

WATERLOO STATION, FEASIBILITY STUDY REPORT

GREATER WELLINGTON REGIONAL COUNCIL

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View from from station entry to Trafalgar Square

1.0 INTRODUCTION

This report concludes the feasibility stage of the Waterloo TOD Station redevelopment, involving an optioneering and multi-criteria assessment process. It documents the outcomes of the feasibility study, which involved evaluating a long list of station options against defined criteria to identify a preferred shortlist. The shortlisted options were then further developed, tested and assessed using a more detailed set of criteria, ultimately leading to the identification of a preferred design option for progression into the Reference Design stage. This document also identifies key parameters and context for station design.

The Feasibility Study was carried out over a three-month period, beginning in May 2025 and followed a structured program of work. The key steps included:

- Development of the station functional program and definition of assessment criteria for assessing options
- Development of a long list of station layout options
- Shortlisting of station options from the long list using a mix of coarse screening using fatal flaws, followed by a “must have” MCA assessment based on qualitative measures.
- Engagement with key stakeholders to inform and validate options
- Development of design detail and cost estimates for shortlisted options
- Detailed MCA evaluation of the shortlisted options using a mix of quantitative and qualitative criteria.

The outcomes of this process are summarised in this Feasibility Study report, including the results of the multi-criteria assessment.



Waterloo Station Photo

1.1 Background

Waterloo Station located in the Hutt Valley on the Wairarapa and Hutt Valley rail lines. It is within the Hutt City Council and Greater Wellington Regional Council (WRLC) local government boundaries.

Rail from Wellington to Waterloo was first established in 1927, terminating in a then open field. The electrification of the railway line from Wellington in 1957 contributed to the significant suburban development of the Hutt Valley throughout the mid-century into the suburban centre it is today.

The 'Waterloo Bus-Rail Interchange' was opened in November 1988 in a development partnership between Wellington Regional Council, Railways Corporation and Lower Hutt City Council (as these organisations were then known). Total cost of the project was \$11.6m in 1988 dollars, equating to an inflation adjusted sum of approximately \$28.3m in 2024 dollars using CPI indexing.

After Wellington station, Waterloo Station is second busiest rail station by passenger volumes. It is a stop:

- At peak times for all Hutt Valley Line express services.
- For the Hutt Valley for all Wairarapa Line services (Upper Hutt, Waterloo, Petone).
- For increased Wairarapa services under Lower North Island Rail Integrated Mobility (LNIRIM).

Waterloo is also a bus hub for services to/from major catchments in the region including Wainuiomata (standard routes 160,170), Naenae (high frequency route 130), Seaview (standard route 121), and Kelson (standard route 150).

At the time of its opening in 1988, a key and current feature of the station was a “huge tubular steel and transparent plastic space frame”, then the largest of its kind in New Zealand. The ‘space frame’ feature currently dominates the Waterloo precinct and gives the station and environs its overall character. However, the original space frame structure was built in 1987 (37 years old) and now manifests an increasing maintenance burden for which, Greater Wellington bears significant annual costs. Specifically, around the extensive use of tiles throughout the precinct and Perspex canopies in the subways, on top of the ongoing work to assess and maintain the space frame. In addition, the existing structure and layout of the station does not provide the ability for optimisation in line with a modern public transport hub. Ultimately the station roof, which forms most of the station’s form and massing, needs to be replaced.

The need to replace the station roof has provided an opportunity for the station infrastructure and surrounding urban catchment to be considered as transit-oriented development candidate.

A transit-oriented development (TOD), is a mixed use urban area within 600m – 800m walking distance of a transit stop (e.g. train station) and core commercial and or residential area. TODs can also integrate and provide transfers between multiple transport modes including walking, passenger rail, bus, cycling and cars.

In May 2022, the Wellington Regional Leadership Committee (WRLC) confirmed Waterloo Station Transit Orientated Development (WTOD) as a Complex Development Opportunity (CDO). CDOs were later renamed Priority Development Areas (PDAs) by the WRLC. PDA status formalises partnership for the

project between central and local government, enables collective planning, decision making, problem solving and issue resolution and risk mitigation, and enhances the ability to access central government resources.

Waterloo Station has been selected as the first Greater Wellington Regional Council TOD project due too:

- A need to address major and end-of-financial-life infrastructure issues in the Waterloo Station.
- The availability of prime commercially developable land in the wider Waterloo Station precinct, which is currently under-utilised from a land use perspective.
- A desire to achieve a better return on investment from land in the ownership of Greater Wellington Regional Council.
- Waterloo station and precinct’s strategic location in the Hutt Valley, and large footprint (approximately 18,865m² of developable land) largely used for free to use carparking.
- The opportunity to develop Waterloo Station as an integrated transport hub linking the Hutt Valley with RiverLink, Hutt CBD, Wellington Central, Upper Hutt and the Wairarapa.
- The potential of the Waterloo Station precinct to contribute to realising the Wellington Regional Growth Framework (WRGF) and Future Development Strategy (FDS) objectives and goals by enabling urban intensification and enhancement in Hutt City.
- The potential of the Waterloo Station precinct to facilitate urban intensification in the wider Lower Hutt City catchment, act as a site for employment (e.g. anchor tenant office space) and the provision of social services (e.g. health, education, social support).

1.2 Structure of this document

This feasibility study, using the multi-criteria assessment (MCA), forms a key part of the wider project development process. It builds on the previous Define and Discover Stage and directly informs the upcoming Reference Design stage. It serves as a critical bridge, consolidating analysis and stakeholder input into a clear, evidence-based recommendation for the future Waterloo Station.



This Feasibility Study Report summarises outcomes of multi-criteria assessment of developed options, and it is structured as follows:

- Section 1 – Introduction
- Sections 2 to 4 – Background, Waterloo Station today and Opportunities and Constraints
- Section 5 – Forecast Passenger Demand, including rail station and bus interchange sizing
- Section 6 – The Station Design Brief, including objectives, design principles and assessment criteria
- Section 7 – Recommended Station Option
- Sections 7 to 10 – An outline of the MCA process, Drivers of option design, Course Screening of options to a long-list, Assessment of long-list to create a short-list and final assessment of the shortlist to identify a preferred and recommended option.
- Section 11 - Conclusions and next steps
- Appendices – Supporting material, including all options considered at each stage of the assessment, and the detailed assessment workbooks

1.3 Waterloo Station Design Team



GRIMSHAW



aurecon



2.0 WATERLOO STATION TODAY

Waterloo Station is the second busiest station on the Metlink rail network and functions as a strategically significant multimodal interchange. Located in the heart of Lower Hutt, it provides a critical node on the Hutt Valley and Wairarapa rail lines, supporting both express and stopping services that connect the region to Wellington Central. The station serves as the primary rail-to-bus interchange for numerous feeder routes and is a vital access point for employment, education, and social services within the city.

The station's strategic significance is reinforced by several key drivers:

- **Hutt City CBD connectivity:** Waterloo Station is the primary rail gateway to Hutt City CBD. With the pending temporary closure of Melling Station (Melling Line only runs weekdays until approximately 7 pm and does not run weekends or public holidays), the importance of Waterloo as a prime gateway to the CBD will increase in the short-term.
- **Regional Connectivity:** Waterloo facilitates transfers between key urban and suburban centres across the Wellington region. It links Lower Hutt with Wellington CBD, Petone, Wainuiomata, Upper Hutt, and the Wairarapa.
- **Catchment Growth:** Residential intensification within the immediate catchment is forecast to grow by 25–40% over the next 30 years, driven by urban development and infill housing.
- **High Existing Public Transport Mode Share:** Current ridership levels are strong, particularly during weekday commuter peaks, reflecting a mature and well-utilised public transport system. While rail patronage in the Wellington region has dipped over the past 12 months, projections show a period of consolidation followed by steady growth decade on decade.
- **Future Demand Drivers:** Upcoming changes, including the implementation of a National Ticketing Solution (which will introduce integrated zonal fares across bus and rail) and the Lower North Island Rail Integrated Mobility (LNIRIM) programme, are

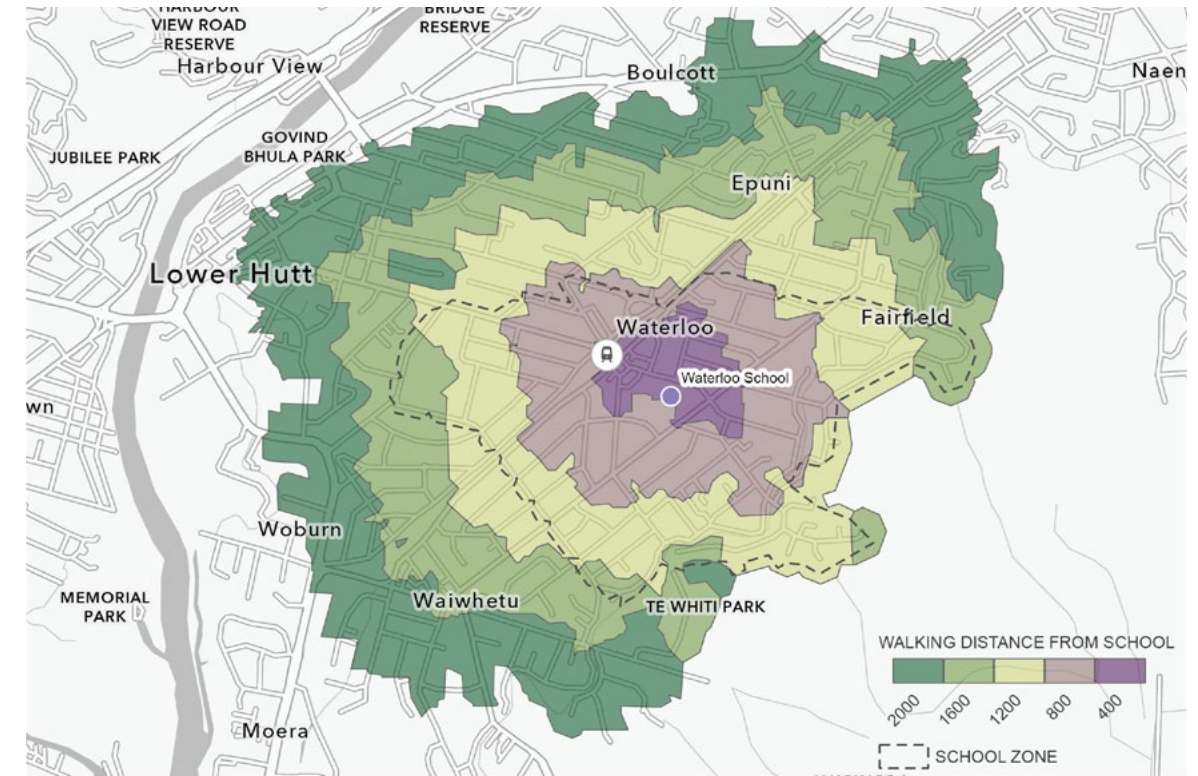
expected to drive further increases in patronage by enhancing service frequency (particularly off-peak), reliability, and the quality of rolling stock.

These factors underscore the importance of ensuring that the station and interchange are sized and configured appropriately to meet current and future functional needs, while remaining adaptable to emerging travel patterns and operational requirements. Ensuring that the station and wider interchange is designed in line with the station access hierarchy above will also optimise and drive public transport patronage by prioritising access modes that generate the most ridership and revenue in a low cost, low impact and space efficient manner.

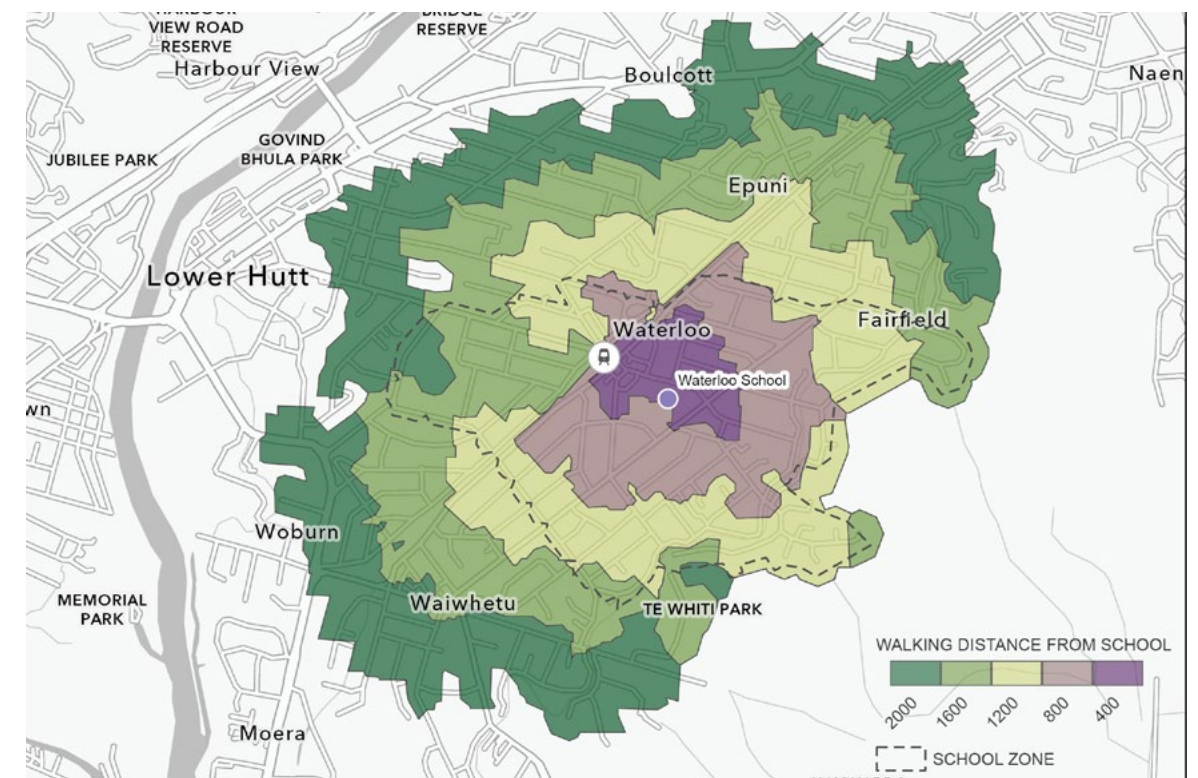
Bus Catchment – Importance of Wainuiomata

Wainuiomata is the largest source of bus-to-rail transfers at Waterloo Station. During the AM peak in March 2024, 12% of Waterloo boardings (about 240 people) arrived by bus, with 62% of these transfers originating from Wainuiomata—roughly 150 passengers between 6:00am and 9:30am. Most used routes 160 and 170, serving Wainuiomata North and South. Naenae and Kelson are also significant contributors.

Integration of these feeder services into the station layout is essential for supporting existing demand and enabling future patronage growth. It also presents a key opportunity for mode shift from private vehicles to public transport, particularly as service enhancements and TOD implementation proceed.



WITH ACCESS THROUGH WATERLOO STATION



WITHOUT ACCESS THROUGH WATERLOO STATION

Figure 1: School catchment / access

Catchment Urban Design and Passenger Flows – Significance of East-West Cross Corridor Access

The train station, bus interchange and its associated underpass beneath the rail corridor serves multiple schools and connects to Hutt CBD. It is the closest station for train users not connected to the Melling Line. Studies demonstrate that the Waterloo Station underpass is a crucial east-west pedestrian link, especially for students crossing to attend local schools. The underpass also serves locals accessing nearby shops, services and community.

Waterloo Station sits at a major convergence of local streets and offers primary walking and cycling access, with alternative crossings 750m to the north and 600m to the south of the station. Significant urban intensification is underway around the station, with new residential buildings (2-3 storeys) and a district plan allowing for heights up to 22m.

To the east, a low-rise local centre surrounds Trafalgar Square with a green open space. The western side features a less structured commercial area, dominated by the Water Treatment Plant, with lower public amenity. Knights Road provides a key route to Hutt City centre and is an important bus corridor. Urban development around Waterloo Station shows a trend of multi-unit developments without car-parking, increasing density and reducing reliance on private vehicles. The diagram following illustrates the impact on pedestrian walking routes with and without the East – West underpass connection.



Figure 3: Underpass during morning peak

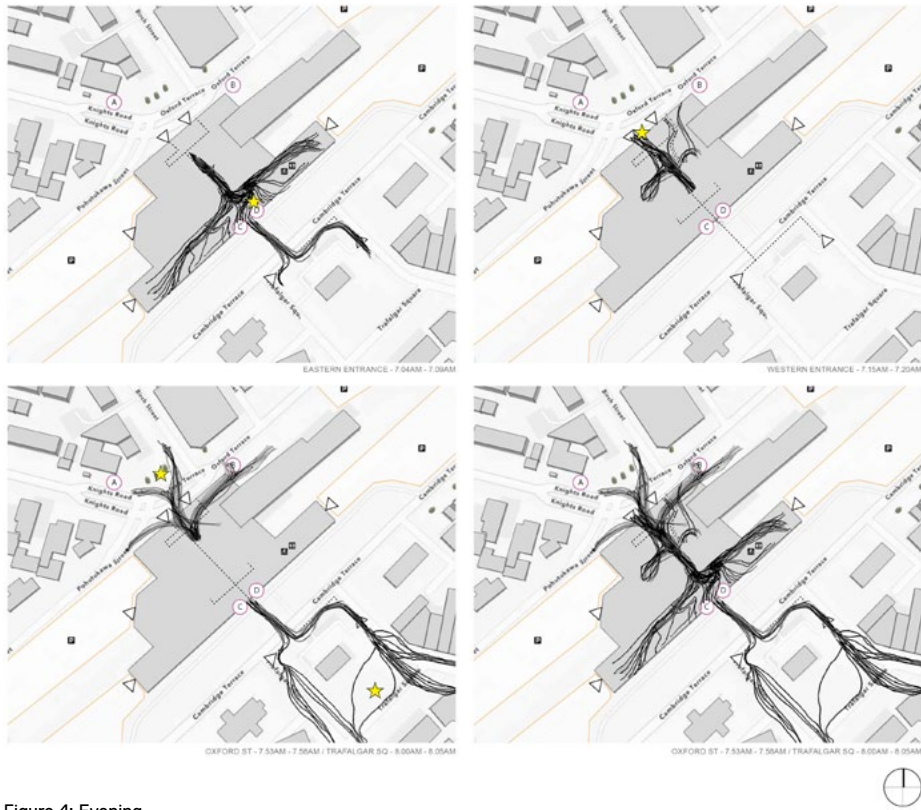
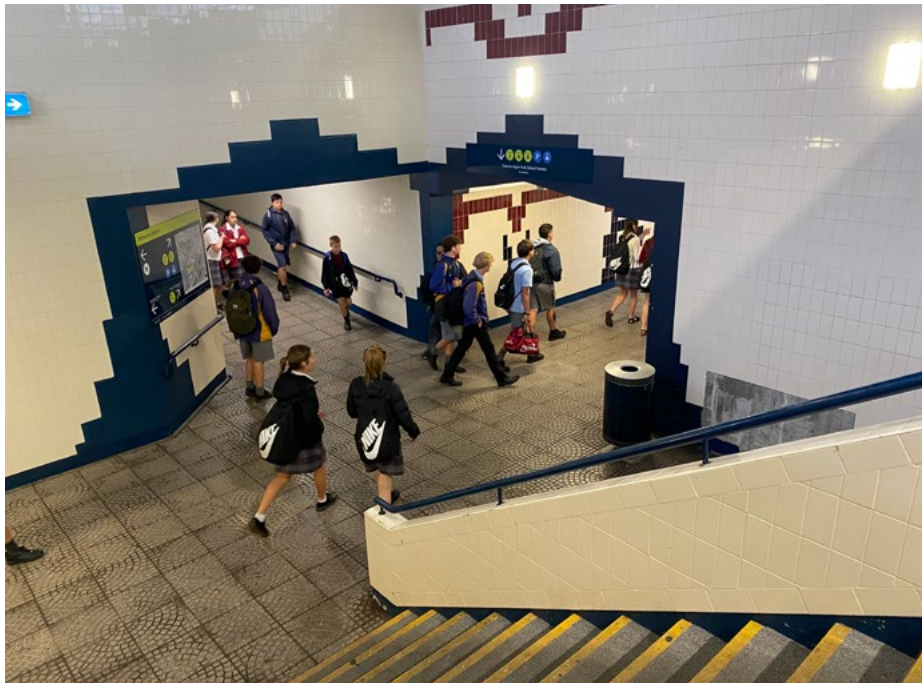


Figure 4: Evening

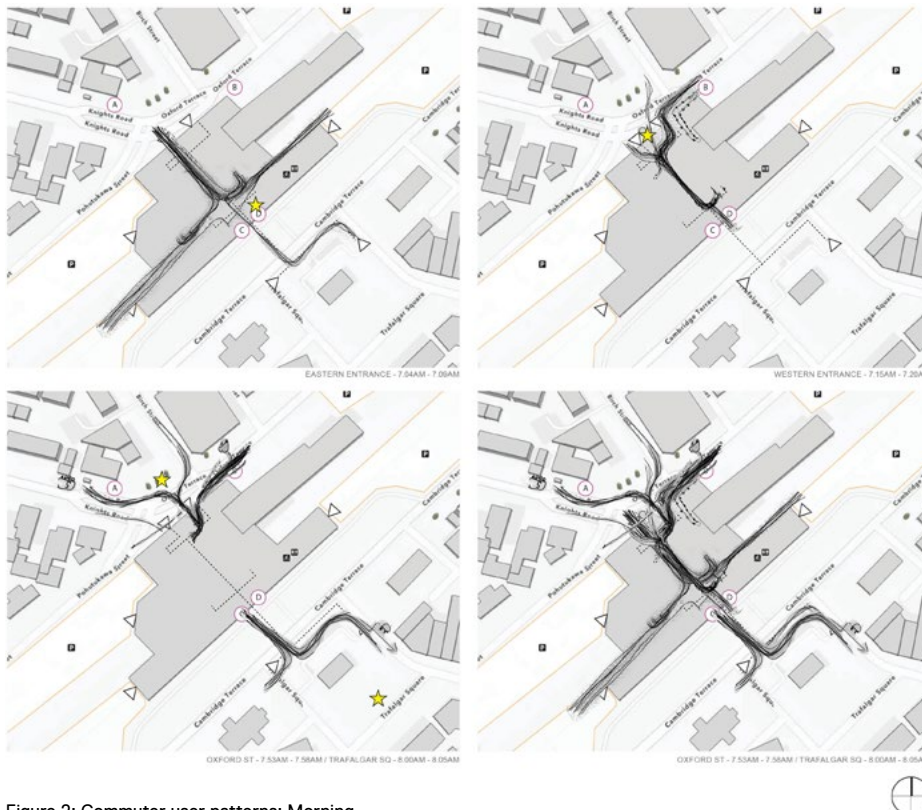


Figure 2: Commuter user patterns: Morning

3.0 OPPORTUNITIES AND CONSTRAINTS

Waterloo Station presents both opportunities and constraints for redevelopment.

The development of Waterloo Station offers the **opportunity** to optimise public and Crown land use around the station to establish an integrated public transport hub, harness the current high per-capita patronage of public transport within the region, and to create a station that better meets the needs of Hutt City's growing population. There is also an opportunity to create a Waterloo station that enhances local identity and supports Greater Wellington's objectives for further transit-oriented development within the station precinct.

Constraints include:

- fragmented land ownership hindering integrated development
- the station's dated infrastructure and poor integration with surrounding areas
- issues with accessibility and wayfinding
- limited connection to other transport options
- the proximity of Wellington Water's water treatment plant
- existing car parking inefficiencies.

The need to maintain station operations and pedestrian connections during construction also poses a challenge.

3.1 Waterloo Station Roof Canopy

The current Waterloo Railway Station was constructed in 1988. In recent years the roof structure (Spaceframe) has suffered from ongoing maintenance issues and is nearing its structural end-of-life. As an alternative to ongoing maintenance, the need to replace the station roof has provided an opportunity for the station infrastructure and surrounding urban catchment to be considered as a candidate for transit-oriented development.

A condition reassessment of the canopy and roof structure has been undertaken with a focus on corrosion, expected residual life span of the canopy in years without maintenance, and the maintenance recommended. It is not clear what the length of the additional life span will be achieved with the maintenance proposed. There is also no cost estimate on the maintenance or the total replacement of the space frame and roof.

3.2 Waiwhetu Aquifer Constraints on Station Foundation

The Waiwhetū Aquifer, a key drinking water source for the Wellington region, is highly sensitive to contamination and under growing pressure from urban growth and increasing water demand. The Waterloo

Station and TOD is located near the Waterloo Bore Field, which extracts water from the aquifer, making any nearby construction activities a potential risk.

Urban development - especially piling and deep excavations - can create pathways for surface contaminants to enter the aquifer or compromise the aquitard leading to pressure loss. This is of particular concern in the Knights Road area. As such, any building near the aquifer must carefully manage foundation design, limit intrusive groundworks, and control stormwater runoff. Any foundation works that could potentially compromise the integrity of the aquitard should be discounted. This limits the depth of piles to above the aquitard. The ground conditions above the aquitard can at times be unsuitable for founding and ground improvement may be required to provide suitable founding conditions. Additional planning controls or construction restrictions may be necessary to mitigate risks to the aquifer's water quality and availability.

3.3 Water Treatment Plant, Railway Tracks and Other Critical Infrastructure

Construction adjacent to the water treatment plant, railway tracks and any other critical infrastructure requires careful consideration to ensure that this important infrastructure is not compromised. Foundation techniques that can cause

significant vibrations and settlement should be discounted or their effects carefully assessed. Works close to railway tracks may require block of lines.

3.4 Civil Services and Below Ground Infrastructure

The proposed options for the railway station must carefully consider the presence of critical existing infrastructure. This includes large-diameter and aging water supply pipes from the nearby Waterloo Water Treatment Plant, an undersized and aging water and wastewater reticulation network, and end-of-life stormwater assets.

Of particular concern is a major 900mm-diameter wastewater trunk main southeast of the station, which lies shallow below ground and must be protected. Additionally, while most of the interchange site sits above the 100-year flood level, there is some flood risk at the northwest edge in a 440-year event.

As such, trainstation layout and construction methods were developed to avoid disrupting these key assets and to minimise impacts on infrastructure capacity and flood resilience.



Figure 5: Stormwater Assets



Figure 6: Flood Extents

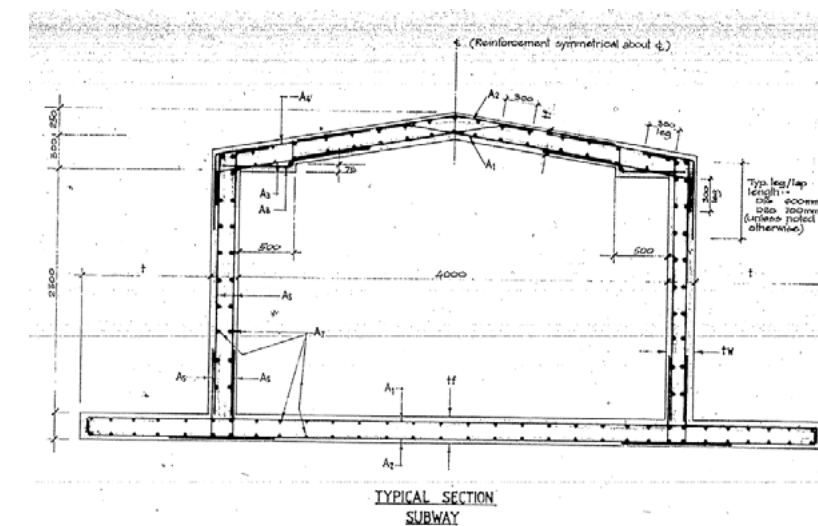


Figure 7: Existing Underpass drawings

3.5 Pedestrian Underpass Condition

A pedestrian underpass is situated beneath both the rail tracks and the Cambridge Terrace roadway. Originally constructed in 1988, it was designed with an assumed lifespan of 50 years. A review of the existing engineering drawings indicates that there is minimal cover to the underpasses reinforcing, which may present durability concerns as the structure ages.

Assessing the underpass's remaining lifespan is challenging. One visible symptom of deterioration is the delamination of wall tiles, which points to underlying material and moisture issues. Of particular concern is the existing water ingress occurring through a section of the tunnel wall near the electrical switchboard, a location that could present operational and safety risks if not addressed.

The seismic performance of the underpass requires evaluation which is currently underway. Strengthening the structure to improve its resilience may be complex and extremely costly, especially as the underpass needs to remain operational throughout any works. Furthermore, both existing and historical subway alignments will likely influence the placement of new foundations, requiring careful consideration during any future upgrades or redevelopment.

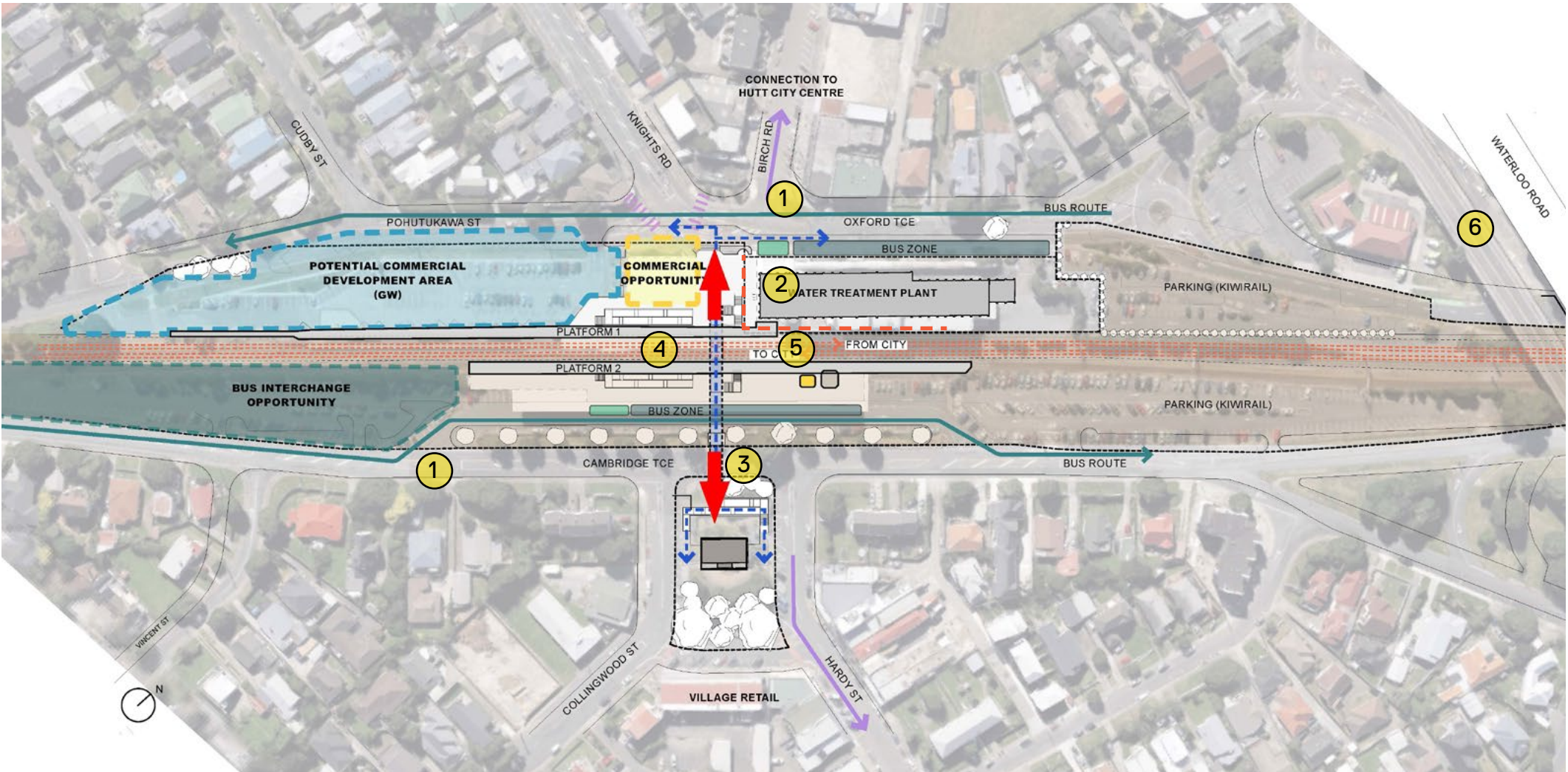


Figure 8: Constraints and Opportunities Summary diagram

- KEY**
- 1. Retain current road alignment
 - 2. Aquifer and water treatment plant
 - 3. Public cross corridor connection
 - 4. Station operations, safety and track geometry
 - 5. 5m separation from Water Treatment Plant
 - 6. Waterloo Road Overbridge

4.0 FORECAST PASSENGER DEMAND

Future passenger demand has been estimated to determine the appropriate station sizing for future capacity, and to assist with identifying infrastructure needs to ensure the station is fit for future use. Developed with input from Wellington's Transport Analytics Unit (WTAU) and Metlink, the assessment used 2046 as the design year (15 years after assumed opening date), with futureproofing considered out to 2061.

4.1 Forecasting future passenger demand

Waterloo is a strategically important station within the regional network. Despite recent softness in passenger numbers across the rail network, there are several factors that will lead to substantial growth in patronage at Waterloo Station in the medium to long term. This includes:

- Significant uplift in housing numbers within the direct catchment of Waterloo Station, with new, denser housing already built or planned
- Wider growth (e.g. Wainuiomata) increasing patronage on feeder bus routes
- Integrated fares and ticketing that will be enabled through the introduction of the National Ticketing System which is likely to drive increased demand, including fare integration across modes, capping, and potential for a distance-based fare structure.
- LIMRIM and other planned investment will also increase frequency and reliability, as well as quality of rolling stock
- Understanding this growth is critical to ensure that a rebuilt Waterloo Station is fit for purpose to meet future demand – and to futureproof where required to avoid inefficient investment or oversizing of some station elements (e.g. lifts, stairs, platforms).

These factors will drive higher demand for rail services and reinforce the importance of ensuring Waterloo Station remains fit for purpose through its next generation of use.

CURRENT DEMAND AND SNAPPER DATA INSIGHTS

To establish a robust baseline, Snapper data for the week of 11–17 March 2024 was analysed, covering the morning peak (06:00–09:00) and evening peak (15:00–18:00). This period falls within the 95th percentile of annual usage and is considered representative of high network demand.

Data from Monday and Friday was excluded due to lower travel volumes typically associated with work-from-home patterns. Weekend data was also excluded. The analysis therefore focuses on the Tuesday to Thursday average, offering a clearer view of typical weekday commuter patterns.

Key findings:

- Passenger flows are strongly tidal, with high inbound demand in the morning (toward Wellington CBD) and outbound demand in the evening
- The Hutt Valley Line (HVL) carries the majority of passengers due to its higher service frequency relative to the Wairarapa Line (WRL)
- Snapper boarding and alighting profiles were used to inform arrival and departure patterns and peak load conditions

FORECASTING FUTURE DEMAND

Passenger forecasts were sourced from the Wellington Strategic Demand Model, as well as historical Snapper data to understand growth rates. These were used to estimate demand on both inbound and outbound platforms during the morning peak.

The per annum growth rates from were used to interpolate the growth for the 2046 Design Year and extrapolate the 2061 Ultimate Design Year. As growth rates for the modelled data were applied to the existing Snapper data, growth was re-based to the year 2024 rather than the 2018 model base year.

The resultant growth rates are shown in Figure 9, and show the highest growth rates for alighting in the morning peak and boarding in the evening peak which correlate with the aspiration of Waterloo becoming a growing destination.

Applying the growth rates from Figure 4 to the existing Snapper data for the average peak weekday, results in the Design Year and Ultimate Design Year passenger demands in Table 1 and Table 2

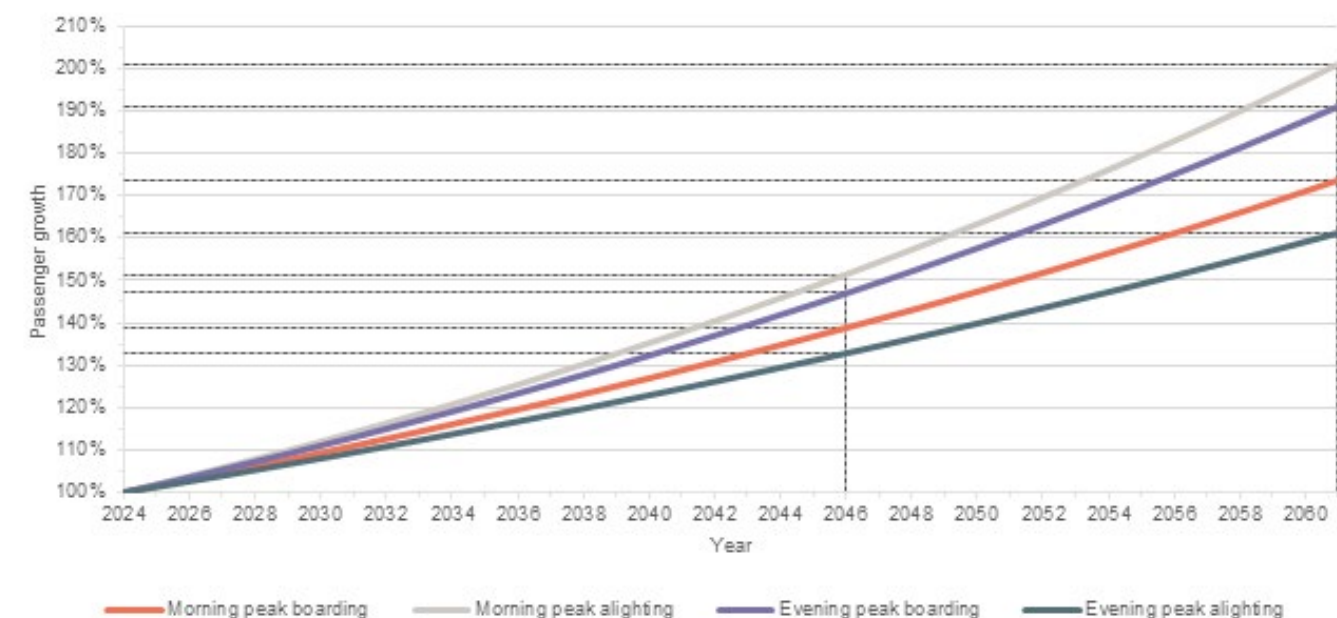


Figure 9: Waterloo Station passenger growth rates

	2024		2046		2061	
Line	Boarding	Alighting	Boarding	Alighting	Boarding	Alighting
HVL (Inbound)	1702	131	2364	198	2957	263
WRL (Inbound)	167	25	232	38	291	50
Inbound Total	1869	156	2596	236	3248	313
HVL (Outbound)	144	40	200	61	250	81
WRL (Outbound)	2	3	3	5	3	6
Outbound Total	146	43	203	66	253	87

Table 1: Design Year and Ultimate Design Year morning 3-hour peak passenger demands by line and direction

	2024		2046		2061	
Line	Boarding	Alighting	Boarding	Alighting	Boarding	Alighting
HVL (Inbound)	90	122	133	163	173	197
WRL (Inbound)	0	0	0	0	0	0
Inbound Total	90	122	133	163	179	197
HVL (Outbound)	145	1423	213	1892	277	2297
WRL (Outbound)	20	107	29	142	38	173
Outbound Total	165	1530	242	2034	315	2470

Table 2: Design Year and Ultimate Design Year evening 3-hour peak passenger demands by line and direction

4.2 Railway Station Sizing

The station has been sized using the upper-bound growth scenario (Sense Partners), which accounts for the influence of the Waterloo TOD on local employment and population, as well as land use uplift expected in the station pedestrian catchment. This aligns with local growth expectations and land use planning and supports a demand-led infrastructure approach.

Station infrastructure has been sized to:

- Accommodate opening year (2031) and design year (2046) demand
- Provide Level of Service C or better during the peak 15-minute period of the busiest week
- Allow future expansion to 2061, where required, to manage targeted congestion or increased throughput

Design elements most likely to experience future constraints (e.g. stairs, underpasses, passenger gating) are explicitly sized for upgrade flexibility

Note For the busiest 15 minute of the day (17:30-17:45), with a delayed train service there may be a lower level of service for a short period of time from the 2040s onwards, with the remainder of the day performing at a LoS C or better.

Table 3 illustrates the proposed station sizing outcomes for Waterloo Station, with key infrastructure elements dimensioned to achieve Level of Service (LOS) C or better through to the 2046 design year under normal operating conditions.

The graph below illustrates how the level of service is expected to degrade over time as demand increases. As the LOS degrades, it signals a trigger point where interventions—such as widening stairs or underpasses—may be warranted to maintain an acceptable level of service.

Refer to the full Pedestrian modelling memo included in Appendix 12 for further information on all station elements.

STATION ELEMENT	MINIMUM PROVISION		DELTA (ULTIMATE DESIGN YEAR – DESIGN YEAR)
	DESIGN YEAR (2046)	ULTIMATE DESIGN YEAR (2061)	
Inbound platform width	5.0 m	5.0 m	0.0 m
Outbound platform width	5.0 m	5.0 m	0.0 m
Inbound platform ticketing scanners	4 scanners	4 scanners	0 scanners
Outbound platform ticketing scanners	7 scanners	9 scanners	+2 scanners
Inbound platform staircase width	2.2 m	2.7 m	+0.5 m
Outbound platform staircase width	3.4 m	4.2 m	+0.8 m
Oxford Terrace station forecourt staircase width	6.1 m	7.5 m	+1.4 m
Station underpass width	3.0 m	3.6 m	+0.6 m
Cambridge Terrace underpass width	1.8 m	2.0 m	+0.2 m

Table 3: Side platform arrangement minimum station elements provision

4.3 Bus Interchange Sizing

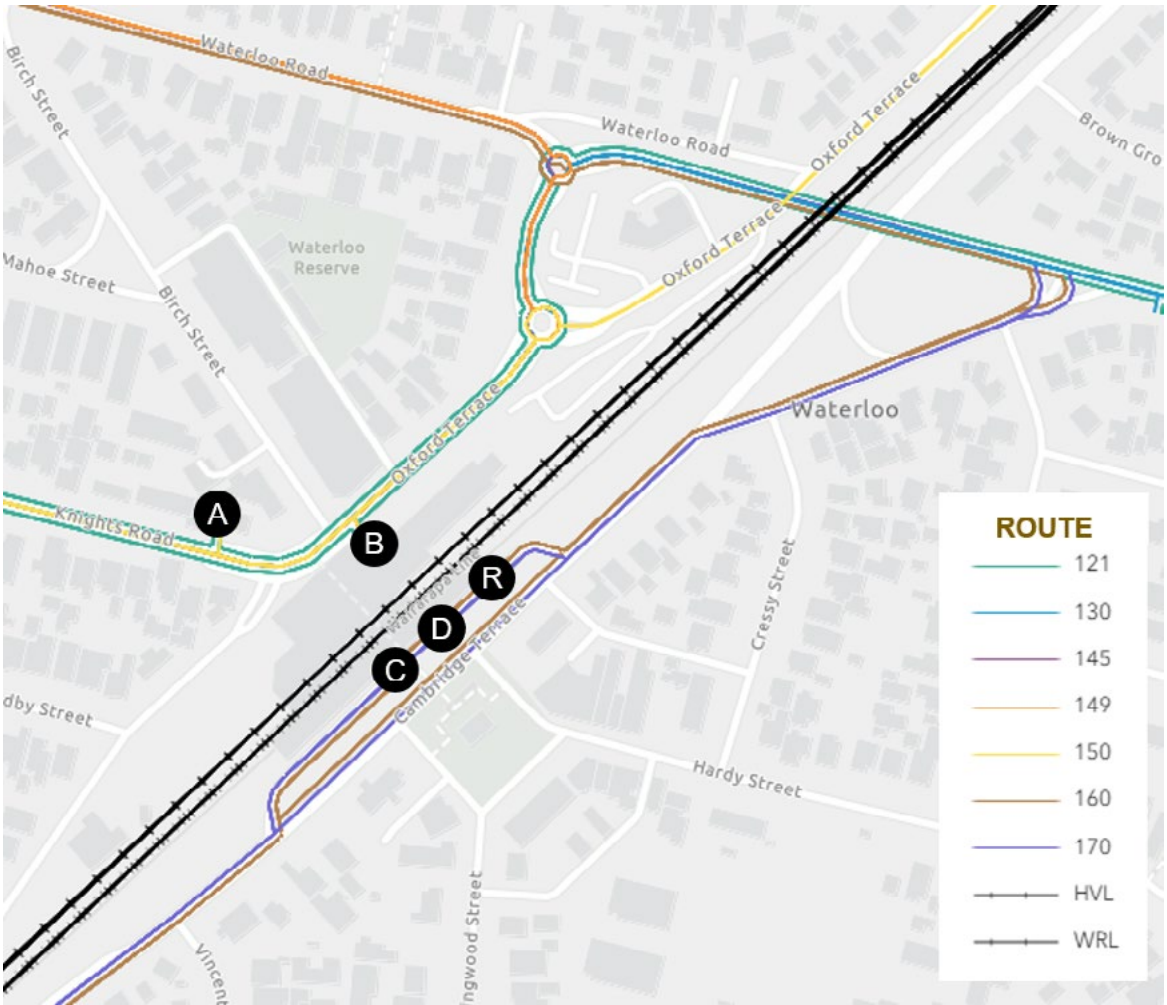
Bus Interchange design parameters

The design of the Waterloo Station interchange must accommodate current operational demands while enabling future growth and service enhancements. The station is currently served by four primary bus stops: Stops A and B located on the western side of the station, and Stops C and D located on the eastern side. In addition, a dedicated rail-replacement bus stop - configured as a double stop - is located northeast of Stop D to support planned and unplanned disruptions to rail service.

Looking ahead to 2041, the number of peak-hour bus services accessing Waterloo Station is forecast to increase significantly, rising from 19 to 36 buses per hour. This growth reflects both anticipated demand increases and planned enhancements to the public transport network as part of the region’s wider mode shift and TOD objectives.

Of the forecast 36 peak-hour bus movements, approximately 75% will travel east - west across the Waterloo Road bridge, traversing the full station precinct and requiring efficient, legible circulation across both sides of the rail corridor. The remaining 25% of bus services will operate exclusively on the western side of the station, accessing Stops A and B.

These operational forecasts have direct implications for interchange layout and functional design. The increase in service frequency and directional flow requires a design that can accommodate simultaneous bus movements, minimise conflicts, and support reliable and accessible transfers across all modes. Importantly, the interchange must also provide for rail-replacement services and emerging transport modes, including on-demand services.



Bus Stop	Stop Type	North bound	South bound	Total
A	Single (~15m)	5	2	7
B	Double (~32m)	4	8	12
C	Single (~20m)	10	-	10
D	Single (~20m)	-	7	7
(R) Rail Replacement	Double (~40m)	-	-	-

Figure 10: Existing bus stop locations and future but frequencies by stop

5.0 STATION DESIGN BRIEF

Outcomes sought for Waterloo Station that guide the objectives of the feasibility study, design principles and assessment criteria are:

- 1. A revived and optimised rail station and interchange with bus services (assumes it is compliant and safe, meets technical requirements that are relevant)
- 2. Providing a transport interchange for a range of transport modes that delivers minimum walking distances and connection times between modes that is consistent with the station hierarchy (Greater Wellington's Smarter Connections Strategy)
- 3. Protect and provide for the development of the Greater Wellington land for commercial purposes and enables for wider growth.

5.1. Objectives

CORE OBJECTIVES

A rail station and interchange for bus services and other active transport modes that:

- Always maintains a safe walkable connection across the rail corridor at Waterloo Station and Cambridge Terrace, including during construction, for the community particularly school children walking to and from school.
- 50 year target durable lifespan for station
- Is demand led so that it provides sufficient capacity, targeting a Level C level of service for rail passengers in the peak 15 minutes in the representative week in the busiest month (excluding disruptions) in 2025 and forecast passenger demand in its planned opening year of 2030 and by 2045 and 2060.
- Is affordable, where affordability is balance between the whole of life costs, including CAPEX, OPEX and finance costs of the rail station and the ability to be funded and paid for by taxpayers, ratepayers, users or a mix over its 30-year maintenance planning horizon.
- Delivers value for money where this defined as the optimal balance between all of life costs and the technical requirements and level of service achieved in its opening year, 2065 and 2061.

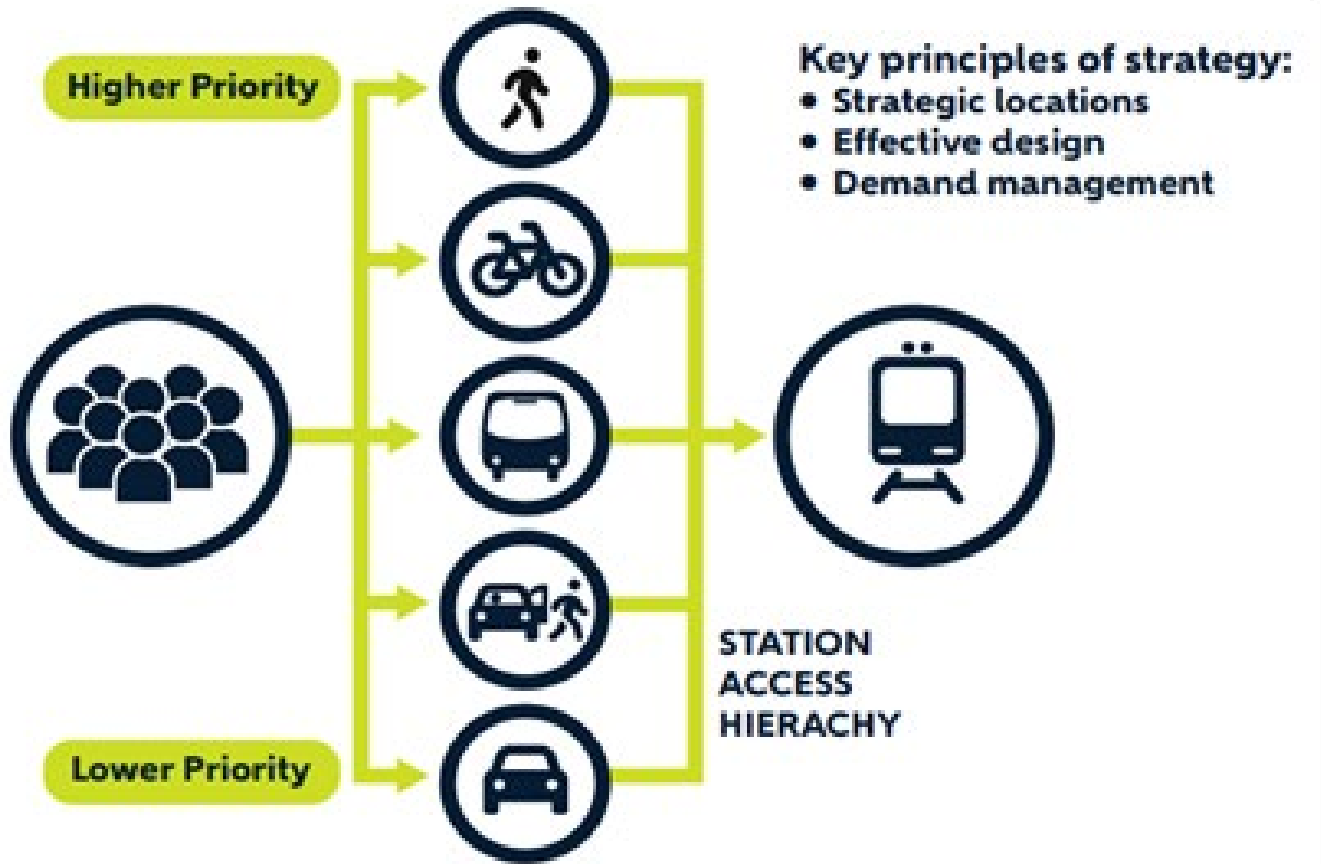
- Is cost-effective, where this the lowest all of life cost over a period of 30 years from its opening year.
- Does not result in negative impacts on water quality or supply, from the structure, foundations and utilities servicing the rail station and interchange that are in the vicinity the Waiwhetū Aquifer, existing potable water infrastructure network and Waterloo Water Treatment Plant.
- Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.
- Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions.
- The preferred option is sufficiently evidenced, robust and justified to effectively engage, influence and secure investment funding from local government (ratepayers) and central government (taxpayers), users and the private sector.

DESIRABLE OBJECTIVES

A rail station and interchange for bus services and other active transport modes that:

- Is a catalyst for transforming and intensifying the use of the urban area within an 800m walking catchment of the station. Thereby contributing to Wellington Regional Growth Framework (WRGF) and Future Development Strategy (FDS) objectives and goals in the Hutt Valley by supporting urban intensification and enhancement in Hutt City.
- Attracts users by having the attributes of a civic and people centred space. Where those attributes include a space that is accessible and usable for all people, is safe and secure, has flexibility to accommodate a variety of activities and events,

- incorporates aesthetic and cultural elements such as art, landscaping and historical features.
- Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.
- Contributes to creating a Metlink design, look and feel for rail stations.

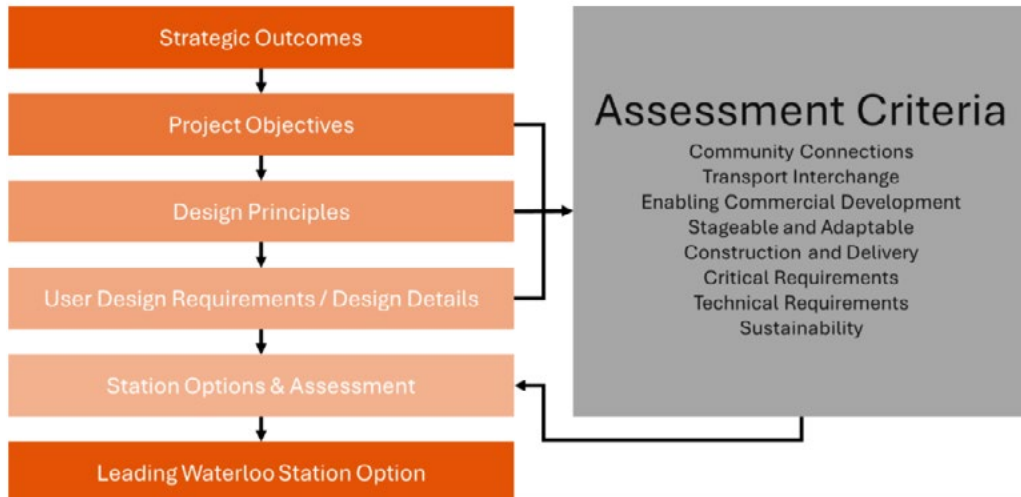


5.2 Design Principles

DESIGN PRINCIPLE	OUTCOME
Safety	Providing a safe environment through Crime Prevention Through Environment (CPTED) design for the station infrastructure assets. The design includes features like clear and uniform announcement systems and tamper-proof philosophies to ensure a safe environment for station users and their belongings.
Protect the Waiwhetū Aquifer	Limit foundation incursion through deep layers, limit foundation demands, limit weight (structural & other), materiality, height/number of stories, and limit bracing demands. Avoid disturbance of key infrastructure in and around the site.
Connections	The design emphasises seamless and safe links between different modes of transport, including bus, train, walking, cycling, micromobility, and the surrounding community. A safe, initiative and efficient rail corridor crossing point at Waterloo Station for pedestrians, particularly school aged children.
Places for People	Using universal design to ensure that the station and interchange is fit for purpose for all station users. A building services design that enhances passenger comfort and amenity. Horizontal weather protection vs. vertical weather protection. The provision of less roof area equals less total wind force resisted by foundations, therefore consider opportunities for offset wind barriers at person height scale. A design that aims to provide a modern, safe, and intuitive wayfinding system that enhances the overall user experience.
Ease of Maintenance	Infrastructure and systems should be simple, common and generic, so that they are easy to maintain. Materials and fit-out should be long-lasting, hard-wearing and functional to achieve a minimum 30-year lifespan. Ensuring we can provide a clean, comfortable, and accommodating station and interchange environment, and keeping our station infrastructure assets free of graffiti and vandalism.
Sustainability	Explore reuse of existing foundations, materiality choices (limit concrete/promote timber), upfront vs. life cycle carbon (structure vs. servicing), and ascertain building importance level Limit the amount of historic (likely) contaminated soil needing disposal and consider options that limit bulk change in levels Incorporating water-sensitive landscape architecture and civil infrastructure solutions that are consistent line with current standards and best practices. The use of energy efficient building services and the use of PV panels for power generation.
Flexibility	Consider placement of structure with respect to existing conditions, sequence of demolition vs. rebuild vs. temporary condition, and stay aware of any identified exclusion zones. Designing for future capacity and flexibility to accommodate increased patronage and transport network changes. Station design protects for future development. i.e. electric bus charging. Opportunities to stage the development of the rail station and bus interchange so that its construction can be demand led as the forecast demand eventuates or existing assets reach end of life.
Resilience	A station design that achieves an importance level of 2 (IL2) The provision of building services that protect for life safety for a suitable period of time during and after an event.

ASSESSMENT CRITERIA

Assessment criteria measures are drawn from the objectives and design principles for Waterloo Station. The inter-relationship and influence on the option assessment is illustrated in the figure below. The assessment criteria are likely to be more qualitative than quantitative measures, where assessment will be based on professional judgement. This reflects the lack of quantitative data available, at the feasibility level of detail.



CRITERIA	ASSESSMENT CRITERIA MEASURE
Community Connections	Always maintains a safe, walkable community connection between the rail corridor at Waterloo station and Cambridge Terrace.
Transport Interchange	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy
Enabling Commercial Development	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.
Stageable and Adaptable	Is demand led so that provides sufficient capacity, targeting a Level C level of service for rail passengers in the peak 15 minutes in the representative week in the busiest month (excluding disruptions) in 2025 and forecast passenger demand in its planned opening year of 2030 and by 2045 and 2060.
Construction and Delivery	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions
Critical Requirements	Does not result in negative impacts on water quality or supply, from the structure, foundations and utilities servicing the rail station and interchange that are in the vicinity the Waiwhetū Aquifer, existing potable water infrastructure network and Waterloo Water Treatment Plant.
Technical requirements	Meets the technical requirements necessary for the construction, operation and consenting of the rail station, bus interchange and ancillary infrastructure and services
Sustainability	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.

Figure 11: a summary of the assessment criteria is provided below with the detail including measures contained in Appendix 3.

6.0 THE FUTURE WATERLOO STATION (RECOMMENDED OPTION)

This section includes Illustrations and written descriptions of the recommended option (Option 17)

6.1 Description

The description of the future Waterloo station components include:

- Platform configuration
- Rail corridor crossing
- Vertical circulation
- Station amenity
- Commercial opportunities
- Interchange elements

Platform configuration - The upgraded platforms are fully aligned, with Platform 2 repositioned to match the location of Platform 1 while maintaining the required 5-metre clearance from the adjacent Water Treatment Plant. This alignment simplifies passenger movement and supports a cohesive, legible station layout. It creates a more compact and unified interchange footprint, enhancing wayfinding, reducing transfer distances, and enabling greater flexibility for staged construction or future platform extensions. While modifications to the existing signal box are required, these are outweighed by the benefits of a more efficient station layout and the opportunity to release additional developable land.

Rail corridor crossing - The removal of the existing long underpass marks a significant shift in cross-corridor access which had previously created a sense of disconnection between the precinct and its surroundings. It is replaced by a shorter, more visible overpass that spans the rail corridor, linking Oxford Terrace to Cambridge Terrace. From there, a new pedestrian crossing provides direct access into Trafalgar Square and onward to Trafalgar Place, creating a seamless, human-scaled connection. This configuration improves urban integration, enhances the user experience, and offers clear sightlines and

improved wayfinding to the station entries.

Vertical circulation - Vertical circulation is addressed through two new enclosed and sheltered entry structures, each with compliant stairs and lifts, ensuring full accessibility.

Station Amenity - While the primary differentiators lie in the spatial configuration and access strategy, Option 17 also includes other station elements common across options. These include platform and entry canopies providing 70% platform cover, weather-protected waiting areas with seating, and station amenities such as public toilets (one block per platform, each with an accessible and a unisex toilet), 100 bike parking spaces, and provisions for future station closure with secure fencing and entry points allowing for future gate line installation.

Commercial opportunity - All shortlisted options feature a compact station footprint, allowing space to be released for commercial use. Within the preferred option, a 550m² commercial area is integrated into the station footprint, providing future opportunities for retail, services, or other development.

Interchange elements - these are consistent with other options: the eastern interchange is upgraded and consolidated, while the western interchange retains its current configuration with improved bus stop facilities. Station entries and forecourts are optimally arranged to support smooth multimodal transfers.

6.2 Delivery Opportunities

A key outcome for the project is to enable TOD opportunities and Waterloo Station is intended to be a catalyst for this. The recommendation of Option 17 enables several delivery opportunities which could make the station a destination, these are summarised below.

PHASING:

The recommended option provides opportunity for phasing of the station meaning that elements could come 'online' as required to meet Greater Wellington and Metlink's delivery outcomes needs. i.e. the commercial area could be constructed later in the project phase, and the rail corridor overpass could also be built at later stage if it is determined that it pedestrian underpass is able to remain operational for a reliable period of time. These are options which would need to be explored further during the next phase of design.

COMMERCIAL:

There is approximately 550m² of commercial footprint provided in the layout of the option. There is potential for this to be increased by allowing for a multilevel building (likely 2-3 storeys) which can be leased providing a means of return on investment for Greater Wellington, or a delivery partner. The commercial area could be utilised for uses such as retail, office and or hospitality.

INVESTMENT:

National policy settings and drivers present an opportunity to package an offering for external investment to include commercial and other tenancy options. Waterloo TOD was not confirmed for National Land Transport Fund funding in the last NZTA funding round and further bids will occur in the next funding round. There may also be other funding opportunities available for initiatives such as sustainability outcomes which are subject to further exploration through the business case. There may also be opportunity to provide bus driver rest facilities which could be reviewed in the next stage of design.

ADVERTISING:

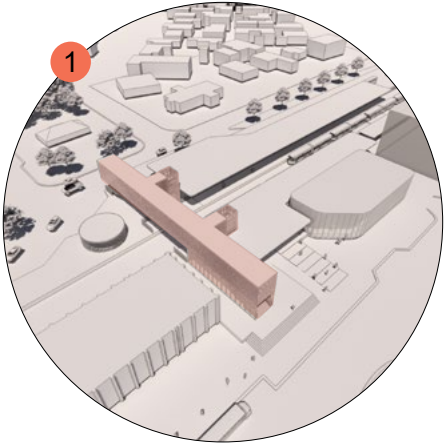
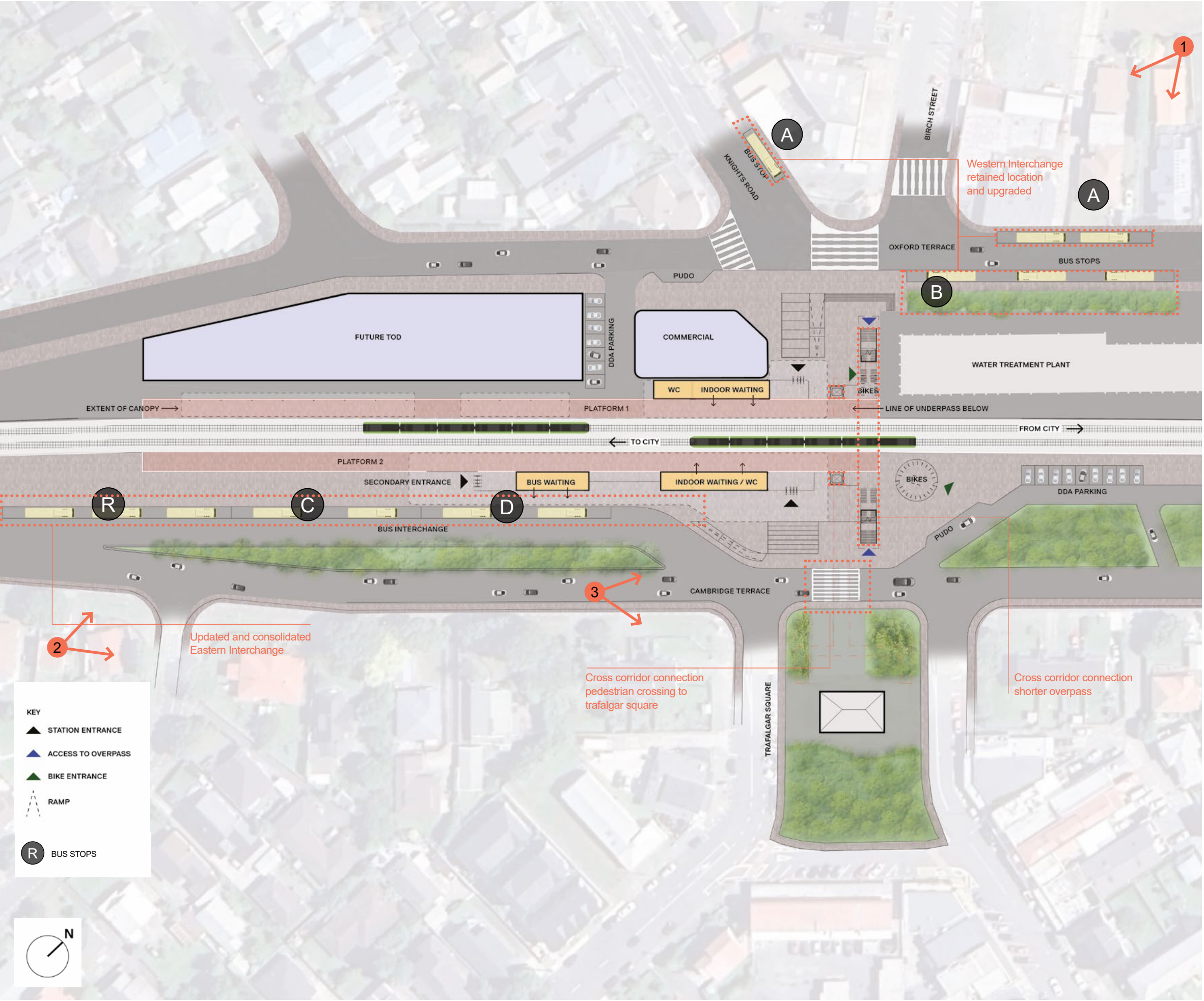
There will be a range of different opportunities for marketing and advertising across this station option including on the platform, at waiting areas and the short overpass could potentially provide internal and external surfaces for marketing (subject to relevant consenting approvals).

WATER TREATMENT PLANT:

A 5m buffer zone has been allowed for around the Water Treatment Plant at the station. The positioning of the proposed station allows future opportunities with Wellington Water to expand to the Northern end of the site should this be required as a potential future opportunity for the division of Greater Wellington property assets.

COMMUNITY:

The pedestrian underpass currently provides an important connection across the rail corridor between the East and Western suburbs of the Waterloo and Lower Hutt area for walking and cycling commuters. Particularly for school children, further exploration is required to ascertain if there are potential funding opportunities associated with the provision of this connection. The decommissioning of the underpass and introduction of the pedestrian crossing at Cambridge Terrace provides the opportunity for the provision of additional public space within Trafalgar Square, The additional space could be utilised as public amenity, or for other future development by Hutt City Council.



