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Submission on Let's Get Wellington Moving Programme Options



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Let's Get Wellington Moving Programme Team

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Executive Summary

The AA notes that implementing any of the programme options will result in somewhat worse congestion and poorer travel time reliability for general traffic. LGWM's economic analysis indicates that motorists will be marginally less worse-off under Option 1 than the other options.

The AA does not support Options 3 or 4. A new Mt Victoria tunnel is needed to provide improved access for public transport users from the east, to support growth and to improve conditions for State Highway users, including the critical economic link to the airport. We are strongly opposed to Option 4. Grade separation at the Basin Reserve is needed to address congestion, support forecast growth and provide for improved access for active modes, particularly cycling.

The information provided by LGWM was insufficient for the AA to identify a clear preference between the two remaining options.

The AA's survey of our Wellington region Members found a very slight preference for Option 2 but there was also more support for light rail than any other individual element of the programme options.

The AA agrees with LGWM's assessment that Option 2 slightly outperforms Option 1 when assessed against the programme objectives. This is because a two-line bus based rapid transit system better supports current urban development plans, and offers improved accessibility, scope for expansion, and resilience than the alternative combination of a single-line light rail line and bus priority.

On the other hand, we also agree that light rail has greater urban development potential than bus rapid transit, particularly beyond the next 30 years. However, we question whether the combination of light rail to the south and bus priority improvements to the east could attract sufficient market demand to account for the vast majority of Wellington city's housing growth in the coming decades.

The low benefit-cost ratios for all options underlines the importance of the planned urban development work to strengthen the economic case for Mass Rapid Transit. This will need to form a key plank of any future work to justify the case for light rail. If light rail does emerge as the preferred option, consideration should also be given to opportunities for staging it by first proceeding with construction either to Newtown or Berhampore.

The AA supports the need to see tangible progress on the programme beyond the city centre improvements. We suggest LGWM identify which elements will deliver the best combination of early benefits and overall value for money, and that can be sensibly staged ahead of the major works. This should include opportunities to avoid or reduce future disruption with subsequent works. We recommend this include considering bringing forward grade separation of the Basin Reserve due to the clear benefits this will deliver for all modes.

The AA appreciates that due to the change in focus and budget constraints, most State Highway projects included in LGWM's 2019 package are no longer part of the programme. These projects have a strong fit with the key programme goal to reduce traffic travelling through and into the city centre and will be needed to support forecast traffic growth. The AA therefore recommends they are retained in LGWM partners' long term statutory land use and transport planning documents.

The majority of our Wellington Members think LGWM is generally headed in the right direction. However, we are concerned there appears to be a disconnect the public expectations of the benefits and the reality of what will eventually be delivered. As the programme progresses to the next phase, we think there needs to be more transparency from LGWM about the congestion impacts, the shift in focus from transport to housing, and the costs individuals can expect to face both to fund the programme and for congestion charges.

1. Introduction

The NZ Automobile Association (AA) appreciates the opportunity to provide feedback on Let's Get Wellington Moving (LGWM) Programme options.

The AA notes that the Let's Get Wellington Moving (LGWM) partners announced the following agreed revised objectives and weighting for the LGWM programme on 1 July:

Objectives	LIVEABILITY	ACCESS	CARBON EMISSIONS AND MODE SHIFT	SAFETY	RESILIENCE
A transport system that...	Enhances urban amenity and enables urban development outcomes	Provides more efficient and reliable access for users	Reduces carbon emissions and increases mode shift by reducing reliance on private vehicles	Improves safety for all users	Is adaptable to disruptions and future uncertainty
Weighting	20%	15%	40%	15%	10%

LGWM's primary objective is reducing carbon emissions and mode shift by reducing reliance on private vehicles. LGWM's primary means for achieving this objective is by reallocating road space from private vehicles to enable infrastructure to be built for other modes. The AA notes that this inevitably means that implementing any of the programme options will result in somewhat worse congestion and poorer travel time reliability for general traffic and that this is confirmed by the LGWM analysis.

This submission starts by presenting the results of a survey the AA undertook to understand our Members' views of the programme options. It then comments on LGWM's assessment of the options, presents the AA's views, suggested next steps and recommendations. The AA's detailed analysis of the impact of the options on private vehicles, the options' performance against the programme objectives and LGWM's economic evaluation is set out in an appendix.

