



# City Centre to Māngere Light Rail Project

## EXECUTIVE SUMMARY



## ○ CONNECTING COMMUNITIES

Over the next 30 years, there will be up to a million new Aucklanders, and our future city needs an integrated transport solution to connect neighbourhoods with our centres of business, education and recreation.

**The City Centre to Māngere Light Rail Project (the CC2M Project) is the first step towards this vision.**

It is a landmark opportunity to deliver integrated transport services coupled with urban renewal that will connect the central isthmus and South Auckland. It will create a sub-30 minute city, provided by Auckland Rapid Transit (ART).

Separated from roads and pedestrians this rapid transit system will integrate into our existing communities while accelerating our urban renewal projects. It will:

- bring better housing, vibrant neighbourhoods;
- increase the number of travel options across the Auckland public transport network; and
- create greater access for pedestrians and cyclists.

The CC2M Project will deliver social & cultural connections and provide opportunities for mana whenua. It will allow greater access to education, training and employment wherever growth is occurring. The benefits will be city wide.



Auckland Rapid Transit (ART)

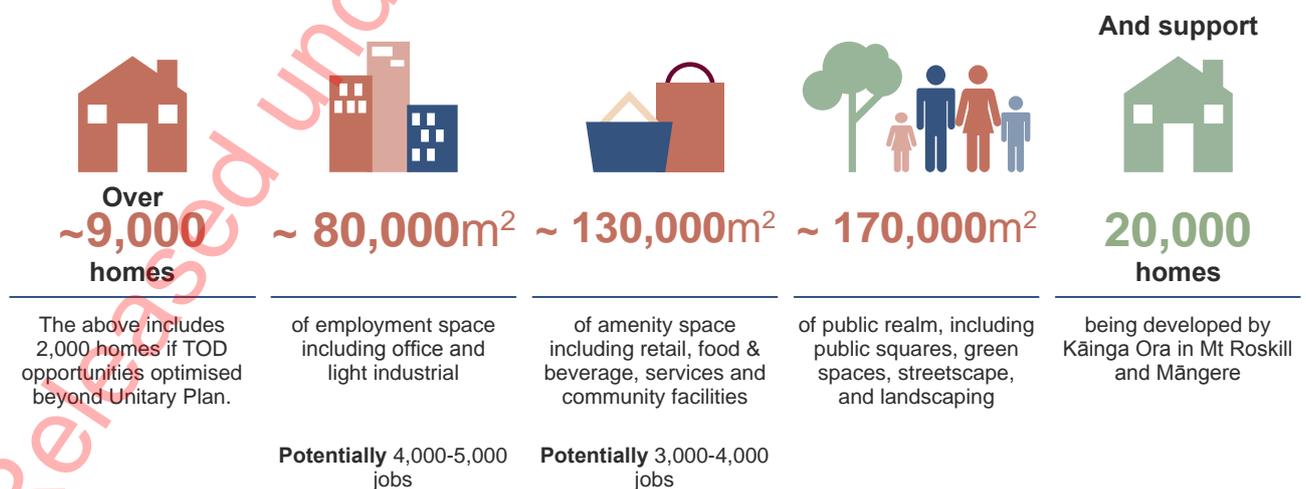
Our solution will drive intergenerational wellbeing now and into the future and provide an innovative approach to delivering the Ministry of Transport’s (MoT’s) Key Outcomes. The key differentiators of our proposal are:

- For the first time a Crown organisation has sought to fully link urban regeneration opportunities with the delivery of infrastructure, meaning that a significant share of the associated benefits of the infrastructure investment will flow directly to the Crown.



Dominion Junction

- We have carefully targeted areas where development can be maximised, through partnership particularly Kāinga Ora where the the risk is too great for the crown, creating opportunity for quality amenity, affordable housing and urban intensification. This supports the emerging National Policy Statement on Urban Development



- We also will develop a University station (linking the University of Auckland and AUT to the rapid transit network) bringing education closer for south Auckland communities.



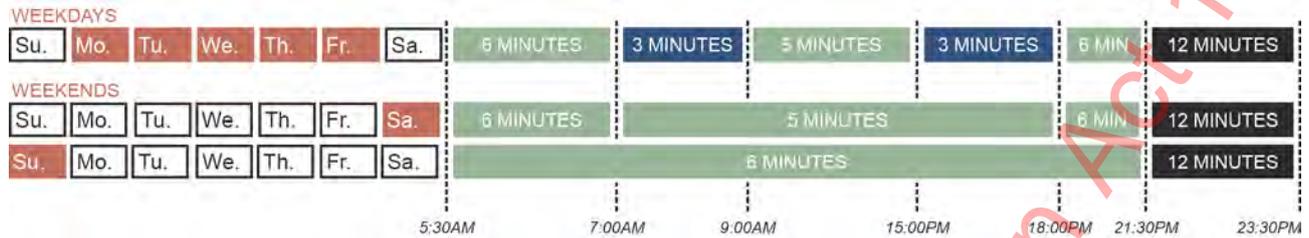
University station



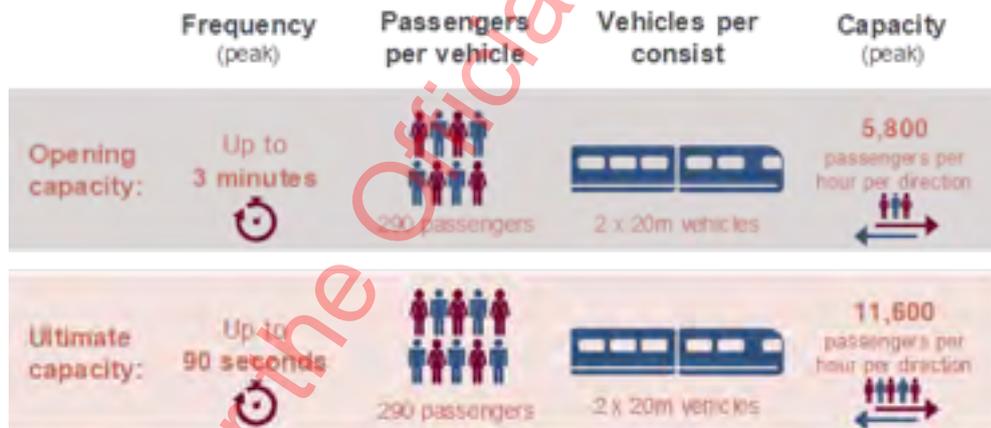
- Our technical solution will ensure 30-minute journeys from Aotea to the Airport and integrates fully with the AT bus and heavy rail network.



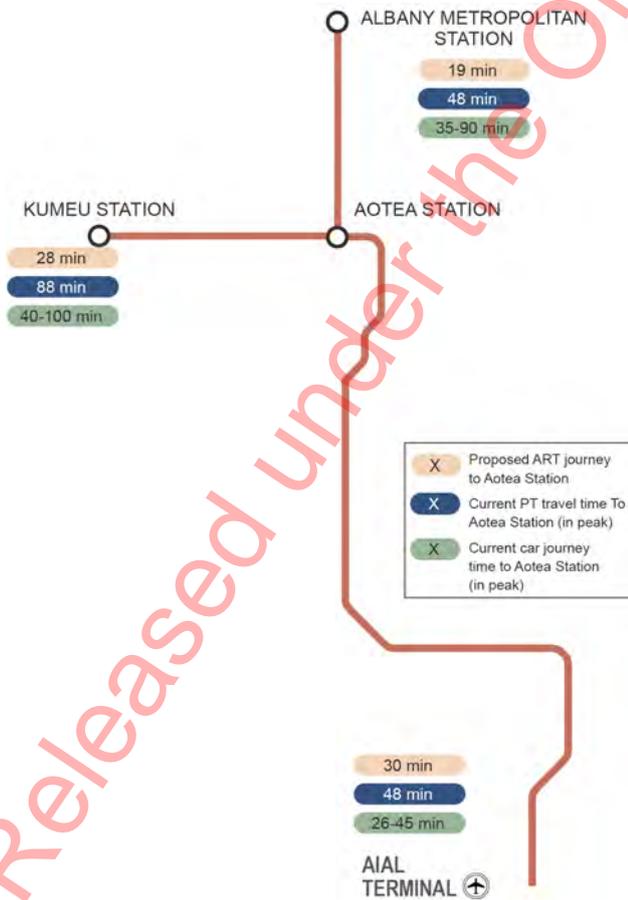
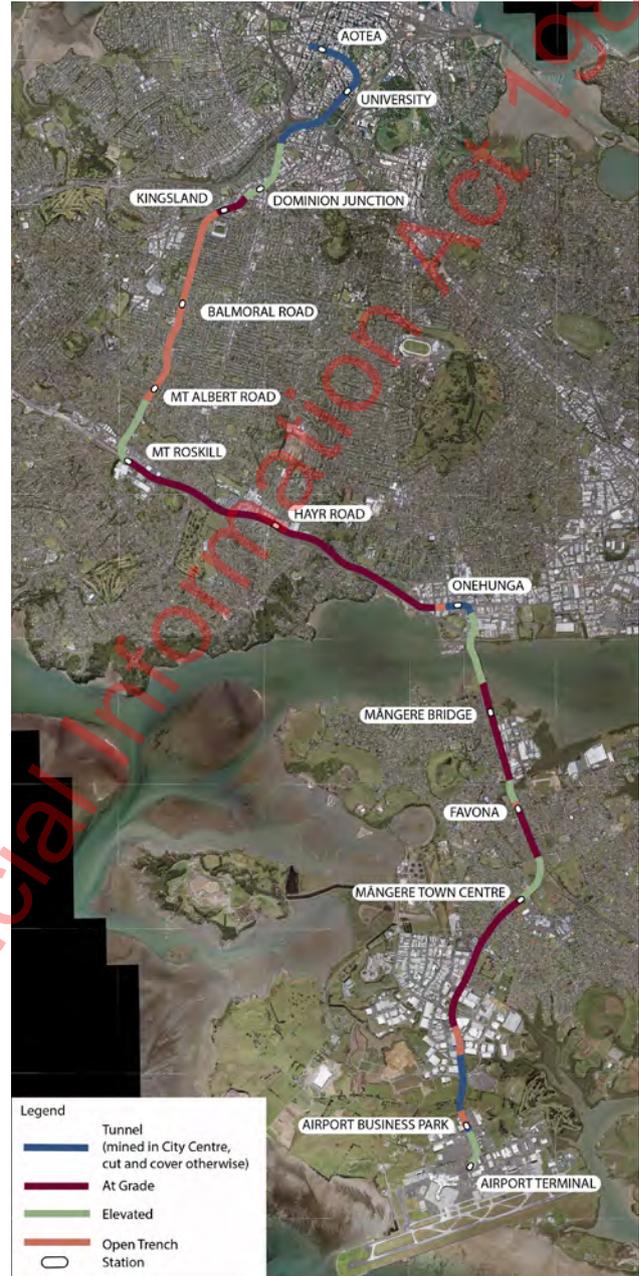
- Our proposal will deliver a light metro style service, will have fully automated trains and provide more services with lower headway, while providing a safe and flexible service.



- Capacity can expand reducing from 3 minute headways to 90 second headways, with 5,800 passenger capacity per direction per hour on opening, rising to 11,600. At those usage rates, at opening ART will eliminate 5,300 cars per hour from Auckland roads, the equivalent of 14 lanes of surface traffic, 6 lanes of motorway or 145 buses per hour. Those numbers double at ultimate capacity.

