

# Hornby Library, Service Centre and South West Leisure Centre - Kyle Park Transport Review

Prepared for Christchurch City Council  
Prepared by Beca Limited

6 March 2019



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## Revision History

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## Document Acceptance

Action	Name	Signed	Date
Prepared by	Hayden Trumper		06/03/2019
Reviewed by	Joe Phillips		06/03/2019
Approved by	Bryce Carter		06/03/2019
on behalf of	Beca Limited		

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## Executive Summary

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Beca Limited (Beca) was commissioned by Christchurch City Council (CCC) to undertake a high-level transport review of the proposed Hornby Library, Service Centre, and South West Leisure Centre (the Project). The Project is proposed to be located on Kyle Park in south west Christchurch with a planned opening date in 2022.

The land use surrounding the Project site is primarily residential with commercial/light industrial development to the east and south of Kyle Park. The Hub Hornby is a large retail shopping centre located adjacent to Denton Park on the opposite site of a rail line running along the southern border of Kyle Park. Hornby High School and Hornby Primary School are co-located directly to the north east of Kyle Park across Waterloo Road.

The anticipated primary catchment extends for approximately 3km from the site, making walking or cycling distances viable for visitors to the Project. The public roads around Kyle Park generally have footpaths on both sides and provide for a good standard of pedestrian connectivity. Off road paths connect Waterloo Road and Kyle Park to The Hub Hornby via an underpass under the rail line. A Major Cycle Route is proposed close to the Project with completion expected prior to 2022.

The rail line and high traffic volumes on State Highway 1 (SH1) limit the potential routes for pedestrians and cyclists within the primary catchment area to the south. The Hub Hornby shopping centre is a key transfer point between high frequency bus routes and less frequent suburban bus routes. Environment Canterbury (ECan) are anticipating a review of bus routes within Christchurch in 2019.

It is recommended that a high quality cycle connection is provided to connect the Project with the proposed nearby Major Cycle Route. Further investigation of opportunities to formalise cycle access through Kyle Park to The Hub Hornby and improvements to the current pedestrian access under the rail line to The Hub Hornby is recommended as the design is further progressed. It is also recommended discussions continue with ECan regarding its review of bus routes in 2019, to improve bus access to the Project.

The library and service centre is expected to attract around 150,000 visitors per year and the leisure facilities around 220,000 visitors per year. It is anticipated that the Project will generate approximately 240 trips (in and out) during the weekday evening peak and approximately 450 trips (in and out) during the Saturday midday peak. Using standard industry sources<sup>1</sup> and the expected trip generation of the Project, a high-level assessment indicates a peak parking demand of approximately 160 parking spaces.

Vehicle access for the Project is likely to be relatively easy to implement due to the moderate to low traffic volumes on Waterloo Road and the length of frontage available to enable access. There are also alternative access opportunities off the northern end of Smarts Road to the east. From initial discussions, the New Zealand Transport Agency has indicated that they currently do not have any fundamental concerns regarding the performance of the intersections on State Highway 1 surrounding the Project.

Overall, it is considered that the Project at Kyle Park can be satisfactorily serviced by the current and anticipated future transport networks. Viable access is available from Waterloo Road and adjacent roads with acceptable impacts on the adjacent transport network. Some localised improvements may be required once the layout and operation of the Project is confirmed as the design is further progressed.

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<sup>1</sup> Sources include, but not limited to, Ministry of Transport Household Travel Surveys, NZ Trip and Parking Database, TRICS, ITE Trip Generation

# 1 Introduction

## 1.1 Overview

Beca Limited (Beca) was commissioned by Christchurch City Council (CCC) to undertake a high-level transport review of the proposed Hornby Library, Service Centre and South Western Leisure Centre (SWLC) (the Project) to be located on Kyle Park. Kyle Park is located in the Hornby suburb in the south west of Christchurch, as indicatively shown in **Figure 1-1**. CCC has indicated this facility is expected to be completed sometime in 2022.

