



30 April 2021

Thorndon Quay Hutt Road

Option Shortlist Multi Criteria Assessment Summary Report

1 Introduction

Thorndon Quay Hutt Road (TQHR) is part of the Let's Get Wellington Moving (LGWM) early delivery programme and is being progressed through a Single Stage Business Case (SSBC) process.

The priorities for the early delivery programme are to make travel by bus to and through the central city faster and more reliable, and to create a better environment for people walking and on bikes. Thorndon Quay and Hutt Road is the busiest bus route outside of the city centre and the busiest route in the city for people cycling to and from work.

The changes to Thorndon Quay and Hutt Road are needed to improve safety, give buses greater priority and provide better walking and cycling facilities. With a growing number of people expected to live and work in the Wellington region, more people will want to walk, cycle or take the bus instead of going by car. Te Ara Tupua, the planned shared path between Ngauranga and Petone, will enable more people to walk and cycle between the Hutt Valley and Wellington.

This report summarises the initial multi-criteria assessment (MCA) of the options to arrive at the technically preferred option to be taken to consultation.

The analysis will be updated following stakeholder and public feedback and further qualitative and quantitative analysis of the options.

2 Background

2.1 Problems

From previous consultation and evidence gathered, the following problem statements were defined.

PROBLEM ONE
Unreliable bus travel times result in a poor customer experience for existing and potential bus users which reduces the attractiveness of and ability to grow travel by bus.
PROBLEM TWO
The current state of cycling facilities results in conflict between users, increases risk and limits cycling attractiveness for increasing volumes of cyclists.
PROBLEM THREE
Poor quality of the street environment creates an unpleasant experience for a growing volume of people reducing its attractiveness to walk and spend time in the area.
PROBLEM FOUR
High and growing traffic volumes combined with high speeds increases the likelihood and severity of crashes on Hutt Road.

2.2 Benefits of Investment

By addressing the problems, the following potential benefits of investing in transport improvements for the TQHR corridor were identified:



Improve the reliability and attractiveness of bus travel



Improve the quality and safety of walking and cycling facilities



Reduce frequency and severity of crashes along Hutt Road



Improve the place quality of Thorndon Quay



Maintain access for freight and the ferry terminal

2.3 Investment Objectives

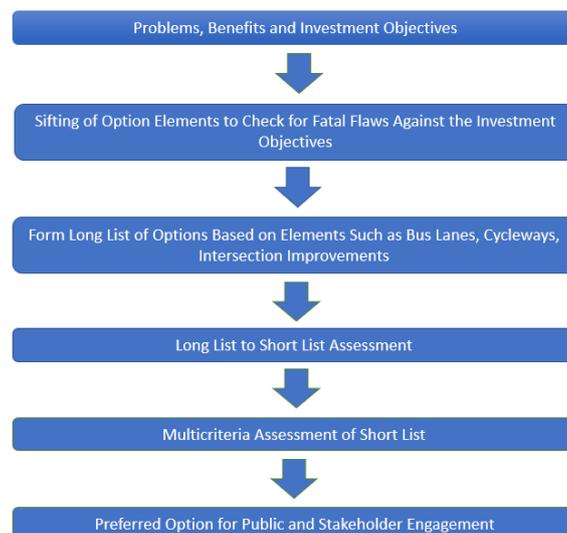
The TQHR project has five Investment Objectives which build on the identified problems and benefits for the corridor:

- i Improve level of service for bus users including improved access, journey times and reliability. Provide sufficient capacity for growth in public transport
- ii Improve level of service, and reduce the safety risk, for people walking and cycling along and across Thorndon Quay and Hutt Road
- iii Reduce the frequency and severity of crashes
- iv Improve the amenity of Thorndon Quay to support the current and future place aspirations for the corridor/area
- v Maintain similar access for people and freight to the ferry terminal

The freight investment objective recognises the need to maintain the freight and people access to the ferry terminal and Centreport while making longer-term investments in other modes along Hutt Road and Thorndon Quay.

2.4 Options Development, Long List Assessment and Options Short List

The TQHR project used a multi-stage process to develop and assess options. This process is summarised in the diagram below.