7.0 MCA ASSESSMENT PROCESS

Three-Stage Assessment Process

The proposed three-stage assessment process was informed by and modelled on NZTA's multi-criteria Assessment (MCA) guidance but adapted to suit the specific needs and constraints of this project

SCORING SCALE

The scoring scale used was the application of a +3 to -3 rating for each assessment criteria measure, based on a comparison of performance against the base case, where the base case was the do minimum requirements. The base case differs from the status quo, where the status quo represents do nothing.

Notes accompanied each score provide context and justification.

STAGE 1 – COARSE SCREEN ASSESSMENT

A “fatal flaw” sieve was undertaken by the Transport and Architecture discipline using the developed MCA tool, removing options with critical issues (e.g. incompatibility with KiwiRail standards, outside project boundaries, etc.). This involved Assessing 2213+ high-level options plus the base case with a focus on:

- Platform positioning and key parameters
- Track alignment and geometric feasibility
- Location and high-level configuration of the interchange
- Preliminary access routes for different user groups
- Key constraints: land ownership, impacts on the road network, proximity to the water treatment plant.

This process resulted in a long list of 22 options, plus the status quo (do nothing) and base case (do minimum).

STAGE 2 – LONGLIST SHORTLISTING

Options that passed the coarse screen formed the long-list and were evaluated through A qualitative MCA, reflecting the level of detail available at this design stage. Evaluation utilised targeted technical input from specialists to provide MCA scoring across key disciplines:

- Transport
- Urban Design
- Civil
- Structural
- Ground Engineering
- Building Services

This assessment resulted in a short-list of:

- Base case
- Option 1B
- Option 1Bi
- Option 2
- Option 5B
- Option 17

STAGE 3 – SHORTLIST MCA ASSESSMENT

Five shortlisted options were developed further and assessed through:

- A full MCA process tailored to project needs
- Detailed technical assessments
- SME input across the same disciplines to support option comparison and identify the preferred option

STAGE 1 – COARSE SCREEN ASSESSMENT

Assessed 13+ high-level options with a focus on:

- Platform positioning and key parameters
- Track alignment and geometric feasibility
- Location and high-level configuration of the interchange
- Preliminary access routes for different user groups
- Key constraints: land ownership, impacts on the road network, proximity to the water treatment plant.

A “fatal flaw” sieve was undertaken by the Transport and Architecture discipline using the developed MCA tool, removing options with critical issues (e.g. incompatibility with KiwiRail standards, outside project boundaries, etc.).

STAGE 2 – LONGLIST SHORTLISTING

Options that passed the coarse screen were evaluated through:

A qualitative MCA, reflecting the level of detail available at this design stage

Targeted technical input from specialists

SME input into MCA scoring across key disciplines:

- Transport
- Urban Design
- Civil
- Structural
- Ground Engineering
- Building Services

STAGE 3 – SHORTLIST MCA ASSESSMENT

Five shortlisted options were developed further and assessed through:

- A full MCA process tailored to project needs
- Detailed technical assessments
- SME input across the same disciplines to support option comparison and identify the preferred option

SCORING SCALE

- Testing each option against base case (neutral)
- Ranking will come after the scoring – relative understanding the performance of each of the option
- Adding detailed notes to justify the scoring

Rating	Testing each option against base case (neutral) Ranking will come after the scoring – relative understanding the performance of each of the option Add detailed notes to justify the scoring Made in reference to a do-min / do-nothing
● 3	Large positive (+ve)
● 2	Moderate positive (+ve)
● 1	Slight positive (+ve)
● 0	Neutral
● -1	Slight negative (-ve)
● -2	Moderate negative (-ve)
● -3	Large negative (-ve)
● Fatal flaw	Discounted

Figure 12: Proposed scoring

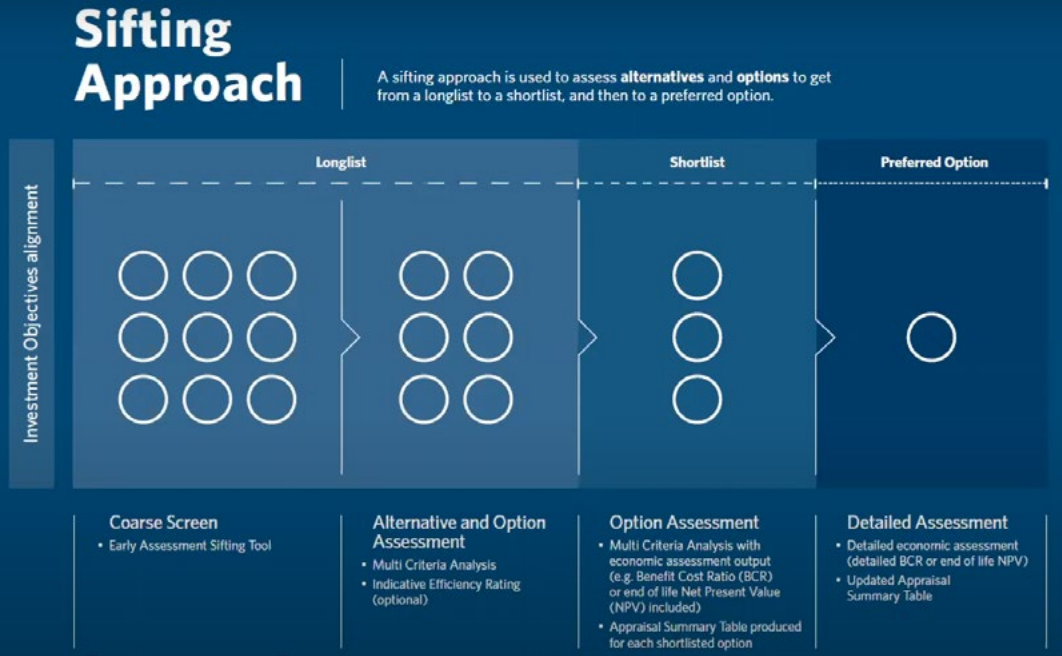


Figure 13: Diagram NZTA sifting MCA approach

8.0 LONG LIST OF OPTIONS AND ASSESSMENT

8.1 The Key Parameters / Moves

The initial focus was on assessing the condition and durability of the existing infrastructure particularly the underpass. The purpose of this assesment was to evaluate the potential for reusing elements in the new build and determine their future usability and lifespan.

With that in mind, we proceeded to the elemental design and positioning of the station’s largest components. The development of station options began with a focus on major elements, primarily the location of the platform. This was followed by access configurations and a feasible bus interchange layout, all within the constraints of the existing site. As the study progressed, further detail was layered in to refine each option.

BIG MOVES

Platform Location and Configuration Options

Considered:

- **Split Platform** – retained in existing alignment, shifted north, or shifted south.
- **Island Platform** – shifted north or south.
- **Rail Alignment** – rail under or over.
- **Cross-Corridor Access** – via existing underpass or overbridge.
- **Vertical Transport (VT) Options** – combinations of lifts, stairs, and ramps

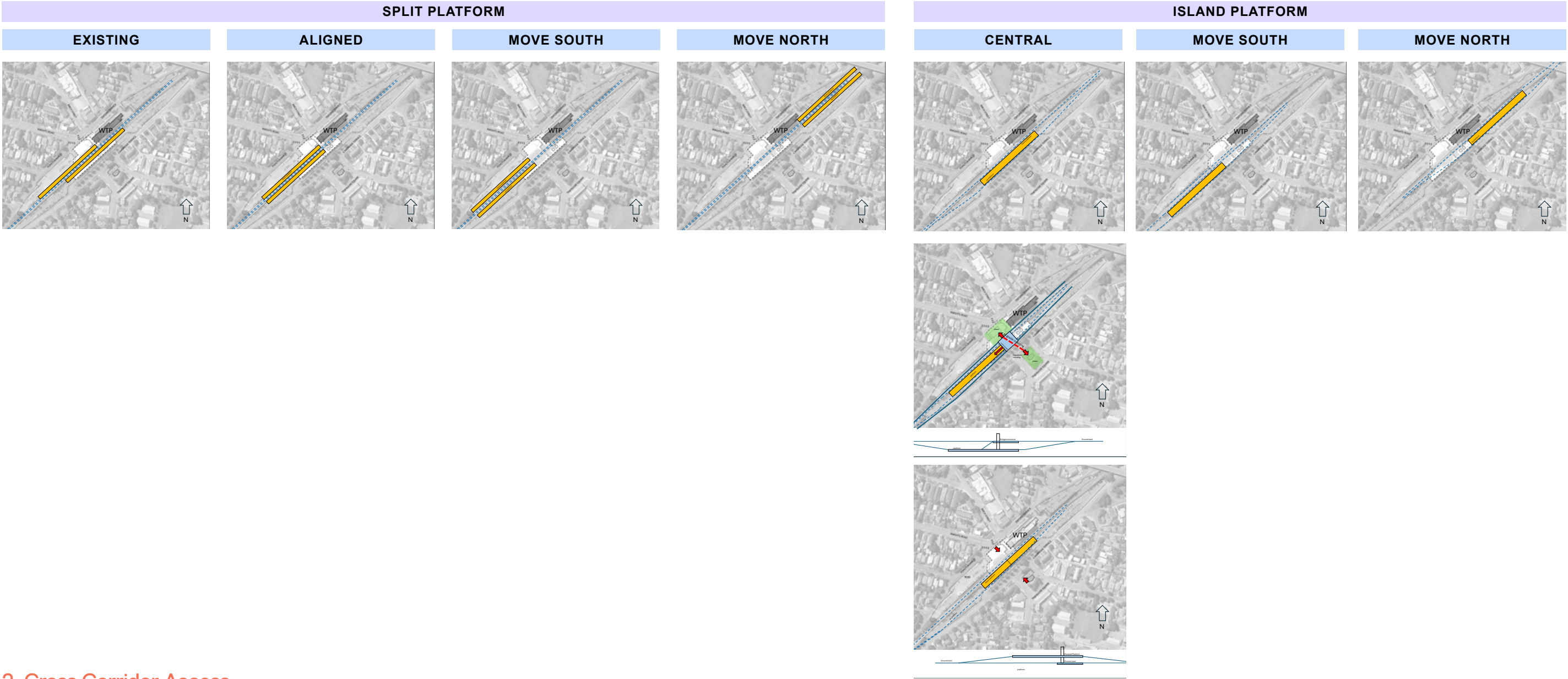
Once the preferred platform configurations were identified, the **key differentiators** between the options became cross rail corridor access and vertical transport options.

While the platform and access arrangements drove the biggest differences between options, other station and interchange elements were developed to be comparable across all options, meaning they were not major differentiators.

Secondary elements of the stations that were comparable were:

- **Interchange Configuration:** Parallel studies were undertaken to test multiple bus operation layouts (six options) and identify configurations best suited to meet projected passenger demand. One option was selected that then was paired with all the shortlisted options.
- **Commercial Opportunity:** Potential for integrated commercial development was noted but varied in influence across options.
- **Station Amenities:** Assumed to be consistent across all options, and therefore not a key variable in option differentiation

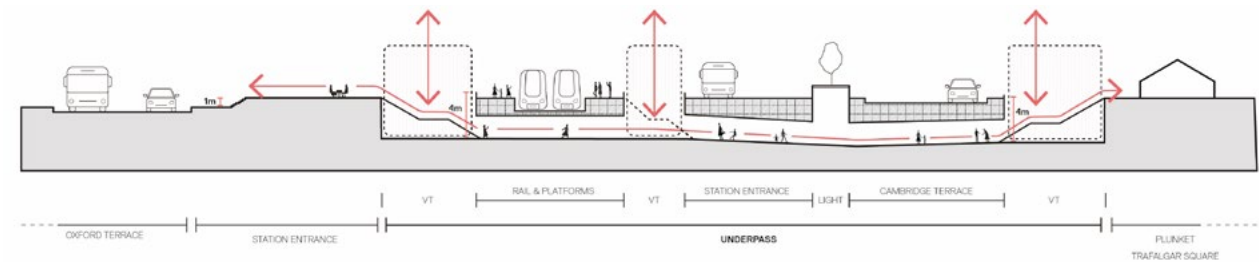
PLATFORM LOCATION AND CONFIGURATION



2. Cross Corridor Access

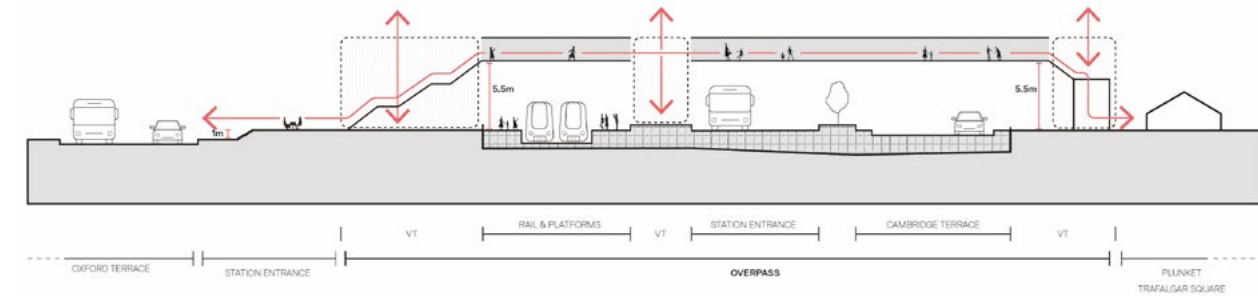
1: UPGRADE UNDERPASS

Upgraded - compliant through (extending the ramps and resurfacing) + provide updated cover



2: OVERPASS BRIDGE

Part covered (roof and perf screen) or fully sealed (roof and glazed envelope of bridge)



Rail Station

The Waterloo Station and bus interchange options have been developed guided by the objectives, design principles and key parameters / moves. At an early stage of design development the focus was on the major moves, namely location and configuration of the primary elements - the platform configuration, cross corridor access and vertical transport configuration.

This produced 22 Options plus the Base Case and Status Quo. These options are illustrated in Figure 14 (refer to Appendix for all the options and MCA assessment)

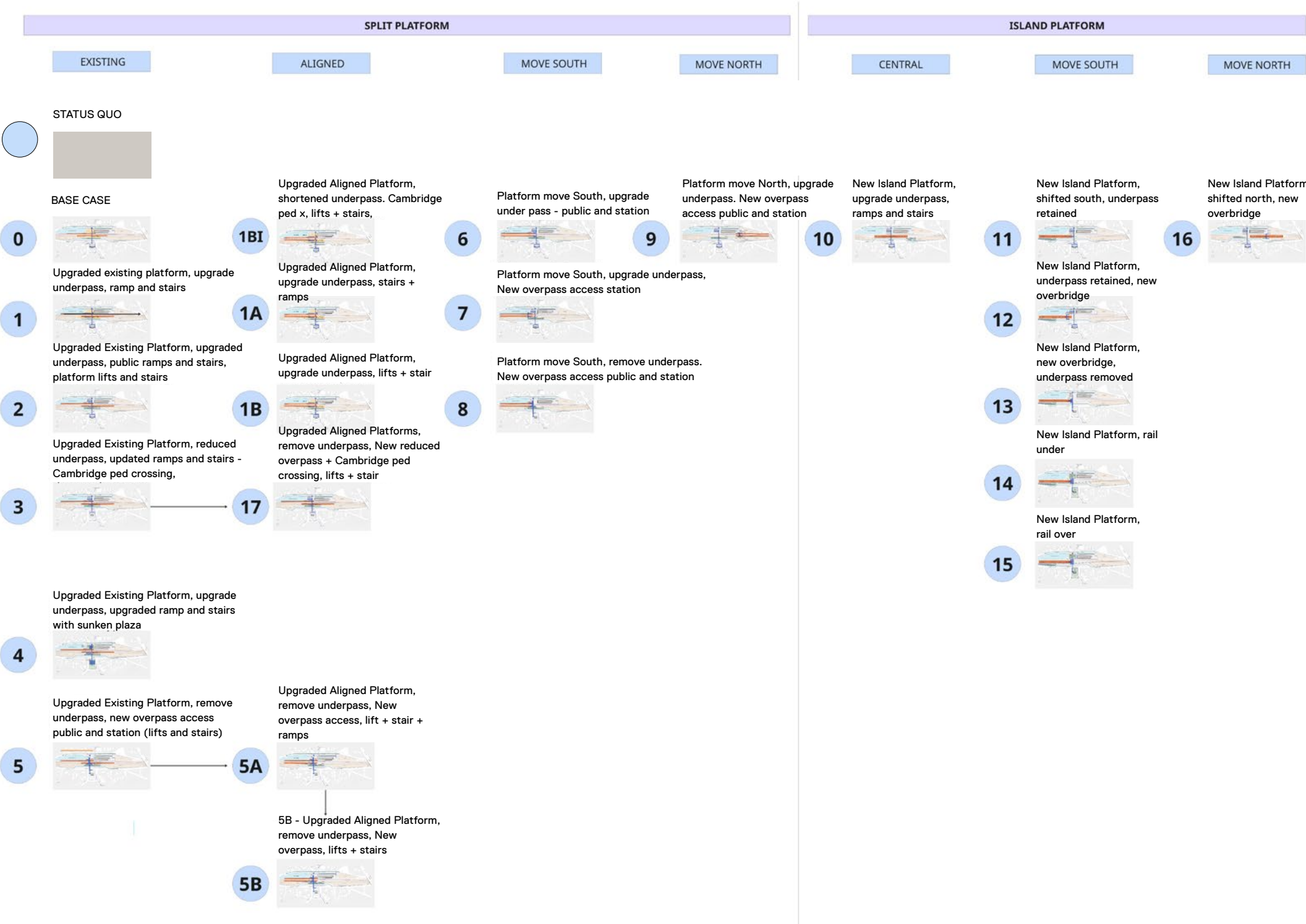


Figure 14: Long List of Options

Bus Interchange Configuration

A range of bus stop operating concepts have been tested to identify a preferred interchange configuration that balances operational efficiency, futureproofing and network coverage. These concepts, illustrated below were assessed with reference to current and future service needs, land use growth, and interchange design constraints. In summary the concepts are:

- Option 1 looked to retain a split interchange across both sides of the station;
- Options 2 and 3, retained the split interchange but introduced 2-way working on the eastern side within the station precinct;
- Option 4 moved Stop D onto Cambridge Terrace; and
- Options 5 and 6 tested consolidated interchanges on either side of the station.

The consolidated interchanges (Options 5 and 6) performed poorly due to the significant additional distances and resulting journey times for buses needing to cross over the road bridge, leading to operational inefficiencies and a poor customer experience. Due to space constraints on the eastern side of the station, two-way working was not operationally possible, therefore Options 2 and 3 were discounted. Option 4 was discounted due to the distance of Stop D from the main bus interchange.

The preferred bus operating concept below (Option 1) features an enhanced interchange on the eastern side of the station, whilst maintaining and improving on street provision on the western side. This configuration has been selected based on its ability to support multiple strategic and operational objectives, including flexibility and futureproofing as more and different types of services (e.g. Demand Responsive Buses) use the station. It also minimises interchange times as well as bus journey times.

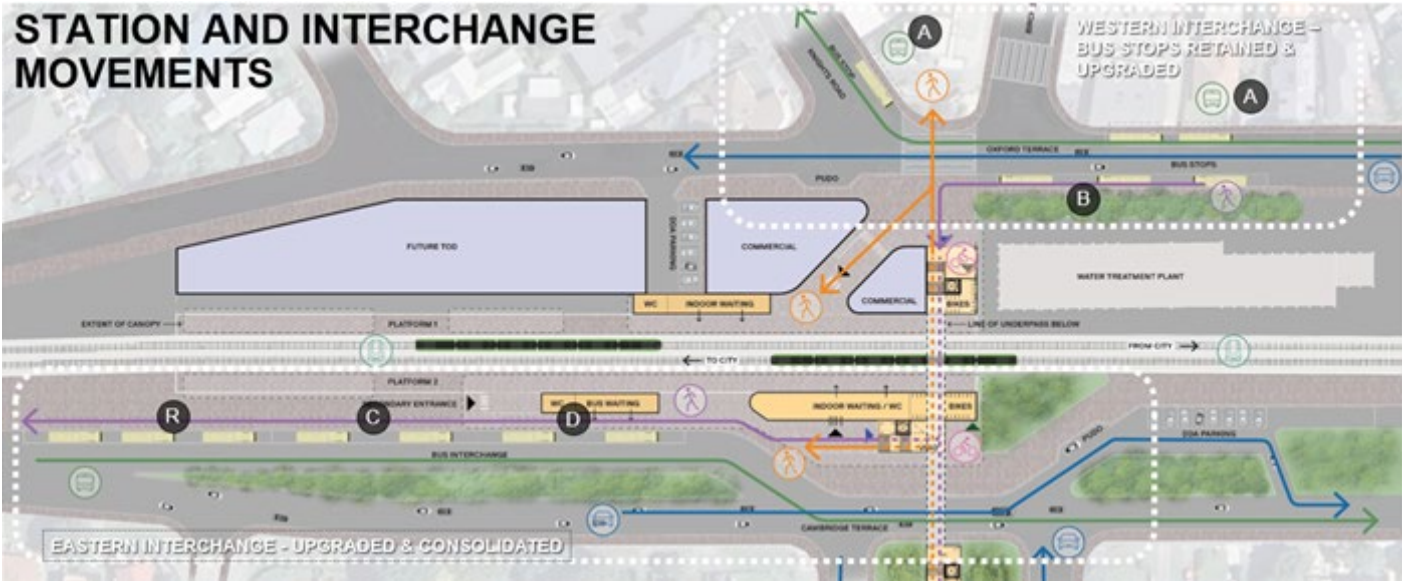
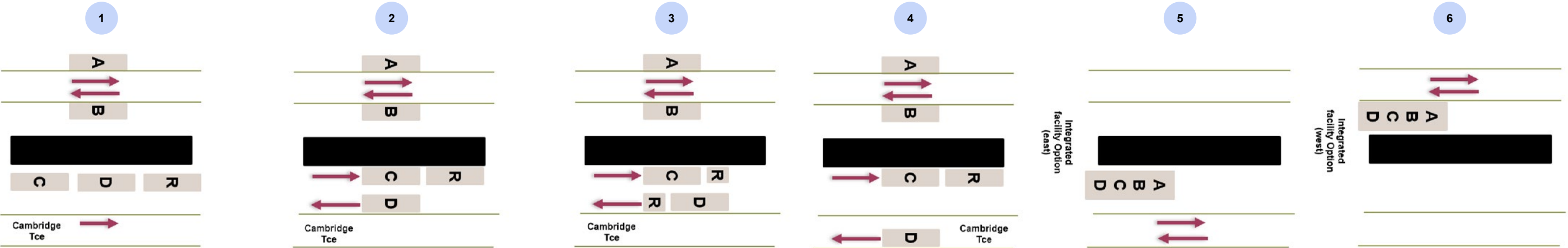


Figure 15: Waterloo Station bus interchange preferred operating concept



8.2 Course Screen of Options

The full list of 22 options was reduced a long list by assessing each option against a coarse screen comprising of specific assessment criteria with a pass / fail test. Those criteria were:

- Achieves technical requirements of platform & track alignment and geometry
- Avoids the buffer area surround the Water Treatment Plant
- Closure of the rail corridor for unacceptable lengths of time or peak periods of use
- Avoids impacts on the existing road infrastructure

The course screen reduced the full list of option to a long list of 12 options. The long list can be categorised into options that retained the Existing Staggered Platforms and those that have aligned platforms.

COURSE SCREEN OPTIONS

LONG-LIST OF OPTIONS AFTER COURSE SCREEN	OPTIONS NOT PROGRESSED AFTER COURSE SCREEN
Base Case	Option 6 – Split Platform move South, upgrade under pass – access public and station
Option 1 - Upgraded Existing Platform, upgrade underpass - ramp and stairs	Option 7 – Split Platform move South, upgrade underpass public access, new overpass access station
Option 2 – Upgraded Existing Staggered Platforms, upgraded underpass, public ramps and stairs, platform lifts and stairs (no ramp)	Option 8 – Split Platform move South, remove underpass. New overpass access public and station
Option 3 - Upgraded Existing Staggered Platforms, reduced underpass, updated ramps and stairs - Cambridge ped x,	Option 9 – Split Platform move North, upgrade underpass, New overpass access public and station (dual access to station)
Option 4 - Upgraded Existing Staggered Platforms, upgrade underpass, upgraded ramp and stairs with sunken plaza	Option 10 - New Island Platform, central location, upgrade underpass, ramps and stairs access public and station,
Option 5 - Upgraded Existing Staggered Platforms, remove underpass, New overpass access public and station (lifts and stairs)	Option 11 - New Island Platform, shifted south, underpass retained for public and station access
Option 1A – Upgraded Aligned Platform, upgrade underpass, stairs + ramps	Option 12 - New Island Platform, shifted South, underpass retained, new overbridge
Option 1B – Upgraded Aligned Platform, upgrade underpass, lifts + stair	Option 13 - New Island Platform, shifted South, new overbridge, underpass removed
Option 1Bi – Upgraded Aligned Platform, shortened underpass. Cambridge ped x, lifts + stairs,	Option 14 - New Island Platform, rail under
Option 17 – Upgraded Aligned Platforms, remove underpass, New reduced overpass + Cambridge ped x, lifts + stair	Option 15 - New Island Platform, rail over
Option 5A – Upgraded Aligned Platform, remove underpass, New overpass access, lift + stair + ramps	Option 16 - New Island Platform, shifted north, new overbridge
Option 5B - Upgraded Aligned Platform, remove underpass, New overpass, lifts + stairs	

8.3 Long List of Options and Short-Listing.

The long list of options was reduced to a short list by assessing each option against a range of assessment criteria that were relevant to and could be measured considering the level of design detail available for each option early in the feasibility study.

The **assessment criteria** and measures used for shortlisting the long list were, as per table below:

ASSESSMENT CRITERIA TABLE

CRITERIA	MEASURE
Community Connections	- Maintain the community connection from East to West (across rail corridor and Cambridge Terrace). - Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)
Transport Interchange	- How well does the station option protect the ability to integrate greatest number of bus interchange options. - Length of the walk on the East West connections for minimum walking distance. - Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.
Enabling Commercial Development	- The Station including bus interchange occupies the smallest possible area measured in sqm. - The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets - The station and bus interchange is decoupled from the use of property not under control of GW
Construction and Delivery	least complex construction and staging method for delivery
Sustainability	- Greatest amount of existing infra-structure that can be reused - Minimum area of soil disturbance and amount of earth needing disposal

These assessment criteria reduced the longlist of options to a short list of five options plus the status quo and the base case. The shortlist is:

SHORTLIST OF OPTIONS

OPTIONS FORMING THE SHORT LIST	OPTIONS NOT INCLUDED IN THE SHORT-LIST
Base Case	Option 1 - Upgraded Existing Platform, upgrade underpass - ramp and stairs
Option 1B – Upgraded Aligned Platform, upgrade underpass, lifts + stair	Option 3 - Upgraded Existing Staggered Platforms, reduced underpass, updated ramps and stairs - Cambridge ped x,
Option 1Bi – Upgraded Aligned Platform, shortened underpass. Cambridge ped x, lifts + stairs,	Option 4 - Upgraded Existing Staggered Platforms, upgrade underpass, upgraded ramp and stairs with sunken plaza
Option 2 - Upgraded Existing Platform, upgraded underpass, public ramps and stairs, platform lifts and stairs (no ramp)	Option 5 - Upgraded Existing Staggered Platforms, remove underpass, New overpass access public and station (lifts and stairs)
Option 5B - Upgraded Aligned Platform, remove underpass, New overpass, lifts + stairs	Option 5A – Upgraded Aligned Platform, remove underpass, New overpass access, lift + stair + ramps
Option 17 – Upgraded Aligned Platforms, remove underpass, New reduced overpass + Cambridge ped x, lifts + stair	

The long list of options not shortlisted is contained in Appendix 11.3, along with the evaluation. A summary of the evaluation to identify the shortlist of masterplan options is illustrated in [Table X](#)

Each of the shortlisted options underwent further design to enable a finer grain assessment to identify a leading option. The description each shortlisted option and the assessment is outlined in Section 9.0.

9.0 SHORT LIST OF OPTIONS

There are 5 shortlisted options in addition to the status quo (do nothing) and base case (do minimum). These are described individually below.

9.1 Status Quo (do nothing)

STATUS QUO DESCRIPTION

This option assumes continued use of the station without any upgrades, but with the ongoing maintenance and operation of the existing infrastructure and its associated cost. The Status Quo includes updates of certain station elements or upgrade costs which will be incurred as elements come to their end of life and continued maintenance is not an option.

- Platforms – At this stage there are no urgent upgrades required to the platforms.
- Station Roof – The study, detailed in the Design Brief, outlines the required work to repair the roof, and ongoing maintenance for this. Maintenance and repair of the roof requires approvals and permits from Kiwirail as the roof structure crosses the rail corridor.
- Underpass maintenance – ongoing repair costs of the underpass to manage water ingress, with understanding of potential end of life cost associated with required replacement estimated to be within the next 15 years i.e. by 2037.
- Stairs and Ramps – The ramps and stairs would remain as is, there may be costs to upgrade the ramps as these are not compliant with current accessibility standards and at some point, in the future, may require upgrading to meet code.
- Existing building upgrades, and or decommissioning over time if these buildings are not generating revenue to cover their costs.

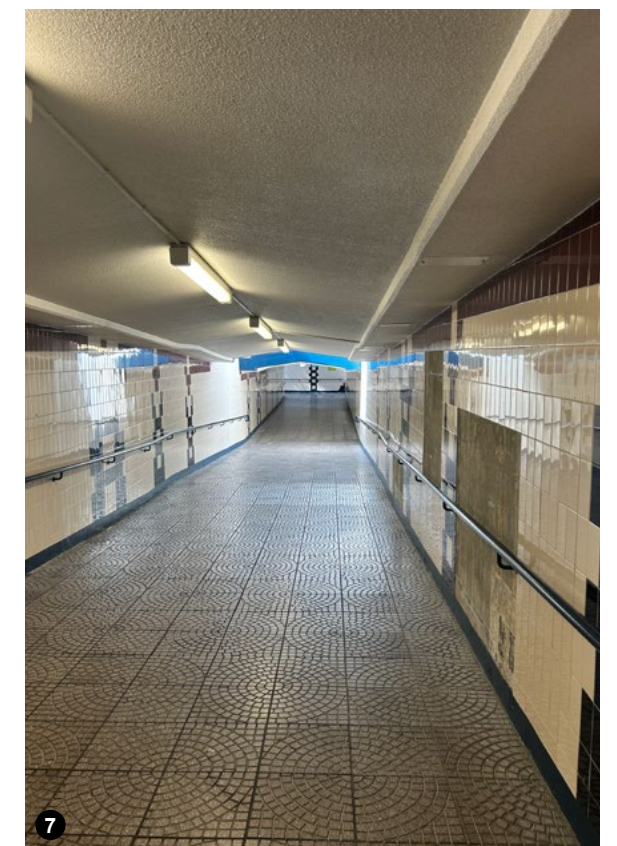
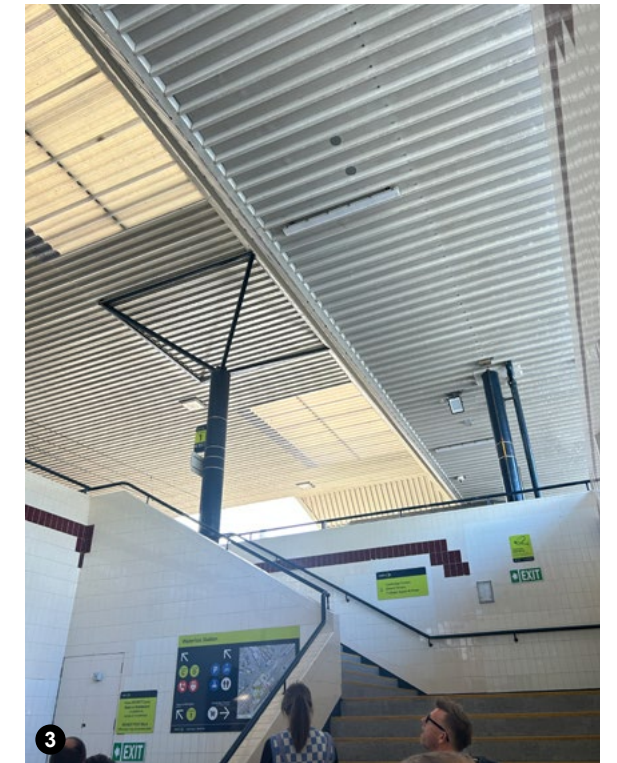


Figure 16: Existing Station: 1. North East End of Station Platform and Roof; 2. Station Underpass and ramp Entry; 3. Station Stair Access and Roof Structure; 4. Platform; 5. View from Platform Looking at side of the roof; 6. Ramps from Trafalgar Square; and 7. View of the Underpass

9.2 Base Case

BASE CASE DESCRIPTION

This option has been used as a baseline reference in the assessment of options and assessed as neutral for all assessment criteria. The base case identifies and contains the minimal upgrades required for the station to safely operate for at least another 50 years, and/or needed to meet the building code because the replacement of a station element e.g. the roof, triggers the need:

Roof replacement (not like-for-like):

- Assumed to be reinstated on both sides of the tracks without crossing over the rail corridor but maintaining a similar coverage area and re-use of the existing structural frame.
- Removal and disposal of existing roof soffit and cladding
- Make good and recoating of the existing structural frame
- Removal and reinstatement of new building services in the roof space (rainwater disposal systems and lighting)
- Roof access and fall restraint systems for maintenance.
- Demolition of the existing amenities building, or re-roofing and upgrades to the existing amenity building.
- Further development and design would be required for the above.

Levelling of rail platforms

- Temporary closures
- Temporary removal and reinstatement of platform furniture
- Re-level and reinstate asphalt finishes

Strengthening and waterproofing the pedestrian underpass

- Upgraded flooring, wall finishes, lighting and waterproofing as required.
- Ongoing and future maintenance and upgrades to the underpass should also allow for seismic upgrades and upgraded water pump to mitigate risks of flooding. Subject to further assessment.

Improved Ramp and Stair Access from Oxford and Cambridge Terrace

- Upgrades to make the current ramps and stairs compliant
- Excavations and waterproofing required
- Allowance for new security gate lines

Improved bus stop amenity i.e. new bus shelters and lighting

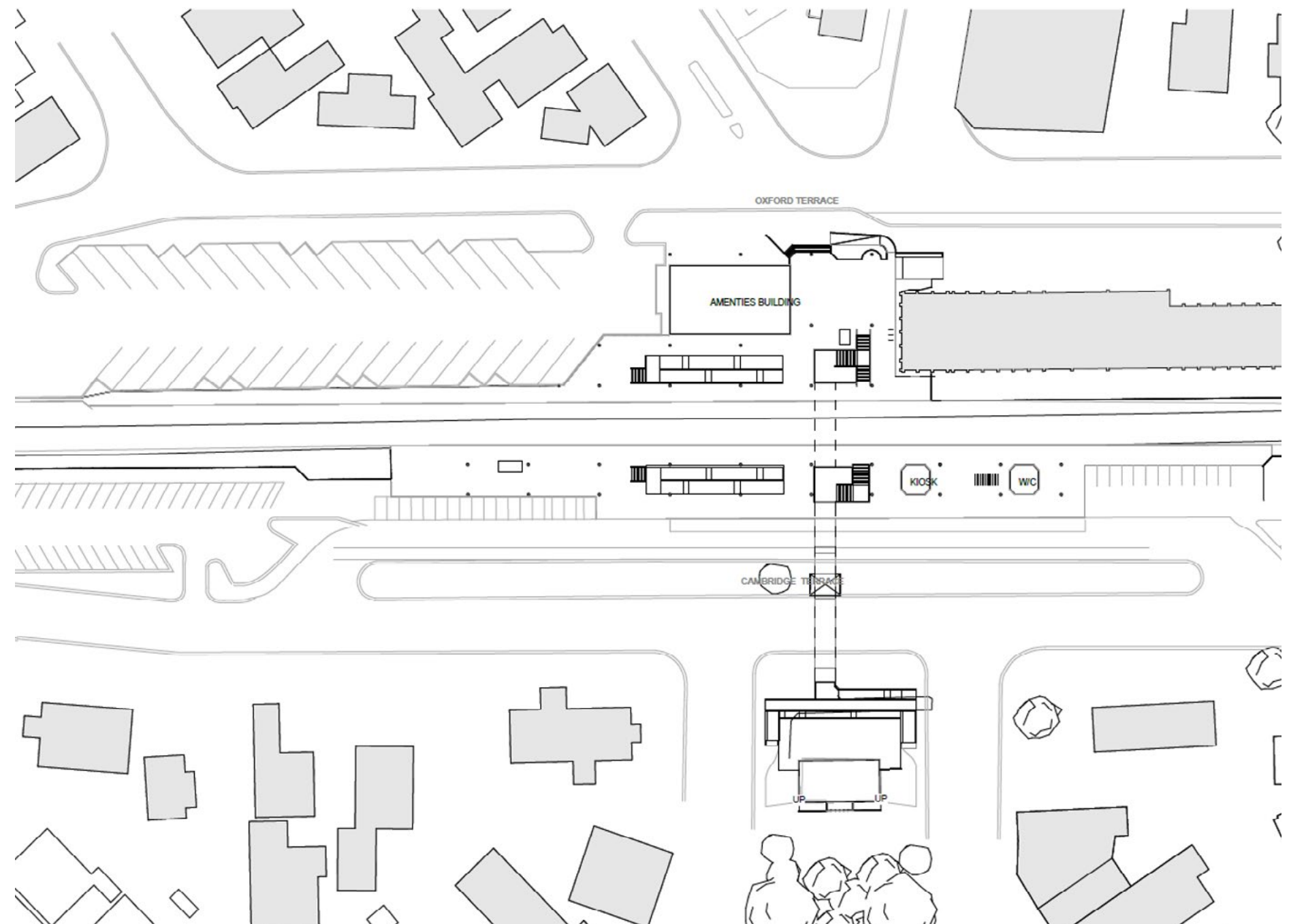


Figure 17: Existing Station drawing

9.3 Option 1B

OPTION 1B DESCRIPTION

Option 1B is defined by the following key configuration elements that differentiate it from other options:

- **Platform:** Aligned and upgraded platforms, with Platform 2 repositioned to align with Platform 1, while maintaining the required 5m clearance from the Water Treatment Plant.
- **Cross-corridor Access:** upgraded underpass providing access from Oxford Terrace through to Trafalgar Square and beneath Cambridge Terrace, for both rail and bus commuters and the wider community.
- **Vertical Circulation:** 3 sets of new enclosed sheltered entries with compliant stairs to provide more direct and legible access and connectivity, with lifts for accessibility.

Secondary Station Elements (not key differentiators due to comparable treatment across options):

- **Canopy:** Entry and platform canopies with associated seating on platform to meet requirements of the brief (70% of platform cover).
- **Station Amenities:**
 - Including weather protected (tempered or conditioned) waiting areas with seating,
 - public toilets – 1 toilet block on each platform with: 1 accessible and one unisex toilet,
 - bike parking - 100,
 - provision for station closure – fencing around the perimeter of the platform and clearly identified entry points futureproofing gateline.

- **Commercial Opportunities:** 480m² within the station footprint, with an additional 225m² adjacent to the Western / Oxford Terrace entry.

Common Elements Across All Options:

- **Bus Interchange:** Integrated with the station with optimally configured station entries and forecourts, the Eastern Interchange Upgraded and consolidated; and Western Interchange retains and upgrades existing bus stops.



Figure 18: View taken from Cambridge Terrace looking North

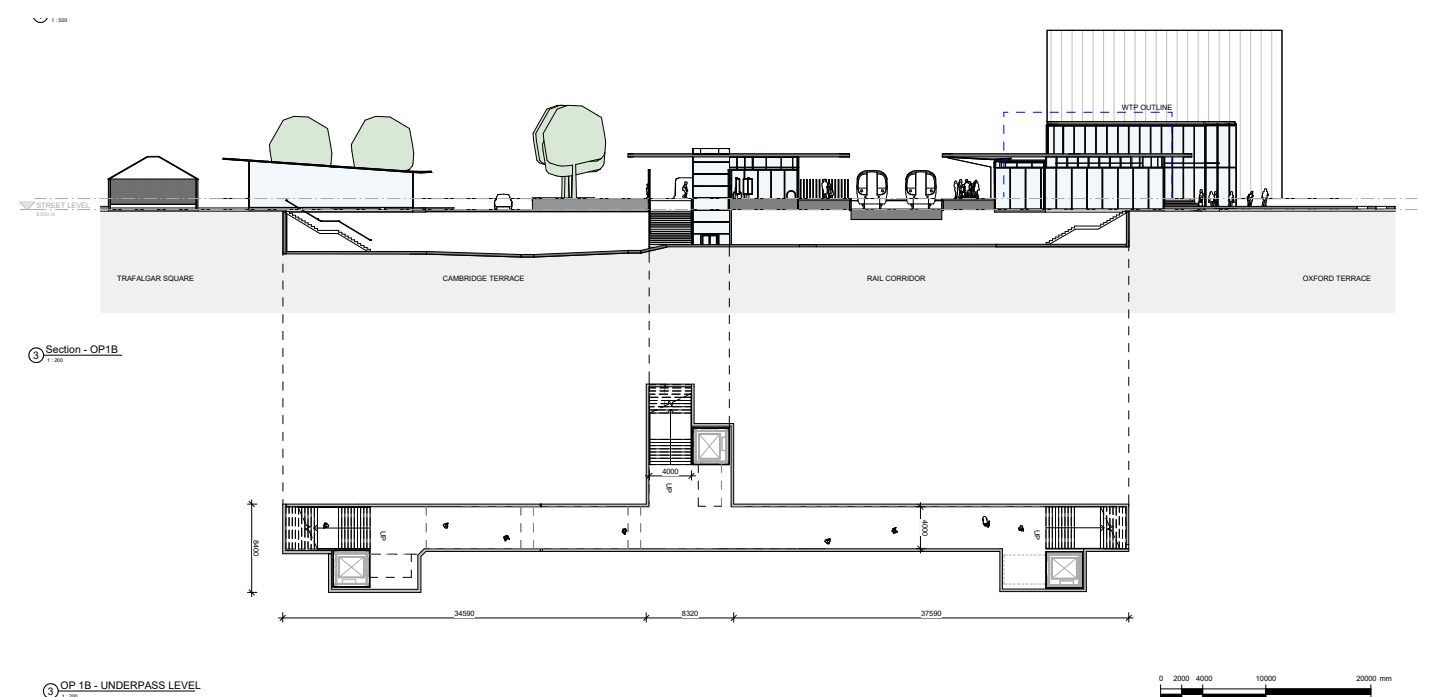
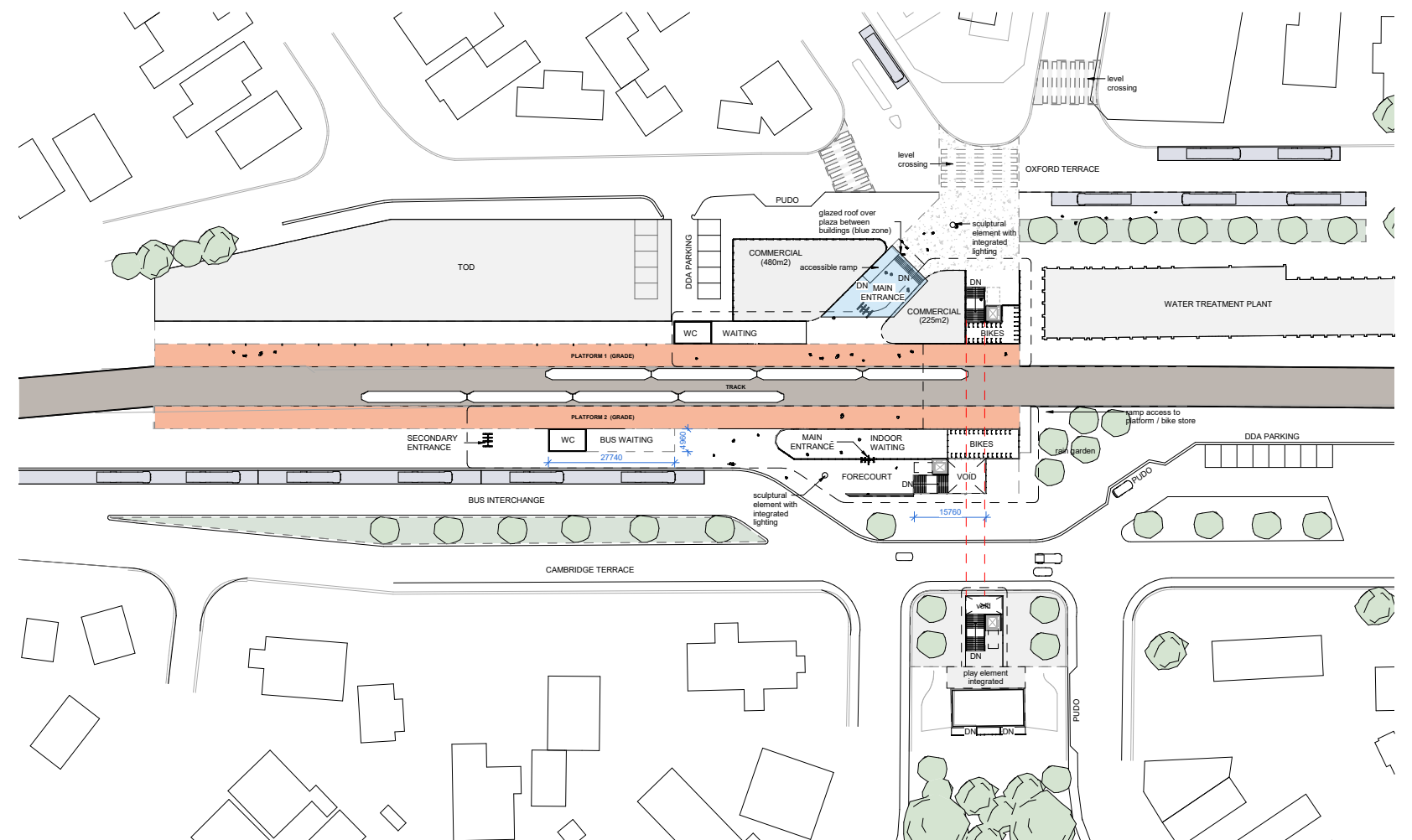
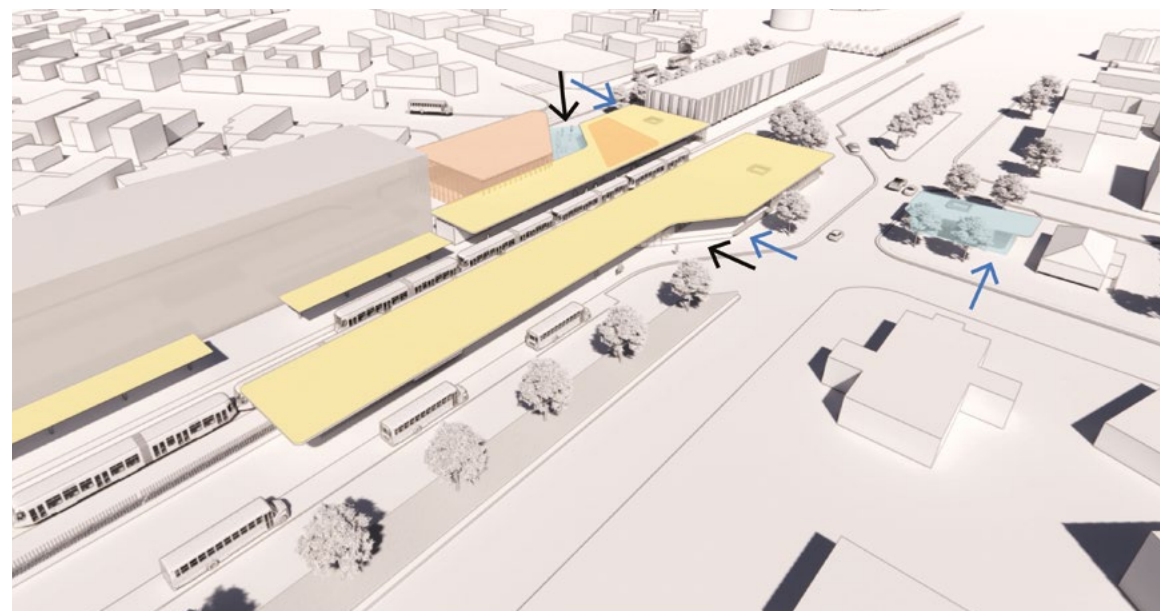
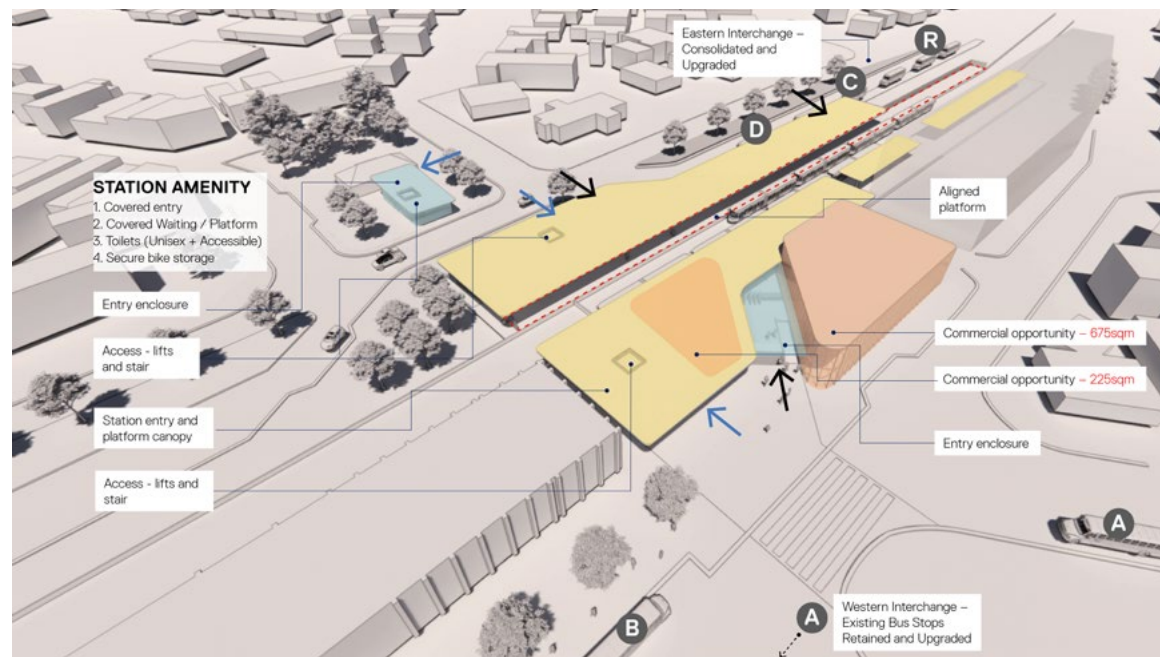


Figure 19: Section through cross corridor connection



9.4 Option 1Bi

OPTION 1BI DESCRIPTION

Option 1BI is defined by the following key configuration elements that differentiate it from other options:

- **Platform:** Aligned and upgraded platforms, with Platform 2 repositioned to align with Platform 1, while maintaining the required 5m clearance from the Water Treatment Plant.
- **Cross-corridor Access:** upgraded underpass providing access Oxford Terrace to Cambridge Terrace, at-grade pedestrian crossing between Cambridge Terrace and Trafalgar Square, serving both commuters and the wider community.
- **Vertical Circulation:** 2 sets of new enclosed sheltered entries with compliant stairs to provide more direct and legible access and connectivity, with lifts for accessibility.

Secondary Station Elements (not key differentiators due to comparable treatment across options):

- **Canopy:** Entry and platform canopies with associated seating on platform to meet requirements of the brief (70% of platform cover).
- **Station Amenities:**
 - Including weather protected (tempered or conditioned) waiting areas with seating,
 - public toilets – 1 toilet block on each platform with: 1 accessible and one unisex toilet,
 - bike parking - 100,
 - provision for station closure – fencing around the perimeter of the platform and clearly identified entry points futureproofing gateline.
- **Commercial Opportunities:** 480m² within the station footprint,

Common Elements Across All Options:

- **Bus Interchange:** Integrated with the station with optimally configured station entries and forecourts, the Eastern Bus Interchange Upgraded and consolidated; and Western Bus Interchange retains and upgrades existing bus stops.



Figure 23: View taken from Cambridge Terrace looking North

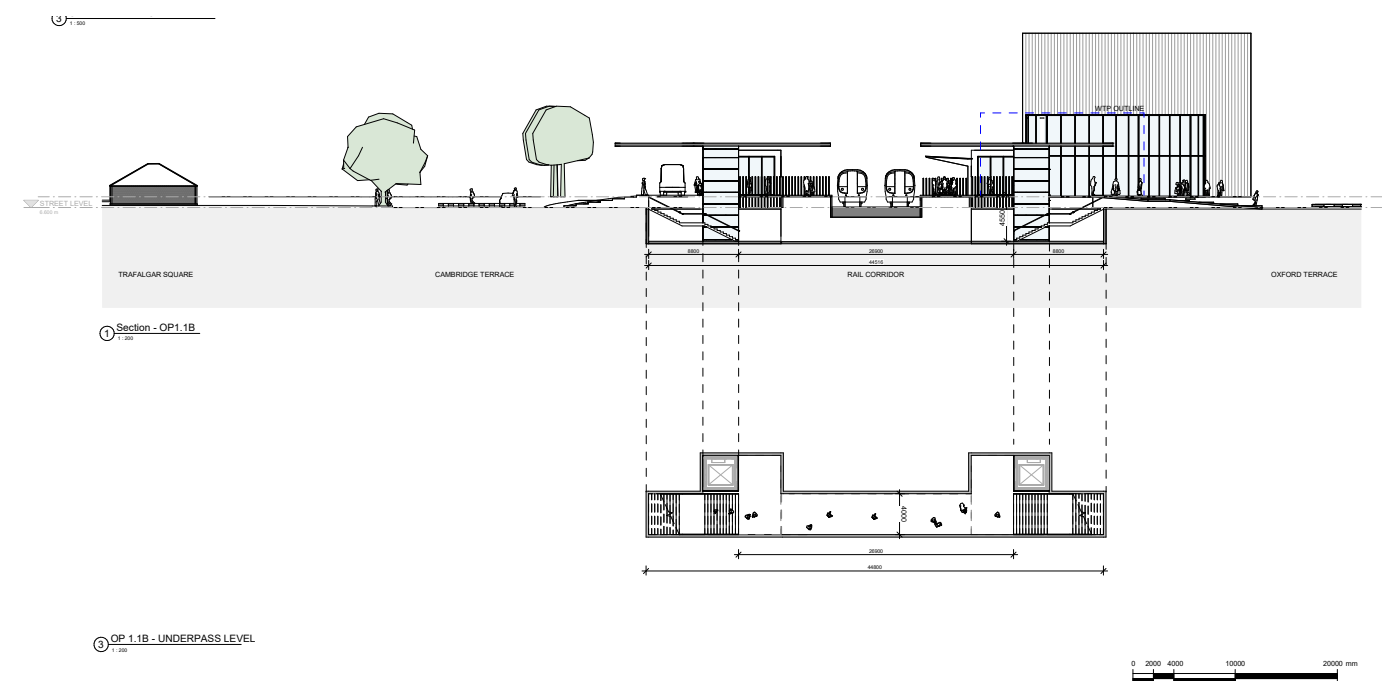


Figure 24: Section through cross corridor connection

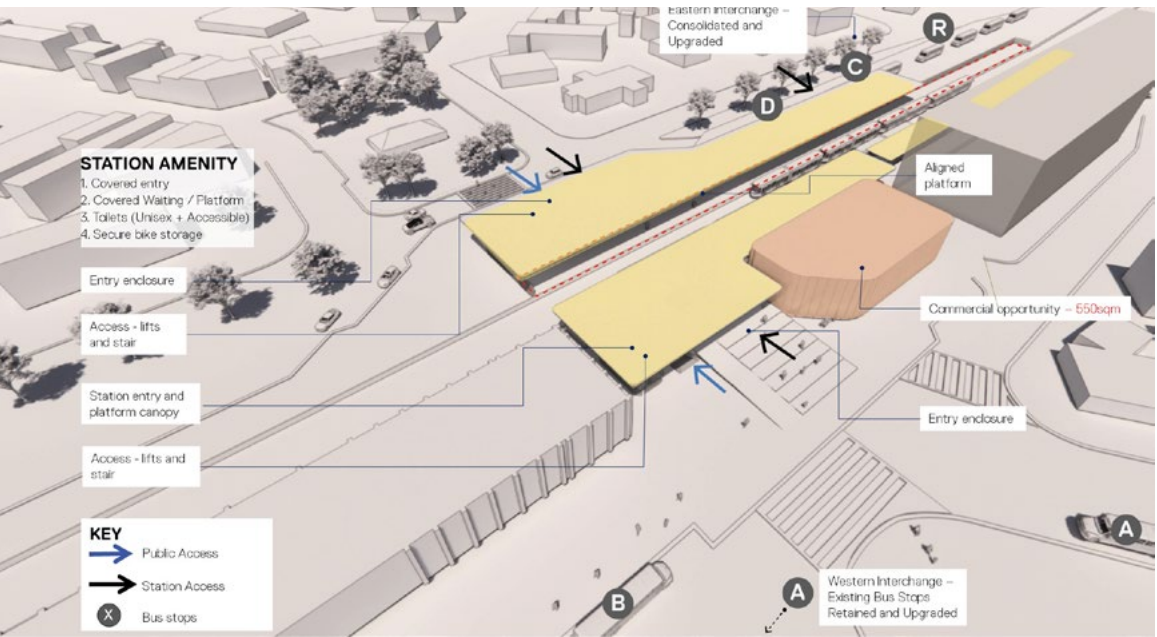


Figure 25: Aerial view from Oxford Terrace

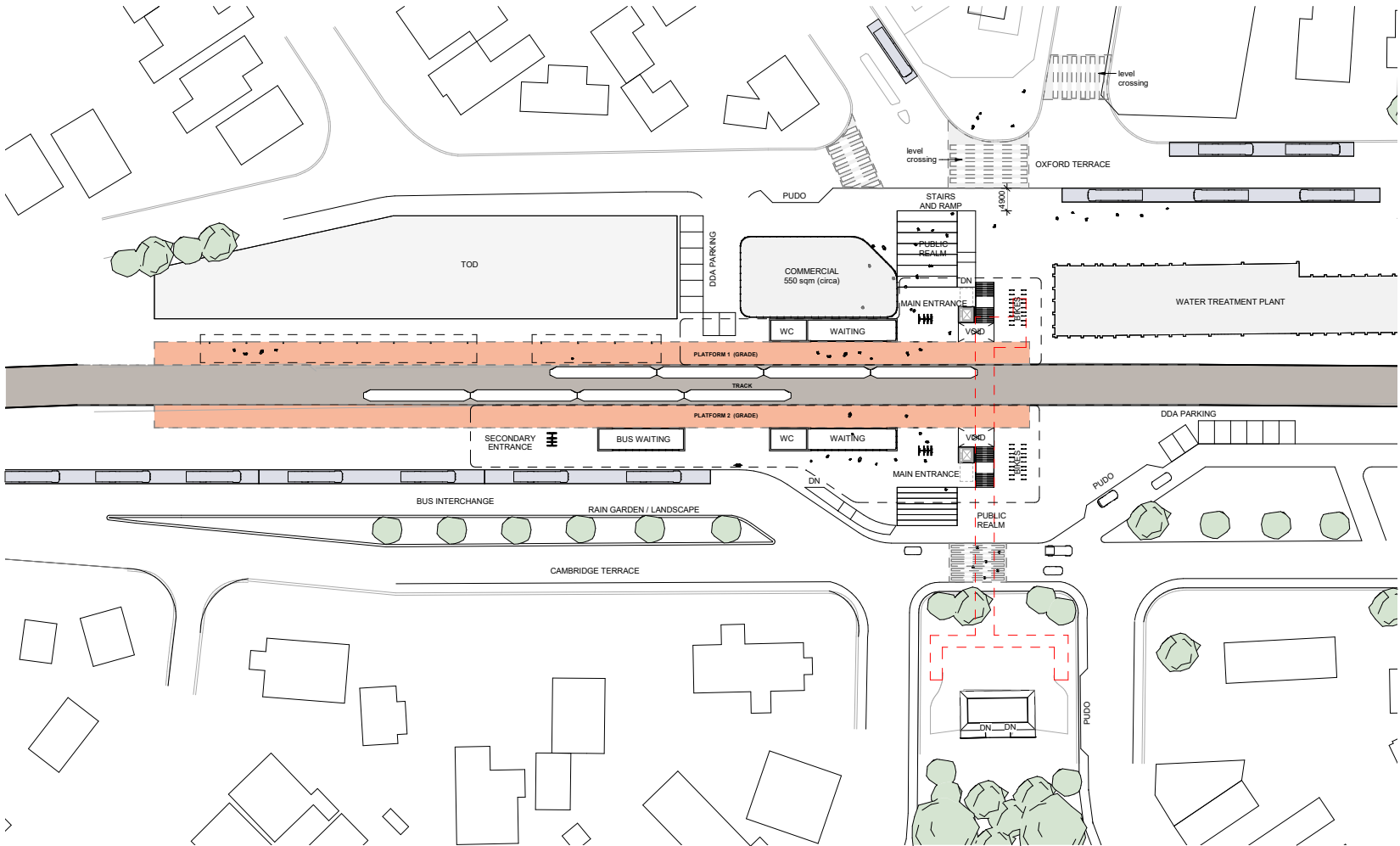


Figure 26: Station and interchange plan

9.5 Option 2

OPTION 2 DESCRIPTION

Option 2 is defined by the following key configuration elements that differentiate it from other options:

- **Platform:** Existing configuration of the platforms, upgraded, Platform 1 maintain to maintain the required 5m clearance from the Water Treatment Plant.
- **Cross-corridor Access:** upgraded underpass providing access Oxford Terrace through to Trafalgar Square, beneath Cambridge Terrace for both rail and bus commuters and the wider community.
- **Vertical Circulation:** 3 sets of new enclosed sheltered entries with compliant stairs to provide more direct and legible access and connectivity, with new compliant ramps for accessibility.

Secondary Station Elements (not key differentiators due to comparable treatment across options):

- **Canopy:** Entry and platform canopies with associated seating on platform to meet requirements of the brief (70% of platform cover).
- **Station Amenities:**
 - Including weather protected (tempered or conditioned) waiting areas with seating,
 - public toilets – 1 toilet block on each platform with: 1 accessible and one unisex toilet,
 - bike parking - 100,
 - provision for station closure – fencing around the perimeter of the platform and clearly identified entry points futureproofing gateline.
- **Commercial Opportunities:** 480m² within the station footprint.

Common Elements Across All Options:

- **Bus Interchange:** Integrated with the station with optimally configured station entries and forecourts, the Eastern Bus Interchange Upgraded and consolidated; and Western Bus Interchange retains and upgrades existing bus stops.