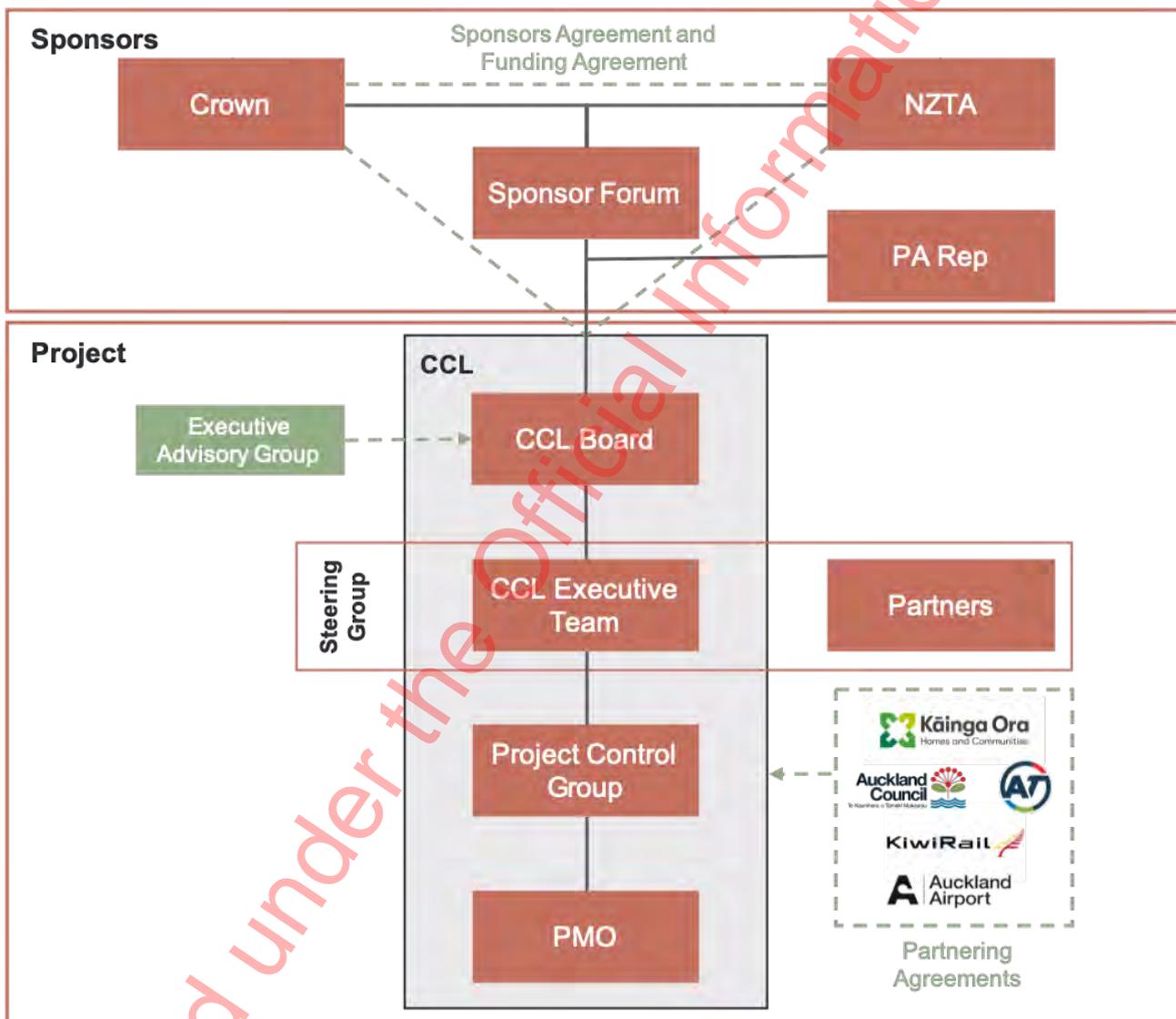


- With 14 stations across 23km of track, the CC2M Project will open up a rapid transit corridor between the Airport and the city centre, two of New Zealand's most strategic locations. Flexibility in technical solution has been emphasised to allow for a fully segregated service with trade-offs made in design made because of factors like cost, construction disruption, utilities relocation, geotechnical and consenting. This has resulted in a route that contains a combination of tunnelling, elevated structures, trenching and at grade running.



- Our technical solution provides for extension to the northwest, north and to Manukau, and flexibility for the Crown to choose alternative providers to build future capacity. In achieving this, our model will align with the current public transport operating environment in Auckland.

- Our model of delivery is revolutionary as we have stepped away from the NZTA pay as you go method to intergenerationally fund the development through the provision of debt to a schedule 4A development entity supported by a variety of funding streams. Given the nature of our development we have named this entity Connected Communities Limited (CCL), with CCL delivering ART. The nature of the funding means that the Crown retains significant oversight, over CCL and the project through a Sponsors Agreement. Our key project partners are engaged through a Steering Group.



- Through all of these design features we have created a true Public Benefit Entity. The nature of our partnership model means that all returns will accrue to the Crown, with the Crown having a longer term and more considered investment horizon in relation to urban and transport development along the route. We do not require legislative change to progress our programme, can move quickly to implement and have a commitment to sign a Sponsors Agreement with the Crown by June 2020.

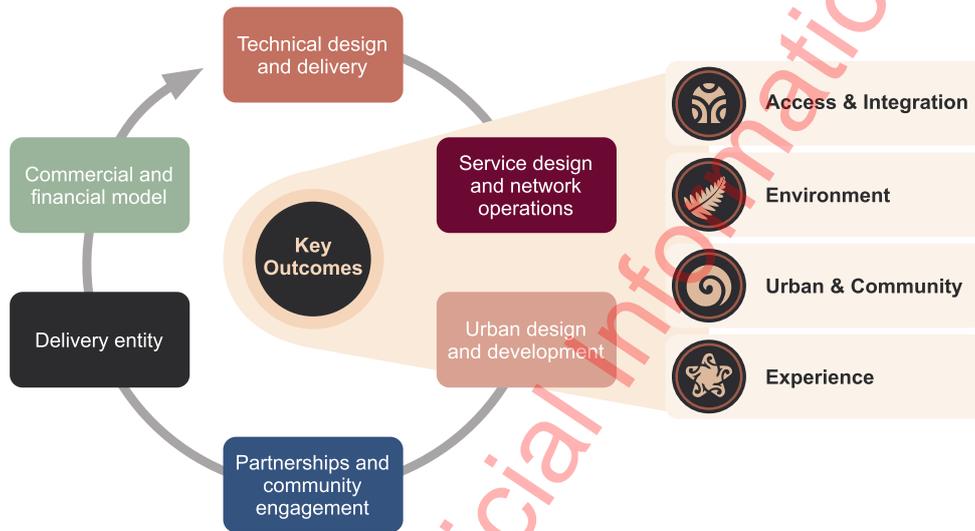
Our integrated solution fully delivers on the MoT's Key Outcomes of Access and Integration, Environment, Urban and Community and Experience.

# ○ DELIVERING THE KEY OUTCOMES

How the Respondent's solution will deliver the Key Outcomes

We offer a fully integrated rapid transit and urban renewal solution to deliver on the Key Outcomes.

## NZTA integrated solution



This integrated solution for ART will deliver transformational outcomes for Auckland as highlighted below, enabled by key partnerships, a discrete purpose built delivery entity, and a flexible outcomes focussed commercial model.

<b>Access and integration</b>	<b>Faster travel times</b> <b>30 minutes</b> From City Centre to Airport	<b>Improved access</b> <b>c.370,000 more jobs</b> Accessible to Māngere residents by public transport by 2048	<b>Lower car usage</b> <b>c.17% reduction</b> In car trips per capita by 2048	<b>Environment</b>
	<b>Higher PT usage</b> <b>c.130% increase</b> In PT trips per capita by 2048 across Auckland	<b>Higher capacity</b> <b>c.5,800 passengers</b> per hour per direction on opening <b>Equivalent to a 6 lane motorway</b>	<b>Lower CO<sub>2</sub> emissions</b> <b>c.28% reduction</b> In vehicle-related CO <sub>2</sub> emissions per capita	
	<b>Higher PT mode share</b> <b>c.16% PT mode share</b> By 2048, up from c.7% in 2016	<b>Autonomous</b> Higher frequency, responsiveness, reliability, and efficiency	<b>Recyclable assets</b> <b>95%</b> Of rolling stock material recyclable	
<b>Urban &amp; Community</b>	<b>Enabled capacity</b> <b>Over 12,000 households</b> Enabled within 1.6km of stations	<b>Urban renewal</b> Urban design that celebrates local identity and enhances the public realm	<b>Quality experience</b> Best practice end-to-end journey experience that is attractive to users and encourages modal shift	<b>Experience</b>
	<b>Enabled jobs</b> <b>Over 14,000 jobs</b> Enabled within 1.6km of stations	<b>New developments</b> Comprehensive transit-oriented developments to deliver housing and revitalise communities	<b>High reliability</b> <b>99.5%</b> Targeted in service operational reliability	
<b>Enablers</b>	<b>Partnerships</b> Partnerships with key organisations to create holistic, lasting, multi-faceted solutions	<b>Delivery entity</b> Discrete entity with local and international expertise, focus and autonomy to ensure project delivery	<b>Commercial model</b> Flexible, outcomes-focused contracting and procurement	

Note: PT = public transport

## Access and Integration

*Improved access to opportunities through enhancing Auckland's Rapid Transit Network and integration with Auckland's current and future transport network.*



### A transformational alignment

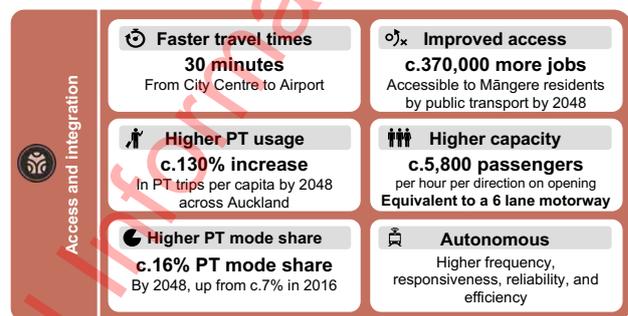
ART links major current and future employment and education centres, enables the creation of new employment hubs along the corridor, improves equity of access to jobs, education and opportunity, triggers development potential and benefit and connects Māori, extending to both places of education and significance.

Transit-Oriented Developments (TODs) will act as a gateway for access and integration to employment, education and recreational facilities, revitalising the urban realm around station nodes and facilitating a greater modal shift.

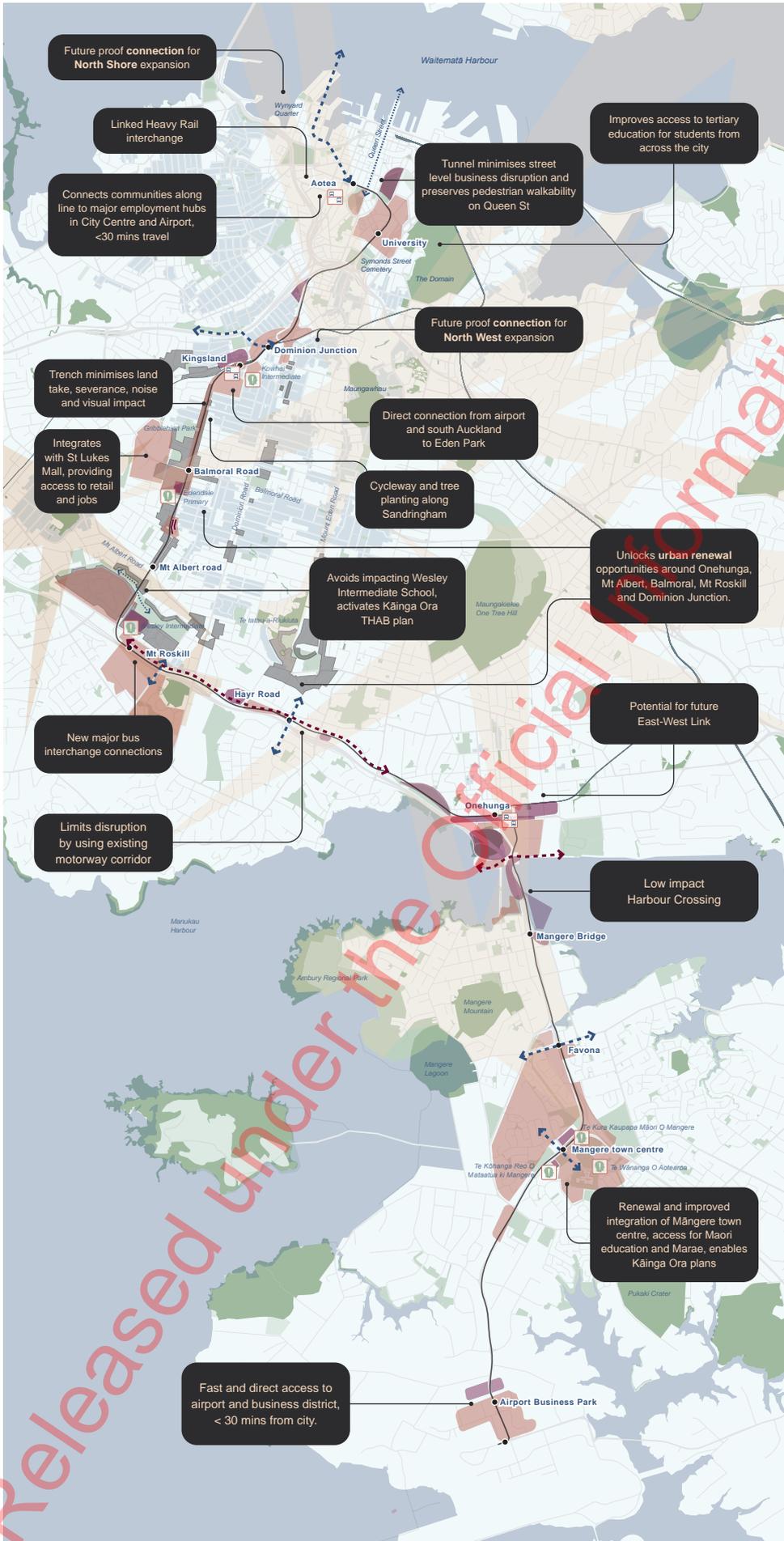
ART will create and expand employment hubs along the corridor, including in Mt Roskill and along Sandringham Rd. Māngere residents will have access to c. 370,000 more jobs in major employment hubs in the City Centre and around Auckland Airport using ART.

