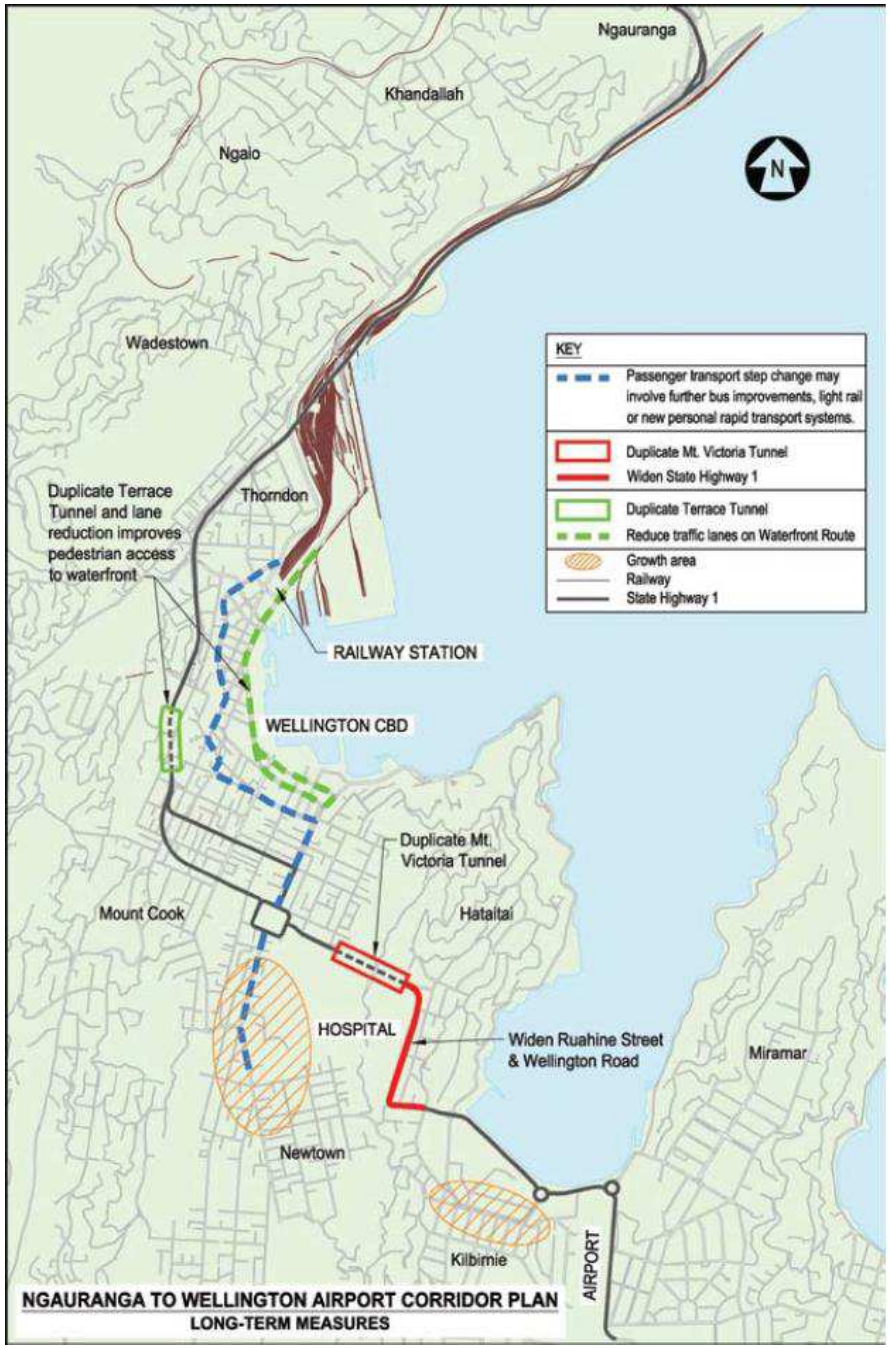
Wellington Public Transport Spine Study

greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

Absolutely POSITIVELY Wellington
Me Heke ki Pōneke
Wellington City Council

NZ TRANSPORT AGENCY
WAKA KOTAHI

AECOM

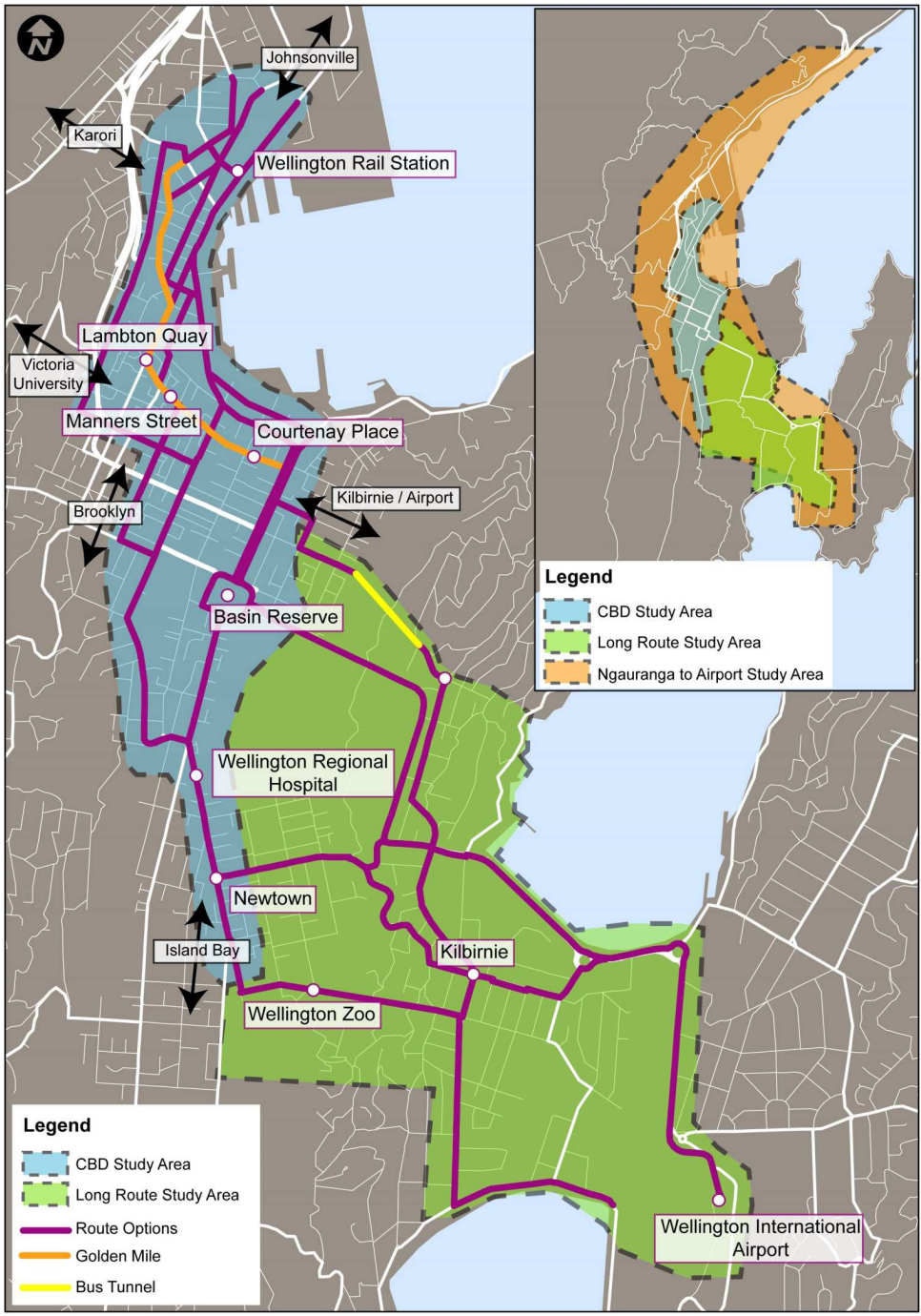


Study purpose

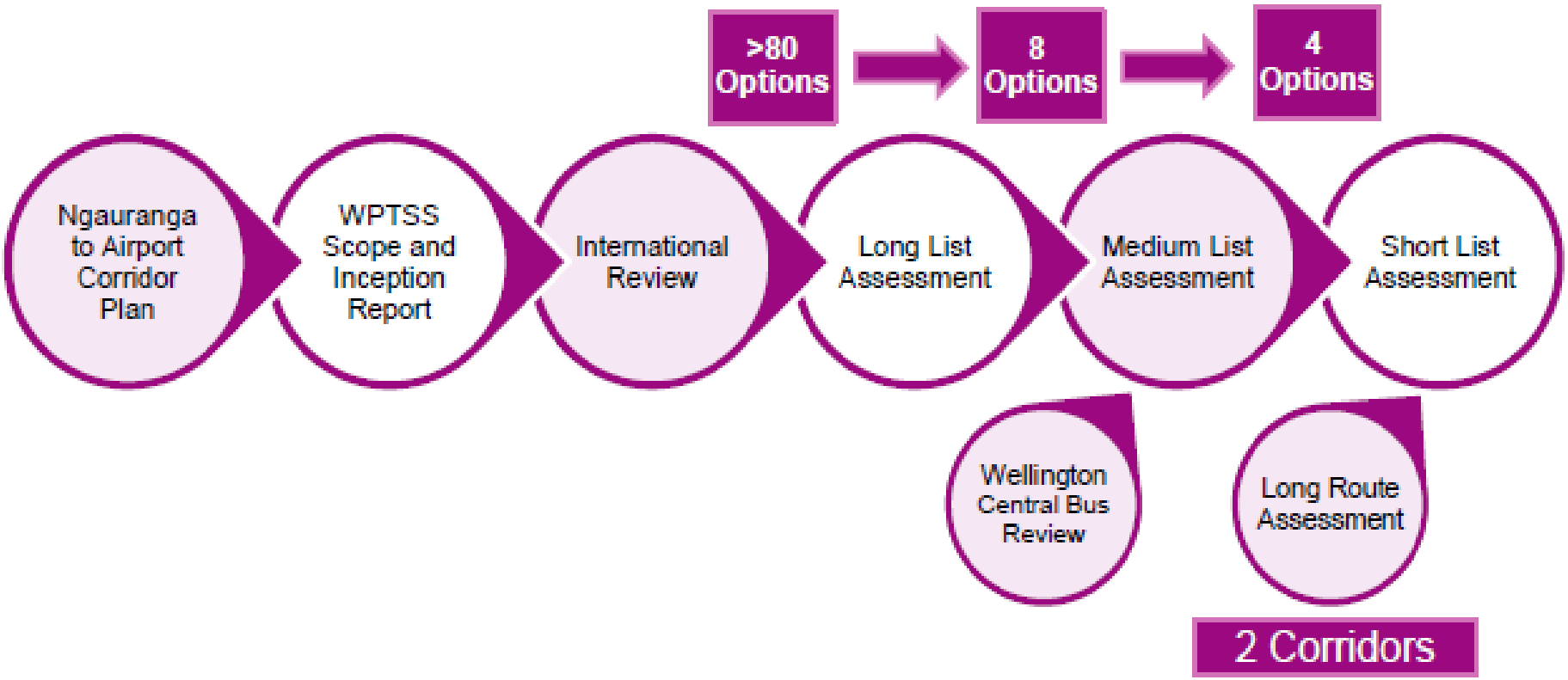
- **Feasibility study**
- Options for a high quality, high frequency PT system
- Key action from Ngauranga to Airport Corridor Plan (2008)
- Long-term outlook

Study area

- Focus Railway station to Hospital
- Considered possible connections north and south
- Study area extended to south-east to Kilbirnie



Study process



Study engagement (so far)

- Surveys - Online, on-street, focus groups, stakeholder interviews
- Reference Group
- Transport Operator Advisory Group
- Emails to wider stakeholder group
- All reports on website as developed
- Now in public consultation phase until 30 Sept




Options

- Full range of options considered
- A range of route options also considered
- Multi-criteria analysis to refine options to a short list
- Shortlist options compared to a base case

Short list mode options

- Bus Priority
  - Standard buses
  - 64 passenger capacity
  - Electric or hybrid or diesel
- Bus Rapid Transit
  - Modern low floor articulated/double-decker buses
  - 100+ passenger capacity
  - Electric or hybrid or diesel
- Light Rail Transit
  - Modern low-floor trams
  - 180+ passenger capacity
  - Electric (underground induction or overhead wires)

