Introduction to Cable Cars (Part B): Policy, Consenting & Installation Considerations

Doppelmayr

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Introduction to Cable Cars Part B: Policy, Consenting & Installation Considerations

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1. Introduction

The use of cable cars in New Zealand for public transport, as opposed to tourism, purposes is a new concept. However, they are used in a variety of locations around the world, such as Portland (Oregon, USA), Mexico City (Mexico), La Paz (Bolivia), London (UK), Luxembourg, and Haifa (Israel), and can provide a vital component of a cities transport network. With the increasing pressure on our road-based transport networks, there is a need for planners and decisions makers to reconsider how cable cars can apply in New Zealand.

This report details how cable cars are well-aligned to the New Zealand policy and consenting environments. It also provides a comparison of the high-level installation considerations and requirements of cable cars and other public transport options, and technical details on cable car systems and implementation matters.

This is part B of a three-part analysis which considers how cable cars may be suitable as public transport service offering. Part A provides a general introduction to cable cars and Part C looks at specific opportunities where they may be appropriate.

2. Policy Environment

The relevant national and regional strategies have been reviewed to understand the strategic context for investing in cable car installations that meet the transport, community and decision-maker needs for effective and efficient urban mobility.

2.1 National policies and strategies

The development, direction, and funding for land-based transport in New Zealand guided primarily by the strategic goals and priorities of the Ministry of Transport and Waka Kotahi. The relevant strategies, as discussed below, are closely aligned with the concepts proposed in this report.

Transport Outcomes Framework

The Transport Outcomes Framework[1], outlined in Figure 2-1, shows the key strategic priorities as identified by the Ministry of Transport. The benefits of cable car systems have clear parallels with the identified outcomes .and will maintain long term positive impacts on human and environmental wellbeing.

The alignments between the contribution of cable car systems and some of the core transport outcomes are outlined in Table 2-1.

Figure 2-1 Transport Outcomes Framework

Table 2-1 Cable Cars alignment with the outcome's framework

Transport Outcome	Alignment with Cable Car Systems
Inclusive Access	Cable cars are comfortable and secure, providing barrier-free boarding and separated entry and exits (to avoid crowds) for independent and secure travel. Low fares also encourage use of the cable car and other services within the integrated public transport network.
Environmental Sustainability	The efficient design and manufacturing of the electric cable cars allow them to be very quiet, lightweight, and producing no direct greenhouse gas emissions when using renewable energy, minimising disturbances to surrounding areas. Construction waste is also very low, with little use of ground space and lower land sealing.
Healthy and Safe People	Cable cars can be fully integrated into any transport network and ticketing system, ensuring ease of access for new and existing public transport (PT) users. The provision of new PT alternatives will support a mode shift towards micro mobility connections for first/last mile connectivity, and away from single occupancy vehicles and road use, reducing congestion, transport-related injuries, and harmful emissions. There have been zero deaths caused by cable cars in New Zealand in the last 30 years, compared to a road toll of 376 in 2022 alone. Cable cars are a proven technology with new opportunities in public transport.
Economic Prosperity	Cable cars are a unique and innovative feature and will act as both a tourist attraction and public utility. They are fixed infrastructure which can be integrated with other urban uses which can then stimulate further economic and land use benefits. New travel patterns will be created, increasing pedestrian numbers which further supports economic activity in the area.

[1] Ministry of Transport. *Transport Outcomes Framework.* 2018. https://www.transport.govt.nz/area-of-interest/strategy-and-direction/transport-outcomes-framework/

Resilience and Security	Cable cars can increase the resilience of a transport network as it operates separately from the rest of a network. It is unaffected by road use issues that can cause delays, such as congestion, accidents, construction, and diversions. It is also more reliable than trains, which can be affected by issues such as flooding and trespassing.

Government Policy Statement on Land Transport 2021[2]

The Government Policy Statement (GPS) on Land Transport[3] was created by the Ministry of Transport as a strategic guide for land transport investment from 2021-2031. The GPS has identified four strategic priorities that best contribute to improving the wellbeing and liveability of New Zealand's communities:

Table 2.2 GPS alignment with cable car systems

Priorities	Alignment with cable car systems
Safety – Developing a transport system where no one is killed or seriously injured	Cable cars have an almost perfect safety record, particularly when compared to current transport fatalities in New Zealand. In 2022, 35 pedestrians, 19 cyclists, 51 motorcyclists, and 252 vehicle occupants died on the transport network.
Better travel options – providing people with better transport options to access social and economic opportunities	Cable cars provide greater travel time reliability than traditional public transport modes such as busses or trains as they are typically unaffected by on ground weather (such as flooding) or traffic conditions. Due to the autonomous nature of their operation, they are also significantly less likely to suffer from operational delays related to driver shortages etc.
Climate change – developing a low-carbon transport system that supports emissions reductions, while improving safety and inclusive access	Electric cable cars are lightweight, quiet, and produce no direct greenhouse gas emissions when using renewable energy. They also provide step and barrier free boarding with separated entry and exit ways for accessibility.
Improving freight connections – improving freight connections for economic development	Depending on their configuration and location, cable cars can also be effective in supporting freight/parcel movements, particularly for last mile deliveries which can enable reliable delivery times with no parking issues.

Arataki

Arataki[4] was created by Waka Kotahi to identify the significant shift, known as step changes, needed to meet the government's short-term priorities and long-term outcomes for the land transport system over a 10-year period (2021-31). Arataki identifies five step changes, which align closely with the benefits of a cable car system.