The problems, benefits and investment objectives, as well as assessment of evidence and feedback from previous stakeholder engagement was used to develop a long list of elements (for example bus lanes, cycleway options, improvements to intersections and pedestrian crossings) which could be packaged to form options for the TQHR corridor. The long list of elements is documented in the Long List to Short List Report. These elements were checked for fatal flaws against the investment objectives. Some elements did not proceed, such as:

- Removing zebra crossings and replacing with refuge islands. These were excluded because zebra crossings have greater safety benefits.
- Installing traffic signals at the Davis Street intersection. This was excluded because it would increase bus travel times. Introducing further delay on the Thorndon Quay section of the route is not in alignment with the investment objectives which is to improve the level of service for bus users
- Building a roundabout at the Tinakori Road intersection. This was excluded because it would increase bus travel times by introducing delay to flows on Thorndon Quay.

The remaining elements were packaged into a long list of options and then assessed using the LGWM Multi Criteria Assessment (MCA) process to arrive at four options for short list assessment. An MCA is an evaluation tool to assess and compare options against a range of objectives and criteria. The key elements which make up the short list options include whether to provide bus lanes in southbound direction only or both northbound and southbound, as well whether to provide a unidirectional or bidirectional cycleway along the corridor.

The four short list options (see the table on the following page) also included special vehicle or bus lanes on Hutt Road to improve the level of service for bus users and to maintain similar access for freight to the port from the north. A special vehicle lane is a traffic lane which can be used only by buses, or buses and trucks, or trucks and high occupancy vehicles (buses and cars with multiple occupancy).

The long list assessment found that the provision of a special vehicle or bus lane on Hutt Road added additional risks to right turning traffic and had the potential to mask motorcyclists that would share the lane with buses. Vehicles exiting properties may not see motorcyclists travelling behind or close to buses when they share the lane. To mitigate this risk, a left in / left out option and a service lane suboption were developed and included in the short list as two sub-options to each main option (suboptions A and B). Suboptions A and B also included a new roundabout on Aotea Quay to provide a turnaround facility for trucks which may be impacted by the left in / left out arrangement on Hutt Road.

The short list options and suboptions are summarised below.

Option	Elements			Common Elements
	Thorndon Quay Bus Lanes	Thorndon Quay Cycle Lanes	Hutt Road Special Vehicle Lanes	
Option 1: Southbound bus lanes with Thorndon Quay bidirectional cycleway	Southbound	Bi-directional	Southbound	<ul style="list-style-type: none"> ▪ Removal of angle parking on Thorndon Quay to improve safety ▪ Speed limit review ▪ Intersection upgrades ▪ Pedestrian Crossing Improvements ▪ Bus stop rebalancing ▪ Thorndon Quay amenity improvements
Option 1A: Southbound bus lanes with Thorndon Quay bidirectional cycleway	Option 1 plus: <ul style="list-style-type: none"> • Left-in / Left-out on Hutt Road (central median) • Construct a roundabout on Aotea Quay 			
Option 1B: Southbound bus lanes with Thorndon Quay bidirectional cycleway	Option 1 plus: <ul style="list-style-type: none"> • Creation of a service lane on east side of Hutt Road (between Onslow and Kaiwharawhara) • Signalise Kaiwharawhara and Onslow Road intersections 			
Option 2: Southbound and Northbound bus lanes with Thorndon Quay unidirectional cycleway	Both directions	Uni-directional	Both directions	
Option 2A: Southbound and Northbound bus lanes with Thorndon Quay unidirectional cycleway	Option 2 plus the same variants as for Option 1A			
Option 2B: Southbound and Northbound bus lanes with Thorndon Quay unidirectional cycleway	Option 2 plus the same variants as for Option 1B			
Option 3: Southbound bus lanes with Thorndon Quay unidirectional cycleway	Southbound	Uni-directional	Southbound	
Option 3A: Southbound bus lanes with Thorndon Quay unidirectional cycleway	Option 3 plus the same variants as for Option 1A			
Option 3B: Southbound bus lanes with Thorndon Quay unidirectional cycleway	Option 3 plus the same variants as for Option 1B			
Option 4: Southbound and Northbound bus lanes with Thorndon Quay bidirectional cycleway	Both directions	Bi-directional	Both directions	
Option 4A: Southbound and Northbound bus lanes with Thorndon Quay bidirectional cycleway	Option 4 plus the same variants as for Option 1A			
Option 4B: Southbound and Northbound bus lanes with Thorndon Quay bidirectional cycleway	Option 4 plus the same variants as for Option 1B			

2.5 Indicative Costs

Indicative costs were assessed for the range of options. The P50 (50th Percentile) costs range from \$23M to \$28M. The P95 (95th Percentile) costs range from \$30M to \$41M.

