	13		4	50.0	0	0.0	0	0.0
Constructability	13		-0.5	-6.3	-1	-12.5	-0.5	-6.3
Transportation Effects	13		0.5	6.3	1.5	18.8	1.5	18.8
Natural environment/ ecological eff	13		-2	-25.0	-2.5	-31.3	-1.5	-18.8
Built Environment	13		-0.5	-6.3	-1.25	-15.6	-0.25	-3.1
Social Effects	13		0.3	3.8	-1.3	-16.3	-1.3	-16.3
Costs	13		2	25.0	4	50.0	3	37.5
Total	100	Score		63		12		52
		Rank		**1**		**3**		**2**

Stage 2 Criteria

Stage 2 - Cost

Stage 2 Criteria	Weighting		Options					
			Option A		Option B		Option C	
			Raw	Weighted	Raw	Weighted	Raw	Weighted
Transportation Benefits	16		1.20	19.2	1.50	24.0	3.20	51.2
Environmental	17		0.77	13.0	-1.27	-21.5	-0.93	-15.9
Effects	17		-0.17	-2.8	-0.25	-4.3	0.25	4.3
Cost	50		2.00	100.0	4.00	200.0	3.00	150.0
	100	Score		129		198		190
		Rank		**3**		**1**		**2**

Options

Option A	EB3 Commercial Online
Option B	EB3 Commercial Offline
Option C	EB3 Commercial Burswood Offline
Option D	0
Option E	0
Option F	0
	7.692308

Scenario: Equal

Notes for use
Cells coloured green are able to be adjusted
Cells coloured orange are not able to be adjusted

Scoring

5
4
3
2
1
0
-1
-2
-3
-4
-5

Multi Criteria Assess Stage 2
Eastern Busway

EB3 Commercial — **Stage 1 Scores**

Criteria	Weighting		Options					
			Option A		Option B		Option C	
			Raw	Weighted	Raw	Weighted	Raw	Weighted
Performance against Business Case objectives	13		1.2	15.0	1.5	18.8	3.2	40.0
Legislative and Consenting Considerations	13		4	50.0	0	0.0	0	0.0
Constructability	13		-0.5	-6.3	-1	-12.5	-0.5	-6.3
Transportation Effects	13		0.5	6.3	1.5	18.8	1.5	18.8
Natural environment/ ecological effe	13		-2	-25.0	-2.5	-31.3	-1.5	-18.8
Built Environment	13		-0.5	-6.3	-1.25	-15.6	-0.25	-3.1
Social Effects	13		0.3	3.8	-1.3	-16.3	-1.3	-16.3
Costs	13		2	25.0	4	50.0	3	37.5
Total	100	Score		63		12		52
		Rank		**1**		**3**		**2**

Stage 2 Criteria

Stage 2 - Other

Stage 2 Criteria	Weighting		Options					
			Option A		Option B		Option C	
			Raw	Weighted	Raw	Weighted	Raw	Weighted
Transportation Benefits	40		1.20	48.0	1.50	60.0	3.20	128.0
Environmental	15		0.77	11.5	-1.27	-19.0	-0.93	-14.0
Effects	10		-0.17	-1.7	-0.25	-2.5	0.25	2.5
Cost	35		2.00	70.0	4.00	140.0	3.00	105.0
	100	Score		128		179		222
		Rank		**3**		**2**		**1**

Options
Option A — EB3 Commercial Online — Scenario — Equal
Option B — EB3 Commercial Offline
Option C — EB3 Commercial Burswood Offline
Option D — 0
Option E — 0
Option F — 0
7.692308

Notes for use
Cells coloured green are able to be adjusted
Cells coloured orange are not able to be adjusted

Scoring

5
4
3
2
1
0
-1
-2
-3
-4
-5

Multi Criteria Assessment Stage 2

Eastern Busway 3 Commercial **Summary Results**

Scenario	Option		
	Option A	Option B	Option C
	Rank		
Equal	3	2	1
Transport Benefits	3	2	1
Environment	1	3	2
Effects	3	2	1
Cost	3	1	2
Combined Score (Lower is better)	13	10	7
Rank	**3**	**2**	**1**

Option A	EB3 Commercial Online
Option B	EB3 Commercial Offline
Option C	EB3 Commercial Burswood Offline