Figure 28: View taken from Cambridge Terrace looking North

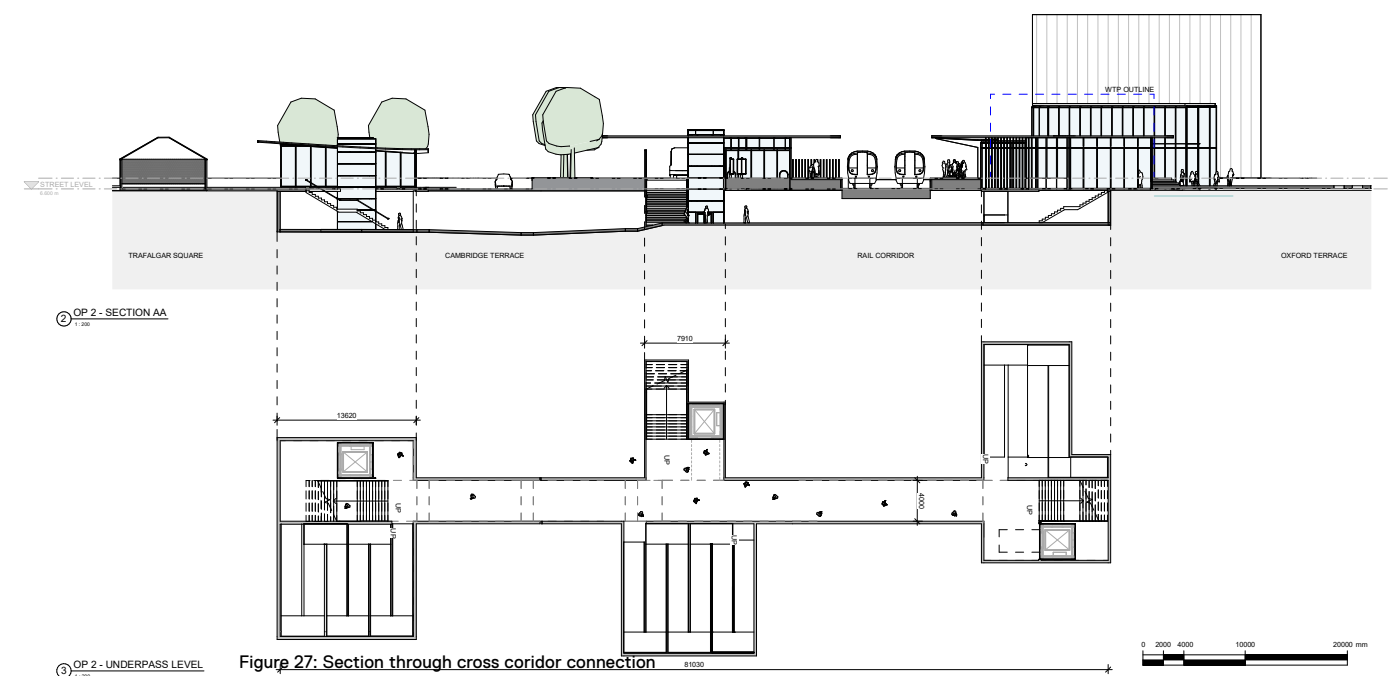


Figure 27: Section through cross corridor connection

Figure 29: Section through cross corridor connection

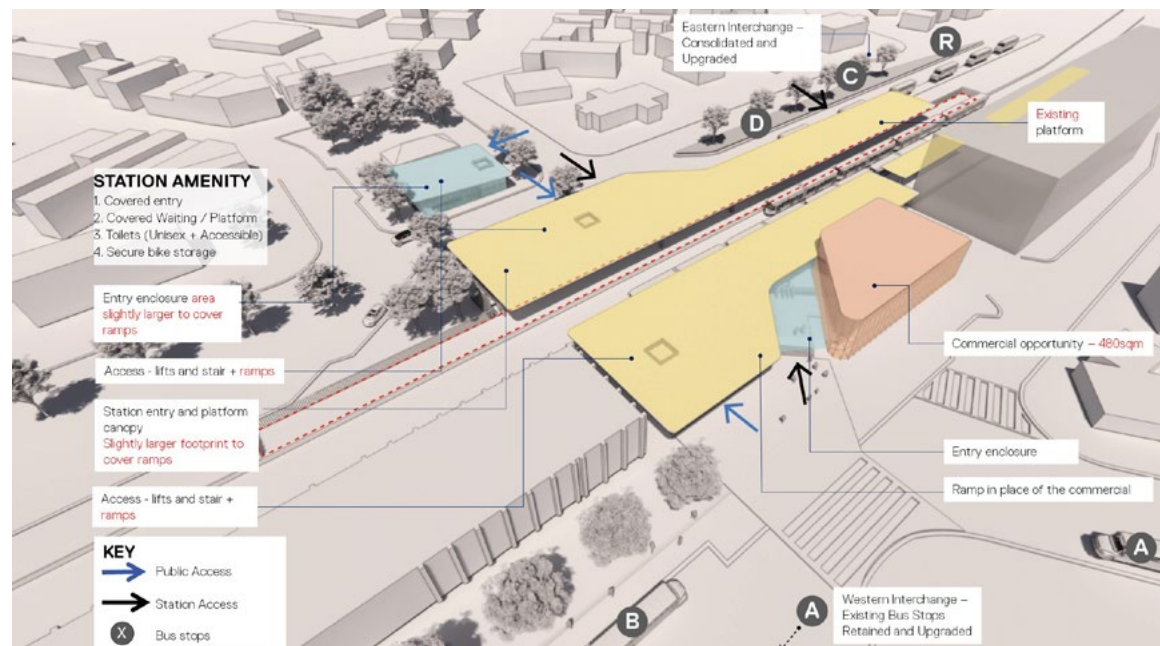


Figure 30: Aerial view from Oxford Terrace

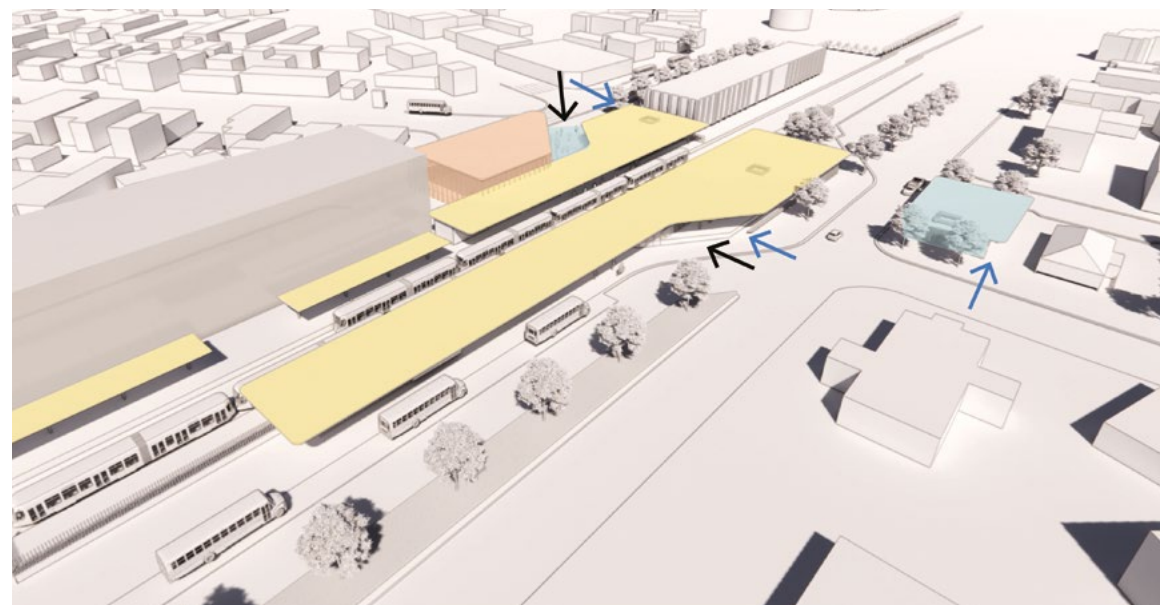


Figure 31: Aerial view from Cambridge Terrace

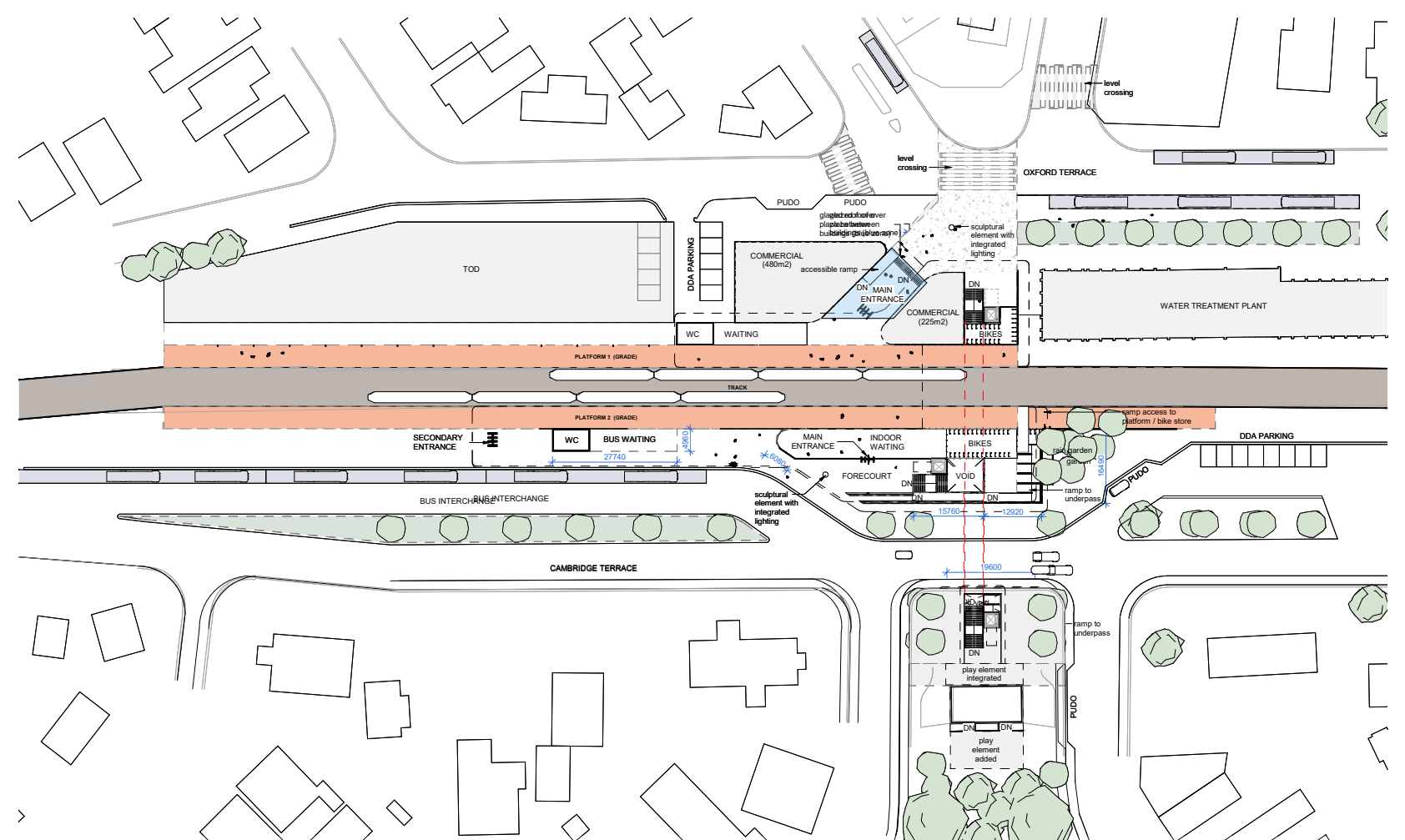


Figure 32: Station and interchange plan

9.6 Option 5B

OPTION 5B DESCRIPTION

Option 5B is defined by the following key configuration elements that differentiate it from other options:

- **Platform:** Aligned and upgraded platforms, with Platform 2 repositioned to align with Platform 1, while maintaining the required 5m clearance from the Water Treatment Plant.
- **Cross-corridor Access:** underpass remove, new overpass providing access Oxford Terrace through to Trafalgar Square, above Cambridge Terrace, for both rail and bus commuters and the wider community
- **Vertical Circulation:** 3 sets of new enclosed sheltered entries with compliant stairs and lifts for accessibility.

Secondary Station Elements (not key differentiators due to comparable treatment across options):

- **Canopy:** Entry and platform canopies with associated seating on platform to meet requirements of the brief (70% of platform cover).
- **Station Amenities:**
 - Including weather protected (tempered or conditioned) waiting areas with seating,
 - public toilets – 1 toilet block on each platform with: 1 accessible and one unisex toilet,
 - bike parking - 100,
 - provision for station closure – fencing around the perimeter of the platform and clearly identified entry points futureproofing gateline.
- **Commercial Opportunities:** 550m² within the station footprint.

Common Elements Across All Options:

Bus Interchange: Integrated with the station with optimally configured station entries and forecourts, the Eastern Bus Interchange Upgraded and consolidated; and Western Bus Interchange retains and upgrades existing bus stops.



Figure 33: View taken from Cambridge Terrace looking North

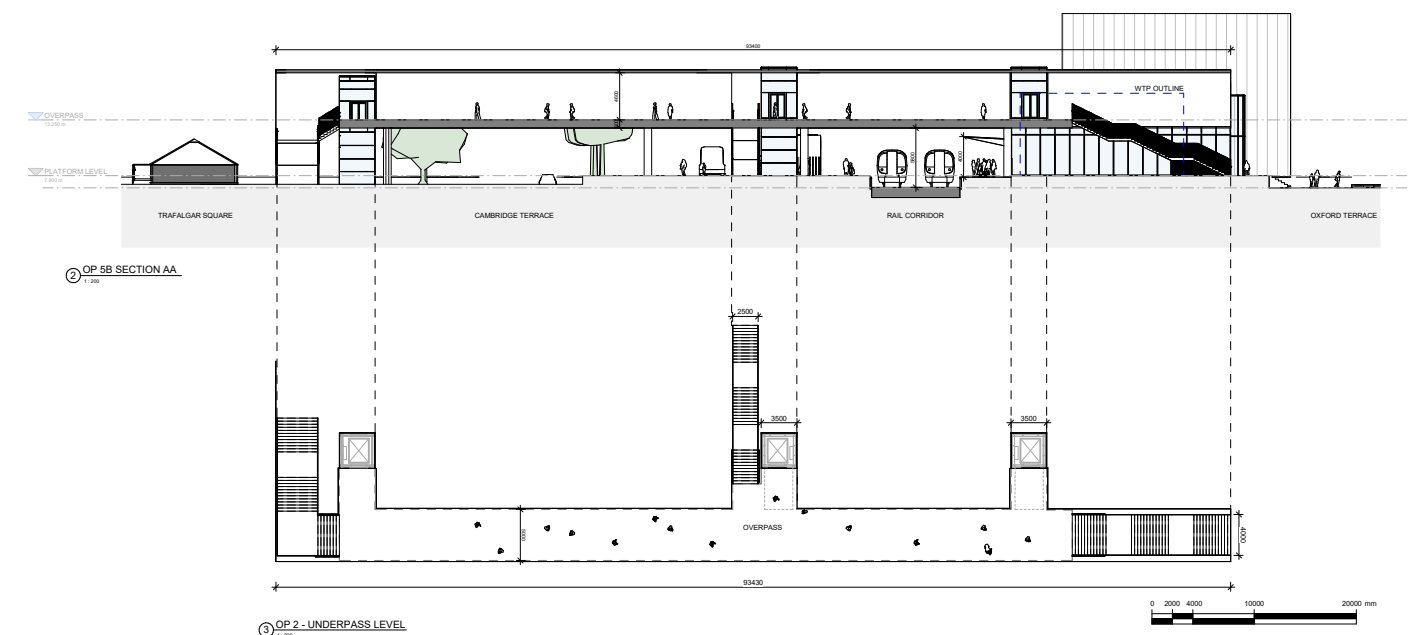


Figure 34: Section through cross corridor connection

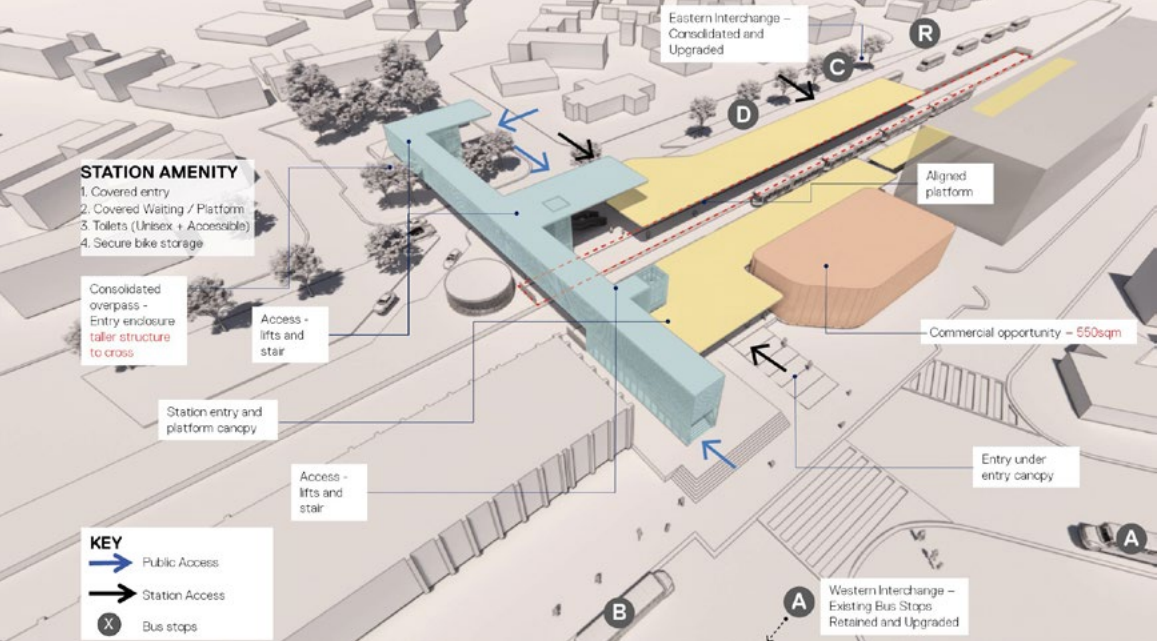


Figure 35: Aerial view from Oxford Terrace

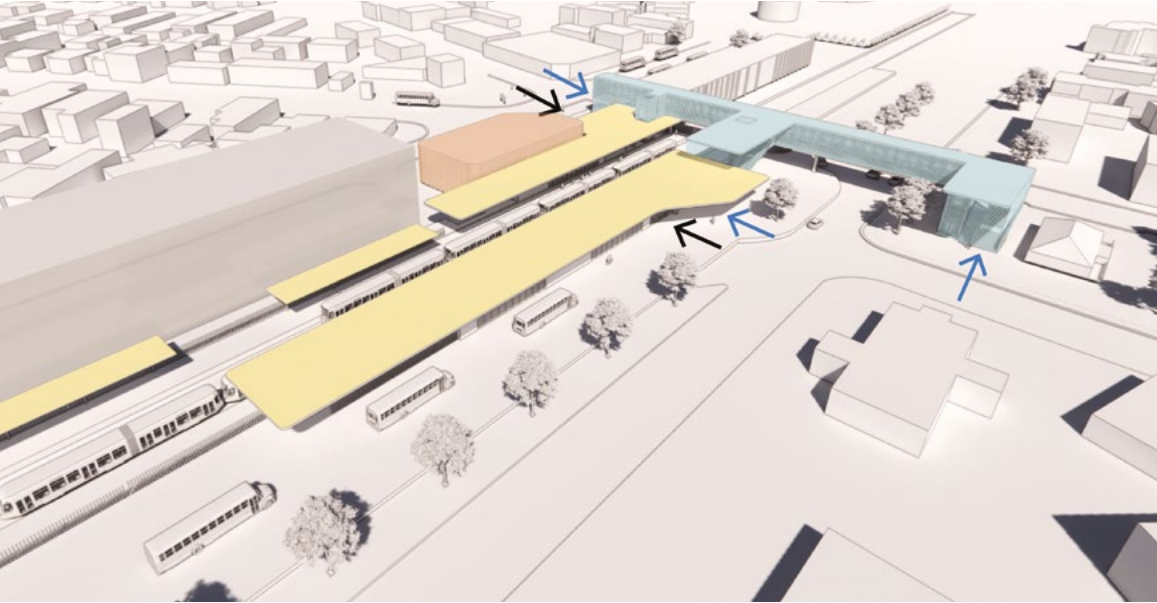


Figure 36: Aerial view from Cambridge Terrace

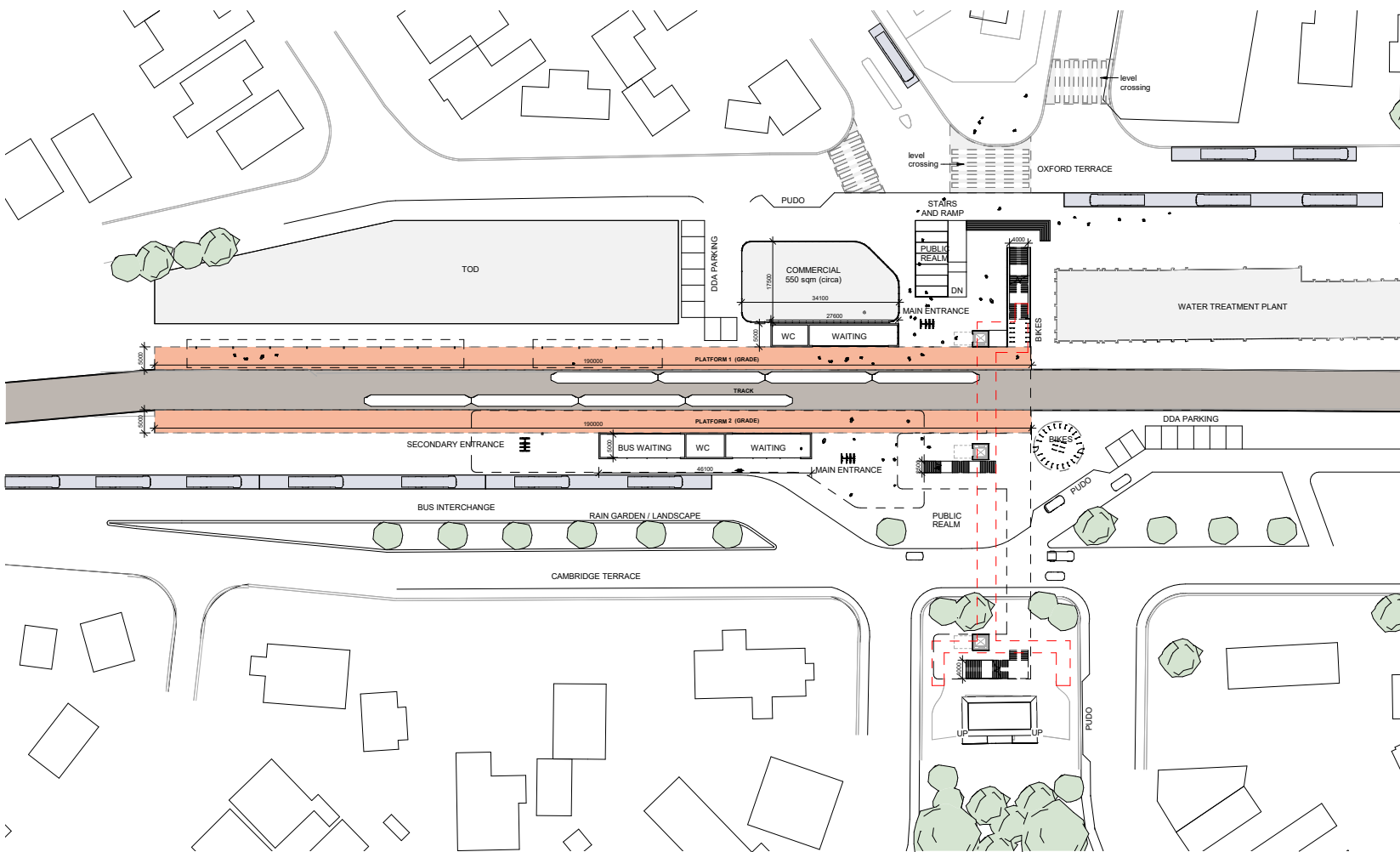


Figure 37: Station and interchange plan

9.7 Option 17 (Recommended Option)

OPTION 17 DESCRIPTION

Option 17 is defined by the following key configuration elements that differentiate it from other options:

- **Platform:** Aligned and upgraded platforms, with Platform 2 repositioned to align with Platform 1, while maintaining the required 5m clearance from the Water Treatment Plant.
- **Cross-corridor Access:** underpass remove, new overpass providing access Oxford Terrace to Cambridge Terrace, at-grade pedestrian crossing from Cambridge Terrace to Trafalgar Square, for both rail and bus commuters and the wider community
- **Vertical Circulation:** 2 sets of new enclosed sheltered entries with compliant stairs and lifts for accessibility.

Secondary Station Elements (not key differentiators due to comparable treatment across options):

- **Canopy:** Entry and platform canopies with associated seating on platform to meet requirements of the brief (70% of platform cover).
- **Station Amenities:**
 - Including weather protected (tempered or conditioned) waiting areas with seating,
 - public toilets – 1 toilet block on each platform with: 1 accessible and one unisex toilet,
 - bike parking - 100,
 - provision for station closure – fencing around the perimeter of the platform and clearly identified entry points futureproofing gateline.
- **Commercial Opportunities:** 550m² within the station footprint.

Common Elements Across All Options:

Bus Interchange: Integrated with the station with optimally configured station entries and forecourts, the Eastern Bus Interchange Upgraded and consolidated; and Western Bus Interchange retains and upgrades existing bus stops.

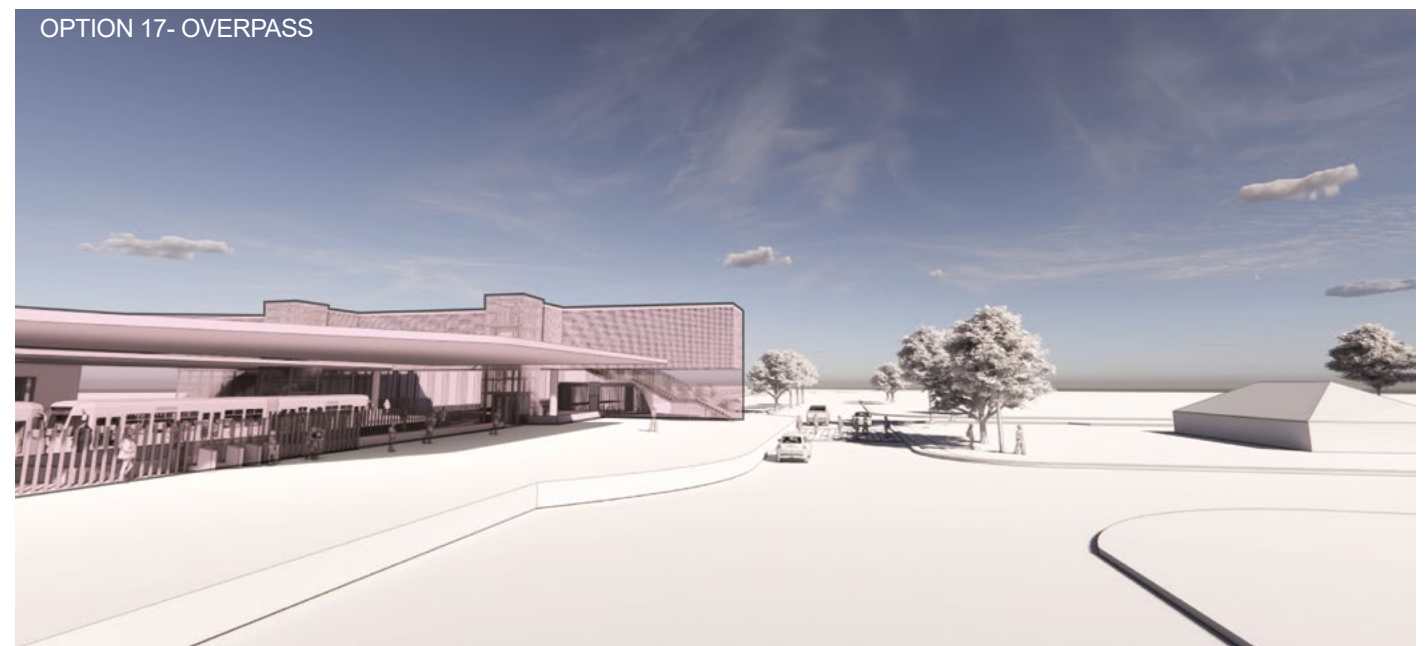


Figure 38: View taken from Cambridge Terrace looking North

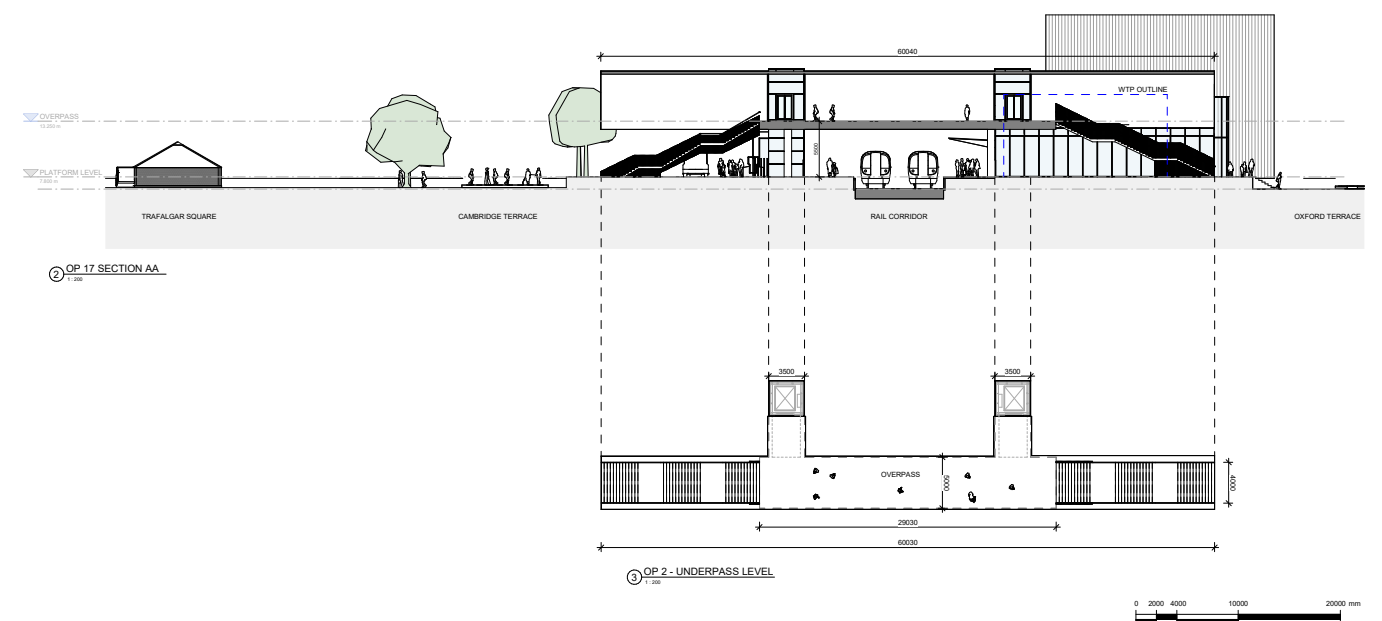
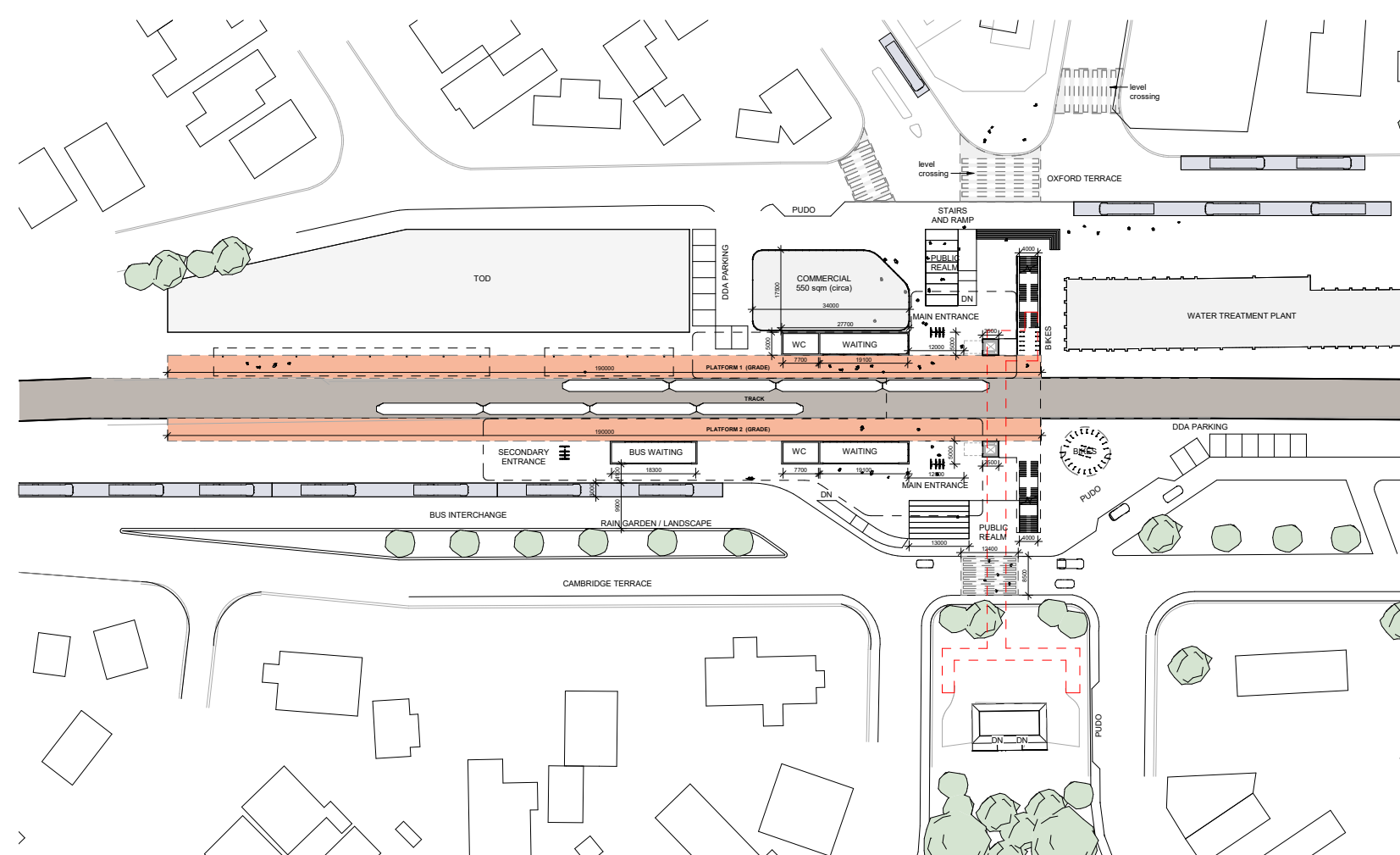
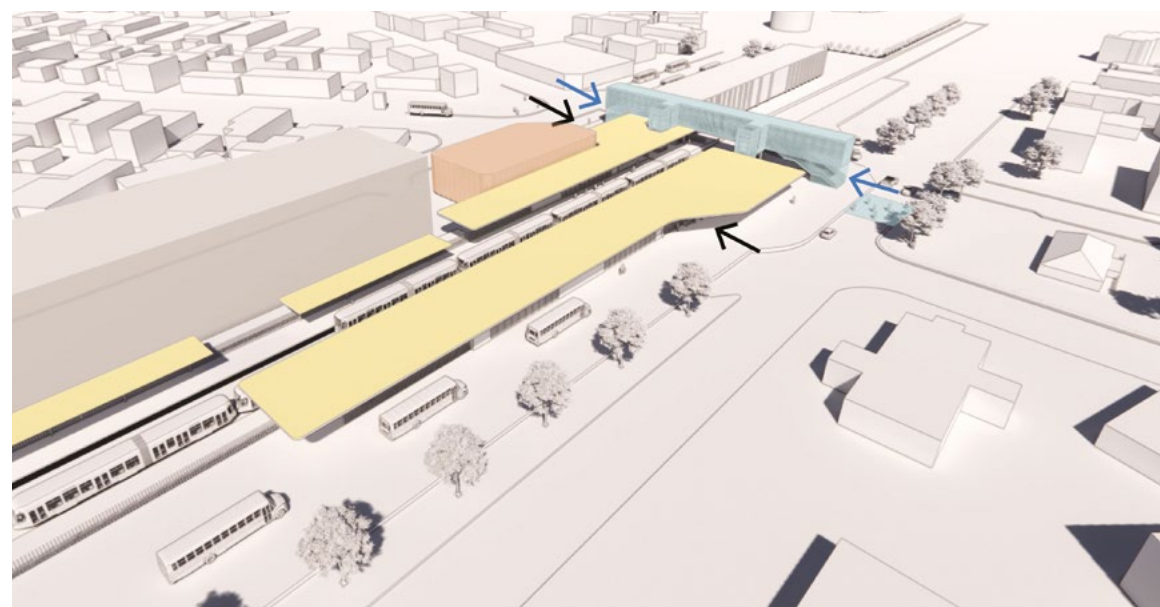
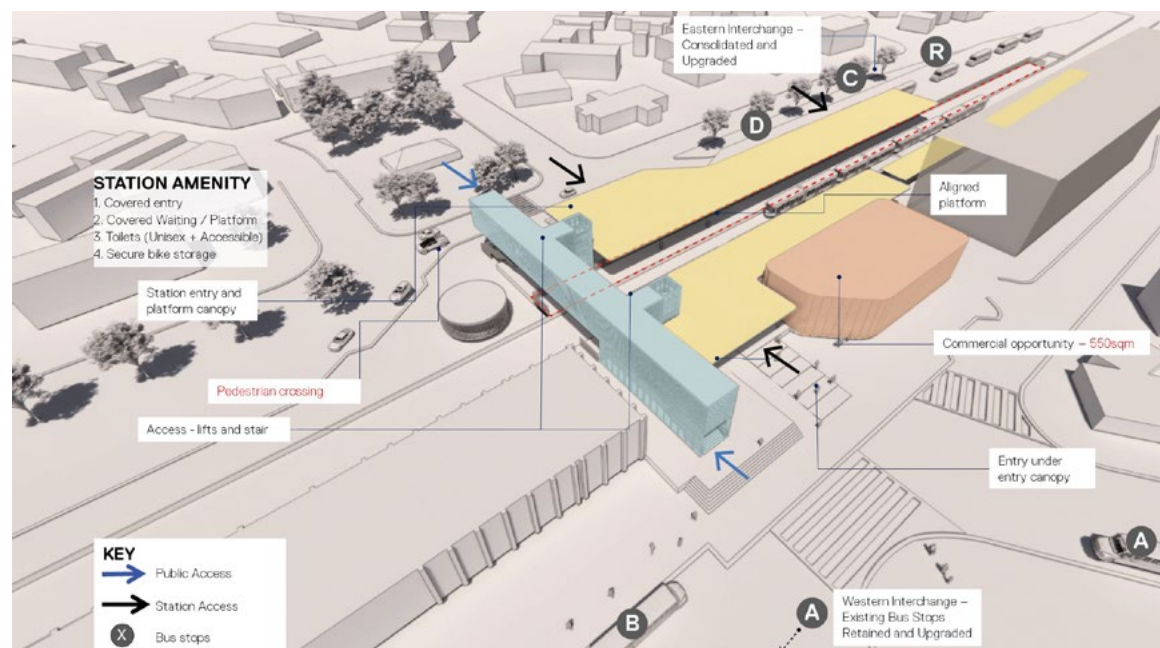


Figure 39: Section through cross corridor connection



10.0 ASSESSMENT OF SHORT LISTED OPTIONS

10.1 Shortlisted Option Evaluation Summary

CROSS-CORRIDOR ACCESS

Both options—Option 1Bi (underpass) and Option 17 (overpass)—feature a pedestrian crossing from Trafalgar Square to Cambridge Terrace and a shorter crossing between platforms. Option 17 stands out for offering a more legible and accessible station approach through an at-grade (eye-level) overpass, while underpass option 1Bi pose a flooding risk (no worse than current conditions) and the remaining life of the underpass is not confirmed. Additionally, the shorter overpass in Option 17 supports improved investment and construction staging, and offers opportunity for less interrupted rail operations during delivery.

VERTICAL TRANSPORT (VT) CONFIGURATION

Most shortlisted options include a combination of lifts and stairs. Although ramps provide greater long-term resilience, they were excluded due to the significant space they require. The overpass configuration in Option 17 also reduces the need for deep excavation, as lifts do not need to descend all the way to the underpass level.

LIFTS - PROS AND CONS

As part of the assessment, the pros and cons of incorporating lifts as an alternative to ramps were carefully considered. Overall, the benefits of lifts were found to outweigh the drawbacks and are summarised as:

PROS:

- Provide essential step-free access for wheelchair users, prams, elderly, and cyclists
- Compact footprint compared to ramps
- Faster and easier than stairs or long ramps
- Weather-protected and user-friendly

CONS:

- Maintenance and operational costs
- Risk of outages, impacting accessibility (able to be mediated with alternative access strategy)
- Limited capacity during peak times

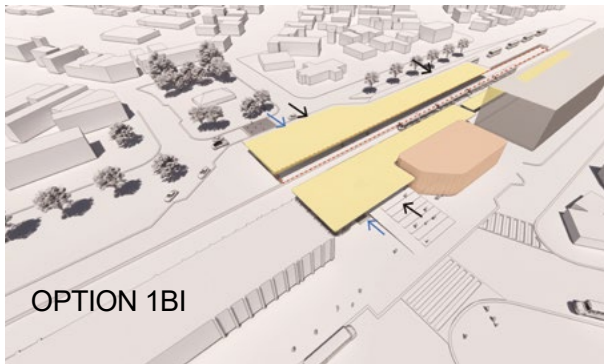
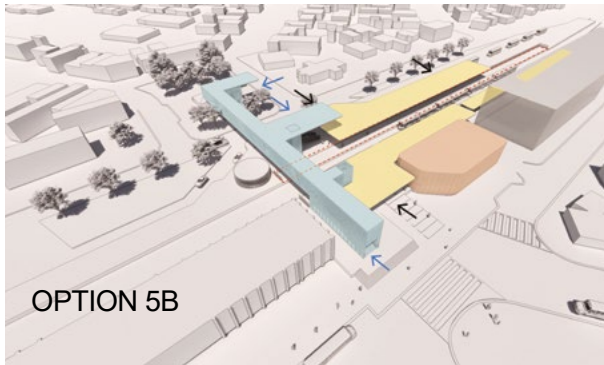
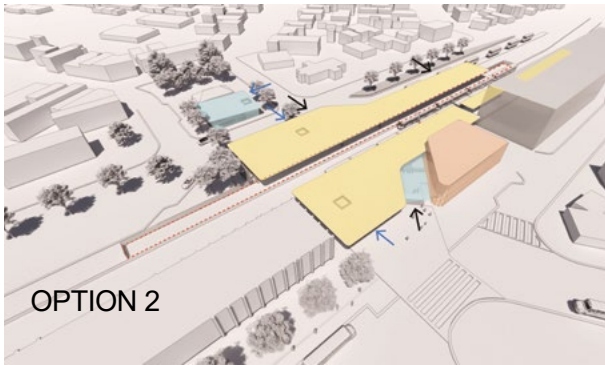
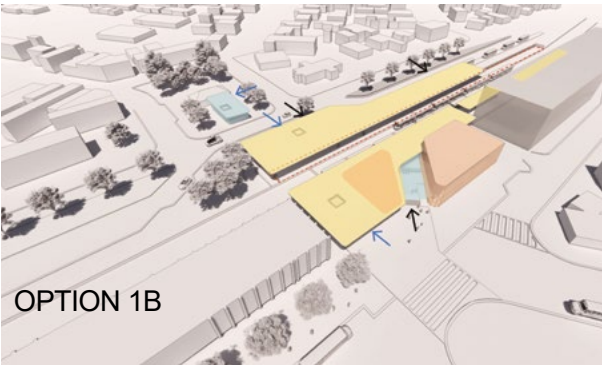
COMMUNITY CONNECTION, TRANSPORT INTERCHANGE, AND COMMERCIAL DEVELOPMENT

Both Option 1Bi and Option 17 score equally in terms of enhancing community connection, supporting a transport interchange, and enabling future commercial development. Each delivers comparable, positive outcomes in these areas.

STAGING AND ADAPTABILITY

All shortlisted options represent a significant improvement over existing conditions. The inclusion of an at-grade crossing in Option 17 reduces pressure on both the underpass and overpass, enhancing the long-term durability and flexibility of the station layout. However, the seismic performance of the underpass in option 1Bi remains a concern, particularly if resolving seismic results in a narrower structure and reduced capacity.

The full multi-criteria assessment (MCA) summary is provided in the appendix.



DO MIN (BASE CASE)	OPTION 1B	OPTION 2	OPTION 5B	OPTION 17	OPTION 1Bi
0	6	4	1	16	11
0.0	0.3	0.3	0.3	0.7	0.5
Discount	Discount	Discount	Discount	Progress	Discount

10.2 Assessment Criteria: Community Connections

COMMENTARY

All the options maintain step free and safe east–west connection for local community movements.

Options 17 and 1Bi introduce on at-grade pedestrian crossing over the Cambridge Terrace, which improves the visual and physical connection between the station and the village to the stations east (Trafalgar Square), particularly for morning commuters travelling into Wellington CBD. The visual and physical connection from the eastern village centre to the station is further enhanced by the removal of the above-ground structures associated with the current underpass.

Safety concerns associated with at the at-grade crossings—Cambridge and Oxford Terraces—have been addressed through the inclusion of raised crossings, traffic signals on Cambridge Terrace, and designated pedestrian crossings on the Oxford side (at Knights Road/Birch Street and Pohutukawa Street). These at-grade crossings also serve as a visual cue to drivers that they are entering a residential area, which is increasingly densifying. Currently,

Cambridge Terrace acts as a traffic corridor, reinforced by the rail line and dense tree planting along its edge. Creating a clear east–west pedestrian crossing between Trafalgar Square and the station frontage helps shift driver perception and encourages safer behaviour.

In the preferred option 17 - the proposed overbridge also offers a visible reference point, reinforcing the east–west link—something less apparent with an underpass. However, the overbridge does introduce a need for lifts to ensure access for cyclists and people with limited mobility. Unlike ramps or a new underpass with gradual slopes, the reliance on lifts introduces a potential vulnerability, as lift breakdowns could disrupt step-free access. It is therefore essential that the lifts are sized to accommodate bicycles and other users simultaneously, particularly during peak travel times.

Assessment Criteria Measure	Description of metric	Option Score					
		Do Min (Base Case)	Option 1B	Option 2	Option 5B	Option 17	Option 1Bi
Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times for the community, particularly school children walking to and from school.	Maintain the safe community connection from East to West (across rail corridor and Cambridge Terrace)	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)
	Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)	Neutral	Slight positive (+ve)	Moderate positive (+ve)	Slight positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)
Community Connections Average Score		0	1	1.5	1	1.5	1.5

10.3 Assessment Criteria: Transport Interchange

COMMENTARY

The proposed at-grade pedestrian crossing at Cambridge Terrace (Options 17 and 1Bi) offers a significant improvement in accessibility by minimising vertical level changes and reducing walking distances between the surrounding community, the station platforms, and the eastern bus interchange. This direct connection enhances permeability across the rail corridor and supports legible, low-effort transfers for all users, particularly those with mobility needs or travelling with luggage or bicycles.

The inclusion of lifts adjacent to each platform provides an efficient and inclusive vertical circulation option. By situating the lifts appropriately, the design minimises travel distances for passengers requiring step-free access, eliminating the need to rely on longer, circuitous ramp paths. This configuration supports a customer-centred station layout that aligns with modern expectations for universal accessibility.

However, careful attention is required in the detailed design of the overbridge stairs - particularly their landing points at ground level. It will be important to ensure that pedestrians crossing the rail corridor via the stairs are deposited near the platform entrances, so as not to be disadvantaged relative to those using the lifts. A misalignment in these connections could create inequitable travel paths and undermine wayfinding clarity and customer experience. This will need to be addressed through the next phase of design to ensure intuitive and equitable movement patterns are maintained across all access modes.

Assessment Criteria Measure	Description of metric	Option Score					
		Do Min (Base Case)	Option 1B	Option 2	Option 5B	Option 17	Option 1Bi
Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	Shortest walking distance route measured in minutes between transport modes.	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)
	Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)
Transport Interchange Average Score		0	1	1	1	2	2

10.4 Assessment Criteria: Enabling Commercial Development

COMMENTARY

One of the core design principles for the station and interchange was to optimise and minimise the station footprint, thereby freeing up land for potential commercial development. The proposed station layouts were intentionally compact, with a consistent planning approach applied across all options. This consistency allowed for clearer comparisons of footprint efficiency.

Options featuring aligned platforms, minimal level changes, and no ramps generally performed best. Underpass-based layouts tended to be the most space-efficient; however, the inclusion of ramps—particularly in Option 2—significantly increased the footprint and reduced overall efficiency.

Compact station layouts not only reduce reliance on land outside GWRC’s control but also enhance opportunities for transit-oriented development (TOD) around the station. A smaller station footprint also helps limit disruption to surrounding landholdings. Options with compact geometries and pedestrian crossings—such as Options

17 and 1Bi—performed particularly well. However, the inclusion of a pedestrian crossing at Cambridge Terrace, while contributing to a smaller footprint, will require further engagement with Hutt City Council.

At this stage, commercial development shown in the shortlisted options is indicative only and represents potential building footprints and configurations that support station operations. While the proposed footprints are broadly comparable across options, the scale and type of commercial development will be explored in more detail during future design phases.

10.5 Assessment Criteria: Stageable and Adaptable

COMMENTARY

All options improve on the current condition and are designed to meet a Level of Service (LOS) C through to 2030, 2046, and 2061 under normal operating conditions. The inclusion of at-grade crossings helps alleviate pressure on underpass and overpass infrastructure, supporting the long-term resilience of station assets.

All options are designed to meet future demand from the outset, as that was a design criterion, and were not specifically designed for demand-led staging. However, the addition of an overpass creates an opportunity to stage the station development—initially relying on the existing underpass, with the overpass delivered later as demand grows or as the underpass reaches the end of its service life. The pedestrian underpass can accommodate LOS C until 2061 under normal conditions, but only until 2046 under degraded conditions, with some uncertainty around its seismic performance if narrowed.

Criteria	Assessment Criteria Measure	Description of metric	Option Score					Option 1Bi	Comments
			Do Min (Base Case)	Option 1B	Option 2	Option 5B	Option 17		
Enabling Commercial Development	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.	Neutral	Slight positive (+ve)	Neutral	Slight positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)	Commercial area is based on footprint only at this stage - not no. of floors. Options with aligned platforms, without ramps and less level changes enable a more efficient station footprint.
		The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets	Neutral	Slight positive (+ve)	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	All options with aligned platforms, without ramps and less level changes enable a more efficient station footprint.
		The station and bus interchange is decoupled from the use of property not under control of GW	Neutral	Neutral	Neutral	Moderate negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	The overpass and pedestrian crossing at Cambridge Terrace will require engagement with Hutt City Council. A pedestrian crossing at Trafalgar Square will give public space back to HCC as the ramps and underpass would be removed.
Enabling Commercial Development Average Score			0	0.7	0	0.0	0.7	0.7	

Criteria	Assessment Criteria Measure	Description of metric	Option Score					Option 1Bi	Comments
			Do Min (Base Case)	Option 1B	Option 2	Option 5B	Option 17		
Stageable and Adaptable	Is demand led so that provides sufficient capacity, targeting a Level C level of service for rail passengers in the peak 15 minutes in the representative week in the busiest month (excluding disruptions) in 2025 and forecast passenger demand in its planned opening year of 2030 and by 2045 and 2060.	Provision of sufficient rail station capacity to achieve Level Service C for 2030, 2045 & 2060	Neutral	Slight positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)	Large positive (+ve)	Slight positive (+ve)	All options improve on the existing condition. Addition of At Grade crossing alleviates pressure on underpass / overpass and gives greater longevity to other station features. Unknown seismic performance of the underpass is a risk if the width of the underpass is reduced for future capacity demand. Existing underpass performs to a LOS C under normal conditions to 2060, but only 2045 under degraded conditions.
		Ability for rail station capacity to be staged to match demand in 2030, 2045 & 2060	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	No ability for demand led development because of insufficient up lift in demand and the capacity needed for basic requirements on opening day. Possible staging of overpass until that time that the underpass needs replacing.
Stageable and Adaptable Average Score			0	0.5	1	1	1.5	0.5	

10.6 Assessment Criteria: Construction and Delivery

COMMENTARY

The shortlisted design options have been developed to a level that supports only high-level assessments of constructability. Throughout the design process, there has been a conscious effort to incorporate the reuse of existing structures and reduce disruption wherever possible. However, it is acknowledged that any upgrade to the station, regardless of the option selected, will inevitably involve some level of disruption, including the base case

All options present construction complexities, particularly with respect to maintaining east–west connectivity, ongoing station operations, and working within constrained site conditions—especially if the station remains open throughout the works. Upgrades to the underpass are particularly challenging due to waterproofing requirements, the formation of new connections, and the need to maintain pedestrian access during construction.

In terms of programme, all options are expected to require a longer construction duration than the base case. Options involving significant excavation—such as Option 2 and

Option 5B—are likely to take more time to complete based on preliminary programme assessments. However, there may be opportunities to refine and optimise construction timeframes during the developed design phase.

Most construction works are proposed to be carried out outside of the active rail corridor. While some temporary closures may be required, it is expected these can be accommodated within planned Block of Line closures. Traffic management will be necessary across all options, with Options 17 and 1Bi likely to have greater impact on the active road corridor than the others.

Temporary east–west pedestrian connections will be required for certain options, such as Options 1B and 2. The specific location and design of these crossings will require further development. At this stage, the potential duration of full station closures is too uncertain to assess with confidence.

10.7 Assessment Criteria: Critical requirements

COMMENTARY

The critical requirements were to avoid any negative impacts on the Water treatment plant and related pipe network, as well as no negative impacts on the Waiwhetū Aquifer and groundwater.

All the station options have a 5m buffer allowance around treatment plant and avoids all below ground services. Further design will need to continue to avoid and provide opportunity for pipe maintenance or replacement in the future

All options can be taken forward without impacting the Aquifer based on the information known at this stage for the depth of the aquifer (approximately 15m).

Criteria	Assessment Criteria Measure	Description of metric	Option Score					Option 1Bi	Comments
			Do Min (Base Case)	Option 1B	Option 2	Option 5B	Option 17		
Construction and Delivery	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	Complexity of construction and staging for delivery	Neutral	Moderate negative (-ve)	Moderate negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Moderate negative (-ve)	All options have construction complexities with maintaining east/west connectivity, station operations, maintaining station operations, and constrained areas of works (especially if station remains open). The underpass upgrades have inherent complexities on waterproofing, construction new connections, and maintaining pedestrian connectivity.
		Duration to complete the overall construction	Neutral	Slight negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	All options will require a longer duration than the base case. Additional excavation for Option 2 and Option 5B do require more time based on high level programme. Opportunities to refine this could be developed through developed design.
		Duration of rail corridor closures for construction	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Works to be constructed outside rail corridors. Closures may be required but these should be able to be accommodated within programmed Block of Line Closures
		Road corridor impacts and Traffic management for construction	Neutral	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	All options will require traffic management. Option 17 and 1Bi will require more work within active roadway than other three options.
		Duration of closure of east west connection across the rail corridor	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Temporary crossing for Option 1 / 2b - location of this bridge would require further development.
		Duration of station closure	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Too difficult to assess at this stage.
Construction and Delivery Average Score			0.0	-0.7	-0.8	-0.7	-0.7	-0.8	

Criteria	Assessment Criteria Measure	Description of metric	Option Score					Option 1BI	Comments
			Do Min (Base Case)	Option 1B	Option 2	Option 5B	Option 17		
Critical Requirements	Does not result in negative impacts on water quality or supply, from the structure, foundations and utilities servicing the rail station and interchange that are in the vicinity the Waiwhetū Aquifer, existing potable water infrastructure network and Waterloo Water Treatment Plant.	Impact on the Water treatment plant and related pipe network	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Station has a 5m buffer allowance around treatment plant and avoids all below ground services. Further design will need to continue to avoid and provide opportunity for pipe maintenance or replacement in the future
		Impact on the Waiwhetū Aquifer and groundwater	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	All options can be taken forward without impacting the Aquifer based on the information known at this stage for the depth of the aquifer (approx 15m).
Critical Requirements Average Score			0	0	0	0	0	0	

10.8 Assessment Criteria: Technical Requirements

COMMENTARY

The shortlisted station and interchange options have been assessed against a range of technical criteria, including constructability, environmental impact, operational performance, and future adaptability. Across all options, key design principles such as minimising the station footprint, reducing disruption, and enabling future commercial development have been consistently applied. Technically, all options are considered feasible, though they vary in complexity.

Platforms Options involving platform changes will impact underground services, but these impacts are considered manageable. Further design refinement will support the identification of mitigation measures to reduce or eliminate these impacts. All options ensure platforms are located above current and future flood levels.

Key Differentiator – Rail Crossing The most significant point of difference between options is how pedestrians and cyclists cross the rail corridor, and between the Oxford Terrace and Trafalgar Square. Overhead bridge options, particularly Options 5B and 17, tend to have fewer impacts on underground services and present lower flood risk due

to their elevated design. Compact station layouts—those avoiding long ramps or major level changes—perform better in terms of footprint efficiency and support for future transit-oriented development. All options offer improved weather protection for station users. However, Option 17 provides less coverage across Cambridge Terrace, which may affect the overall user experience.

Visual Impact: The overpass helps create a more legible connection across the rail corridor but may appear out of character, especially where it crosses road corridors. Option 17 has a reduced visual impact, as its overpass does not cross the road.

Traffic Impacts and Bus Interchange Circulation: The options 17 and 1Bi introduce at-grade pedestrian crossings, which brings some disruption to the road and bus network, especially where they intersect with controlled intersections. However, with appropriate traffic management and lighting strategies, these could support future network improvements. Ongoing consideration will be needed for how the interchange can support future land use and development.

Legibility and Wayfinding: Option 17 performs well in terms of legibility and accessibility, offering a more intuitive and direct route to the station via an at-grade entrance that aligns with users’ line of sight.

Safety and Crime Prevention: Crime prevention through design has been considered across all options. However, the large overbridge in Option 5B, particularly where it crosses Cambridge Terrace, may create spaces with poor visibility and the potential for loitering outside the station footprint. Other options generally enhance current conditions and allow for effective monitoring.

Impact on Park-and-Ride Capacity: All options result in a reduction in park-and-ride car parking spaces compared to the existing baseline. However, this is not a key differentiator, as parking space requirements are consistent across all options and defined in the technical specifications.

Provision for Future Fare Line: Each option allows for a fare line to be introduced in the future. However, adaptations to the current infrastructure would be necessary to enable this.

Maintenance Requirements: New mechanical systems and lifts introduced in some options will require additional maintenance. Ease of access and serviceability should be considered in the next design stages.

Climate Change Adaptation: Options that retain the underpass are considered to carry a higher flooding risk during severe storm events, although none perform worse than the current condition. All options must continue to address resilience to flooding, storm events, and temperature extremes.

Criteria	Assessment Criteria Measure	Description of metric	Option Score					Option 1Bi	Comments
			Do Min (Base Case)	Option 1B	Option 2	Option 5B	Option 17		
Technical requirements	Meets the technical requirements necessary for the construction, operation and consenting of the rail station, bus interchange and ancillary infrastructure and services	Impact on underground services	Neutral	Moderate negative (-ve)	Moderate negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Options with platform changes have an impact but all workable. Overhead options have a lesser impact on services below ground, and at Trafalgar Sq. Refinement to what can be mitigated to be further developed.
		Risk of station assets and access flooding from current day rainfall events, groundwater intrusion, watermain bursting	Neutral	Neutral	Neutral	Moderate positive (+ve)	Moderate positive (+ve)	Neutral	Platforms above flood levels (inc. future). Option 5b & 17 have lesser risk due to being above ground level.
		Visual impact of the proposed station and associated built components, when assessed against the future urban environment	Neutral	Moderate positive (+ve)	Moderate positive (+ve)	Moderate negative (-ve)	Slight positive (+ve)	Moderate positive (+ve)	Overpass provides legibility for connection over the rail corridor. Lesser impact for 17 as the bridge does not cross the road. Bridge over road is more out of character.
		Visual impacts of station built elements on Trafalgar Square	Neutral	Slight negative (-ve)	Moderate negative (-ve)	Large negative (-ve)	Large positive (+ve)	Large positive (+ve)	Options which require adaption to Trafalgar Square for increase ramp area and the overpass at Cambridge terrace are considered to have greater visual impact.
		Traffic impacts and turning circles to and from the Bus interchange	Neutral	Moderate positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)	Slight negative (-ve)	Slight negative (-ve)	Pedestrians crossing at grade will have impact on bus / road network as this is the only option which has a controlled intersection. There are ways this might be a positive for future networks. Working on the assumption that there would be a lighting interchange. Consideration is required for the future use & development.
		Station Horizontal and vertical weather protection for users	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight negative (-ve)	Slight negative (-ve)	All stations provide better weather protections in the station. The differentiator for Option 17 is the reduced protection across Cambridge Terrace.
		Legibility and wayfinding for users, e.g. easily identified entrances.	Neutral	Moderate positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)	Large positive (+ve)	Large positive (+ve)	Option 17 provides a more legible and accessible route to the station, as it is at grade (eye level).
		Safety and Crime prevention thorough design of station. Also applies to area around station	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight negative (-ve)	Moderate positive (+ve)	Moderate positive (+ve)	Large overbridge on option 5B across Cambridge Terrace may encourage loitering and poor lines of sight for security outside of the station. All other options can be monitored and improve existing condition.
		Impact on number of park and ride car parks against baseline	Neutral	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	These will all be less than base case - not a key differentiator between the options and no. of car parking spaces is prescribed in technical req, the same across all options.Parlan
		Ability to construct fare line in the future	Neutral	Large positive (+ve)	Large positive (+ve)	Large positive (+ve)	Large positive (+ve)	Large positive (+ve)	All options enable a fare line to be constructed in the future. Current condition will require adaption for this.
		Frequency and ability for infrastructure and systems to be maintained with ease	Neutral	Slight negative (-ve)	Slight negative (-ve)	Large negative (-ve)	Moderate negative (-ve)	Slight negative (-ve)	New Mechanical and lifts will require additional maintenance
		Adaptation to the effects of climate change e.g.: flooding, storm events, drought/heat waves	Neutral	Neutral	Neutral	Slight positive (+ve)	Slight positive (+ve)	Neutral	All options where the underpass is retained are considered a risk for flooding events, but are no worse than the existing condition.
Technical Requirements Average Score			0	0.4	0.3	-0.1	0.7	0.6	

10.9 Assessment Criteria: Sustainability

COMMENTARY

The sustainability assessment considered key environmental performance factors across each station option, focusing on emissions, energy use, stormwater management, and land disturbance.

Reuse of Existing Infrastructure (Carbon Emissions Proxy): All options involve some level of structural change. Those that do not retain the underpass perform worse, as they require its decommissioning and introduce more new construction.

Access to Sun / Passive Solar Gain: At both the platform and concourse levels, all options (including the base case) improve daylight access, as the new canopy design does not fully cover the tracks. The type of rail crossing is the key differentiator, with overpass options performing better by allowing more natural light to reach the platforms.

Energy Efficiency, Solar Generation & Stormwater Neutrality: These factors were not differentiators, as all options performed equally well. Each supports the integration of energy-efficient systems and photovoltaic (PV) panels, offering a clear improvement over existing conditions.

Similarly, all options can achieve stormwater neutrality, which represents an improvement over the existing conditions.

Soil Disturbance & Earthworks: This was the most significant factor in the assessment. Options involving platform re-alignment and lifts, particularly when combined with an underpass, require substantial excavation. The inclusion of ramps results in the greatest level of earthworks, leading to the lowest performance scores in this category.

While all options have potential for sustainable improvements (stormwater, solar, energy), those minimising structural change and excavation perform better overall. On balance the overpass options performed best in the sustainability assessment.

9.11 Cost Analysis

The shortlist of options have not been assessed on cost, but a comparative exercise of costs was undertaken to establish a value for money vs benefit analysis. All of the options had a comparatively similar rough cost estimate except for Option 5 which had a greater cost associated with the large overpass structure over Cambridge Terrace.

Criteria	Assessment Criteria Measure	Description of metric	Option Score					Option 1BI	Comments
			Do Min (Base Case)	Option 1B	Option 2	Option 5B	Option 17		
Sustainability	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused (Proxy for carbon emissions)	Neutral	Slight negative (-ve)	Slight negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Slight negative (-ve)	All options require some changes to the existing structure, options which do not retain the underpass will require decommissioning of the underpass, and the greatest amount of new structure.
		Achieving stormwater neutrality and quality	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	This can be achieved with all options, and improves existing condition.
		Access to sun, for light and provision of passive solar warmth	Neutral	Neutral	Neutral	Slight positive (+ve)	Slight positive (+ve)	Neutral	More natural light provided with the new canopy not covering the train tracks. Overpass able to access natural light and passive solar
		Use of energy efficient building services & PV panels for power generation	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	All options enable opportunities for solar generation, and are better than the existing condition.
		Minimum area of soil disturbance and amount of earth needing disposal	Neutral	Moderate negative (-ve)	Large negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Moderate negative (-ve)	Platform alignments, Introduction of lifts and options with ramps require large excavations / soil disturbance.
Sustainability Average Score			0	-0.2	-0.4	0	0	-0.2	

11.0 CONCLUSION & NEXT STEPS

SUMMARY

The comprehensive assessment of Waterloo station options demonstrates a careful balance between sustainability, technical performance, and cost considerations. While all options offer improvements over current conditions, the analysis finds that pedestrian overpass solutions generally yield the most favourable outcomes. However overall Option 17 is recommended as it offers the best overall balance across key evaluation criteria. While it closely competed with Option 1Bi, technical requirements and buildability were the deciding factors in its favour.

Moreover, although cost analysis did not serve as the primary differentiator—with the notable exception of the more expensive Option 5—all shortlisted options fall within a similar budgetary range, supporting a value-for-money approach when weighed against their respective benefits.

11.1 Recommendation

Option 17 is recommended as it offers the best overall balance across the key evaluation criteria. While closely comparable to Option 1Bi, technical requirements and buildability considerations give Option 17 the advantage. It provides a more legible and accessible station approach through an at-grade overpass, supports more efficient construction staging, and avoids flood risks associated with underpasses. Both options perform equally well in terms of community connection, transport interchange potential, and commercial development. However, the underpass in Option 1Bi presents long-term seismic risks. Overall, Option 17 delivers greater adaptability and resilience for the future station layout.

Option 17 is currently being developed to reference design level by the design team and will undergo a more detailed cost assessment based on greater detail and definition.

11.2 Next Steps

- Advance reference design for the preferred option 17.
- Engage with community stakeholders and relevant agencies to refine design elements and facilitate support and future approval.
- Develop a robust phasing and implementation plan that minimises disruption to rail and road operations during construction.
- Update the cost analysis for option 17, refining value-for-money considerations and enabling informed decisions for project funding and delivery.



View from Trafalgar Sq to Station

12.0 APPENDICES

12.1 STATION PROGRAM

WATERLOO STATION, INTERCHANGE PROGRAM AND PARAMETERS

The Station and Interchange requirements, along with the sizing of its elements, was developed during the Define and Discover stage. This was based on the client brief and technical requirements guided by relevant standards, as well as Design Team best practice inputs, which outlined elements and their sizing required for a modern, functional station.

Area requirements were developed based on these inputs, helping define the key components and their spatial needs. The technical requirements incorporated detailed specifications necessary for station operation, as informed by client expectations, relevant standards, and best practice guidelines. Some findings from the site investigations also informed the station program.

During the Feasibility Stage, the focus was on locating primary and secondary elements, establishing their bulk, sizing, spatial arrangement, and identifying any interdependencies.