[2] While the 2024 GPS draft has released, it does not inform policy until formally adopted and has been excluded from this analysis. However, cable cars are aligned with proposed priorities i.e., maintaining and operating the system, increasing resilience, reducing emissions, safety, sustainable urban and regional develop.
[3] Ministry of Transport. *Government Policy Statement on Land Transport 2021.* 2021. https://www.transport.govt.nz/assets/Uploads/Paper/GPS2021.pdf
[4] Waka Kotahi. *Arataki.* 2020 https://www.nzta.govt.nz/planning-and-investment/planning/30-year-plan/arataki/

Table 2-3 Alignment of Cable Car Systems with Arataki Step Changes

Step Changes	Alignment with Cable Car Systems
Improve Urban Form	Providing additional enhanced connections to areas of a high place function.
Transform Urban Mobility	As a new and innovative option, for those that are predisposed to preferring travel by personal vehicle they can provide a strong incentive for mode shift with the provision of a perceived 'higher quality' PT option that is seamlessly integrated into the public transport network. Cable cars are also a step free option for those with accessibility needs.
Significantly Reduce Harms	Public transport is considered the safest mode of travel. Increasing PT use plays a large role in reducing harm and cable cars can be important component – especially when combined with inclusive design which enable users to avoid road crossings etc, which is where public transport users are most at risk.
Tackle Climate Change	Cable cars are a sustainable mode of travel due to their electric power and low emissions. They are an efficient use of space and are implemented with minimal disruption to the environment.
Support Regional Development	Providing enhanced and seamless connections to and across densely populated areas/city centres improves access to economic and social opportunities.

Emissions Reduction Plan 2022

Transport is one of New Zealand's largest sources of greenhouse gas emissions and the reduction of carbon emissions generated by public transport will play an important role towards achieving the target of net-zero emissions by 2050. To reach this goal, the Emissions Reduction Plan [5] has outlined three key actions for New Zealand to adopt:

- Reduce reliance on cars and support people to walk, cycle and use public transport.
- Rapidly adopt low-emissions vehicles
- Begin work now to decarbonise heavy transport and freight.

These actions are supported by a range of initiatives that aim to address the issues of equity that are ingrained in the transport system. The provision of a cable car system aligns most closely with the first key action and its initiatives. See table 2.4 below.

Table 2-4 Alignment of Emissions Reduction Plan with Cable Cars

Reduce reliance on cars and support people to walk, cycle and use public transport	Alignment with Cable Car Systems
Improving the reach, frequency and quality of PT and making it more affordable for low-income New Zealanders	Cable cars are an additional driver of mode shift. They can help to fill gaps in PT access when it is not feasible to increase/expand bus or train services (due to issues such as funding or geographical limitations), as well as help to meet other goals of improving the frequency and quality of PT.
Increasing support for walking and cycling, including initiatives to increase the use of e-bikes	Cable cars are bike friendly and incentivise walking, forming a component of a multimodal trip by active modes and PT. Travel by cable car also increases the likelihood of users travelling on foot between rides.

[5] New Zealand Government. *Aotearoa New Zealand's first emissions reduction plan.* 2022 https://environment.govt.nz/assets/Emissions-reduction-plan-chapter-10-transport.pdf

Ensuring safer streets and well-planned urban areas	Cable car stations and their surrounding areas are planned in anticipation of increased foot traffic and pedestrian volume.

Government Policy Statement on Urban Development (updated May 2022)

The National Policy Statement on Urban Development (NPS-UD) 2020[6] sets out the objectives and policies for planning well-functioning urban environments. It places requirements on regional and local authorities to give effect to the objectives of the NPS-UD.

Of the eight objectives outlined in the NPS-UD, the provision of cable car systems aligns most closely with the following four objectives.

- **Objective 1:** New Zealand has well-functioning urban environments that enable all people and communities to provide for their social, economic, and cultural wellbeing, and for their health and safety, now and into the future.
- **Objective 3:** Regional policy statements and district plans enable more people to live in, and more businesses and community services to be in areas of an urban environment in which one or more of the following apply:
  - the area is in or near a centre zone or other area with many employment opportunities.
  - the area is well-serviced by existing or planned public transport.
  - there is high demand for housing or for business land in the area, relative to other areas within the urban environment.
- **Objective 4:** New Zealand's urban environments, including their amenity values, develop and change over time in response to the diverse and changing needs of people, communities, and future generations.
- **Objective 8:** New Zealand's urban environments: support reductions in greenhouse gas emissions; and are resilient to the current and future effects of climate change.

2.2 Regional policies and strategies

While cable cars are a versatile option that can be implemented in many locations, from an operational perspective, a high potential passenger base is desirable. As such, their alignment with the relevant regional policies and strategies of Tier 1[7] localities, as specified in the NPS-UD, have been considered. Overall, there is a high level of consistency with **Error! Reference source not found.** summarising the k ey themes and strategic goals that are shared across the five cities. An expanded list of the documents consulted can be found in Appendix A.

Most of the regional aspirations are drawn from the various national strategies discussed above and are reflective of the overarching goal to create **safe, accessible, connected, and sustainable communities**. The benefits of cable car systems align with these aspirations, offering an innovative transport solution that meets current demand while also maintaining a future outlook.

