

TECHNICAL PAPER

PROJECT TEAM COLLABORATION – GOOD PUBLIC TRANSPORT INTERCHANGE DESIGN IN AUCKLAND

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ABSTRACT:

Auckland Transport's Draft Regional Public Transport Plan 2012 looks to implement transformational change to the way many Aucklanders use public transport.

Auckland Transport, now into its third year of operation, wishes to seamlessly integrate bus, train and ferry services to enable complementary rather than competing travel choice. The proposed new network will provide greater and more legible travel choices around the region through reducing duplication, increased service frequencies and the provision of easy connections between services at a series of interchange points around the city. A guideline for consistent application of interchange design has become necessary to obtain regularity across Auckland's public transport network.

Traffic Design Group (TDG) has worked with Auckland Transport to produce the Public Transport Interchange Design Guidelines (2013) which will aid the design of future interchange facilities in Auckland. Our paper discusses these guidelines with special focus on the collaboration undertaken to understand the customer experience and the interaction of public transport services at the interchange location.

This paper will look at how the overall project outcomes improved as a result of the collaboration process used and it describes our methods for working with the client on a project that continued to evolve as it developed.

Learnings will include ideas on appropriate collaboration tools to use in a project such as this where the client wished to remain hands on throughout the process.

OVERVIEW

Auckland is undergoing a transformational shift in its approach to the provision and use of public transport.

The Draft Auckland Regional Public Transport Plan 2012 (RPTP), a statutory document prepared by Auckland Transport, looks to deliver on Strategic Direction 13 of the Auckland Plan (2012) to double the number of customers using the city's public transport system over the next 10 years.

To deliver this quantum increase in customers, Auckland Transport plans to make significant changes to the way rail, ferry and especially bus operates to provide a simpler, more connected network.

This more connected network will focus on the integration between services and remove unnecessary duplication. The key components of this integration are the development of convenient interchange facilities, high frequency services and a simple integrated fare system.

Given the importance of good interchange design, Auckland Transport identified a need for design guidelines to help direct future modification to the public transport interchange network. To appropriately encompass total interchange design, the guidelines needed to address all aspects of the act of interchanging as well as the interchange facilities themselves.

This paper discusses the approach Traffic Design Group (TDG) took to create the guidelines and how collaboration with Auckland Transport lead to a more robust final product. Specifically, the importance of shared understanding and working together were essential in obtaining guidelines relevant to Auckland's needs.

PROJECT OUTLINE

To give perspective to the project TDG firstly needed to understand Auckland Transport requirements. This was achieved through collaboration by both parties, with an eventual series of iterations to define the project scope.

Like other providers of public services, Auckland Transport wishes to provide useful and cost effective services to their customers. Therefore, the main purpose of the interchange design guidelines was to positively impact the design of interchange facilities so as to maximise their potential to satisfy customers and public transport operators alike.

Because public transport is a user-driven service, the true success of an interchange facility lies in the willingness of customers to actively use a facility. The attributes of the interchange that customers place the most importance or priority on, will usually reflect the type of journey that they are making. For example, whether they are travelling to work or making a leisure trip, and the period of time that customers may spend waiting between services. This meant that the guidelines had to understand how customers interact with interchange facilities and how they perceive the built environment.

One of the main objectives for the guidelines was to produce a document which would aid architects and engineers in the design of new bus-to-bus public transport interchanges and provide guidance for the refinement of existing interchange facilities in Auckland. Although primarily for bus-to-bus transfer, the guidelines are also appropriate for the bus components of bus-to-rail and bus-to-ferry interchanges.

Research of similar guidelines developed around the world helped to mould the final document. It was noted that several international guidelines, such as Transport for London's (TfL) Interchange Best Practise Guidelines (2009), contained very high-level direction which aimed to question designers about the fundamentals of an interchange's design rather than specifying particular dimensions or standards. In contrast, Auckland Regional Transport Authority's Bus Stop Infrastructure Design Guidelines (2009) contained specific details such as signage and facility requirements. The vision for the interchange design guidelines was to accomplish a balance between high-level design guidance and suggestion of facility components. This was achieved within the guidelines produced by outlining the customer focused design considerations as well as how they could be realised with varying levels of facility components to match the interchange type.

The guidelines have also been developed to enable them to act as an interchange facility audit tool in order to assess the interchange design process and to establish compliance with Auckland Transport requirements for such facilities. It is the expectation that the development of these guidelines will result in reduced design costs, improved levels of service, and increased uniformity across the Auckland region.