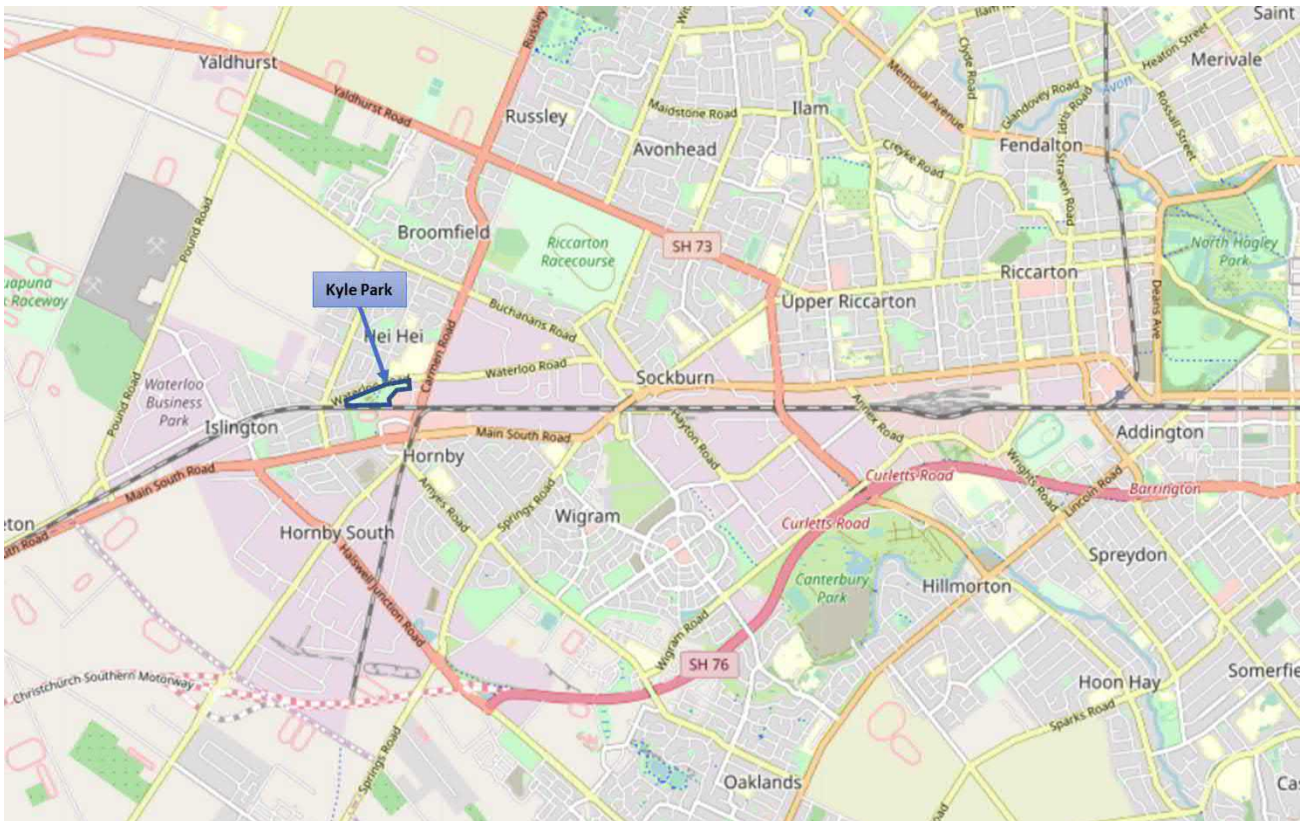


Figure 1-1: Indicative Location of Kyle Park

This report is a high-level review of the vehicle and alternative mode access for the initial spatial concept design of the Project. Detailed operational information is typically not available as part of the initial spatial concepts of similar developments. This assessment uses standard industry information sources<sup>2</sup> and experience to highlight the risk and opportunities associated with the current spatial concept.

Detailed operational information will be obtained as part of the further development of the design and will be included as part of an Integrated Transport Assessments (ITA) or similar for resource consent.

<sup>2</sup> Sources include, but not limited to, Ministry of Transport Household Travel Surveys, NZ Trip and Parking Database, TRICS, ITE Trip Generation

## 1.2 Report Structure

This report has the following structure:

- **Section 2:** Discusses the site context for the Project. This includes highlighting the nearby land-uses and surrounding road and alternative transport (bus, cycle and pedestrian) networks;
- **Section 3:** Outlines the Project and an approximate timeline for completion of the proposed facility. This includes a high-level assessment of the likely trip generation and parking requirements of the Project;
- **Section 4:** Assesses the high-level transport effects of the Project. This includes identifying potential access locations, safety implications and accessibility by alternative transport modes;
- **Section 5:** Provides the summary and conclusions to the report.

## 2 Site Context

### 2.1 Surrounding Land-Use

The land uses near the Project site are shown in **Figure 2-1**. To the east of Kyle Park, the land use is mainly commercial. To the west of Carmen Road and north of Kyle Park, the land use is mainly residential with Hornby High School and Hornby Primary School located opposite Kyle Park on Waterloo Road.

Hornby High School is currently being redeveloped with completion expected by the end of 2019. Directly to the south of Kyle Park is Denton Park, which hosts several sports clubrooms, and a large shopping centre (The Hub Hornby).