Communities will benefit from significantly improved access to education, open spaces, social and recreational facilities and hospitals, with the increased public impact and benefits of these opportunities greater the further the community is located distance from the City Centre. In particular, the inclusion of University station creates vastly improved higher education access within 30 minutes across the alignment, and is future proofed for north shore campus connections.

Our city underground solution will promote better city experiences during and after construction. By avoiding on street running, there is less business disruption on Queen Street, Auckland Council is enabled to deliver on the City Centre Masterplan Refresh: Access for Everyone for increased walkability and pedestrian-priority and mana whenua are enabled to realise the aspiration of daylighting Horotiu Stream in future.



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**LEGEND**

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<span style="display: inline-block; width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black;"></span>	Green Space
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<span style="display: inline-block; width: 15px; height: 10px; background-color: #ADD8E6; border: 1px solid black;"></span>	Interchange with Rail Transport Network
<span style="display: inline-block; width: 15px; height: 10px; background-color: #8B4513; border: 1px solid black;"></span>	Improved education

## Service Operations – An enjoyable and reliable experience

The ART end-to-end operational design will deliver a safe, reliable and enjoyable experience for customers.

The design of the ART, from technical to commercial elements, has focused on the delivery of the Key Outcomes, customers and the community, especially in the delivery of a high-quality customer experience that is supported by a robust operating strategy.

Our fully segregated route and autonomous, high-capacity light metro system will deliver faster, reliable and enjoyable travel. It will improve equitable and inclusive access to opportunity and enhance the attractiveness and competitiveness of public transport against other modes. The system will be well-integrated, physically and digitally, with the rest of the transport network to support multi-modal journeys. The operating strategy will ensure speed, reliability, high-capacity, comfort, safety and resilience within the system, with automated operations and a fully segregated alignment enabling a multitude of benefits to customers.

### **System Automation**

We propose the deployment of a fully automated Grade of Automation 4 (GoA4) system and have developed our operating strategy on this basis. The GoA4 system is proven technology that will increase service frequency, service reliability, allow for remote operation and automatic service recovery.

### **Centralised operations with the flexibility of local support**

An Operations Control Centre (OCC) will be at the centre of the system's operations management. The staff located inside the OCC will ensure the real-time supervision and control of the system in all modes of operations. In addition to the OCC, staff will be located on site at each station with the primary purpose of assisting passengers during normal operations.



### **Reliability of service**

ART will enjoy 100% right of way 100% of the time. The full segregation of the ART alignment - by way of a system of tunnels, trenches, elevated guideways, and separated at-grade corridors - will ensure continuity of service. ART will not interact with pedestrians, cyclists, cars or other road-based traffic.

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With a dedicated, fully segregated dual direction route, ART will enjoy 100% right of way 100% of the time, providing reliable, on time services.

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### **Fast, frequent and reliable services**

Our operating strategy incorporates efficient headways and reduced dwell times at each station. It will provide a bidirectional, all-stops service pattern with high legibility and utility for customers, and a timetable-free 'turn up and go' frequency all day, seven days a week.

### **Safety in Operation**

The proposed service model is tested in Australian and European practice and complies with international standards for passenger and staff safety.

### **Increased capacity, efficiency and responsiveness**

ART's effective corridor capacity usage will provide flexibility and responsiveness to changing demand, disruptions and special events. On opening, ART will provide capacity for 5,800 passengers per hour in each direction in the peak, providing capacity equivalent to a 6 lane motorway. By 2048, the ART corridor will service 11,600 passengers per hour per direction in the morning peak, the equivalent of a 6 lane motorway in each direction, or a 12 lane motorway in total.

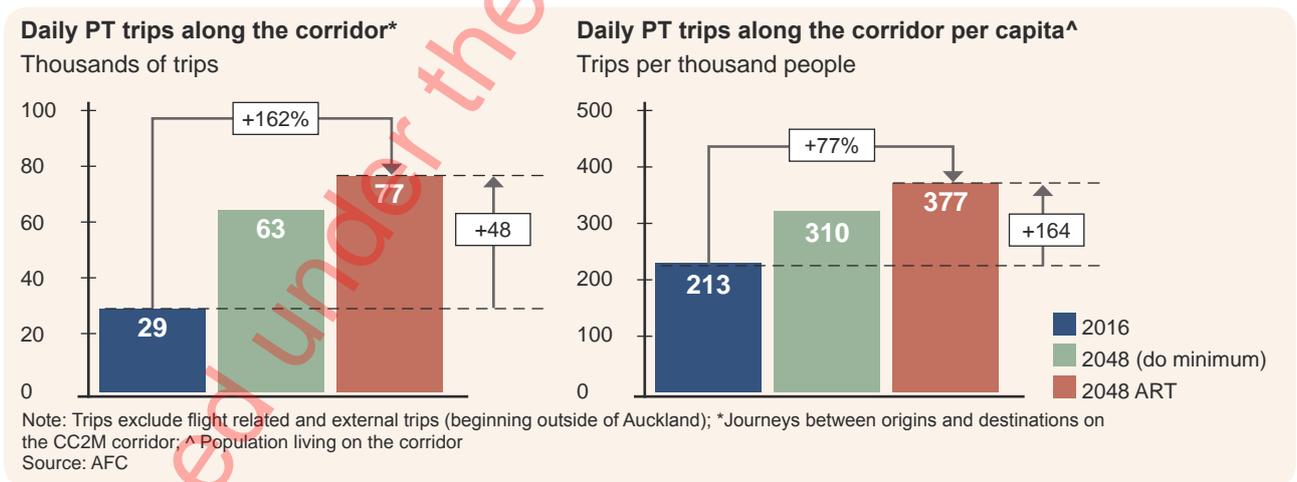
### Enhanced network integration and patronage

ART will integrate seamlessly with the Auckland public transport network, establishing multiple points of interconnection with the heavy rail and bus networks.



Onehunga Station

By 2048 ART will drive a c.130% increase in public transport trips per capita across Auckland. Increased opportunity for mode share and network integration and ease of transfer will drive higher patronage across network and in the corridor.



At the same time, removal of c.76 buses per hour from the City will alleviate public transport congestion across Auckland, reducing time spent in severe congestion by two thirds, encouraging patronage. The Aotea, Onehunga and Kingsland integrated stations with heavy rail and bus links provide fast transfer and multimodal transport links further enhancing network integration and attractiveness of public transport options.

## Future Network Flexibility & Integration

*How the Respondent Proposes to integrate with the existing public transport network and incorporate any future expansion*

### Managing integration with Auckland's transport network

The ART alignment is designed to maximise the integration of ART with the wider Auckland transport network by maximising the potential for interchange between ART and other public transport services. This is achieved by strategically locating ART stations at transport interchanges and close to major arterial road corridors served by frequent bus services. This approach simultaneously maximises the potential ART patronage while reducing demand for existing bus services on the isthmus. ART will be at the core of Auckland's expanding Rapid Transport Network (RTN), which also includes heavy rail and fast, frequent bus services.

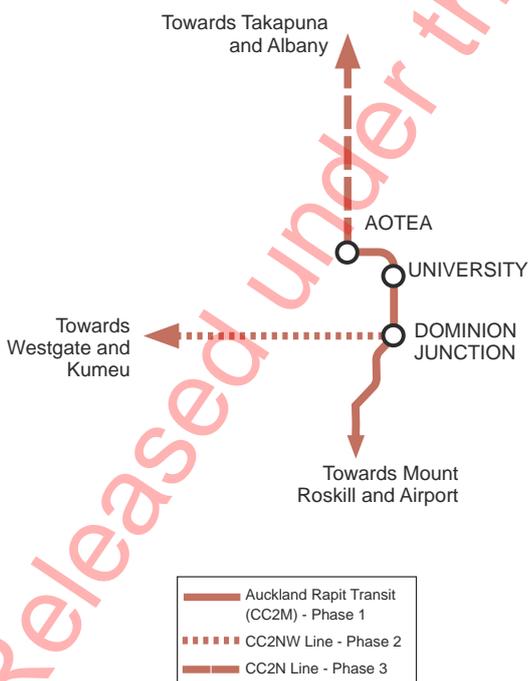
As well as integrating with and supporting interchange with Auckland Transport (AT) rail and bus services, it is just as important for the scheme to:

- Integrate with non-public transport modes. These modes – walking, cycling, micromobility, taxis (and private hire) and private vehicles – have been considered for all stations in recognition of the importance of ensuring a sufficient mix of feeder services and first/last mile travel choices. This is especially the case in a low density and dispersed areas, and
- Be sufficiently integrated into the communities through which ART passes. This applies to stations and the parts of the alignment between stations

### Future network flexibility

We take a long-term approach to deliver the ART solution for the CC2M Project. This is in line with the cross-government vision for a future Rapid Transit Network (RTN) outlined in the ATAP and the Auckland Transport Regional Public Transport Plan (RPTP). The proposed ART solution enables us to deliver a rapid transit network without any predetermined restrictions on the Crown in three phases:

- Phase 1: Delivery of ART solution for CC2M (this proposal)
- Phase 2: ART Northwest expansion for CC2NW; and
- Phase 3: ART expansion to the North Shore for CC2N



**Our solution enables construction of additional phases without impacting on the operation of the CC2M line and ultimately, customers, businesses and the community. In particular:**

The CC2M alignment and station locations to meet MoT's key outcomes and have been designed and chosen to accommodate longer platforms at stations (than currently provided), futureproofing for future expansion;

The CC2NW line will connect to the CC2M line at Dominion Junction Station and the CC2N line will connect to the CC2M line underground at Aotea;

The depot area provides workshop facilities for longer trains, as will be required for future network expansions; The CC2NW and CC2N lines will have their own light maintenance depots and stabling yards.

The operational solution and associated signalling system allow for future expansion of the ART network and ensure seamless and safe integration and interoperability between the network lines

## Urban & Community

*Enabling quality integrated urban communities, especially around Māngere, Onehunga and Mt Roskill.*

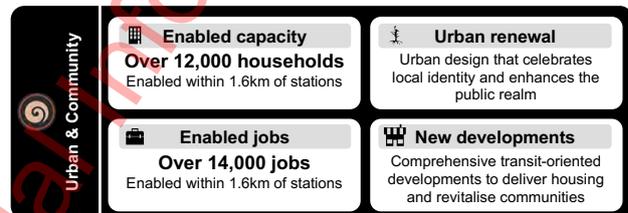


### Vibrant, attractive and thriving urban communities

ART will support the development of thriving urban communities that are well connected to rapid transit through revitalisation and strengthening of the quality of urban environments. High capacity rapid transit will enable transit-oriented development (TODs) in existing urban areas by improving access to employment and education opportunities, delivered by sister project Auckland Urban Renewal.