COLLABORATION EACH STEP OF THE WAY

The collaborative approach used to produce the guidelines document with Auckland Transport was a critical approach to ensuring the relevance and success of the interchange design guidelines. Working with the client throughout each step of the project helped mould the final structure and content of the document to best meet their requirements and expectations.

Figure 1 shows the project steps and collaboration throughout this project between TDG and Auckland Transport:

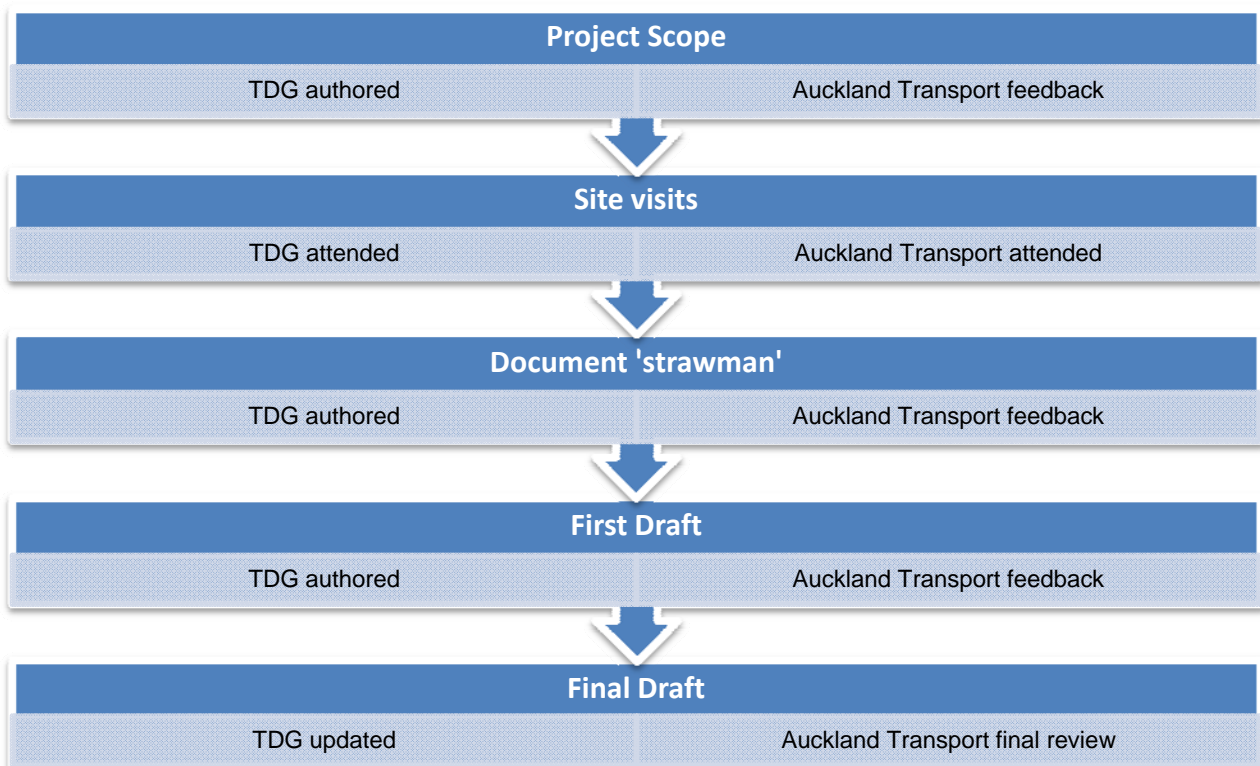


Figure 1: Key steps in the collaboration process undertaken

Collaboration between Auckland Transport and TDG began during the project's inception. Direct discussions with Auckland Transport ensured the scope of the project was well defined and specific to Auckland's public transport infrastructure needs. During the inception phase, discussions and suggestions were documented and scrutinised to ensure that the 'right path' was taken from the start.

Site visits enabled further guidance as to Auckland Transport's requirements and their specific objectives. Although the trips were primarily to identify current best practice, they also itemised the shortcomings of each interchange facility visited. This enabled the incorporation of specific details into the guidelines that would help direct designers away from poor practice. Not only did the guidelines need to focus on what to do well, they also needed to ensure that what isn't done well is minimised in the future.