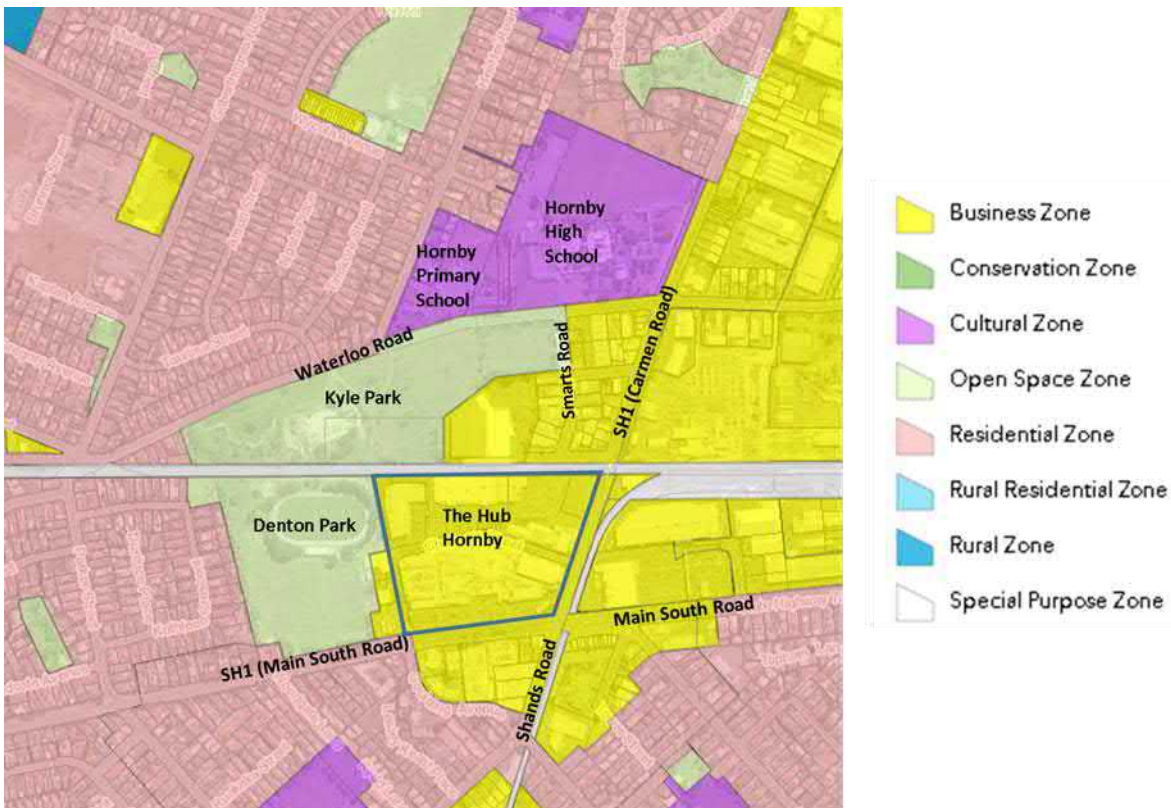


Figure 2-1: Surrounding Land Uses

### 2.2 Existing Road Network

Kyle Park has a long northern road frontage along Waterloo Road with a shorter eastern road frontage along Smarts Road. The Main South Line rail line travels to the south of Kyle Park with road crossings of the rail line located on State Highway 1 Carmen Road (SH1) and Parker Street. The surrounding roads are shown in **Figure 2-2** below and further described below.



Figure 2-2: Traffic Volumes on Surrounding Roads

- Waterloo Road:** This is a two-lane two-way road with a 13.5m wide carriageway with a 2m painted median and ‘no stopping’ lines around intersections and pedestrian crossings. This road connects to SH1 Carmen Road and Gilberthorpes Road and includes accesses for Hornby High School and Primary School along the northern side. Under the Christchurch District Plan, this road is considered a Collector road and its primary purpose is to provide connection between the local and arterial roads, as well as provide property access. The current traffic volumes are well within the traffic volume of up to 6,000 veh/day expected for a Collector road.
- Smarts Road:** This is a two-lane two-way road with a an approximately 13m wide carriageway with unrestricted parking on both sides along its length. Under the Christchurch District Plan, this road is considered a Local road and its primary purpose is almost entirely for access purposes and it is not intended to act as through routes for motor vehicles.
- SH1 (Carmen Road and Main South Road):** This is a four-lane two-way road to the east of Kyle Park that transitions to a two-lane two-way road to the west of Denton Park. The carriageway width varies between approximately 16 and 23m and includes ‘clearways’ on each side of the two-lane section of road to the east of Denton Park that function as bus lanes during the weekday peak periods.

This road is considered a High Volume National Strategic road by NZ Transport Agency (the Transport Agency) and connects Christchurch to Dunedin and Picton. Under the Christchurch District Plan, SH1 is defined as a Major Arterial and is to cater primarily for traffic movement with property access, as a secondary function.



- Parker Street:** This is a two-lane two-way road with a 12.5m wide carriageway with no parking restrictions on both sides. This road connects to SH1 Main South Road and Gilberthorpes Road and crosses the Main South Line rail line that runs to the south of Kyle Park. Under the Christchurch District Plan, this road is considered a Collector road and its primary purpose is to provide connection between the local and arterial roads. The current traffic volumes are typical of a Collector road.

## 2.3 Public Transport

Current public transport services available around Kyle Park are shown in **Figure 2-3**. The Hub Hornby shopping centre is a key transfer point between high frequency citybound bus routes and less frequent suburban bus routes in this area.

The Yellow Bus route is the high frequency bus route that runs every 15 minutes throughout the day and connects The Hub Hornby shopping centre to the CBD to the east and Rolleston/Templeton to the west.