2. AA Members' views

The AA surveyed our Wellington region Members to understand their views on the LGWM programme options. Just under half of the 1,200 respondents indicated they reside in Wellington City; just over a third in Lower Hutt, Upper Hutt, or Porirua; and the remainder in outer Wellington.

The survey asked respondents whether they drive into or through the city centre and whether they could feasibly switch these trips to other modes:

- 49% reported they drive in or through the city centre at least once a week and 19% do so either every day or almost every day
- 39% of respondents who drive into or through the city centre at least once a month reported that they could not switch any of their trips to another mode and 21% said they could feasibly switch all or most of their trips to another mode

Respondents were asked for their views on the priority of different LGWM programme goals. The survey also sought their views on addressing congestion as this has typically been a key priority for our Members. The top three priorities were:

1. Improving public transport, which was rated as a top or significant priority by just over 80% of our Members
2. Addressing congestion, which was rated as a top or significant priority by almost three-quarters of our Members
3. Improving safety, which was rated as a top or significant priority by just under 70% of our Members

The least important of the programme goals were:

1. Supporting housing development, which was rated as a top or significant priority by just over 50% of our Members
2. Reducing emissions by reducing reliance on private vehicles, which was rated as a top or significant priority by just under 50% of our Members
3. Making walking and cycling more attractive which was rated as a top or significant priority by just over 40% of our Members

When asked if they prefer one option over the others, 25% identified Option 1 – South coast light rail and new public transport tunnel, 28% Option 2 – Bus rapid Transit to the sea and skies, 9% Option 3 – South Coast light rail and 10% Option 4 – South coast light rail light rail via Taranaki St. When asked for their views on the most important component of the different options, the top-ranked component was selected light rail by just under 30% of respondents. The second-ranked component, selected by just over 20 % of respondents, was Bus Rapid Transit.

The survey also sought Members' conceptual views on congestion charging. Some 16% of respondents indicated they support it in principle; a further 38% indicated they might be open to it and 44% opposed it. The results were broadly similar regardless of area of residence.

Lastly, the survey asked Members whether they think Wellington's transport plans are heading in the right direction. Just over half – 51 per cent – consider the plans were somewhat headed in the right direction and a further 9 percent strongly in the right direction.

3. Option assessment

3.1 Comments on LGWM Assessment

The AA notes that the multi-criteria assessment LGWM conducted found that Option 2 was the top performing option. It performed slightly better against the programme objectives than Option 1 and both Options 1 and 2 performed better than Options 3 and 4.

The key differences between Options 1 and 2 were:

- Option 2's ability to better support the city's and region's current urban development plans; and
- the better accessibility, scope for expansion and resilience from a two-line bus based rapid transit system compared with single-line light rail line and enhanced bus services in the east.

The AA was slightly surprised to read LGWM’s comment that most aspects where Option 2 performs slightly better than Option 1 are not considered the key outcomes sought from the programme objectives. Specifically, LGWM noted that Option 2 has less potential to encourage the highest levels of urban development than Option 1.



While both options were assessed to have very similar carbon emissions reduction and mode shift potential, LGWM also emphasised that higher levels of urban development also has the potential to deliver greater mode shift and carbon emission reductions.

The AA agrees that Option 2 is likely to have less long term urban development potential than Option 1 but this was not the criterion the options were assessed against. They were assessed against the ability to support Wellington city’s recently released urban development plans. Both options received the same score against this objective but LGWM’s conclusion was that “*Option 2 is considered to have greater potential urban development reach with BRT to the south and east, compared with Option 1 with LRT in combination with enhanced bus*”.

3.2 The AA’s views on the options

The table below sets out the AA’s assessment of the programme options. Consistent with LGWM’s analysis, we agree all options perform relatively similarly and there are few material differences between them when assessed against the LGWM programme objectives, particularly at a city and regional level.

Option	1	2	3	4
Private vehicles				
Active modes				
Public transport				
Access total				
Carbon emissions				
Mode shift				
Carbon & mode shift total				
Amenity				
Urban development ¹				
Liveability total				
Safety				
Resilience				

-  Option results in better performance for mode or against programme objectives
-  Option results in worse performance for mode
- Colour intensity reflects degree of improvement or deterioration

¹ Note this assessment reflects the options’ performance against Wellington city’s and region’s current land use plans. The AA’s views on the work LGWM plans to do to assess the feasibility of a much higher level of urban development on the proposed light rail corridor to Island Bay are provided later in this section.