CCL enables over 12,000 additional households along the route, with urban regeneration opportunities in TODs having the potential to deliver 9,000 homes.

We will achieve transformation through partnership, with our key relationship being with Kāinga Ora, with ART allowing Kāinga Ora to approach master planning for 20,000 houses at Mt Roskill and Māngere differently than would otherwise be the case.



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ART will also allow CCL to intensify development at key nodes, with CCL using compulsory acquisition powers to acquire land at Dominion Junction, Balmoral and Onehunga. CCL then will partner with the private sector to develop TODs where risk is not appropriately held by the Crown. This concept reflects the Public Benefit Entity nature of CCL; Crown will take risk when appropriate, the private sector when not. The Crown will likely have a longer term and more considered investment horizon in relation to urban and transport development along the route than the private sector.



*Dominion Junction*

An increased choice of housing typologies will be available supported by amenities and community facilities, meeting diverse demographic needs. The Sandringham alignment avoids business disruption and Special Character Areas on Dominion Road and takes advantage of the significant existing Terrace Housing and Apartment Buildings (THAB) Zone to enable AUR to deliver vibrant communities.



*Sandringham Road Trench*

Through our control of master-planning, our approach to urban design and precinct planning will guide residential and commercial development opportunities in and around stations. We will enable compact urban development that underpins investment in quality, safe and active public spaces and pedestrian-oriented communities that are less car dependent.



*Māngere Station Interchange*

ART infrastructure (e.g. stations, track and other structures) will be designed to create a positive visual impact and will incorporate Te Aranga design principles. AUR's approach to urban renewal will enhance public realm and community spaces in a way that celebrates local identity and character while protecting and/or enhancing the natural environment and heritage assets along the corridor.



*Māngere Station Interchange*

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## Environment

*Optimised environmental quality and embedded sustainable practices.*

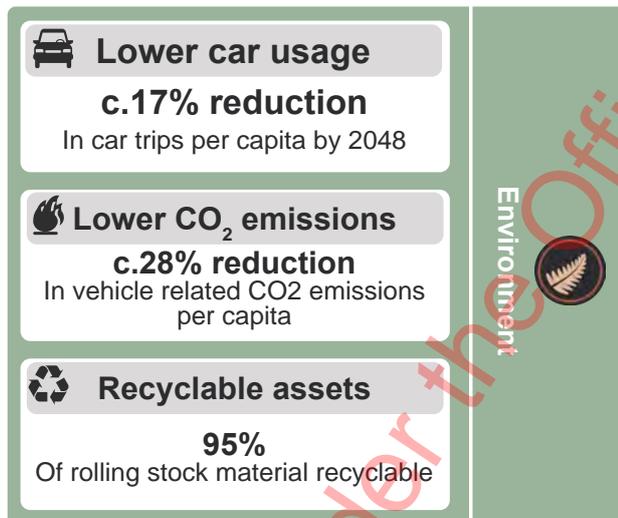


The project aligns strongly with the recent climate emergency declaration by Auckland Council and the Zero Carbon Act.

We have driven environmental impact through the project lifecycle, from planning and design, to construction and procurement and into delivery and operations. Our approach has focused on developing environmental initiatives that are sustainable and will lead to long-lasting improvement on the environment.

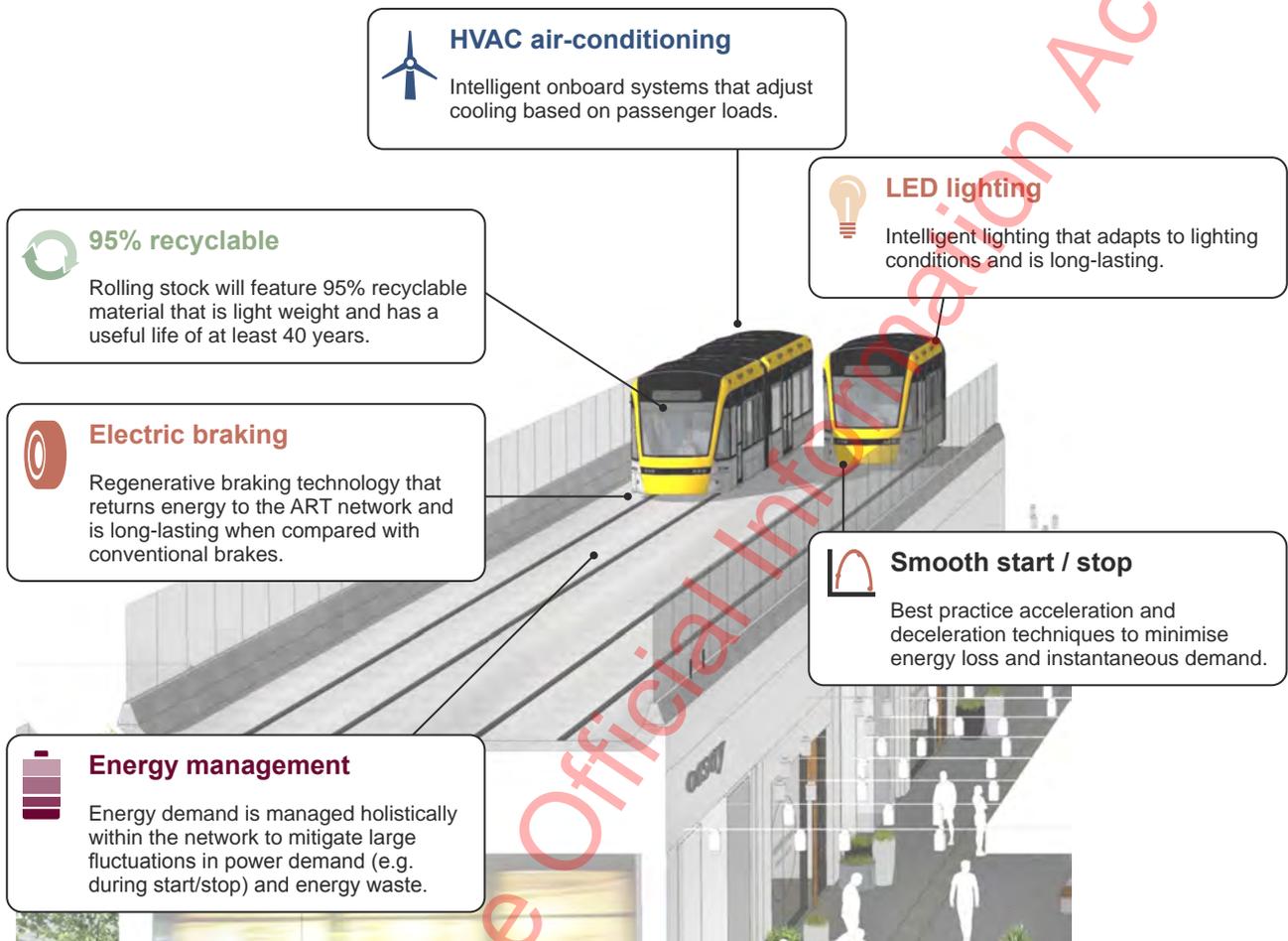
### Moving people more sustainably

ART's autonomous light metro rolling stock will feature 95% recyclable material that is light weight and has a useful life of at least 40 years.



The rolling stock for our fully segregated, autonomous light metro system will move people more sustainably.

Intelligent air-conditioning and lighting will adapt to operating conditions to manage energy usage. Best practice acceleration and deceleration techniques will minimise energy loss. Regenerative braking technology will return energy to the ART network with energy demand managed holistically within the network to mitigate large fluctuations. Autonomous energy efficient rolling stock will also minimise energy consumption through operations by up to 30%.



### Reducing CO2 emissions and air pollutants

ART will take full advantage of our renewable electricity system to drive a 14% reduction in CO2 and a 13-15% reduction in air pollutants (such as NOx, VOCs and particulate matters) in the corridor by 2048. ART will drive increases in public transport with 18% fewer car trips per capita, enabling the removal of up to c. 150 buses per hour in the morning peak by 2048. Emissions will be reduced and sustained at a reduced level, via an automated energy efficient network.

### Sensitive planning and design

Protected ecosystems, active laneways, sensitive water usage, native planting and celebrated heritage sit at the core of our sustainable planning and design for the ART corridor. Stations and infrastructure will create a positive visual impact through high quality urban design.



Māngere Street

2032



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Protecting ecosystems	Active laneways	Water-Sensitive Urban Design (WSUD)	Native bio-species	Protecting heritage assets
<ul style="list-style-type: none"> <li>Respecting and protecting volcanic view shafts through trenching and alignment</li> <li>Reducing the impact of corridor design on the urban and natural environment (e.g. Queen St)</li> </ul>	<ul style="list-style-type: none"> <li>Laneways and continuous cycling paths to support pedestrian access and mixed use development</li> <li>Low impact streetscapes with green frontages to enhance biodiversity and provide attractive public spaces</li> </ul>	<ul style="list-style-type: none"> <li>Capturing and filtering stormwater to enhance water quality through raingardens and bioswales</li> <li>Improving the quality of run-off into waterways (i.e. Walmsley and Oakley Creeks, lagoons)</li> </ul>	<ul style="list-style-type: none"> <li>Designing native planting with Mana Whenua to increase canopy cover with species unique to the local area while offsetting emissions during construction</li> <li>Aligning with Auckland Council's '1 million trees' Urban Forest Strategy within three years</li> </ul>	<ul style="list-style-type: none"> <li>Planning alignment around heritage and sensitive assets to minimise impact and severance</li> <li>Incorporating Māori design elements into station design and streetscapes</li> </ul>

We have considered the impact on waterways throughout the project lifecycle from urban design, construction to operations. ART will improve the quality of run-off into waterways through Water Sensitive Urban Design to increase water filtration prior to run-off as stormwater, tree canopies near waterways to reduce run-off from hard surfaces, and effluent management during the construction phase.

TODs will be sustainably developed in accordance with current design and planning standards (including seismic, Homestar, Unitary Plan, insulation).

### Creating impact through partnerships

ART will enable kaitiakitanga outcomes by partnering with mana whenua. In partnership we will avoid remedy and mitigate harmful impacts on the environment, ensure that the mauri of the environment is protected, preserve taonga and landmarks, enable early and genuine engagement with mana whenua Kaitiaki, collaborate in developing an Urban Design Framework incorporating mana whenua values, activate native plantation in raingardens, bioswales and streetscapes to enhance mauri; and rejuvenate waterways that can be used for local traditions.

**Partnerships with mana whenua will be highly engaging, leading to sustained environmental improvements.**

### Construction that treads lightly

To support a low carbon footprint, our sustainable practices will include use of low carbon and recycled materials, volumes that allow for low carbon technology investment and reuse of materials along the corridor.

We will dedicate ourselves to reducing pollution risk and discharge, selecting methods and machinery to minimise noise and vibrations and engaging with stakeholders early, proactively and constructively to create ownership of mitigation strategies.