[6] New Zealand Government. *National Policy Statement on Urban Development 2020*. 2022. https://environment.govt.nz/acts-and-regulations/national-policy-statements/national-policy-statement-urban-development/
[7] Auckland, Hamilton, Tauranga, Wellington, Christchurch

Shared priorities of Tier 1 localities

Safety

- Reduce deaths and serious injuries on the road

Accessibility

- Physically accessible PT infrastructure
- Affordable for all
- Integrated, safe and reliable network
- Multimodal choice and flexibility in combination with micromobility modes such as scooters, bikes etc

Shaping urban form

- Sustainable urban development results in densities that support rapid transit
- Attractive natural environment that supports walking and cycling
- Equitable access to social and employment opportunities
- Little barriers for movement on the ground compared to other transport infrastructure

Sustainability

- Reduce emissions
- Lower car dependency
- Supports a healthy natural environment
- Encourage active modes
- Space saving

The Tier 1 cities are currently undertaking significant effort to enhance their urban form and promote active modes, with key programmes shown in Table 2-5.

Table 2-5 Tier 1 Transport Projects

Auckland	Hamilton	Tauranga	Wellington	Christchurch
• Future Connect • City Rail Link • Light Rail • Eastern Busway • Supporting Growth Programme	• Metro Spatial Plan • Rototuna Transport Hub	• Urban Form & Transport Initiative • Connected Centres • Transport System Plan	• Let's Get Wellington Moving • Transport network resilience work	• PT Futures Business Case • Mass Rapid Transit business case

Programmes such as Let's Get Wellington Moving, Mass Rapid Transit in Christchurch, Light rail in Auckland, Connected Centres in Tauranga, and Hamilton's Rototuna Transport Hub all show that these cities currently have an appetite for solutions that address problems created by car dependency and outdated spatial planning. These schemes reflect a shared sentiment that they cannot build their way

out of congestion, as well as support for a well-functioning multimodal transport system that will reduce journey times to local social and economic opportunities. This strategic direction paves the way for cable car systems to provide optimised travel connections without increasing the volume of vehicles on the road.

2.3 Public Transport Procurement Framework

The design, operation and contracting of publicly funded transport services in New Zealand are governed by the requirements of the Public Transport Operating Model (PTOM). Due to identified limitations with the PTOM model, the structure was reviewed in 2021, with consideration of New Zealand's climate objectives as well as other issues. In 2022, it was announced that PTOM would be replaced with the Sustainable Public Transport Framework (SPTF). This new framework will prioritise mode-shift, fair and equitable treatment of employees, and improved environment and health outcomes. The SPTF will result in key reforms, including the establishment of new objectives for the planning, procurement, and delivery of public transport services, as well as enabling in-house delivery of public transport services.

These reforms increase the attractiveness and viability of cable cars as a public transport option in the following ways:

- Councils will have greater flexibility to change and operate PT services as they see fit, without having to negotiate with an external contractor i.e., they can fund and operate their own PT services.
- Councils can move away from mode specific procurement, such as a bus or ferry service, to one focused on options (e.g., cable car) that move people by best value for money.

The SPTF will be implemented though future service planning and delivery, documents such as the RPTP and RLTP need to be amended to reflect these changes. The Bill to establish the SPTF was submitted to Parliament in March 2023 with status updates to be announced[8].

The introduction of the SPTF will be a substantial change in the way public transport can be procured and operated in New Zealand. At its simplest, it will enable Councils to fund, source (or build) and operate their public transport services directly, rather than through the current contracting out model.

2.4 Regional policies and strategies of Tier 2 localities

In addition to considering the suitability of Tier 1 local authority areas, where population density and transport demand are highest, opportunities for current, or future, cable cars may also exist in Tier 2[9] local authorities. Tier 2 localities are also defined in the NPS-UD and are required to give effect to the NPS through Future Development Strategies i.e., the same type of large-scale planning documents that exist in the larger metropolitan areas.

The relevant strategic documents for different Tier 2 localities have indicated that these areas are not yet considering transport options outside of road-based bus services. This is due, in general, to the smaller size and lower population densities. The prevalence of low-density planning has meant that much of these localities are heavily reliant on private vehicles and have low public transport usage. Their overall focus is primarily on developing existing public transport networks and enhancing active modes infrastructure.

One notable exception is the Queenstown Lakes area which has investigated a cable car system between Queenstown Airport and Queenstown Town Centre. While this is not currently being investigated further, it is a longer-term consideration and reflects the high tourist movement demand which warrant a high-capacity mass transport solution.

[8] As at September 2023
[9] Whangarei, Rotorua, New Plymouth, Napier-Hastings, Palmerston North, Nelson Tasman, Queenstown, Dunedin

Additional consideration has also been given to the Homestead Bay/ Jacks Point development in Queenstown which requires an enhanced public transport solution to achieve development permission due to constraints within the roading network. This is a key challenge for all urban areas and shows the potential that a cable car can provide through enabling development without compromising existing roading networks.

2.5 Summary

The potential introduction of urban cable cars in New Zealand is highly aligned with both national and regional policies and strategies. In essence, as they are an equivalent form of transport to light rail or bus rapid transport, in that they are a high capacity, high frequency form of public transport, there are no policy constraints on their introduction.

3. Consenting Environment

Due to their infrastructural requirements, the construction and operation of cable car system will require appropriate consenting for their implementation. While the specific consenting requirements will be dependent on the specific district and/ or regional plans in the proposed area of operation, this section outlines the Resource Management Act (RMA) provisions relevant to the use and installation of cable cars.

The key relevant sections of the RMA include:

- **Section 7**

Sets out the 'other matters' which persons exercising functions and powers under the ACT must have 'particular regard to' including, inter alia: the efficiency of the end use of energy, the maintenance and enhancement of amenity values, maintenance, and enhancement of the quality of the environment, the effects of climate change, and the benefits to be derived from the use and development renewable energy.

Cable cars are aligned with most of these, however careful consideration is required concerning the more subjective criteria related to amenity values. This is in respect to the introduction of cable car towers which may affect visual amenity and/or view shafts.