For example, during the site visits it was identified that good examples of service information and ticketing facilities were evident at Akoranga Bus Station on Auckland's North Shore. Shown in Figure 2 is a sheltered waiting area with effective, clear information boards displaying timetables and regional service maps. Also shown are real time arrival boards and a ticket machine with helpful user information. The form and nature of these facilities was then referred to as good design practice for an interchange that requires this level of customer information, and was assessed and discussed in the design guidelines.



Figure 2: Good example of information and ticketing facilities at Akoranga Bus Station

Following the site visits the next project step was to assemble a 'straw man' of the document to enable collaboration at an early stage and ensure the final document structure met Auckland Transport's vision for the guidelines. This 'straw man' included section headings and descriptions under each heading of what TDG proposed to include and why. This approach ensured better efficiency across the project, enabling the appropriate effort to be put into the agreed upon components.

Building on the well-defined scope and knowledge of Auckland Transport's requirements, the document began to take shape. Once the document achieved enough detail to understand the general direction of the guidelines, TDG presented a draft document to Auckland Transport for input.

The draft was presented face-to-face to give a brief overview of the document and the reasoning behind the more detailed design recommendations. This was received well; with Auckland Transport taking the opportunity to review the document in more depth before providing further feedback. The additional time taken allowed Auckland Transport to consider the finer details of the guidelines to ensure all the material presented achieved their objectives.

Final feedback was then received from Auckland Transport to allow the completion of the guidelines. These concluding suggestions were incorporated into the guidelines so as to fully satisfy Auckland Transport's requirements.

BEST PRACTISE

A further example of the benefit of the on-going collaboration undertaken was the importance of joint site visits. To be able to appropriately address the objectives for the guidelines from an Auckland perspective, the need to undertake site visits with Auckland Transport to a variety of interchange types currently provided in Auckland was established. By undertaking these visits jointly it ensured that observations made and consequently incorporated in the guidelines were client focused and not just from a 'third party' point of view.

Armed with a framework of best practise customer and bus driver requirements for interchange derived from international interchange design guidelines (discussed later), a full day was spent visiting and assessing current Auckland interchanges. Organisation for these site visits involved determining a good cross section of interchange hierarchy so as to ensure all levels of interchange facility were consulted. This hierarchy was determined by Auckland Transport's Draft Regional Public Transport Plan 2012 which includes;

- Major Interchanges,
- Intermediate interchanges,
- Minor Interchanges, and
- Neighbourhood Connections.

The sample of interchange sites was agreed during discussions with Auckland Transport based on geographical spread and to ensure that specific issues, interests and concerns were covered.

The project site visit team comprised not only transport planning and engineering professionals but also an ex-bus driver and bus company official. All participants were also either regular or recent casual public transport users. We believe that this collaboration of user experience and professional expertise gave a well-rounded view, and provided not only valuable insight into the operational adequacy of the visited interchanges but also the usability of the sites from both an operator and a customer's point of view.

It was clear early on in the project that this approach revealed invaluable first hand experiences of the usability and appropriateness of different design features at the visited sites plus commentary on where improvements could be made. These improvements were valuable additions to the guidelines given that the aim is to minimise 'areas for improvement' through their use.

As an example of the useful outcomes that came from this process; the Grafton Train / Bus Interchange site visit revealed the inability of waiting customers to see on coming buses, as shown in Figure 3. This would not comply with a guideline that required a clear line of sight to all oncoming bus services from the sheltered waiting area.