We note that motorists can expect to experience somewhat increased travel time, poorer travel time reliability and associated additional costs under all options. The economic analysis indicates that motorists will be marginally less worse-off under Option 1.

The AA does not support Options 3 or 4 because they do not include a new Mt Victoria tunnel with dedicated lanes for buses and general traffic. A new tunnel is needed to provide improved access for public transport users from the east, support growth and to improve conditions for State Highway users, including the critical economic link to the airport. The minor public transport improvements through Hataitai under Options 3 and 4 are insufficient to meet the needs of public transport users and support growth in the eastern suburbs.

The AA is also strongly opposed to Option 4 because it does not include grade separation at the Basin Reserve. This project is needed both to address congestion and support forecast growth at this critical bottleneck for general traffic and to provide for improved access for active modes, particularly cycling. Consequently, we think there is a strong case for bringing forward grade separation of the Basin Reserve through an extended Aras tunnel due to the clear benefits this will deliver for all modes.

The information provided by LGWM was insufficient for the AA to identify a clear preference between Options 1 and 2.

The AA's survey of our Wellington region Members found a very slight preference for Option 2 but there was also more support for light rail than any other individual element of the programme options.

We agree with the LGWM Multi-Criteria Assessment that Option 2 performs the best against the programme objectives. Bus Rapid Transit (BRT) is a better fit with Wellington's current public transport network and will better serve current and planned urban development. This includes the housing allocation set out in Wellington's Spatial Plan, which was finalised as recently as June, and the even more recently released draft District Plan. Unlike the proposed single light rail line to Island Bay, BRT can be expanded into other parts of the city and more readily constructed in stages without the need for passengers to change services.

On the other hand, we also agree that light rail has greater urban development and density potential than BRT, particularly beyond the next 30 years. However, we question whether it is credible to assume that light rail to the south and enhanced bus services to the east would attract sufficient market demand from both developers and prospective house purchasers to account for the majority of Wellington city's housing growth on these corridors in the next 30 years (refer the appendix to this submission pages 20 -22).

4. Suggested next steps

4.1 Improved value for money

The AA notes that LGWM's economic evaluation found the three options assessed three would deliver almost identical returns. The indicative benefit cost ratios are low (i.e. the equivalent of a 35-38 cents return per dollar invested).

Overall, the economic evaluation shows further work is needed to justify the economic case for the proposed programme.

Depending on the option between 58-73% of the programme benefits relate to active modes yet the majority of the expenditure is focused on Mass Rapid Transit. This underlines the importance of the planned urban development work to strengthen the economic case both generally for Mass Rapid Transit, and specifically for light rail. This needs to include substantial market evidence to build a robust case that light rail could catalyse the very large numbers of additional homes in LGWM's estimates. This will need to form a key plank of any future work to develop a detailed proposal if LGWM elects to carry forward light rail to the next stage.

The results of the economic evaluation also suggests LGWM needs to do further work to improve the value for money from the individual elements of the programme. While BCRs were only provided at an option level, assessment at a sub-option level would help reveal which elements are likely to deliver the best transport results.

4.2 Staging and sequencing

LGWM shared with the AA that a consistent theme of public feedback to date has been a strong desire to stop talking about the big programme elements and get on with building it. The AA supports the need for tangible progress. We are concerned that LGWM's indicative planning suggests construction of the MRT and State Highway elements might not be complete until as late as 2043.

We suggest LGWM's consider which elements of the programme will deliver the best combination of early benefits and overall value for money, and that can be sensibly staged ahead of the major works – including opportunities to avoid or reduce future disruption with subsequent works. The AA would be surprised if grade separation of the Basin Reserve did not come up as a top priority given the benefits it offers to all modes. Early construction would provide tangible evidence of real progress in improving Wellington's transport system. It will enable the Mass Rapid Transit solution on the southern corridor, improve safety, address congestion and support forecast growth at a critical bottleneck for general traffic and provide improved access for active modes, particularly cycling.

In terms of the major MRT decisions, if light rail emerges as the preferred option, consideration could be given to staging it by first proceeding with construction either to Newtown or Berhampore, given estimated passenger loadings.

If BRT emerges as the preferred option, LGWM should identify the optimal construction programme for delivering it in stages to enable the realisation of early benefits and to minimise disruption.