To mitigate adverse effects on visual amenity, the RMA may require implementation measures such as landscaping, screening, or design modifications to ensure the project aligns with the surrounding environment. Overall, the RMA seeks to balance development and environmental protection.

- **Section 9**

Outlines the Restrictions on Use of Land. It states that land may not be used in a manner that contravenes a regional or district rule unless expressly allowed by a resource consent. Thus, theoretically, a cable car could be constructed within an area which is not classified as a "Cable Car Zone" (or similar), provided it undergoes resource consent and is approved by the relevant authority.

The RMA does not specifically have a provision for cable car zones, although it provides a framework for managing land use and developments which includes considerations for transport infrastructure such as cable cars. Specific district plans may include cable car zones if identified and subject to the normal district plan approval process.

- **Section 16**

Imposes a duty on occupiers of land to ensure that noise levels are kept at a reasonable level by adopting the best practicable option.

- **Section 17**

Specifies that every individual or entity has a duty to avoid, remedy or mitigate adverse effects on the environment.

- **Section 87B**

Determines which activities are to be treated as discretionary activities or prohibited activities. An application for resource consent must be treated as a discretionary activity if:

a) A resource consent is required and there is no relevant rule in the plan; or

b) The plan requires a resource consent for the activity but does not classify it as controlled, restricted discretionary, discretionary, or non-complying under Section 77A.

The classification of an activity as discretionary, permitted or controlled varies between regions based on their planning regulations. Cable cars as public transport may be considered discretionary or controlled activity rather than being permitted outright. Given that most district plans have no mention of, or reference to, cable cars, any resource consent application for a cable car is likely to be considered a discretionary activity. Assessment criteria for discretionary activities involves consenting authorities taking into account a range of considerations such as, environmental, social and economic and how the activity aligns with the principles of sustainable resource management. These are specified in the relevant district plan.

- **Section 166**

Provides a definition for 'network utility operators'. This definition includes *"a person who constructs, operates, or proposes to construct or operate, a road or railway line*". It also includes provisions for airport authorities operating an airport. Achieving a network utility operator designation provides additional benefit and protection for related activities and approval is granted by the Minister for the Environment[10].

Cable cars, as a public transport service, may be considered as a network utility operator if it meets the criteria. Network utility operators typically provide and operate essential utility services and infrastructure networks. Considerations to be classified as a network utility operator would include, scale, essential service delivery, integration into the existing transport network and adhering to RMA environmental regulations.

- **Section 167**

Related to Section 166, S167 allows network utility operators to apply to be a 'requiring authority' for the purposes of a particular project or work, or for a particular network utility operation.

- **Section 375**

Provides a list of activities relating to public utilities which must be classified as permitted activities under any district plan. This list corresponds closely with the utility activities outlined in Section 166 but does not include activities relating to roads or railway lines.

3.1 Summary

As an effects-based piece of legislation, the RMA has a focus on avoiding, mitigating, or remedying adverse effects on the environment. The installation and operation of a cable car, in general, does not contravene the general principles of the RMA.

While any proposed operation will need to consider the specific district plan provision, other than Section 7 (amenity) and Section 16 (noise) cable cars are highly compliant with the Act.

Cable cars could be evaluated under the RMA for noise and amenity impacts the cable car system has on the environment, it may be considered positive or negative effect on the amenity. Cable car systems can generate noise from the general operations, stations, and mechanical noise. Certain steps can be taken to mitigate amenity and noise considerations such as design modifications, sound barriers, landscaping, and urban design.

It must also be noted that there is no provision under the RMA relating to privacy[11]. Thus, there is no provision in the RMA opposing the construction of a facility (such as a cable car) above residential properties on the basis of privacy – although district plans may contain other limitations on structures

[10] https://environment.govt.nz/guides/applying-for-requiring-authority-status/how-to-apply-for-requiring-authority-status/

[11] Privacy, and the related rights, are specified in the NZ Bill of Rights Act 1990. While this contains the normal civil and political rights e.g., freedom of expression and association, there is no 'right' to not be overlooked e.g., from structures etc. The Property Law Act 2007 does acknowledge air rights, and the potential for easements, but this will also be dependent on location specific matters.

e.g., impacts on recession planes which relate to minimising the impact of loss of sunlight on neighbouring properties.

It would be recommended that any organisation seeking to introduce a cable car operation should look to become an approved Network Utility Operator (requiring authority) as this would mitigate many of the RMA related consenting issues.

4. District Plan Provisions

If a Network Utility Operator status is not achieved, any consent application for a cable car would require a rigorous assessment against the relevant district and/or regional plans, the following highlights key additional documentation related to Auckland, Wellington, Christchurch, Tauranga, Hamilton and Queenstown.

4.1 Auckland Council

Chapter H22 Strategic Transport Corridor Zone

Chapter H22 provides for the development and use of State highways and Railway Corridors.

Strategic Transport Corridor Zones provide the flexibility needed for the development of the state highway and railway corridors and for a wide range of activities for transporting people and goods. The zone also provides certainty as to the activities that can be undertaken and assists in planning and investment across transport modes. By applying a Strategic Transport Corridor Zone to a corridor, provisions can be put in place to facilitate the integrated use of the corridor as a single transport network.

Objectives of Chapter H22 include:

- Railway and state highway corridors are used safely, effectively, and efficiently for the transportation of people and goods in an integrated manner.
- Land identified for railway and state highway corridors can be developed and used for non-transport related activities without undermining the future use of the corridor for transport purposes.
- Potential effects of the location and design of noise mitigation measures on adjacent development are managed.
- Any non-transport related activities do not generate adverse reverse sensitivity effects on the operation of the corridor.