The number 125 bus route is a suburban bus route that connects the suburbs of Halswell to Redwood with a stop at The Hub Hornby and outside Hornby High School. The number 130 bus route is a suburban bus route that connects the suburbs of Avonhead and Hei Hei to The Hub Hornby. The number 140 bus route is a suburban bus route that connects the suburbs of Mt Pleasant, Linwood, Riccarton and Russley with a stop at The Hub Hornby and outside Hornby High School. These suburban routes run at 15 or 30 minute intervals depending on the time of day.

Initial discussions with Environment Canterbury (ECan) regarding the Project have indicated that bus routes within Christchurch are expected to be reviewed in 2019. Once a preferred site is confirmed, there is the potential for the review of bus routes to include consideration of the Project.

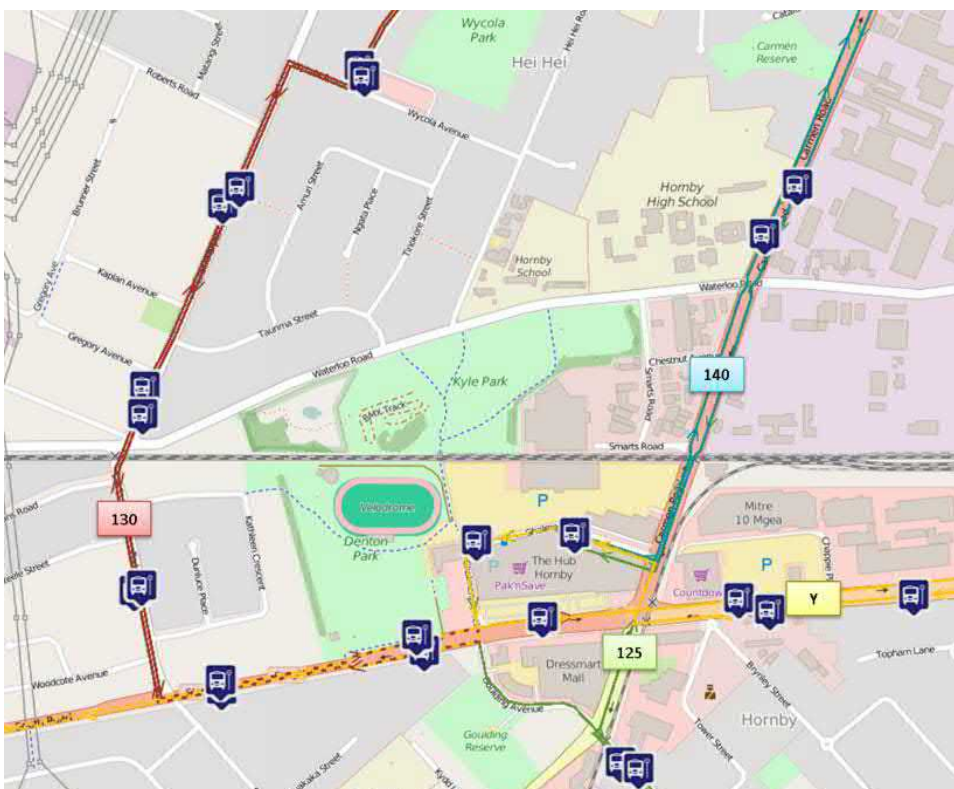


Figure 2-3: Bus Routes around the Hornby Area

## 2.4 Active Modes

The roads around Kyle Park generally have footpaths on both sides. Pedestrian refuge islands are currently provided on Waterloo Road near the walking paths through Kyle Park. Walking (off-road) paths also connect Waterloo Road and Kyle Park to Denton Park and The Hub Hornby via an underpass under the rail line to the south of Kyle Park. The current walking paths around Kyle Park are shown in **Figure 2-4**.

There are currently limited formal cycle facilities provided in the vicinity of Kyle Park. The paths cyclists can take to Kyle Park are shown in **Figure 2-4**. The only formal cycle facilities currently provided are cycle lanes on the approaches to the SH1/Waterloo Road intersection. It should be noted that there are paths through Kyle Park that connect to Denton Park via an underpass under the rail line that are currently used by pedestrians and cyclists. However, these paths are not formalised as shared paths.

As part of the Major Cycle Routes project, a new high-quality cycleway will be provided along the northern frontage of Kyle Park on Waterloo Road connecting Hornby and Templeton to Hagley Park and the City Centre. Construction is expected to start in 2019 with construction expected to be completed prior to the facility opening in 2022.



Figure 2-4: Current and Future Pedestrian and Cycle Routes

## 2.5 Christchurch Southern Motorway – Stage 2

The Christchurch Southern Motorway Stage 2 (CSM2) is a new four-lane motorway that runs from Halswell Junction Road to the north east of Rolleston as shown in **Figure 2-5**. This project involves greenfield construction between Halswell Junction Road and an interchange with SH1 to the south west of Templeton. South west of the SH1/CSM2 Interchange, SH1 will be widened to accommodate four lanes of traffic west to Rolleston. This project is expected to be completed by 2020.