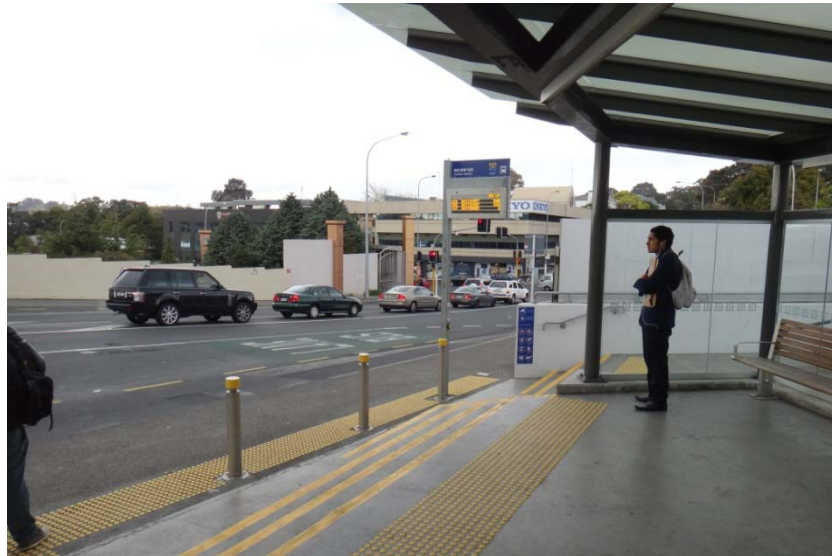


Figure 3: Grafton train / bus interchange constrained sightlines

An example of good practise was observed at Otaru Interchange. Clear sightlines of buses approaching are shown in Figure 4.



Figure 4: Good vision to on-coming buses at Otaru Interchange

Personal security is an aspect addressed by TfL's Interchange Best Practise Guidelines 2009. It poses the question; "have isolated locations been designed out?" Making all areas of an interchange visible enables passive security which can help users feel safer in their environment. This practise was observed at the Takapuna Bus Interchange where perforated sheet metal has been replaced with clear glass as shown in Figure 4. This has enabled more light to enter the bus stops and ensures waiting locations are visible to passing pedestrians.



Figure 5: Passive security and weather protection at Takapuna Bus Interchange

Facilities to enable users to access interchanges via different modes should be considered in the design process. The New South Wales Ministry of Transport's Guidelines for the Development of Public Transport Interchange Facilities (2008) discusses pedestrian, cycling, taxi, drop-off / pick-up and park and ride access. Each mode has a range of amenities that can be included in interchange facility design to enable and encourage patronage. One such example was observed at the New Lynn Station where sheltered bike storage and lockers were on offer (shown in Figure 6). This facility has noticeably encouraged customers to access the station via bicycle. Facilities that support access to interchanges via different modes were researched and specified in the design guidelines.



Figure 6: Good practise bicycle facilities at New Lynn Station

ESTABLISHING AGREED DESIGN CONSIDERATIONS

An example of collaboration was in the agreement of key design considerations. The project team was conscious of achieving a balance between the provision of technical detail and high-level guidance. It concluded that high-level considerations would dictate the technical specifications provided. Auckland Transport agreed it was prudent to focus on bus-to-bus interchange as this is where the greatest potential for the new Auckland public transport network would be unlocked.

For an interchange facility to operate appropriately, it should aim to seamlessly unite the needs of customers and the transport mode.

Working with the Auckland Transport Public Transport Operations Team, the following series of high-level design considerations and their associated contributing aspects were agreed:

■ Physical needs

- Location, area boundaries, connectivity to street network
- Customer forecasts (arrival, departure by mode including transfers, peaks)
- Bus number forecasts (peaks, type of bus, layover requirement)
- Primary interchange purpose (terminus, park & ride, intermodal transfer)

■ Customer needs

- Customer movements (bus to bus, bus to rail, park & ride to bus)
- Travel type (commuters, tourists, special events)
- Volume considerations (mode separation)

- Safety (mode conflicts, personal security)
- Accessibility
- Bus operation needs
 - Volume considerations (mode separation)
 - Bus movements (terminus, through, pulse timing)
 - Driver break location and Shuttle car parking
 - Bus types (size)
 - Safety of drivers and turning manoeuvres
- Land use integration
 - Integrated facilities (toilets, retail) provided by adjacent land use
 - Connectivity (pedestrian desire lines)
 - Complementary development opportunities (transit oriented development, retail, cafes)
 - Local context
 - Safety

Further, discussions with Auckland Transport revealed a desire for greater focus to be put on the customer experience above anything else. The guideline document identified that the design of an interchange should firstly accommodate the four main purposes that customers may use it for. These were:

- start a public transport journey;
- end a public transport journey;
- transfer – continue a public transport journey by changing service / route; and
- pass-through – continue a public transport journey on the same service / route.

These purposes dictate the customer's level of exposure to the interchange. Expanding these purposes identified the main activities that occur within an interchange facility, identified in Figure 7 below. This shows a customer's primary interaction with the interchange, be it that they arrive on a bus or enter the interchange by some other mode (for instance by foot). The customer priorities are highlighted in bold and these formed, with Auckland Transport's agreement, the basis of the customer focused design considerations.