Primary Elements:

- Platform / Concourse
- Interchange – (parameters further detailed in the next section)
- Cross-corridor access (for both commuters and community)
- Vertical circulation (lifts, stairs, and ramps)

Secondary Elements:

- Canopy - Entry and Platform canopy
- Commercial opportunity within station footprint
- Station amenity - including waiting areas, toilets, bike parking, station closure provision

STATION DESIGN ELEMENTS

- **Platform Length:** 190 meters
- **Side Platform Width (Minimum Operational):** 3m–5m
- **Island Platform Width (Minimum Operational):** 9.6m
- **Sheltered Waiting Area:** 247m²
- **Seating Capacity:** Minimum 60 seats

- **Public Toilets:** 1 fully accessible bathroom with at least 4 toilets, changing table in at least one accessible toilet
- **Platform Fixtures & Furnishings:** Bins and Seating

BUS INFRASTRUCTURE

- **Bus Layover Bays:** 2
- **Bus Stops:** 10 (subject to adjustment based on final design options)
- **Bus Shelters:** Use standard shelter kit of parts (size to be confirmed)
- **Weather Shelter** (Bus ↔ Rail Boarding): Required for protection during transfers

PARKING & ACCESS

- **Accessible Parking Bays:** Minimum 16
- **Emergency Vehicle Bay:** 1
- **Maintenance/Refuse Truck Bay:** Shared, 1 total
- **Public Connections** Across Rail Corridor: Direct and accessible—suitable for wheel users

BIKE FACILITIES

- **Bike Parking Formats:** Protected/secure types integrated to reduce concealment risk
- **Bike Parking Spaces:** Minimum 100 (client baseline: 32)

VERTICAL MOVEMENT & ACCESS

- **Stairs** – Outbound Platform: See Station Sizing Section
- **Stairs** – Oxford Terrace Access: See Station Sizing Section
- **Underpass:** See Station Sizing Section
- **Ramps:** See Station Sizing Section, Gradient Options: 1:20 (no handrails) or 1:12

ENVIRONMENTAL FEATURES

- **Shelter Orientation:** East/west aspect to ensure passive solar warmth and comfort during AM/PM peak periods

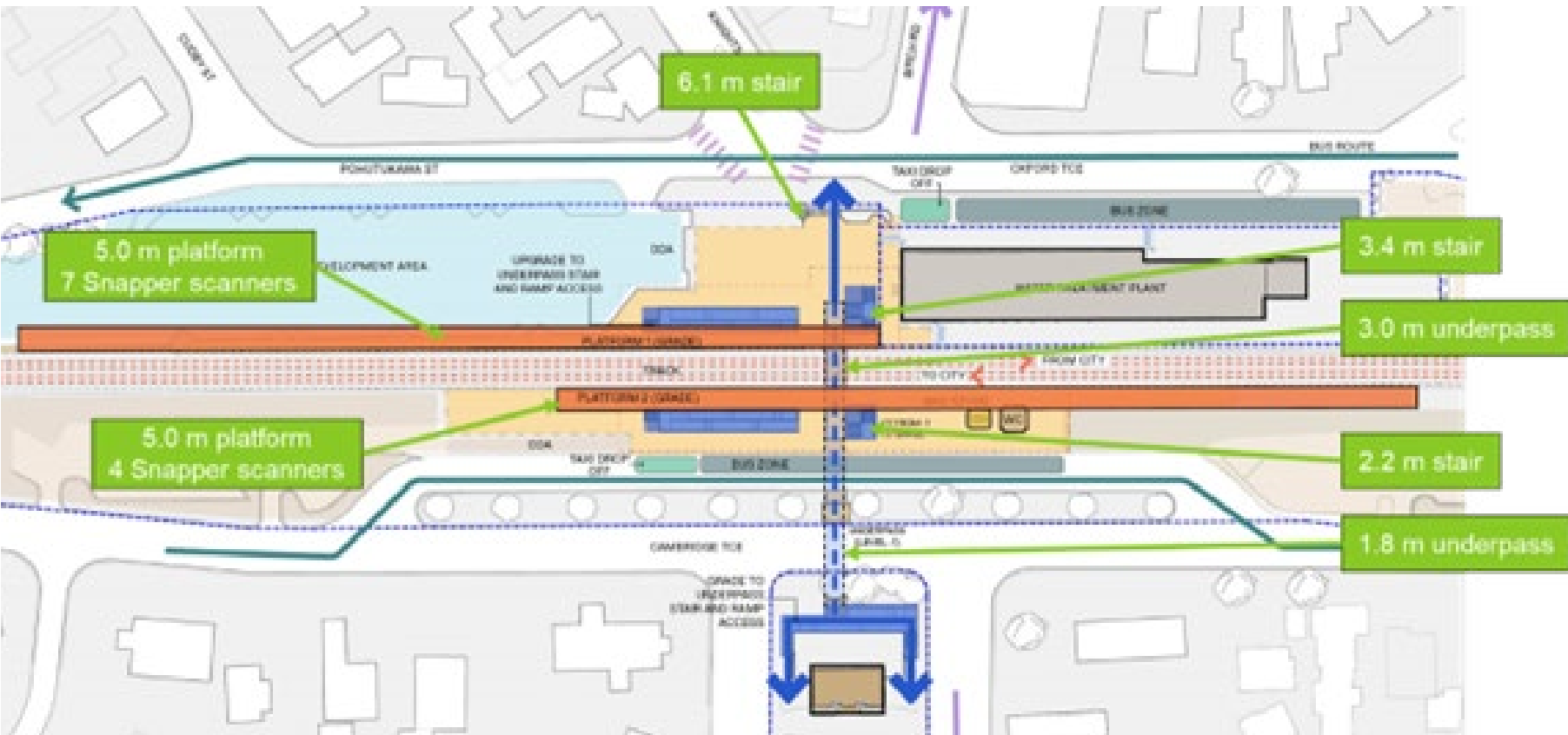


Figure 43: Station sizing diagram to achieve a LOS C or better (2046 design year)

12.2 ASSESSMENT CRITERIA

CRITERIA	ASSESSMENT CRITERIA MEASURE	DESCRIPTION OF METRIC
Community Connections	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times for the community, particularly school children walking to and from school.	Maintain the safe community connection from East to West (across rail corridor and Cambridge Terrace)
		Ability to achieve step free access for the community connec-tion from East to West (across rail corridor and Cambridge Terrace)
Transport Interchange	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between sched-uled services (e.g. bus to rail) that is consistent with the station hierarchy	Shortest walking distance route measured in minutes be-tween transport modes.
		Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.
Enabling Commercial Develop-ment	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decou-pled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.
		The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets
		The station and bus interchange is decoupled from the use of property not under control of GW
Stageable and Adaptable	Is demand led so that provides sufficient capacity, targeting a Level C level of service for rail passengers in the peak 15 minutes in the representative week in the busiest month (excluding disruptions) in 2025 and forecast passenger demand in its planned opening year of 2030 and by 2045 and 2060.	Provision of sufficient rail station capacity to achieve Level Service C for 2030, 2045 & 2060
		Ability for rail station capacity to be staged to match demand in 2030, 2045 & 2060
Construction and Delivery	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construc-tion impacts and disruptions	Complexity of construction and staging for delivery
		Duration to complete the overall construction
		Duration of rail corridor closures for construction
		Road corridor impacts and Traffic management for construc-tion
		Duration of closure of east west connection across the rail corridor
		Duration of station closure
Critical Requirements	Does not result in negative impacts on water quality or supply, from the structure, foundations and utilities servic-ing the rail station and interchange that are in the vicinity the Waiwhetū Aquifer, existing potable water infrastructure network and Waterloo Water Treatment Plant.	Impact on the Water treatment plant and related pipe network
		Impact on the Waiwhetū Aquifer and groundwater
Technical requirements	Meets the technical requirements necessary for the con-struction, operation and consenting of the rail station, bus interchange and ancillary infrastructure and services	Impact on underground services
		Risk of station assets and access flooding from current day rainfall events, groundwater intrusion, watermain bursting
		Visual impact of the proposed station and associated built components, when assessed against the future urban enivronment
		Visual impacts of station buillt elements on Trafalgar Square
		Traffic impacts and turning circles to and from the Bus inter-change
		Station Horizontal and vertical weather protection for users
		Legibility and wayfinding for users, e.g. easily identified entrances.
		Satety and Crime prevention thorough design of station. Also applies to area around station
		Impact on number of park and ride car parks against baseline
		Ability to construct fare line in the future
		frequency and ability for infrastructure and systems to be maintained with ease
		Adaptation to the effects of climate change e.g.: flooding, storm events, drought/heat waves
		Greatest amount of existing infrastructure that can be reused (Proxy for carbon emissions)
		Achieving stormwater neutrality and quality
Sustainability	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and opera-tion by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Access to sun, for light and provision of passive solar warmth
		Use of energy efficient building services & PV panels for pow-er generation
		Minium area of soil disturbance and amount of earth needing disposal

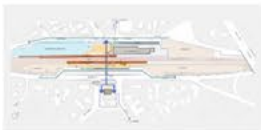
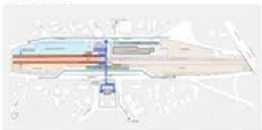
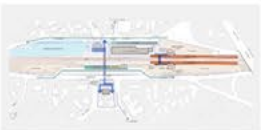
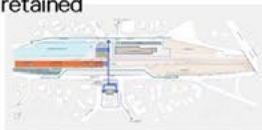
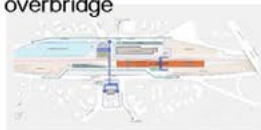
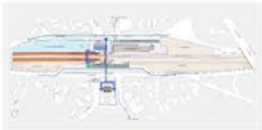
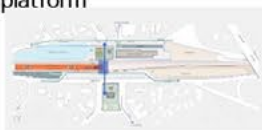
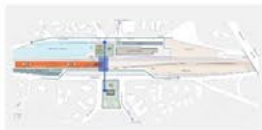
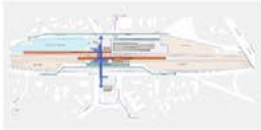
12.3 STAGE 1: LONGLIST & MCA WORKBOOK

Note: for complete Stage 1 supporting material refer to the Appendix folder

OPTION LONGLIST

PLATFORM LOCATION & CONFIGURATION

CORSS CORRIDOR ACCESS

SPLIT PLATFORM			ISLAND PLATFORM		
EXISTING	MOVE SOUTH	MOVE NORTH	CENTRAL	MOVE SOUTH	MOVE NORTH
Base Case	Platforms shifted South	Platforms shifted North – new overbridge	New island platform – underpass retained	New Island Platform – shifted South – underpass retained	New island platform shifted north – new overbridge
0  Upgraded platforms and underpass ramps & stairs	6  New overbridge – Underpass retained	9 	10 	11  New island platform – new overbridge	16 
1  Upgrade platforms – upgrade underpass – new lifts and stairs	7  New over bridge – underpass removed			12  New over bridge – underpass removed	
2  Upgrade platforms – reduced underpass access – new pedestrian crossing	8  upgrade platforms - upgraded underpass ramps and stairs plus, upgrade underpass entry			13  Rail under - island platform	
3  upgrade platforms – underpass removed – new overpass				14  Rail over - island platform	
4  upgrade platforms – underpass removed – new overpass				15  Rail over - island platform	
5  upgrade platforms – underpass removed – new overpass					

BASE CASE

REPAIR / REPLACE ROOF - MAINTAIN EXISTING

FEATURES:

- 1. Repair/replace station canopy and remove existing station building
- 2. Ongoing maintenance of aging amenity and assets

BENEFITS:

- Likely least expensive option (depending on results from soil testing / liquefaction trigger and analysis of tunnel performance)

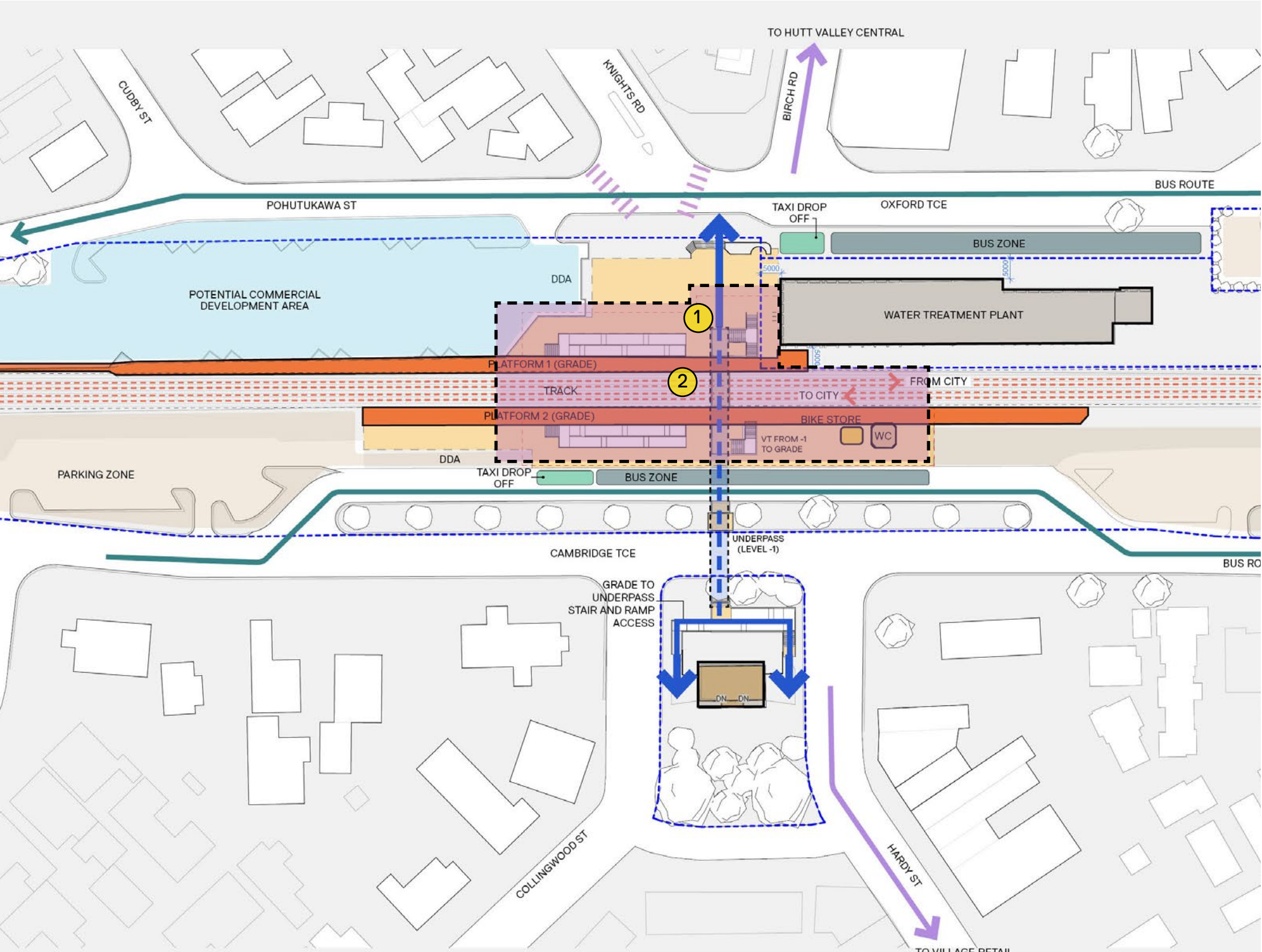
DISADVANTAGES:

- Possible concrete degradation, at year 37 of 50-year design life cycle

*Surface level changes to consolidate bus interchange, platform modifications / shelter (canopies) to be developed.

KEY:

- Platforms
- Concourse
- Bus zone
- Carparking
- Vertical Transport
- Taxi/PUDO
- GWRC Ownership



OPTION 01

UPGRADE PLATFORMS AND UNDERPASS RAMPS & STAIRS

FEATURES:

1. Upgrade platforms to meet Design Brief – increase length and width (190m long x 5m wide)
2. Shift northern platform away from water treatment plant (5 m buffer zone)
3. Upgrade underpass access:
 - a. Platform: increased ramp length and stair changes for BC compliance
 - b. Trafalgar Square and Oxford Terrace: increased ramp length and stair changes for BC compliance
4. Interchange upgrades
 - a. Upgrade bus interchange configuration on Cambridge Terrace and Oxford Terrace
 - b. Upgrade car parking arrangement

BENEFITS:

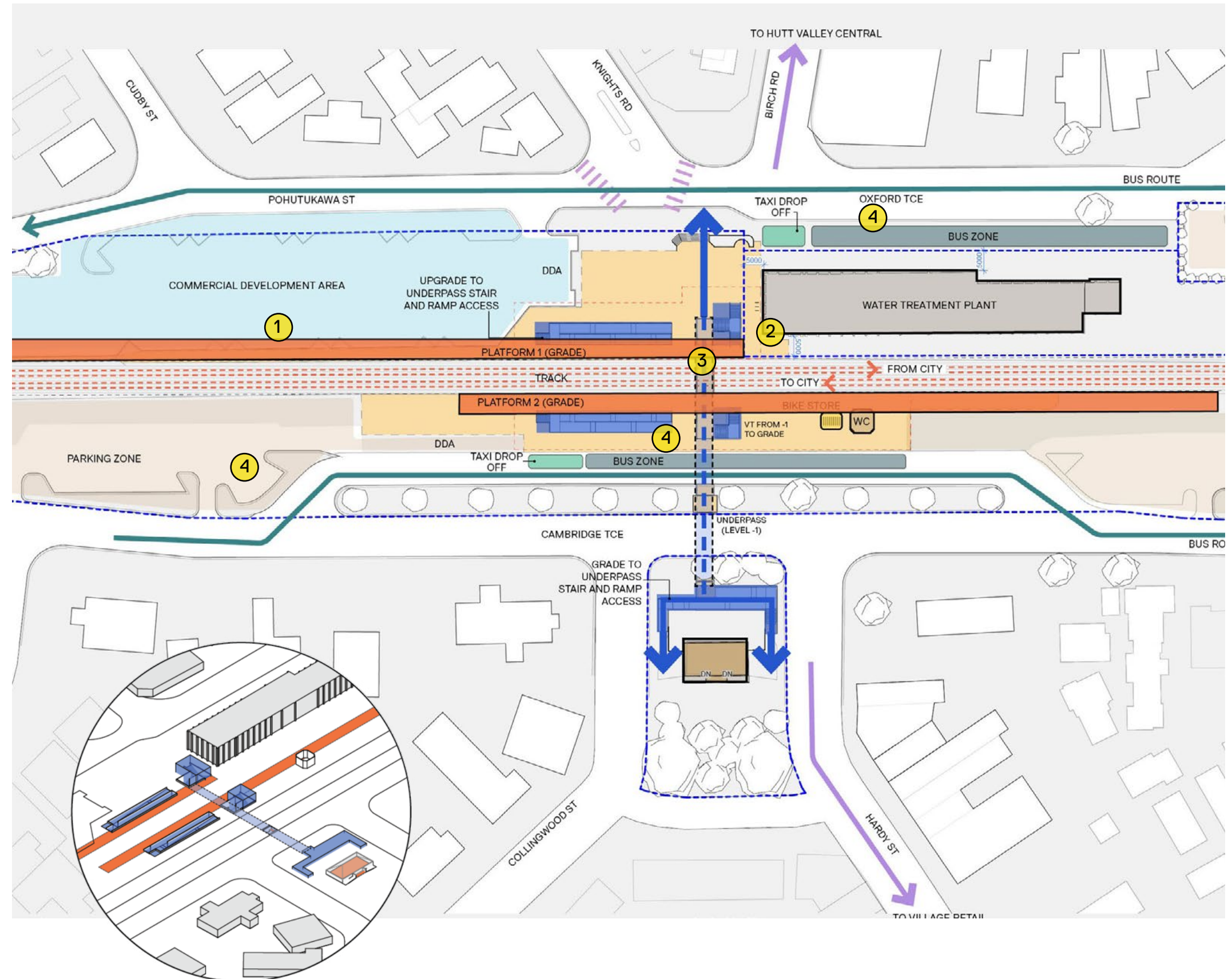
- Provides compliant platforms
- Provides DDA Compliant access through underpass and to platforms
- Retain existing underpass

DISADVANTAGES:

- Possible concrete degradation, at year 37 of 50-year design life cycle
- Potential challenges where stairs / ramp come into the 'side' of tunnel

KEY:

- Platforms
- Concourse
- Bus zone
- Carparking
- Vertical Transport
- Taxi/PUDO
- GWRC Ownership



CONCEPT 3D

OPTION 02

UPGRADED PLATFORMS - UPGRADE UNDERPASS - NEW LIFTS & STAIRS TO PLATFORM

FEATURES:

1. Upgrade platforms to meet Design Brief – increase length and width (190m long x 5m wide)
2. Upgrade underpass access:
 - a. New stairs and lifts
 - b. Increased ramp length and stair changes for BC compliance from Cambridge Terrace and Oxford Terrace
3. Shift northern platform away from water treatment plant (5 m buffer zone)
4. Interchange upgrades
 - a. Upgrade bus interchange configuration on Cambridge Terrace and Oxford Terrace
 - b. Upgrade car parking arrangement

BENEFITS:

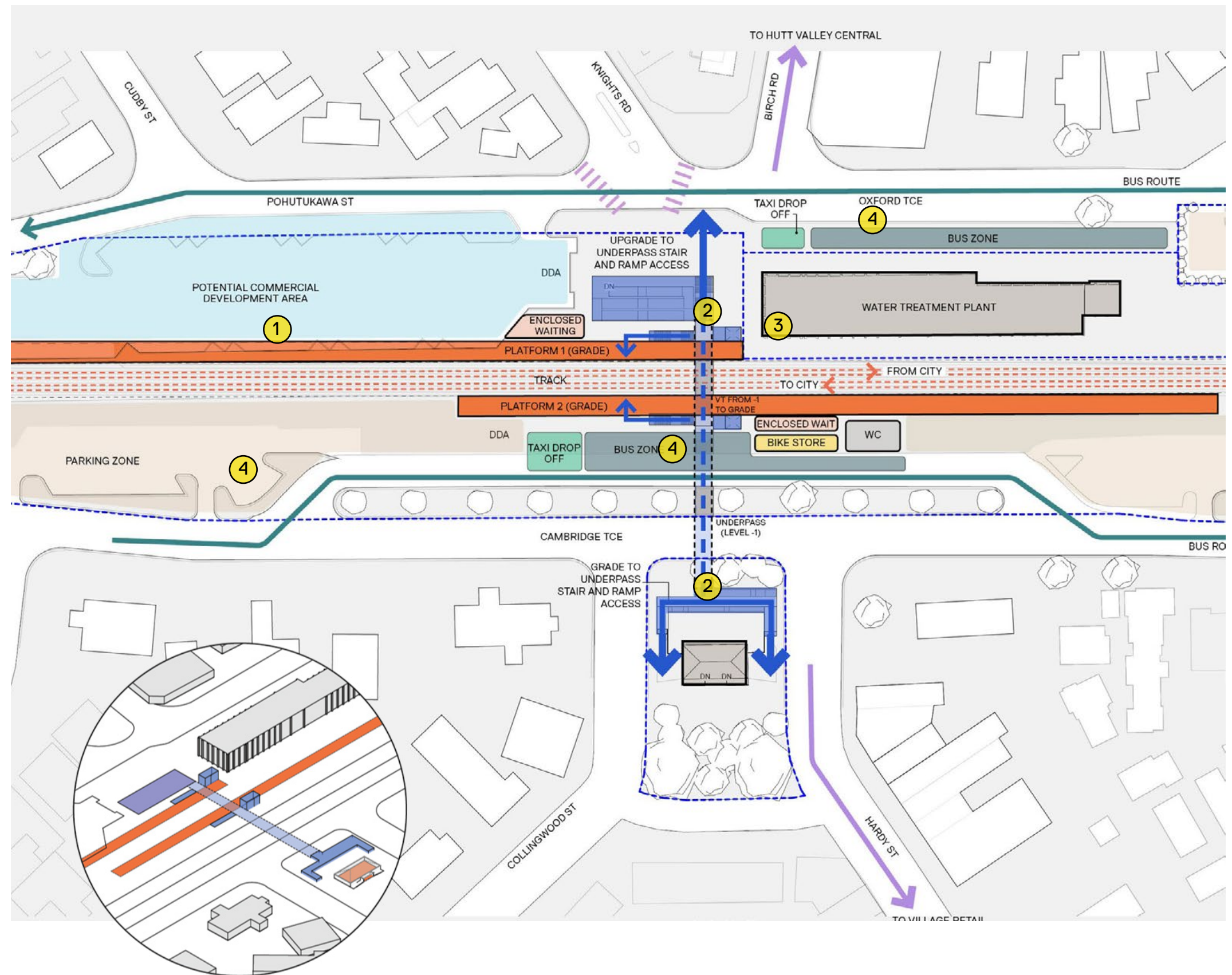
- Provides compliant platforms
- Provides DDA Compliant access through underpass and to platforms
- Improved vertical transport to platforms (lifts & updated stair access)
- Maintain existing underpass

DISADVANTAGES:

- Possible concrete degradation, at year 37 of 50-year design life cycle
- Potential challenges where stairs / ramp come into the 'side' of tunnel

KEY:

- Platforms
- Concourse
- Bus zone
- Carparking
- Vertical Transport
- Taxi/PUDO
- GWRC Ownership



CONCEPT 3D

OPTION 03

UPGRADED PLATFORMS - REDUCED UNDERPASS - NEW PEDESTRIAN CROSSING

FEATURES:

1. Upgrade platforms to meet Design Brief – increase length and width (190m long x 5m wide)
2. Introduction of a level crossing on Cambridge terrace for at grade station access
3. Upgrade underpass access
4. New stairs and lifts for accessible platform access (includes vertical transport)
5. Reduce length of underpass
6. Improved station entry experience

BENEFITS:

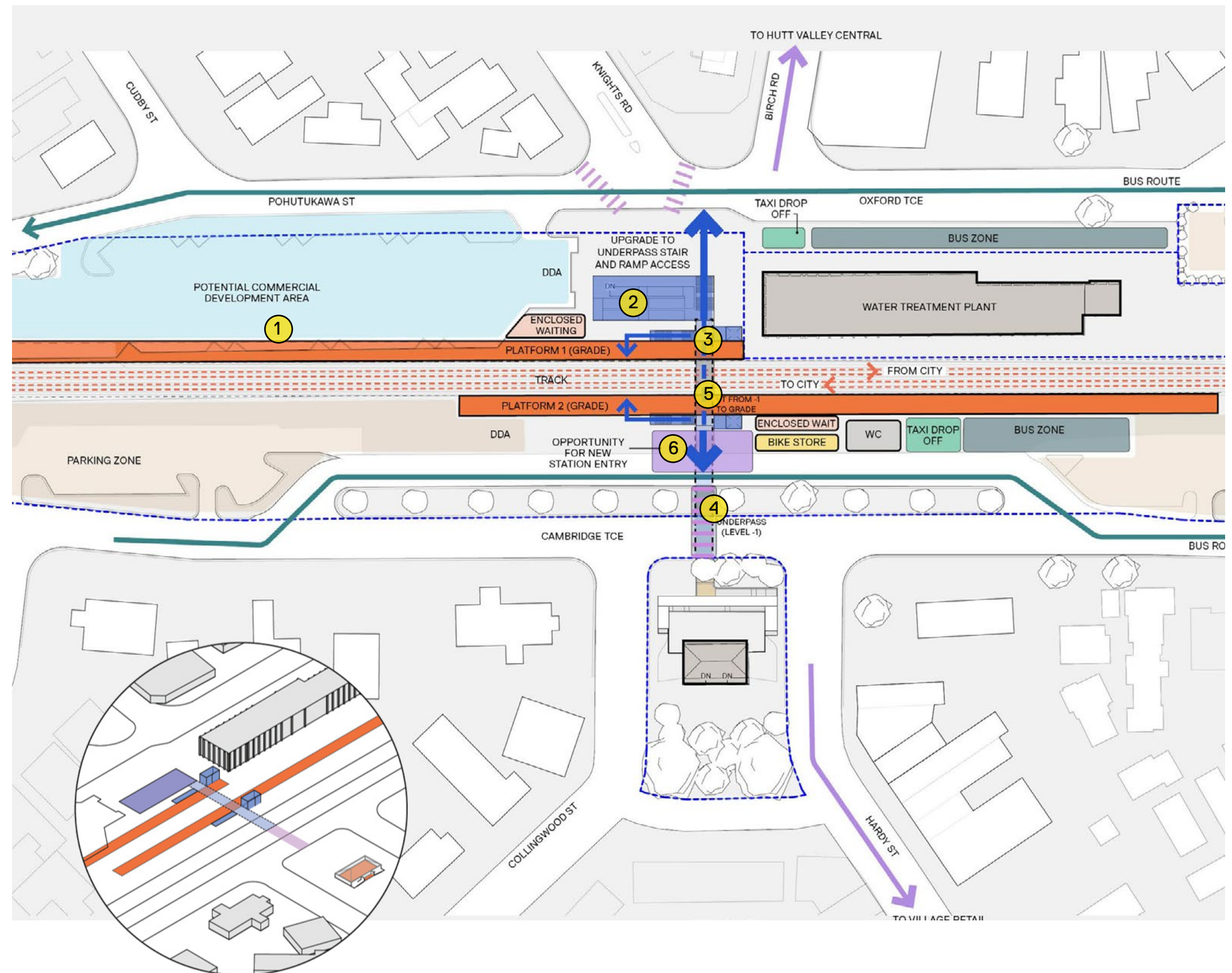
- Shorter underpass – improved sightlines
- DDA Compliant access through underpass and to platforms
- At grade crossing creates public entry

DISADVANTAGES:

- Introduces a pedestrian crossing on Cambridge terrace
- Possible concrete degradation, at year 37 of 50-year design life cycle
- Potential challenges where stairs / ramp come into the 'side' of tunnel

KEY:

- Platforms
- Concourse
- Bus zone
- Carparking
- Vertical Transport
- Taxi/PUDO
- GWRC Ownership



CONCEPT 3D

OPTION 04

UPGRADED PLATFORMS - UPGRADE UNDERPASS, RAMPS, STAIRS & ENTRY

FEATURES:

1. As per option 1 with improved public access into underpass at the Trafalgar square (terraced sunken garden)
2. Improved access from Oxford Terrace into underpass

BENEFITS:

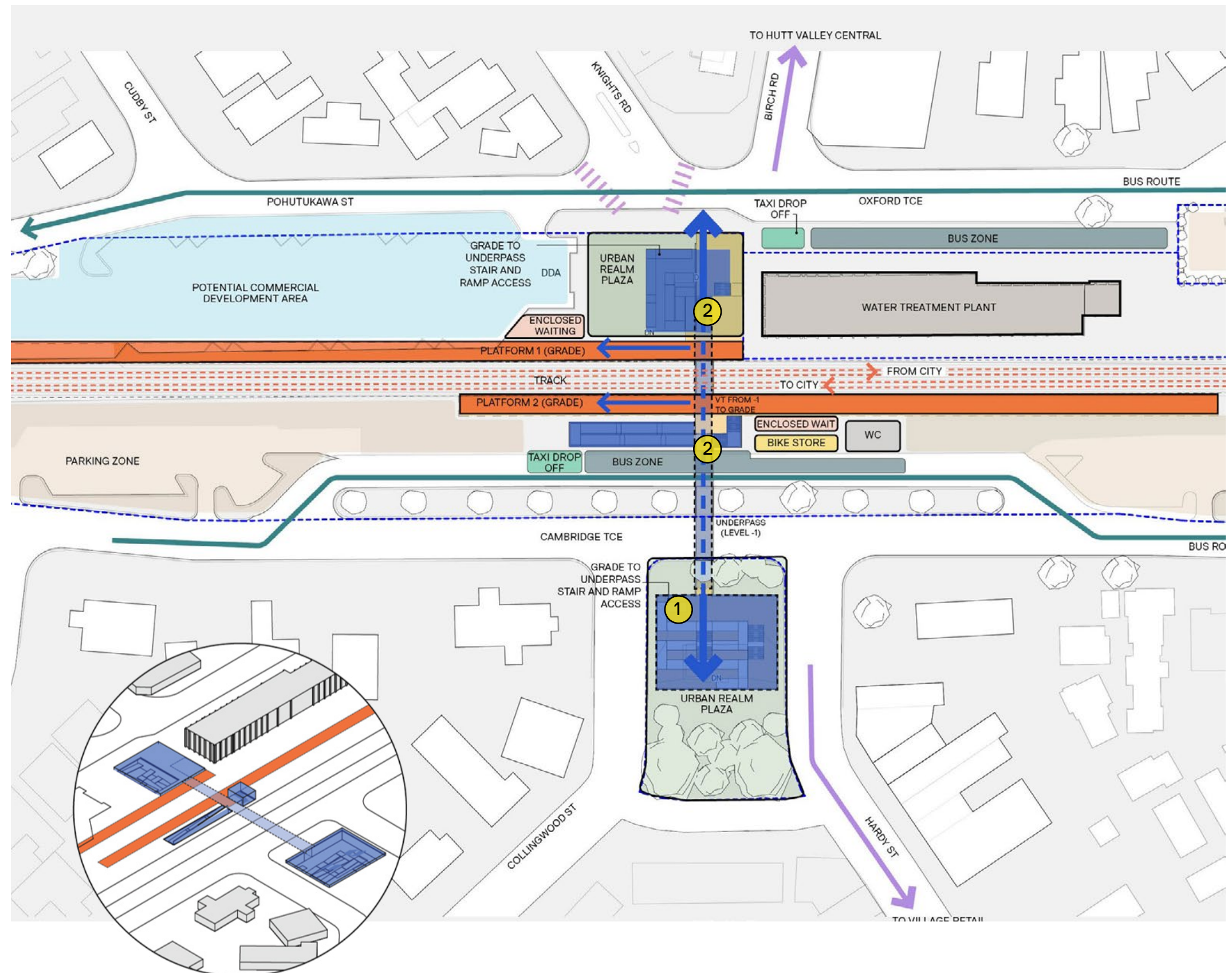
- Provides DDA Compliant access through underpass and to platforms
- Opportunity to expand underpass width in the future
- Improved public realm and station amenity
- Improved cross corridor pedestrian connectivity
- Improved safety & CPTED through underpass (line of sight, amenity)
- Retains grade separated cross corridor link
- Maintains majority of existing underpass

DISADVANTAGES:

- Drainage of open cut areas needs to be considered
- Potential removal of contaminated soil
- Possible concrete degradation, at year 37 of 50-year design life cycle
- Potential challenges where stairs / ramp come into the 'side' of tunnel

KEY:

- Platforms
- Concourse
- Bus zone
- Carparking
- Vertical Transport
- Taxi/PUDO
- GWRC Ownership



CONCEPT 3D

OPTION 05

UPGRADED PLATFORMS - UNDERPASS REMOVED - NEW OVERPASS

FEATURES:

1. Upgrade platforms for compliance
2. New overbridge as public and commuter cross corridor and cross-road connection
3. Underpass removed
4. New vertical transport

BENEFITS:

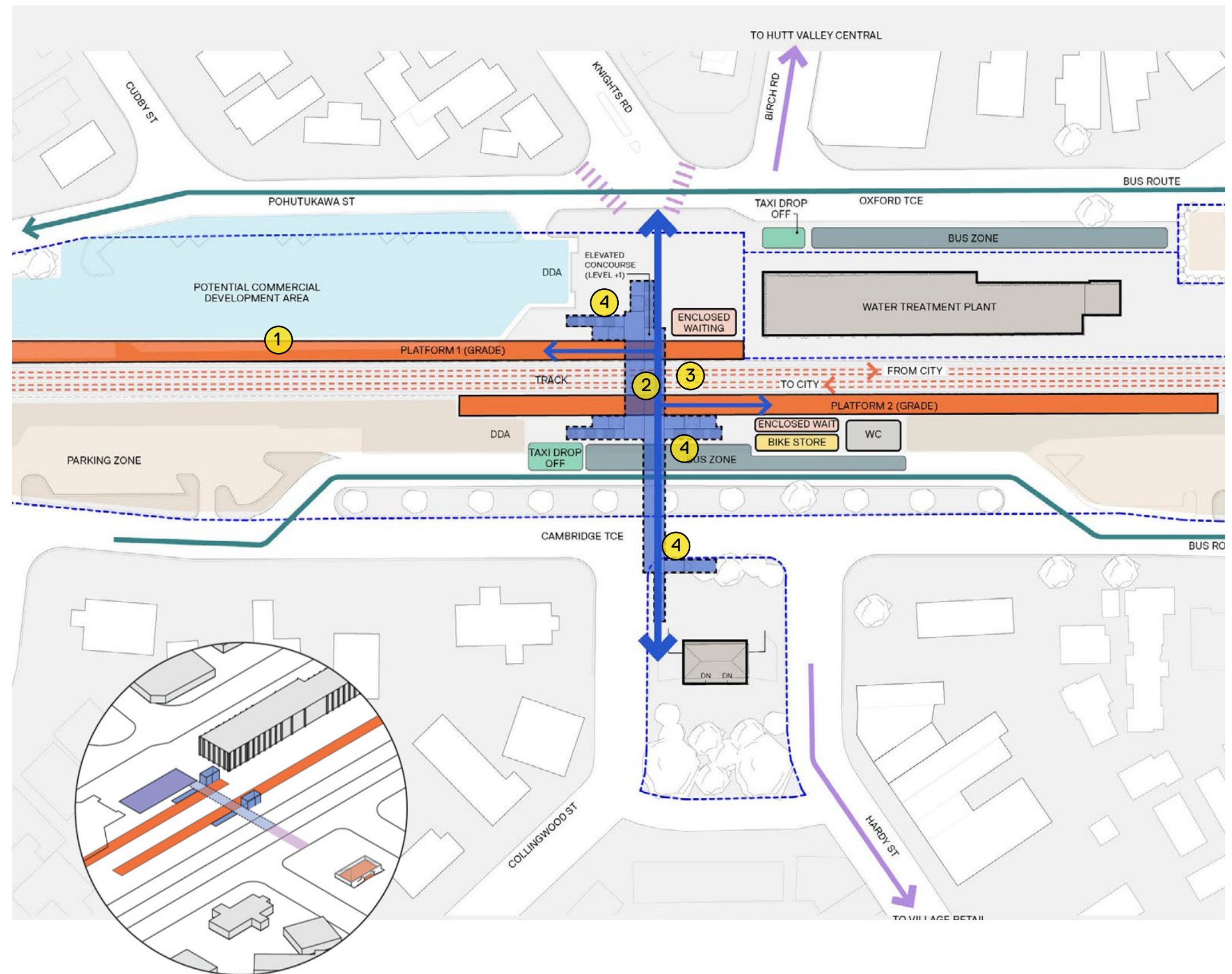
- Reduces CPTED and accessibility issues by removing the underpass
- Combines public and commuter cross corridor link – passive surveillance benefits
- Provides compliant cross corridor and cross road access

DISADVANTAGES:

- Increased visual bulk – requires a considered architectural & Urban Design response
- Increased pedestrian journey – vertical movement increases

KEY:

- Platforms
- Concourse
- Bus zone
- Carparking
- Vertical Transport
- Taxi/PUDO
- GWRC Ownership



CONCEPT 3D

OPTION 05: INDICATIVE VIEW



OPTION 06

PLATFORMS SHIFTED SOUTH - UPGRADE UNDERPASS, NEW LIFTS & STAIRS

FEATURES:

- 1. Shift platforms to the South
- 2. Opportunity to include secondary entry/egress from platforms
- 3. Upgrade underpass as per option 1
- 4. Provide compliant platform access (new stairs and lifts)

BENEFITS:

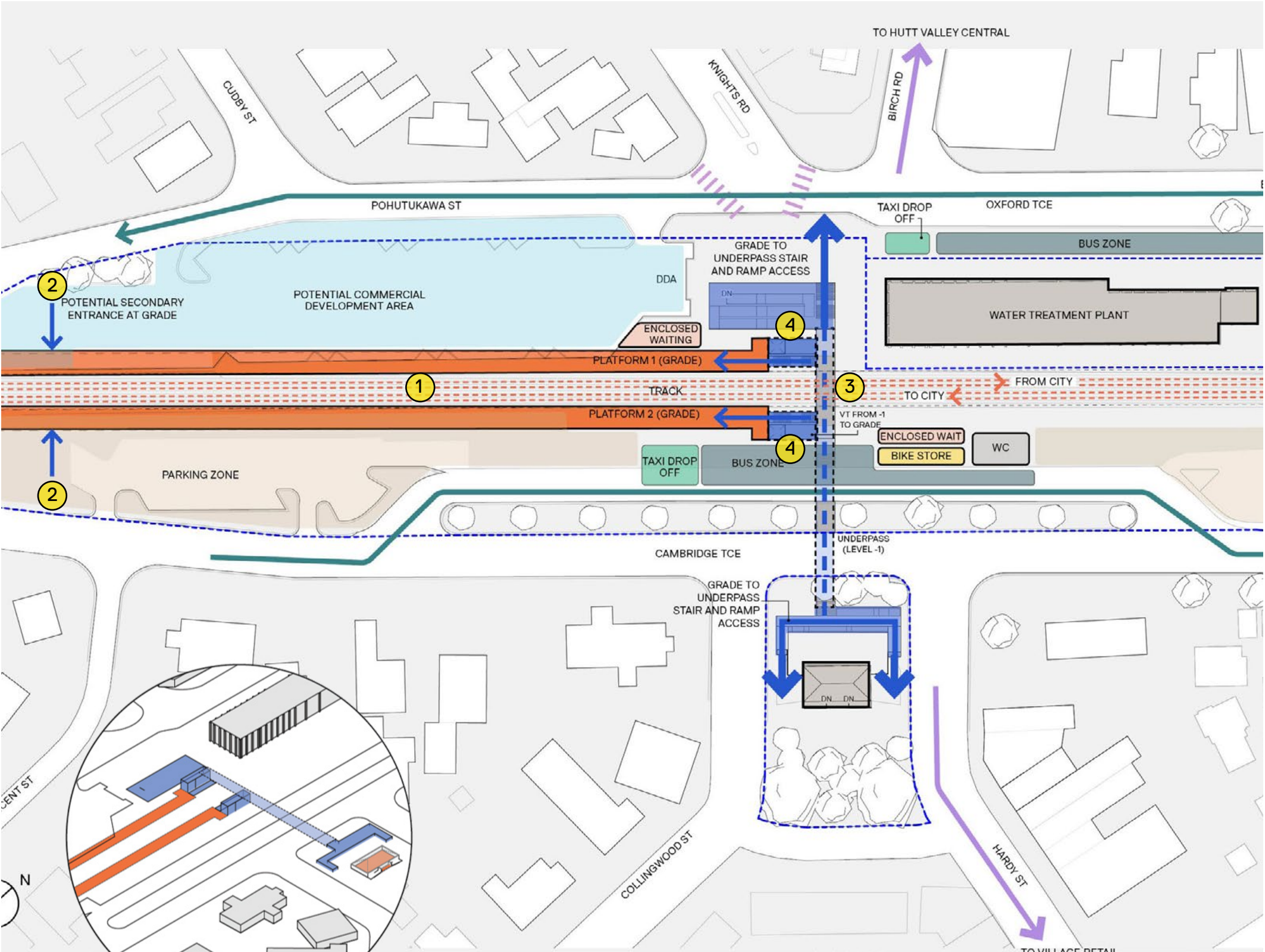
- Possible staging of platform works (mainly platform 2)

DISADVANTAGES:

- Requires rail engineering review to check if platforms can be straight given existing curvature of track
- End loaded platforms

OPTION LOST AT MCA
ASSESSMENT STAGE 01: FATAL
FLAW

- KEY:
- Platforms
 - Concourse
 - Bus zone
 - Carparking
 - Vertical Transport
 - Taxi/PUDO
 - GWRC Ownership



CONCEPT 3D

OPTION 07

ALIGNED (UPGRADED) PLATFORMS - NEW OVERPASS TO PLATFORMS - UNDERPASS UPGRADED

FEATURES:

1. Shift platforms to the South
2. Separate overbridge for cross platform connection
3. Upgrade underpass as per option 1

BENEFITS:

- Separate cross corridor public and commuter link
- Requires rail engineering review to check if platforms can be straight given existing curvature of track

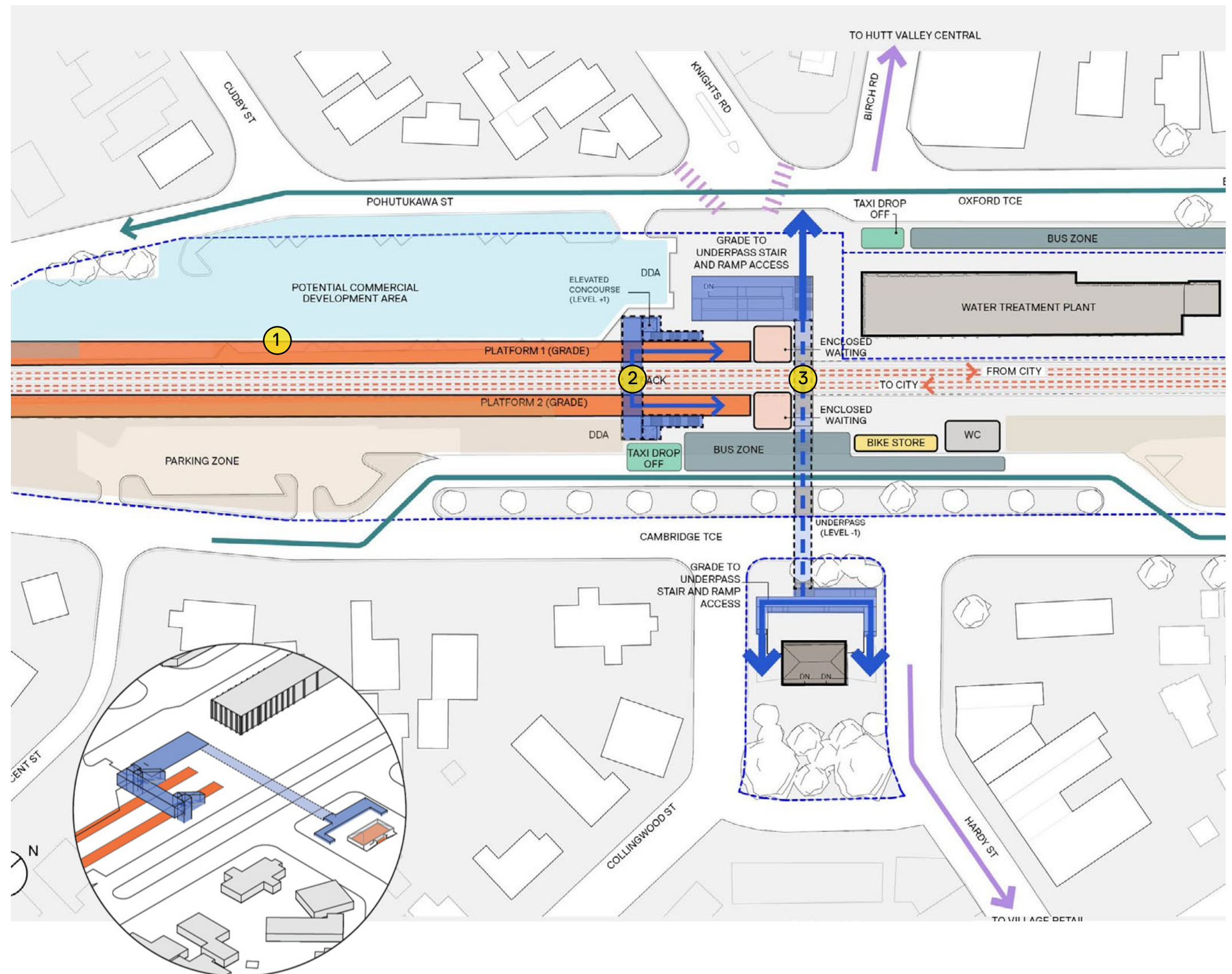
DISADVANTAGES:

- Requires rail engineering review to check if platforms can be straight given existing curvature of track
- Duplicates cross corridor access \$\$

OPTION LOST AT MCA
ASSESSMENT STAGE 01: FATAL
FLAW

KEY:

- Platforms
- Concourse
- Bus zone
- Carparking
- Vertical Transport
- Taxi/PUDO
- GWRC Ownership



CONCEPT 3D

OPTION 07: INDICATIVE VIEW



OPTION 08

PLATFORMS SHIFTED SOUTH - NEW OVERPASS - UNDERPASS REMOVED

FEATURES:

1. Upgrade platforms for compliance
2. New overbridge as public and commuter cross corridor and cross road connection
3. Underpass removed

BENEFITS:

- Removes issues of safety and non-compliant issues by removing the underpass
- Combines public and commuter cross corridor link – passive surveillance benefits
- Provides compliant cross corridor and cross road access

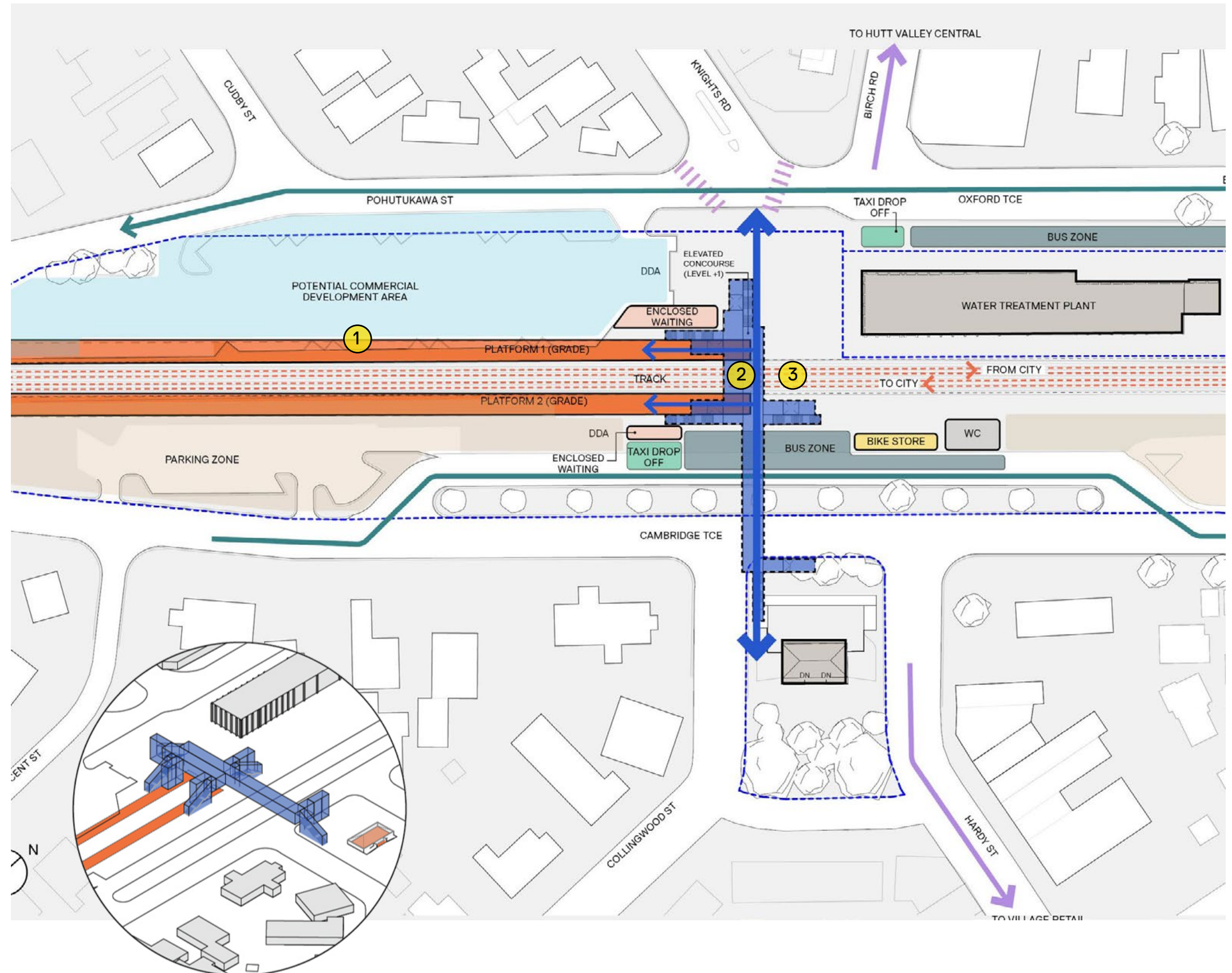
DISADVANTAGES:

- Increased visual bulk – Requires a considered architectural & Urban Design response
- Increased pedestrian journey – vertical movement increases
- Requires rail engineering review to check if platforms can be straight given existing curvature of track

OPTION LOST AT MCA
ASSESSMENT STAGE 01: FATAL
FLAW

KEY:

- Platforms
- Concourse
- Bus zone
- Carparking
- Vertical Transport
- Taxi/PUDO
- GWRC Ownership



CONCEPT 3D

OPTION 08: INDICATIVE VIEW



OPTION 09

PLATFORMS SHIFTED NORTH - NEW OVERPASS - UNDERPASS RETAINED

FEATURES:

- 1. Shift platforms to the North
- 2. Shift station entry to the North
- 3. Upgrade underpass as per option 1 or 2

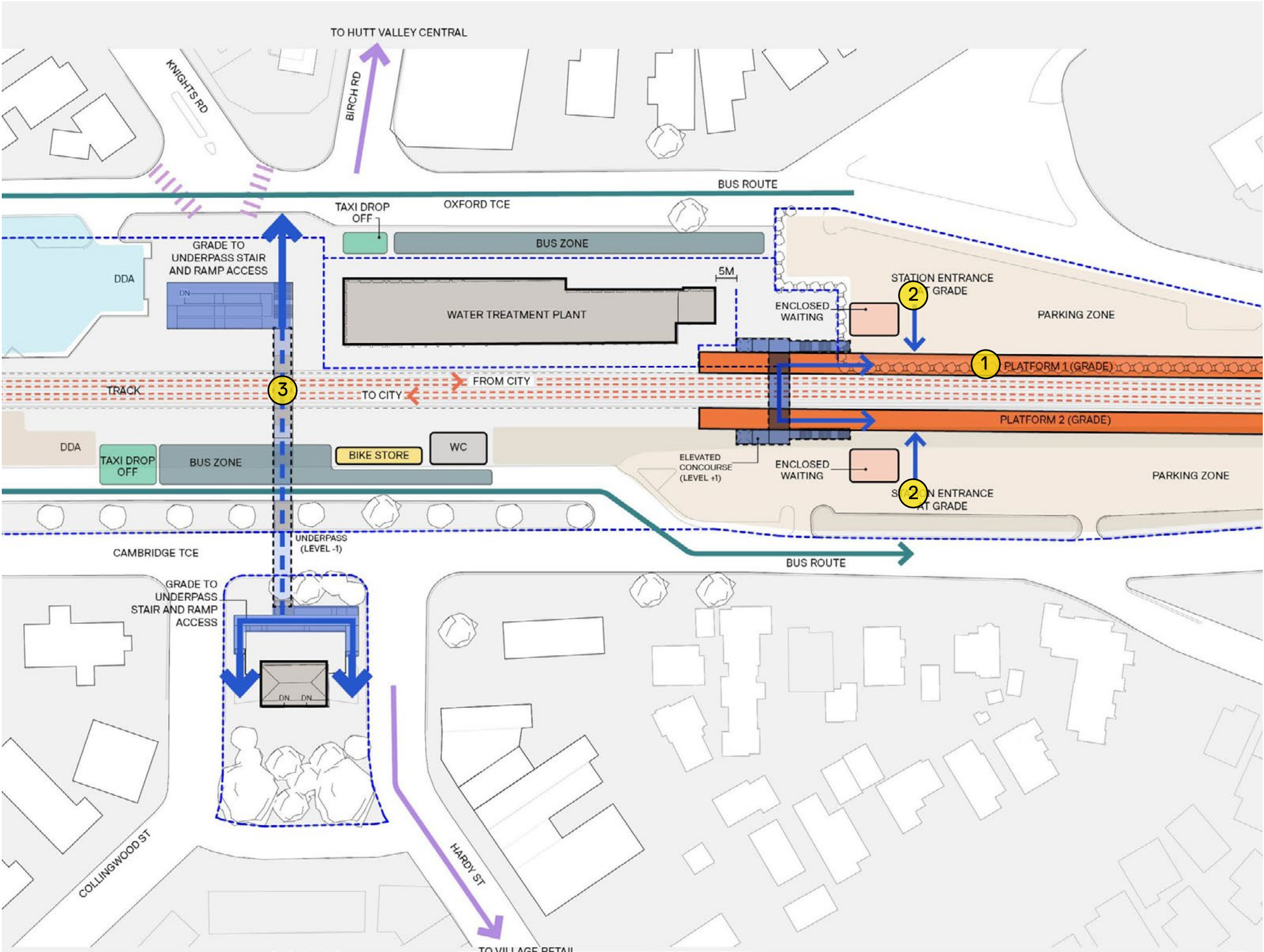
BENEFITS:

•

DISADVANTAGES:

•

OPTION LOST AT MCA
ASSESSMENT STAGE 01: FATAL
FLAW



- KEY:
- Platforms
 - Concourse
 - Bus zone
 - Carparking
 - Vertical Transport
 - Taxi/PUDO
 - GWRC Ownership

OPTION 10

NEW ISLAND PLATFORM - UPGRADE RETAINED

FEATURES:

1. New island platform
2. Underpass upgraded

BENEFITS:

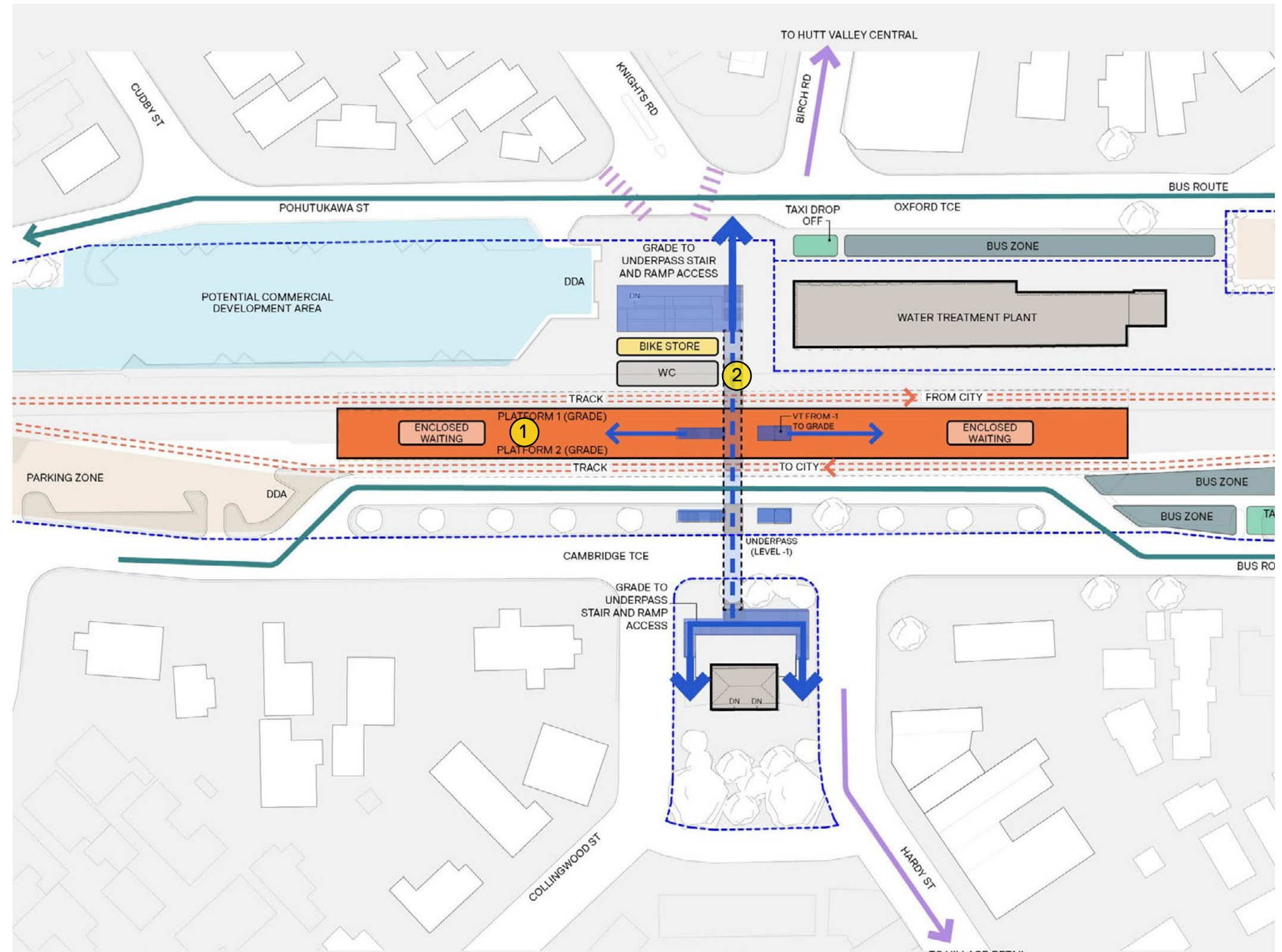
- Combines platform functionality (single set of VT) – improves

DISADVANTAGES:

- All access to platforms is from the underpass
- No rail operational benefit
- Requires rail engineering review to confirm track alignment can work
- Requires review with bus interchange requirements (spatial test)
- Operational challenges during construction

KEY:

- Platforms
- Concourse
- Bus zone
- Carparking
- Vertical Transport
- Taxi/PUDO
- GWRC Ownership



OPTION 11

NEW ISLAND PLATFORM SHIFTED SOUTH - UNDERPASS RETAINED

FEATURES:

1. New island platform shifted south
2. Underpass retained and upgraded
3. Platforms end-loaded

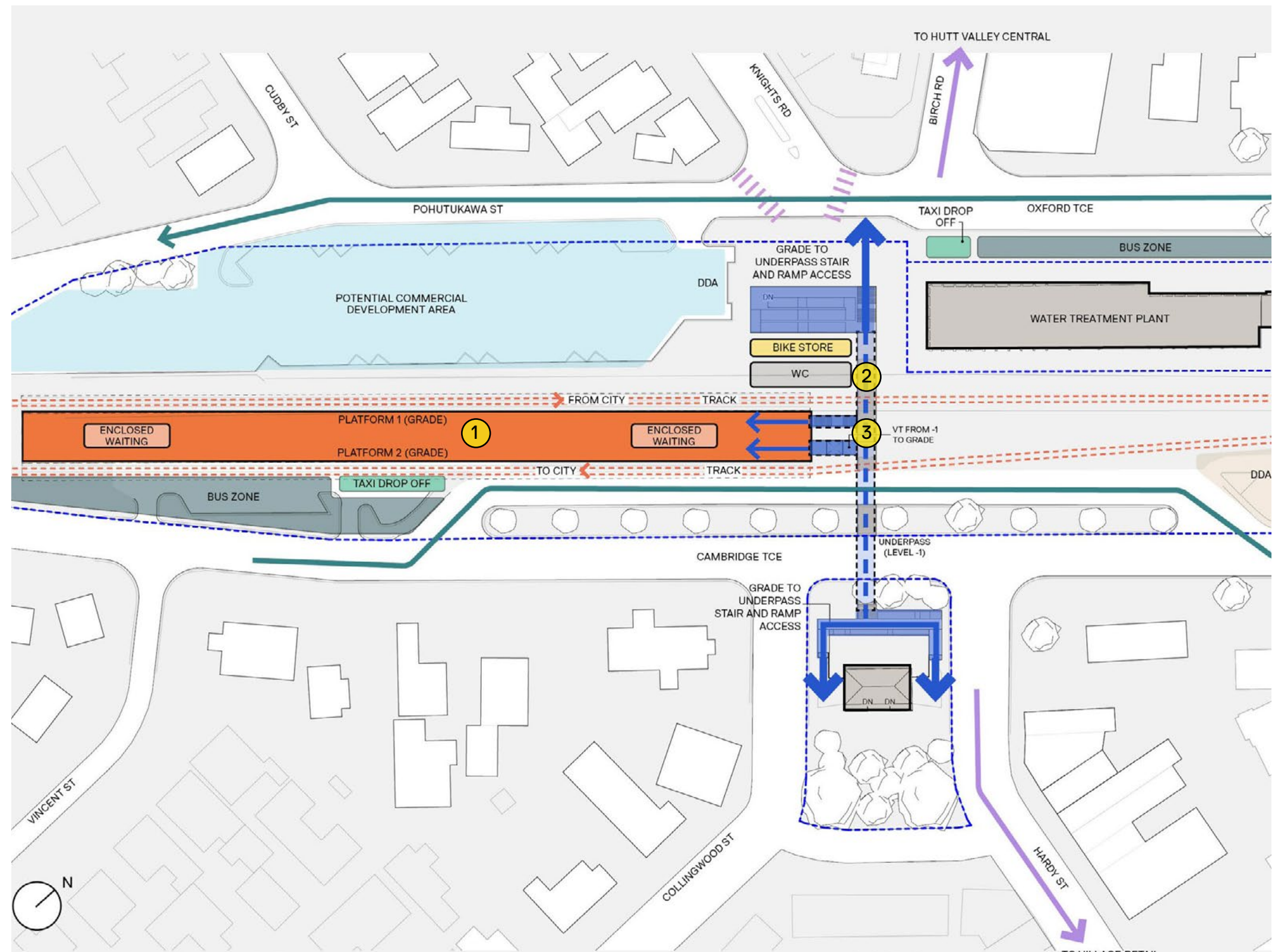
BENEFITS:

- Combines platform functionality (single set of VT)

DISADVANTAGES:

- Requires rail engineering review track alignment
- Requires review with bus interchange requirements (spatial test)

OPTION LOST AT MCA
ASSESSMENT STAGE 01: FATAL
FLAW



OPTION 12

NEW ISLAND PLATFORM SHIFTED SOUTH - NEW OVERPASS

FEATURES:

1. New island platform
2. New commuter overbridge
3. Upgrade underpass as per option 1 or 2

BENEFITS:

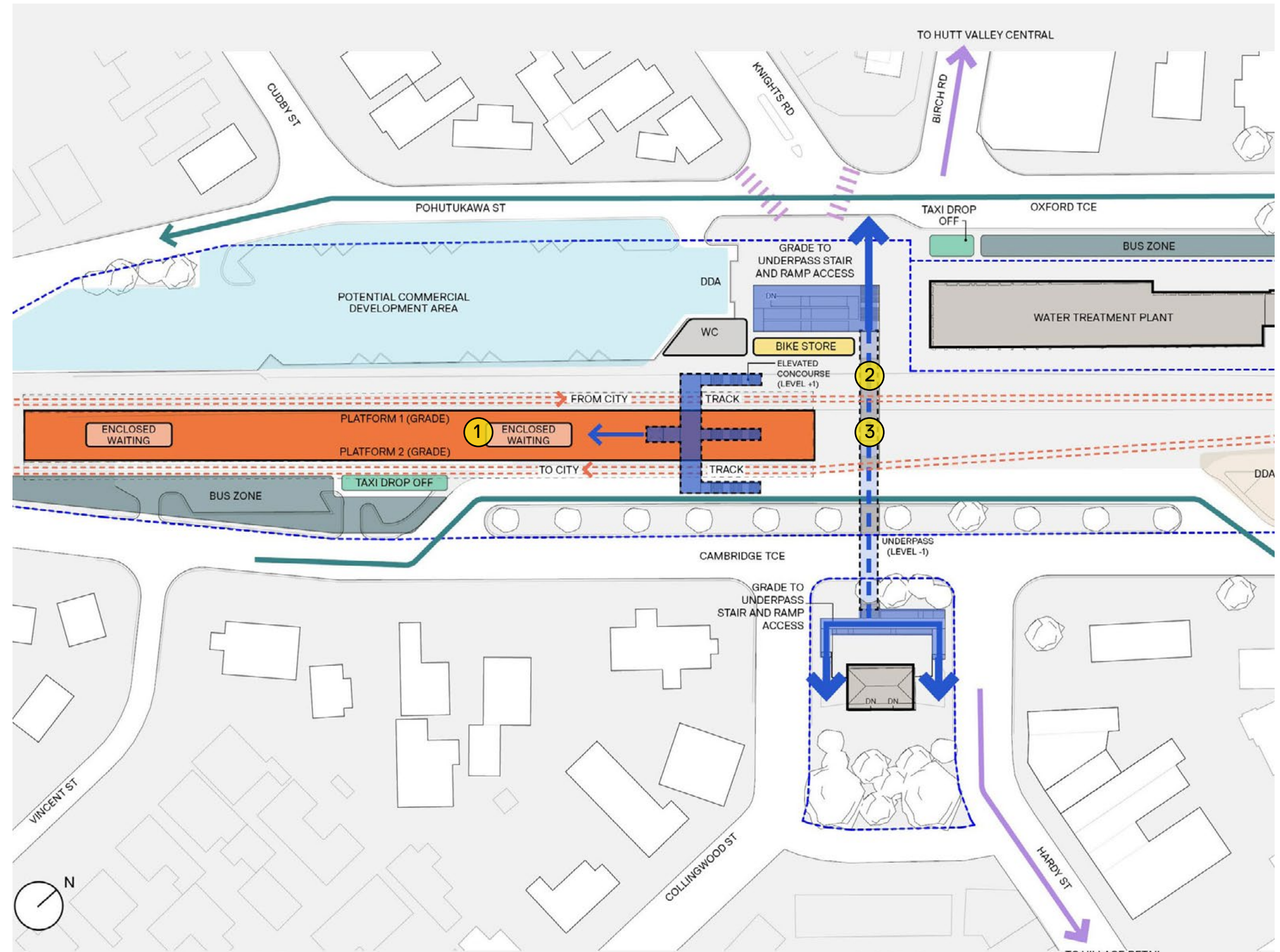
- Combines platform functionality (single set of VT)

DISADVANTAGES:

- Requires rail engineering review track alignment
- Requires review with bus interchange requirements (spatial test)

OPTION LOST AT MCA
ASSESSMENT STAGE 01: FATAL
FLAW

- KEY:
- Platforms
 - Concourse
 - Bus zone
 - Carparking
 - Vertical Transport
 - Taxi/PUDO
 - GWRC Ownership



OPTION 13

NEW ISLAND PLATFORM SHIFTED SOUTH - UNDERPASS RETAINED

FEATURES:

1. New island platform to the South
2. New overbridge as public and commuter cross corridor and cross road connection
3. Underpass removed

BENEFITS:

- Removes issues of safety and non-compliant issues by removing the underpass
- Combines public and commuter cross corridor link – passive surveillance benefits
- Provides compliant cross corridor and cross road access