## Experience

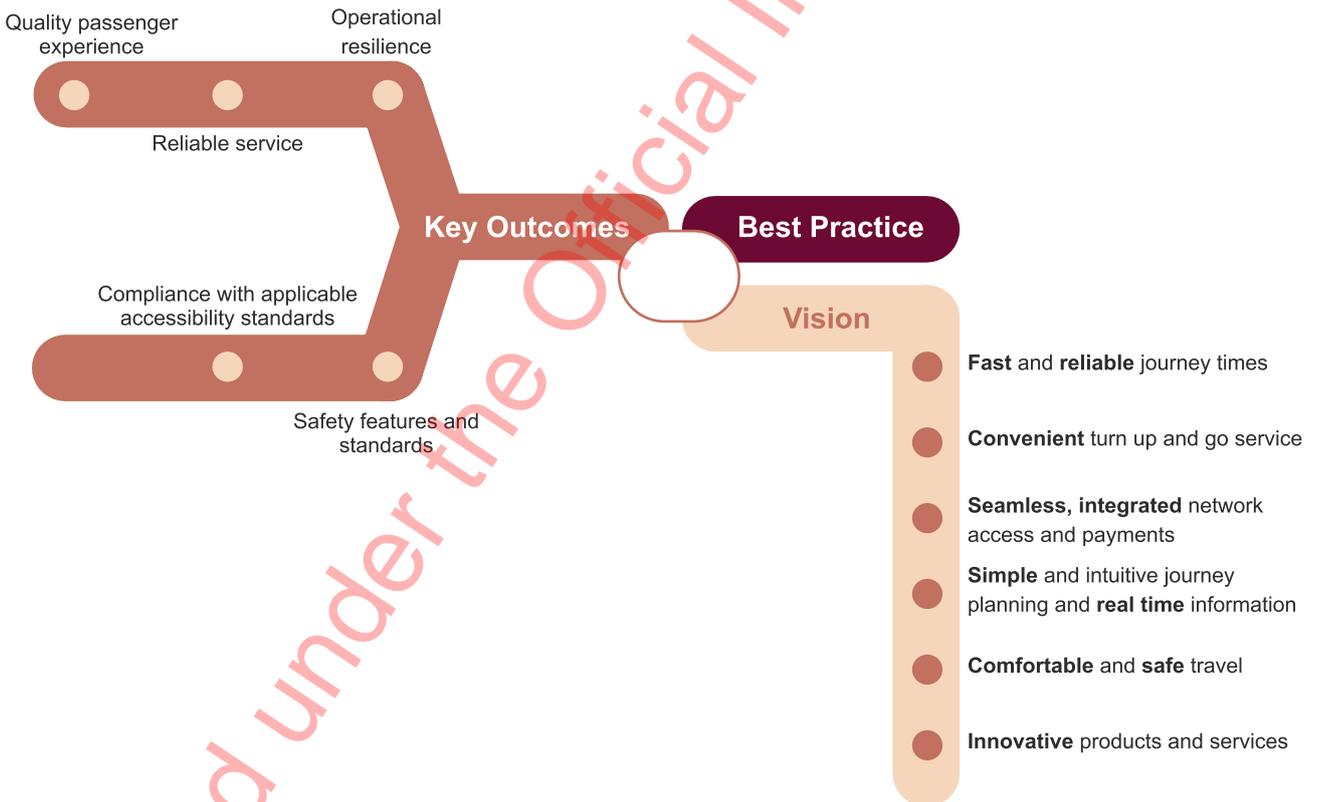
A high quality service that is attractive to users, with high levels of patronage.



### An easy and enjoyable customer experience end-to-end

The ART passenger experience is designed to deliver on the Key Outcomes and to achieve our vision for the ideal passenger journey, leveraging current international best practice and coming evolutions in public transport, personal mobility, and technology.

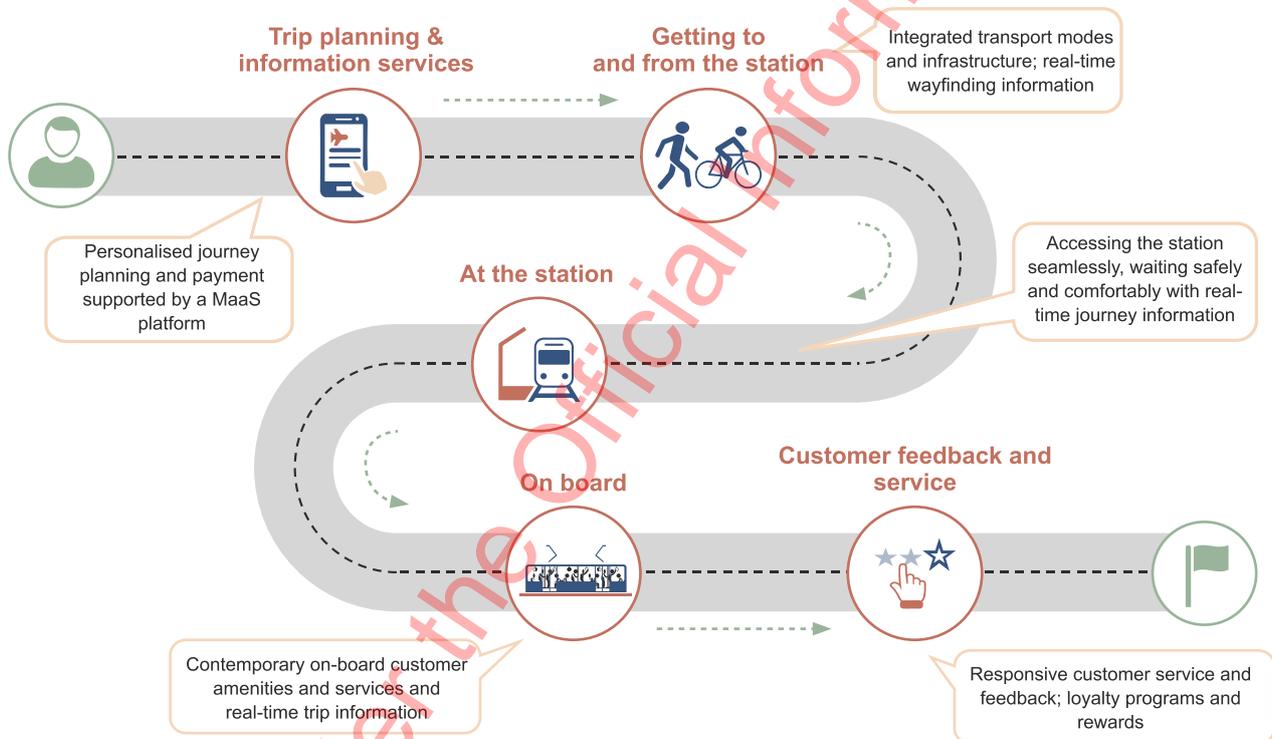
<b>Quality experience</b> Best practice end-to-end journey experience that is attractive to users and encourages modal shift	Experience 
<b>High Reliability</b> <b>99.5%</b> Targeted in service operational reliability	



The ART experience considers the end-to-end passenger journey and has been developed utilising a range of typical user profiles to ensure that ART delivers a truly quality experience at all points along the journey for all passengers.

In addition, TODs will enhance community user experience with station nodes becoming destinations with amenity and safety through passive surveillance.

Customer-centric design has guided our approach to customer experience to deliver fast, reliable and safe journeys that make ART the mode of choice for Auckland.



### Getting to and from the stations

The ART experience is designed to make it as safe and easy as possible for all passengers to travel to and from stations. The ART will offer convenient connection to a variety of modes of transport, in recognition of the fact that customers will access the system in several way according to their diverse needs and preferences. Integrated design, based on close partnerships with AT and KiwiRail, will enable seamless multi-modal journeys for passengers. Key elements of the ART experience of getting to and from stations include:

- Safe and easy accessibility by active modes with easy-to-access platforms for people with reduced mobility
- Efficient transfers to other services, and
- Intuitive wayfinding and clear signage.

## At the stations

The ART station experience is designed for comfort, safety and convenience within an attractive, visually appealing and locally inspired environment. The ART stations will create vibrant public spaces that people want to visit, encouraging patronage. Station design will promote the efficient movement of people through the system and enable customers of all levels of mobility to feel safe, secure, comfortable and well informed while at the station.

### Key elements of the ART experience within stations include:

- High visual amenity with modern design and a unique local identity for each station
- Comfortable and convenient facilities including amenities and retail facilities
- Provision of a safe and secure environment with the adaption of the enabled by Crime Prevention with Environmental Design Principles
- Real-time information and intuitive wayfinding will enable the comfortable and efficient movement of passengers to, from and through the system. Te Reo Māori and dual signage will be incorporated into all signage and other customer information and guided by the Auckland Council Māori Language Policy, and mana whenua where appropriate. Efforts will be made to incorporate Te Reo in the public realm, enhancing a sense of Māori cultural identity.

## On Board

The ART will offer a modern on-board experience that keeps passengers connected, comfortable, safe and well-informed. Combined with the ART's fast, frequent and reliable service design, the on-board experience will make the ART an attractive means of travel for both current users and non-users of public transport.

### Key elements of the ART on-board experience include:

- Wi-Fi connectivity and cellular reception throughout the journey from station to station;
- Heating and air conditioning units providing climate control and air renewal;
- Storage areas of luggage and bikes; and
- Infotainment screens delivering customer information, entertainment, advertising, and potentially content from mana whenua which reflects their relationship with the Tāmaki Makaurau landscape

### A quality experience along the journey

A range of typical user profiles has been used to ensure that ART delivers a quality experience at all points along the journey for all passengers.



#### Aroha's journey



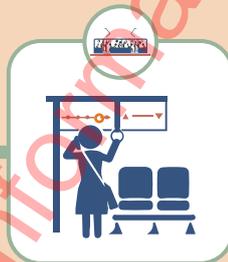
Aroha receives an alert on her phone to let her know her service will be delayed for 1 minute



Aroha can safely cycle to her local ART station and lock her bike up securely at a storage facility



There are a variety of shops at the ART station; Aroha gets her morning coffee from the cafe



Cellular reception means Aroha can take business calls while commuting; a screen indicates when she is arriving



Aroha rates her ART experience on media

#### Amanda's journey



Signs around the ART help Amanda remember which way to go



Amanda can leave her e-scooter at a dedicated scooter bay at the station



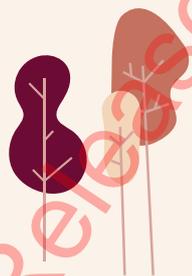
A Be-In/Be-Out system detects her phone and charges Amanda automatically when she steps on board



Amanda feels safe on the ART, as vehicles are well lit, with CCTV, and there are often customer service officers on board



Amanda knows that if she has any issues using the service, she can get help in real-time from the ART's chatbot





### David's journey



Maps around the station help David figure out how to reach his platform



David can call a bus on-demand to access the ART and uses the elevator to get to the platform



At the platform, a screen lets David know when the next service is arriving and where it is going



David feels comfortable and safe riding the ART as there is a dedicated space for his wheelchair



David appreciates that customer service staff at stations are always willing to help him

### Sven's journey



An app gives Sven directions for his entire end to end journey from the airport to the door of his hotel



Ramps to the platform make it easy for Sven to access the ART with his luggage



Sven pays for the ART by tapping on with Apple Pay



Sven is able to store his luggage in a rack; WiFi enables him to plan his journey while on board



Sven rates his public transport experience 'very good' at a digital feedback terminal as he leaves the station



# PARTNERSHIPS, DELIVERY & COMMERCIAL

*The Respondent's approach to partnering with the Ministry, with iwi, and with key stakeholders in the delivery of the Project, including how the Respondent will ensure the partnership endures.*

Enablers	 <b>Partnerships</b> Partnerships with key organisations to create holistic, lasting, multi-faceted solutions	 <b>Delivery entity</b> Discrete entity with local and international expertise, focus and autonomy to ensure project delivery	 <b>Commercial model</b> Flexible, outcomes-focused contracting and procurement
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## Partnerships

Strong partnerships are key to ensuring the successful delivery of enduring outcomes that will benefit Auckland now and in the future. It ensures the different stakeholder interests and views are represented throughout the project life in a meaningful way. Leveraging partner expertise rather than replicating it creates efficiencies as it enables CCL to focus on its core competencies, leaving supplementing functions to partners with existing experience.

CCL's Key Partners will be involved at a governance level throughout the project life to influence and help shape holistic solutions and recommendations during development, construction and throughout operations. Alignment of objectives and clear allocation of roles and responsibilities between partners results in certainty of delivery and achievement of outcomes. Key Partners include Auckland Council (AC), Auckland Transport (AT), Kāinga Ora, KiwiRail and mana whenua.

- Partnership with Kāinga Ora and AC will ensure urban outcomes remain an ongoing part of the solution to support densification and redevelopment around stations and in areas of Crown land holding. AT and KiwiRail support all elements of integrated network operations, ensuring access to communities along the corridor is optimised, future stages are considered early, and that ART provides world class service and customer experiences. Having a partnership with mana whenua allows for genuine involvement and representation of Māori and Māori culture throughout the corridor, creates a clear sense of community and ensures the preservation of environmental taonga.
- Other partners have been specifically selected where collaboration is required to increase certainty of delivery and minimise disruption throughout construction (Watercare, Vector and Chorus), to improve access and integration around Auckland (CRL and Auckland Airport) and to develop commercial opportunities and regenerate urban and community areas (Private Developers, Panuku and CRL).
- CCL will also partner with Unitec, Watercare, KiwiRail and CRL to enable skills training and job creation to ensure the successful delivery and operation of CC2M. Unitec will align current courses and create new courses to offer the skills required for the delivery of CC2M, while Watercare, KiwiRail and CRL will assist CCL in offering specialised training and induction for staff on the project. These skills and jobs will have a lasting impact on local communities and workers, leaving a legacy of local capabilities in NZ for future stages and projects.