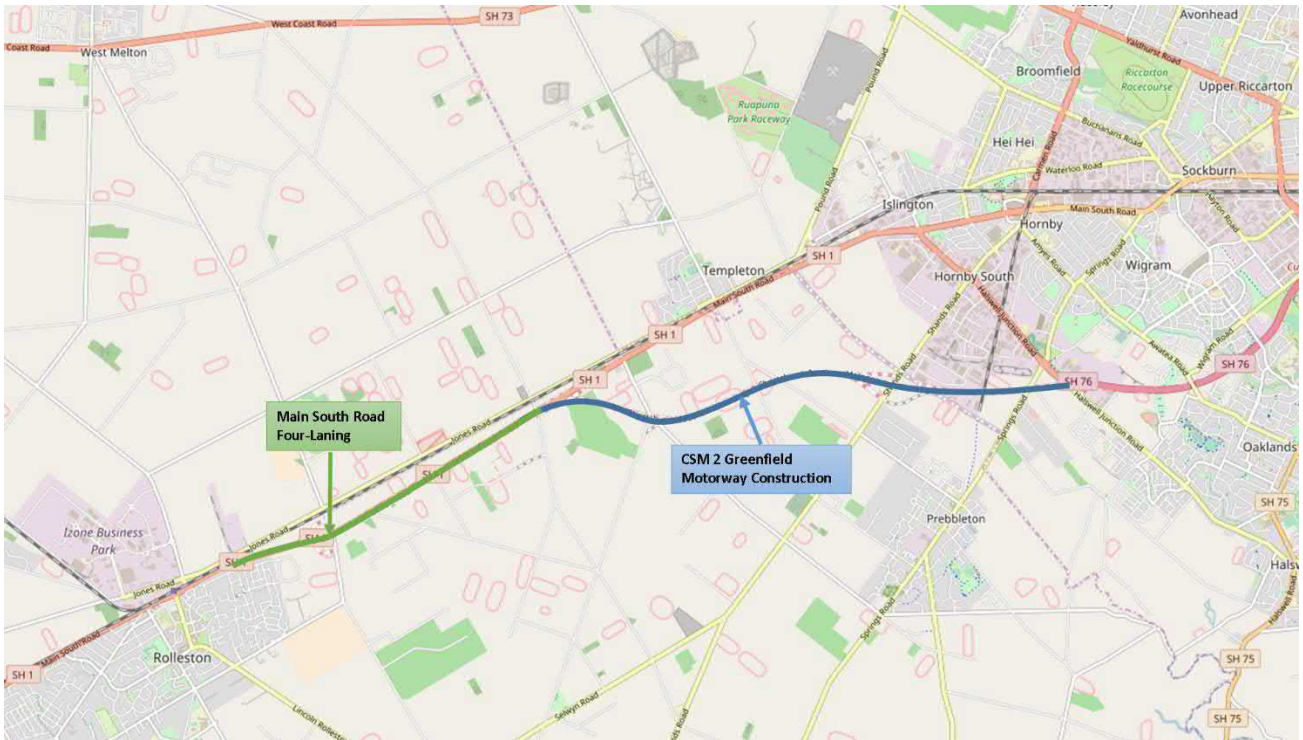


Figure 2-5: CSM2 Alignment

The Christchurch Assignment and Simulation Traffic (CAST) model predicts an approximately 10% increase in traffic on SH1 Carmen Road between the model years of 2016 and 2021. Waterloo Road is predicted to experience minimal change in traffic volumes over the same model years. It is noted that the changes identified include background traffic growth and other network changes assumed in the CAST model in addition to changes attributed to the CSM2 project.

### 3 Proposed Development

#### 3.1 Overview

It is understood from CCC that the Project involves construction of a new building housing the Hornby Library, Service Centre and South West Leisure Centre . An indicative spatial layout of the facility is shown in **Figure 3-1** although this could change through the design process. The Project is expected to have a total floor area of approximately 4,250m<sup>2</sup>. CCC has indicated that the opening date for the Project is likely to be in 2022. CCC has indicated the Library and Service Centre (library, governance services and ancillary services) is expected to attract 150,000 visitors per year. The SWLC (wet and dry sport areas) is expected to attract 220,000 visitors per year.