4.3 Longer term need to separate State Highway 1 from city centre

The AA notes that the 2019 LGWM package also included an extra terrace tunnel, undergrounding State Highway 1 at Te Aro and a fourth southbound lane between Ngauranga and Aotea Quay to divert cars from the city centre and enable better public transport, walking and cycling and people to get to key destinations. We appreciate that due to LGWM's change in focus and budget constraints these projects are no longer part of the programme. However, given their strong fit with the key programme goal to reduce traffic travelling through and into the city centre and the wider need for these works given forecast traffic growth, we recommend they are retained in LGWM partners' long term statutory land use and transport planning documents.

4.4 Improved communication about what the programme means for the public

A majority of our Wellington Members think LGWM is headed in the right direction but there appears to be a disconnect between LGWM's goals and the priorities of the public. We are concerned that public expectations of the benefits are well beyond the reality of what will eventually be delivered. As the programme progresses to the next phase, we think there needs to be more transparency from LGWM.

There is a widespread perception that the programme will help address congestion when in fact the LGWM analysis shows they will make it somewhat worse. It needs to be made clear that none of the options will reduce car congestion from current levels or make it quicker or easier for those using cars in the future. It also means much more information needs to be provided on the intended role and timing of congestion charging and the indicative charge motorists can expect to face.

There also needs to be more transparency about the programme's shift in focus from improving transport to facilitating housing growth, including increased density. LGWM needs to communicate and explain this shift to the public.

Finally, there needs to be more transparency about the costs for individuals. Wherever LGWM lands on the elements of the final programme, it will be far and away the most expensive infrastructure programme in Wellington's history. Our members indicated a degree of openness to the indicative range of rate rises, and at a conceptual level, to congestion charging. However, many people need to budget their spending on the basis of their pay cheques. Without a clear understanding of the how the additional costs might hit their wallets, people's comments on options are effectively limited to their perception of the benefits.

5. Recommendations

The AA recommends LGWM partners:

1. **Bring forward grade separation of the Basin Reserve** due to the clear benefits this will deliver for all modes including enabling the Mass Rapid Transit solution on the southern corridor, improving safety, addressing congestion and supporting forecast growth at a critical bottleneck for general traffic and providing improved access for active modes, particularly cycling
2. **Include a new Mt Victoria tunnel with dedicated lanes for buses and general traffic** in the final package to improve public transport access from the east, support growth and improve conditions for State Highway users, including the critical economic link to the airport
3. **Undertake more work to strengthen the economic case for Mass Rapid Transit** generally and specifically for light rail, including:
 - a. the market feasibility of accommodating the majority of Wellington city's forecast housing growth in the southern and eastern suburbs over the next 30 years
 - b. assessing individual components to reveal which elements (e.g. enhanced bus services vs. BRT to the east) are likely to deliver the best value for money
 - c. if light rail emerges as the preferred option, consider staging it by first proceeding with construction either to Newtown or Berhampore, given estimated passenger loadings.
4. **Identify** which elements of the programme will deliver the best combination of overall value for money, early benefits and can be sensibly brought forward for completion – including opportunities to avoid or reduce future disruption with subsequent works
5. **Retain previous LGWM package State Highway elements** in long term statutory land use and transport planning documents given their fit with the goal of removing traffic from city centre and wider need for these works given forecast traffic growth
6. **Improve transparency** with the public on the congestion impacts of the programme, the shift in the programme's focus from transport to housing and the costs to individuals both to fund the programme and for congestion charges

6. About the NZ Automobile Association

The NZAA is an incorporated society with over 1.8 million members, representing a large proportion of New Zealand road users.

The AA was founded in 1903 as an automobile users' advocacy group, but today our work reflects the wide range of interests of our large membership, many of whom are cyclists and public transport users as well as private motorists.

Across New Zealand, the motoring public regularly come into contact with the AA through our breakdown officers, 37 AA Centres and other AA businesses. Seventeen volunteer AA District Councils around New Zealand meet each month to discuss local transport issues.

Our policy and research team regularly surveys our Members on transport issues and Members frequently contact us unsolicited to share their views. Via the AA Research Foundation, we commission original research into current issues in transport and mobility. Collectively, these networks, combined with our professional resource, help to guide our advocacy work and enable the NZAA to develop a comprehensive view on mobility issues.

Motorists pay over \$4 billion in taxes each year through fuel excise, road user charges, registration fees, ACC levies, and GST. Much of this money is reinvested by the Government in our transport system, funding road building and maintenance, public transport services, road safety work including advertising, and Police enforcement activity.