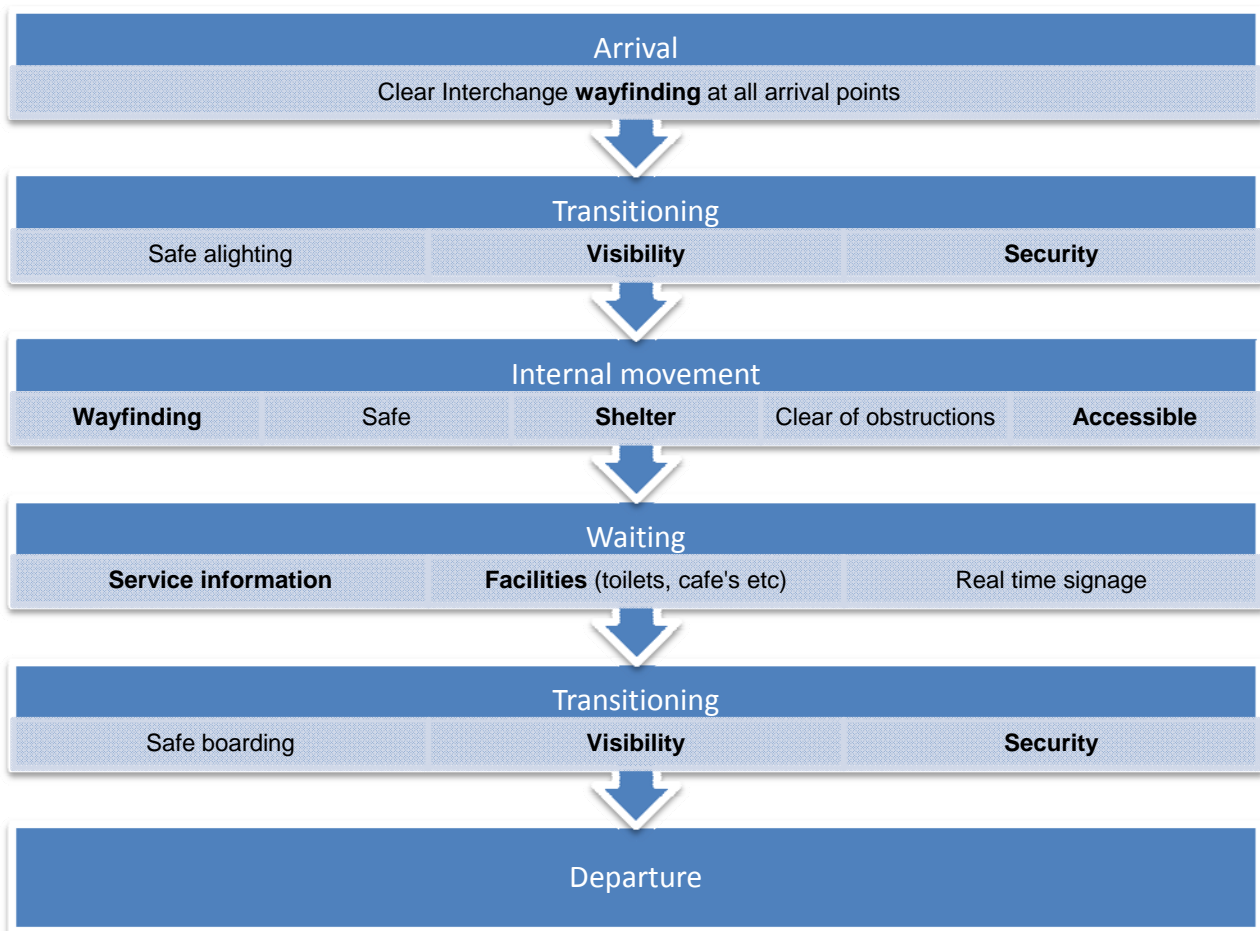


Figure 7: Customer interaction with interchange facility

Following this focus on the customer, the project team addressed the vehicle and bus driver operational needs of an interchange by undertaking discussions with drivers and operators to assist in the understanding of these needs. Through these collaborations, the team saw the need to map out the operational requirements so that designers could better understand how a bus driver interacts with an interchange facility. The interaction phases are shown in Figure 8 along with the respective design considerations.