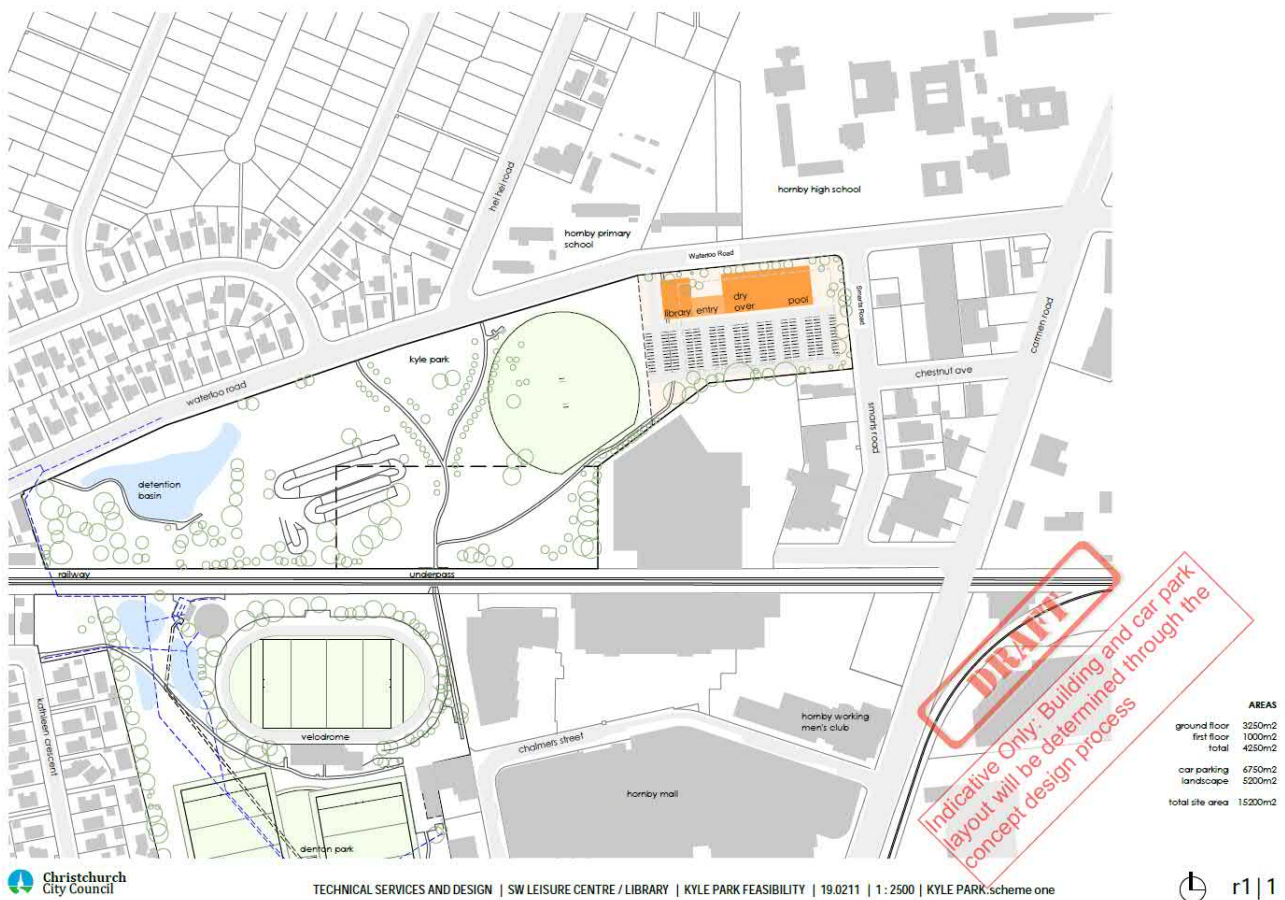


Figure 3-1: Indicative Spatial Study of Project

#### 3.2 Vehicle Trip Generation

Based on the available information and standard industry information sources, it is anticipated that the vehicles and trips generated by the proposed facility is as follows:

- Approximately 70 people movements (in & out) resulting in approximately 40 vehicle movements generated during the AM peak;
- Approximately 240 people movements (in & out) resulting in approximately 150 vehicle movements generated during the PM peak; and
- Approximately 450 people movements (in & out) resulting in approximately 230 vehicle movements generated during the Saturday peak.

The vehicle trip generation and assignment will be further refined for resource consent purposes as more information is obtained on the operation of Project as the design is progressed.

### **3.3 Anticipated Parking Requirements**

At this stage, there is limited information available regarding the layout and operation of the proposed facility, so an assessment of the Project against the Christchurch District Plan requirements is currently not possible.

Using standard industry sources of information, the maximum parking demand is expected to be on average 63% of the peak trip generation in the weekend. Applying this to the Project, results in a peak parking demand of approximately 160 parking spaces. The anticipated parking demand will be further refined as the layout and operation of the Project is refined as the design is further developed.

## 4 Assessment of Transport Effects

### 4.1 Public Transport and Active Modes Review

#### 4.1.1 Public Transport

The Hub Hornby, located to the south of Kyle Park, is a key transfer location between frequent city-bound bus services and less frequent suburban bus services. The bus stops at The Hub Hornby shopping centre are likely to be the main bus stops used by people using facilities at Kyle Park with bus stops for the 125 and 140 bus routes also present on SH1 Carmen Road. Visitors arriving by bus would currently need to walk around 400 to 500m, which represents a reasonably satisfactory five to seven minute walk.

Visitors alighting buses at The Hub Hornby need to use the rail line underpass that connects The Hub Hornby via Denton Park and Kyle Park, as shown in **Figure 4-1**. CCC has completed a Crime Prevention Through Environmental Design review of this underpass and has made recommendations to improve safety and security of people using the underpass. These recommendations should be considered as the Project is further developed and the demand for this route is confirmed.