Appendix: Detailed Options' Analysis

Private vehicle users

Travel times

The AA notes the following findings from the *LGWM Modelling Report (the Modelling report)*:

- Most of the increase in travel times for private vehicles is attributable to forecast population growth
- All options result in a reduction in private vehicle trips but any decongestion benefits are more than offset by the reallocation of road space to other modes, meaning all options will result in slightly worse travel times for general traffic
- The combination of grade separating the Basin Reserve by extending the Aras tunnel and the constructing a new tunnel with two lanes for general traffic in Options 1 and 2 will deliver some improvements, particularly for east-west State Highway movements
- Traffic using local roads through the city centre, particularly the waterfront corridor, will be slower due to the allocation of lanes to other modes.
- Overall Options 1 and 2 will result in slightly private vehicle better travel times than the other options

Further LGWM analysis presented in *The Programme Engagement report* found that Option 1 will result in slightly better travel times for motorists than options 2 and 4².

The *Engagement report* also noted that, consistent with the prioritisation of road space for other modes, almost all car user disbenefits are for trips originating or ending in the CBD.

Travel time reliability

The AA notes the following findings from the *Modelling Report*:

- All options will result in poorer travel time reliability
- Travel time reliability is worse on most key strategic routes under all options, notably for trips in both directions between Johnsonville the airport and the hospital, and between Bowen St and the airport
- Travel time reliability on key strategic routes is *slightly* worse for Options 1 and 2 than Options 3 and 4 as more road space is reallocated to public transport in Options 1 and 2

Other private vehicle costs

LGWM notes that all programme options will result in additional costs for motorists in the form of increased vehicle operating costs from driving in congested conditions, disbenefits due to delays and reduced time for other activities.

² The Programme Engagement report did not provide any explanation for the difference between Options 1 and 2, given both options include grade separation and a new tunnel, so the AA can only assume it reflects the increased lane take for Bus Rapid Transit in Option 2.

Economic assessment

LGWM has conducted an economic evaluation of Options 1, 2 and 4 over a 40-year period from the date in which construction of the first elements of the programme are expected to be complete.

This aggregates the above private vehicle impacts into a single road user disbenefits line in Net Present Value terms. That shows total disbenefits for motorists are \$123m for Option 1, \$221m for Option 2 and \$300m for Option 4. All else being equal, this suggests motorists are “least worse off” under Option 1.

Assessment of impacts for private vehicles

Private vehicle costs by option	1	2	3	4
Safety				
Travel time				
Travel time reliability				
Other costs				
Economic evaluation			Not assessed	

The table above summarises the information provided by LGWM. Consistent with the programme’s focus, it indicates that motorists can expect to experience somewhat increased travel time, poorer travel time reliability and associated additional costs under all options. It also confirms the economic analysis that motorists will be least worse-off under Option 1.

Provides more efficient and reliable access for users

Active modes

The AA notes LGWM’s analysis of options 1, 2 and 4 shows that, depending on the option, between 58 percent and 73 percent of the programme benefits accrue to walkers and cyclists.

These benefits are concentrated in the CBD, particularly along the Golden Mile due to the removal of general traffic. There are further walking and cycling benefits modes around the hospital due to improvements along the route from the Basin Reserve.

The modelling results show that all three options are expected to result in a similar number of additional active mode trips. LGWM’s draft report for public engagement presents a slightly different picture. It considers that walking and cycling kilometres travelled would be around 7-8 percent higher under Options 1 and 2 than Option 4. It notes that cycling benefits are expected to be greater under Options 1 and 2 than under Option 4 (Option 3 was not assessed) due to grade separation of the Basin Reserve enabling more cycling improvements.

This is reflected in the table below which shows that Options 1 and 2 will deliver marginally better results for active mode users than the other options.

Active mode benefits AM peak by option	1	2	3	4
Trip numbers				
Kilometres travelled				
Economic evaluation ³			Not assessed	

Public transport

Travel times

Travel time savings from both the south and the east are expected to be particularly significant for commuters using public transport in peak periods.

Trips between Island Bay and the railway station are expected to be up to 12 minutes faster under all three options assessed than without the improvements.

Trips from the airport and the rail station are expected to be between 6 and 8 minutes quicker and 14 minutes faster from Miramar for Options 1 and 2, presumably due to the provision of dedicated bus lanes in the proposed tunnel.

Option 2 is expected to result in the most travel time savings for public transport users – marginally more than Option 1, which is the next best performing option.