## Approach to partnerships

We have engaged with key stakeholders to discuss the benefits of partnership and how we will work together to achieve the key outcomes and certainty of delivery. CCL has three partnership categories:

### Sponsors:

The Crown and NZTA will be funders and responsible parties for the Project. They will provide project procurement and delivery expertise, regulatory oversight and influence at a central governmental level to support CCL in achieving Sponsor Requirements. Sponsors will have a specific oversight role and the relationship will be governed by a Sponsors Agreement, a Funding Agreement and guided by a Statement of Intent

#### Crown

Investor & funder. Influence and focus on outcomes



Funder and infrastructure delivery expertise

### Key Partners:

Where a collaborative approach is critical to helping deliver on the key outcomes and ensuring the solution is enduring and evolves over time. Alignment with Key Partners increases certainty of delivery and allows for expertise and capability to be leveraged, rather than replicated



Auckland wide long-term views and interests



Network integration, fare collection and customer experience



Leverage rail skills  
Network integration



Placemaking, urban & community

#### Mana Whenua

Insight and guidance regarding Maori interests



Airport access

### Other Partners:

Where collaboration is required in relation to specific commercial projects, other discrete aspects of delivering the infrastructure and / or building a legacy of skills and jobs in local communities and NZ.



Integration, property development



Skills training. Centre of excellence



Utilities interface. Centre of excellence



Utilities interface, operations



Utilities interface, lines provider



Property development with Auckland Council

#### Private Developers

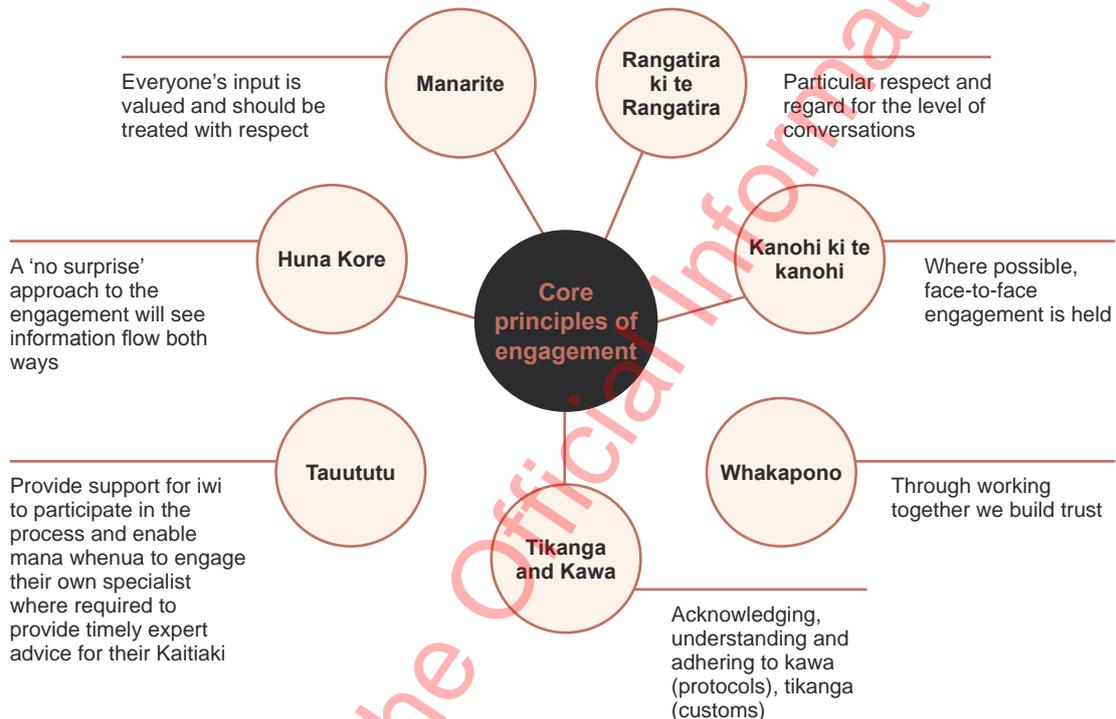
Property development with Private Sector

## Mana Whenua Partnership

We are committed to ‘working for the betterment of the people’ by establishing strong, meaningful and enduring relationships with all impacted Māori communities, particularly mana whenua and mataawaka entities. To support this, we will establish these groups as influential partners in the development of ART and develop share goals, aspirations and outcomes for the project.

Our Maori Communications and Engagement plan has been developed to include all mana whenua, while establishing a collective approach at a kaitiaki level, to optimise time commitments for the Project.

‘Mahia te mahi hei painga mō te iwi –  
work for the betterment of the people’



A key output, in collaboration with mana whenua and Mataawaka, will be a Māori Partnership Strategy outlining the principles, objectives and initiatives of the partnership to optimise economic, social, cultural and environmental interests and opportunities associated with ART.

## Stakeholder Engagement

We recognise the importance of delivering a robust Stakeholder Engagement and Communications plan, based on internationally recognised, evidence based, and best practice approaches to ensure ART is understood and supported by all partners, stakeholders, residents and communities.

To build a positive licence to operate, our engagement and communication approach will be focused on enabling all partners and stakeholders to participate and feel a degree of ownership as ART develops. Our strategy is based on listening first, and co-designing the specific ‘how, when and why’ of the engagement with each group. In the early phases, we will lay the foundation for an open and honest dialogue seeking input and feedback, while managing expectations.

We understand different parts of the community will be impacted differently throughout. As such, we will tailor our approach based on delivery phase and geographic area demographics. This will enable targeting of messages and interaction type based on stakeholder needs, ensuring we can identify challenges and opportunities early and productively. This approach will support Stakeholder groups throughout the Project, ensuring their experience is as positive as possible.

# DELIVERY ENTITY

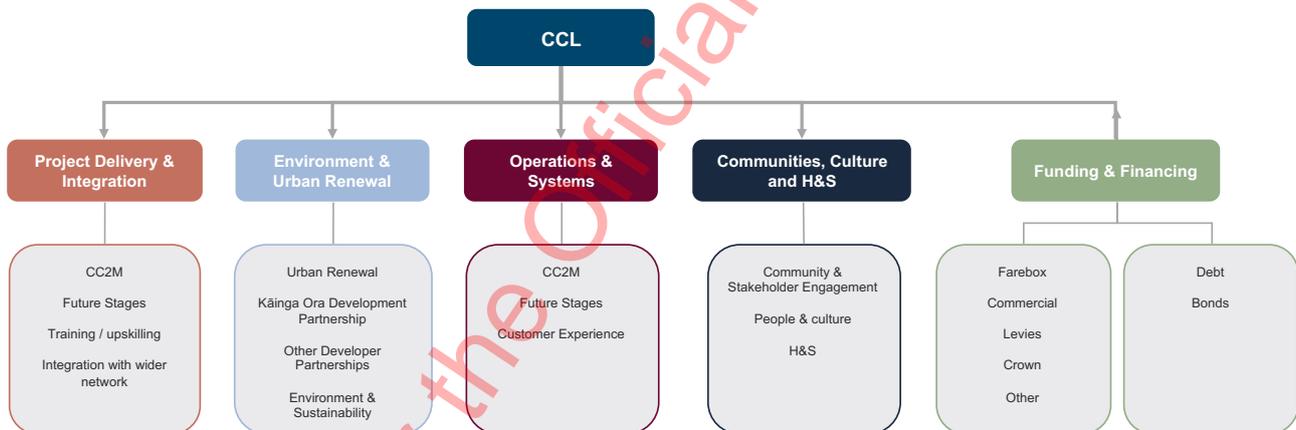
The Respondent's strategy for providing project governance, leadership and management quality.

Summary of the proposed Contractor structure, financial and commercial arrangements and risk allocation.



## A bespoke Delivery Entity

CCL, a 100% Crown owned Schedule 4A Company under the Public Finance Act, will be established to deliver the ART under existing legislation. CCL will be a discrete, standalone entity that is separate from its Sponsors, the Crown and NZTA. It will attract the right expertise and provide the level of focus and autonomy to deliver a project of this scale and complexity. The organisational structure split into 5 functions will provide delivery certainty by aligning with the underlying activities and Key Outcomes. CCL will be an enduring entity that continues to exist beyond the transport delivery phase of CC2M, ensuring knowledge is built and retained within New Zealand.



CCL will be a Public Benefit Entity with all variable revenue streams flowing back into the entity to reduce the Crown contribution, benefitting all New Zealanders. New Zealanders will also have the opportunity to invest in the Project via bonds through Kiwisaver funds. Together, these allow New Zealanders to capture the benefit from the Project and international travellers.

As noted previously, CCL will have a robust governance structure designed to give it the autonomy to deliver ART, while still providing the Sponsors with sufficient oversight, visibility, and influence during each phase. Governance forums will take place at the Sponsor, CCL Board, Partner and Entity levels and will be supported by robust reporting, a strong organisational culture and a KPI incentive regime linked to the Key Outcomes. The relationship between CCL and its Sponsors will be documented by a Sponsors Agreement.

## Commercial Model

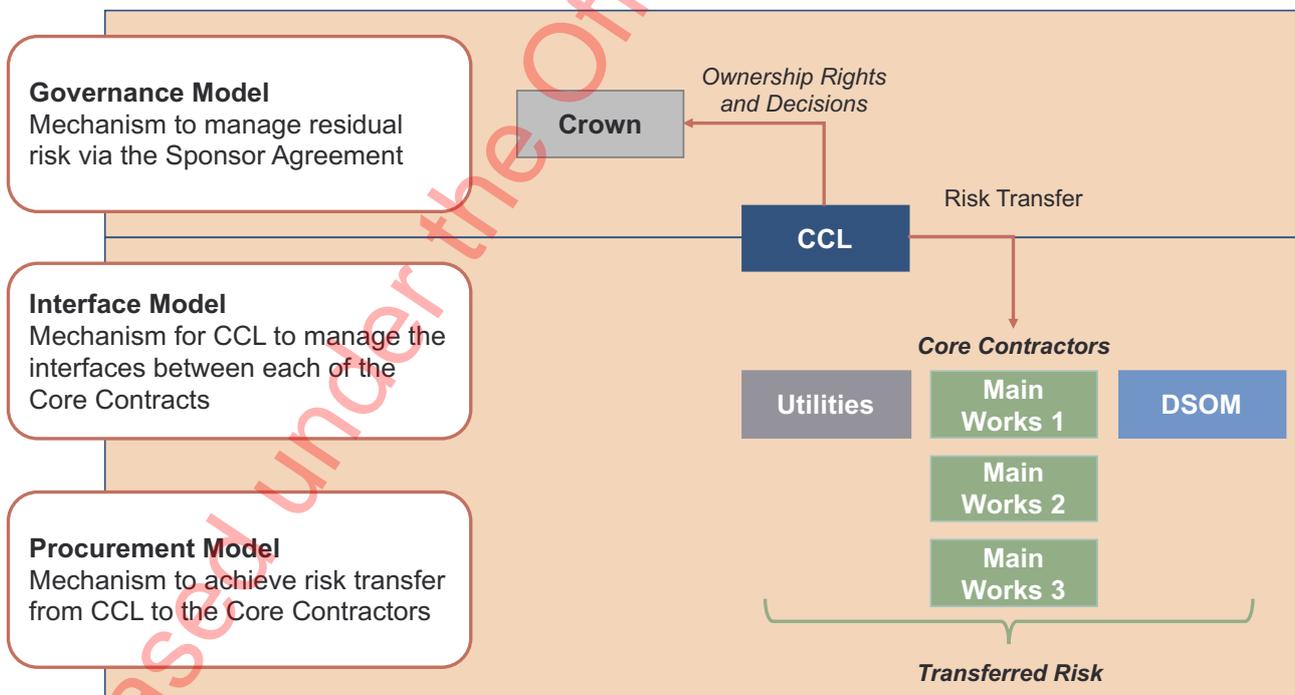


### Mechanisms for risk allocation and mitigation

Risk allocation and mitigation is managed through three distinct mechanisms: the Governance model which is used to manage residual risks at a CCL level, the Interface model which is used to manage the interfaces between each of the Core Contract, and the Procurement model which is used to achieve optimal risk transfer from CCL to the private sector.