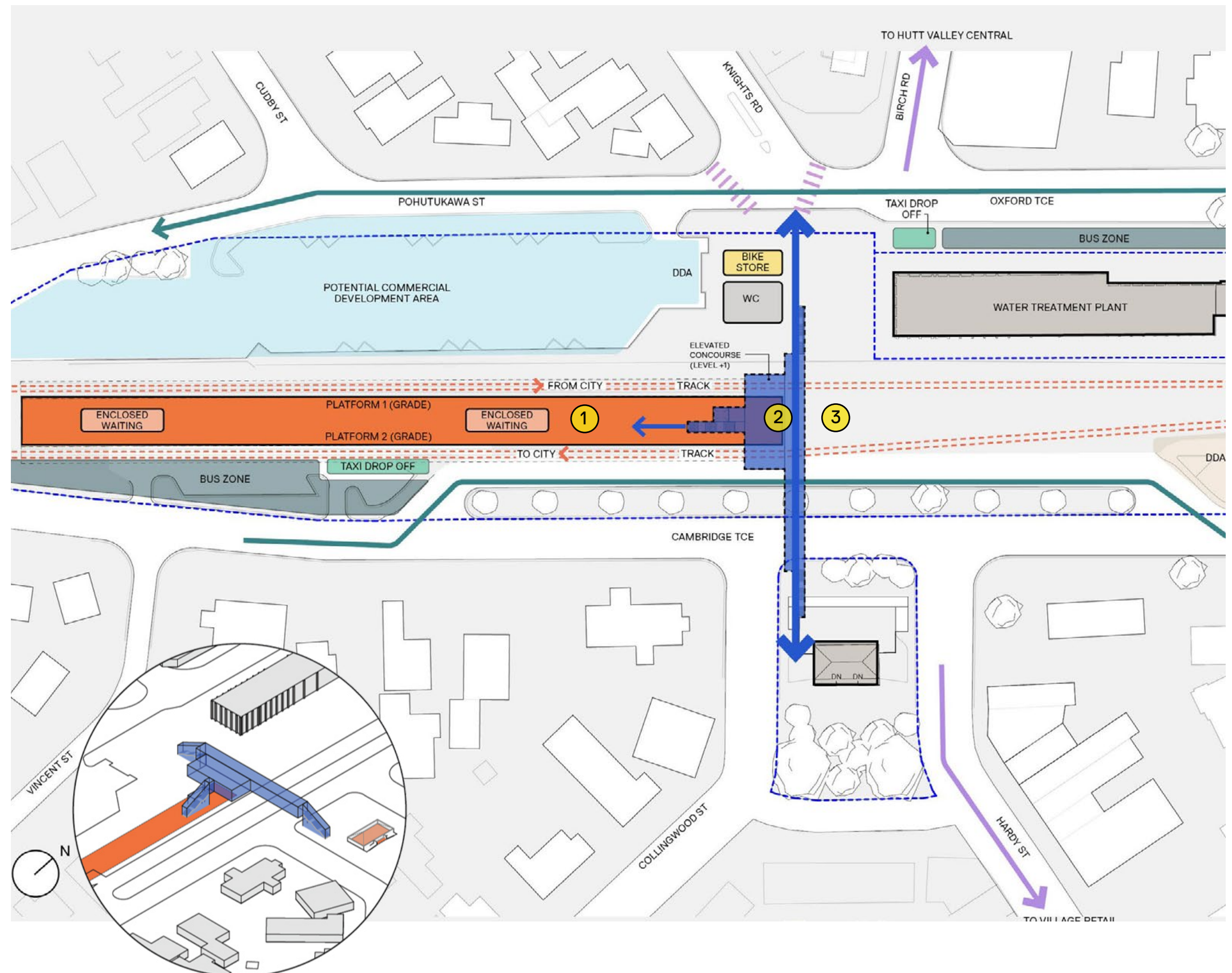
DISADVANTAGES:

- Increased visual bulk – Requires a considered architectural & Urban Design response
- Increased pedestrian journey – vertical movement increases
- End loads platforms
- Requires rail engineering review to check if platforms can be straight given existing curvature of track

OPTION LOST AT MCA
ASSESSMENT STAGE 01: FATAL
FLAW

KEY:

- Platforms
- Concourse
- Bus zone
- Carparking
- Vertical Transport
- Taxi/PUDO
- GWRC Ownership



CONCEPT 3D

OPTION 14

NEW ISLAND PLATFORM SHIFTED SOUTH - RAIL UNDER

FEATURES:

- 1. New island platform
- 2. New commuter level bridge
- 3. Rail cut below grade crossing

BENEFITS:

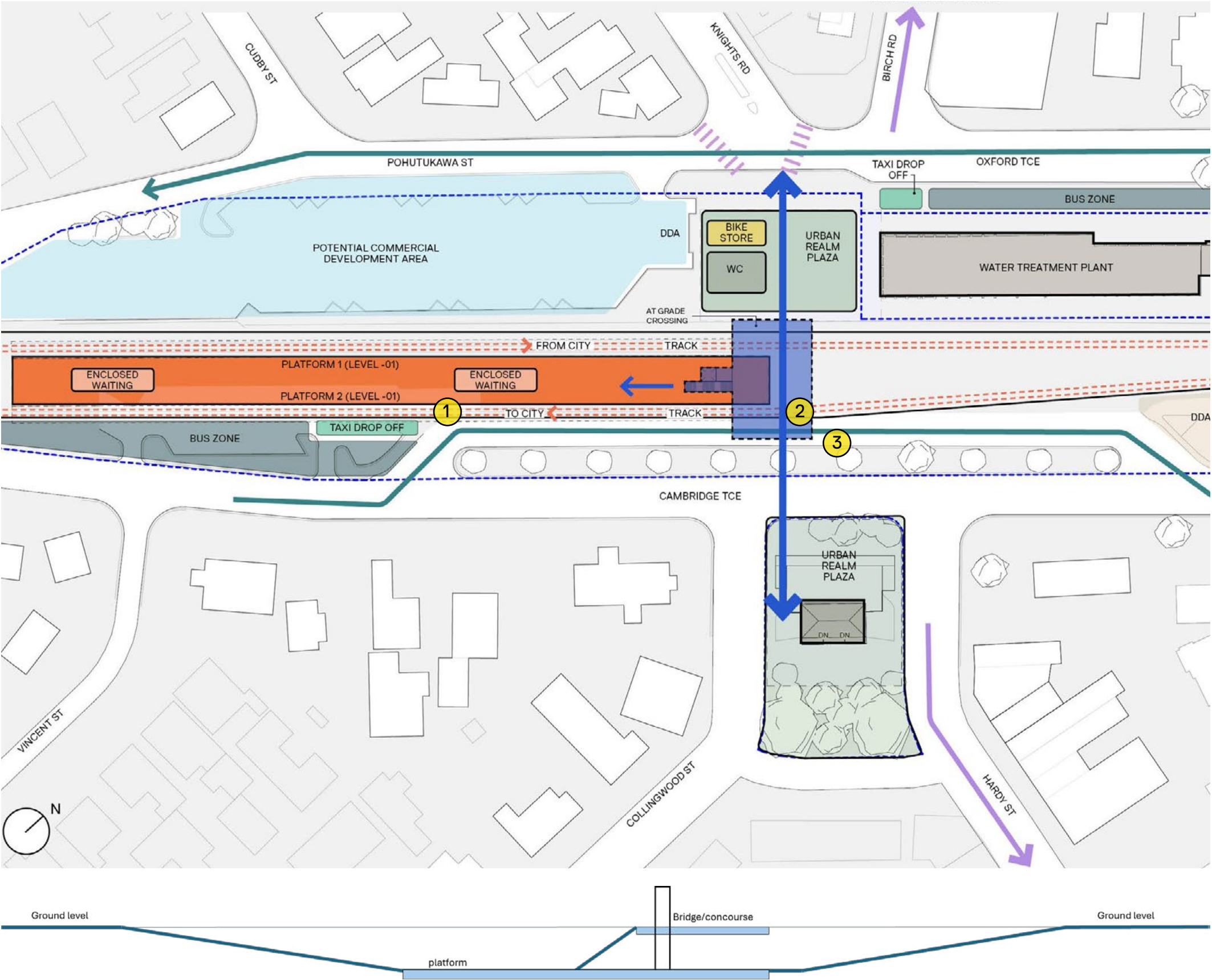
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DISADVANTAGES:

- Requires rail engineering review track alignment
- Requires review with bus interchange requirements (spatial test)

OPTION LOST AT MCA
ASSESSMENT STAGE 01: FATAL
FLAW

- KEY:
- Platforms
 - Concourse
 - Bus zone
 - Carparking
 - Vertical Transport
 - Taxi/PUDO
 - GWRC Ownership



OPTION 14

NEW ISLAND PLATFORM SHIFTED SOUTH - RAIL OVER

FEATURES:

- 1. New island platform
- 2. New commuter level bridge
- 3. Rail raised above grade crossing

BENEFITS:

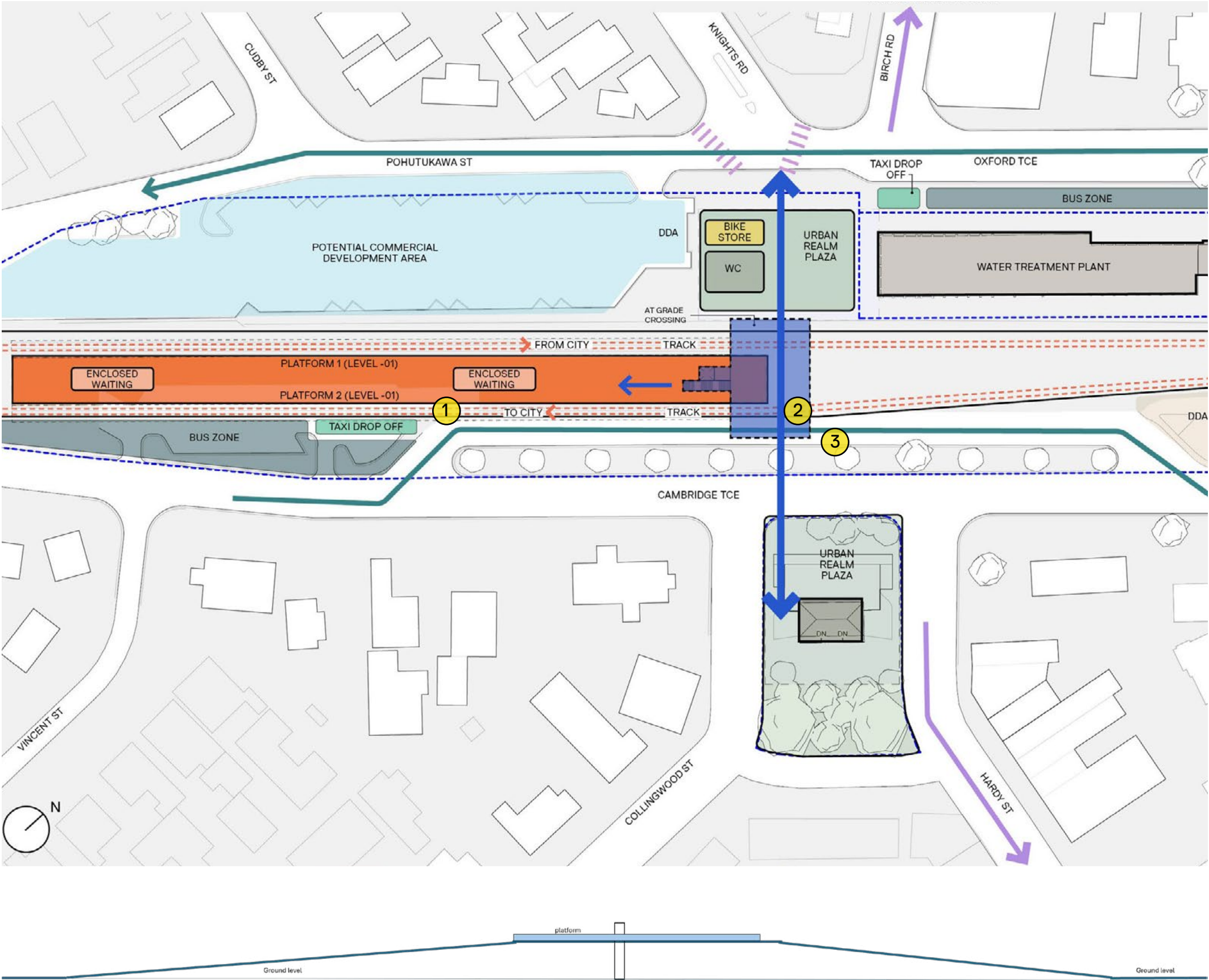
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DISADVANTAGES:

- Requires rail engineering review track alignment
- Requires review with bus interchange requirements (spatial test)

OPTION LOST AT MCA
ASSESSMENT STAGE 01: FATAL
FLAW

- KEY:
- Platforms
 - Concourse
 - Bus zone
 - Carparking
 - Vertical Transport
 - Taxi/PUDO
 - GWRC Ownership



OPTION 16

PLATFORMS SHIFTED NORTH - NEW OVERPASS - UNDERPASS RETAINED

FEATURES:

- 1. Shift platforms to the North
- 2. New overpass
- 3. Upgrade underpass as per option 1 or 2

BENEFITS:

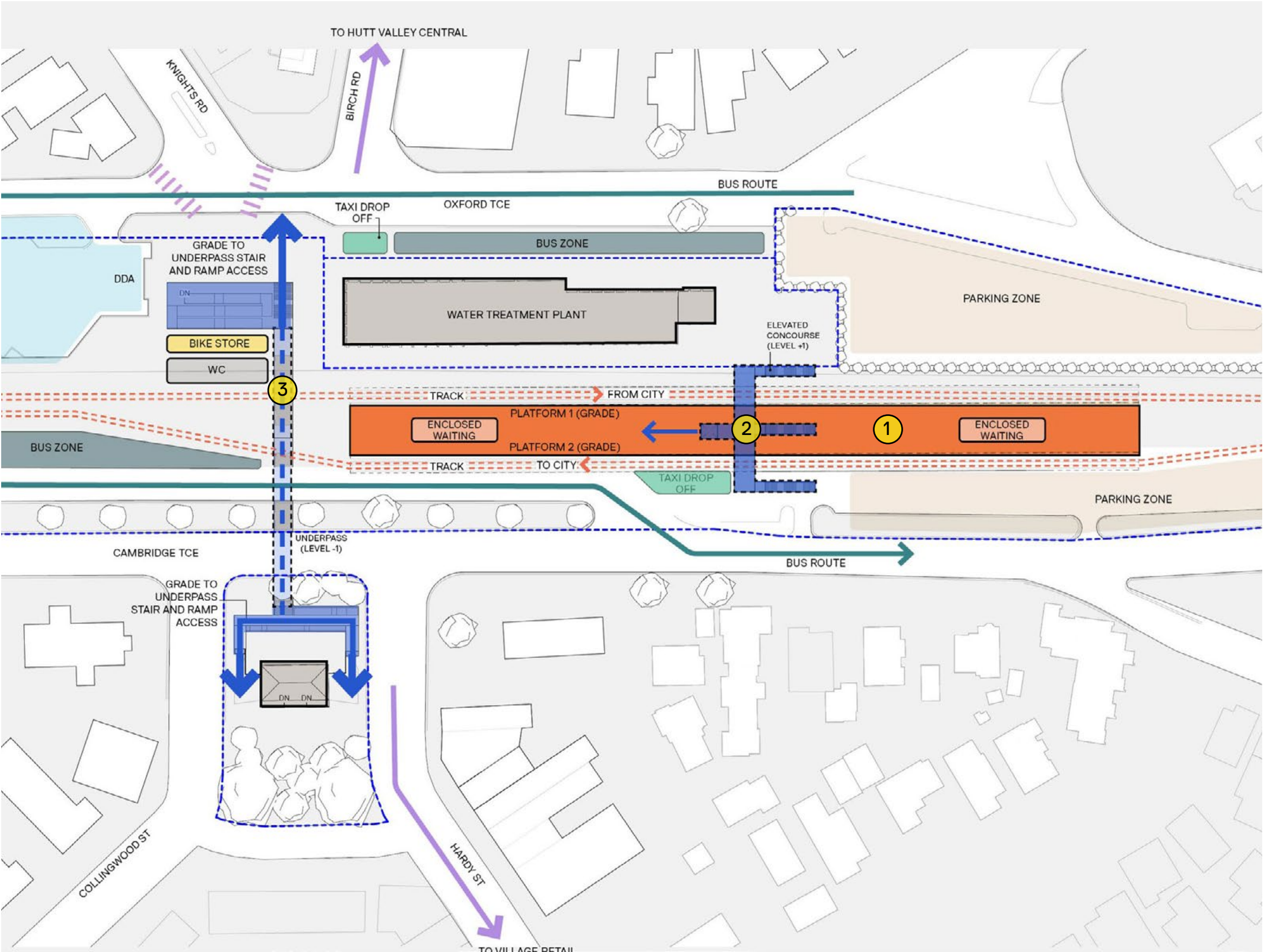
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DISADVANTAGES:

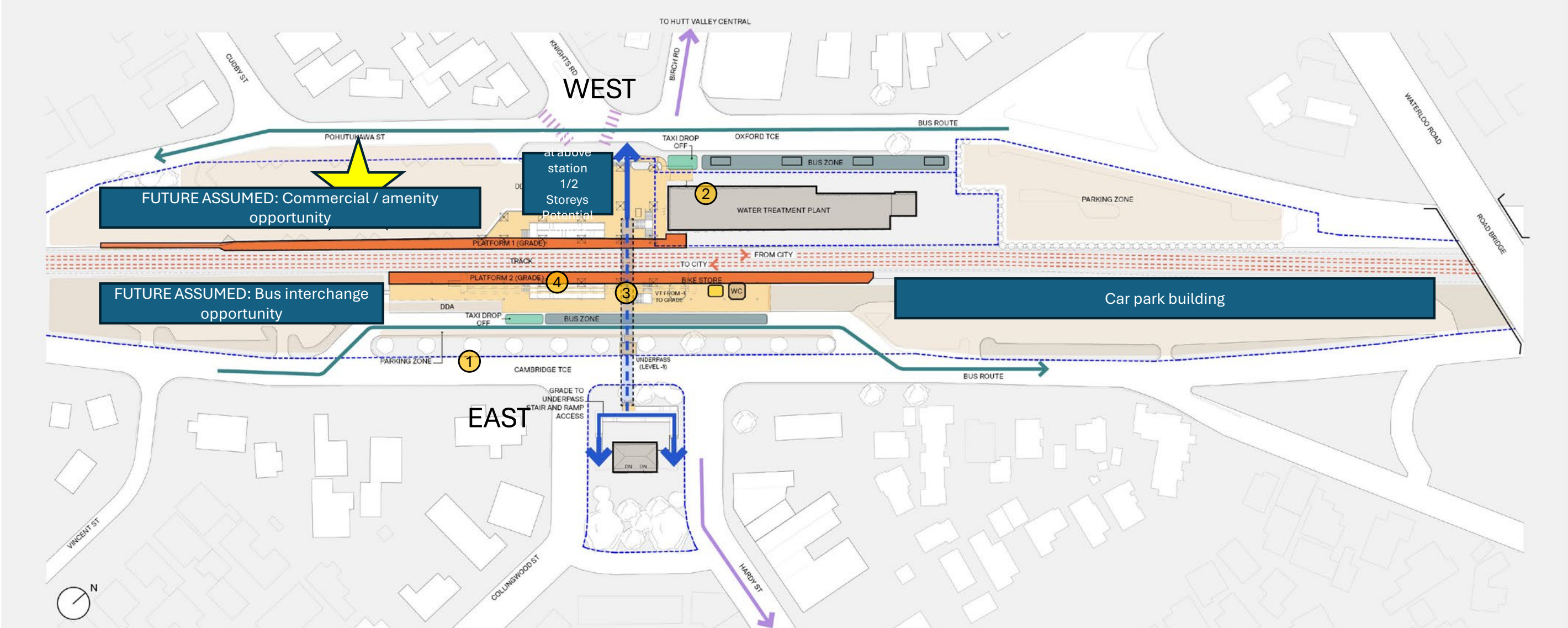
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OPTION LOST AT MCA
ASSESSMENT STAGE 01: FATAL
FLAW

- KEY:
- Platforms
 - Concourse
 - Bus zone
 - Carparking
 - Vertical Transport
 - Taxi/PUDO
 - GWRC Ownership



SITE CONSTRAINTS AND OPPORTUNITIES - POST WORKSHOP SUMMARY



KEY CONSTRAINTS

1. Retain current road alignments
2. Aquifer and water treatment plant
3. Public cross corridor connection
4. Station operations

- Platforms
- Concourse
- Bus zone
- Carparking
- Vertical Transport
- Taxi/PUDO
- GWRC Ownership

Existing Conditions and Key Constraints

OVERPASS PRECEDENTS



MCA ASSESSMENT WORKBOOK SUMMARY

Note: this is summary assessment compiling both stage 1 and 2 in one workbook
for complete workbook refer to file *Final Draft MCA Longlist Options Assessment worksheet V5.0* in the appendix folder

LONGLIST AS	LONGLIST ASS	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT
Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Do Min (Base Case)	OPTION 01A: Aligned Platforms, upgraded Underpass	OPTION 01A: Aligned Platforms, upgraded Underpass	OPTION 01B: Aligned & Upgraded Platforms, Bus Interchange, underpass	Option 01Bi: Aligned & Upgraded Platforms, Bus Interchange, Short Underpass below rail corridor and Pedestrian Crossing at Cambridge Terrace	OPTION 02: upgrade platforms, underpass – new lifts and stairs, improved East West connection ramps	OPTION 03: upgraded platforms - reduced underpass – new pedestrian crossing	OPTION 04: upgrade platforms – upgrade underpass ramps & stairs & entry, sunk in plaza	OPTION 05: upgrade platforms – underpass removed – new overpass stairs and lifts	OPTION 05A: Aligned & upgraded platforms – underpass removed – new overpass stair, lifts and ramps	OPTION 5B - OVERPASS with Aligned & upgraded platforms & Consolidated Bus Interchange in SE
Fatal Flaws	Grimshaw Aurecon (Transport)	Identify those options that have technical fatal flaws and are excluded from further assessment	Achieves technical requirements of platform & track alignment and geometry	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
			Avoids the buffer area surround the Water Treatment Plant	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
			Closure of the rail corridor for unacceptable lengths of time or peak periods of use	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
			Avoids impacts on the existing road infrastructure	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
Community Connections	Grimshaw Boffa Miskell Tonkin & Taylor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the safe community connection from East to West (across rail corridor and Cambridge Terrace)	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Moderate negative (-ve)	Slight negative (-ve)	Neutral	Neutral	Neutral
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)	Neutral	Neutral	Neutral	Neutral	Slight positive (+ve)	Moderate positive (+ve)	Slight positive (+ve)	Moderate positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	Shortest walking distance route measured in minutes between transport modes.	Neutral	Neutral	Slight negative (-ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight negative (-ve)	Slight positive (+ve)	Slight positive (+ve)	Moderate negative (-ve)	Slight positive (+ve)
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.	Neutral	Neutral	Neutral	Neutral	Slight positive (+ve)	Slight positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)	Slight positive (+ve)	Slight negative (-ve)	Slight positive (+ve)
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Large negative (-ve)	Slight negative (-ve)	Moderate negative (-ve)	Neutral
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets	Neutral	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Neutral	Neutral	Neutral	Neutral	Slight negative (-ve)	Slight positive (+ve)
			The station and bus interchange is decoupled from the use of property not under control of GW	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Moderate negative (-ve)	Large negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)
Stageable and Adaptable	Aurecon (Transport) Grimshaw	Is demand led so that provides sufficient capacity, targeting a Level C level of service for rail passengers in the peak 15 minutes in the representative week in the busiest month (excluding disruptions) in 2025 and forecast passenger demand in its planned opening year of 2030 and by 2045 and 2060.	Ability for rail station capacity to be staged to match demand in 2030, 2045 & 2060 Provision of sufficient rail station capacity to achieve Level Service C for 2030, 2045 & 2060	INSUFFICIENT DETAIL AND INFORMATION AVAILABLE										
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	Complexity of construction and staging for delivery	Neutral	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Large negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)
			minimum number of months to complete construction	INSUFFICIENT DETAIL AND INFORMATION AVAILABLE										
			least number and shortest duration of rail corridor closures for construction											
			least number and shortest duration of road corridor closures for construction											
Technical requirements	Aurecon (Civil) Aurecon (Building Services) Boffa Miskell T&T Grimshaw	Meets technical requirement necessary for the construction, operation and consenting of the rail station, bus interchange and ancillary infrastructure and services	Criteria to come for the assessing the impact of the technical requirements on the environment, consenting, existing infrastructure and land	INSUFFICIENT DETAIL AND INFORMATION AVAILABLE										
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused	Neutral	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Large negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)
			Minimum area of soil disturbance and amount of earth needing disposal	Neutral	Slight negative (-ve)	Slight negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Large negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)
Decision (Progress or Discount)				Progress	Discount	Discount	Progress	Progress	Progress	Discount	Discount	Discount	Discount	Progress
Reason(s)	All			option outcome is not sufficiently different from base case	option outcome is not sufficiently different from base case		-3	-1	-1	-7	-12	-3	-11	-2

												Option 17: Aligned Platforms, Bus Interchange, new overbridge over rail corridor, on grade Ped Xing Cambridge Tce		
OPTION 06: Platform move South – upgrade underpass – public and station	OPTION 07: new overbridge –underpass retained	OPTION 08: new over bridge – underpass removed	OPTION 09: Platform move North, upgrade Underpass. New overpass access public and station	OPTION 10: New Island platform – underpass retained	OPTION 11: New Island platform – shifted South underpass retained	OPTION 12: New island platform – shifted South, public underpass retained, new overbridge station access	OPTION 13: New island platform – shifted South, new overbridge station access, public underpass removed	OPTION 14: New Island platform – rail under	OPTION 15: New Island platform – rail over	OPTION 16: New Island platform – shifted North - new overbridge				
Fatal Flaw	Fatal Flaw	Fatal Flaw	Fatal Flaw	Neutral	Fatal Flaw	Fatal Flaw	Fatal Flaw	Fatal Flaw	Fatal Flaw	Fatal Flaw	Neutral			
Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral			
Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral			
Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral			
				Neutral							Neutral			
				Neutral							Moderate positive (+ve)			
											Moderate positive (+ve)			
				Neutral							Moderate positive (+ve)			
				Neutral							Neutral			
				Neutral							Slight positive (+ve)			
				Neutral							Slight negative (-ve)			
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Fatal Flaw	Slight negative (-ve)													
	Moderate negative (-ve)													
	Slight negative (-ve)													
	0													
	0													
	0													
										0				
				Neutral							Moderate negative (-ve)			
				Neutral							Slight negative (-ve)			
Discount	Discount	Discount	Discount	Discount	Discount	Discount	Discount	Discount	Discount	Discount	Progress			

12.4 STAGE 2: LONGLIST & MCA WORKBOOK

Note: for complete Stage 2 supporting material refer to the Appendix folder

OPTION LONGLIST SUMMARY

Fatal flaw... Sub options created...

Additional filters for fatal flaws assessment

deliverability	efficient footprint / free-up developable land	efficient footprint / free-up developable land	ability for demand led capacity improvement	construction sequence - maintaining operations and community link
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PLATFORM LOCATION & CONFIGURATION

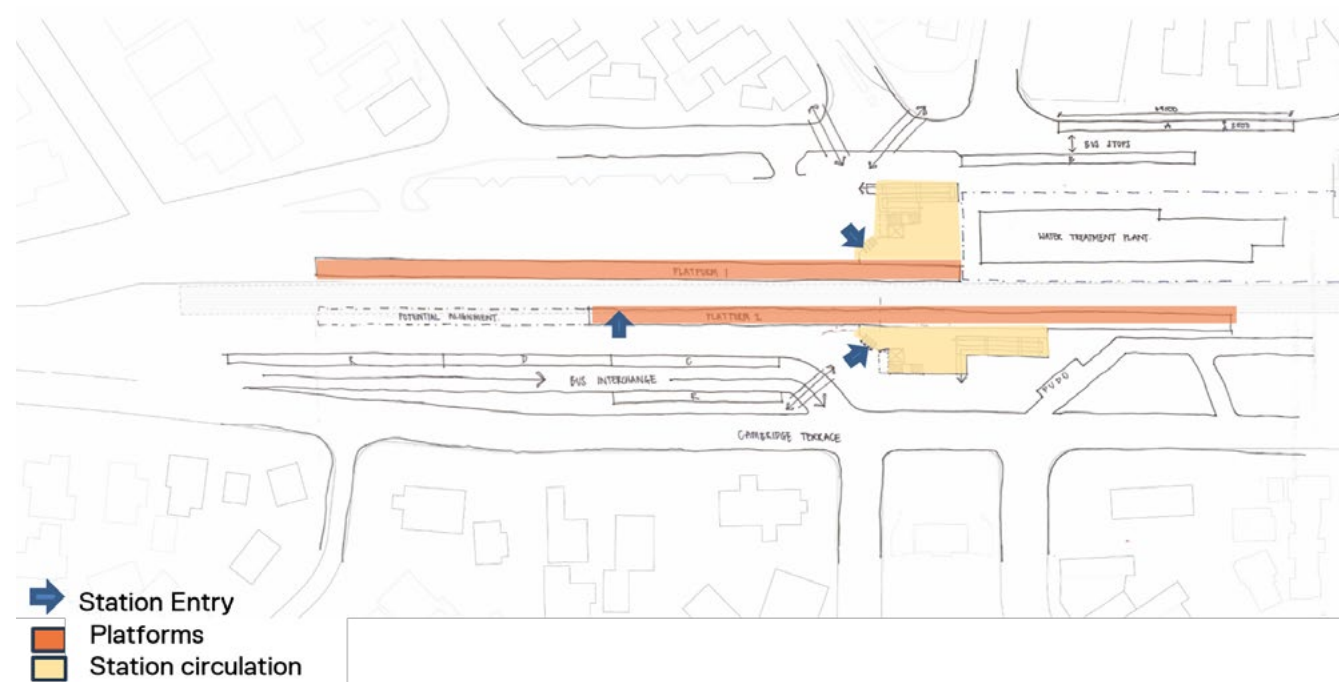
CORSS CORRIDOR ACCESS

SPLIT PLATFORM					ISLAND PLATFORM		
EXISTING		ALIGNED	MOVE SOUTH	MOVE NORTH	CENTRAL	MOVE SOUTH	MOVE NORTH
BASE CASE					New Island Platform, upgrade underpass, ramps and stairs	New Island Platform, shifted south, underpass retained	New Island Platform, shifted north, new overbridge
0					10		
1	Upgraded Platform, upgrade underpass - ramp and stairs	1A					
2	Upgraded Platform, upgraded underpass, public ramps and stairs, platform lifts and stairs (no ramp)						
3	Upgraded Platform, reduced underpass - Cambridge ped x, updated ramps and stairs						
4	Upgraded Platform, upgrade underpass - ramp and stairs, entry plaza						
5	Upgraded Platform, remove underpass. New overpass access public and station (lifts and stairs)	5A					

SHORTLISTED PLATFORM CONFIGURATIONS AND BUS INTERCHANGE

1: EXISTING ALIGNMENT - UPGRADED PLATFORMS

5m wide, moved 5m away from Water Treatment Plant



BENEFITS:

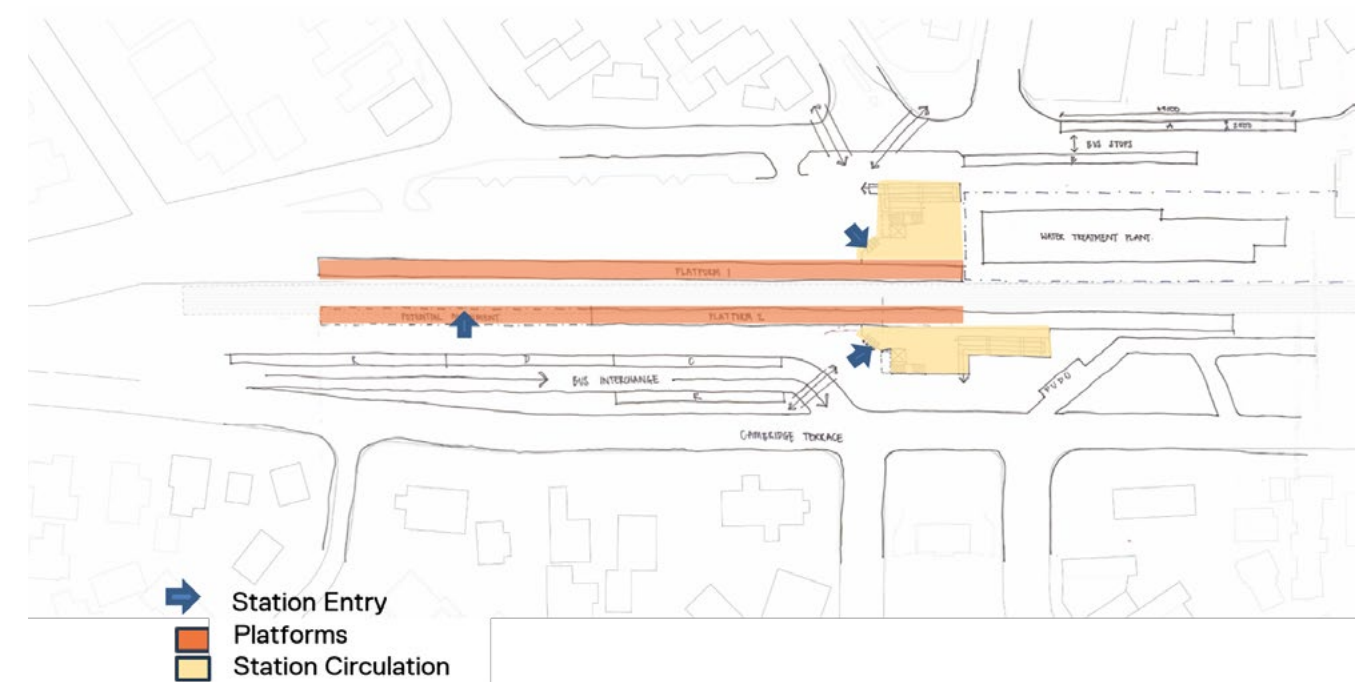
- Better passenger distribution from western station entry, with passengers accessing center of platform
- No impact on existing signal box infrastructure
- Potentially greater flexibility for interchange facilities or future commercial development.

DISADVANTAGES:

- Longer and potentially less legible walking route from bus stops to Platform 2 (mitigated with extra entrance from bus interchange).
- Split platforms may reduce sense of coherence or wayfinding clarity for new users.

2: ALIGNED - UPGRADED PLATFORMS

East platform aligned to west



BENEFITS:

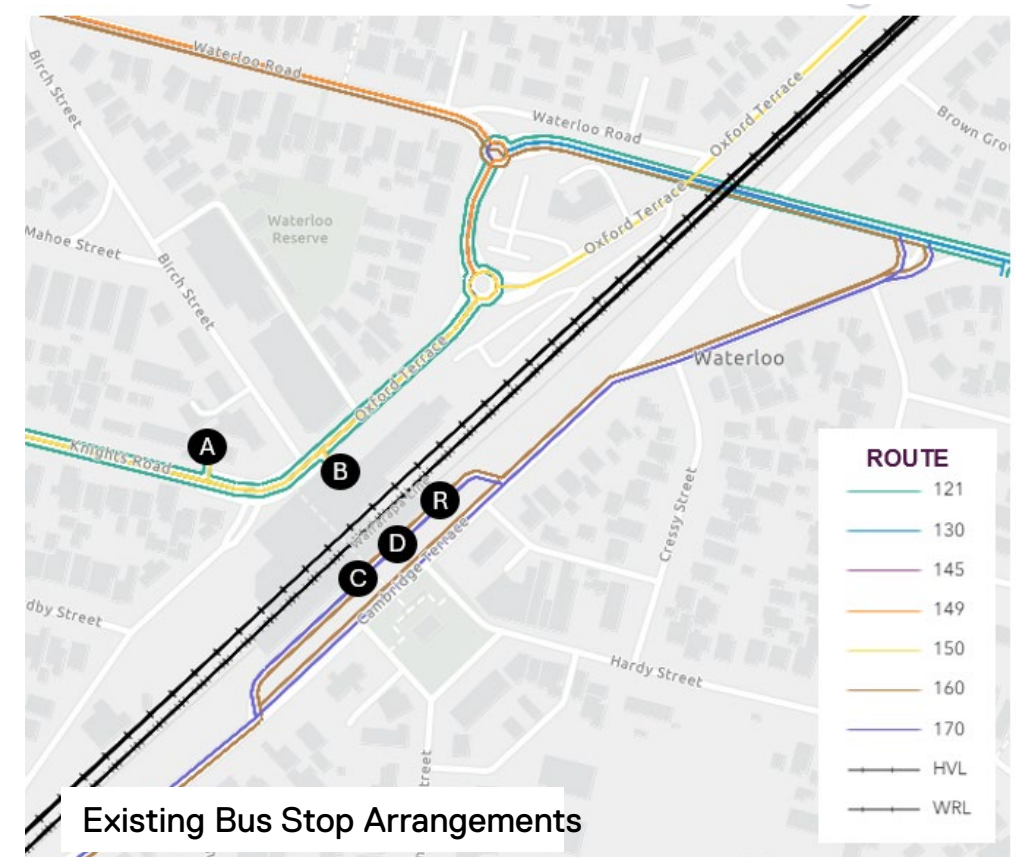
- Aligned platforms may be more legible, supporting wayfinding and a sense of clarity.
- Creates a more compact and unified interchange footprint, reducing walking distances between modes.
- More adaptable for phased construction or future platform lengthening.

DISADVANTAGES:

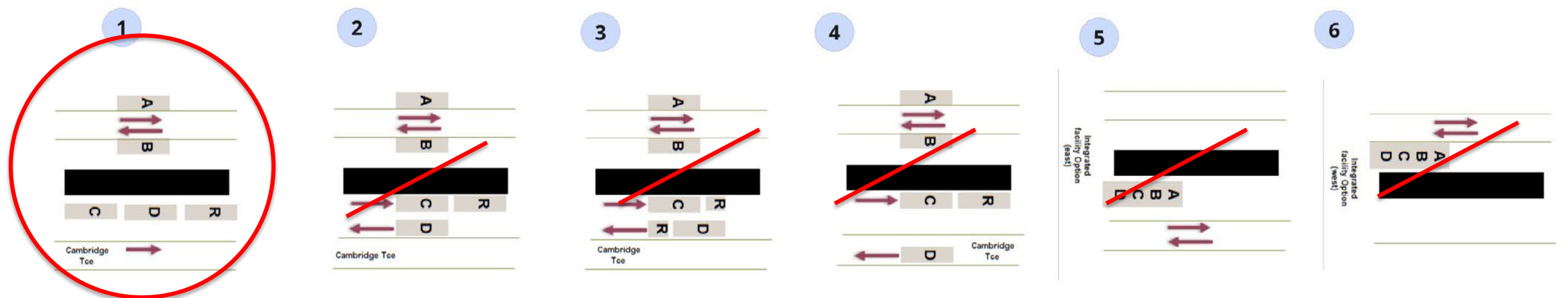
- Longer walking route from bus stops to Platform 2 (mitigated with extra entrance from bus interchange).
- Realigning platform affects the signal box, which introduces some complexity & risk
- Western station entry may face issues with peak congestion with concentrated entry at north end of platform.

Bus operating options – interchange configuration

- By 2041, peak bus services to Waterloo will increase from 19 to 36 buses per hour.
- Multiple operating concepts (below) have been tested to optimise service and wider area coverage.
- Preferred option: Enhanced interchange on the eastern side to support Wainuiomata growth opportunity, support ongoing need for rail replacement services and enable future service changes (e.g. demand-responsive services).
- Western stops would be retained and upgraded — relocating them to the eastern side adds significant travel time disadvantages due to nearby bridge.
- Improve amenity and access on both sides of the station to create a single, cohesive interchange facility.



Considered bus interchange concepts:



BASE CASE

REPAIR / REPLACE ROOF - MAINTAIN EXISTING

FEATURES:

1. Repair/replace station canopy and remove existing station building
2. Ongoing maintenance of aging amenity and assets

BENEFITS:

- Likely least expensive option (depending on results from soil testing / liquefaction trigger and analysis of tunnel performance)

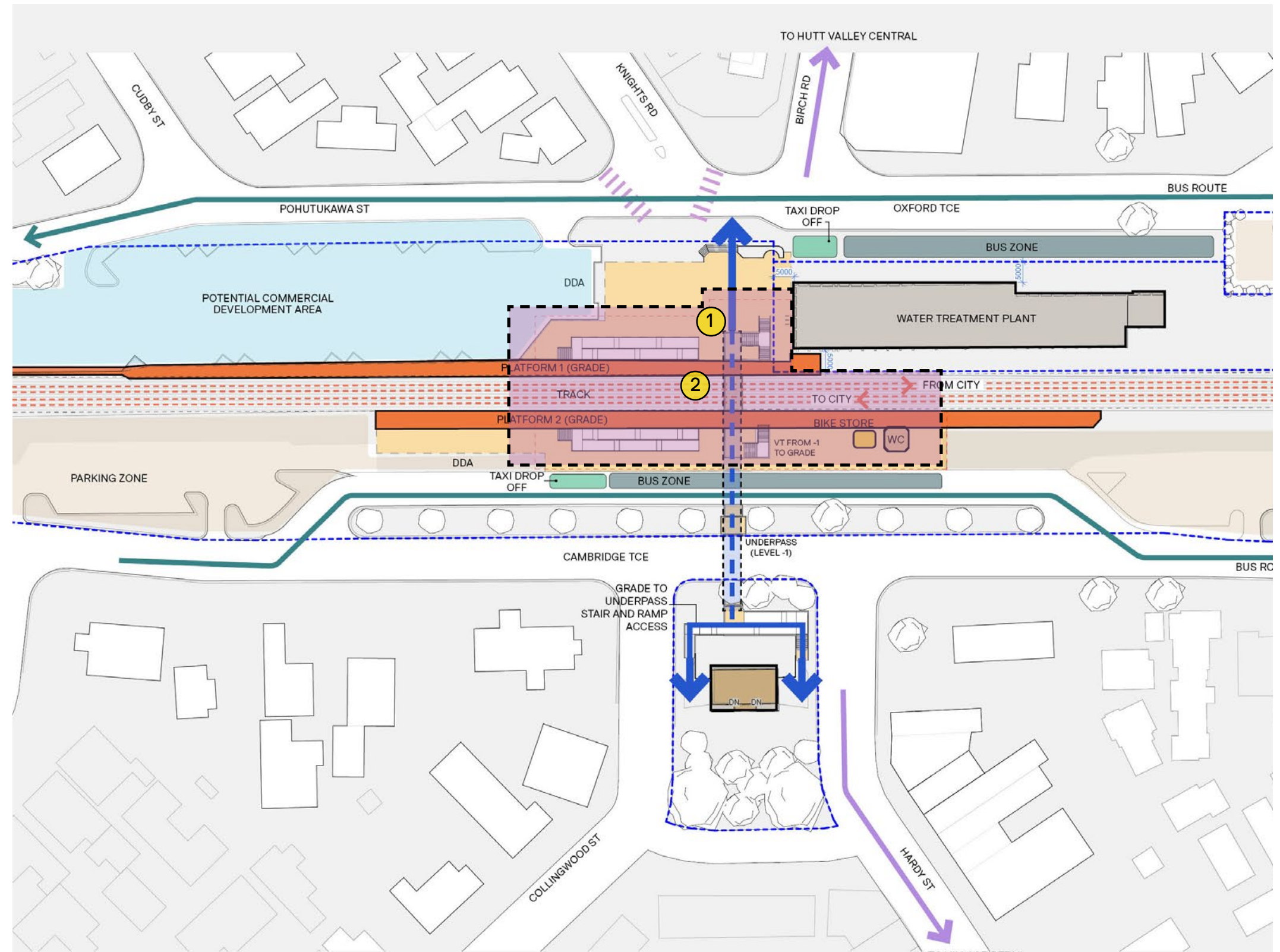
DISADVANTAGES:

- Possible concrete degradation, at year 37 of 50-year design life cycle

*Surface level changes to consolidate bus interchange, platform modifications / shelter (canopies) to be developed.

KEY:

- Platforms
- Concourse
- Bus zone
- Carparking
- Vertical Transport
- Taxi/PUDO
- GWRC Ownership



OPTION 01

UPGRADE PLATFORMS AND UNDERPASS RAMPS & STAIRS

FEATURES:

1. Upgrade platforms to meet Design Brief – increase length and width (190m long x 5m wide)
2. Shift northern platform away from water treatment plant (5 m buffer zone)
3. Upgrade underpass access:
 - a. Platform: increased ramp length and stair changes for BC compliance
 - b. Trafalgar Square and Oxford Terrace: increased ramp length and stair changes for BC compliance
4. Interchange upgrades
 - a. Upgrade bus interchange configuration on Cambridge Terrace and Oxford Terrace
 - b. Upgrade car parking arrangement

BENEFITS:

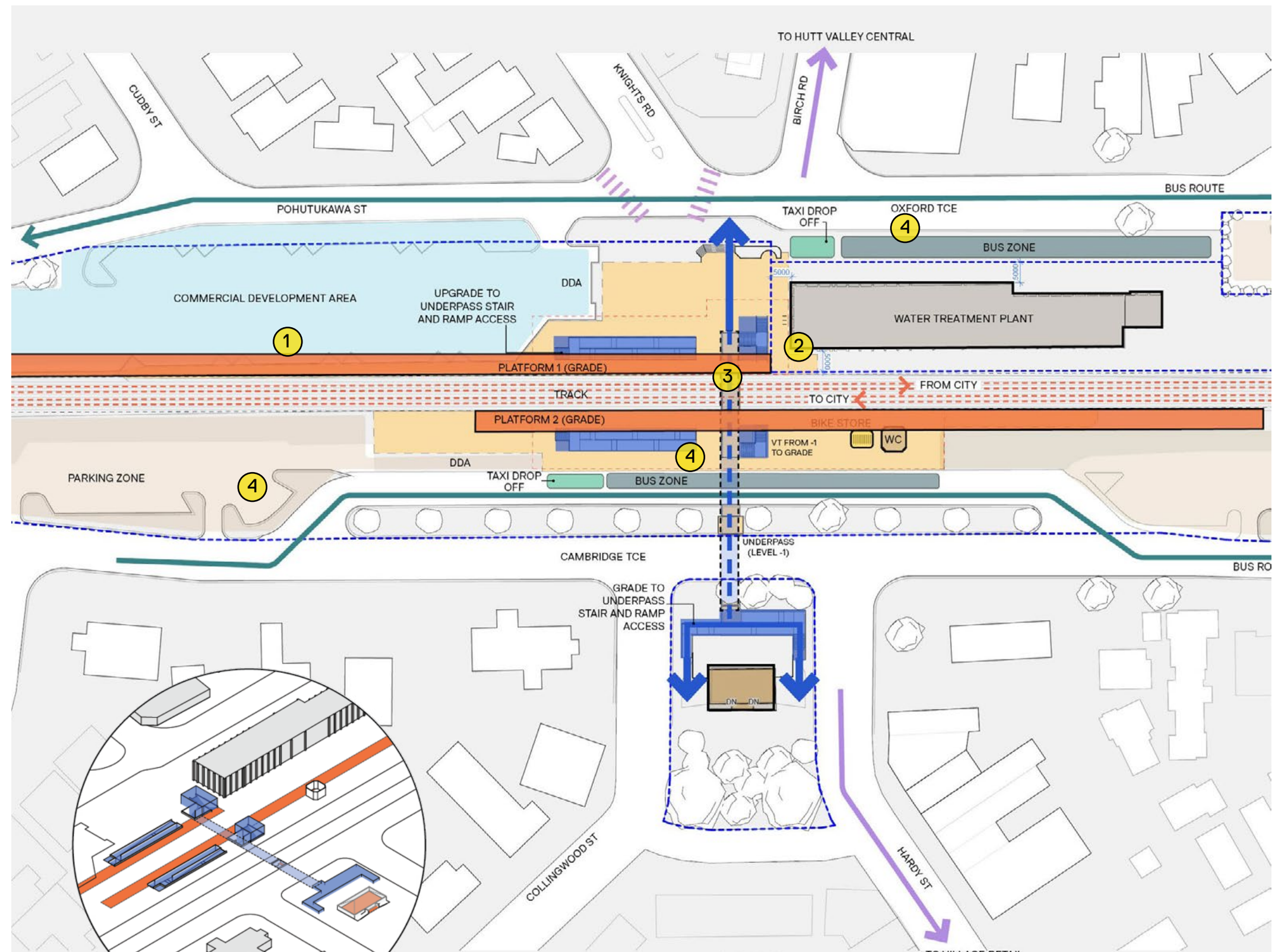
- Provides compliant platforms
- Provides DDA Compliant access through underpass and to platforms
- Retain existing underpass

DISADVANTAGES:

- Possible concrete degradation, at year 37 of 50-year design life cycle
- Potential challenges where stairs / ramp come into the 'side' of tunnel

KEY:

- Platforms
- Concourse
- Bus zone
- Carparking
- Vertical Transport
- Taxi/PUDO
- GWRC Ownership



CONCEPT 3D

OPTION 01A

ALIGNED (UPGRADED) PLATFORMS - UNDERPASS RAMPS & STAIRS

FEATURES:

1. Upgrade platforms to meet Design Brief – increase length and width (190m long x 5m wide)
2. Platforms aligned
3. Shift northern platform away from water treatment plant (5 m buffer zone)
4. Upgrade underpass access:
 - a. Platform: increased ramp length and stair changes for BC compliance.
 - b. Trafalgar Square and Oxford Terrace: increased ramp length and stair changes for BC compliance
5. Interchange upgrades
 - a. Upgrade bus interchange configuration on Cambridge Terrace and Oxford Terrace
 - b. Upgrade car parking arrangement

BENEFITS:

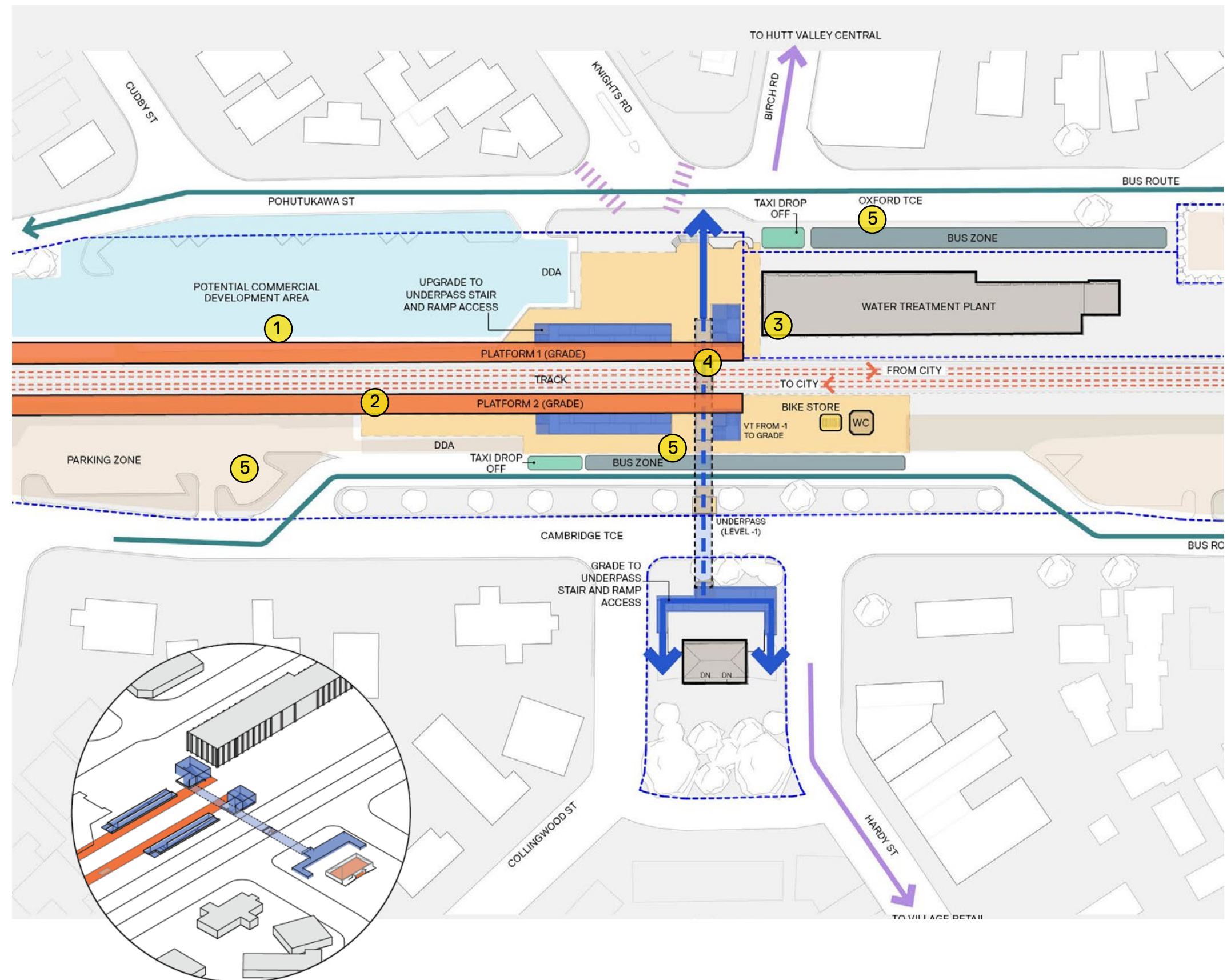
- Provides compliant platforms
- Provides DDA Compliant access through underpass and to platforms
- Painless alteration provided ramp extension happens without affecting structural envelope of existing tunnel

DISADVANTAGES:

- Possible concrete degradation, at year 37 of 50-year design life cycle
- Potential challenges where stairs / ramp come into the 'side' of tunnel

KEY:

- Platforms
- Concourse
- Bus zone
- Carparking
- Vertical Transport
- Taxi/PUDO
- GWRC Ownership



CONCEPT 3D

OPTION 02

UPGRADED PLATFORMS - UPGRADE UNDERPASS - NEW LIFTS & STAIRS TO PLATFORM

FEATURES:

1. Upgrade platforms to meet Design Brief – increase length and width (190m long x 5m wide)
2. Upgrade underpass access:
 - a. New stairs and lifts
 - b. Increased ramp length and stair changes for BC compliance from Cambridge Terrace and Oxford Terrace
3. Shift northern platform away from water treatment plant (5 m buffer zone)
4. Interchange upgrades
 - a. Upgrade bus interchange configuration on Cambridge Terrace and Oxford Terrace
 - b. Upgrade car parking arrangement

BENEFITS:

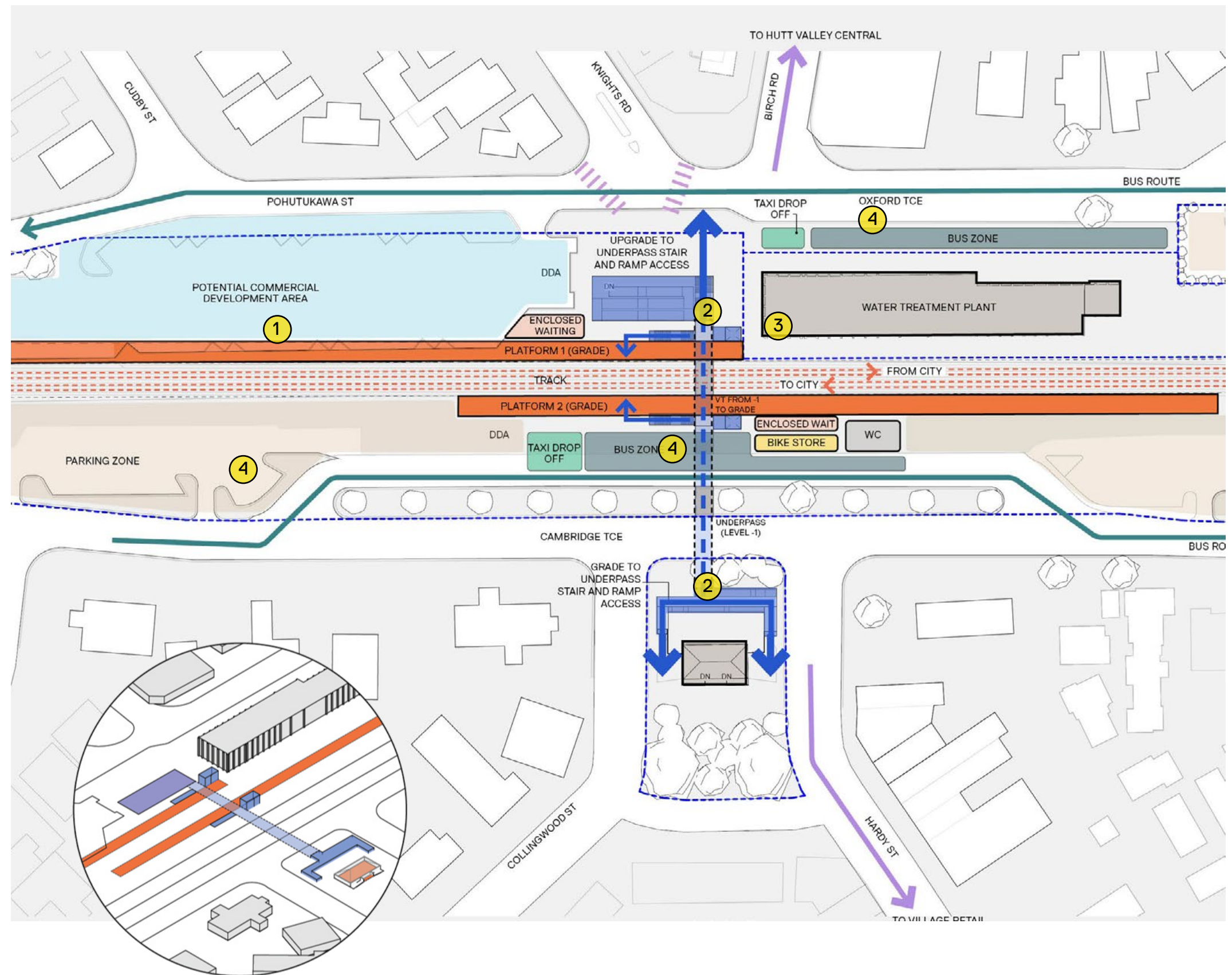
- Provides compliant platforms
- Provides DDA Compliant access through underpass and to platforms
- Improved vertical transport to platforms (lifts & updated stair access)
- Maintain existing underpass

DISADVANTAGES:

- Possible concrete degradation, at year 37 of 50-year design life cycle
- Potential challenges where stairs / ramp come into the 'side' of tunnel

KEY:

- Platforms
- Concourse
- Bus zone
- Carparking
- Vertical Transport
- Taxi/PUDO
- GWRC Ownership



CONCEPT 3D

OPTION 03

UPGRADED PLATFORMS - REDUCED UNDERPASS - NEW PEDESTRIAN CROSSING

FEATURES:

1. Upgrade platforms to meet Design Brief – increase length and width (190m long x 5m wide)
2. Introduction of a level crossing on Cambridge terrace for at grade station access
3. Upgrade underpass access
4. New stairs and lifts for accessible platform access (includes vertical transport)
5. Reduce length of underpass
6. Improved station entry experience

BENEFITS:

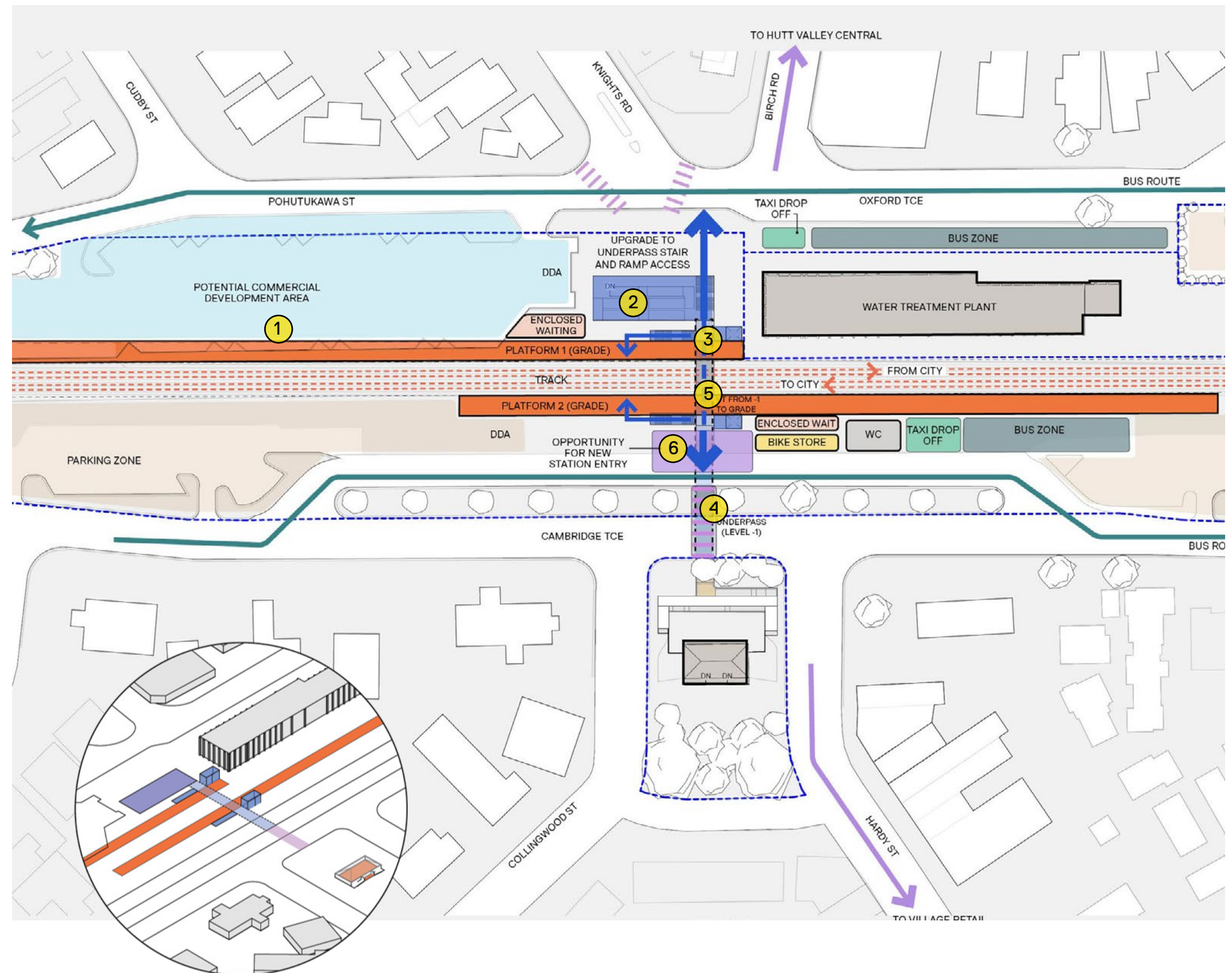
- Shorter underpass – improved sightlines
- DDA Compliant access through underpass and to platforms
- At grade crossing creates public entry

DISADVANTAGES:

- Introduces a pedestrian crossing on Cambridge terrace
- Possible concrete degradation, at year 37 of 50-year design life cycle
- Potential challenges where stairs / ramp come into the 'side' of tunnel

KEY:

- Platforms
- Concourse
- Bus zone
- Carparking
- Vertical Transport
- Taxi/PUDO
- GWRC Ownership



CONCEPT 3D

OPTION 04

UPGRADED PLATFORMS - UPGRADE UNDERPASS, RAMPS, STAIRS & ENTRY

FEATURES:

1. As per option 1 with improved public access into underpass at the Trafalgar square (terraced sunken garden)
2. Improved access from Oxford Terrace into underpass

BENEFITS:

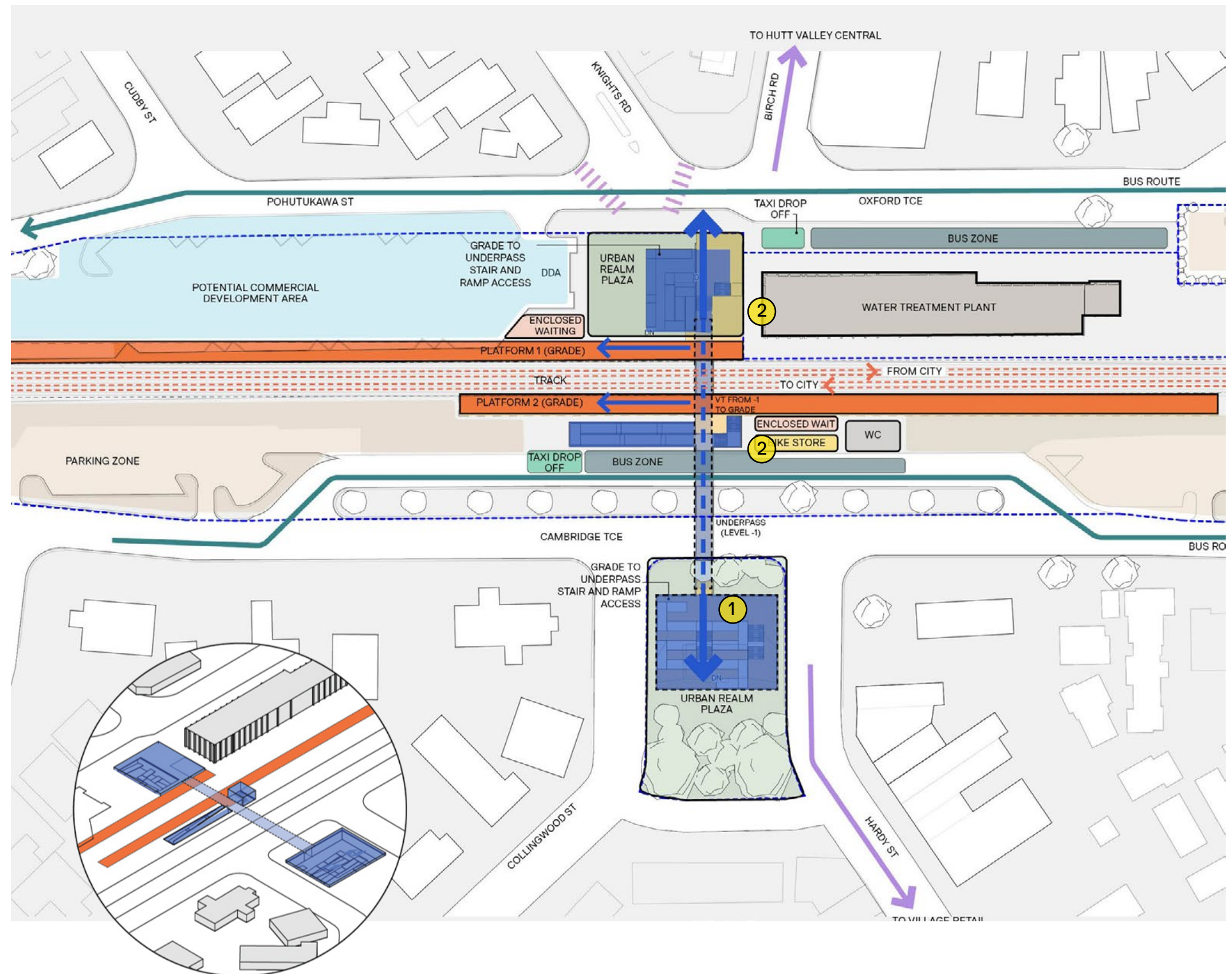
- Provides DDA Compliant access through underpass and to platforms
- Opportunity to expand underpass width in the future
- Improved public realm and station amenity
- Improved cross corridor pedestrian connectivity
- Improved safety & CPTED through underpass (line of sight, amenity)
- Retains grade separated cross corridor link
- Maintains majority of existing underpass