3 Multi-Criteria Assessment of Short List Options

3.1 Introduction

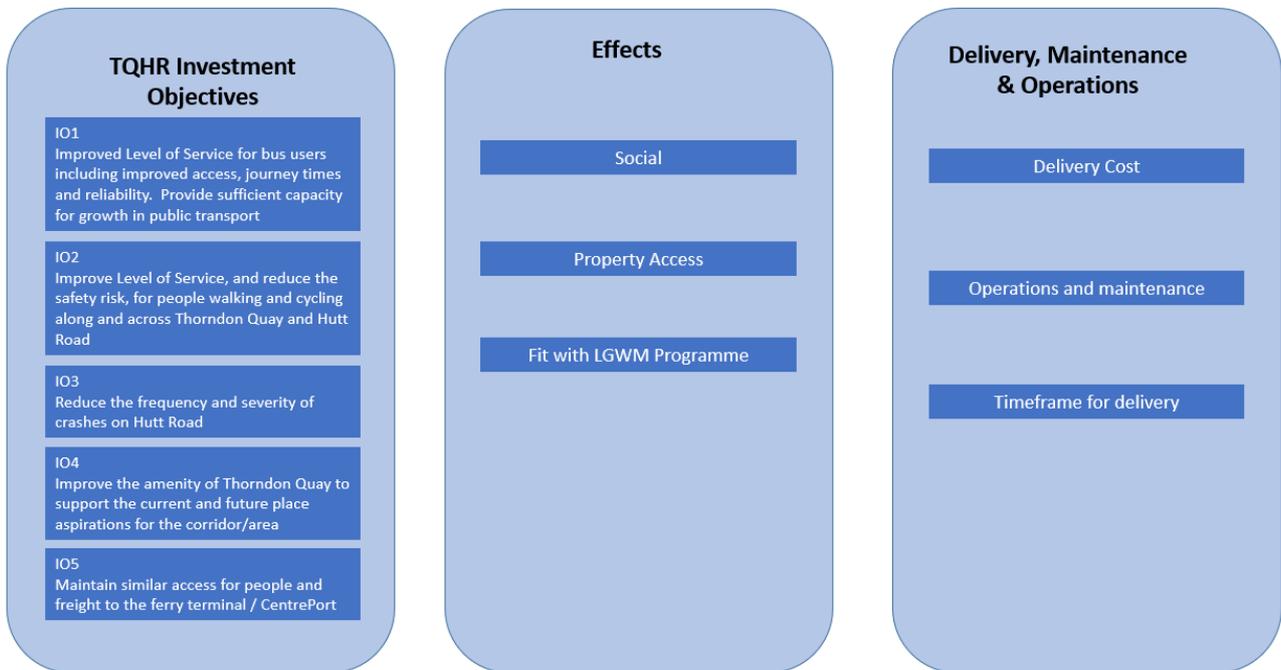
Following the development of the short list of options, the next phase was the multi-criteria assessment (MCA) on the short list to inform the selection of a technically preferred option.

3.2 MCA Criteria

The short list MCA included an assessment of the options against their contribution to the following:

- investment objectives;
- effects; and
- delivery, maintenance and operations.

The main topics included in each of these areas are summarised below:



The considerations for each of the MCA criteria include:

- **Investment Objective 1:** Improving the level of service for bus users.
- **Investment Objective 2:** Improving the level of service and safety for those travelling by active transport modes.
- **Investment Objective 3:** Reducing the frequency and severity of crashes on Hutt Road.
- **Investment Objective 4:** Improving the amenity along Thorndon Quay.
- **Investment Objective 5:** Maintaining similar access for people and freight to the ferry terminal and freight hub.
- **Social:** Effects on social and economic opportunities along and adjacent to the corridor.

- **Property Access:** Effect of access to properties along the corridor.
- **Fit with LGWM Programme:** Alignment with linked projects such as Golden Mile.
- **Delivery:** Construction impacts.
- **Operations and maintenance:** Impacts on services and maintenance costs.
- **Timeframe for delivery:** Speed of delivery to realise benefits.