Under all options, public transport trips will remain slower than private vehicle trips for all routes other than trips to the airport. Public transport trips will be most competitive with private vehicle trips under Option 2 (slightly more so than Option 1). This is because Option 2 comprises the most extensive public transport network improvements.

Trip numbers

Additional public transport trips AM peak 2036	Option 1	Option 2	Option 3	Option 4
Modelling report combined additional trips from the south and east	702	583	254	319

The results show that Option 1 is expected to achieve the greatest increase in public transport trips. However, the more significant observation is that the increase in trip numbers appears small in relation to the scale of the proposed investment in MRT.

³ Note the economic evaluation relates to the whole programme and therefore the majority of these benefits relate to improvements in active mode access to the city centre and particularly along the Golden Mile, rather than access improvements from the south and east.

Network benefits

One of the key disadvantages of the light rail options (1, 3 and 4) is that it is a single-line proposal. LGWM has made clear that, due to a combination of topographical and spatial constraints, there is minimal, if any, opportunity for future extensions in Wellington. By contrast, Option 2 consists of two connected bus rapid transit lines to the south and east, with scope to extend this network in the future, particularly to the north.

LGWM conducted a multi-criteria assessment of the four options. Options 3 and 4 received the least favourable assessments. This appears to be because with the absence of a new tunnel with dedicated bus lanes through Mt Victoria (and for Option 4, no grade separation of the Basin Reserve) Options 3 and 4 only provide minimal improvements for public transport from the east.

The MCA analysis concluded Option 2 would perform slightly better than Option 1 due to its scope to provide ongoing improvements in transport accessibility and its' ability to meet the city's and region's current urban development objectives.

LGWM notes that Option 2:

- provides wider coverage of the city with high quality public transport with BRT to the south and east, compared to a higher quality LRT only to the south in Option 1.
- spreads the improved public transport journey times, reliability, and quality resulting in slightly better service and increased patronage
- has the best potential for expansion especially to northern suburbs like Johnsonville which cannot be serviced by Light Rail
- can be introduced earlier than LRT and is easier to open in stages

Economic assessment

The AA notes LGWM's analysis of options 1, 2 and 4 shows that public transport benefits are similar across all options. The benefits primarily relate to travel time savings and range from 39 to 44 percent of the total programme benefits depending on the option.

The benefits for public transport users from the south are similar under both the light rail and bus rapid transit options.

The benefits for public transport users from the east are highest under Options 1 and 2, which emphasises the benefits of dedicated bus lanes in a new tunnel.

Option 2, is expected to deliver nine percent more travel time savings than Option 1, and therefore comes out as the highest performing option against the economic assessment.

Public transport benefits assessment

Public transport benefits	Option 1		Option 2		Option 3		Option 4	
Route	South	East	South	East	South	East	South	East
Travel time								
Trip numbers								
PT network benefits								
Economic evaluation					Not assessed			

The table above summarises AA’s assessment of the different options’ public transport benefits based on LGWM’s information. This shows that while there are no significant differences between the options, Option 2 performs slightly better than Option 1 and somewhat better than Options 3 and 4.

The key difference between Options 1 and 2 is the wider network benefits the two BRT lines provide and the scope for further expansion compared with a single light rail line under Option 1. We also note that BRT is more flexible than light rail – existing and future bus services can be fed into BRT lines and lines can be constructed in stages with services running on a combination of BRT lines and existing streets.

The absence of a new tunnel with dedicated bus lanes to serve the east in Options 3 and 4 means public transport benefits for eastern suburbs residents are more limited under these options than under Options 1 and 2.

Carbon emissions and mode shift

Reduced carbon emissions

LGWM used modelling estimates of the reduction in vehicle kilometres travelled and litres of fuel consumed as a proxy to estimate the reduction in carbon emissions attributable to the different programme options in 2036.

This indicated that all options were expected to achieve around a two percent reduction in Wellington city’s emissions under current land use assumptions (the Wellington Spatial Plan and the draft District Plan). Option 3 was expected to perform slightly worse than the other three options due to its’ marginally worse mode shift potential.

The AA notes that the modelling made no assumptions about changes in the composition of Wellington’s light vehicle fleet over the next 15 years. Biofuel mandates and the replacement of substantial numbers of internal combustion vehicles with EVs over this period will result in a much cleaner fleet. This is good news for Wellington’s overall transport emissions savings but switching modes from somewhat cleaner vehicles to public transport and active modes implies the two percent savings estimate attributed to mode switching is likely to be a little high.