Chapter H22 also outlines activity classification for different types of infrastructure on these corridors (e.g. bus depots, cycleways, and walkways) as well as buildings or additions associated with transport activities and transport storage yards. Notably, Chapter H22 provides matters of discretion for these infrastructure types and supporting buildings, which could inform an assessment of a cable car proposal.

Chapter E26 Infrastructure

Chapter E26 outlines classifications, rules, and matters of discretion for network utilities infrastructure. Whilst Chapter E26 does not provide for cable car tower infrastructure specifically, the rules and matters of discretion for similar infrastructure (e.g., overhead telecommunications lines, pole- mounted transformers) can inform the matters of discretion for cable car proposals.

Auckland Transport Referral

For Auckland Council resource consents, all assets which create or modify Auckland Transport assets trigger referral to Auckland Transport for input and approval. Thus, any proposed cable car which modifies AT assets (e.g., local roads, streetlights) would require AT input.

4.2 Wellington City Council

There are no relevant rules or standards relating to cable car proposals in the Wellington District Plan. The only reference to cable cars within the plan is regarding protecting views from the existing Wellington cable car. The plan outlines existing Waka Kotahi NZTA and Kiwirail designations but has no provisions for strategic transport corridors. There are also no relevant rules, standards, or restrictions relating to cable cars in the Wellington Town Belt Management Plan. However, as the cable car will be a public

utility, section 9.5.4 states that the use of the Town Belt for public utilities is considered appropriate in some circumstances. Consultation will need to be made with the council in this instance as the management plan has no designations or provisions for strategic transport corridors.

4.3 Christchurch City Council

There are no relevant rules or standards relating to cable cars in the Christchurch District Plan. The plan outlines existing Waka Kotahi NZTA and Kiwirail designations but has no provisions for strategic transport corridors. Instead, projects (such as Mass Rapid Transit) must comply with the objectives and rules of the District Plan, and in particular Chapter 7 Transport of the plan. Current investigations into MRT in Christchurch will address the consenting environment as part of the business case process.

4.4 Tauranga City Council

There are no relevant rules or standards relating to cable cars in the Tauranga City Plan. In **Chapter 3**, the definition of 'construction' includes reference to cableways:

> *"Any work in connection with the construction, installation, carrying out, repair, cleaning, painting, renewal, alteration, dismantling or demolition of:*
>
> *b. Any road, motorway, harbour or foreshore works, railway, **cableway**, tramway, canal, or aerodrome."*

Whilst this suggests that there may be provisions for cableways in the city plan, there are no subsequent references to cableways in the plan.

4.5 Hamilton City Council

Similar to the Tauranga City Plan, the Hamilton District Plan includes a definition of 'construction' that references cableways:

> *"Any work in connection with the construction, installation, carrying out, repair, cleaning, painting, renewal, alteration, dismantling or demolition of:*
>
> *c. Any road, motorway, harbour or foreshore works, railway, **cableway**, tramway, canal, or aerodrome."*

Like Tauranga, there are no subsequent references to cableways in the Hamilton District Plan.

The plan defines 'transport infrastructure' as "any structure that is necessary for the functioning of the transport network and that caters for the needs of transport users", which could include cable car infrastructure.

4.6 Queenstown Lakes District Council

The QLDC district plan includes provisions for ski tows and ski lifts, but only within defined Ski Area Sub-Zones. These sub-zones are located solely within the Rural General Zone, so there is no consideration of an urban scenario. The purpose of the Ski Area Sub-Zones is to enable the continued development of ski-field activities where the effects of those activities are anticipated to be cumulatively minor.

Under **Section 5.3.3.2**, the following are classified as Controlled Activities:

- The addition or alteration to any existing building or the construction of any new buildings associated with Ski Area Activities within Ski Area Sub-Zones.
- Commercial activities associated with ski area activities within Ski Area Sub-Zones.
- Ski tows and lifts within the Ski Area Sub-Zones… …in respect of their location, external appearance, alignment and methods of construction.
- Night lighting in Ski Area Sub-Zones in respect of times, duration and intensity.

Under **Section 5.3.3.3**, the following are classified as Discretionary Activities:

- Ski Area Activities not located within a Ski Area Sub-Zone.

Where ski area activities are classified as Controlled activities, **Section 5.4.2.3** Assessment Matters General considers the following impacts of ski area activities on the surrounding area:

a) Whether the ski tow or lift or building breaks the line and form of the landscape with special regard to skylines, ridges, hills, and prominent slopes.

b) Whether the materials and colour to be used are consistent with the rural landscape of which the tow or lift or building will form a part.

c) Balancing environmental considerations with operational characteristics.

d) Potential effect on surrounding environment.

e) Impact of lighting on the enjoyment of an adjoining property.

Based on these criteria, the visual amenity and environmental effects of a proposed activity are of primary concern.

Under the QLDC district plan, a cable car system would need to align with the plans regulations and guidelines. Considerations would include land use zoning, resource consent, Environmental Impact Assessment (IEA), public consultation, mitigation measures, transport integration, urban design standards, noise management, safety and regulations, conditions of consent and ongoing compliance.

4.7 Summary

As can be seen, there are no prohibitions on the development and operation of cable cars in the areas considered. While there are matters for consideration, final approval will be subject to the normal resource consent process – either through the resource consent or plan change process.

5. Resource Consent Application Process

The above analysis has shown a lack of specific provision for cable cars in the majority of existing district plans. As per section 87B of the RMA, if a district plan lacks relevant rules for cable cars, the proposal would be classified as a Discretionary Activity. If a district plan lacks relevant rules, it would also lack the corresponding matters of discretion related to the rule – thus, the proposal could theoretically be assessed against any matters of discretion.