3.3 MCA Scoring Summary

The MCA was scored on an 11 point system from -5 to 5, with 0 being no change from current state, positive being an improvement to the current state and negative being worse than the current state. The rationale behind the scores is summarised in the table below:

Criteria	Details
Investment Objectives	
<p>Investment Objective One:</p> <ul style="list-style-type: none"> • Improve level of service for bus users including improved access, journey times and reliability • Provide sufficient capacity for growth in public transport 	<p>All options scored positive as they will improve the level of service for bus users along the corridor. This is because the options allow for journey time and reliability improvements while providing a suitable level of capacity for current and future growth. Bus travel times are estimated to improve by approximately 10 minutes in the southbound direction in the 2036 morning peak period and approximately 1-2 minutes in the northbound direction in the 2036 evening peak period.</p> <ul style="list-style-type: none"> • Options 2 and 4 scored highest (score of 4) as they include bus lanes / special vehicle lanes in both the northbound and southbound direction • Options 1 and 3 scored 3 as they provide bus lanes / special vehicle lanes in the southbound direction only
<p>Investment Objective Two</p> <ul style="list-style-type: none"> • Improve level of service, and reduce the safety risk, for people walking and cycling along and across Thorndon Quay and Hutt Road 	<p>All options improve the level of service, and reduce the safety risk, for people walking and cycling on Thorndon Quay and Hutt Road, as well as capacity for cycling growth. The assessment noted that the increasing lanes may create safety concerns for cyclists, pedestrians and other vehicles to cross. These elements will be further considered during design. While both unidirectional and bidirectional cycle facilities would be an improvement on the existing situation from a safety perspective, unidirectional cycleways (Options 2 or 3) scored better for safety, due to less risk with cyclists travelling with the direction of general traffic. The suboptions A and B scored better than their respective base option as they include measures to manage the risk of crashes between pedestrians and cyclists with vehicle right turn movements on Hutt Road.</p> <ul style="list-style-type: none"> • Options 2A, 2B, 3A and 3B ranked the highest with a score of 4 • Options 2 and 3 ranked the second highest with a score of 3 • Options 1A, 1B, 4A and 4B had a score of 2 • Options 1 and 4 scored 1

Criteria	Details
<p>Investment Objective Three</p> <ul style="list-style-type: none"> Reduce the frequency and severity of crashes on Hutt Road 	<p>All options were considered to reduce the frequency and severity of crashes on Hutt Road. The assessment noted the provision of a special vehicle or bus lane on Hutt Road added additional risks to right turning traffic and had the potential to mask motorcyclists that would share the lane with buses. Accordingly, the base Options (1, 2, 3 and 4) scored lowest. The suboptions A and B scored better than their respective base option as they included measures to manage the risk of crashes with vehicle right turn movements on Hutt Road.</p> <ul style="list-style-type: none"> Options 1A, 1B, 2A, 2B, 3A, 3B, 4A and 4B ranked the highest with a score of 3 Options 1, 2, 3 and 4 scored 1
<p>Investment Objective Four</p> <ul style="list-style-type: none"> Improve the amenity of Thorndon Quay to support the current and future place aspirations for the corridor/area 	<p>All options include amenity improvements for Thorndon Quay to support the current and future place aspirations for the corridor/area. These would vary depending on the option. For example, the scoring was sensitive to footpath widths and area available for amenity improvements (greater width received higher score) and unidirectional vs bidirectional cycleway (bidirectional resulted in less carriageway width which received a higher score). Option 4 and 4A had the most positive effects on character and place value by creating a vibrant street that includes footpath with trees.</p> <ul style="list-style-type: none"> Option 4 and 4A ranked the highest with a score of 4 Option 1, 1A, and 4B scored 3 Option 3 and 3A scored 2 Option 1B, 2, 2A, 2B, and 3B ranked the lowest with a score of 1
<p>Investment Objective Five</p> <ul style="list-style-type: none"> Maintain similar access for people and freight to the ferry terminal / CentrePort 	<p>All options scored positive as the provision of special vehicle lanes on Hutt Road are expected to improve freight access to the ferry terminal / CentrePort.</p> <ul style="list-style-type: none"> Options 2, 2A, 2B, 4, 4A and 4B ranked the highest with a score of 3, as they include special vehicle lanes in both the northbound and southbound directions Options 1, 1A, 1B, 3, 3A and 3B scored 2, as they include special vehicle lanes in the southbound direction only
Implementability	
<p>Social</p>	<p>All options had positive effects on equity and access to social and economic opportunities, such as employment, retail, health, cultural and social connectedness,</p> <ul style="list-style-type: none"> Option 2, 2A, and 2B ranked the highest with a score of 4 Option 1, 1A, 1B, 3, 3A, 3B, 4, 4A, and 4B scored 3
<p>Property access</p>	<p>Option 1B, 2B, 3B, and 4B provided positive long-term effects on access to and servicing of private buildings (i.e. deliveries, removals, building maintenance) since the service lanes reduce conflicts and provide safe access to properties. However, Option 1, 1A, 2, 2A, 3, 3A, 4, 4A had negative long-term effects on access</p>