LGWM also estimated embodied carbon (i.e. carbon emissions attributable to the construction of the infrastructure) proposed under the different options. Unsurprisingly, Options 1 and 2, which

include construction of both an extension the Aras tunnel and a new four-lane Mt Victoria tunnel, as well as Mass Rapid Transit, have the highest embodied emissions.

Mode shift

LGWM has reported that all options are predicted to achieve the same regional public transport mode share results and similar improvements in public transport mode share for trips into the CBD. The modelling results are also very similar across options for trips between the CBD and the south and east.

Consistent with these statements therefore, the table below sets out the estimated change in mode share at a programme level⁴.

Non-car mode share % AM peak	No programme	Approximate mode share increase with programme	Total mode share with programme
Region wide PT 2036	18	1	19
City centre PT 2036	52.6	2.8	55.4
South 2046	51	8	59
East 2046	38	12	50

Option 3 is predicted to achieve a slightly less increase in CBD mode share than the other options. The analysis shows this is almost entirely due to a small reduction in trips from the east⁵.

Further analysis by LGWM indicates that Options 1 and 2 are expected to achieve marginally higher public transport mode share from the south and east than Option 4 (Option 3 was not further assessed). This is largely due to faster travel times from the east under Options 1 and 2 due to the dedicated bus lanes in the proposed new tunnel.

Carbon emissions and mode shift assessment

Option	1	2	3		4	
Route (south or east)			S	E	S	E
Embodied carbon						
Emissions reductions from mode shift						
Mode shift						

⁴ Note that the regional and city centre figures are for 2036 and the southern and eastern numbers are for 2046 as this was the only information provided by LGWM.

⁵ Both Options 3 and 4 have substantially less public transport improvements to the east so understandably should deliver result in fewer additional trips than the other two options. However, it is not clear why Option 3 should perform worse than Option 4 for eastern passengers as both have the same improvements and the same route descriptions. The AA wonders the difference reflects that with light rail running down Taranaki St instead of Kent and Cambridge Terraces in Option 3, eastern suburbs buses need to spend longer travelling in congested conditions in the city centre with general traffic.

The table on page 19 above presents a summary assessment of how the options perform against LGWM’s carbon emissions and mode shift objective. The key difference relates to less embodied emissions due to the reduced transport improvements for the east in Options 3 and 4. While this results in reduced embodied emissions, it also results in reduced mode shift. Option 1 and 2 are therefore the best performing options against this objective.

Liveability

Enhance urban amenity

LGWM has reported that all options would include the same level of urban amenity improvements. Streets along the MRT routes would be reconstructed and include high-quality public realm improvements, new pedestrian connections to MRT stations, trees, reformed footpaths and street furniture. These improvements would benefit not just public transport users but local communities generally.

Enables urban development outcomes

Wellington city’s June 2021 Spatial Plan provides for 24,600-32,200 additional homes to accommodate a forecast population increase of 50,000-80,000 people in the city over the next 30 years.

The Spatial Plan allocates 27-32% of these homes to the city centre, 17 percent to inner city suburbs and 51-56 per cent to outer suburbs. This includes around 34-45% or up to 11,000 additional dwellings in the southern and eastern suburbs.

LGWM has concluded that with mass rapid transit and supportive changes in zoning to permit greater housing density, southern and eastern suburbs could support an additional 5,000 new homes over the next 30 years (i.e. 16,000 in total), and potentially a further 1,400 more with the eastern suburbs.

LGWM also considers that, if supported by further higher density zoning, the options with light rail to Island Bay (1, 3 and 4) would support a further 5,000 additional homes (i.e. 21,000 in total and potentially more on top of that, in the south. This reflects a combination of the additional passenger carrying capacity of light rail vehicles (300 vs 100 for Bus Rapid Transit) and the permanence of light rail compared with bus-based systems.

LGWM considers LRT would also catalyse further housing development in the city centre. Concentrating additional growth in both the city centre and along the LRT route could reduce growth in north Wellington and elsewhere in the region.

For these reasons, LGWM considers that, compared with the bus only solution (Option 2), light rail could future-proof the southern corridor for additional housing, including potentially beyond its’ 21,000 estimate and beyond the Spatial Plan and LGWM’s 30-year assessment horizon.