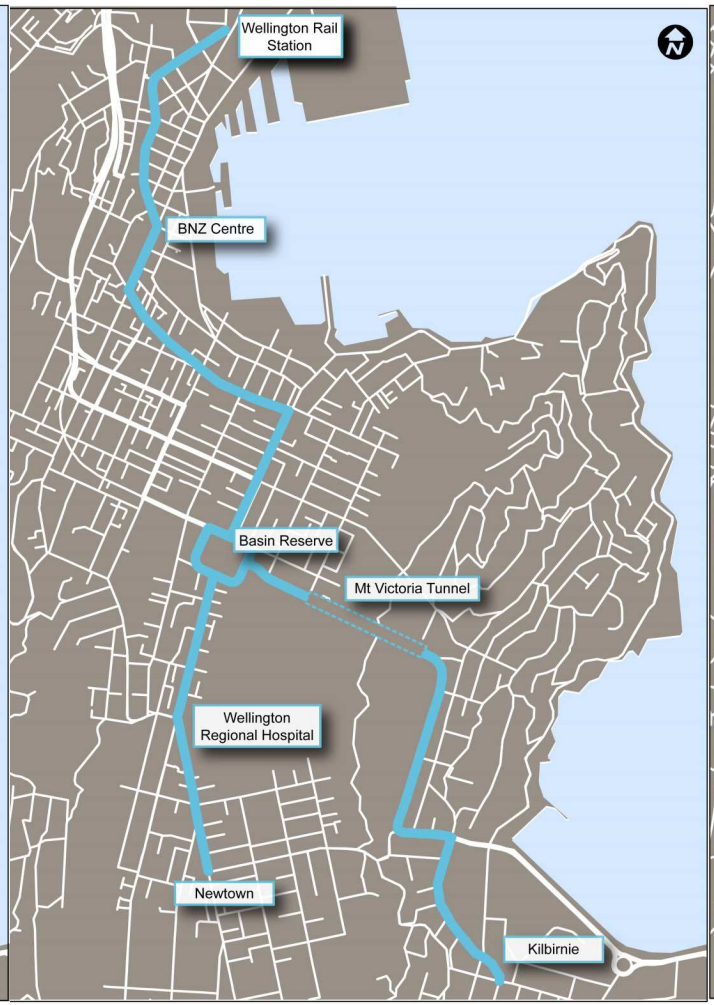
Short list route options

- Extensions to north (ie Johnsonville) considered but limited benefits and high costs
- Extension to south found potential for mode shift, travel time savings, and improved integration between modes
- Eastern sub-options considered:
  - Via Haitaitai bus tunnel to Kilbirnie
  - Via Constable Street to Kilbirnie
  - Via new tunnel from the Zoo to Kilbirnie
  - Via SH1 corridor (Mt. Victoria tunnels) to Kilbirnie

Short list route alignments

Bus Priority

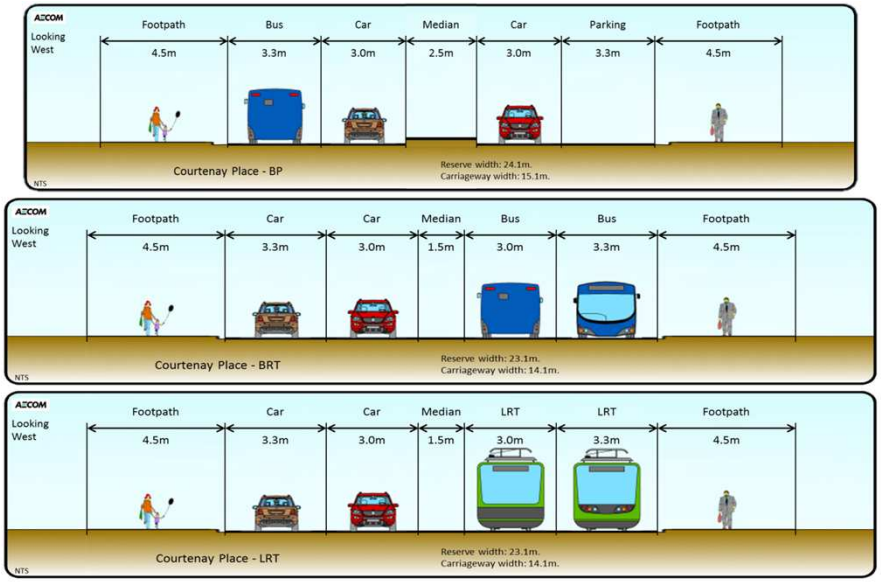
BRT



LRT

Short list evaluation

- Physical feasibility assessment of routes
- Transport modelling
- Costing – capital and operational
- Social, environmental assessment
- Economic assessment



Physical feasibility

- Tested ability to fit within road reserve and through key pinch points
- Options modified to minimise impacts where possible
- Key impact = loss of on-street parking
- Limited property impacts along some sections of the route. Significant along SH1 corridor (ie Town Belt)