Criteria	Details
Fit with LGWM Programme	<ul style="list-style-type: none"> • Option 1B, 2B, 3B, and 4B ranked the highest with a score of 4 • Option 1A, 3A, and 4 A scored -2 • Option 1, 2, 2A, 3, and 4 ranked the lowest with a score of -3 <p>All options scored positively as they aligned with linked projects, such as the Golden Mile and City Streets. They provide the flexibility to integrate with linked projects (for example the bidirectional cycleways north and south of Thorndon Quay and Hutt Road), deliver the option incrementally, and scale the level of intervention.</p> <ul style="list-style-type: none"> • Option 4A ranked the highest with a score of 5 • Options 1A, 2A, and 4 ranked the second highest with a score of 4 • Option 1, 2, 3A, and 4B scored 3 • Option 1B,2B and 3 scored 2 • Option 3B scored the lowest with a score of 1. While still scoring positive, this option was seen to have the least integration with the wider programme, including providing unidirectional cycleways which will integrate least with bidirectional cycleways north and south of the project as well as the service road which could impact potential connectivity to the Multi-User Ferry Terminal.
Delivery, Maintenance & Operations	
Delivery	<p>All options had negative scores. This was due to impacts on expected duration of delivery and effect on pedestrians, cyclists, bus operations and parking during delivery. It was also due to impacts on parking and access to and servicing of private buildings (i.e. deliveries, removals, building maintenance) during construction.</p> <ul style="list-style-type: none"> • Option 1 and 4 ranked the highest (least negative impacts) with a score of -1 • Option 1A and 4A ranked the second highest with a score of -2 • Option 2 scored -3 • Option 1B, 2A, 2B, 3, 3A, 3B, and 4B ranked the lowest with a score of -4
Operations and maintenance	<p>All options had negative scores due to impacts on public operational costs (maintenance, refuse collection, street cleansing, landscape maintenance), potential ability to accommodate utilities, services repairs and renewals, and flexibility (ie re-route bus services due to major planned and unplanned events and flexibility of future corridor use.</p> <ul style="list-style-type: none"> • Option 1, 3, and 4 ranked the highest (least negative impacts) with a score of -1 • Option 1A, 1B, 2, 3A, 3B, 4A, and 4B scored -2 • Option 2A and 2B ranked the lowest with a score of -3

Criteria	Details
Timeframe for delivery	<p>Option 1 had positive impacts by demonstrating tangible improvements (outputs) within the 2018-21 / 2021-24 NLTP period and the ability to demonstrate tangible improvements (benefits) within the 2018-21 / 2021-24 period. The impacts of Option 1A, 2, 3, and 4 were neutral. Option 1B, 2A, 2B, 3A, 3B, 4A, and 4B had negative impacts.</p> <ul style="list-style-type: none"> • Option 1 ranked the highest with a score of 2 • Option 1A, 2, 3, and 4 scored 0 • Option 1B scored -1 • Option 2A, 3A, and 4A scored -2 • Option 2B, 3B, and 4B ranked the lowest with a score of -3

3.4 MCA Scoring Summary

The table below summarises the results of the MCA assessment of the options against investment objectives, effects and delivery, maintenance and operations using an 11 point (+5 to -5) system.