LGWM’s urban development report indicates that this could include up to a further 9,000 additional homes in the south and a further 1,400 in the east. LGWM notes this much greater concentration of

new housing in the south could result in further mode shift and reductions in carbon emissions, more affordable housing and a better economic return for light rail.

The AA notes that LGWM’s modelling report concluded that the impact of the high land use scenario on mode shift, at least at a regional level, is relatively small. First, this reflects the fact public transport use from the southern and eastern suburbs only accounts for a small proportion of regional trips. Second, a high land use scenario redistributes some growth from the north meaning some rail trips are substituted for light rail ones.

LGWM’s modelling report also notes that a more intensified land use scenario could potentially reduce emissions by a further 6% to 10% within Wellington City. The AA notes this would be 300-500 percent more than LGWM’s programme estimate of 2 percent across all options and no information was provided to substantiate this statement. At face value, it is therefore unclear how such potential reductions could be credible.

Liveability assessment

The AA notes that there is now a strong body of international evidence on the housing uplift potential of light rail and therefore agrees with LGWM analysis that this potential is greater than is the case for bus rapid transit. We agree that with light rail in place and supported by much higher density zoning, the southern corridor would be future-proofed for significant development beyond the 30-year assessment period.

The table below summarises the information set out in section 5.2 above on the additional homes proposed for the south and east in the Spatial Plan and the draft District Plan and compares this with LGWM’s estimates of the additional housing potential from MRT and the further potential from LRT.

The AA notes LGWM has also commented that light rail would stimulate further growth in housing in the city centre but has not provided an estimate of this. The final row of the table therefore combines estimates for the share of total Wellington city housing growth in the city centre the south and the east homes under the three scenarios.

Additional new homes in the south & east	Spatial Plan	Estimated additional homes from MRT	Estimated additional homes from LRT
Additional Homes compared with Spatial Plan		5,000	5,000
Total additional homes	11,000	16,000	21,000
Share of forecast extra homes in Wellington City (%)	34-45	50-65	65-85
Share of forecast extra homes in Wellington City including city centre (%)	61-77	77-97	93-117

The AA’s major concern with the estimates is whether it is credible to assume that light rail would attract sufficient market demand from both developers and prospective house purchasers to account for 65-85 percent of all Wellington city’s housing growth in the next 30 years.

Similarly, we question whether it is realistic to assume 93 percent-plus of Wellington city’s forecast additional homes will be constructed in the city centre, the south and the east. This is a radical

departure from the recently released Spatial Plan which enables the market to respond to a range of opportunities for development to across the city.

Economic evaluation

The AA notes that LGWM conducted an economic evaluation of the estimated benefits, capital and operating costs of Options 1, 2 and 4 out to 2073-2074. This allows for an assumed 14 years of capital expenditure and then a 40-year operational period.

A summary of the base results is presented in the table below. (The numbers are in real net present value 2021 dollars).

Economic evaluation (\$m)	Option 1	Option 2	Option 3	Option 4
Total benefits	1,214	1,123	Not assessed	973
Total costs	3,500	3,312		2,781
Benefit-cost ratio	0.38	0.35		0.37

The assessment found Options 1 and 2 have similar costs and benefits. The benefits for Option 4 are less than Options 1 and 2 due to the absence of grade separation for the Basin Reserve (and presumably fewer benefits for eastern suburbs public transport users with the absence of dedicated bus lanes through a new Mt Victoria tunnel). However, these reduced benefits are offset by the much lower capital costs of Option 4 compared with the other options assessed.

The benefit-cost ratio for all three assessed options is almost identical. The differences between them are therefore too marginal to draw any conclusions on this basis alone on which option stacks up best as an investment from an economic point of view.

The indicative benefit cost ratios are low (i.e. the equivalent of a 35-38 cents return on an investment of a dollar).

It is important to note that the assessment did not assume any changes in population or employment distribution would result from any of the options, presumably due to modelling constraints. The AA agrees with LGWM that the infrastructure improvements proposed could be expected to result in population changes and potentially some changes in employment which would have a positive impact on the economic assessment. More generally, the AA also acknowledges the limitations of cost benefit analysis for mega projects where significant improvements in accessibility can drive significant land use changes.

If the programme options could achieve the number of additional homes LGWM has assumed would be possible under the BRT and LRT options, this would no doubt lift the benefit-cost ratio. However, equally any increase would be off a very low base. Overall, the economic evaluation shows further work is needed to justify the economic case for the proposed programme.