That said, section 166 of the RMA provides for the construction, operation, and proposal of road, rail, and air transport under its definition of Network Utility Operators. Given the provision for road, rail, and air transport under this definition, it would be reasonable to extend the definition of Network Utility Operator to cable car activities.

An approved Network Utility Operator can designate land for a specified usage as network utilities such as roads or telecommunication facilities. These designated areas (designations) can then be identified in district plans. Network Utility Operators, also known as a requiring authority, do not have to own the land but in order to obtain requiring authority status has to demonstrate they are able to likely undertake or complete the project and can undertake any necessary responsibilities (such as financial).

Once the designation is put in place, the Network Utility Operator may do anything allowed by the designation, and the usual *land use* provisions of the district plan do not apply to the designated site, but a requiring authority may still need to get any resource consents required from the regional council.

Depending on the specific requirements, achieving a requiring authority status will substantially aid in the delivery of a cable car operation, particularly in mitigating against any requirements associated with visual amenity etc, as the construction of towers for example would become a permitted activity under the land use designation.

If seeking to implement an urban cable car system, securing Network Utility Operator status is recommended. Alternatively, as per the proposed changes to the SPTF, local authorities which have requiring authority status as a matter of right, would be able implement a cable car system under this authority.

6. Installation & Technical Considerations

6.1 Urban Cable Car PT Success Factors

Figure 6.1 shows the key attributes to be considered with regard to the success factors for an urban cable car system as a public transport solution in a specific location.

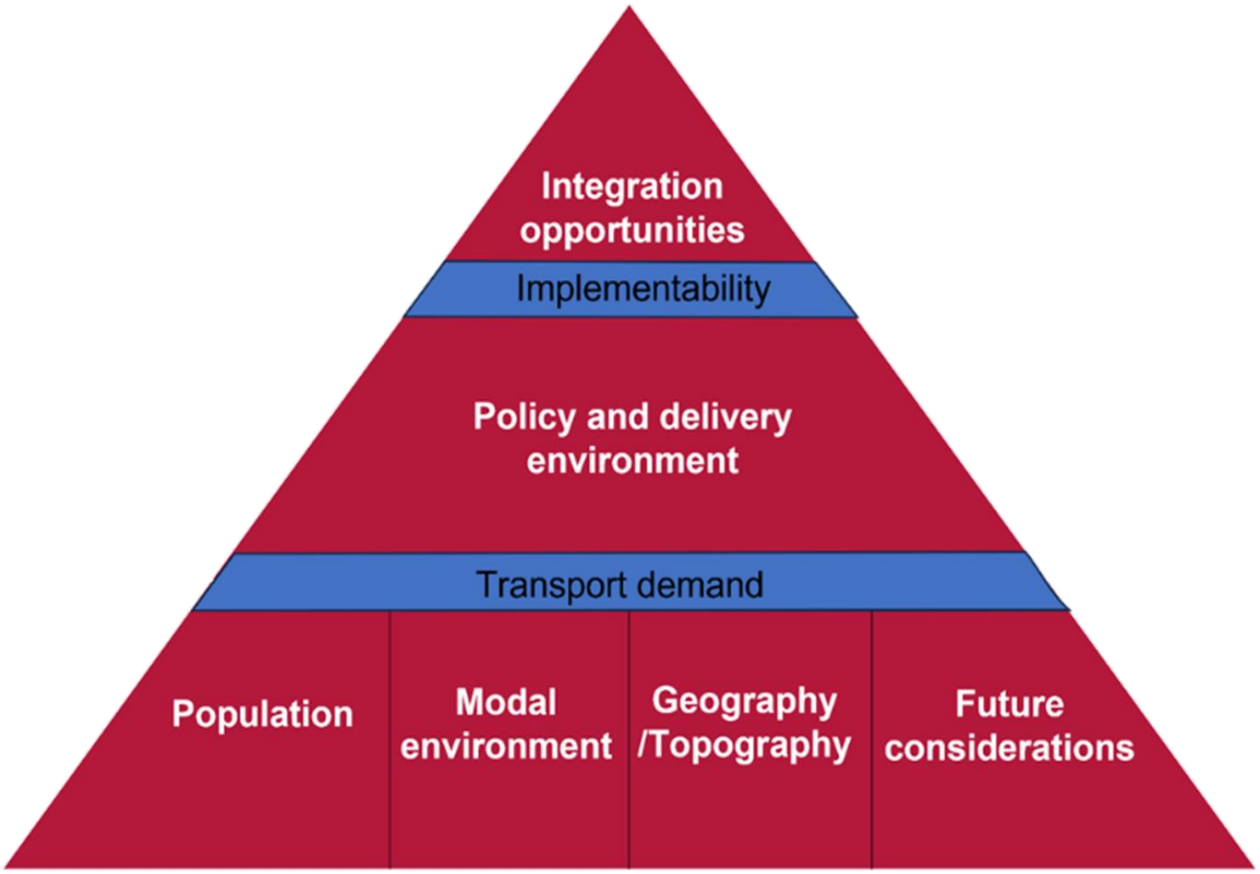

Figure 6- 1 Public Transport Consideration Factors

As shown in Figure 6-1, the foundational factors for determining the suitability, or otherwise of a cable car system for public transport services are:

- Population total as well as density, which can indicate likely potential demand levels.
- Modal environment – current and expected mode shares, these often reflect additional factors such as climate or land use form.
- Geography/Topography – existence of any geographical features e.g., elevation (hills) or rivers that may impact travel networks and connections.
- Future considerations – such as proposed development strategies or other considerations that will change the population and/ or expected transport demands.