DISADVANTAGES:

- Drainage of open cut areas needs to be considered
- Potential removal of contaminated soil
- Possible concrete degradation, at year 37 of 50-year design life cycle
- Potential challenges where stairs / ramp come into the 'side' of tunnel

KEY:

-  Platforms
-  Concourse
-  Bus zone
-  Carparking
-  Vertical Transport
-  Taxi/PUDO
-  GWRC Ownership



CONCEPT 3D

OPTION 05

UPGRADED PLATFORMS - UNDERPASS REMOVED - NEW OVERPASS

FEATURES:

1. Upgrade platforms for compliance
2. New overbridge as public and commuter cross corridor and cross-road connection
3. Underpass removed
4. New vertical transport

BENEFITS:

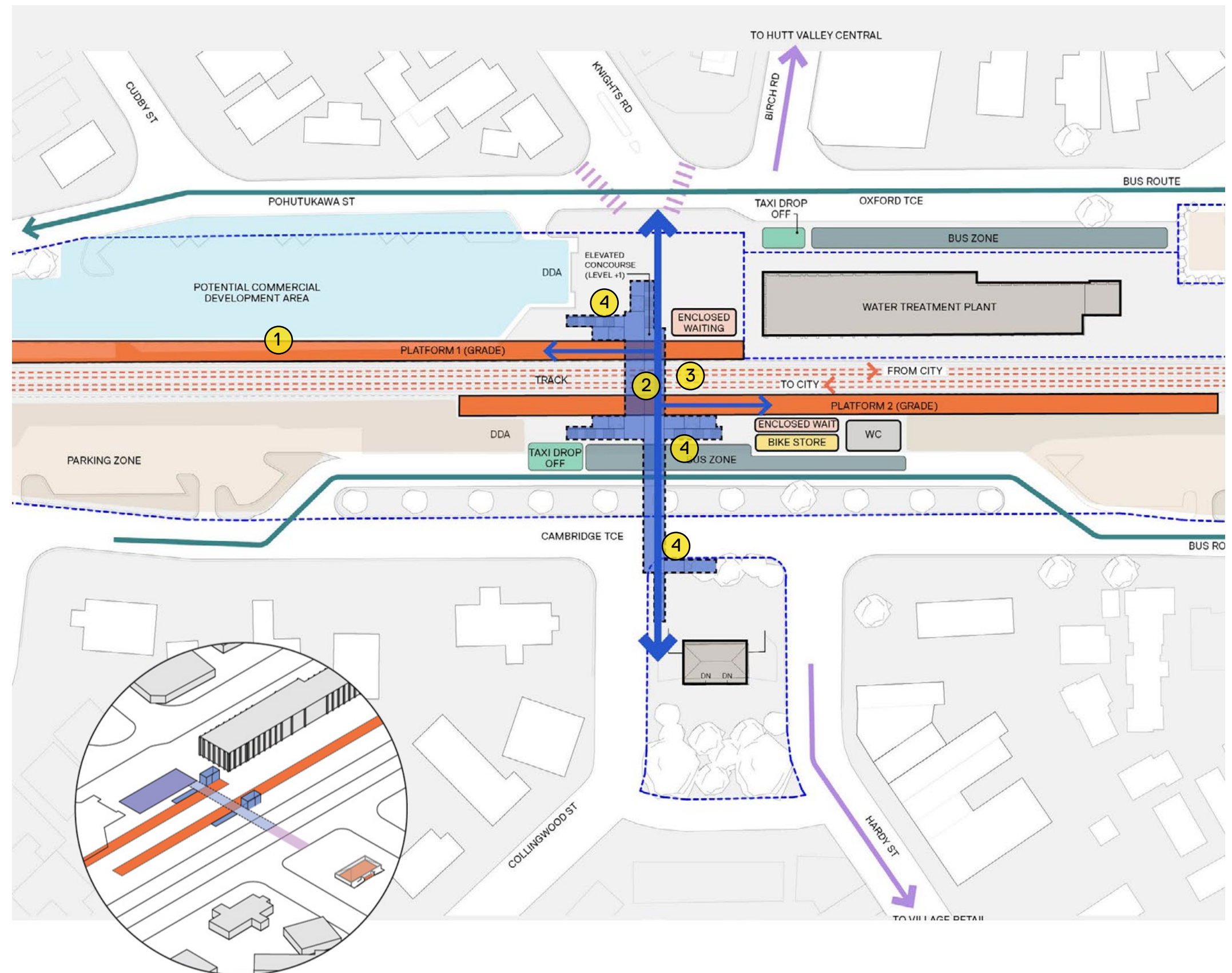
- Reduces CPTED and accessibility issues by removing the underpass
- Combines public and commuter cross corridor link – passive surveillance benefits
- Provides compliant cross corridor and cross road access

DISADVANTAGES:

- Increased visual bulk – requires a considered architectural & Urban Design response
- Increased pedestrian journey – vertical movement increases

KEY:

- Platforms
- Concourse
- Bus zone
- Carparking
- Vertical Transport
- Taxi/PUDO
- GWRC Ownership



CONCEPT 3D

OPTION 05: INDICATIVE VIEW



OPTION 05A

ALIGNED (UPGRADED) PLATFORMS - UNDERPASS REMOVED - NEW OVERPASS WITH RAMPS

FEATURES:

1. Upgrade platforms for compliance
2. Platforms aligned
3. New overbridge as public and commuter cross corridor and cross road connection
4. Underpass removed
5. Ramps added - resilience
6. Includes vertical transport

BENEFITS:

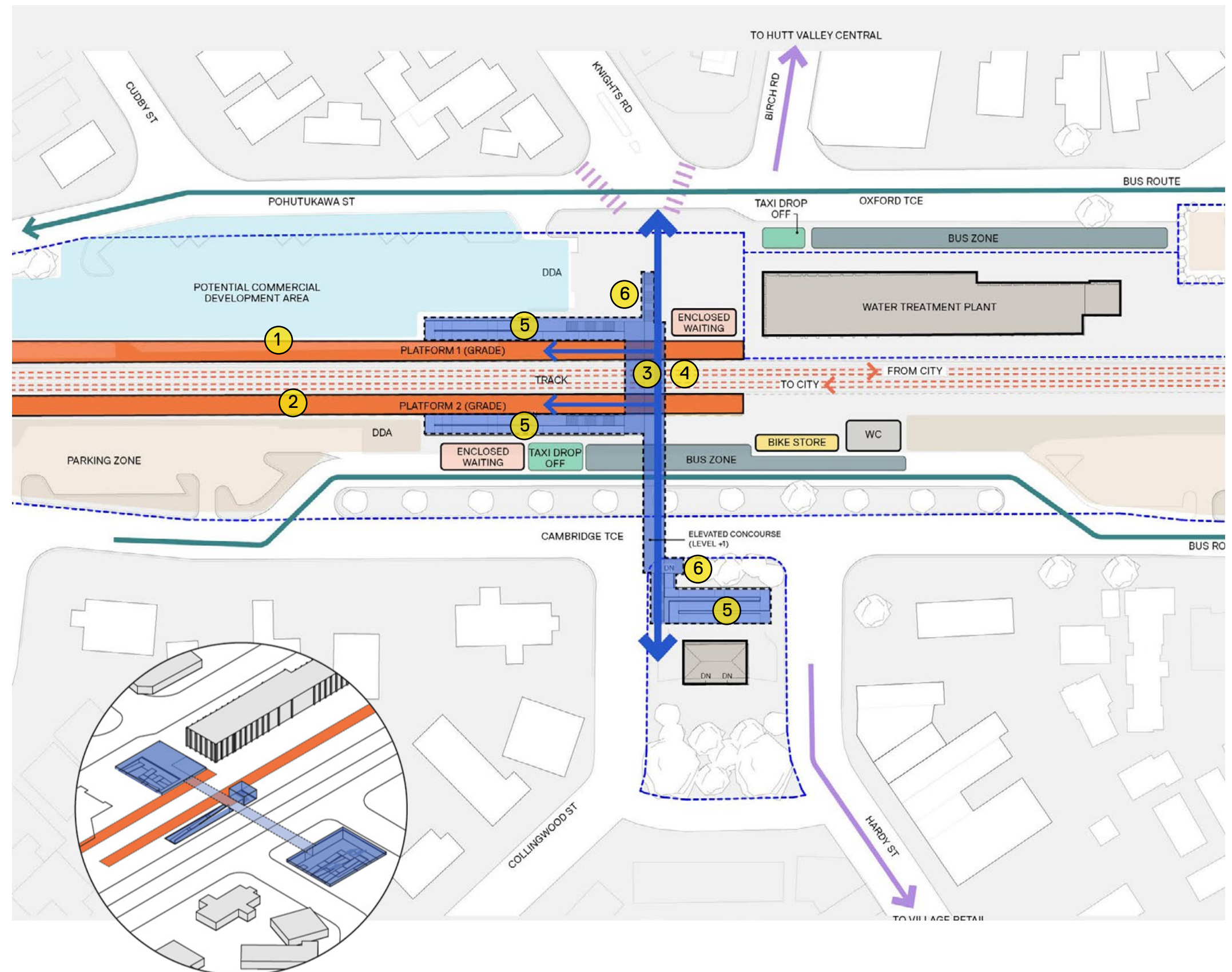
- Removes issues of safety and non-compliant issues by removing the underpass
- Combines public and commuter cross corridor link – passive surveillance benefits
- Provides compliant cross corridor and cross road access

DISADVANTAGES:

- Increased visual bulk – Requires a considered architectural & Urban Design response
- Increased pedestrian journey – vertical movement increases

KEY:

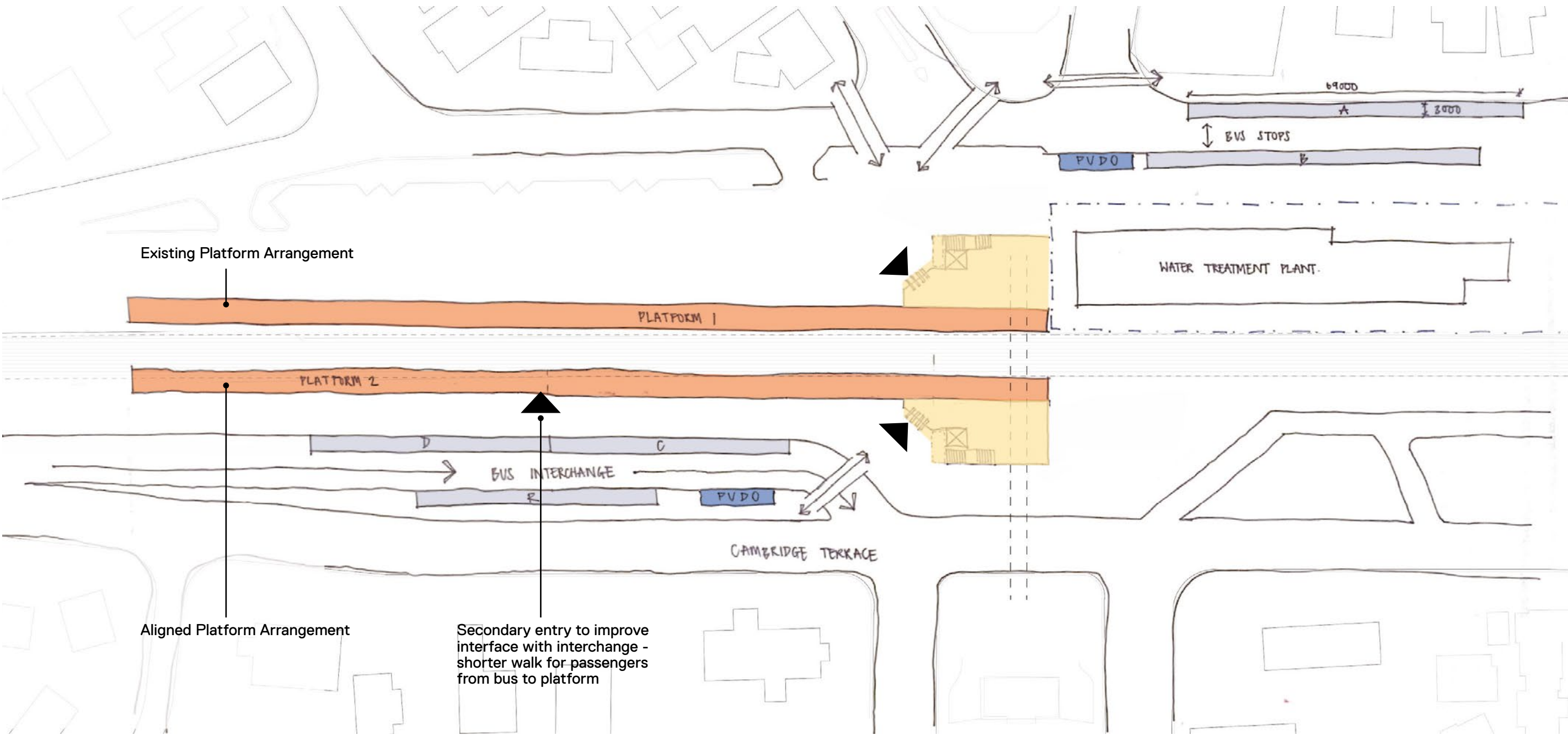
- Platforms
- Concourse
- Bus zone
- Carparking
- Vertical Transport
- Taxi/PUDO
- GWRC Ownership



CONCEPT 3D

OPTION 1B

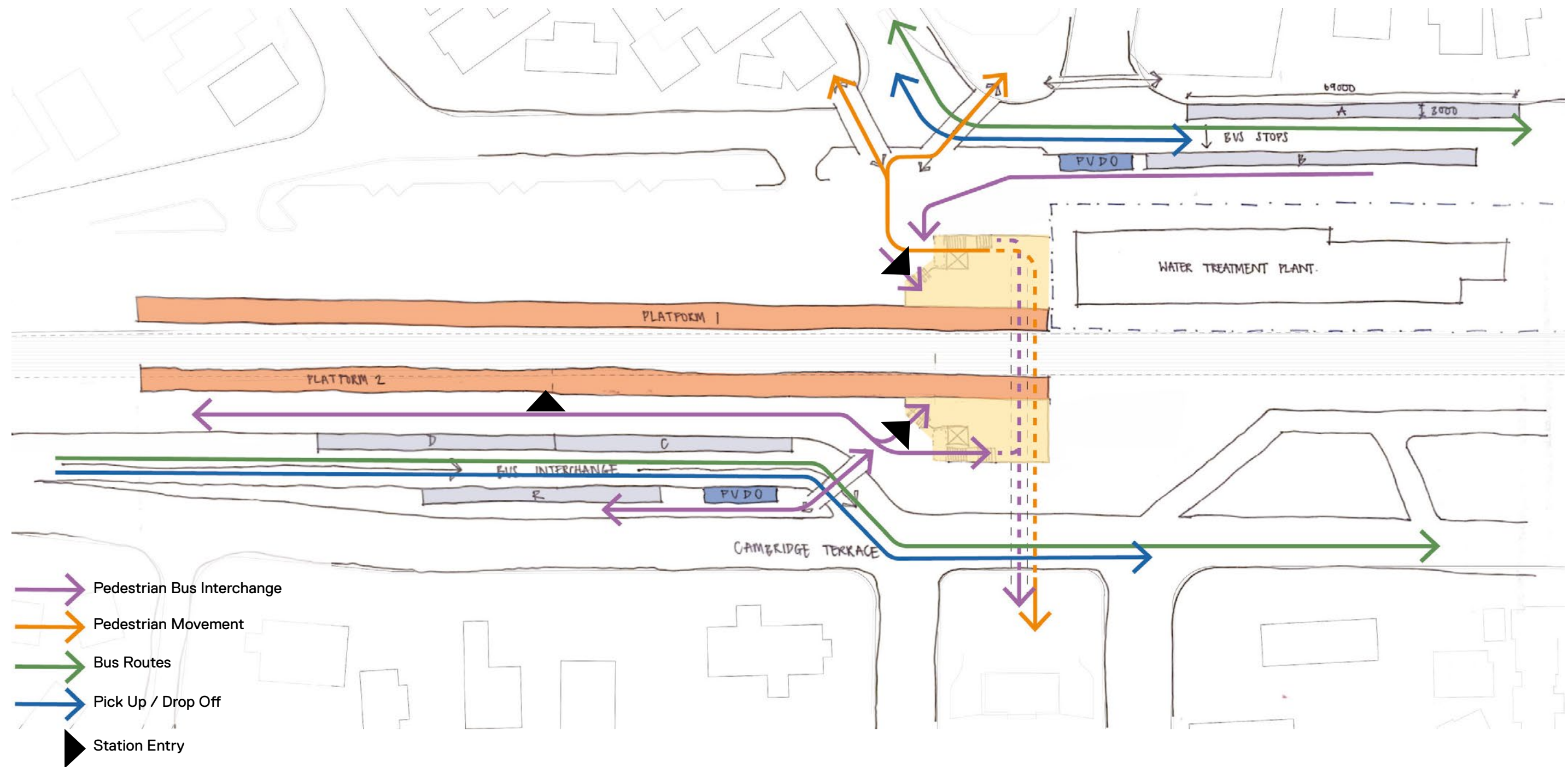
ALIGNED PLATFORMS WITH BUS INTERCHANGE



- KEY:
- Platforms
 - Station Circulation
 - Bus zone

OPTION 1B

ALIGNED PLATFORMS WITH BUS INTERCHANGE - KEY CIRCULATION



OPTION 02

UPGRADED PLATFORMS - UPGRADE UNDERPASS - NEW LIFTS & STAIRS TO PLATFORM

FEATURES:

1. Upgrade platforms to meet Design Brief – increase length and width (190m long x 5m wide)
2. Upgrade underpass access:
 - a. New stairs and lifts
 - b. Increased ramp length and stair changes for BC compliance from Cambridge Terrace and Oxford Terrace
3. Shift northern platform away from water treatment plant (5 m buffer zone)
4. Interchange upgrades
 - a. Upgrade bus interchange configuration on Cambridge Terrace and Oxford Terrace
 - b. Upgrade car parking arrangement

BENEFITS:

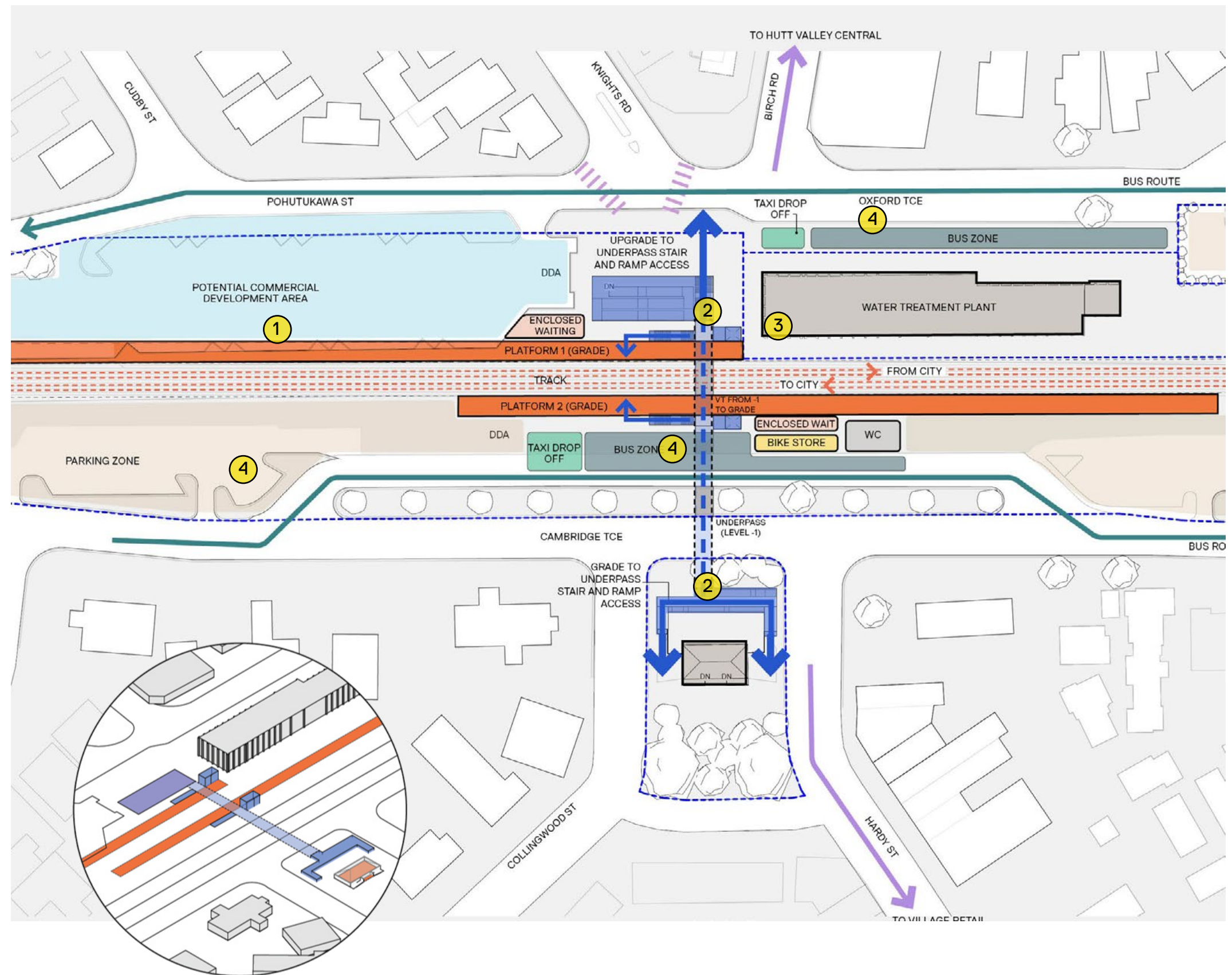
- Provides compliant platforms
- Provides DDA Compliant access through underpass and to platforms
- Improved vertical transport to platforms (lifts & updated stair access)
- Maintain existing underpass

DISADVANTAGES:

- Possible concrete degradation, at year 37 of 50-year design life cycle
- Potential challenges where stairs / ramp come into the 'side' of tunnel

KEY:

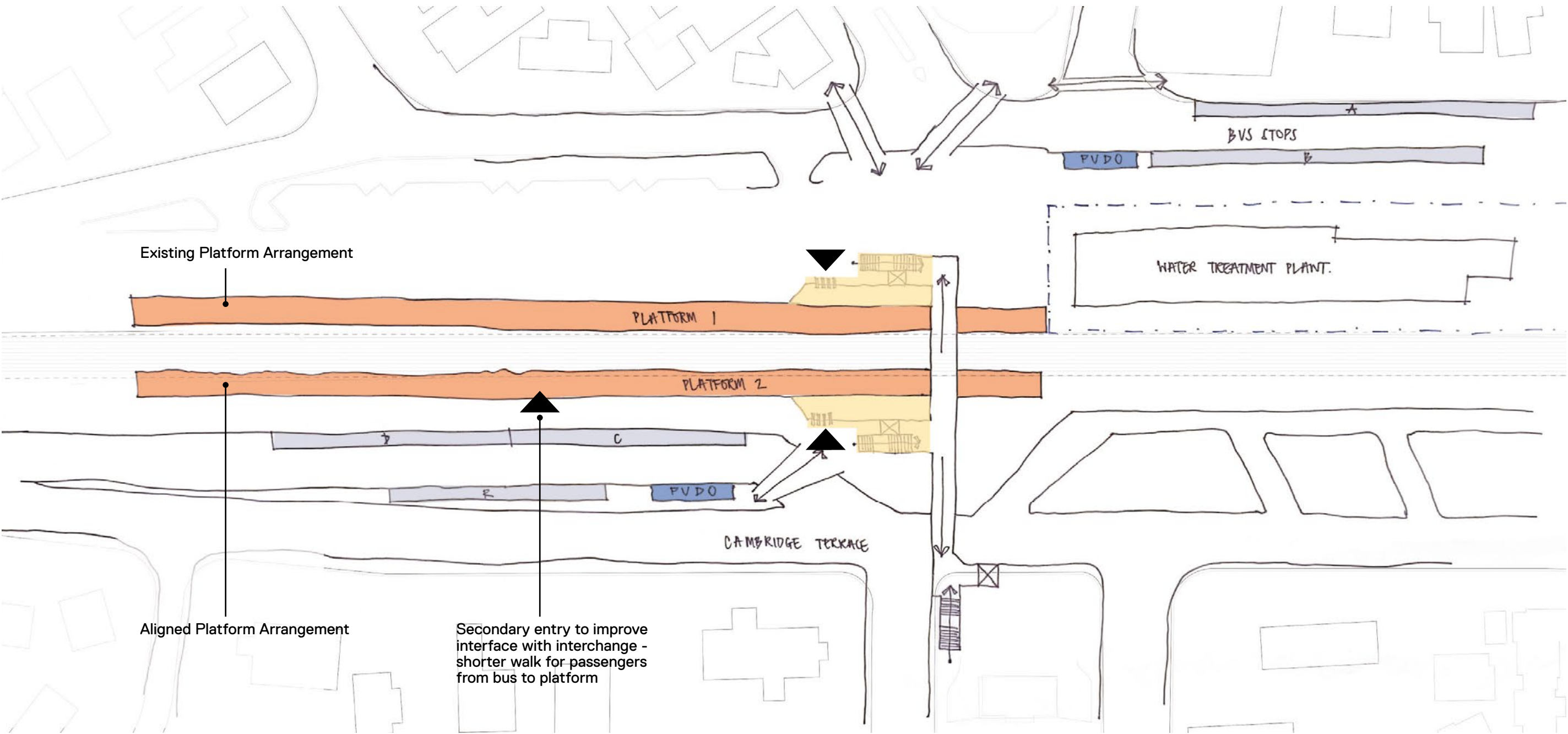
- Platforms
- Concourse
- Bus zone
- Carparking
- Vertical Transport
- Taxi/PUDO
- GWRC Ownership



CONCEPT 3D

OPTION 5B

OVERPASS BRIDGE + ALIGNED PLATFORMS WITH BUS INTERCHANGE

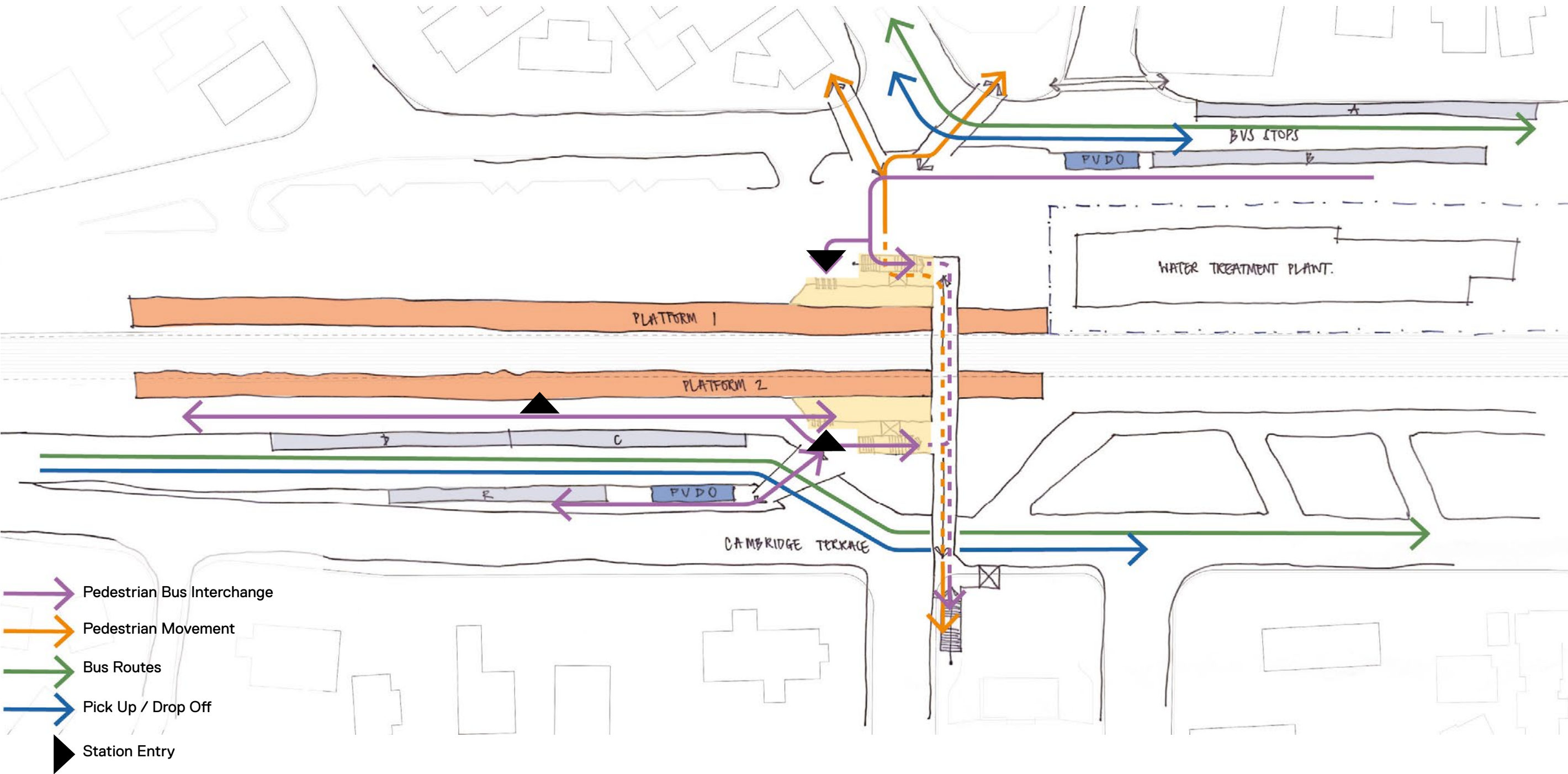


KEY:

- Platforms
- Station Circulation
- Bus zone

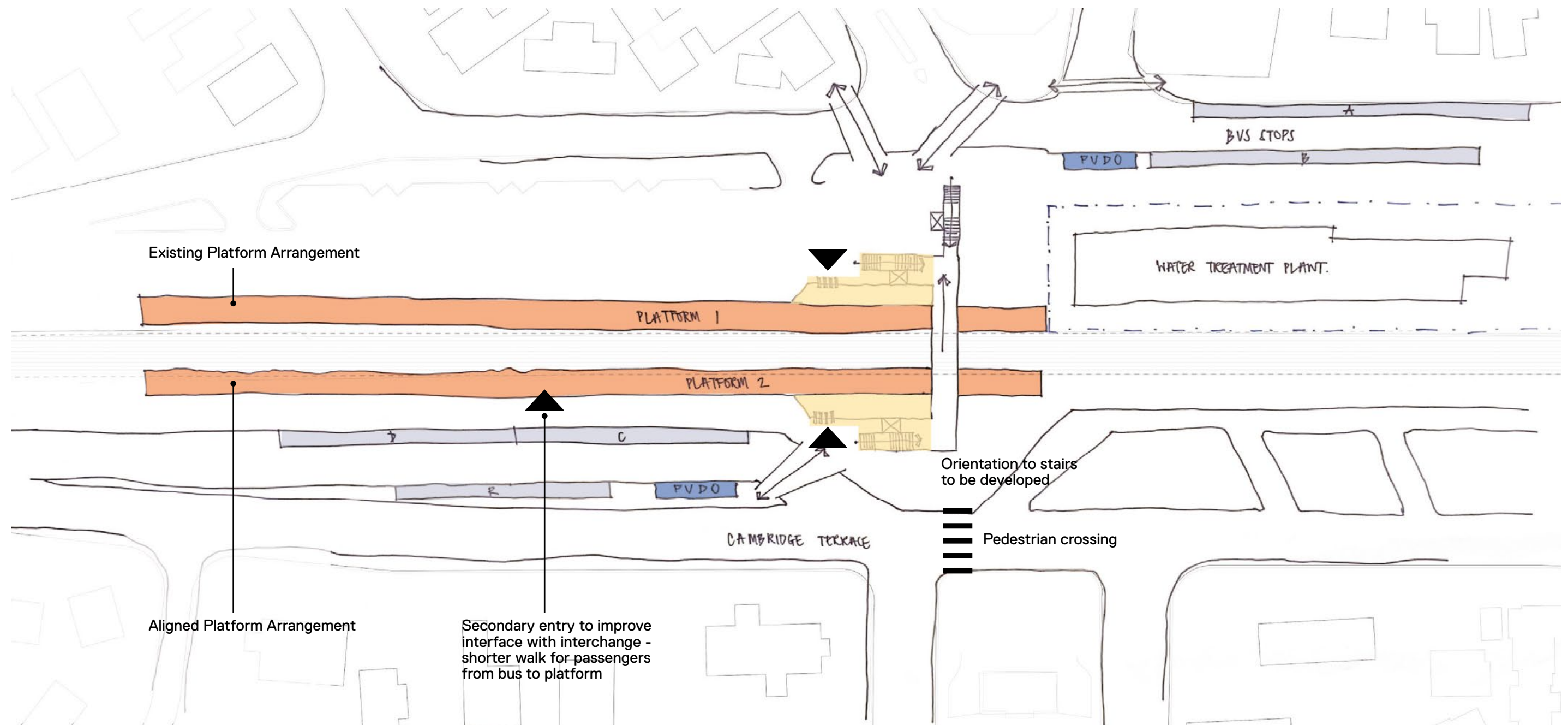
OPTION 5B

OVERPASS BRIDGE + ALIGNED PLATFORMS WITH BUS INTERCHANGE



OPTION 17

OVERPASS BRIDGE + ALIGNED PLATFORMS WITH BUS INTERCHANGE AND AT GRADE PEDESTRIAN CROSSING

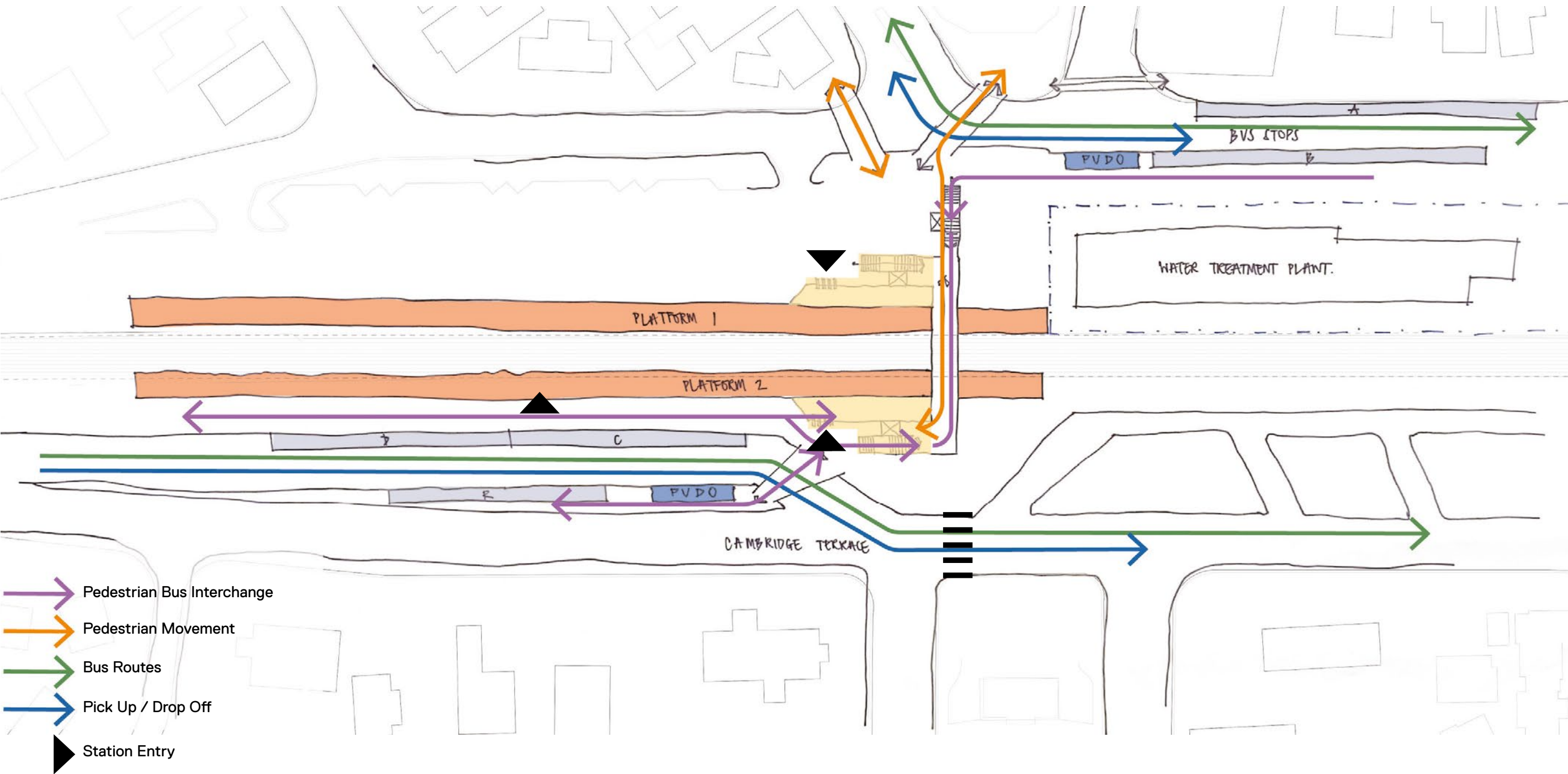


KEY:

- Platforms
- Station Circulation
- Bus zone

OPTION 17

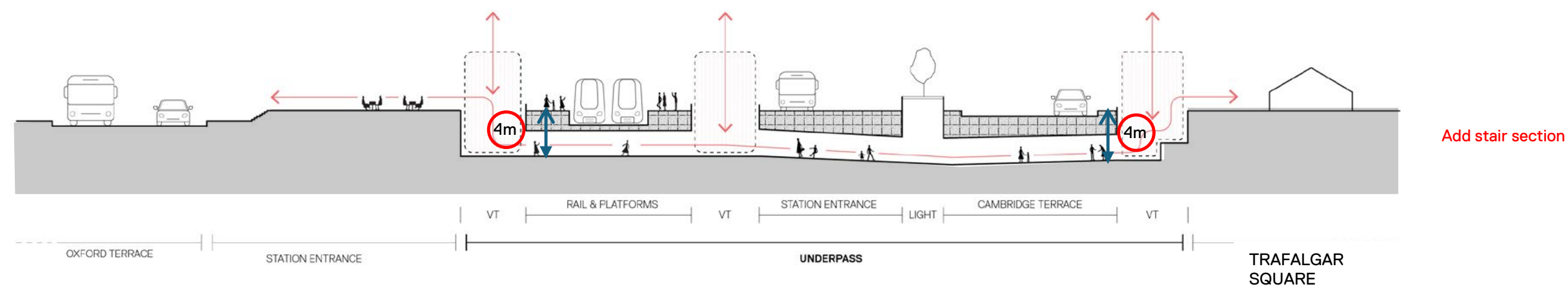
OVERPASS BRIDGE + ALIGNED PLATFORMS WITH BUS INTERCHANGE AND AT GRADE PEDESTRIAN CROSSING



East West connection

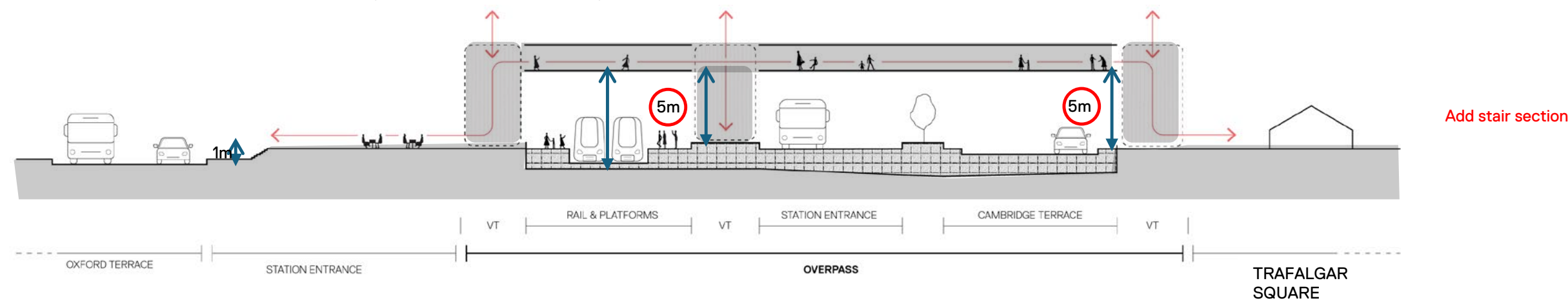
1. Upgraded underpass

Upgraded - Compliant (extending the ramps and resurfacing + provide updated cover)



2. Overpass bridge (sub option to serve station only)

Part covered (roof and perf screen) or fully sealed (roof and glazed envelope of the bridge)





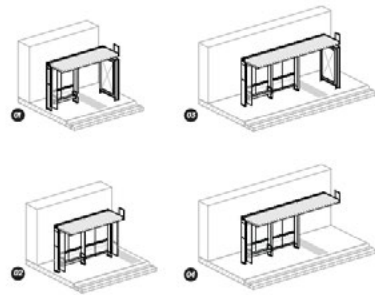
Precedent Images – Queensway Transit Exchange



Precedent Images – Queensway Transit Exchange

Bus Shelter Typologies

- 1 Small Shelter with Advertising
- 2 Small Shelter without Advertising
- 3 Standard Shelter with Advertising
- 4 Standard Shelter without Advertising
- 5 Special Shelter - 6 Days
- 6 Special Shelter - 6 Days



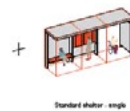
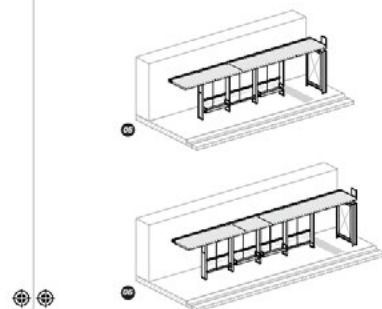
Kit of Parts Approach

A modular kit of parts allows different configurations to suit site constraints. High performance street furniture shelters with large canopies and minimal infrastructure on ground for optimized pedestrian movement.



End-cantilever module

Additional modules which can be added to extend shelter (posting, signage, wind break)



Standard shelter - single

Scalable kit of parts – Sydney Street Furniture



Precedent Images – At grade crossing

MCA ASSESSMENT WORKBOOK SUMMARY

Note: this is summary assessment compiling both stage 1 and 2 in one workbook
for complete workbook refer to file *Final Draft MCA Longlist Options Assessment worksheet V5.0* in the appendix folder

LONGLIST AS	LONGLIST ASS	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT	LONGLIST ASSESSMENT
Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Do Min (Base Case)	OPTION 01A: Aligned Platforms, upgraded Underpass	OPTION 01A: Aligned Platforms, upgraded Underpass	OPTION 01B: Aligned & Upgraded Platforms, Bus Interchange, underpass	Option 01Bi: Aligned & Upgraded Platforms, Bus Interchange, Short Underpass below rail corridor and Pedestrian Crossing at Cambridge Terrace	OPTION 02: upgrade platforms, underpass – new lifts and stairs, improved East West connection ramps	OPTION 03: upgraded platforms - reduced underpass – new pedestrian crossing	OPTION 04: upgrade platforms – upgrade underpass ramps & stairs & entry, sunk in plaza	OPTION 05: upgrade platforms – underpass removed – new overpass stairs and lifts	OPTION 05A: Aligned & upgraded platforms – underpass removed – new overpass stair, lifts and ramps	OPTION 5B - OVERPASS with Aligned & upgraded platforms & Consolidated Bus Interchange in SE
Fatal Flaws	Grimshaw Aurecon (Transport)	Identify those options that have technical fatal flaws and are excluded from further assessment	Achieves technical requirements of platform & track alignment and geometry	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
			Avoids the buffer area surround the Water Treatment Plant	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
			Closure of the rail corridor for unacceptable lengths of time or peak periods of use	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
			Avoids impacts on the existing road infrastructure	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
Community Connections	Grimshaw Boffa Miskell Tonkin & Taylor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the safe community connection from East to West (across rail corridor and Cambridge Terrace)	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Moderate negative (-ve)	Slight negative (-ve)	Neutral	Neutral	Neutral
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)	Neutral	Neutral	Neutral	Neutral	Slight positive (+ve)	Moderate positive (+ve)	Slight positive (+ve)	Moderate positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	Shortest walking distance route measured in minutes between transport modes.	Neutral	Neutral	Slight negative (-ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight negative (-ve)	Slight positive (+ve)	Slight positive (+ve)	Moderate negative (-ve)	Slight positive (+ve)
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.	Neutral	Neutral	Neutral	Neutral	Slight positive (+ve)	Slight positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)	Slight positive (+ve)	Slight negative (-ve)	Slight positive (+ve)
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Large negative (-ve)	Slight negative (-ve)	Moderate negative (-ve)	Neutral
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets	Neutral	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Neutral	Neutral	Neutral	Neutral	Slight negative (-ve)	Slight positive (+ve)
			The station and bus interchange is decoupled from the use of property not under control of GW	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Moderate negative (-ve)	Large negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)
Stageable and Adaptable	Aurecon (Transport) Grimshaw	Is demand led so that provides sufficient capacity, targeting a Level C level of service for rail passengers in the peak 15 minutes in the representative week in the busiest month (excluding disruptions) in 2025 and forecast passenger demand in its planned opening year of 2030 and by 2045 and 2060.	Ability for rail station capacity to be staged to match demand in 2030, 2045 & 2060 Provision of sufficient rail station capacity to achieve Level Service C for 2030, 2045 & 2060	INSUFFICIENT DETAIL AND INFORMATION AVAILABLE										
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	Complexity of construction and staging for delivery	Neutral	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Large negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)
			minimum number of months to complete construction	INSUFFICIENT DETAIL AND INFORMATION AVAILABLE										
			least number and shortest duration of rail corridor closures for construction	INSUFFICIENT DETAIL AND INFORMATION AVAILABLE										
			least number and shortest duration of road corridor closures for construction	INSUFFICIENT DETAIL AND INFORMATION AVAILABLE										
Technical requirements	Aurecon (Civil) Aurecon (Building Services) Boffa Miskell T&T Grimshaw	Meets technical requirement necessary for the construction, operation and consenting of the rail station, bus interchange and ancillary infrastructure and services	Criteria to come for the assessing the impact of the technical requirements on the environment, consenting, existing infrastructure and land	INSUFFICIENT DETAIL AND INFORMATION AVAILABLE										
				INSUFFICIENT DETAIL AND INFORMATION AVAILABLE										
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused	Neutral	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Large negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)
			Minimum area of soil disturbance and amount of earth needing disposal	Neutral	Slight negative (-ve)	Slight negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Large negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)
Decision (Progress or Discount)				Progress	Discount	Discount	Progress	Progress	Progress	Discount	Discount	Discount	Discount	Progress
Reason(s)	All			option outcome is not sufficiently different from base case	option outcome is not sufficiently different from base case		-3	-1	-1	-7	-12	-3	-11	-2

Magnitude	Definition for: Objectives, Constraints and Critical Issues
Large positive (+ve)	Significant positive effect
Moderate positive (+ve)	More than minor positive effect
Slight positive (+ve)	Minor positive effect
Neutral	No impact or no discernible difference
Slight negative (-ve)	Minor adverse effect
Moderate negative (-ve)	More than minor adverse effect
Large negative (-ve)	Significant adverse effect
Fatal Flaw	Technical fatal flaw
Not scored	

Magnitude derived from comparson with status quo

Decision
Progress
Discount

Longlist Assessment															
Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Do Min (Base Case)	OPTION 01A: Aligned Platforms, upgraded Underpass	OPTION 01A: Aligned Platforms, upgraded Underpass	OPTION 01B: Aligned & Upgraded Platforms, Bus Interchange, underpass	Option 01B: Aligned & Upgraded Platforms, Bus Interchange, Short Underpass below rail corridor and Pedestrian Crossing at Cambridge Terrace	OPTION 02: upgrade platforms, underpass – new lifts and stairs, improved East West connection ramps	OPTION 03: upgraded platforms – reduced underpass – new pedestrian crossing	OPTION 04: upgrade platforms – upgrade underpass ramps & stairs & entry, sunk in plaza	OPTION 05: upgrade platforms – underpass removed – new overpass stairs and lifts	OPTION 05A: Aligned & upgraded platforms – underpass removed – new overpass stair, lifts and ramps	OPTION 5B – OVERPASS with Aligned & upgraded platforms & Consolidated Bus Interchange in SE	Option 17: Aligned Platforms, Bus Interchange, new overbridge over rail corridor, on grade Ped Xing Cambridge Tce
Fatal Flows	Grimshaw Aurecon (Transport)	Identify those options that have technical fatal flaws and are excluded from further assessment	Achieves technical requirements of platform & track alignment and geometry	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
			Avoids the buffer area around the Water Treatment Plant	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
			Closure of the rail corridor for unacceptable lengths of time or peak periods of use	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
			Avoids impacts on the existing road infrastructure	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
Community Connections	Grimshaw Boffa Miskell Tonkin & Taylor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the safe community connection from East to West (across rail corridor and Cambridge Terrace)	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Moderate negative (-ve)	Slight negative (-ve)	Neutral	Neutral	Neutral	Neutral
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)	Neutral	Neutral	Neutral	Neutral	Slight positive (+ve)	Moderate positive (+ve)	Slight positive (+ve)	Moderate positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Moderate positive (+ve)
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	Shortest walking distance route measured in minutes between transport modes.	Neutral	Neutral	Slight negative (-ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight negative (-ve)	Slight positive (+ve)	Slight positive (+ve)	Moderate negative (-ve)	Slight positive (+ve)	Moderate positive (+ve)
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.	Neutral	Neutral	Neutral	Neutral	Slight positive (+ve)	Slight positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)	Slight positive (+ve)	Slight negative (-ve)	Slight positive (+ve)	Moderate positive (+ve)
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Large negative (-ve)	Slight negative (-ve)	Moderate negative (-ve)	Neutral	Neutral
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets	Neutral	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Neutral	Neutral	Neutral	Neutral	Slight negative (-ve)	Slight positive (+ve)	Slight positive (+ve)
			The station and bus interchange is decoupled from the use of property not under control of GW	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Moderate negative (-ve)	Large negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Slight negative (-ve)
Stageable and Adaptable	Aurecon (Transport) Grimshaw	Is demand led so that provides sufficient capacity, targeting a Level C level of service for rail passengers in the peak 15 minutes in the representative week in the busiest month (excluding disruptions) in 2025 and forecast passenger demand in its planned opening year of 2030 and by 2045 and 2060.	Ability for rail station capacity to be staged to match demand in 2030, 2045 & 2060	Insufficient detail and information available to assess long list option against criteria											0
			Provision of sufficient rail station capacity to achieve Level Service C for 2030, 2045 & 2060												0
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	Complexity of construction and staging for delivery	Neutral	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Large negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)
			minimum number of months to complete construction	Insufficient detail and information available to assess long list option against criteria											Moderate negative (-ve)
			least number and shortest duration of rail corridor closures for construction												Slight negative (-ve)
			least number and shortest duration of road corridor closures for construction												0
			minimum number of months for station closure												0
Technical requirements	Aurecon (Civil) Aurecon (Building Services) Boffa Miskell T&T Grimshaw	Meets technical requirement necessary for the construction, operation and consenting of the rail station, bus interchange and ancillary infrastructure and services	Criteria to come for the assessing the impact of the technical requirements on the environment, consenting, existing infrastructure and land	Insufficient detail and information available to assess long list option against criteria											0
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused	Neutral	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Large negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)
			Minimum area of soil disturbance and amount of earth needing disposal	Neutral	Slight negative (-ve)	Slight negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Large negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)
Decision (Progress or Discount)				Progress	Discount	Discount	Progress	Progress	Progress	Discount	Discount	Discount	Discount	Discount	Progress
Reason(s)	All			0	option outcome is not sufficiently different from base case	option outcome is not sufficiently different from base case	-3	-1	-1	-7	-12	-3	-11	-2	2

Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Identify those options that have techincal fatal flaws and are excluded from further assessment	Achieves technical requirements of platform & track alignment and geometry	Neutral	
	Avoids the buffer area surround the Water Treatment Plant	Neutral	
	Closure of the rail corridor for unacceptable lengths of time or peak periods of use	Neutral	
	Avoids impacts on the existing road infrastructure	Neutral	
Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the community connection from East to West (across rail corridor and Cambridge Terrace)	Neutral	minor upgrades required
	Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)	Neutral	
Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	How well does the station option protect the ability to integrate greatest number of bus interchange options.	Neutral	Bus interchange changes are part of the do minimum option.
	Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.	Neutral	
Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.	Neutral	
	The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets	Neutral	
	The station and bus interchange is decoupled from the use of property not under control of GW	Neutral	
Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery	Neutral	Consideration remains for the viability of retaining and upgrading the existing underpass, including for temporary works. Assumption for comparison against the base case allows for substantial works to the existing underpass. Further exploration and detail around measures for length of time and complexity etc. for closures to these in shortlist.
Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused	Neutral	
	Minimum area of soil disturbance and amount of earth needing disposal	Neutral	

OPTION 01: upgraded platforms and underpass ramps & stairs ASSESSMENT					
Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the community connection from East to West (across rail corridor and Cambridge Terrace).	Neutral	Retains community connection, does not require adjustment of user habits.
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)	Neutral	(Note: Ability to maintain step free connection during construction is not acheivable and not measured as part of this criteria) Option introduces accessible ramps. Same as base case
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	How well does the station option protect the ability to integrate greatest number of bus interchange options.	Neutral	No change from do min. Compatible with all bus interchange options.
			Shortest walking distance route measured in minutes between transport modes.	Neutral	
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.	Neutral	No change from do min.
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.	Neutral	No change to base case - except minor extension of ramps.
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets	Neutral	Similar to base case.
			The station and bus interchange is decoupled from the use of property not under control of GW	Neutral	Similar to base case.
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery	Moderate negative (-ve)	
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused	Slight negative (-ve)	Retaining existing platform has a lesser impact from a sustainability perspective. No disruption to services inside of station footprint, assumed not impact mains infrastructure network. Minimal changes to basecase from a structural and geotech perspective.
			Minimum area of soil disturbance and amount of earth needing disposal	Slight negative (-ve)	Minor adjustment to the basecase for upgrade. This is on the assumption that the existing underpass is viable for upgrade.

OPTION 01A: Aligned Platforms, upgraded Underpass ASSESSMENT					
Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the community connection from East to West (across rail corridor and Cambridge Terrace).	Neutral	Retains community connection, does not require adjustment of user habits.
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)	Neutral	Option introduces accessible ramps. Same as base case
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	How well does the station option protect the ability to integrate greatest number of bus interchange options.	Slight negative (-ve)	Longer walking distance between bus stops and platform 2
			Shortest walking distance route measured in minutes between transport modes.	Slight negative (-ve)	
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.	Neutral	Slight increase in walking distrances.
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.	Neutral	Similar to base case.
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets	Slight positive (+ve)	Efficiencies gained from alignment of the platform.
			The station and bus interchange is decoupled from the use of property not under control of GW	Neutral	Similar to base case.
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery	Moderate negative (-ve)	Enables staging with the platform alignmnent which reduced complexity for retaining access during construction. Works to upgrade existing underpass retains complexity element.
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused	Slight negative (-ve)	Retaining existing platform has a lesser impact from a sustainability perspective. No disruption to services inside of station footprint, assumed not impact mains infrastructure network. Minimal changes to basecase from a structural and geotech perspective.
			Minimum area of soil disturbance and amount of earth needing disposal	Slight negative (-ve)	Minor adjustment to the basecase for upgrade. This is on the assumption that the existing underpass is viable for upgrade.

OPTION 1B -Aligned Platforms, Bus interchange, underpass

Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Fatal Flaws	Grimshaw Aurecon (Transport)	Identify those options that have techincal fatal flaws and are excluded from further assessment	Achieves technical requirements of platform & track alignment and geometry	Neutral	
			Avoids the buffer area surround the Water Treatment Plant	Neutral	
			Closure of the rail corridor for unacceptable lengths of time or peak periods of use	Neutral	
			Avoids impacts on the existing road infrastructure	Neutral	
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the safe community connection from East to West (across rail corridor and Cambridge Terrace).	Neutral	No change from do min. Compatible with all bus interchange options.
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)	Neutral	Lifts provide for grade change
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	Shortest walking distance route measured in minutes between transport modes.	Slight positive (+ve)	Better connection between bus interchange and Platform 2, Lift provides quicker connection to interchange compared to the ramps
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.	Neutral	Same as base case
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.	Neutral	Same as base case
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets	Slight positive (+ve)	Aligned platforms and bus interchange geometry more efficient
			The station and bus interchange is decoupled from the use of property not under control of GW	Neutral	Same as base case, easy to convert south eastern car park to bus interchange
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery	Moderate negative (-ve)	Enables staging with the platform alignmnent which reduced complexity for retaining access during construction. Works to upgrade existing underpass retains complexity element.
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused	Slight negative (-ve)	Retaining existing platform has a lesser impact from a sustainability perspective. No disruption to services inside of station footprint, assumed not impact mains infrastructure network. Minimal changes to basecase from a structural and geotech perspective.
			Minimum area of soil disturbance and amount of earth needing disposal	Moderate negative (-ve)	Lift pits for the underpass and proximity to rail corridor will have a greater impact than base case. Platforms moved requiring more earthworks.

OPTION 1B -Aligned Platforms, Bus interchange, underpass

Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Fatal Flaws	Grimshaw Aurecon (Transport)	Identify those options that have technical fatal flaws and are excluded from further assessment	Achieves technical requirements of platform & track alignment and geometry	Neutral	
			Avoids the buffer area surround the Water Treatment Plant	Neutral	
			Closure of the rail corridor for unacceptable lengths of time or peak periods of use	Neutral	
			Avoids impacts on the existing road infrastructure	Neutral	
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the safe community connection from East to West (across rail corridor and Cambridge Terrace).	Neutral	No change from do min. Compatible with all bus interchange options.
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)	Slight positive (+ve)	Lifts provide for grade change, improved line of sight from Cambridge, better access for bus users.
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	Shortest walking distance route measured in minutes between transport modes.	Slight positive (+ve)	Better connection between bus interchange and Platform 2, Lift provides quicker connection to interchange compared to the ramps
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.	Slight positive (+ve)	Level change via lift and stairs. Significant improvement to the pedestrian connection on the east of the station and bus interchange with Cambridge Terrace and Trafalgar Square
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.	Neutral	Same as base case
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets	Slight positive (+ve)	Aligned platforms and bus interchange geometry more efficient
			The station and bus interchange is decoupled from the use of property not under control of GW	Neutral	Same as base case, easy to convert south eastern car park to bus interchange. Level crossing of Cambridge Terrace removes underpass ramps on Trafalgar Square
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery	Moderate negative (-ve)	Enables staging with the platform alignment which reduced complexity for retaining access during construction. Works to upgrade existing underpass retains complexity element.
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused	Slight negative (-ve)	Retaining existing platform has a lesser impact from a sustainability perspective. No disruption to services inside of station footprint, assumed not impact mains infrastructure network. Minimal changes to basecase from a structural and geotech perspective.
			Minimum area of soil disturbance and amount of earth needing disposal	Moderate negative (-ve)	Lift pits for the underpass and proximity to rail corridor will have a greater impact than base case. Platforms moved requiring more earthworks.

OPTION 02: upgrade platforms, underpass – new lifts and stairs ASSESSMENT					
Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the community connection from East to West (across rail corridor and Cambridge Terrace).	Neutral	Retains community connection, does not require adjustment of user habits.
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)	Moderate positive (+ve)	Option introduces accessible ramps and vertical transport (to the platforms only) which is considered more beneficial for accessible connection (eg. Wheelchair users).
Transport Interchange			Shortest walking dsitance route measured in minutes between transport modes	Slight positive (+ve)	
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.	Slight positive (+ve)	Improvement from do min base case.
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.	Neutral	No change to base case - except minor extension of ramps.
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets	Neutral	Similar to base case.
			The station and bus interchange is decoupled from the use of property not under control of GW	Neutral	Similar to base case.
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery	Moderate negative (-ve)	Upgrade the underpass and upgrade platform.
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused	Slight negative (-ve)	Retaining existing platform has a lesser impact from a sustainability perspective. No disruption to services inside of station footprint, assumed not impact mains infrastructure network. Minimal changes to basecase from a structural and geotech perspective.
			Minimum area of soil disturbance and amount of earth needing disposal	Moderate negative (-ve)	Lift pits for the underpass and proximity to rail corridor will have a greater impact than base case.

OPTION 03: upgraded platforms - reduced underpass – new pedestrian crossing ASSESSMENT

Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the safe community connection from East to West (across rail corridor and Cambridge Terrace).	Moderate negative (-ve)	Behaviour change for pedestrian and road users (potential impact to road speeds and subsequently to bus network timeframes). Users cross at grade at Cambridge Terrace without a crossing. Signalling may be required which will increase length of time to cross, and encourage unlawful crossing. Most obvious and legible route to cross is at grade.
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)	Slight positive (+ve)	Introduced level crossing, further investigation required of the existing levels and spatial arrangement of ticket lines.
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	How well does the station option protect the ability to integrate greatest number of bus interchange options.	Slight negative (-ve)	Potential impact on bus operations.
			Length of the walk on the East West connections for minimum walking distance.	Slight negative (-ve)	
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.	Moderate positive (+ve)	On grade access improved interchange between different transport modes.
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.	Neutral	
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets	Neutral	
			The station and bus interchange is decoupled from the use of property not under control of GW	Moderate negative (-ve)	Requires HCC approvals for the grade level crossing.
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery	Moderate negative (-ve)	Pedestrian cross is easier. Less works to the underpass reduce level of complexity. Ability to stage during construction and maintaining access during construction considered more complex.
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused	Slight negative (-ve)	Reduction of underpass being re-used. New road crossing infrastructure and integration with underpass below rail tracks.
			Minimum area of soil disturbance and amount of earth needing disposal	Moderate negative (-ve)	Blocking / infill of the underpass, and lift pits for the underpass and proximity to rail corridor will have a greater impact than base case.

OPTION 04: upgrade platforms – upgrade underpass ramps & stairs & entry, sunk-in plaza					
Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain safe the community connection from East to West (across rail corridor and Cambridge Terrace).	Slight negative (-ve)	at grade crossing. Considered more negative due to safety element (CEPTD) which may attract antisocial behaviour without high level of security / passive surveillance.
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)	Moderate positive (+ve)	Would enable step free access through ramped access, and vertical transport across the rail corridor.
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	How well does the station option protect the ability to integrate greatest number of bus interchange options.	Neutral	
			Length of the walk on the East West connections for minimum walking distance.	Slight positive (+ve)	
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.	Moderate positive (+ve)	Reduces switchbacks from current arrangements.
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.	Large negative (-ve)	Loss of commercial land to the West for sunken plaza.
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets	Neutral	
			The station and bus interchange is decoupled from the use of property not under control of GW	Large negative (-ve)	Reliance on HCC approvals for land, and removal of community amenity building not owned by GW.
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery	Large negative (-ve)	Large excavation required, complexity to negate services considered more complex. More temporary works required. Complexity for access to platforms and maintaining operations is similar to other options.
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused	Large negative (-ve)	Significant excavation and existing services to be negated. Clashes with main water pipework infrastructure.
			Minimum area of soil disturbance and amount of earth needing disposal	Large negative (-ve)	Significant soil disturbance and quantity of earth to be disposed of.