Option	Contribution to Investment Objectives					Contribution to Effects			Contribution to Delivery, Maintenance and Operations			Total	Option Rank
	IO1 – Bus Reliability / Attractiveness	IO2 – Walking & Cycling	IO3 – Hutt Road Safety	IO4 – Thorndon Quay Amenity	IO5 – Similar Freight Access*	Social	Property Access	Fit with LGWM Programme	Delivery	Operations and Maintenance	Timeframe for Delivery		
Option 1: Southbound bus lanes with Thorndon Quay bidirectional cycleway	3	1	1	3	2	3	-3	3	-1	-1	2	13	6
Option 1A: Southbound bus lanes with Thorndon Quay bidirectional cycleway	3	2	3	3	2	3	-2	4	-2	-2	0	14	5
Option 1B: Southbound bus lanes with Thorndon Quay bidirectional cycleway	3	2	3	1	2	3	4	2	-4	-2	-1	13	6 Equal
Option 2: Southbound and Northbound bus lanes with Thorndon Quay unidirectional cycleway	4	3	1	1	3	4	-3	3	-3	-2	0	11	9 Equal
Option 2A: Southbound and Northbound bus lanes with Thorndon Quay unidirectional cycleway	4	4	3	1	3	4	-3	4	-4	-3	-2	11	9 Equal
Option 2B: Southbound and Northbound bus lanes with Thorndon Quay unidirectional cycleway	4	4	3	1	3	4	4	2	-4	-3	-3	15	3 Equal

Option	Contribution to Investment Objectives					Contribution to Effects			Contribution to Delivery, Maintenance and Operations			Total	Option Rank
	IO1 – Bus Reliability / Attractiveness	IO2 – Walking & Cycling	IO3 – Hutt Road Safety	IO4 – Thorndon Quay Amenity	IO5 – Similar Freight Access*	Social	Property Access	Fit with LGWM Programme	Delivery	Operations and Maintenance	Timeframe for Delivery		
Option 3: Southbound bus lanes with Thorndon Quay unidirectional cycleway	3	3	1	2	2	3	-3	2	-4	-1	0	8	12
Option 3A: Southbound bus lanes with Thorndon Quay unidirectional cycleway	3	4	3	2	2	3	-2	3	-4	-2	-2	10	11
Option 3B: Southbound bus lanes with Thorndon Quay unidirectional cycleway	3	4	3	1	2	3	4	1	-4	-2	-3	12	8
Option 4: Southbound and Northbound bus lanes with Thorndon Quay bidirectional cycleway	4	1	1	4	3	3	-3	4	-1	-1	0	15	3 Equal
Option 4A: Southbound and Northbound bus lanes with Thorndon Quay bidirectional cycleway	4	2	3	4	3	3	-2	5	-2	-2	-2	16	1 Equal
Option 4B: Southbound and Northbound bus lanes with Thorndon Quay bidirectional cycleway	4	2	3	3	3	3	4	3	-4	-2	-3	16	1 Equal

*the assessment assumes that freight can use the special vehicle lanes on Hutt Road.

3.5 Summary

The highest scoring options from the MCA are Options 4A and 4B.

While Options 4A and 4B scored similarly overall, the provision of a service road (suboption B) was discounted as being more disruptive, fits less with other regional projects and carries larger implementation risk.

The provision of bidirectional or unidirectional cycling facilities was also discussed. It was noted that the provision of a bidirectional cycleway (i.e. Options 1 or 4) should be aligned with the wider LGWM programme as there are bidirectional facilities planned to the north and south of the TQHR corridor. This would provide a consistent cycle path and ease of connection.

It was also noted that while both unidirectional and bidirectional cycle facilities would improve safety and level of service, unidirectional cycleways (Options 2 or 3) scored better for safety, due to less risk with cyclists travelling with the direction of general traffic.

Following the MCA workshop, the Technical Advisory Group (TAG) met to discuss a recommended option. The TAG supported the highest scoring option of 4A while noting the additional safety risks inherent with bidirectional cycleways which will require consideration in the design phase.

The TAG recommended that Option 4A was the best option to take forward as the interim preferred option. This decision was supported by the LGWM Programme Steering Group.

4 Next Steps

Following stakeholder and public engagement, the MCA will be reviewed to take into account feedback and further technical analysis. An economic analysis of the short-listed options will also be taken into account to assist in recommending a preferred option to take forward to the Single Stage Business Case (SSBC).

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