If a location meets these four factors, it can also be considered against the policy and delivery environment.

Public transport systems or services, which require public subsidy, will require consideration of funding sources. While public transport is subsidised by Waka Kotahi through the National Land Transport

Fund, there is a requirement for a local contribution – often through targeted local rates. The respective Regional Council documents will need to account for this, otherwise they will be unable to levy rates.

Where the policy and delivery environment is permissive of public transport, consideration can be given to implement ability. Regarding cable cars this could include corridor clearance, carriageway, and spatial requirements. A suitable delivery model will also be required.

If this consideration can be met, integration opportunities into the wider urban form or transport networks can also be explored.

It should be noted that the above approach is not definitive but reflects best practice considerations. Deviation from these considerations may be appropriate as local conditions permit.

6.2 Comparison with other Public Transport - Installation

Cable cars can be a more effective and efficient public transport option when the right operating conditions are met. As noted above, terrain or road network issues can be overcome via an aerial cable car, and their predominantly automated operation on a dedicated corridor, means they can provide reliable and consistent journeys. Their simplicity can make it a more advantageous transit option, particularly when compared to light rail, due to its small physical footprint and ability to overcome natural or manmade barriers.

Table 6-1 provides a comparison of the high-level installation considerations and requirements of cable cars and other public transport options. All figures are in New Zealand dollars.

Table 6-1 Installation considerations and requirements – comparison with Other PT

Installation Considerations and Requirements	Cable Cars	Other Public Transport
Meets strategic priorities	Provide a safe, improved, low-carbon emission transport system.	Other modes can meet the strategic priorities however the current public transport fleet is still predominantly diesel based with a resulting carbon footprint.
Cost	Approx. $30 - 40m per km	Light Rail – ALR projected to cost $14.6b[12] for the 24km scheme. Busway – Eastern Busway (Auckland) to cost about $200m per km[13]
Depot/stabling	Depending on system size a depot for parking the cable cars may be required, but no additional land is needed as the depot can be integrated into the station design (above or underground).	Additional land required for bus depot and light rail stabling
Station	Stations are typically stand-alone or integrated into existing buildings, such as malls	Stations may be underground or surface level. More space required for boarding platforms and bus rest areas
Power supply	Fully electric, can be powered by renewable energy	Electric light rail and buses, NZ's bus fleet still not de-carbonised

[12] https://www.lightrail.co.nz/
[13] https://at.govt.nz/media/1984973/eastern-busway-brief-spring-2020.pdf

Corridor width	14m-20m envelope around the cableway operation, with distances between towers of 200m – 1km in urban areas	For buses and light rail, a minimum operating width can be less than 6m, equivalent to a normal traffic lane, however that is in one direction only, with additional lane space required for other traffic.
Construction disruptions	Minimal disruption as construction is isolated to specific sites and can typically take around 18 months. Traffic may be affected in small, contained areas as stations and towers are constructed	Significant construction disruption can occur due to both the duration of the build process, often 2 years plus, and the need to reconstruct all roads carrying the light rail scheme – this is due to the need to shift underground utilities as well as construct the carriageway to carry the weight of the vehicles and install the tracks. Such disruption can also negatively affect local business due to its effect on vehicle and pedestrians flows, along with the wider network as traffic is displaced.
Civil engineering works	Minimal earthworks or excavation/demolition needed. Works are typically non-invasive. Route is as the crow flies, no limitations by topography or natural features	Light Rail – potential for extensive tunnelling and excavation. May impact land integrity, route limited (depending on cost) by topography or natural features. Busway – may require residential demolition works to clear busway path. Route may also be limited by topography or natural features

6.3 Cable Car PT Operational Characteristics

Cable Car – Public Transport Operational Characteristics		
Characteristic	**Description**	**Parameters**
System Capacity	Passengers carried per hour, per direction	Up to 8,000 per hour per direction
Car capacity	Number of passengers in an individual cable car	Typically range 8-35 passengers
Frequency	Time between cable car boarding opportunity	A Car every 9-30+ seconds
Waiting Time	Average waiting time for passengers	Minimal – actual dependent on queuing mechanism
Travel Speed	Speed of cabin movements along the route between stations (km/hour)	Typically range 22 to 30 km/hour
Station Spacing	Optimal distance between stations	Minimum 500m
System Safety	Injuries / deaths related to system performance	Very low compared to other modes (e.g.,3 injuries/100M pass & 0 deaths, Switzerland 2008-09)
Operating Period	Maximum operating hours allowing for maintenance requirements	Generally, around 17-18 hours/ day Typically, 1 week shutdown/ year
Passenger Information	Real time information (RTI) to passengers	RTI screens can be fitted inside Cars
Accessibility	Ease of access to cable car	Level boarding from station platform
Wheelchairs/ prams/ bicycles	Ability to carry wheelchairs & prams, bicycles	Liftable seats creates space for carriage
Communications & Security	Communications facility between customer/ security staff	Surveillance cameras Comms link to Control Centre
Car Temperature	Ability to heat / cool Car – ventilation	Natural ventilation – windows AC systems available