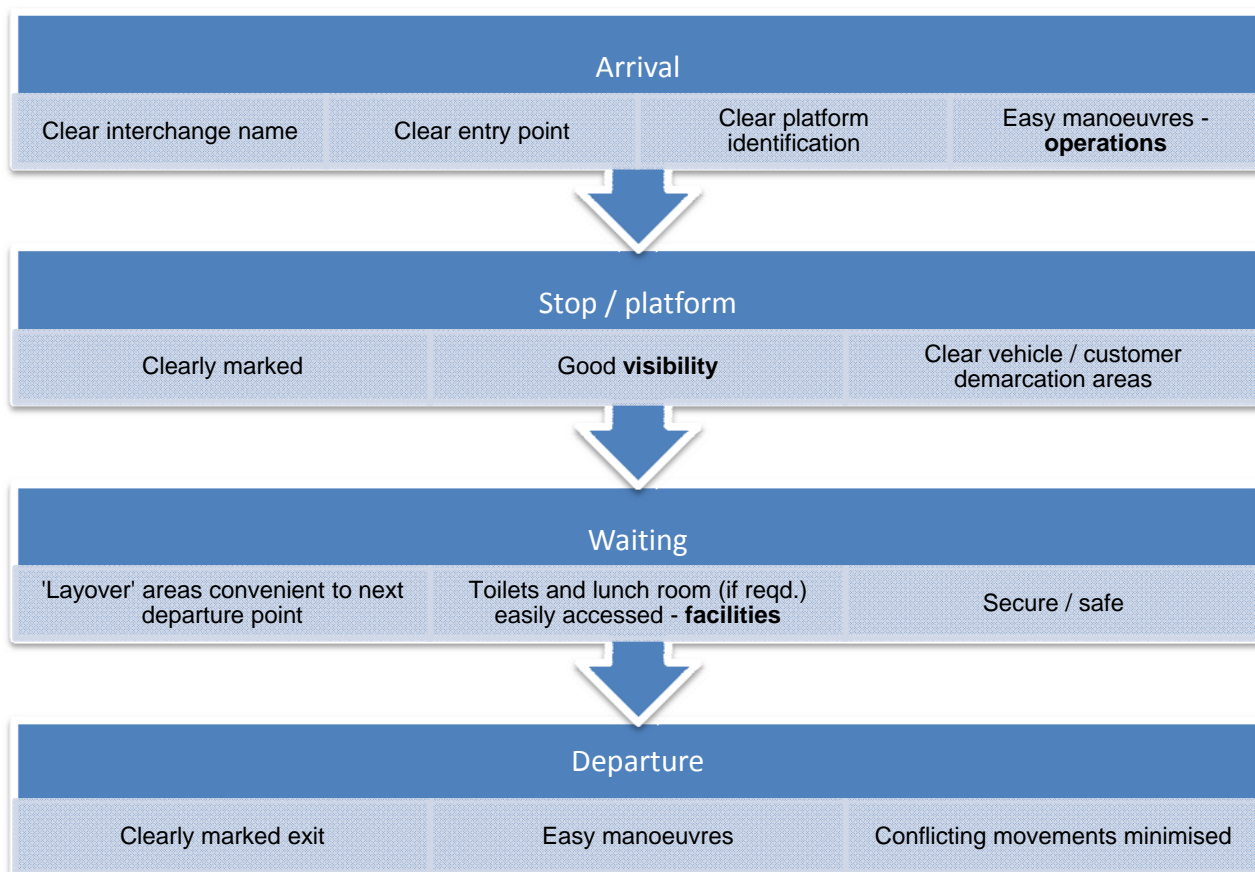


Figure 8: Bus driver interaction with an interchange facility

CONCLUSION

The collaborative process used in the establishment of the Auckland Public Transport Interchange Design Guidelines has enabled the production of a document that meets all of Auckland Transport's interchange design guideline objectives. The guidelines can be utilised by both architects and engineers to aid the design or redesign of public transport interchanges with a bus component in Auckland.

The benefits of the collaborative approach taken could be summarised through these key outcomes:

- Effective knowledge leverage across the project team of both advisor and client.
- Minimal overwork as desired outcomes are established and agreed upon in a step by step basis throughout the project.
- No surprises which helps reduce overwork and unnecessary time spent, therefore resulting in a more cost effective process.
- Document evolution was fully agreed upon resulting in a product all parties were happy with.

As a result the Auckland Public Transport Interchange Design Guidelines reflect international best practice with locally agreed real life examples from Auckland interchange sites. This occurred as a result of TDG and Auckland Transport working in a truly collaborative environment.

References

Auckland Council (2012). Auckland Plan.

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