Benefits of options

	Ref Case	Bus Priority	BRT	LRT
Passenger numbers (region)				
2021	35600	+200	+700	+200
2031	34000	+300	+800	+300
2041	35200	+300	+900	+400
Travel times				
Kilbirnie to rail station (total mins)	24	-3	-11	-11
Newtown to rail station	18	-3	-6	-7
PT user benefits		$35m	$95m	$56m
Highway benefits (negative)		-$18m	-$23m	-$31m
TOTAL NPV benefits		**$21m**	**$90m**	**$31m**

Other benefits

- Journey time reliability

Ref Case	Bus Priority	BRT	LRT
Low	Moderate	High	High

- Golden Mile capacity

(Number of PT vehicles/hour in am peak hour at Johnston Street both directions)

Ref Case	Bus Priority	BRT	LRT
168	168	106	100

Estimated costs

Capital (millions)	Bus Priority	BRT	LRT
Changes to existing roads	$49	$145	$235
LRT infrastructure	$0	$0	$458
Vehicles	$0	$28	$88
Design and contingencies	$10	$35	$155
Total	**$59**	**$207**	**$938**

Operational	Km/annum (million)			$/annum (million)	Difference
	Bus	BRT	LRT		
Reference Case	18.5			$88	
Bus Priority	18.5			$88	0
Bus Rapid Transit	16.2	1.6		$82	-6
Light Rail Transit	17.4		0.8	$89	+1

Capital costs in detail ($m)

Description	Bus Priority	BRT	LRT
Road alterations	$26	$76	$94
Alterations to existing services	$2	$15	$52
Traffic management	$6	$19	$25
Rails and power	0	0	$119
Depots	0	0	$23
Tunnels	0	0	$316
General Allowances	$15	$34	$65
Vehicles	$0	$28	$88
Design and contingencies	$10 (20%)	$35 (20%)	$156 (20%)
TOTAL	$59	$207	$938

Economic assessment

Evaluation Framework	Bus Priority	BRT	LRT
EEM	0.57	0.87	0.05
EEM (new update)	0.81	1.49	0.05
Alternative approach	0.67	1.55	0.10

- Range of BCRs depending on different values applied
- Wider economic benefits considered

Staging of implementation

	Bus Priority	BRT	LRT
Existing road layout	✓	✗	✗
Independent of RoNS (2014-2022)	✓	✗	✗
Demand by 2021	✓	✓	✓
Incremental Implementation	✓	✓	✗
Comprehensive Implementation		✓	✓
Recommended Timeframe	ASAP	2021-22	2021-22