6.4 Cable Car System Components

Cable Car – System Components		
Component	**Description**	**Requirements / Features**
System Type (circulating urban application)	Monocable: single haul cable, detachable grip, circulating gondolas spread along cable	ROW 12-14m Pylon span 200-300m Max speed 22 km/hr Cabin capacity 8-15 pass Line capacity 4,500 pass/hour Safe wind conditions – up to 70 km/hr
	Tri-cable (3S): three cables (haul cable, two track ropes)	ROW 18-22m Pylon span 800m-3km Max speed 30 km/hr Cabin capacity 20-35 pass Line capacity 8,000 pass/hr Safe wind conditions – up to 110 km/hr
Cable Cars (Cabins)	Passenger cabins designed for urban public transport	Standard 10-20 pass cabins, 425-450mm seats Larger cabins (20-35 pass) available for MGD & 3S systems Folding seats to enable wheelchairs, bicycles Heated seats, ventilation, air conditioning available LED interior lighting CCTV Digital information Comms link (audio/video) with control room Wi-Fi Swing/ pivoting windows 'Smart glass' obscures view
Stations	Station functions: Three types of stations: 1. Drive stations & Return stations: house drive system; 2. Intermediate stations: serve intermediate destinations/ PT hubs 3. Turn stations: enable change of direction in route: can be turn-only (no passenger transfer) or with pass transfer & platform	Length: relates to length of braking/ acceleration paths and the required capacity Width: relates to track gauge, cabin widths Space required for: signalling & control technology, power supply systems, staff areas, workshops Space also required for Passenger access and waiting/ queuing areas Monocable end station platform footprint: Width 12-15m, Length 9-12m

	Boarding & disembarking at stations	Monocable end station: accel/decel length 15-18m, climb out length 24-30m; Total ROW length around 40m Can be at ground level or elevated ROW footprint on Ground for elevated station around half of at-grade station Level platform boarding Accessibility: stairs & lifts required for elevated stations Integrate with surrounding land use Architectural Design appropriate to heritage/ cultural surroundings
Cable Car Parking Garage	Storage facility for cable cars (cabins)	Located for operational efficiency No additional ground space needed, can be located above or below station
Access to Stations	Access for passengers to Station from other modes	Ideally provide direct weather protected access Meet accessibility requirements
Towers (Pylons)	Pylons to support the cableway	Spread/ number dependent on system type & topography Height: 15m – 80+m Ground space for foundations approx. $4m^2$ – $20m^2$ per pylon Line of sight impacts need to be assessed and allowed for (e.g., by positioning) Design can lessen visual impact
Proximity to Buildings & Structures	Horizontal protective zone to buildings & structures (incl fire risk)	Dependent on local requirements
Automation	Cableways are automated operation; passenger access can also be controlled through automated doors	Detection systems Automatic doors Control Centre/ staffing to intervene for incidents

6.5 Cable Car Issues and Impacts

Cable Car – Issues & Impacts		
Component	**Description**	**Requirements**
Visual Amenity - Line of Sight	Impact of Towers on views / line of sight to local attractions	Generally, seek to avoid line of sight conflicts Tower design can lessen visual impact
Shadows/ reflections	Extent to which a shadow is cast by moving cabin over residences	Impact related to height of cableway
Noise	Noise emissions from: drive engine in drive station; Towers Appropriate planning can reduce noise emissions to minimal levels	Engine: > 65 decibels, locating engine below surface removes most noise Towers: Noise constraints for night hours will be met and be lower than 45 decibels
Flyover Privacy	Extent to which the cableway impacts on privacy of residents in the cableway corridor	Route should aim to pass over publicly owned land or agricultural/ commercial spaces where possible. Mitigations possible to minimise impact, e.g., Smart glass, window design
Obstructions	Navigation of structures on route that would obstruct the cableway, eg power lines, airport clearance zone	Route should aim to avoid obstructions where possible. Meet technical requirements for obstructions, ie vertical clearance Undergrounding part of route is a possibility, e.g. airport
Soil Sealing	Extent to which construction results in loss of soil resources	Minimal impact compared to other modes given small footprint of pylons, plus stations
Traffic Impact	Impact of Towers, located in road corridor, on traffic flows	Impact related to location of Towers: if placed at roadside minimal impact Substantially less travel impacts in construction than other modes
Severance	Extent to which cableway separates land uses & creates a barrier to access	Minimal compared to other modes Generally, land use under cable car unhindered
Carbon Emissions	Carbon emissions caused by development and operation of cableway	Life cycle assessment shows impact less than other PT modes

7. Conclusion

While the operation of a cable car for public transport purposes is a new concept in New Zealand, they successfully operate in many locations around the world.

As a form of high-capacity, high frequency mass transport, with low environmental impact and relatively simple construction, their introduction into New Zealand is highly aligned with our national and regional policies and strategies.

Although our planning framework does not, in general, specifically accommodate their requirements, in essence they are no different to any other road or rail utility operator. Pending changes to the Land Transport Management Act, related to PTOM and the shift to SPTF, means that it will also be possible for local authorities to directly construct and operate a cable car system if they wish to do so. This approach would be beneficial as local authorities already have requiring authority designation which will ease the development and approval process. If a third party wished to provide such a scheme, an application would be required to the Ministry for the Environment to become a Network Utility Operator to gain the same status.

A key consideration when determining a preferred transport solutions is also the feasibility of implementation. Unlike the significant disruption and related network impacts when installing infrastructure heavy solutions such as found with rail-based systems, cable cars can be installed with a minimum of disruption and in a shorter period. When combined with their operational benefits, such as reliable and consistent journey times, particularly in comparison to other on road means of transport, such as buses or trains, their overall advantages are significant.

In summary, there are no significant planning or consenting impediments to the introduction of a cable car system for public transport purposes in New Zealand. Their consideration as part of any assessment of a high-capacity, high-frequency, sustainable mass transport system should be given to ensure the most appropriate mode is selected for our growing cities.

Appendix A.
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