The anticipated review of the bus routes within Christchurch provides the opportunity for CCC to liaise with ECan to improve bus services near the Project. Reducing the distance to nearby bus services and improving pedestrian links to bus stops will improve the attractiveness of visitors arriving by bus. It is also recommended that high quality pedestrian links are considered to nearby bus stops.

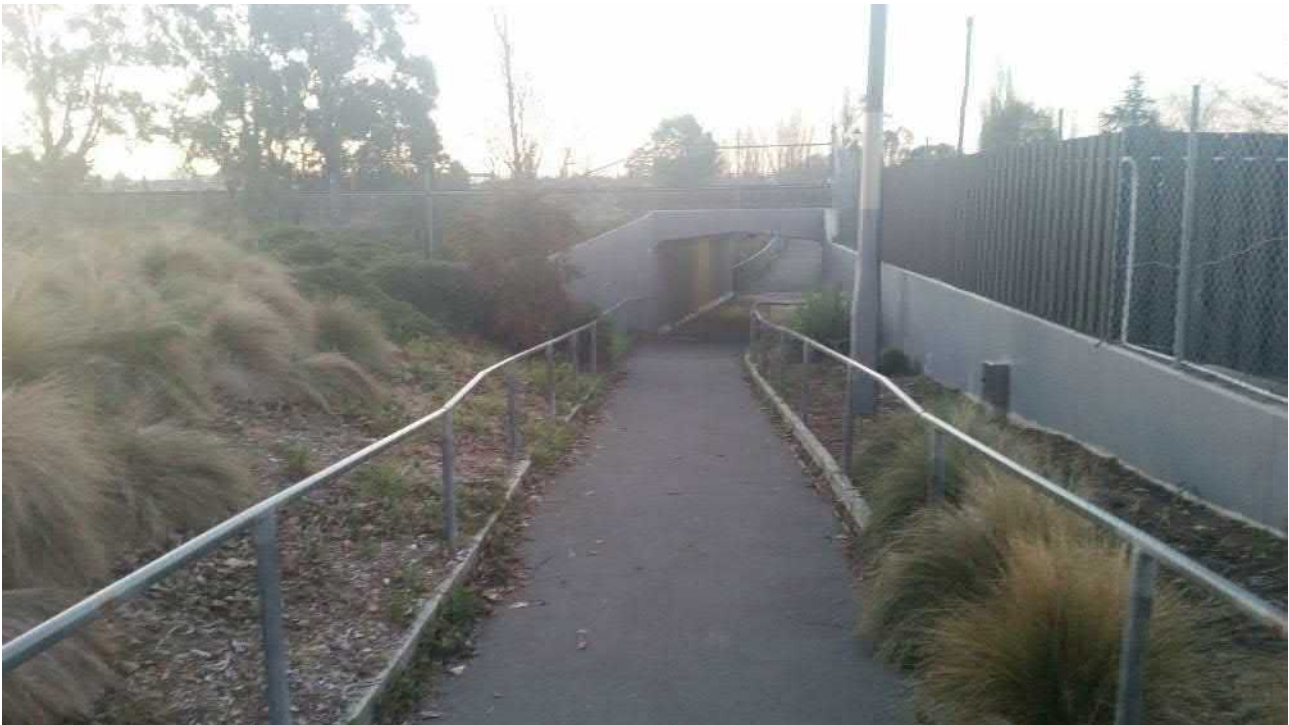


Figure 4-1: Denton Park/Kyle Park Railway Underpass

#### 4.1.2 Active Modes

The Project is located at the centre of the anticipated primary catchment, which extends for approximately 3km from the site, making walking or cycling distances viable<sup>3</sup> as shown in **Figure 4-2**. Pedestrian crossing

<sup>3</sup> Based on average walking distance per trip of 800m and average cycling distance per trip of 4.5km (NZ Household Travel Survey)

facilities are currently provided on Waterloo Road that provide good pedestrian connections to the north of the Project.

Pedestrian connections are limited across SH1 and the rail line due to high traffic volumes and limited pedestrian crossing facilities respectively. Therefore, there is a potentially more limited pedestrian catchment area to the south of the Project.



Figure 4-2: Pedestrian and Cycle Catchment for the Project

There are currently paths through Kyle Park that connect Waterloo Road to Denton Park and The Hub Hornby that are currently used by pedestrians and cyclists that are likely to be of sufficient width to allow for shared paths. These paths are not formally designated as shared paths which suggests to the cyclists that they are unable to use this path to access the proposed facility, limiting cycle connectivity to the south. It is recommended that formalising these paths as shared paths be investigated.

The only formal cycle facilities currently present on the roads around Kyle Park are the cycle lanes on SH1 (Carmen Road). There is a proposed Major Cycle Route for the South Express Cycle Route, which is currently planned to run along the northern boundary of Kyle Park between Hei Hei Road and its western boundary. This is expected to be completed prior to the completion of the Project and will provide good cycle connection to the north and west of the Project.

Given the proximity of the route to the Project, it is recommended a high-quality cycle connection is provided to the Major Cycle Route to enable continuity of cycle connectivity with this regionally significant cycle facility.