OPTION 05: upgrade platforms – underpass removed – new overpass stairs and lifts ASSESSMENT					
Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the safe community connection from East to West (across rail corridor and Cambridge Terrace).	Neutral	Underpass removed, stairs and vertical transport only. Could be affected by the height of the overpass as this will impact length of time to cross, and customer perception is a longer distance. Retains access at all hours - no difference to current usability.
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)	Slight positive (+ve)	Has vertical transport which enables step free access. No ramps therefor the introduction of lifts offsets the measure against addition of the vertical transport.
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	How well does the station option protect the ability to integrate greatest number of bus interchange options.	Neutral	Less distance compared to underpass ramps in the base case Lift provision offers benefit for the interchange.
			Length of the walk on the East West connections for minimum walking distance.	Slight positive (+ve)	
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.	Slight positive (+ve)	
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.	Slight negative (-ve)	Uses area to the West.
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets	Neutral	Similar to basecase.
			The station and bus interchange is decoupled from the use of property not under control of GW	Moderate negative (-ve)	Over pass impact Hutt City Council land and impacts to existing building at Trafalgar Square
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery	Slight negative (-ve)	Construction of a bridge is less complex. Can be staged and integrated with temporary works. Location of overpass would need to be further developed and assessed for efficiencies. Removal of underpass and how this is achieved would require further investigation of how this is achieved.
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused	Moderate negative (-ve)	Removal of underpass, new infrastructure to go over the road - less re-use of the existing in comparison to the basecase.
			Minimum area of soil disturbance and amount of earth needing disposal	Slight negative (-ve)	Lift pits and foundations limited to "shallow" excavation with out proximity to rail corridor. Ability to use underpass for spoil disposal

OPTION 05A: upgrade platforms – underpass removed – new overpass stair, lifts and ramps ASSESSMENT					
Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the safe community connection from East to West (across rail corridor and Cambridge Terrace).	Neutral	Underpass removed, stairs, ramps and vertical transport. Could be affected by the height of the overpass as this will impact length of time to cross, and customer perception is a longer distance. Retains access at all hours - no difference to current usability.
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)	Slight positive (+ve)	Has vertical transport which enables step free access. Ramps enables access for bikes and wheelchairs users.
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	How well does the safe station option protect the ability to integrate greatest number of bus interchange options.	Neutral	
			Length of the walk on the East West connections for minimum walking distance.	Moderate negative (-ve)	Ramps increase distance travelled
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.	Slight negative (-ve)	Ramps however improved by inclusion of vertical transport.
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.	Moderate negative (-ve)	
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets	Slight negative (-ve)	Increase of ramps outside of GW land holdings is considered more negative that alignment of platforms for efficient station footprint.
			The station and bus interchange is decoupled from the use of property not under control of GW	Moderate negative (-ve)	Over pass impact Hutt City Council land and impacts to existing building at Trafalgar Square
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery	Slight negative (-ve)	Construction of a bridge is less complex. Can be staged and integrated with temporary works. Location of overpass would need to be further developed and assessed for efficiencies. Removal of underpass and how this is achieved would require further investigation of how this is achieved.
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused	Moderate negative (-ve)	Location of ramps to be developed further.
			Minimum area of soil disturbance and amount of earth needing disposal	Slight negative (-ve)	Platforms moved requiring more earthworks. Lift pits and foundations limited to "shallow" excavation without proximity to rail corridor. Ability to use underpass for spoil disposal

OPTION 5B - OVERPASS with Alinged platforms & Consolidated Bus Interchange in SE

Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Fatal Flaws	Grimshaw Aurecon (Transport)	Identify those options that have techincal fatal flaws and are excluded from further assessment	Achieves technical requirements of platform & track alignment and geometry	Neutral	
			Avoids the buffer area surround the Water Treatment Plant	Neutral	
			Closure of the rail corridor for unacceptable lengths of time or peak periods of use	Neutral	
			Avoids impacts on the existing road infrastructure	Neutral	
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the community connection from East to West (across rail corridor and Cambridge Terrace) at all times during construction	Neutral	Underpass removed, stairs and vertical transport only. Could be affected by the height of the overpass as this will impact length of time to cross, and customer perception is a longer distance. Retains access at all hours - no difference to current usability.
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)	Slight positive (+ve)	Has vertical transport which enables step free access. No ramps therefor the introduction of lifts offsets the measure against addition of the vertical transport.
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	Shortest walking distance route measured in minutes between transport modes.	Slight positive (+ve)	Less distance compared to underpass ramps in the base case
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.	Slight positive (+ve)	Lifts for level change
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.	Neutral	
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets	Slight positive (+ve)	Aligned platforms and bus interchange geometry more efficient
			The station and bus interchange is decoupled from the use of property not under control of GW	Moderate negative (-ve)	Over pass impact Hutt City Council land and impacts to existing building at Trafalgar Square
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery	Slight negative (-ve)	Construction of a bridge is less complex. Can be staged and integrated with temporary works. Location of overpass would need to be further developed and assessed for efficiencies. Removal of underpass and how this is achieved would require further investigation of how this is achieved.
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused	Moderate negative (-ve)	Removal of underpass, new infrastructure to go over the road - less re-use of the existing in comparison to the basecase.
			Minimum area of soil disturbance and amount of earth needing disposal	Slight negative (-ve)	Platforms moved requiring more earthworks. Lift pits and foundations limited to "shallow" excavation. Ability to use underpass for spoil disposal

OPTION 06: Platform move South – upgrade underpass – public and station ASSESSMENT					
Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Fatal Flaws	Grimshaw Aurecon (Transport)	Identify those options that have technical fatal flaws and are excluded from further assessment	Achieves technical requirements of platform & track alignment and geometry	Fatal Flaw	
			Avoids the buffer area surround the Water Treatment Plant	Neutral	
			Closure of the rail corridor for unacceptable lengths of time or peak periods of use	Neutral	
			Avoids impacts on the existing road infrastructure	Neutral	
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the community connection from East to West (across rail corridor and Cambridge Terrace) at all times during construction		
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)		
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	Shortest walking distance route measured in minutes between transport modes.		
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.		
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.		
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets		
			The station and bus interchange is decoupled from the use of property not under control of GW		
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery		
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused		
			Minimum area of soil disturbance and amount of earth needing disposal		

OPTION 07: new overbridge –underpass retained ASSESSMENT					
Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Fatal Flaws	Grimshaw Aurecon (Transport)	Identify those options that have technical fatal flaws and are excluded from further assessment	Achieves technical requirements of platform & track alignment and geometry	Fatal Flaw	
			Avoids the buffer area surround the Water Treatment Plant	Neutral	
			Closure of the rail corridor for unacceptable lengths of time or peak periods of use	Neutral	
			Avoids impacts on the existing road infrastructure	Neutral	
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the community connection from East to West (across rail corridor and Cambridge Terrace) at all times during construction		
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)		
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	Shortest walking distance route measured in minutes between transport modes.		
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.		
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.		
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets		
			The station and bus interchange is decoupled from the use of property not under control of GW		
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery		
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused		
			Minimum area of soil disturbance and amount of earth needing disposal		

OPTION 08: new over bridge – underpass removed ASSESSMENT					
Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Fatal Flaws	Grimshaw Aurecon (Transport)	Identify those options that have technical fatal flaws and are excluded from further assessment	Achieves technical requirements of platform & track alignment and geometry	Fatal Flaw	
			Avoids the buffer area surround the Water Treatment Plant	Neutral	
			Closure of the rail corridor for unacceptable lengths of time or peak periods of use	Neutral	
			Avoids impacts on the existing road infrastructure	Neutral	
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the community connection from East to West (across rail corridor and Cambridge Terrace) at all times during construction		
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)		
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	Shortest walking distance route measured in minutes between transport modes.		
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.		
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.		
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets		
			The station and bus interchange is decoupled from the use of property not under control of GW		
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery		
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused		
			Minimum area of soil disturbance and amount of earth needing disposal		

OPTION 09: Platform move North, upgrade Underpass. New overpass access public and station ASSESSMENT					
Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Fatal Flaws	Grimshaw Aurecon (Transport)	Identify those options that have technical fatal flaws and are excluded from further assessment	Achieves technical requirements of platform & track alignment and geometry	Fatal Flaw	
			Avoids the buffer area surround the Water Treatment Plant	Neutral	
			Closure of the rail corridor for unacceptable lengths of time or peak periods of use	Neutral	
			Avoids impacts on the existing road infrastructure	Neutral	
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the community connection from East to West (across rail corridor and Cambridge Terrace) at all times during construction		
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)		
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	Shortest walking distance route measured in minutes between transport modes.		
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.		
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.		
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets		
			The station and bus interchange is decoupled from the use of property not under control of GW		
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery		
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused		
			Minimum area of soil disturbance and amount of earth needing disposal		

OPTION 10: New island platform – underpass retained					
Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the safe community connection from East to West (across rail corridor and Cambridge Terrace).	Neutral	Maintains ability in line with the base case.
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)	Neutral	Maintains ability in line with the base case.
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	How well does the station option protect the ability to integrate greatest number of bus interchange options.	Neutral	
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.	Neutral	
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.	Neutral	
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets	Neutral	
			The station and bus interchange is decoupled from the use of property not under control of GW	Neutral	
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery	Fatal Flaw	Most complex options due to approvals, staging, maintaining operations (reduced capacity on track) and reconfiguration of railway track network.
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused	Neutral	
			Minimum area of soil disturbance and amount of earth needing disposal	Neutral	

OPTION 11: New island platform – shifted South underpass retained

Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Fatal Flaws	Grimshaw Aurecon (Transport)	Identify those options that have techincal fatal flaws and are excluded from further assessment	Achieves technical requirements of platform & track alignment and geometry	Fatal Flaw	
			Avoids the buffer area surround the Water Treatment Plant	Neutral	
			Closure of the rail corridor for unacceptable lengths of time or peak periods of use	Neutral	
			Avoids impacts on the existing road infrastructure	Neutral	
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the community connection from East to West (across rail corridor and Cambridge Terrace) at all times during construction		
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)		
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	Shortest walking distance route measured in minutes between transport modes.		
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.		
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.		
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets		
			The station and bus interchange is decoupled from the use of property not under control of GW		
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery		
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused		
			Minimum area of soil disturbance and amount of earth needing disposal		

OPTION 12: New island platform – shifted South, public underpass retained, new overbridge station access

Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Fatal Flaws	Grimshaw Aurecon (Transport)	Identify those options that have techincal fatal flaws and are excluded from further assessment	Achieves technical requirements of platform & track alignment and geometry	Fatal Flaw	
			Avoids the buffer area surround the Water Treatment Plant	Neutral	
			Closure of the rail corridor for unacceptable lengths of time or peak periods of use	Neutral	
			Avoids impacts on the existing road infrastructure	Neutral	
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the community connection from East to West (across rail corridor and Cambridge Terrace) at all times during construction		
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)		
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	Shortest walking distance route measured in minutes between transport modes.		
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.		
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.		
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets		
			The station and bus interchange is decoupled from the use of property not under control of GW		
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery		
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused		
			Minimum area of soil disturbance and amount of earth needing disposal		

OPTION 13: New island platform – shifted South, new overbridge station access, public underpass removed

Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Fatal Flaws	Grimshaw Aurecon (Transport)	Identify those options that have techincal fatal flaws and are excluded from further assessment	Achieves technical requirements of platform & track alignment and geometry	Fatal Flaw	
			Avoids the buffer area surround the Water Treatment Plant	Neutral	
			Closure of the rail corridor for unacceptable lengths of time or peak periods of use	Neutral	
			Avoids impacts on the existing road infrastructure	Neutral	
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the community connection from East to West (across rail corridor and Cambridge Terrace) at all times during construction		
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)		
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	Shortest walking distance route measured in minutes between transport modes.		
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.		
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.		
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets		
			The station and bus interchange is decoupled from the use of property not under control of GW		
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery		
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused		
			Minimum area of soil disturbance and amount of earth needing disposal		

OPTION 14: New island platform – rail under					
Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Fatal Flaws	Grimshaw Aurecon (Transport)	Identify those options that have techincal fatal flaws and are excluded from further assessment	Achieves technical requirements of platform & track alignment and geometry	Fatal Flaw	
			Avoids the buffer area surround the Water Treatment Plant	Neutral	
			Closure of the rail corridor for unacceptable lengths of time or peak periods of use	Neutral	
			Avoids impacts on the existing road infrastructure	Neutral	
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the community connection from East to West (across rail corridor and Cambridge Terrace) at all times during construction		
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)		
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	Shortest walking distance route measured in minutes between transport modes.		
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.		
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.		
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets		
			The station and bus interchange is decoupled from the use of property not under control of GW		
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery		
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused		
			Minimum area of soil disturbance and amount of earth needing disposal		

OPTION 15: New island platform – rail over					
Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Fatal Flaws	Grimshaw Aurecon (Transport)	Identify those options that have techincal fatal flaws and are excluded from further assessment	Achieves technical requirements of platform & track alignment and geometry	Fatal Flaw	
			Avoids the buffer area surround the Water Treatment Plant	Neutral	
			Closure of the rail corridor for unacceptable lengths of time or peak periods of use	Neutral	
			Avoids impacts on the existing road infrastructure	Neutral	
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the community connection from East to West (across rail corridor and Cambridge Terrace) at all times during construction		
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)		
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	Shortest walking distance route measured in minutes between transport modes.		
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.		
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.		
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets		
			The station and bus interchange is decoupled from the use of property not under control of GW		
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery		
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused		
			Minimum area of soil disturbance and amount of earth needing disposal		

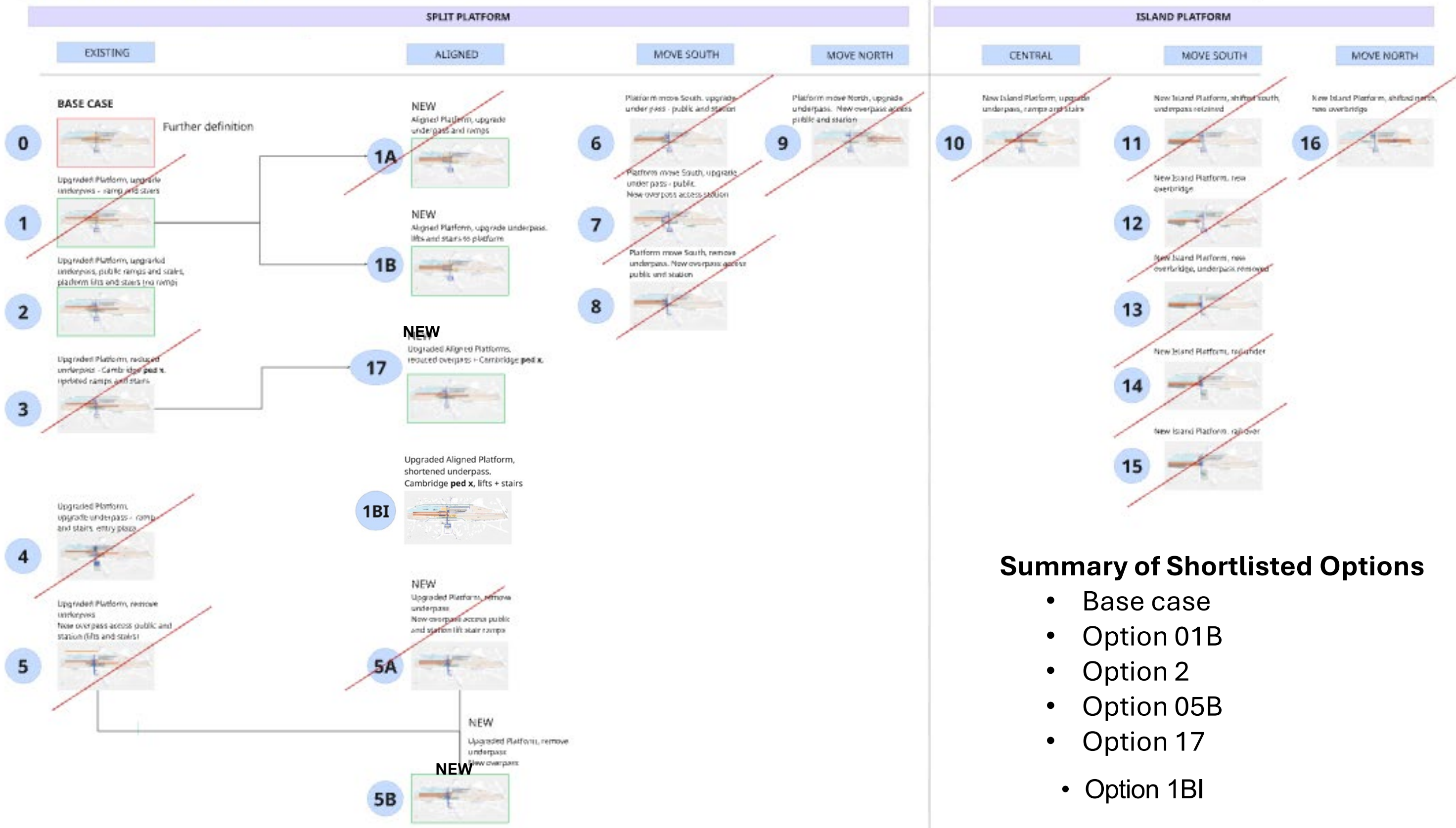
OPTION 16: New island platform – shifted North - new overbridge

Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Fatal Flaws	Grimshaw Aurecon (Transport)	Identify those options that have techincal fatal flaws and are excluded from further assessment	Achieves technical requirements of platform & track alignment and geometry	Fatal Flaw	
			Avoids the buffer area surround the Water Treatment Plant	Neutral	
			Closure of the rail corridor for unacceptable lengths of time or peak periods of use	Neutral	
			Avoids impacts on the existing road infrastructure	Neutral	
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the community connection from East to West (across rail corridor and Cambridge Terrace) at all times during construction		
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)		
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	Shortest walking distance route measured in minutes between transport modes.		
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.		
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.		
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets		
			The station and bus interchange is decoupled from the use of property not under control of GW		
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery		
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused		
			Minimum area of soil disturbance and amount of earth needing disposal		

OPTION 17: Aligned Platforms, Bus Interchange, new overbridge, on grade Ped Xing Cambridge Tce					
Criteria	SME Lead	Objective	Appropriate method for Measurement @ the detail available at the long stage of the assessment	Magnitude Score	Commentary
Fatal Flaws	Grimshaw Aurecon (Transport)	Identify those options that have techincal fatal flaws and are excluded from further assessment	Achieves technical requirements of platform & track alignment and geometry	Neutral	
			Avoids the buffer area surround the Water Treatment Plant	Neutral	
			Closure of the rail corridor for unacceptable lengths of time or peak periods of use	Neutral	
			Avoids impacts on the existing road infrastructure	Neutral	
Community Connections	Grimshaw Boffa Miskell Tonkin & Talyor Dunning	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times, including during construction, for the community particularly school children walking to and from school.	Maintain the community connection from East to West (across rail corridor and Cambridge Terrace)	Neutral	Same as base case
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)	Moderate positive (+ve)	lifts for level change, improved line of sight from Cambridge, better access for bus users,
Transport Interchange	Aurecon (Transport) Boffa Miskell Grimshaw	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	Shortest walking distance route measured in minutes between transport modes.	Moderate positive (+ve)	Significantly Less distance compared to underpass ramps in the base case
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.	Moderate positive (+ve)	Direct line of sight and direction. Level change via lift and stairs. Significant improvement to the pedestrian connection on the east of the station and bus interchange with Cambridge Terrace and Trafalgar Square
Enabling Commercial Development	Grimshaw Boffa Miskell	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.	Neutral	
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets	Slight positive (+ve)	
			The station and bus interchange is decoupled from the use of property not under control of GW	Slight negative (-ve)	Level crossing of Cambridge Terrace. Option removes underpass ramps on Trafalgar Square
Construction and Delivery	RCP	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	least complex construction and staging method for delivery	Slight negative (-ve)	Construction of a bridge and on grade pedestrian crossing is less complex. Can be staged and integrated with temporary works. Location of overpass would need to be further developed and assessed for efficiencies. Removal of underpass and how this is achieved would require further investigation of how this is achieved.
Sustainability	RCP T&T Dunnings Aurecon (Civil) Aurecon (Building Services)	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused	Moderate negative (-ve)	Removal of underpass, new infrastructure to go over the road - less re-use of the existing in comparison to the basecase.
			Minimum area of soil disturbance and amount of earth needing disposal	Slight negative (-ve)	Platforms moved requiring more earthworks. Lift pits and foundations limited to "shallow" excavation without proximity to rail corridor. Ability to use underpass for spoil disposal

12.5 STAGE 3: SHORTLIST & MCA WORKBOOK

Note: for complete Stage 2 supporting material refer to the Appendix folder



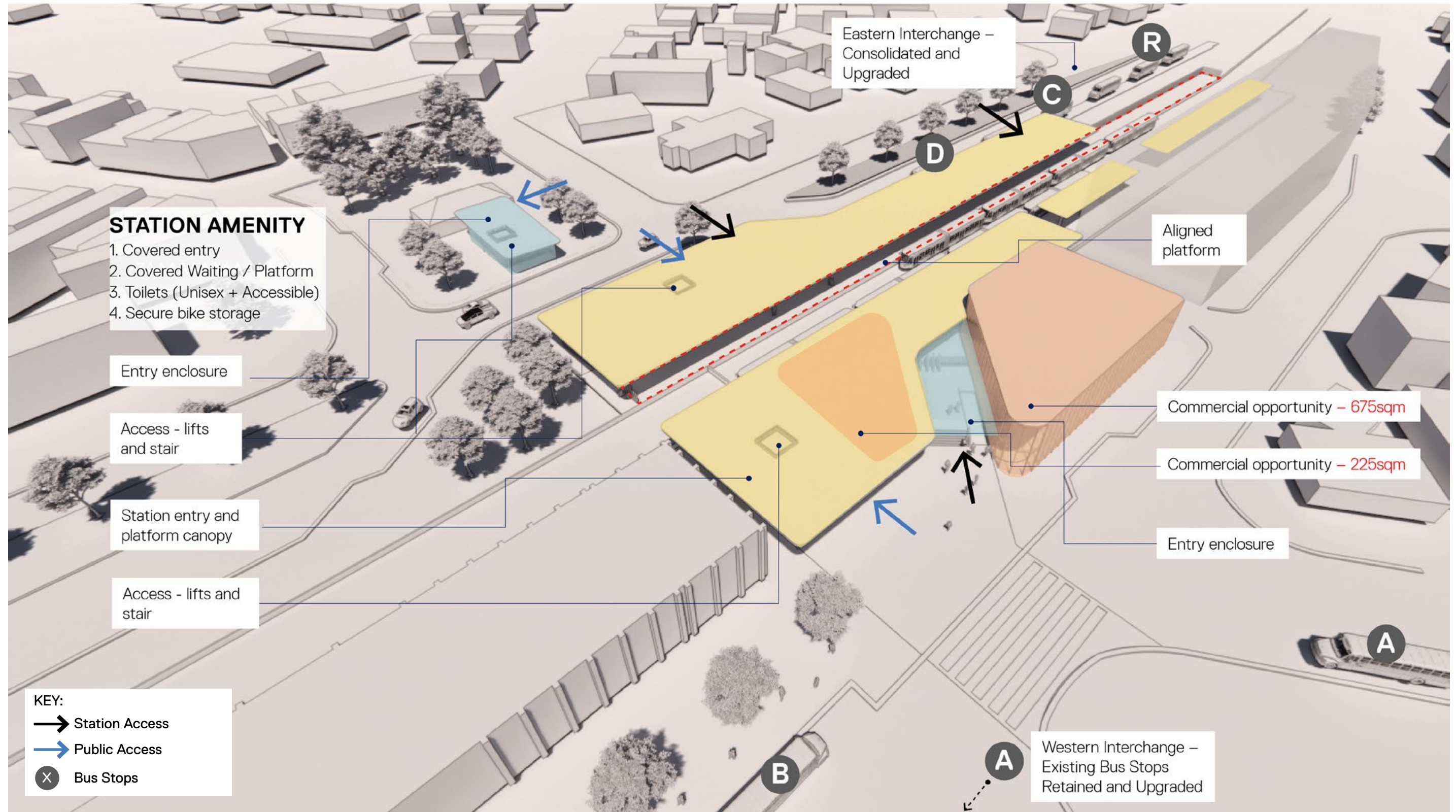
Summary of Shortlisted Options

- Base case
- Option 01B
- Option 2
- Option 05B
- Option 17
- Option 1BI

SHORTLISTED OPTIONS OVERVIEW

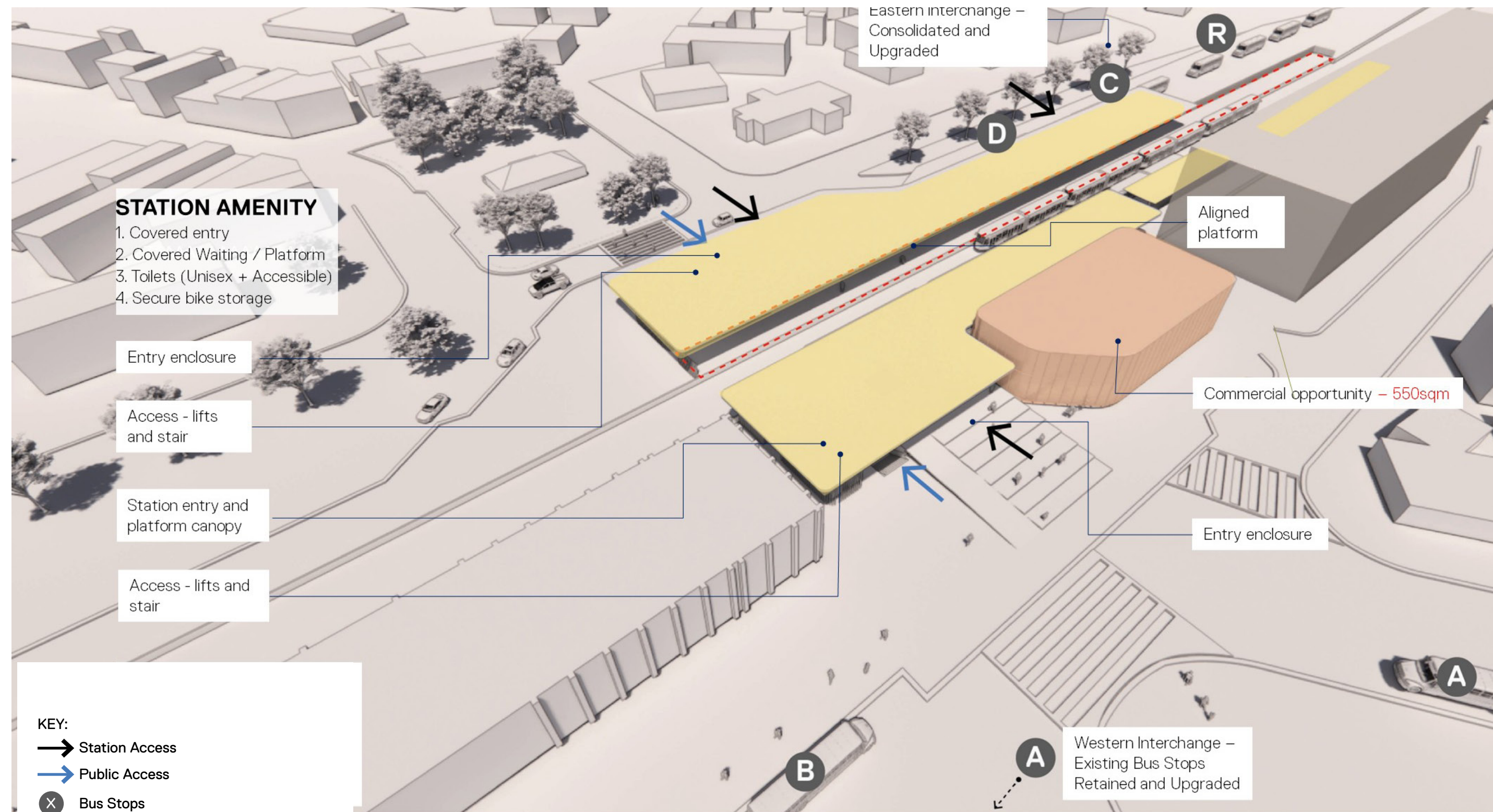
OPTION 1B

- ♦ ALIGNED UPGRADED PLATFORMS (PLATFORM 2 ALIGNED WITH PLATFORM 1)
- ♦ UPGRADED UNDERPASS
- ♦ NEW LIFTS AND STAIRS TO PLATFORM



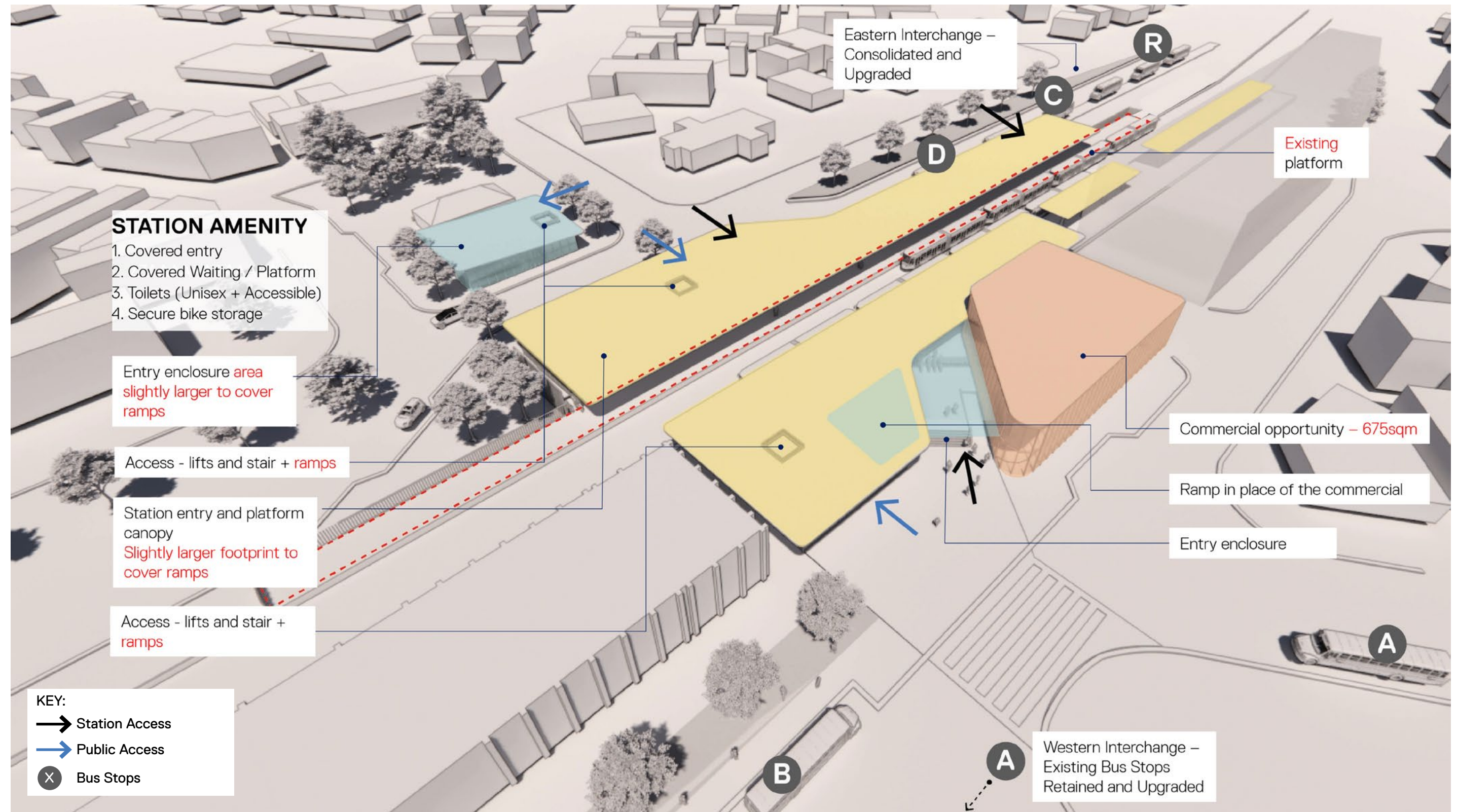
OPTION 1BI

- ♦ **ALIGNED UPGRADED PLATFORMS (PLATFORM 2 ALIGNED WITH PLATFORM 1)**
- ♦ **UPGRADED SHORTENED UNDERPASS, LIFTS AND STAIRS**
- ♦ **PEDESTRIAN CROSSING OVER CAMBRIDGE TERRACE**



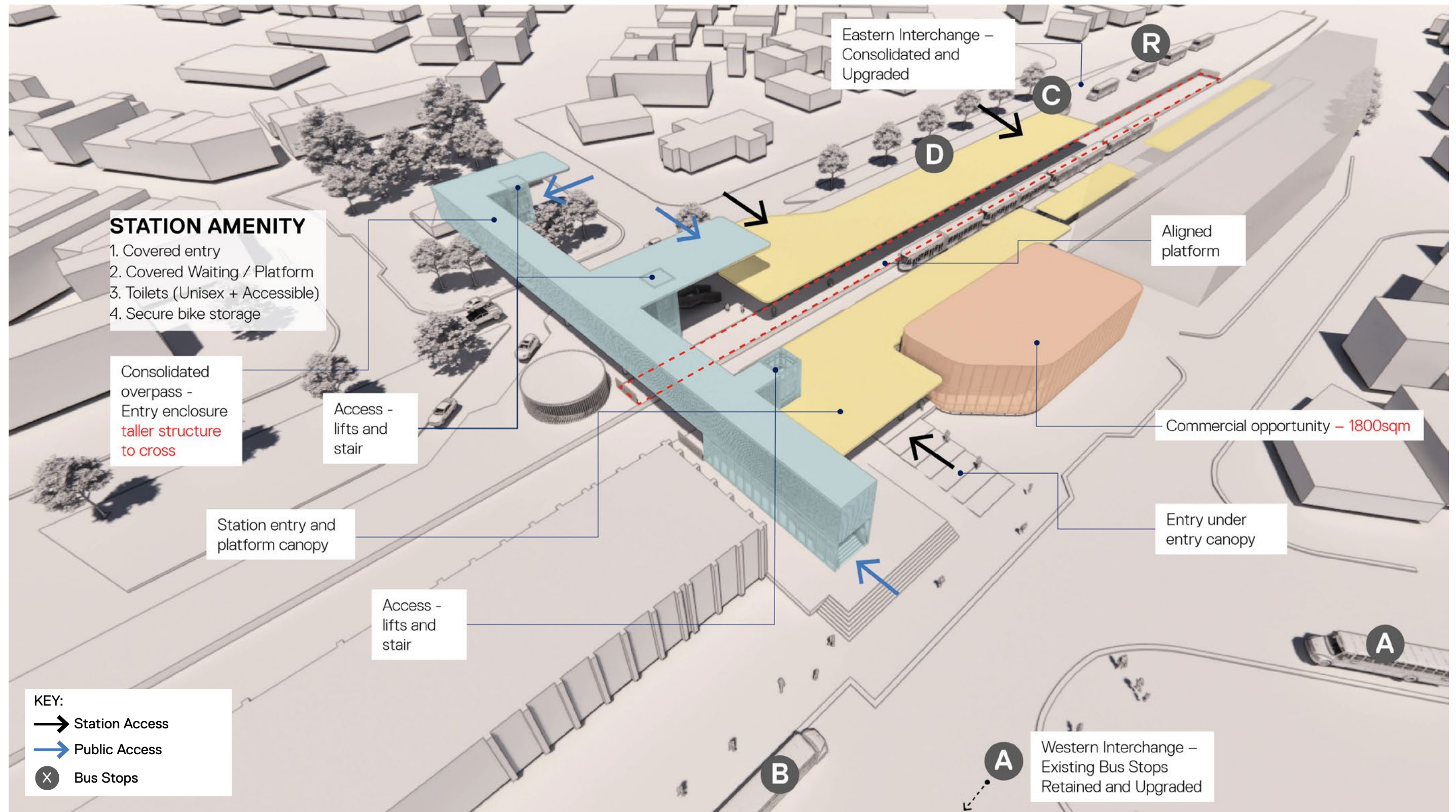
OPTION 2

- ♦ EXISTING UPGRADED PLATFORM (NOT ALIGNED)
- ♦ UPGRADED UNDERPASS
- ♦ UPGRADED RAMPS AND STAIRS, LIFTS ADDED



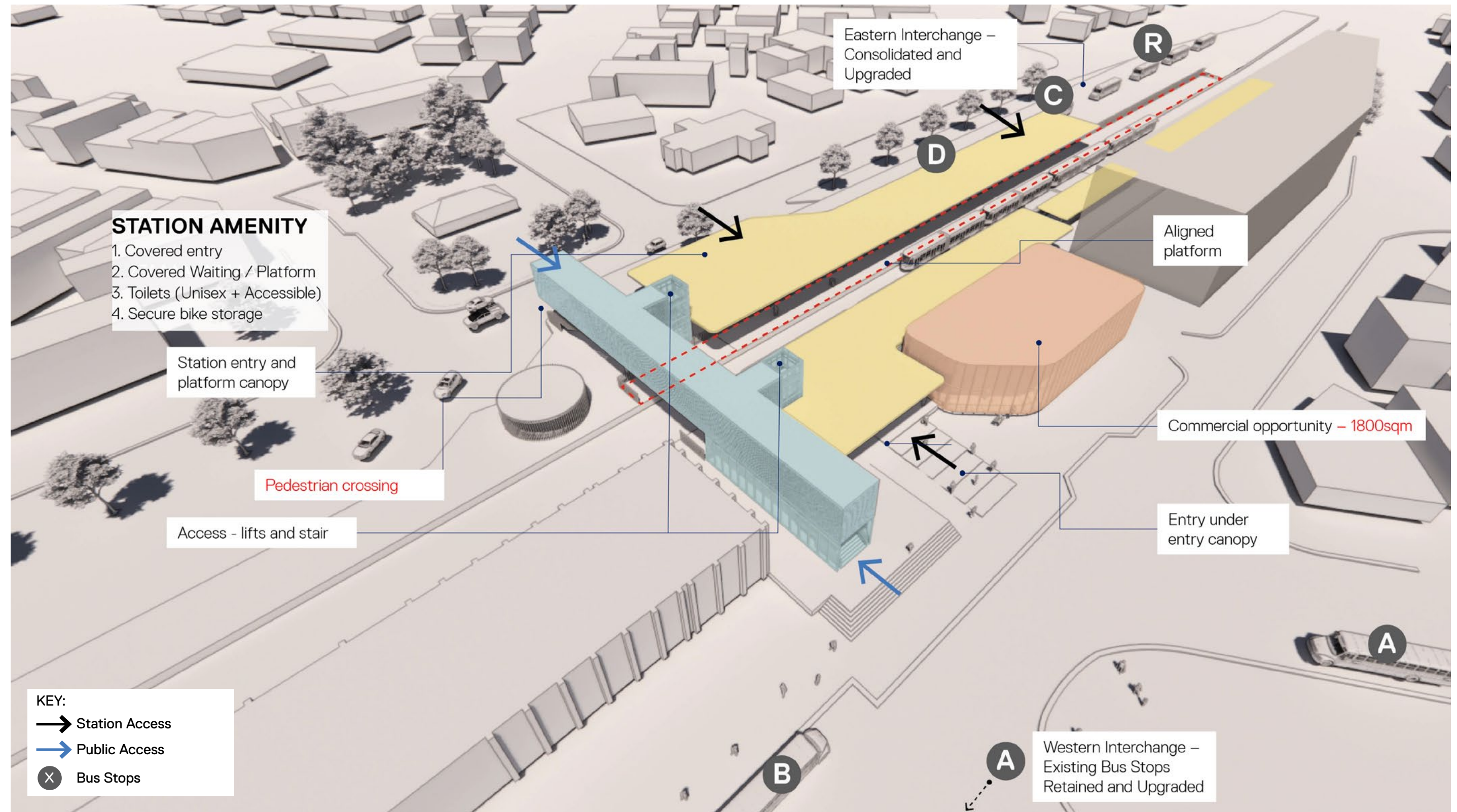
OPTION 5B

- ♦ **ALIGNED UPGRADED PLATFORMS (PLATFORM 2 ALIGNED WITH PLATFORM 1)**
- ♦ **NEW OVERPASS, UNDERPASS REMOVED**
- ♦ **STATION LIFT AND STAIRS**



OPTION 17

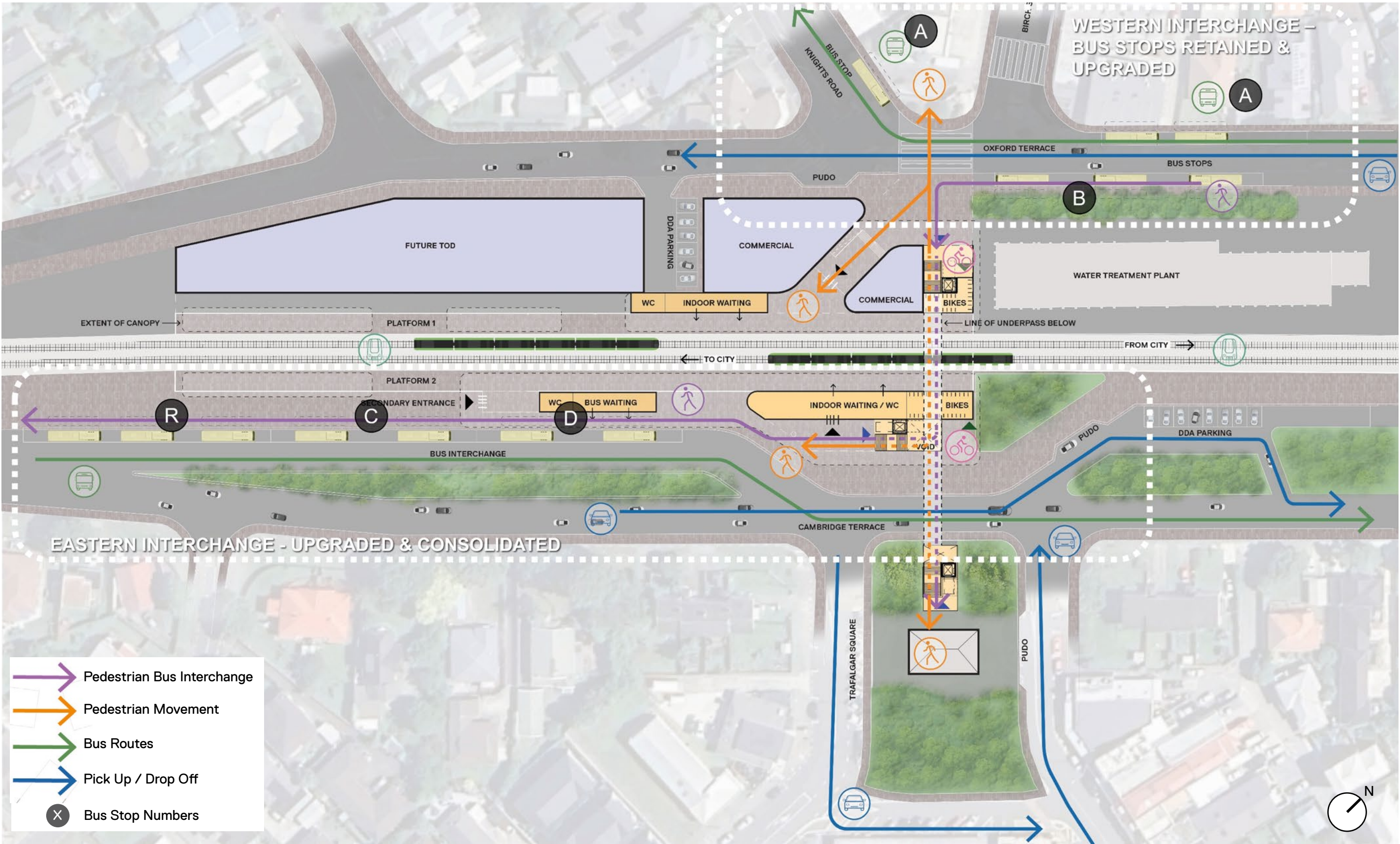
- ♦ **ALIGNED UPGRADED PLATFORMS (PLATFORM 2 ALIGNED WITH PLATFORM 1)**
- ♦ **SHORTENED OVERPASS, UNDERPASS REMOVED , LIFTS AND STAIRS**
- ♦ **PEDESTRIAN CROSSING OVER CAMBRIDGE TERRACE**



KEY FEATURES OF NOTE ACROSS THE SHORTLISTED OPTIONS

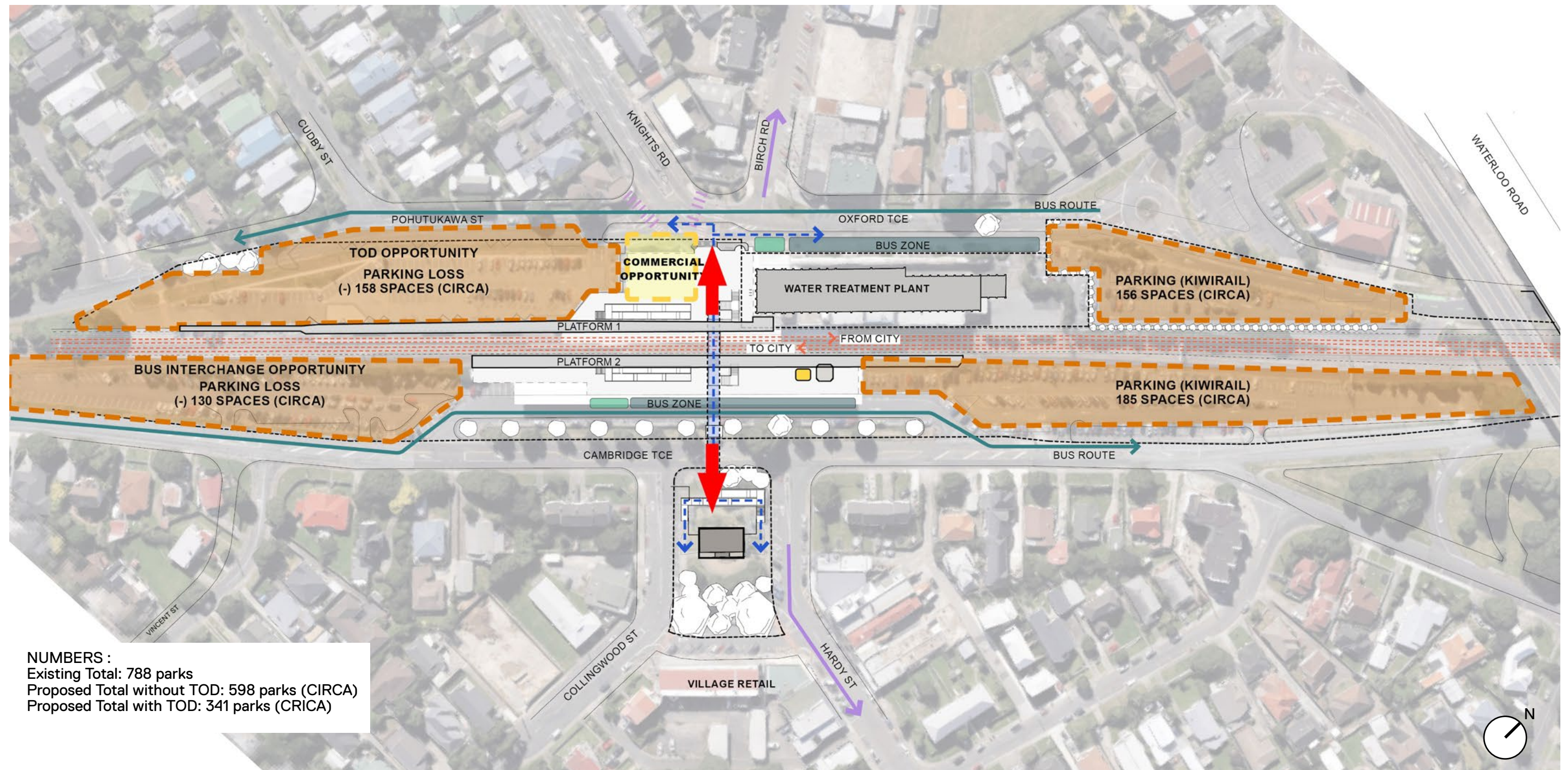
ALL OPTIONS: INTERCHANGE CONFIGURATION

STATION AND INTERCHANGE MOVEMENTS



ALL OPTIONS: PARKING NUMBERS

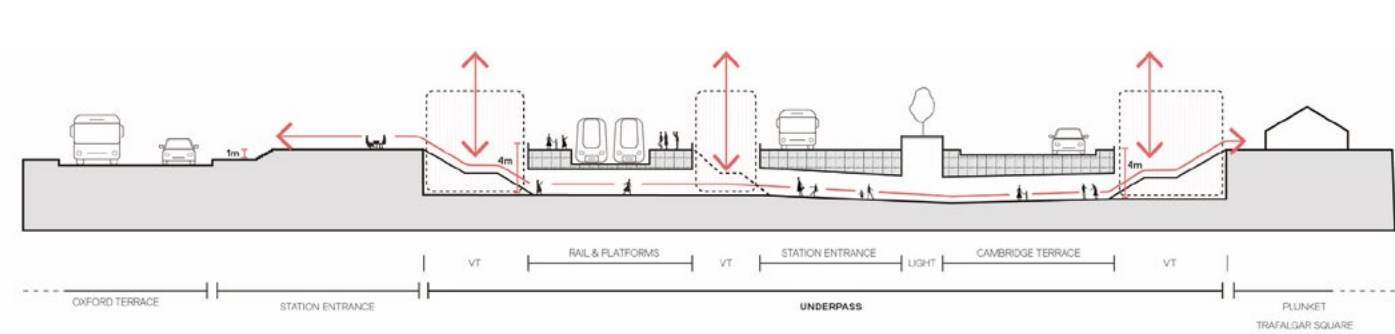
EXISTING V LOSS



CROSS CORRIDOR CONNECTIVITY: UNDER V OVER

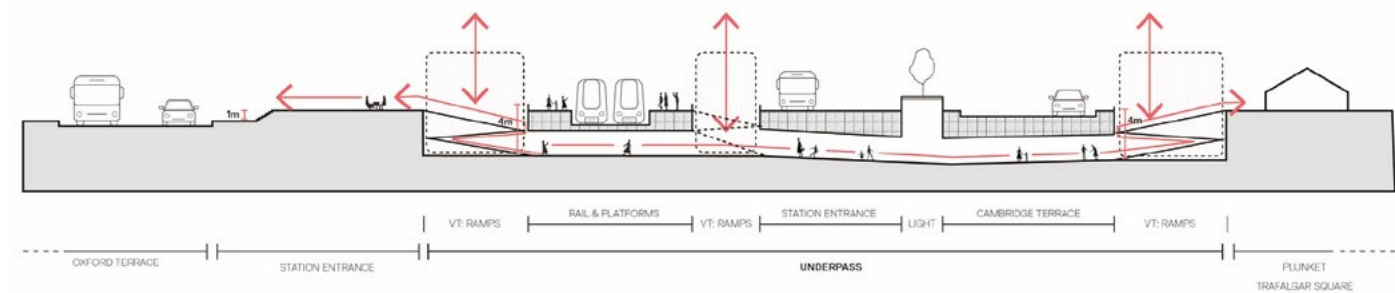
1B: UPGRADE UNDERPASS

Upgraded underpass (new stairs and lifts + provide updated cover)



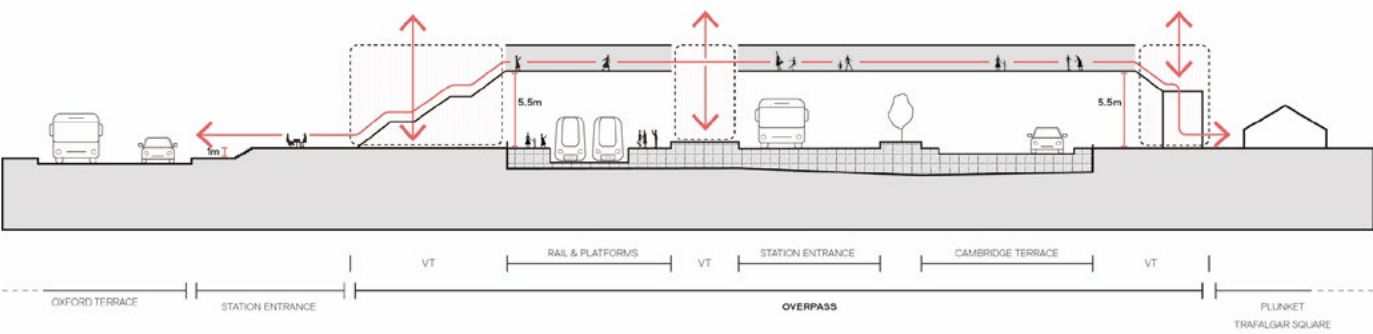
2: UPGRADE UNDERPASS

Upgraded underpass (new stairs and lifts + provide updated cover)



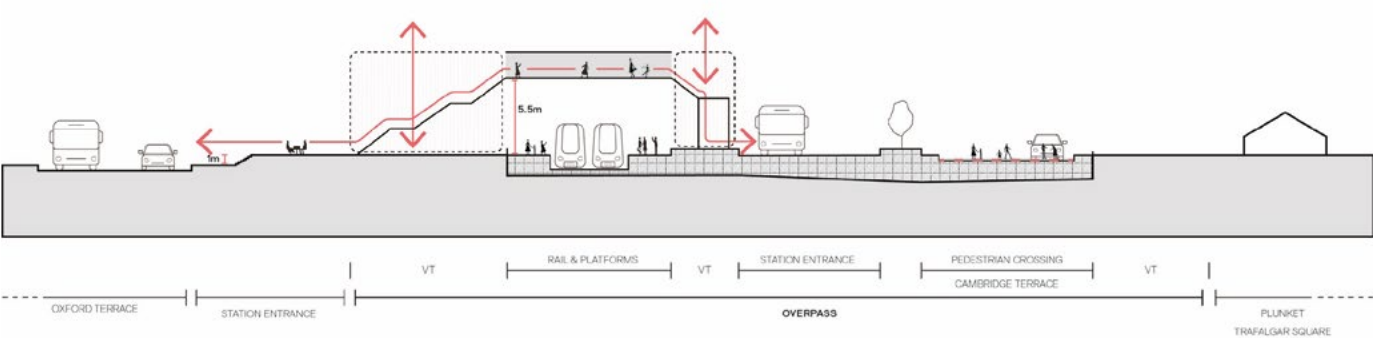
5B: OVERPASS BRIDGE

Part covered (roof and perforated screen) or fully sealed (roof and glazed envelope of bridge)



17: OVERPASS BRIDGE + PEDESTRIAN CROSSING

Part covered (roof and perforated screen) or fully sealed (roof and glazed envelope of bridge)

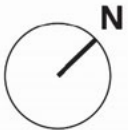
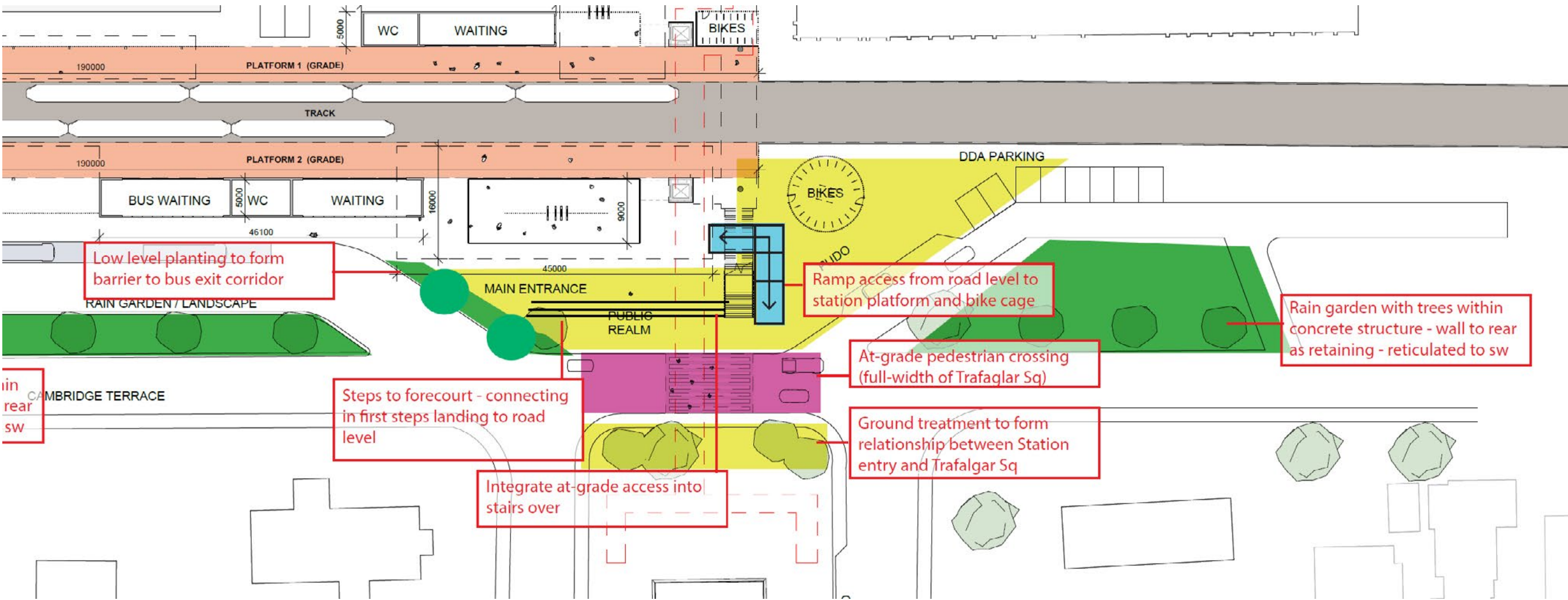


CROSS CORRIDOR CONNECTIVITY: UNDER V OVER

VISUAL IMPACT ASSESSMENT - INDICATIVE ONLY



LEVEL CHANGE – CAMBRIDGE TERRACE AND STATION FORECOURT (EXTRACT FROM BOFFA MISKAL SKETCH)



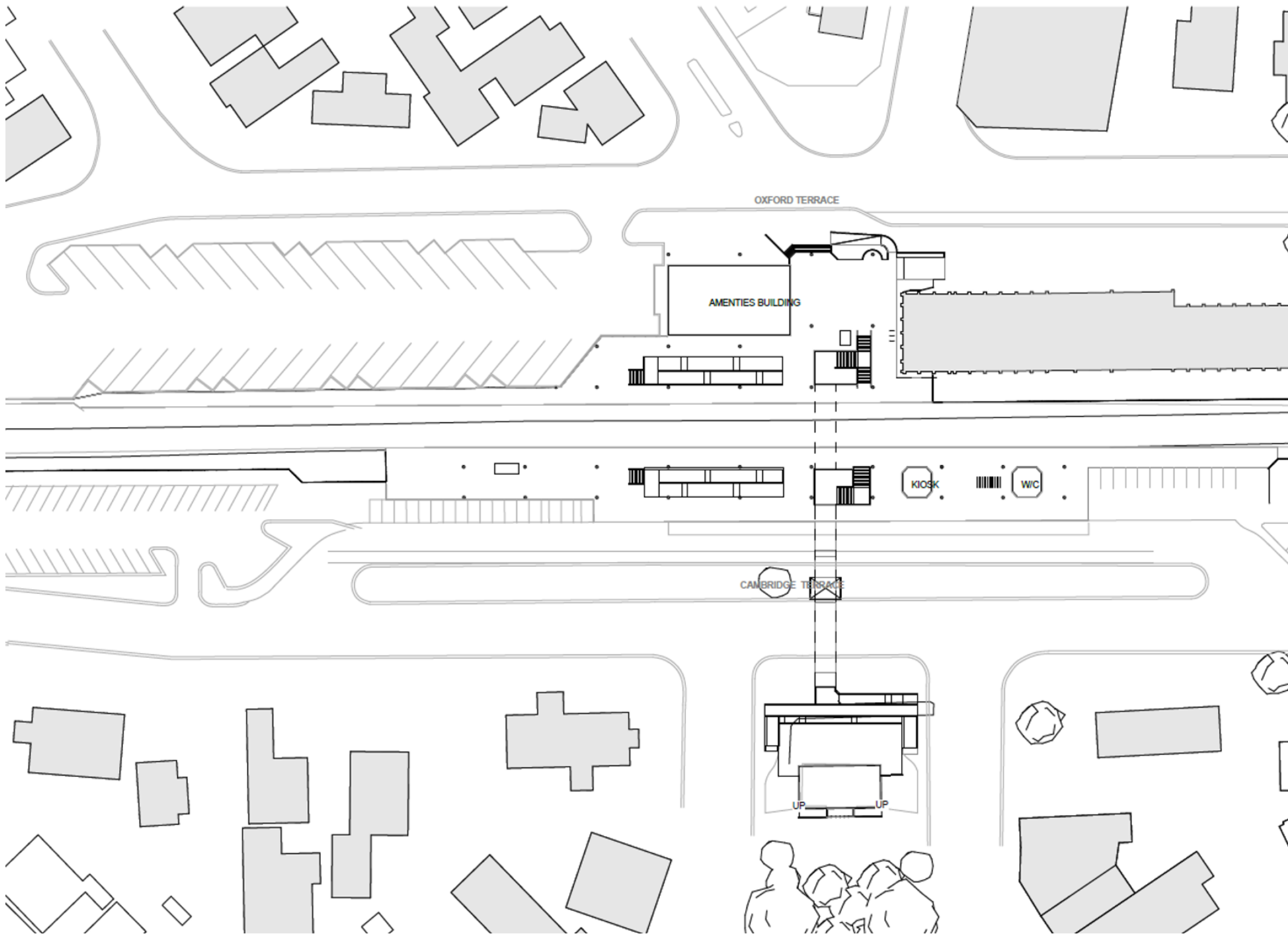
THE SHORTLISTED OPTIONS - IN MORE DETAIL

BASE

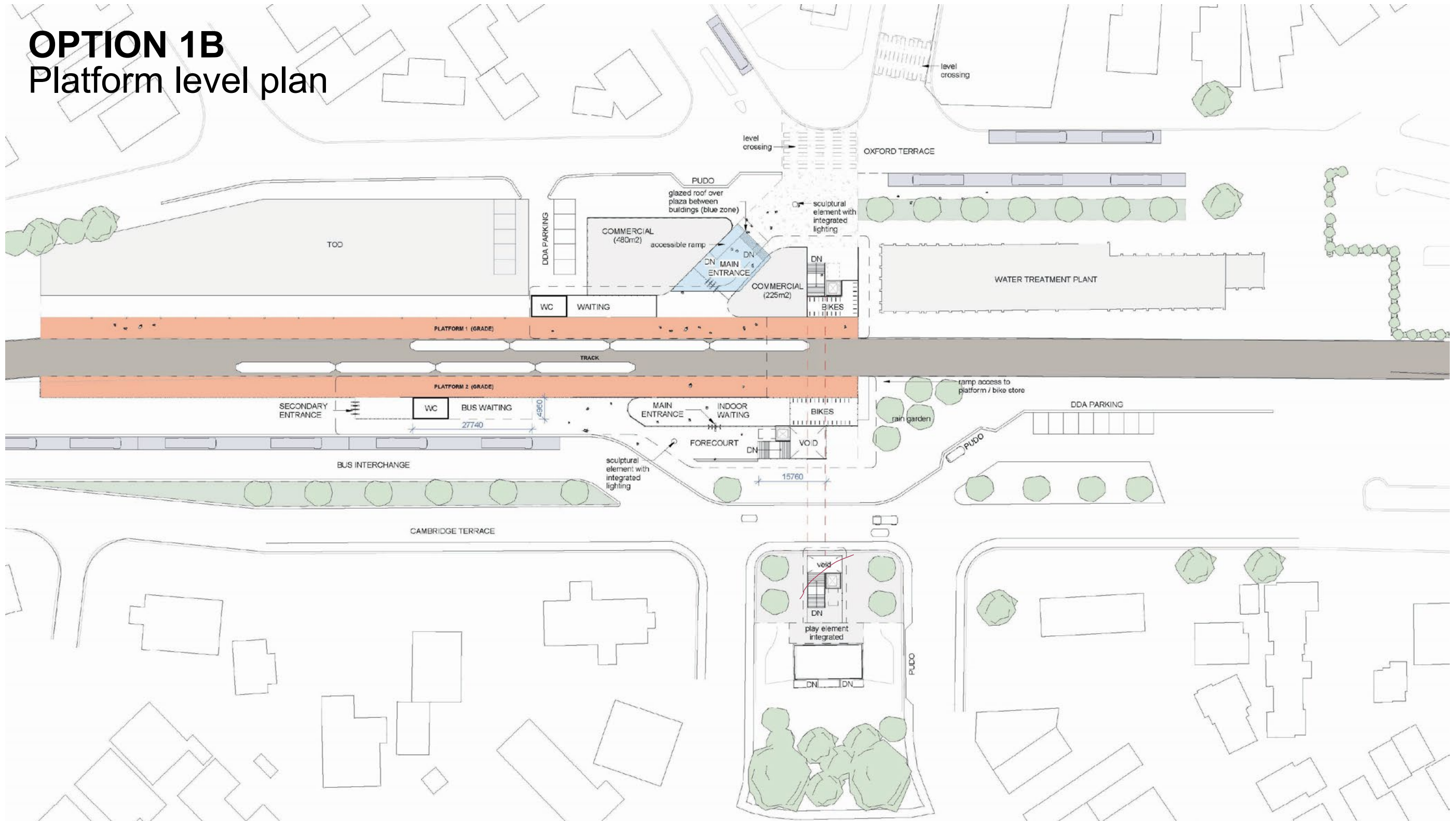
UPGRADED PLATFORMS - UPGRADE UNDERPASS - NEW LIFTS & STAIRS TO PLATFORM

FEATURES:

- 1. Roof replacement (not like for like)
- 2. Levelling of rail platforms
- 3. Strengthening and waterproofing the subway
- 4. Improved oxford terrace to platform pedestrian ramps
- 5. Improved bus stop amenity i.e. new bus shelters and lighting