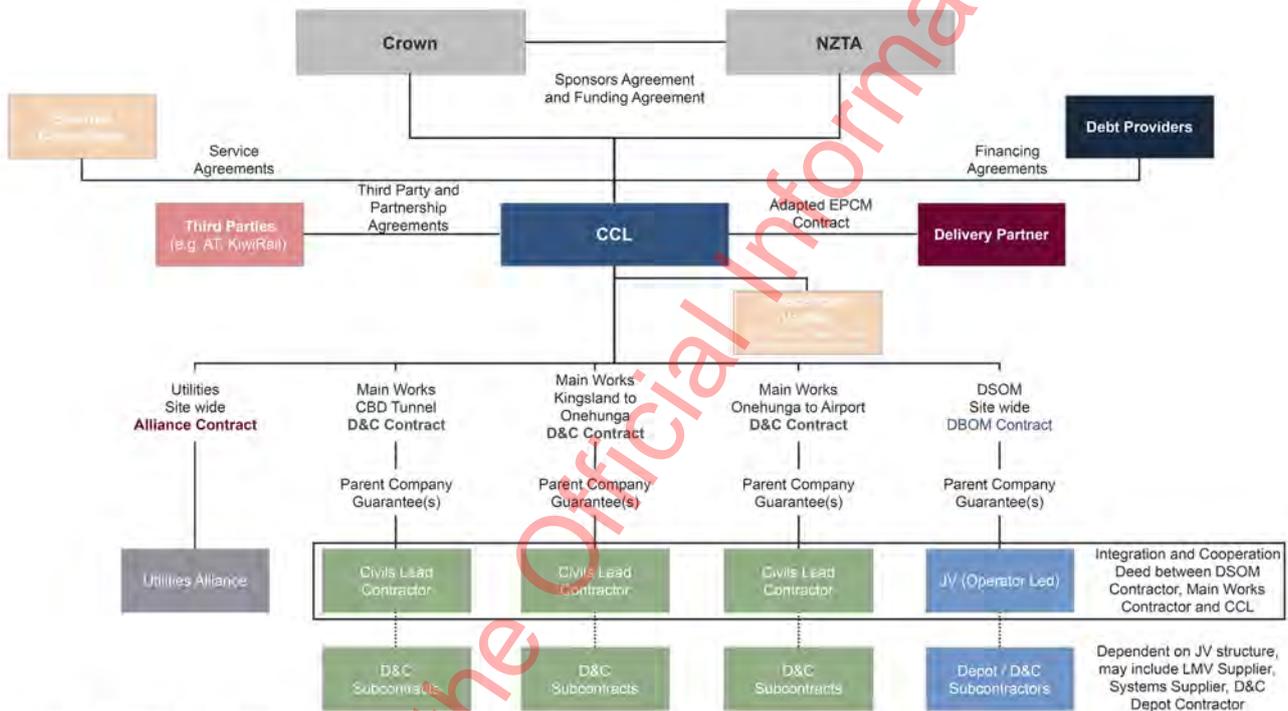
### Robust governance structure

CCL will manage risk at an entity level through its robust governance structure (clear allocation of roles, responsibilities and articulation of requirements and outcomes); a highly capable and experienced team supplemented by a Delivery Partner (with international expertise of contract and interface management); timely and reliable information, reporting and underlying systems; a culture of openness and trust; and incentivisation and KPIs to drive cost management and achievement of outcomes throughout the organisation.



## Contractual structure

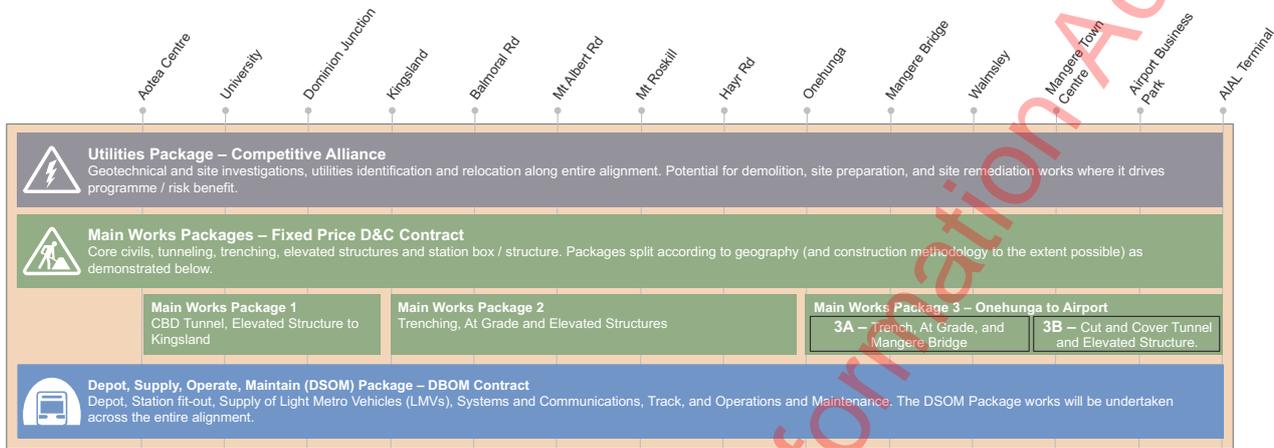
The contractual structure of the preferred Procurement Strategy is shown in the figure below, noting CCL will be counterparty to the various contract packages, with separate Sponsors and Funding agreements to be entered into between the Crown, NZTA and CCL.



Note: The dotted lines indicate CCL is not a party to the contract

## Responsive procurement strategy

The Procurement Strategy reflects the scale and complexity of ART and the capacity of the market to respond, with commercial principles designed to allocate risks to the parties best able to management them. A Utilities Package will de-risk the main works and provide a programme benefit, delivered under an alliance model to provide flexibility and sharing of risks to deal with unknown conditions and respond to design changes. Three Main Works Packages are sized to reduce interface management for CCL whilst optimising attractiveness to the market and competitive tension, procured under fixed price D&C contracts to achieve a high level of risk transfer and price certainty. A Depot, Supply (of Systems and LMVs), Operations and Maintenance (DSOM) Package combines all customer facing elements to drive focus on achieving customer outcomes, delivered under a Design, Build, Operate, Maintain model to transfer delivery and supply risks whilst facilitating early operator involvement and allowing for flexibility in scope. Reflective of the scale, complexity and integrated nature of ART, together with the capacity of the market to respond, our Procurement Strategy includes five works packages.



**Appropriate risk allocation**

Risk allocations have been developed for each of the above contracts on the basis of allocating risks to the parties best able to manage them. Within the underlying risk allocations, the private sector parties will not be asked to price or take risks that they are not best placed to manage (consistent with the NZ Construction Accord).

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Package	Utilities Package	Main Works Packages	DSOM Package
<b>Payment and performance</b>	Competitive tender process to select Alliance partners on basis of quality and experience, with proposed competitive rates for indicative scope of works. The nature of the Alliance is such that all Alliance Participants will jointly then jointly develop the TOC, drawing on the pre-agreed rates where appropriate.	Fixed Price D&C principles for Delivery Phase (advisory role for design input).  Pre-priced options and schedule of rates to support variations.	Fixed Price D&C Contract for all Main Works Packages and scope as defined in contract.  Competitively Tendered Fixed and Variable Rates for Operations Phase + KPI and Performance Abatements.
<b>General principles</b>	All key risks are shared between the Participant and CCL in a 'no-blame' culture.  Flexible arrangement to deal with unknown utilities conditions and to respond to design changes.	Transfer of all relevant risks the Main Works Contractor has control over within their package and are best placed to manage.  Utilities Package de-risks the Main Works Packages to support efficient risk transfer of construction and site risks.	Transfer relevant risks of D&C and supply element of the package that DSOM best placed to manage. DSOM input into the Reference Design provides scope to take fit for purpose (to the standards of the performance / operating standards) risk.
<b>Key risks transferred</b>	TOC development to define scope and methodology for the parties, and approaches to responding to unknown conditions and scope changes  Risks are generally shared, with approaches to manage risks developed by parties and embedded in the TOC.  Some risks may be transferred such as potential defect liabilities	Design Risk (in line with reference designs / design elements of the pkg)  Construction Risks (including construction methodology)  Site Condition / Contamination Risk (within GBR)  Known Utilities  Further Approvals  Defects (within DLP)  Programme, time and delays	Design Risk (in line with reference designs / design elements of the pkg)  Construction (Depot) and Manufacturing (rolling stock) Risk  Site Condition / Contamination Risk (within GBR)  Known Utilities  Acceptance, Testing and Commissioning Risk (subject to main works asset handovers)  Third Party Damage  Defects (within DLP)  Operation / Performance Risk  Maintenance and Life Cycle Expenditure  Handover Risk

### Aligned funding and finance

The funding structure aligns funding sources with the Key Outcomes so that beneficiaries contribute directly to its funding. Variable funding sources include user revenue through standard and premium farebox integrated with the existing network, advertising and retail opportunities, and value capture via a targeted rate and levy and property development. Crown funding sources align with CCL's requirements during each Project phase. The Base Total Project Cost approach provides funding certainty for the Crown.

The financing solution involves CCL borrowing directly from the commercial markets under a structure that provides flexibility, minimises financing risk, and supports value for money objectives. CCL will raise financing in the bank debt, wholesale bond and placement markets to allow financing to accommodate Project changes and changes in debt markets. The multi instrument approach minimises refinancing and execution risks, by spreading risk across Project phases and counterparties, and unlocks significant financing volume. An amortising repayment profile seeks to align financing servicing costs with variable funding sources and spread capital costs intergenerationally. The financing will be priced similar to the Crown cost of capital ensuring value for New Zealanders. The flexible financing structure means New Zealand doesn't have to take the delay costs. the debt will not be considered as core Crown exposure, so it doesn't utilise balance sheet capacity.

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# ○ TECHNICAL RESPONSE

Overall proposals for design and construction of the CC2M Project

Overall proposals for the operational services in respect of the CC2M

The ART corridor consists of a twin track Rapid Transit System of standard gauge track with left hand running and automated operations. ART will operate in its own corridor for the entirety of the route, including a mix of tunnelled, trenched, at grade and elevated sections to achieve full physical separation from existing traffic and pedestrians. This will ensure the performance requirements of the Project are met in terms of journey time and reliability, while keeping the community safe. A technical description of the alignment is outlined below.

## City Centre

The ART corridor in the city centre will be entirely tunnelled in order to achieve separation and avoid business disruption. It will have a northern terminus at Aotea Station, creating an interchange with the CRL line, and will be designed to allow for a potential future extension to the north. The tunnels will include track alignment that incorporates a turnback facility, allowing trains to turnaround for their return journey. The route will include an underground station at University (improving access for students across Auckland), before emerging at Dominion Junction.

## Dominion Junction to Mt Roskill

From the southern tunnel portal, the alignment will transition to an elevated structure over New North Rd and on to a new station at Dominion Junction. That station has been designed to allow for future integration with the Northwest ART corridor and will create a natural focal point of TOD urban regeneration in an area that is presently twilight light industry.

The alignment will cross over the rail line and then descend into a trench at Kingsland Station, creating an interchange with the Western Line serving West Auckland and a rapid transit connection to Eden Park for South Auckland. From Kingsland Station, the alignment continues below ground in a partially covered trench along most of Sandringham Rd preventing visual and noise impacts. The partial cover and frequent crossing points provide space for urban renewal and prevent severance. The extensive Terrace Housing and Apartment Building zoning along Sandringham Rd creates significant opportunity for urban development and regeneration.