## 4.2 Site Access Review

### 4.2.1 Overview

At this stage, no detailed traffic modelling has been undertaken. However, an overview of the features that may affect the access location are provided in **Figure 4-3**. A commentary on the viability of the possible access locations is provided below. This is based on the anticipated traffic demands of the site, as well as broader transport planning and traffic engineering experience of similar developments.

The CCC District Plan requires accesses to be constructed at least 10m from intersections. However, due to the predicted volume of traffic generated by the Project, an access located further than 10m from an intersection may still result in vehicles accessing the site having adverse effects on the safe operation of that adjacent intersection.



Figure 4-3: Road Frontage Features that may Affect Access

### 4.2.2 Waterloo Road

Access along this frontage is expected to have good sight distances available for vehicles provided parking restrictions are implemented to maintain adequate sight distance, as Hornby Primary and High School related parking may obstruct sight lines.

A service access to Hornby High School is currently located approximately 70m to the west of Smarts Road. A main pedestrian access for the school to the east of the current service access is proposed as part of the Hornby High School redevelopment. An access to Hornby Primary School and a pedestrian crossing facility is located near the western edge of the proposed site.

It is anticipated that most students will cross Waterloo Road at the nearby pedestrian crossing facilities, so pedestrian crossing movements are expected to be concentrated at these locations.



Therefore, given the long road frontage to the east of the current pedestrian crossing facility and relatively low traffic volume using the current Hornby High School service entrance, it is considered that a feasible access can be safely established on Waterloo Road. There could also be an alternative to combine access for the Project with a school access at a single intersection, subject to further technical investigation.

#### 4.2.3 Smarts Road

This road provides access to industrial sites to the east of the Project.

An access on this road would likely have good sight distances available for vehicles provided parking restrictions are implemented to maintain adequate sight distance. Given the relatively short road frontage and proximity to the Smarts Road/Waterloo Road and Smarts Road/Chestnut Avenue intersections, the primary access to the Project may be less suitable off this road.

#### 4.2.4 Access Summary

In general, vehicle access to Kyle Park is likely to be relatively straightforward to implement due to low to moderate traffic volumes on the Waterloo Road and the length of frontage available to enable access. There is also an alternative access opportunity off the northern end of Smarts Road to the east of the site.

### 4.3 Intersection Performance Review

As detailed operational information is not yet available for the Project, traffic modelling has not been conducted as part of this assessment. Based on initial discussions, the Transport Agency has indicated that it currently does not have any fundamental concerns regarding the performance of the intersections on SH1 surrounding Kyle Park. However, the Transport Agency has indicated that should any changes to intersection layout or signals be identified through further assessment, those changes should maintain priority for SH1 traffic on Carmen Road.

### 4.4 Safety Review

A high-level review of the existing safety situation in the vicinity of Kyle Park has considered the crash history for the five years (2013-2017) extracted from the Crash Analysis System (CAS).

The crash risk at the intersections surrounding Kyle Park is primarily driven by traffic volumes with no nearby intersection being classified as high risk as defined by the High Risk Intersection Guide. There have not been any reported crashes resulting in injury recorded on Waterloo Road in the last five years, therefore the risk of crashes on Waterloo Road is considered low.

The Transport Agency has not highlighted any significant safety concerns on SH1.

Overall, the Project should not impact on the safety of the nearby transport network.

## 5 Summary

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This assessment has been undertaken to provide a high-level transport review of the Project to be located on Kyle Park in south west Christchurch, highlighting the high-level transport opportunities and issues associated with the Kyle Park site.

Given the level of detail currently available on the Project, the trip generation and parking demand has been derived using standard industry sources of information. This will be further refined as the design is further developed and more detailed operational information is available. This will inform the more detailed assessments to be undertaken as part of the development of the design and an Integrated Transport Assessment for any resource consent (or similar).

Vehicle access to Kyle Park is likely to be easy to implement due to the low to moderate traffic volumes on Waterloo Road and the length of frontage available to enable access. There are also alternative access opportunities off the northern end of Smarts Road to the east of the Project. From initial discussions, the Transport Agency has indicated that they currently do not have any fundamental concerns regarding the performance of the intersections on State Highway 1 surrounding Kyle Park.

The Project is located at the centre of the anticipated primary catchment, which extends for approximately 3km from the site. This makes the walking or cycling distances viable options for visitors to the Project. However, the high traffic volumes on SH1 and the rail line limits the potential catchment of pedestrians and cyclists to the south.

It is recommended that a high-quality cycle connection be provided to the proposed Major Cycle Route. Opportunities to improve the current pedestrian paths and formalised cycle access under the rail line to Denton Park and The Hub Hornby should be investigated as the design is further progressed. It is also recommended discussions continue with ECan regarding its review of bus routes in 2019, to improve bus access to the Project.

Overall, it is considered that the Project at Kyle Park can be satisfactorily serviced by the current and anticipated future transport network. Viable access alternatives are available from Waterloo Road and adjacent roads with acceptable impacts on the adjacent transport network. Some localised improvements may be required once the layout and operation of the Project is confirmed.