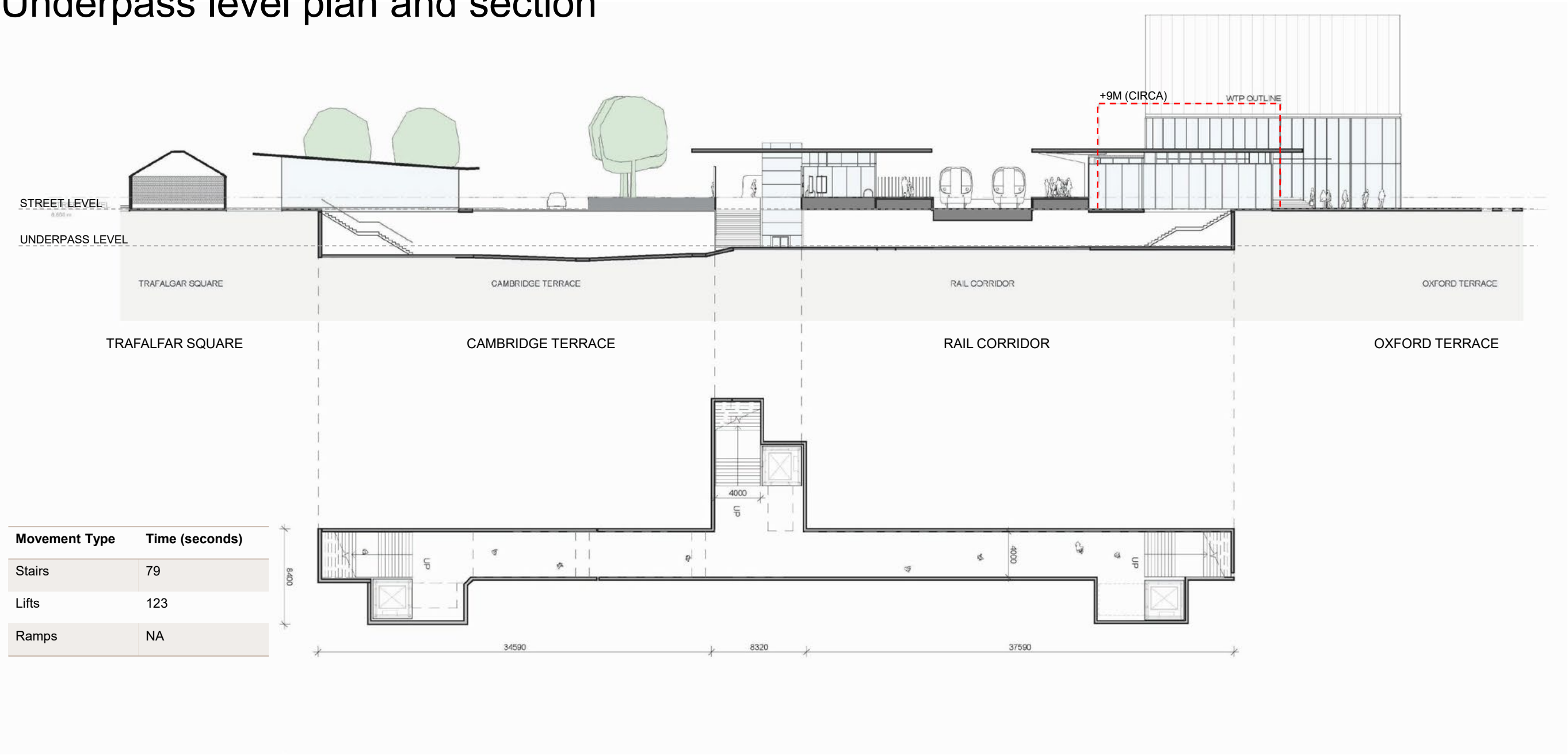


OPTION 1B Platform level plan

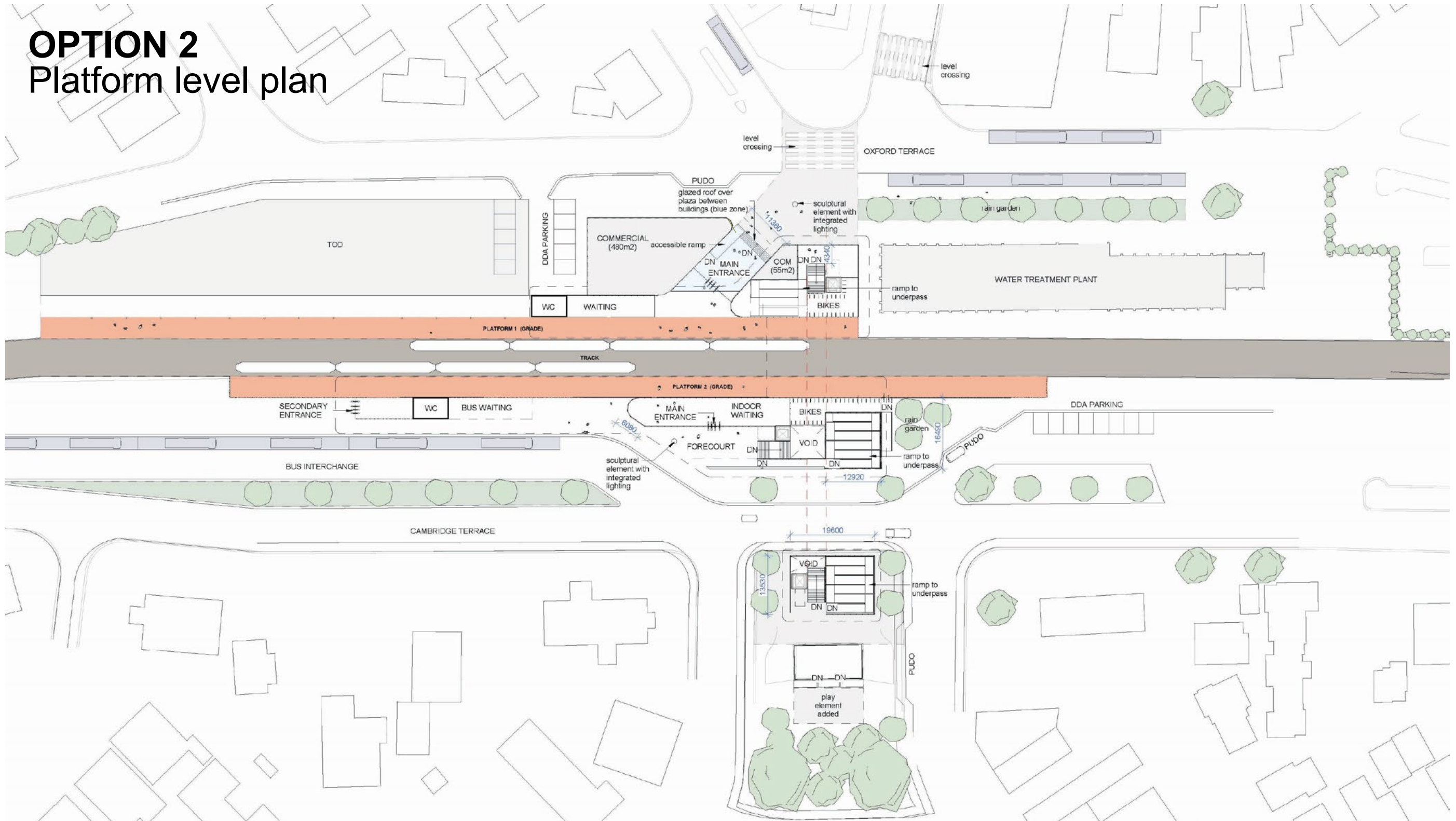


OPTION 1B

Underpass level plan and section

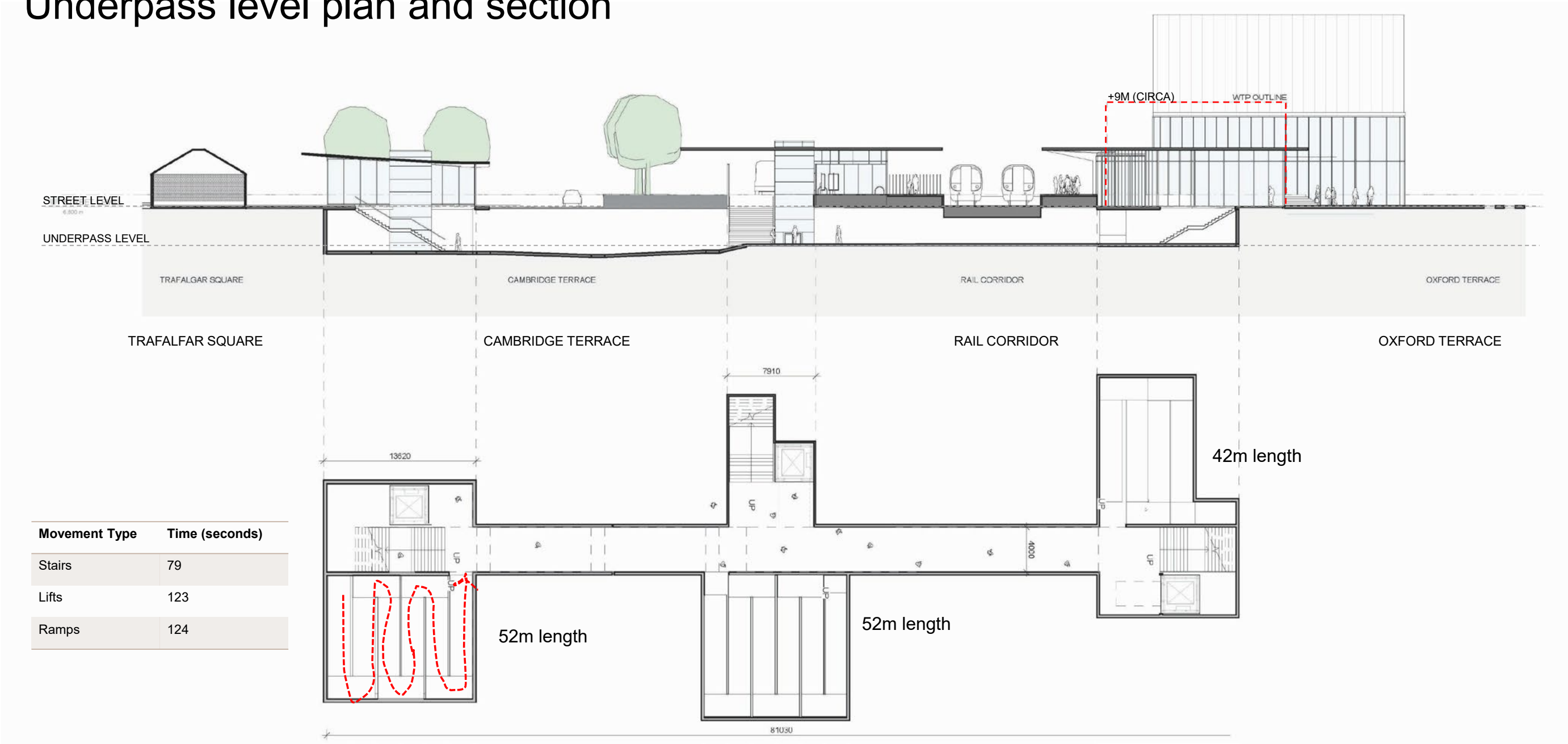


OPTION 2 Platform level plan



OPTION 2

Underpass level plan and section



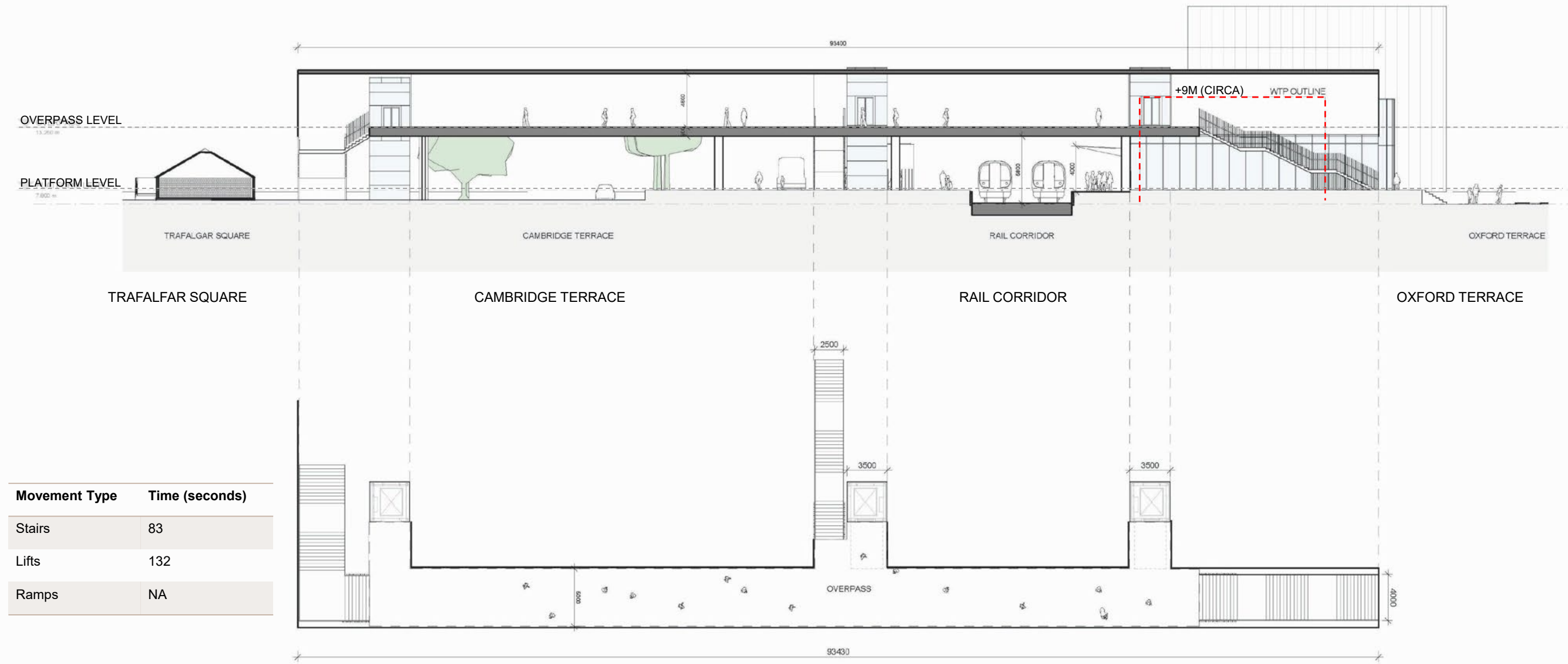
OPTION 5B

Platform level plan

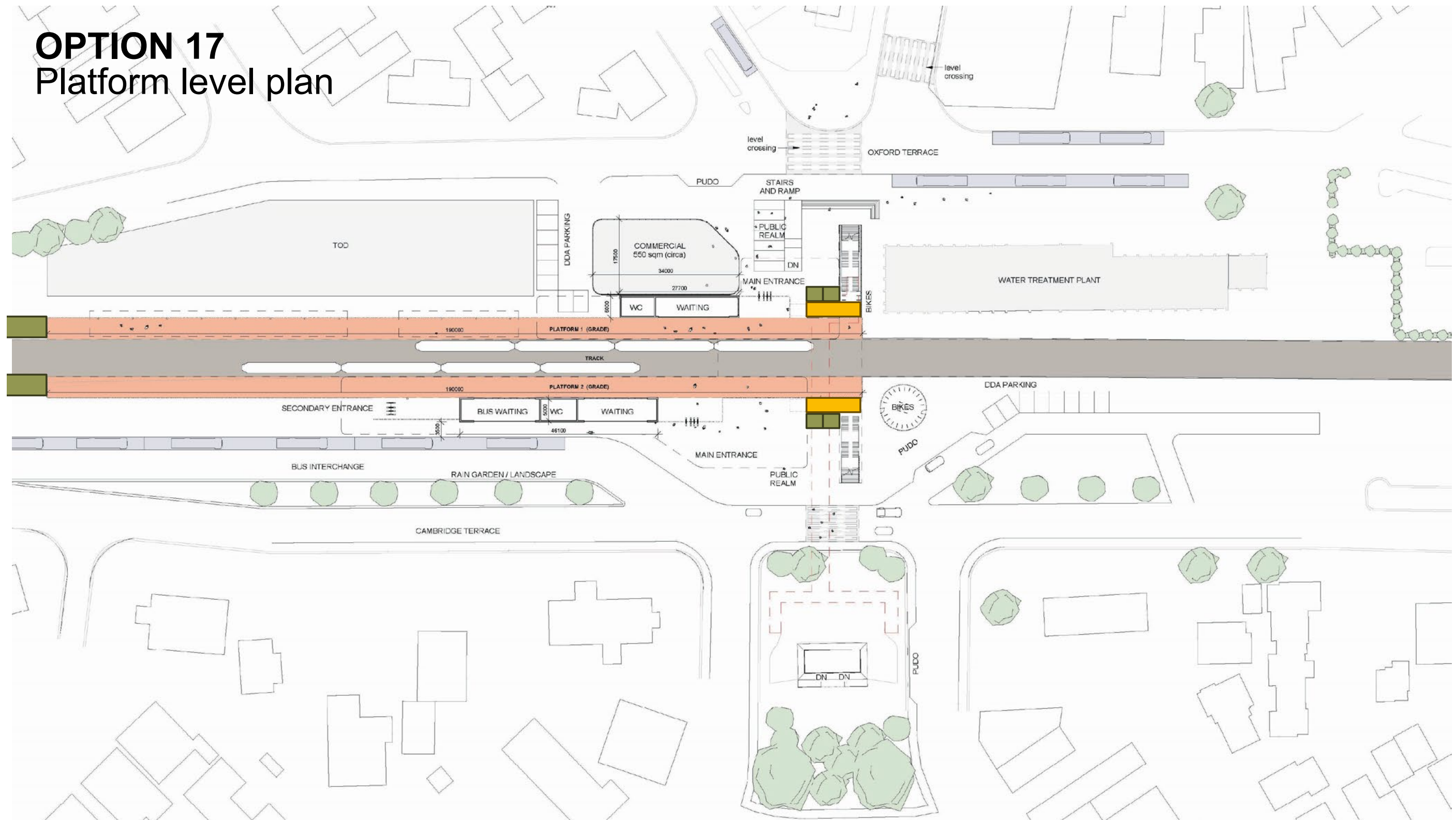
This architectural plan illustrates the layout of a railway station platform level. The central feature consists of two parallel platforms, Platform 1 (Grade) and Platform 2 (Grade), separated by a single-track section. Platform 1 is 18000 units long and 6000 units wide, while Platform 2 is 19000 units long and 6000 units wide. The track section between them is 19000 units long and 6000 units wide. To the left of Platform 1 is a TOD (Transit Oriented Development) area. To the right of Platform 2 is a BUS INTERCHANGE area. The plan also shows a COMMERCIAL building (550 sqm circa) with a MAIN ENTRANCE, a PUBLIC REALM, and a WATER TREATMENT PLANT. A BUS WAITING area is located between the platforms. A RAIN GARDEN / LANDSCAPE area is situated to the left of the bus interchange. The plan includes various other features such as a STAIRS AND RAMP, a PUBLIC REALM, a BIKES area, a PUDO (Pickup/Drop-off) area, and a CAMBRIDGE TERRACE. The plan is labeled with dimensions and various functional areas.

OPTION 5B

Overpass level plan and section

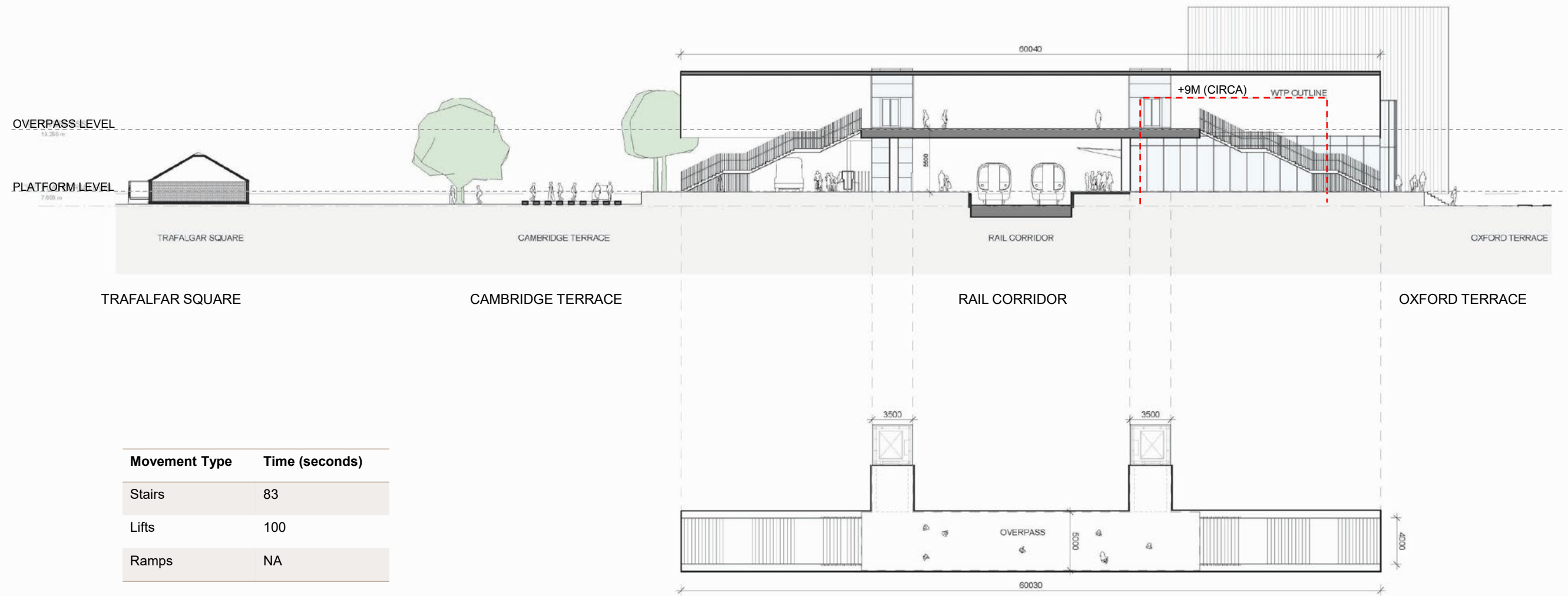


OPTION 17 Platform level plan



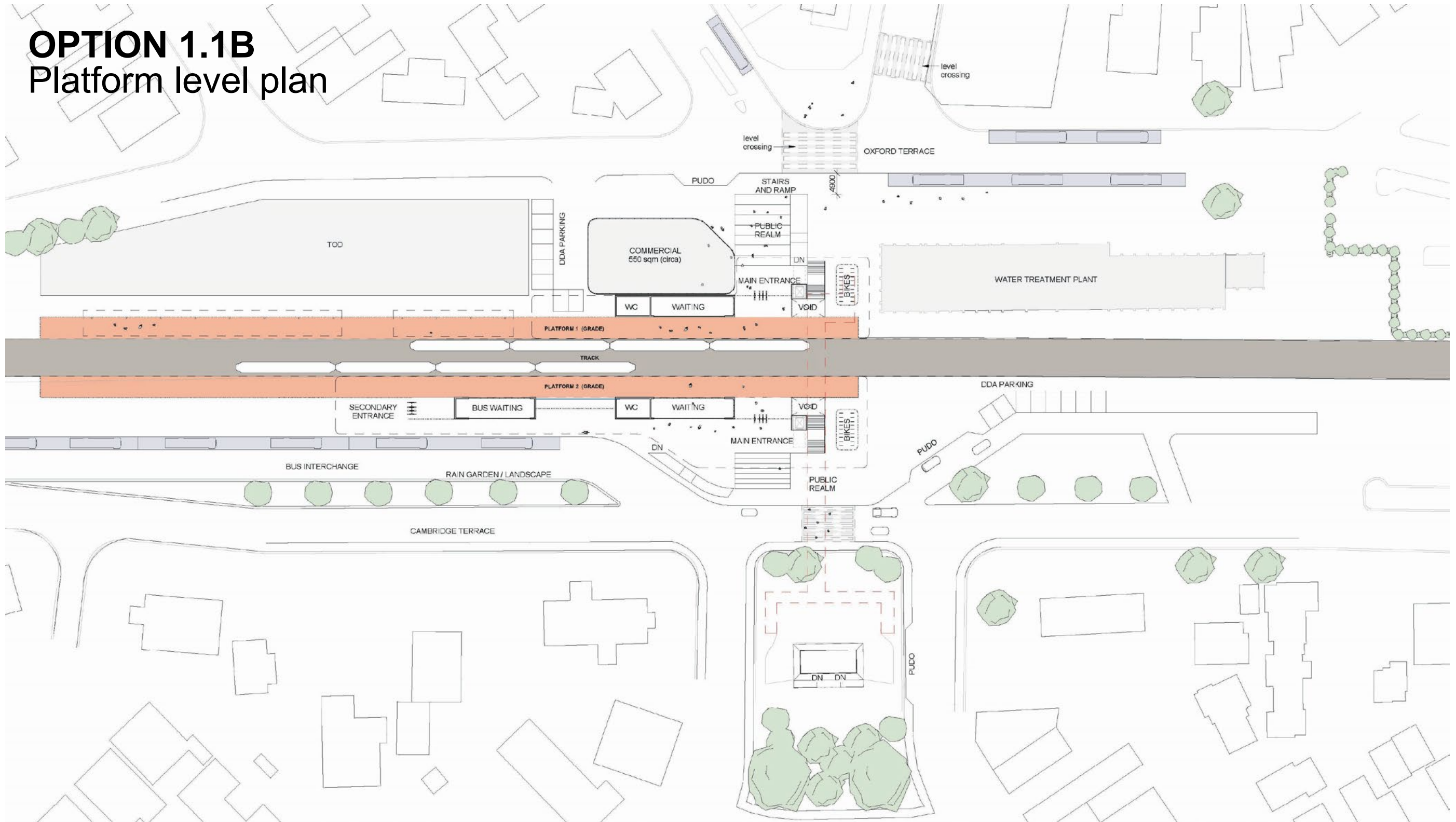
OPTION 17

Overpass level plan and section



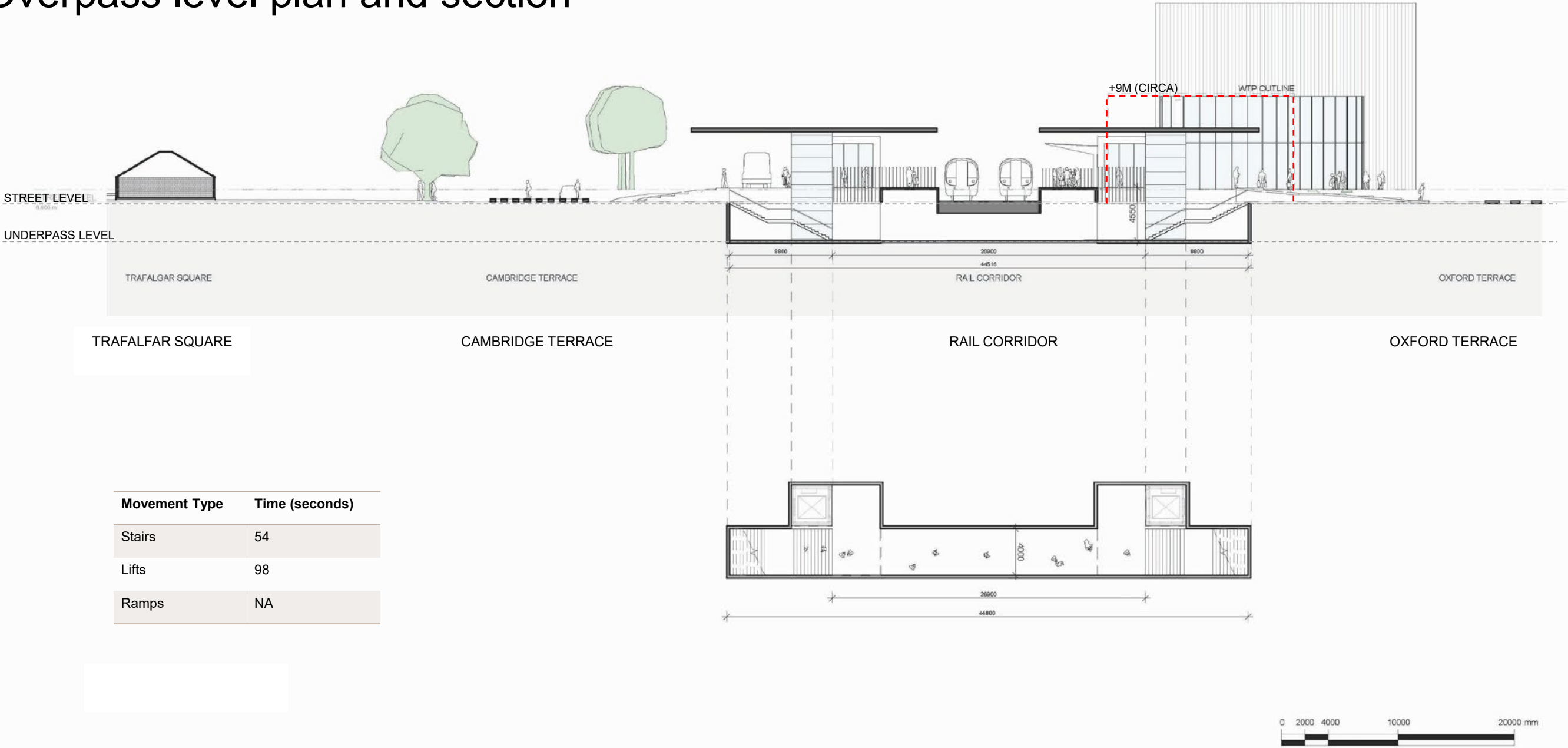
Movement Type	Time (seconds)
Stairs	83
Lifts	100
Ramps	NA

OPTION 1.1B Platform level plan



OPTION 1.1B

Overpass level plan and section



MCA ASSESSMENT WORKBOOK SUMMARY

Note: this is summary assessment stage 3,
for complete workbook refer to file *Final Draft MCA Longlist Options Assessment worksheet V5.0* in the appendix folder

Summary										
Weighting	Criteria	Assessment Criteria Measure	Description of metric	Option Score					Option 1BI	Comments
				Do Min (Base Case)	Option 1B	Option 2	Option 5B	Option 17		
12.5%	Community Connections	Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times for the community, particularly school children walking to and from school.	Maintain the safe community connection from East to West (across rail corridor and Cambridge Terrace)	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	All options maintain and improve the connection across the rail corridor and Cambridge Terrace.
			Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)	Neutral	Slight positive (+ve)	Moderate positive (+ve)	Slight positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)	All options achieve step free access for the community connection. The options with a pedestrian crossing at Cambridge terrace, compliant ramps and lifts improve upon the existing condition.
	Community Connections Average Score		0	1	1.5	1	1.5	1.5		
12.5%	Transport Interchange	Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	Shortest walking distance route measured in minutes between transport modes.	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)	Options with reduced ramp lengths, changes in levels have been scored more highly as they reduce distance times. All options are an improvement against the base case.
			Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.	Neutral	Neutral	Slight positive (+ve)	Slight positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)	Options with reduced ramp lengths, changes in levels have been scored more highly as they reduce distance times. All options are an improvement against the base case, except option 1B.
	Transport Interchange Average Score		0	0.5	1	1	2	2		
12.5%	Enabling Commerical Development	Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.	Neutral	Slight positive (+ve)	Neutral	Slight positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)	Commercial area is based on footprint only at this stage - not no. of floors. Options with aligned platforms, without ramps and less level changes enable a more efficient station footprint.
			The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets	Neutral	Slight positive (+ve)	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	All options with aligned platforms, without ramps and less level changes enable a more efficient station footprint.
			The station and bus interchange is decoupled from the use of property not under control of GW	Neutral	Neutral	Neutral	Moderate negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	The overpass and pedestrian crossing at Cambridge Terrace will require engagement with Hutt City Council. A pedestrian crossing at Trafalgar Square will give public space back to HCC as the ramps and underpass would be removed.
	Enabling Commerical Development Average Score		0	0.7	0	0.0	0.7	0.7		
12.5%	Stageable and Adaptable	Is demand led so that provides sufficient capacity, targeting a Level C level of service for rail passengers in the peak 15 minutes in the representative week in the busiest month (excluding disruptions) in 2025 and forecast passenger demand in its planned opening year of 2030 and by 2045 and 2060.	Provision of sufficient rail station capacity to achieve Level Service C for 2030, 2045 & 2060	Neutral	Slight positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)	Large positive (+ve)	Slight positive (+ve)	All options improve on the existing condition. Addition of At Grade crossing alleviates pressure on underpass / overpass and gives greater longevity to other station features. Unknown seismic performance of the underpass is a risk if the width of the underpass is reduced for future capacity demand. Existing underpass performs to a LOS C under normal conditions to 2060, but only 2045 under degraded conditions.
			Ability for rail station capacity to be staged to match demand in 2030, 2045 & 2060	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	No ability for demand led development because of insufficient up lift in demand and the capacity needed for basic requirements on opening day. Possible staging of overpass until that time that the underpass needs replacing.
	Stageable and Adaptable Average Score		0	0.5	1	1	1.5	0.5		
12.5%	Construction and Delivery	Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	Complexity of construction and staging for delivery	Neutral	Moderate negative (-ve)	Moderate negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Moderate negative (-ve)	All options have construction complexities with maintaining east/west connectivity, station operations, maintaining station operations, and constrained areas of works (especially if station remains open). The underpass upgrades have inherent complexities on waterproofing, construction new connections, and maintaining pedestrian connectivity.
			Duration to complete the overall construction	Neutral	Slight negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	All options will require a longer duration than the base case. Additional excavation for Option 2 and Option 5B do require more time based on high level programme. Opportunities to refine this could be developed through developed design.
			Duration of rail corridor closures for construction	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Works to be constructed outside rail corridors. Closures may be required but these should be able to be accommodated within programmed Block of Line Closures
			Road corridor impacts and Traffic management for construction	Neutral	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	All options will require traffic management. Option 17 and 1BI will require more work within active roadway than other three options.
			Duration of closure of east west connection across the rail corridor	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Temporary crossing for Option 1 / 2b - location of this bridge would require further development.
			Duration of station closure	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Too difficult to assess at this stage.
	Construction and Delivery Average Score		0.0	-0.7	-0.8	-0.7	-0.7	-0.8		

12.5%	Critical Requirements	Does not result in negative impacts on water quality or supply, from the structure, foundations and utilities servicing the rail station and interchange that are in the vicinity the Waiwhetū Aquifer, existing potable water infrastructure network and Waterloo Water Treatment Plant.	Impact on the Water treatment plant and related pipe network	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Station has a 5m buffer allowance around treatment plant and avoids all below ground services. Further design will need to continue to avoid and provide opportunity for pipe maintenance or replacement in the future
			Impact on the Waiwhetū Aquifer and groundwater	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	All options can be taken forward without impacting the Aquifer based on the information known at this stage for the depth of the aquifer (approx 15m).
	Critical Requirements Average Score			0	0	0	0	0	0	
12.5%	Technical requirements	Meets the technical requirements necessary for the construction, operation and consenting of the rail station, bus interchange and ancillary infrastructure and services	Impact on underground services	Neutral	Moderate negative (-ve)	Moderate negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Options with platform changes have an impact but all workable. Overhead options have a lesser impact on services below ground, and at Trafalgar Sq. Refinement to what can be mitigated to be further developed.
			Risk of station assets and access flooding from current day rainfall events, groundwater intrusion, watermain bursting	Neutral	Neutral	Neutral	Moderate positive (+ve)	Moderate positive (+ve)	Neutral	Platforms above flood levels (inc. future). Option 5b & 17 have lesser risk due to being above ground level.
			Visual impact of the proposed station and associated built components, when assessed against the future urban environment	Neutral	Moderate positive (+ve)	Moderate positive (+ve)	Moderate negative (-ve)	Slight positive (+ve)	Moderate positive (+ve)	Overpass provides legibility for connection over the rail corridor. Lesser impact for 17 as the bridge does not cross the road. Bridge over road is more out of character.
			Visual impacts of station built elements on Trafalgar Square	Neutral	Slight negative (-ve)	Moderate negative (-ve)	Large negative (-ve)	Large positive (+ve)	Large positive (+ve)	Options which require adaption to Trafalgar Square for increase ramp area and the overpass at Cambridge terrace are considered to have greater visual impact.
			Traffic impacts and turning circles to and from the Bus interchange	Neutral	Moderate positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)	Slight negative (-ve)	Slight negative (-ve)	Pedestrians crossing at grade will have impact on bus / road network as this is the only option which has a controlled intersection. There are ways this might be a positive for future networks. Working on the assumption that there would be a lighting interchange. Consideration is required for the future use & development.
			Station Horizontal and vertical weather protection for users	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight negative (-ve)	Slight negative (-ve)	All stations provide better weather protections in the station. The differentiator for Option 17 is the reduced protection across Cambridge Terrace.
			Legibility and wayfinding for users, e.g. easily identified entrances.	Neutral	Moderate positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)	Large positive (+ve)	Large positive (+ve)	Option 17 provides a more legible and accessible route to the station, as it is at grade (eye level).
			Safety and Crime prevention thorough design of station. Also applies to area around station	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight negative (-ve)	Moderate positive (+ve)	Moderate positive (+ve)	Large overbridge on option 5B across Cambridge Terrace may encourage loitering and poor lines of sight for security outside of the station. All other options can be monitored and improve existing condition.
			Impact on number of park and ride car parks against baseline	Neutral	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	These will all be less than base case - not a key differentiator between the options and no. of car parking spaces is prescribed in technical req. the same across all options.Parlan
			Ability to construct fare line in the future	Neutral	Large positive (+ve)	Large positive (+ve)	Large positive (+ve)	Large positive (+ve)	Large positive (+ve)	All options enable a fare line to be constructed in the future. Current condition will require adaption for this.
			frequency and ability for infrastructure and systems to be maintained with ease	Neutral	Slight negative (-ve)	Slight negative (-ve)	Large negative (-ve)	Moderate negative (-ve)	Slight negative (-ve)	New Mechanical and lifts will require additional maintenance
			Adaptation to the effects of climate change e.g. flooding, storm events, drought/heat waves	Neutral	Neutral	Neutral	Slight positive (+ve)	Slight positive (+ve)	Neutral	All options where the underpass is retained are considered a risk for flooding events, but are no worse than the existing condition.
	Technical Requirements Average Score			0	0.4	0.3	-0.1	0.7	0.6	
12.5%	Sustainability	Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused (Proxy for carbon emissions)	Neutral	Slight negative (-ve)	Slight negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Slight negative (-ve)	All options require some changes to the existing structure, options which do not retain the underpass will require decommissioning of the underpass, and the greatest amount of new structure.
			Achieving stormwater neutrality and quality	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	This can be achieved with all options, and improves existing condition.
			Access to sun, for light and provision of passive solar warmth	Neutral	Neutral	Neutral	Slight positive (+ve)	Slight positive (+ve)	Neutral	More natural light provided with the new canopy not covering the train tracks. Overpass able to access natural light and passive solar
			Use of energy efficient building services & PV panels for power generation	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	All options enable opportunities for solar generation, and are better than the existing condition.
			Minimum area of soil disturbance and amount of earth needing disposal	Neutral	Moderate negative (-ve)	Large negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Moderate negative (-ve)	Platform alignments, Introduction of lifts and options with ramps require large excavations / soil disturbance.
	Sustainability Average Score			0	-0.2	-0.4	0	0	-0.2	

			Do Min (Base Case)	Option 1B	Option 2	Option 5B	Option 17	Option 1B1	
Unweighted TOTAL SCORE			0	6	4	1	16	11	
100% Weighted Total AV SCORE			0.0	0.3	0.3	0.3	0.7	0.5	
Decision (Progress or Discount)			Discount	Discount	Discount	Discount	Progress	Discount	

Community Connections

Assessment Criteria Measure	Description of metric	Comment on Performance in Qualitative or Quantitative terms to Justify Magnitude score						Option Score						Comments
		Do Min (Base Case)	Option 1B	Option 2	Option 5B	Option 17	Option 1B1 - Short Underpass	Do Min (Base Case)	Option 1B	Option 2	Option 5B	Option 17	Option 1B1 - Short Underpass	
Maintains a safe walkable community connection across rail the rail corridor at Waterloo Station and Cambridge Terrace at all times for the community, particularly school children walking to and from school.	Maintain the safe community connection from East to West (across rail corridor and Cambridge Terrace)		More direct and legible. No change from do min. Compatible with all bus interchange options.	Remains community connection, does not require adjustment of user habits.	Underpass removed, stairs and vertical transport only. Could be affected by the height of the overpass as this will impact length of time to cross, and customer perception is a longer distance. Retains access at all hours - no difference to current usability.	Same as base case. Additional pedestrian crossing introduces interface with cars on a busy road, assumes signalised crossing	More direct and legible. Auscon: No change from do min. Compatible with all bus interchange options.	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	
	Ability to achieve step free access for the community connection from East to West (across rail corridor and Cambridge Terrace)		Lifts provide for grade change. Lift but no ramp.	Option introduces accessible ramps and vertical transport (to the platforms only) which is considered more beneficial for accessible connection (eg. Wheelchair users). Same as 1B but ramps provide options.	Has vertical transport which enables step free access. No ramps therefore the introduction of lifts offsets the measure against addition of the vertical transport. Same as Option 1.	Lifts for level change. Improved line of sight from Cambridge, better access for bus users. Negates need to traverse (under / over) across Cambridge Terrace.	Lifts for level change. Improved line of sight from Cambridge, better access for bus users. Negates need to traverse (under / over) across Cambridge Terrace. Would be large positive with ramps.	Neutral	Slight positive (+ve)	Moderate positive (+ve)	Slight positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)	Ramps vs lifts and stair, channels for bikes over stairs. Sub-option for a shortened underpass beneath Cambridge Terrace - would increase underpass options to moderate positive. Crossing of Cambridge would be on-grade. Would be improved with ped crossing across Cambridge direct to entrance and allows removal of T Square stairs/underpass/lift.
Average Score								0.0	1.0	1.5	1.0	1.5	1.5	

step free access

average user
mobility impaired
walking (using stairs)
cyclists
parents with prams
people with baggage

non compliant	123 seconds (lifts)	123 seconds (lifts)	122 seconds (lifts)	100 seconds (lifts)	
	79 seconds (stairs)	79 seconds (stairs)	116 seconds (stairs)	83 seconds (stairs)	
		124 seconds (ramps)			

Pedestrian Walking Times Assumptions

- Velocity (m/s):
 - Walk (1.0)
 - Push (0.5)
 - Stairs (0.5) (1.14 & 1.20)
 - Bikes (0.5)
- Lift Ride Time:
 - 30 s (underpass); 30 s (stairs); 30 s (lift)
- Distances from platform measured from the centre of the MTR island platform.
- Assumes zero wait time to cross Canton Drive

Between Station Place & Bus Interchange

Existing

Option 1B
Shortened Way

Option 1B1
Shortened Way

Time	Existing	Option 1B	Option 1B1
Time	1 min 45 seconds	1 min 15 seconds	1 min 10 seconds
Time	1 min 45 seconds	1 min 15 seconds	1 min 10 seconds
Time	1 min 45 seconds	1 min 15 seconds	1 min 10 seconds

Transport interchange

Assessment Criteria Measure	Description of metric	Comment on Performance in Qualitative or Quantitative terms to justify Magnitude score						Option Score						Comments
		Do Min (Base Case)	Option 1B	Option 2	Option 6B	Option 17	Optoin 1BI	Do Min (Base Case)	Option 1B	Option 2	Option 6B	Option 17	Optoin 1BI	
Provides a transport interchange for a range of transport modes that delivers minimum walking distances between modes and minimum connection times between scheduled services (e.g. bus to rail) that is consistent with the station hierarchy	Shortest walking distance route measured in minutes between transport modes.	Baseline Scoring	Better connection between bus interchange and Platform 2. Lift provides quicker connection to interchange compared to the ramps. Underpass location is not as centrally located along Platform 2 as do-minimum	Better connection between bus interchange and Platform 2. Lift provides quicker connection to interchange compared to the ramps.	Less distance compared to underpass ramps in the base case	Significantly Less distance compared to underpass ramps in the base case	Significantly Less distance compared to underpass ramps in the base case	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)	1B - harder for bike change without ramps. Buses and walking slight improvement. 2 - Buses and walking slight improvement. Easier for bikes to navigate. Would be large pos with fewer switchbacks and at-grade crossing. 6B - same as 1B 17 - significant improvement for walking cycling connection At grade. improve on bus.
	Minimum number of level and direction changes required to traverse between transport modes e.g. bus to rail.	Baseline Scoring	Same as base case	Improvement from do min base case with new public ramps and stairs.	Lifts for level change	Direct line of sight and direction. Level change via lift and stairs. Significant improvement to the pedestrian connection on the east of the station and bus interchange with Cambridge Terrace and Trafalgar Square	Direct line of sight and direction. Level change via lift and stairs. Significant improvement to the pedestrian connection on the east of the station and bus interchange with Cambridge Terrace and Trafalgar Square	Neutral	Neutral	Slight positive (+ve)	Slight positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)	1B - step alignment an improvement, more direct onto oxford tce. 2 - same as 1B but more turns on the ramp. If bike/wheelchair. Would be mod pos with fewer switchbacks. 6B - same as 1B (slightly higher distance) 17 - direct and fewer level changes
Average Score								0.0	0.5	1.0	1.0	2.0	2.0	

Enabling Commercial Development

Assessment Criteria Measure	Description of metric	Comment on Performance in Qualitative or Quantitative terms to justify Magnitude score						Option Score						Comments
		Do Min (Base Case)	Option 1B	Option 2	Option 6B	Option 17	Option 18I	Do Min (Base Case)	Option 1B	Option 2	Option 6B	Option 17	Option 18I	
Has the smallest possible footprint (area and geometry) and avoids the need to use property in the immediate precinct (including property not under control of GW) for station operations so that it occupies a minimum land holding (having regard to forecast growth requirements), is decoupled from property not under control of GW and maximises the area of the land immediately adjoining the station for TOD related commercial and community uses.	The Station including bus interchange occupies the smallest possible area measured in sqm.		Small reduction of area compared to Base Case. Ramps removed - improvement from base case.	No change to base case - except minor extension of ramps.	Small reduction of area compared to Base Case. Slightly larger star footprint than 1B	Releases Trafalgar Square from any impact from the station smallest	Releases Trafalgar Square completely	Neutral	Slight positive (+ve)	Neutral	Slight positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)	
	The Station including bus interchange has a geometry that is compact and minimises disturbance to land holdings and assets		Aligned platforms and bus interchange geometry more efficient	Similar to base case.	Aligned platforms and bus interchange geometry more efficient	Aligned platforms and bus interchange geometry more efficient. Introduction of the pad crossing releases Trafalgar Square from any impact from the station	Aligned platforms and bus interchange geometry more efficient	Neutral	Slight positive (+ve)	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	
	The station and bus interchange is decoupled from the use of property not under control of GW		Same as base case, easy to convert south eastern car park to bus interchange	Similar to base case.	Over pass impact Hutt City Council land and impacts to existing building at Trafalgar Square	Level crossing of Cambridge Terrace will need approval from Hutt City. Option removes underpass ramps on Trafalgar Square - removes impact on the Trafalgar Square - should be better.	Level crossing of Cambridge Terrace will need approval from Hutt City. Option removes underpass ramps on Trafalgar Square	Neutral	Neutral	Neutral	Moderate negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	
Average Score								0.0	0.7	0.0	0.0	0.7		

Stageable and Adaptable

Assessment Criteria Measure	Description of metric	Comment on Performance in Qualitative or Quantitative terms to justify Magnitude score						Option Score						Comments
		Do Min (Base Case)	Option 1B	Option 2	Option 6B	Option 17	Option 1BI	Do Min (Base Case)	Option 1B	Option 2	Option 6B	Option 17	Option 1BI	
Is demand led so that provides sufficient capacity, targeting a Level C level of service for rail passengers in the peak 15 minutes in the representative week in the busiest month (excluding disruptions) in 2025 and forecast passenger demand in its planned opening year of 2030 and by 2045 and 2060.	Provision of sufficient rail station capacity to achieve Level Service C for 2030, 2045 & 2060		Current underpass meets LOS C for up to 2060 at current width. This may not if seismic strengthening is required and reduces width. Addition of lifts to platform improves LOS from Base Case. Existing underpass performs to a LOS C under normal conditions to 2060, but only 2045 under degraded conditions. Expanded underpass under Cambridge Road and stairs adds additional capacity to improve the LOS of that section from present.	Current underpass meets LOS C for up to 2060 at current width. This may not if seismic strengthening is required and reduces width. Lifts, stairs and ramps offers capacity at a Level C or better up to and beyond 2060. The additional space required for the ramps will remove capacity on the platform, but unlikely to impact the LOS below a C. Expanded underpass under Cambridge Road and stairs adds additional capacity to improve the LOS of that section from present.	Overpass at 4m, allows for LOS C up to 2060. Addition of lifts plus overpass allows sizing up to 2060 (A, C) and beyond	Overpass at 4m, allows for LOS C up to 2060. Addition of lifts plus overpass allows sizing up to 2060 (A, C) and beyond. Addition of At Grade crossing alleviates pressure on underpass / overpass and gives greater longevity to other station features and overpass could be narrower if required	Current underpass meets LOS C for up to 2060 at current width. This may not if seismic strengthening is required and reduces width. Addition of lifts to platform improves LOS from Base Case. Existing underpass performs to a LOS C under normal conditions to 2060, but only 2045 under degraded conditions.	Neutral	Slight positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)	Large positive (+ve)	Slight positive (+ve)	All options are improved with the addition of lifts and with reduced level changes. Unknown seismic performance of the underpass is a risk if the width of the underpass is reduced for future capacity demand. Existing underpass performs to a LOS C under normal conditions to 2060, but only 2045 under degraded conditions.
	Ability for rail station capacity to be staged to match demand in 2030, 2045 & 2060		Further details of seismic analysis required for the underpass, to assess if this meets future capacity demand. Scored on assumption that underpass is viable. — Limited options for staging to match demand, as all elements (lifts, stairs, underpass) required from the outset.	Further details of seismic analysis required for the underpass, to assess if this meets future capacity demand. Scored on assumption that underpass is viable. Some options for staging – as lifts could be provided ahead of upgrading the ramps and vice versa	Limited options for staging to match demand, as all elements (lifts, stairs, overpass) required from the outset	Limited options for staging to match demand, as all elements (lifts, stairs, overpass) required from the outset	Further details of seismic analysis required for the underpass, to assess if this meets future capacity demand. Scored on assumption that underpass is viable. — Limited options for staging to match demand, as all elements (lifts, stairs, underpass) required from the outset.	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	no ability for demand led development because of insufficient up lift in demand and the capacity needed for basic requirements on opening day. Possible staging of overpass until that time that the underpass needs replacing. — All options could have passive provision for escalators with the exception of Option 2 (because of the ramps). However, modelling indicates will not be required at 2060
Average Score								0.0	0.5	1.0	1.0	1.5		

Construction & Delivery

Assessment Criteria Measure	Description of matrix	Comment on Performance in Qualitative or Quantitative terms to justify Magnitude score						Option Score						Comments
		Do Min (Base Case)	Option 1B	Option 2	Option 5B	Option 17	Option 1B1	Do Min (Base Case)	Option 1B	Option 2	Option 5B	Option 17	Option 1B1	
Has a construction methodology that is simple and can be completed in the least number of months, therefore has a lower construction cost, and minimises the length of time that the rail network and users will be subject to construction impacts and disruptions	Complexity of construction and staging for delivery	Base case includes segmented underpass which have inherent difficulties to waterproof and to complete any other seismic or structural improvements to a underground structure. The underpass will need to be closed during works and a temporary connection (potentially bridge depending on timeframe) may be required to maintain connectivity	Larger scope of work than base case with additional buildings, station works, excavation for vertical transport, platform upgrades, bus interchange and other works that make the work more complex. Construction of voids for vertical transport, works to upgrade underpass, and dependencies with station operations and building works increase complexity. The underpass will need to be closed during works and a temporary connection (potentially bridge depending on timeframe) may be required to maintain connectivity	Larger scope of work than base case with additional buildings, station works, excavation for vertical transport, platform upgrades, bus interchange and other works that make the work more complex. Construction of voids for vertical transport, works to upgrade underpass, and dependencies with station operations and building works increase complexity. The underpass will need to be closed during works and a temporary connection (potentially bridge depending on timeframe) may be required to maintain connectivity	Construction of a bridge is less complex. Can be staged and integrated with temporary works. Location of overpass would need to be further developed and assessed for efficiency. Decommissioning of the underpass and how this is achieved would require further investigation of how this is achieved.	Construction of a bridge and an grade pedestrian crossing is less complex. Can be staged and integrated with temporary works. Location of overpass would need to be further developed and assessed for efficiency. Decommissioning of the underpass and how this is achieved would require further investigation of how this is achieved.	Larger scope of work than base case with additional buildings, station works, excavation for vertical transport, platform upgrades, bus interchange and other works that make the work more complex. Construction of voids for vertical transport, works to upgrade underpass, and dependencies with station operations and building works increase complexity. The underpass will need to be closed during works and a temporary connection (potentially bridge depending on timeframe) may be required to maintain connectivity	Neutral	Moderate negative (-ve)	Moderate negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Moderate negative (-ve)	All options have construction complexities with maintaining east/west connectivity, station operations, maintaining station operations, and constrained areas of works (especially if station remains open). The underpass upgrades have inherent complexities on waterproofing, construction new connections, and maintaining pedestrian connectivity.
	Duration to complete the overall construction		Additional works such as voids for vertical transport and building works will increase programme duration beyond the base case.	Larger based voids will increase programme beyond duration expected for Option 1B. Difficulty re underpass connection with new structure re sequencing keeping underpass open	Bridge will need to be constructed before most works can commence so connectivity can be maintained. Size of the bridge extends project duration to be similar to Option 2.	Bridge will need to be constructed before most works can commence but smaller sized bridge can be constructed faster than Option 5B. Thus overall duration will be less	Reduced size of voids and underpass upgrade works will reduce construction programme. Though construction of voids and dependencies with other works will mean duration will be similar to Option 1B.	Neutral	Slight negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	All options will require a longer duration than the base case. With options 2 due to larger void sizes, and options 5B due to larger bridge size expected to have the longest durations.
	Duration of rail corridor closures for construction		Assuming only minor disruption re underpass upgrade underack & demo works of existing roof	Assuming only minor disruption re underpass upgrade underack & demo works of existing roof	Demo of existing + construction/moving of new overpass	Demo of existing + construction/moving of new overpass		Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Works to be constructed outside rail corridors. Closures may be required but these should be able to be accommodated within programmed Block of Line Closures
	Road corridor impacts and Traffic management for construction	Base case will require traffic management for site access and potentially works around Trafalgar Square	Traffic management will be similar to Base Case but in place for a longer period of time. Assuming only minor disruption re underpass upgrade under road	Traffic management will be similar to Base Case but in place for a longer period of time. Assuming only minor disruption re underpass upgrade under road	Traffic management will be similar to Base Case but in place for a longer period of time. Assuming only minor disruption re underpass upgrade under road	Will require traffic management for site access. Option also requires the most live works within a live roadway to construct the pedestrian crossing/bridge and other road works on Cambridge Terrace. Underpass remains open if overpass positioned sympathetically	Will require traffic management for site access. Option also requires the most live works within a live roadway to construct the pedestrian crossing/bridge and other road works on Cambridge Terrace	Neutral	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	All options will require traffic management. Option 17 and 1B1 will require more work within active roadway than other three options.
	Duration of closure of east west connection across the rail corridor		Limit closure during upgrade	Closing of entrance ways likely during works	Tunnel remain open if overpass positioned sympathetically	Tunnel remain open if overpass positioned sympathetically		Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Temporary overbridge could be considered for all options.
	Duration of station closure			No new platform in space				Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	to difficult to determine at this stage of design
Average Score								0.0	-0.7	-0.8	-0.7	-0.7	-0.8	

Critical Requirements

Assessment Criteria Measure	Description of metric	Comment on Performance in Qualitative or Quantitative terms to justify Magnitude score						Option Score						Comments
		Do Min (Base Case)	Option 1B	Option 2	Option 6B	Option 17	Option 1B1	Do Min (Base Case)	Option 1B	Option 2	Option 6B	Option 17	Option 1B1	
Does not result in negative impacts on water quality or supply, from the structure, foundations and utilities servicing the rail station and interchange that are in the vicinity the Waiwhetū Aquifer, existing potable water infrastructure network and Waterloo Water Treatment Plant.	Impact on the Water treatment plant and related pipe network		Commercial Development and TOD will clash with 750 dia water transmission main. Foundations would need to bridge the pipe. 525 dia water main will require protection where it runs adjacent to commercial development.	Commercial Development and TOD will clash with 750 dia water transmission main. Foundations would need to bridge the pipe. 525 dia water main will require protection where it runs adjacent to commercial development.	TOD will clash with 750 dia water transmission main. Foundations would need to bridge the pipe. 750dia 525 dia water main will require protection where it runs adjacent to commercial development. 750 dia main runs under stairs from Oxford Terrace	TOD will clash with 750 dia water transmission main. Foundations would need to bridge the pipe. 750dia 525 dia water main will require protection where it runs adjacent to commercial development. 750 dia main runs under stairs from Oxford Terrace	Commercial Development and TOD will clash with 750 dia water transmission main. Foundations would need to bridge the pipe. 525 dia water main will require protection where it runs adjacent to commercial development.	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Station has a 6m buffer allowance around treatment plant and avoids all below ground services. Further design will need to continue to avoid and provide opportunity for pipe maintenance or replacement in the future
	Impact on the Waiwhetū Aquifer and groundwater							Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Not going near aquifer under each option, therefore no impact on groundwater and drinking water. Need to stay above 10m deep relative to ground level.
Average Score								0.0	0.0	0.0	0.0	0.0		

Technical Requirements

Assessment Criteria Measure	Description of metric	Comment on Performance in Qualitative or Quantitative terms to Justify Magnitude score						Option Score						Comments
		Do Min (Base Case)	Option 1B	Option 2	Option 5B	Option 17	Option 1B1	Do Min (Base Case)	Option 1B	Option 2	Option 5B	Option 17	Option 1B1	
Meets the technical requirements necessary for the construction, operation and consenting of the rail station, bus interchange and ancillary infrastructure and services	Impact on underground services	Baseline Scoring	Looks like structure in Trafalgar Square avoids the wastewater trunk main but will require protection. It will be under the "Play element". 4 x duct commo bank in Trafalgar Square may need relocation (currently runs over underpass). Clash with SW on Platform 2 stairs / void. Not a big issue. Electrical duct bank (6 ducts) and 100 dia chorus duct may clash with IT pit on Platform 1. WTP infrastructure assessed elsewhere. Comm bank under platform & tracks - common to all options	Looks like structure in Trafalgar Square avoids the wastewater trunk main but will require protection. Placement of play element better located. 4 x duct commo bank in Trafalgar Square may need relocation (currently runs over underpass). Clash with SW on Platform 2 stairs, ramps and void. Not a big issue. Electrical duct bank (6 ducts) and 100 dia chorus duct may clash with IT pit on Platform 1. WTP infrastructure assessed elsewhere. Comm bank under platform & tracks - common to all options	The stair structure will build over the wastewater trunk main in Trafalgar Square. May require sleeving and protection. If stair structure moved slightly to forward it would improve rating. No clash with SW on Platform 2 stairs. Electrical duct bank (6 ducts) and 100 dia chorus duct will clash with IT pit on Platform 1. WTP infrastructure assessed elsewhere. Comm bank under platform & tracks - common to all options	Wastewater trunk main in Trafalgar Square unaffected. Clash with SW on Platform 2 stairs, not a big issue. Electrical duct bank (6 ducts) and 100 dia chorus duct will clash with IT pit on Platform 1. WTP infrastructure assessed elsewhere. Comm bank under platform & tracks - common to all options	Wastewater trunk main in Trafalgar Square unaffected. Clash with SW on Platform 2 stairs / void. Not a big issue. Electrical duct bank (6 ducts) and 100 dia chorus duct may clash with IT pit on Platform 1. WTP infrastructure assessed elsewhere. Comm bank under platform & tracks - common to all options	Neutral	Moderate negative (-ve)	Moderate negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Rated option 5B assuming the stairs in Trafalgar Square could be moved slightly to avoid WW line.
	Risk of station assets and access flooding from current day rainfall events, groundwater intrusion, western main bursting	Baseline Scoring	Platforms sit above 100 year flood level. Underpass will be more vulnerable to flooding and will require suitable engineering solutions (ie pumps). Commercial TOD built structures FFL will need to be set above flood levels. May be flooding in car parks and surrounding streets - depending on final levels. Underpass options will be subject to flooding however any new design will aim to minimise this at underpass entry thresholds	Platforms sit above 100 year flood level. Underpass will be more vulnerable to flooding and will require suitable engineering solutions (ie pumps). Commercial TOD built structures FFL will need to be set above flood levels. May be flooding in car parks and surrounding streets - depending on final levels. Underpass options will be subject to flooding however any new design will aim to minimise this at underpass entry thresholds	Platforms and overpass sit above 100 year flood level. Commercial and TOD FFL will need to be set above flood levels. May be flooding in car parks and surrounding streets - depending on final levels	Platforms and overpass sit above 100 year flood level. Commercial and TOD FFL will need to be set above flood levels. May be flooding in car parks and surrounding streets - depending on final levels	Platforms sit above 100 year flood level. Underpass will be more vulnerable to flooding and will require suitable engineering solutions (ie pumps). Commercial TOD built structures FFL will need to be set above flood levels. May be flooding in car parks and surrounding streets - depending on final levels	Neutral	Neutral	Neutral	Moderate positive (+ve)	Moderate positive (+ve)	Neutral	
	Visual impact of the proposed station and associated built components, when assessed against the future urban environment		Building at positive visual impact as well as negative. Station main commercial building is an improvement on existing. Contemporary design hides up current structure.	Same as 1B	Overpass structure is dominant and creates poor outcomes underneath. Limits visual connectivity and integration from outside.	Improvement on existing structure. Dominating overpass is limited to the boundary. Scale is similar to Water Treatment plant. Possible risk of structure imposing at Cambridge and could be reduced from boundary and better integrated at this side.	Same as Option 17.	Neutral	Moderate positive (+ve)	Moderate positive (+ve)	Moderate negative (-ve)	Slight positive (+ve)	Moderate positive (+ve)	
	Visual impacts of station built elements on Trafalgar Square		Structure will dominate existing building and take away existing play space. If the at grade ring was on Cambridge this would score the best of all the options. Even better than the option 17.	Same as 1B but even larger structure.	Significant visual impact across Cambridge Terrace to accommodate road clearances with overpass. Dominating structure, imposes on existing building and public square. Removes playground.	Issue given bank to square. Still some visual effect from elevated bridge opposite the square - shading afternoon potential and dominance, but altogether a good outcome. Reducing trafalgar square, freeing	Removal of entrance from Trafalgar Square improves visual impact.	Neutral	Slight negative (-ve)	Moderate negative (-ve)	Large negative (-ve)	Large positive (+ve)	Large positive (+ve)	All options promote legible and clear wayfinding through improved planning. Canopies will be designed to identify station entry points.
	Traffic impacts and turning orders to and from the bus interchange	Baseline Scoring	Bus movement access to and from the bus interchange is unchanged from the do-minimum. Pedestrian movements maintain physical separation from bus circulation via use of the underpass.	Bus movement access to and from the bus interchange is unchanged from the do-minimum. Pedestrian movements maintain physical separation from bus circulation via use of the underpass.	Bus movement access to and from the bus interchange is unchanged from the do-minimum. Pedestrian movements maintain physical separation from bus circulation via use of the underpass.	At grade pedestrian crossing on Cambridge Terrace will cause a movement conflict with operating buses, creating delays to their service.	At grade pedestrian crossing on Cambridge Terrace will cause a movement conflict with operating buses, creating delays to their service.	Neutral	Moderate positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)	Slight negative (-ve)	Slight negative (-ve)	Signals at the bus interchange could allow buses to have some priority on exit
	Station Horizontal and vertical weather protection for users					The at-grade crossing over Cambridge Terrace does not provide weather protection		Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight negative (-ve)	Slight negative (-ve)	Option 17 open to elements for Cambridge Terrace ped xing
	Legibility and wayfinding for users, e.g. easily identified entrances.		Improved station frontage and Trafalgar entrance more clear.	Improved station frontage and Trafalgar entrance more clear.	Overpass has strong legibility.	Overpass has strong legibility. Front of station on Trafalgar side great visibility / legibility. Significant improvement on existing.		Neutral	Moderate positive (+ve)	Moderate positive (+ve)	Moderate positive (+ve)	Large positive (+ve)	Large positive (+ve)	
	Safety and Crime prevention through design of station. Also applies to area around station						Removal of the island escape.	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight negative (-ve)	Moderate positive (+ve)	Moderate positive (+ve)	Large overbridge on option 5B provides a risk of a hiding area.
	Impact on number of park and ride car parks against baseline	Baseline Scoring	Loss of 447 parking bays (178 to 341) due to the TOD opportunity (-168 bays) and bus interchange opportunity (-130 bays) - 37% decrease.	Loss of 447 parking bays (178 to 341) due to the TOD opportunity (-168 bays) and bus interchange opportunity (-130 bays) - 37% decrease.	Loss of 447 parking bays (178 to 341) due to the TOD opportunity (-168 bays) and bus interchange opportunity (-130 bays) - 37% decrease.	Loss of 447 parking bays (178 to 341) due to the TOD opportunity (-168 bays) and bus interchange opportunity (-130 bays) - 37% decrease.	Loss of 447 parking bays (178 to 341) due to the TOD opportunity (-168 bays) and bus interchange opportunity (-130 bays) - 37% decrease.	Neutral	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	All options require a reduction in the existing available parking.
	Ability to construct fare line in the future							Neutral	Large positive (+ve)	Large positive (+ve)	Large positive (+ve)	Large positive (+ve)	Large positive (+ve)	All options enable a fare line to be constructed in the future. Current condition will require adaption for this.
	Frequency and ability for infrastructure and systems to be maintained with ease	Baseline Scoring	Increased maintenance associated with lifts	Increased maintenance associated with lifts	Increased maintenance associated with lifts. Maintenance introduced above road and train tracks. Overpass structures may require fully glazed walls and will require additional maintenance. Noting this option has extensive facades	Increased maintenance associated with lifts. Maintenance introduced above train tracks. Overpass structures may require fully glazed walls and will require additional maintenance	Increased maintenance associated with lifts	Neutral	Slight negative (-ve)	Slight negative (-ve)	Large negative (-ve)	Moderate negative (-ve)	Slight negative (-ve)	New Mechanical and lifts will require additional maintenance. All options would be designed to ensure facades and roofs can be accessed and provide safe methods for access and maintenance
	Adaptation to the effects of climate change e.g. flooding, storm events, drought/heat waves		Flooding risk of underpass not significantly improved.	Flooding risk of underpass not significantly improved.	Mitigated risk of flooding. Increased risk of solar gain in the overpass, this can be reduced by using natural ventilation	Mitigated risk of flooding. Increased risk of solar gain in the overpass, this can be reduced by using natural ventilation	Flooding risk of underpass not significantly improved.	Neutral	Neutral	Neutral	Slight positive (+ve)	Slight positive (+ve)	Neutral	
Average Score								0.0	0.4	0.3	-0.1	0.7	0.6	

Sustainability

Assessment Criteria Measure	Description of metric	Comment on Performance in Qualitative or Quantitative terms to justify Magnitude score						Option Score						Comments
		Do Min (Base Case)	Option 1B	Option 2	Option 5B	Option T7	Option 1B1	Do Min (Base Case)	Option 1B	Option 2	Option 5B	Option T7		
Minimises or avoids environmental impacts and additional greenhouse gas emissions during construction and operation by maximising the reuse of existing infrastructure and building elements, disturbing or removing the least amount of earth needing disposal, achieving stormwater neutrality, using energy efficient building services and the use of PV panels for power generation.	Greatest amount of existing infrastructure that can be reused (Proxy for carbon emissions)		Retaining existing platform has a lesser impact from a sustainability perspective. No disruption to services inside of station footprint, assumed not impact mains infrastructure network. Minimal changes to basecase from a structural and geotech perspective.	Retaining existing platform has a lesser impact from a sustainability perspective. No disruption to services inside of station footprint, assumed not impact mains infrastructure network. Minimal changes to basecase from a structural and geotech perspective.	Removal of underpass, new infrastructure to go over the road - less re-use of the existing in comparison to the basecase.	Removal of underpass, new infrastructure to go over the road - less re-use of the existing in comparison to the basecase.	Retaining existing platform has a lesser impact from a sustainability perspective. No disruption to services inside of station footprint, assumed not impact mains infrastructure network. Minimal changes to basecase from a structural and geotech perspective.	Neutral	Slight negative (-ve)	Slight negative (-ve)	Moderate negative (-ve)	Moderate negative (-ve)	Slight negative (-ve)	
	Achieving stormwater neutrality and quality		Opportunity to maintain or mitigate neutrality and SW treatment objectives across all options, including the TOD. Likely improve current situation	Opportunity to maintain or mitigate neutrality and SW treatment objectives across all options, including the TOD. Likely improve current situation	Opportunity to maintain or mitigate neutrality and SW treatment objectives across all options, including the TOD. Likely improve current situation	Opportunity to maintain or mitigate neutrality and SW treatment objectives across all options, including the TOD. Likely improve current situation	Opportunity to maintain or mitigate neutrality and SW treatment objectives across all options, including the TOD. Likely improve current situation	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	
	Access to sun, for light and provision of passive solar warmth		More natural light provided with the new canopy not covering the train tracks	More natural light provided with the new canopy not covering the train tracks	More natural light provided with the new canopy not covering the train tracks Overpass able to access	More natural light provided with the new canopy not covering the train tracks Overpass able to access	More natural light provided with the new canopy not covering the train tracks	Neutral	Neutral	Neutral	Slight positive (+ve)	Slight positive (+ve)	Neutral	
	Use of energy efficient building services & PV panels for power generation		Large roof surface areas for PV panels circa 4400m2. No shadowing in the north south direction.	Large roof surface areas for PV panels circa 4400m2. No shadowing in the north south direction.	The overpass may provide shadow over the roof minimising useful PV space. Lower available roof space due to overpass.	The overpass may provide shadow over the roof minimising useful PV space. Lower available roof space due to overpass.	Large roof surface areas for PV panels circa 4400m2. No shadowing in the north south direction.	Neutral	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	Slight positive (+ve)	
	Minium area of soil disturbance and amount of earth needing disposal		Lift pits for the underpass and proximity to rail corridor will have a greater impact than base case. Platforms moved requiring more earthworks.	Lift pits for the underpass and proximity to rail corridor will have a greater impact than base case.	Platforms moved requiring more earthworks. Lift pits and foundations limited to "shallow" excavation without proximity to rail corridor. Ability to use underpass for spoil disposal	Platforms moved requiring more earthworks. Lift pits and foundations limited to "shallow" excavation without proximity to rail corridor. Ability to use underpass for spoil disposal	Lift pits for the underpass and proximity to rail corridor will have a greater impact than base case. Platforms moved requiring more earthworks.	Neutral	Moderate negative (-ve)	Large negative (-ve)	Slight negative (-ve)	Slight negative (-ve)	Moderate negative (-ve)	
Average Score								0.0	-0.2	-0.4	0.0	0.0	-0.2	

Magnitude	Definition for: Objectives, Constraints and Critical Issues	Numeric
Large positive (+ve)	Significant positive effect	3
Moderate positive (+ve)	More than minor positive effect	2
Slight positive (+ve)	Minor positive effect	1
Neutral	No impact or no discernible difference	0
Slight negative (-ve)	Minor adverse effect	-1
Moderate negative (-ve)	More than minor adverse effect	-2
Large negative (-ve)	Significant adverse effect	-3
Fatal Flaw	Technical fatal flaw	
Not scored		

Decision

Progress

Discount