South of the Mt Albert Rd ridgeline the alignment shifts onto an elevated structure to cross Te Auaunga / Oakley Creek creating the opportunity to extend the local market and incorporate a variety of commercial opportunities in the space underneath the structure. Kāinga Ora have identified this proposal as having the potential to serve as a town centre to support their wider plans for introducing new urban development in this area. At Stoddard Rd, the elevated alignment turns to the east, passing over Stoddard Road on a bend, to access a new Mt Roskill station and bus interchange.

### **Mt Roskill to Onehunga**

Moving south, the alignment will follow the northern edge of the Southwestern Motorway (SH20) at grade, generally utilising a corridor set aside for future heavy rail use. The alignment maintains space for that future heavy rail use and is supported in principal by KiwiRail. The use of this SH20 alignment limits the visual and noise impacts of the project (and creates opportunities to improve noise mitigation from existing levels). Minor roading structural works are required in the area. The depot will be located adjacent to Hayr Rd and provide the stabling and maintenance facility for ART operations.

The corridor continues along SH20, going under Hillsborough Rd and remaining in a cut along SH20 to accommodate for the level change that occurs between Hillsborough and Onehunga. The alignment will enter Onehunga using the existing space between SH20 and the Onehunga Lagoon. This will require relocation of the lagoon's shared-use path on to a new boardwalk structure running along the southern edge but avoids intruding on the coastal marine area. ART will not preclude any planned or future east-west link. At Gloucester Park Rd the alignment descends into a trench, going under Selwyn St and linking into a station just west of Onehunga Mall. That station will link with a repositioned heavy rail station connecting to the Onehunga Branch Line. Significant urban regeneration potential exists at Onehunga.

### **Onehunga to Auckland Airport**

From Onehunga Station, the corridor crosses under Onehunga Mall and Neilson St, crossing the Manukau Harbour on a new low level bridge that passes under the existing roading bridges to limit visual and ecological disruption. From there the alignment generally follows the western edge of SH20 at grade (except for areas around motorway on and off-ramps) until SH20A. Again this approach limits land take, community disruption, noise and visual impacts.

SH20A will be realigned to enable CC2M to run in a dedicated corridor in the centre of SH20A. A new bridge will be constructed to cross SH20A, starting adjacent to David Lange Park and landing in the median of SH20A before Bader Drive. Both motorway ramps connected to and from SH20 will be realigned to create a landing space for ART in the median. At Bader Drive the alignment will be at the same level as SH20A with the Māngere Town Centre station provided in the central median under Bader Drive. There is a substantial urban development, revitalisation and partnership opportunity here with Auckland Council, Kāinga Ora and potentially local iwi.

## Operating Solution and Model

CCL's focus on the Key Outcomes expected from the CC2M Project has determined the best operational solution to meet these outcomes. This has translated into the ART Operating Strategy, which includes:

<b>Segregated Alignment</b>	A fully segregated model of operation will deliver higher levels of reliability and deliver the journey time requirements. It will also offer safety advantages by removing conflicts with other users.
<b>Automatic Operation</b>	We propose a fully automated system capable of operating without any staff on the train, except in emergency situations. This operating model is capable of achieving higher levels of service frequency, reliability and flexibility and therefore more effective at delivering the project outcomes and requirements.
<b>Integration with other modes</b>	ART is designed to be part of a larger network allowing for full passenger integration at stations with other transport services. This integration will encourage greater use of public transport and help deliver the change in travel behaviour required.
<b>Service Frequency</b>	An automatic rail system introduces considerable operational flexibility. In order to deliver the benefits required, we have adopted the principle of a higher frequency service (resulting in shorter waiting times) because this is most effective at driving public transport growth.
<b>Capacity and Level of Comfort</b>	The system will allow for flexibility in service frequency/train length. With the levels of frequency identified above, individual train capacity will be less (with each train made up of two car sets – 290 passengers per train set with 75 seated), however, there is flexibility in the design of the system to amend this by increasing train length/reducing frequency making the system more flexible to the changing demands both over time and during specific events.
<b>Journey Speed</b>	The end to end passenger journey time from city centre to Auckland Airport will not exceed 30 minutes. This will help drive growth in public transport usage by introducing a fast, competitive journey time compared to private vehicles.
<b>Staffing and Security</b>	Each station will have a human presence with a member of staff providing customer service support. CCTV coverage of all stations will be linked to an operational control centre – connected to the existing network of agencies in Auckland.
<b>Ticketing and Revenue Protection</b>	ART will be fully integrated into the existing Auckland ticketing system and fare structure, including use of the AT Hop Card (and successor systems).

Our Operating Strategy also focuses on delivery, implementation and value for money. It looks beyond the construction phase and identifies how ART needs to be established and governed as an operating entity to deliver the outcomes and to demonstrate it is constantly delivering value for money over time. In addition to these factors, and as noted previously in this executive summary, ART will:

- Provide a light metro rolling stock solution to achieve a 30 minute journey, which has the benefit of providing the level of passenger per hour per direction mobility required by ART
- Integrate with the Auckland Transport network, maximising the potential for interchange
- Through the ART Operations Control Centre, ART will interface seamlessly with other network operators, whether that be the Auckland Transport Operations Centre or AT's customer facing and enforcement systems
- Deliver a customer experience delivering a high quality customer journey, leveraging current international best practice while providing English and Te Reo Maori accessibility
- Safety will be a top priority, with fully automated signalling and train control systems, CCTV and emergency help points. Safety governance will foster accountability and transparency

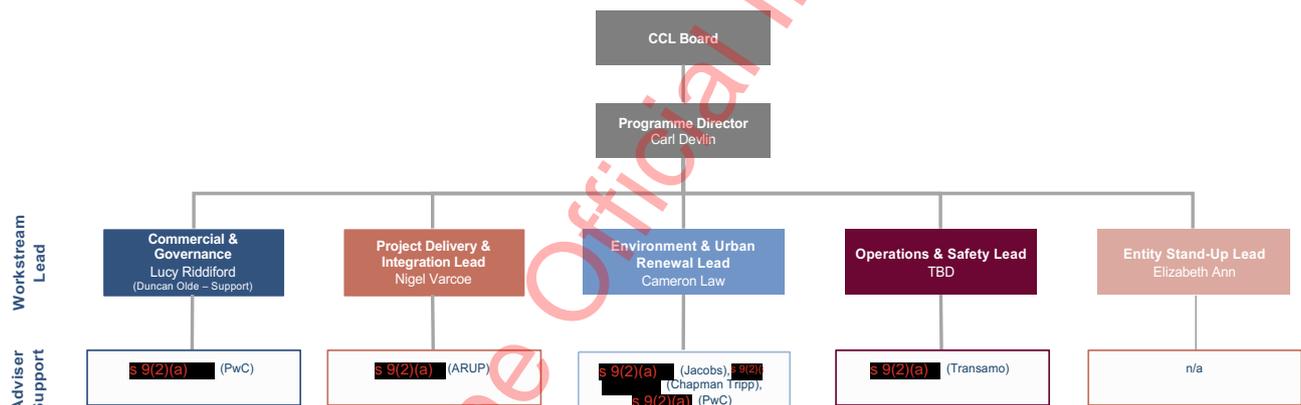
# DEVELOPING OUR RESPONSE

We have developed our response using the very best of local and global advisers, ensuring a robust deliverable solution and enhancing public value.

The key outcomes have been the touchstone and have driven a bold solution that delivers more than a transport link. The teams have worked in an integrated collaborative way, located together in a project office. The solution has evolved through the Interactive Engagement Process, ensuring that at every stage, it is tested and refined.

## NZTA management structure

During delivery the CEO and executive team will be CCL employees ensuring the right level of commitment and control is achieved and to ensure that skills and capability are built and retained within the organisation. As noted previously CCL will be supported by a Delivery Partner. In the establishment phase Carl Devlin, as programme director, will be supported by Lucy Riddiford (Commercial and Governance), Nigel Varcoe (Programme Delivery and Integration), Cameron Law (Environmental & Urban Renewal) and Entity Stand-up (Elizabeth Ann).



## Key advisers

In addition to the strong internal team from Waka Kotahi NZ Transport Agency (the Transport Agency), our establishment phase team will be supported by key advisers, who have been involved in the development of the proposal as described below.

**PricewaterhouseCoopers** have led the commercial strategy, strategic approach, governance and organisational structure, funding and financing, value creation and land use and the business case. Partners **s 9(2)(a)** and **s 9(2)(a)** have significant domestic expertise around alternative funding in the infrastructure space and bring Australian and UK expertise in light rail and significant infrastructure projects to support this. Executive Director **s 9(2)(a)** has over 25 years' experience in property in New Zealand and UK/Europe, leading significant commercial development projects and structuring large transactions, including public/private development partnerships. He has led the thinking on Auckland Urban Renewal.

**Arup** was commissioned by the Auckland Transport to undertake the initial ALR business case commissioned by Auckland Transport before being handed over to the Transport Agency; this background meant they will well-placed to develop the technical solution in the tight timeframes required by the dual process. Arup has leveraged its international regional and global businesses to assist with quality and deliverability. Arup's team has been led by **s 9(2)(a)** a transport planner with significant experience in Auckland and London.

**LEK's** **s 9(2)(a)** is a leading international public transport planning and economics expert who has detailed insight into the current project having led the Advanced Bus study commissioned by the Transport Agency to explore the potential for emerging bus technologies as an alternative to light rail. LEK has led the Strategic Planning and Network Integration workstream, as well as developing the key outcomes narrative and the customer experience strategy.

**Transamo** has led the operating strategy and model, rolling stock and safety in operations works streams. Over the past 20 years, Transamo has partnered with transport authorities worldwide in defining and implementing their Light Rail Transit (LRT) transportation projects. Recent LRT Projects include Sydney (Australia), Parramatta (Australia), Nancy (France), Casablanca (Morocco), Liège (Belgium) and Luxembourg (Luxembourg). Transamo is a subsidiary of Transdev Group SA, one of the largest operators and maintainers of LRT networks. Transdev Group operates 25 light rail systems in seven countries worldwide. Transamo and its experts have a strong focus not only on the design and engineering aspects of LRT networks but importantly on optimal customer service outcomes, operability and maintainability of LRT networks on a 'whole of life' basis.

**Chapman Tripp** has led the legal workstream. They are a leading national full-service law firm. Major engagements include consenting of large-scale transport projects (such as Waterview and Puhoi to Wellsford) and commercial negotiations (such as Puhoi to Warkworth PPP deal). The team has been led by **s 9(2)(a)**, who is experienced in all areas of project finance and has particular interest and expertise in infrastructure development. **s 9(2)(a)** brings expertise in regulatory, public policy and legislative processes as well as corporate governance, corporate advisory and transactional experience. **s 9(2)(a)** brings over 20 years' experience of the RMA and a detailed understanding of legal planning processes and legislation.

**Turner & Townsend** have led the price workstream and have provided significant input on the proposed programme. They have a wealth of experience working with clients including City Rail Link, Auckland Transport, Transport for NSW, Transport Canberra, Queensland Rail. All Turner and Townsend employees working on the response have a proven track record on major rail projects in New Zealand and Australia. Turner and Townsend are responsible for developing robust and up-front cost estimates to inform both capital and operating expenditure budgets identifying value engineering opportunities.

# A NEW WAY TO CONNECT



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Over the next 30 years, there will be up to a million new Aucklanders. It's time for a new way to connect.

Our future city needs an integrated transport solution to connect neighbourhoods with our centres of business, education and recreation.

ART is the first step towards this vision. It will connect the central isthmus and South Auckland, expanding to the North Shore and North-West in the future. It will create a sub-30 minute city.

Whether travelling to the Airport, the city centre or anywhere in between, ART will get Aucklanders there – quickly and economically with high-capacity, modern, and accessible Light Metro style trains.

Separated from roads and pedestrians this rapid transit system will integrate into our existing communities while accelerating our urban renewal projects. It will bring better housing, vibrant neighbourhoods and greater access for pedestrians and cyclists. And by connecting Rapid Transit to existing heavy rail and bus services, we will increase the number of travel options across the network.

ART will deliver social & cultural connections, and provide opportunities for mana whenua and mātāwaka across Tāmaki Makaurau. Extending across Auckland, the benefits will be city wide. It will allow greater access to education, training and employment wherever growth is occurring.

Auckland Rapid Transit will be transformational, driving intergenerational wellbeing now and into the future.

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**Mr Carl Devlin**

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