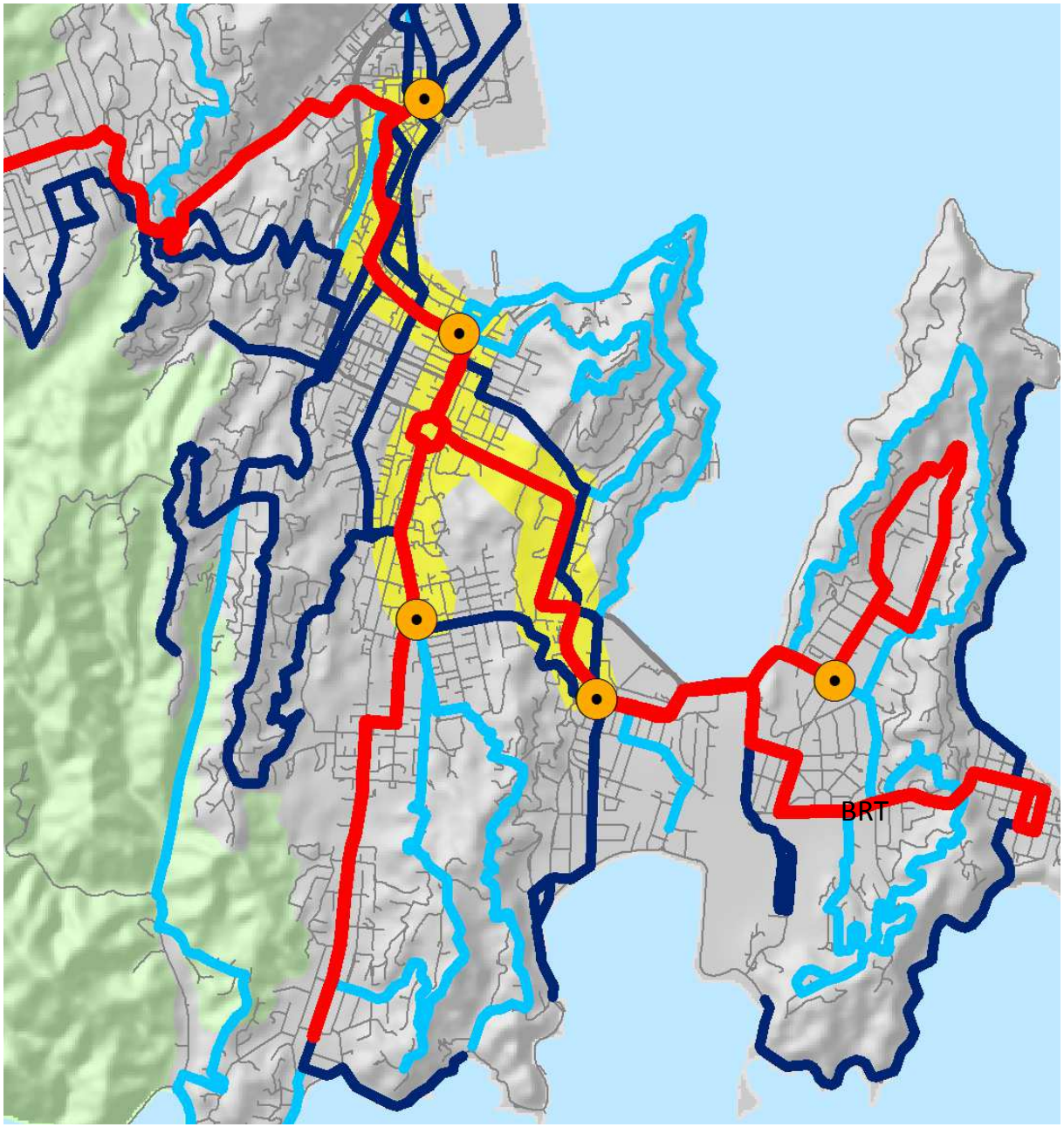
Summary of key findings

- *To grow PT mode share requires further investment*
- *Opportunities to grow mode share from south and east Wellington*
- *BRT has highest benefits, then LRT then Bus Priority*
- *LRT has highest costs (5x more than BRT)*
- *Bus Priority and BRT can be developed incrementally, LRT best developed comprehensively*
- *Technically feasible to build all options. Significant property impacts from BRT/LRT along SH1 corridor, and additional impacts from LRT tunnel*
- *Need to support preferred option by aligning policy (ie land use and parking) and ensure other earlier transport projects are designed to accomodate*

Finding a Preferred Option

- Regional Transport Committee agreed its preferred option is BRT (subject to consultation)
- Public consultation July-Sept (closes 30 Sept)
- Submissions and hearing (Dec)
- www.gw.govt.nz/PTSpineStudy for more details

Potential BRT Network



Existing bus route

BRT route

Feeder bus route

Interchange

Potential impacts on Your Neighbourhood

- Depends on final option, route and detailed design, study only at concept feasibility level
- Preferred option (BRT) likely to provide for extended services to other suburbs like Island Bay, Miramar and Karori
- Some existing bus routes would become feeder services & transfers and interchange facilities required
- Could be some loss of on-street parking along the core routes
- Will deliver much faster, more reliable, higher quality public transport for most people in Wellington City

Funding Options

- Annual funding need: BP $2.7m; BRT $5.0m; LRT $47m (This takes account of capital and operational costs, fare revenue, interest and inflation)
- Options analysed: fares, rates, car park levies, road pricing, development contributions, value capture,
- Rates or fares unable to fund LRT (would require 50% increase in regional rates)
- Broad based tools (road pricing, fuel tax) generate most funding
- Corridor specific tools (development contributions, value capture) generate less funding

Integration with other transport projects

- PT Spine Study outcomes are inter-related with a number of other transport projects
- GWRC, WCC, NZTA are working together to ensure integrated approach to transport network development in Wellington

Strategic road network projects

- Improvements to state highway signalled in N2A Corridor Plan
  - Basin Bridge project
  - Buckle Street Underpass
  - Inner City Bypass upgrades
  - Mt Victoria Tunnel Duplication/Ruahine Street Upgrade

Links with strategic road network projects

- Public Transport Spine Study relies on Basin Bridge to separate E/W and N/S traffic and free up PT routes
- Mt Victoria Tunnel Duplication work slowed down to incorporate Public Transport Spine Study proposals for Ruahine Street and Wellington Road

Links with other projects

Coordinated implementation with:

WCC:

- Bus priority plan
- Transport Strategy review
- Cycle lane development (ie Island Bay to CBD)

GWRC:

- Wellington Bus Review
- New bus service contracts