

*Relocation of Redcliffs School
to Redcliffs Park - Transport Assessment
Ministry of Education*

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Quality Assurance Information

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Prepared by: Jeanette Ward, Associate
Reviewed by: Ann-Marie Head, Associate

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T +64 9 486 0898 (Aklid)

T +64 3 377 4703 (Chch)

F +64 3 377 4700

E office@abley.com

Auckland

Level 8, 57 Fort Street
PO Box 911336
Auckland 1142
New Zealand

Christchurch

30a Carlyle Street
PO Box 25350
Christchurch 8144
New Zealand

www.abley.com

Executive Summary

Introduction

The Ministry of Education (MOE) commissioned Abley Transportation Consultants Limited (Abley) to prepare a Transport Assessment for the relocation of Redcliffs School to Redcliffs Park in the suburb of Redcliffs, Christchurch. The assessment will be used to support a regeneration project under the Greater Christchurch Regeneration Act 2016. The school will initially have a roll of 300 students and a maximum future roll of 400 students.

Provision is made within the designation for a ECE for up to 50 children, however the Ministry has advised that this will not be included as part of the initial development on the site for Redcliffs School. Any access and parking requirements would be assessed at the time of that development, if it is advanced.

The scope of the assessment was to provide sufficient confidence that a school on Redcliffs Park would not significantly impact the safety and efficiency of the local transport network. This assessment provided the opportunity to identify any issues that require further consideration should the Council decide that the MOE can purchase the site for a school. For the purposes of our assessment we have made a number of assumptions, these are outlined throughout the report.

Redcliffs Park is located to the north east of Main Road at the north end of Redcliffs. The park currently features a large greenspace with two football fields, a playground, a small community building and a toilet block. The school buildings will be located on Redcliffs Park directly adjacent to Main Road. We have assumed that the school car park will be located on the site at a lower elevation to the buildings.

Parking associated with the school will be catered for on-site (staff, visitor, mobility and servicing) and on-street for drop off and pick up. Vehicle access to the school car park will be from Beachville Road. The location of the car park and the access will be established during the design process. We have assumed that there will be no vehicle access from Main Road or Celia Street. Pedestrian and cycle access to the site will be available from the Beachville Road, Celia Street and Main Road frontages. Main Road is the highest volume frontage road, there is not intended to be any on-street parking on Main Road in the direct vicinity of the school.

Assessment basis

The assessment takes into account access by walking, cycling, bus and car. The assumed level of private motor vehicle use is considered in the transport network assessment whereas the other modes are assessed to determine how well they are catered for in the current transport environment in terms of existing infrastructure and safety.

The transport assessment is based on a maximum school roll of 400 students. The existing Redcliffs School zone is used as the catchment for school trips. It is acknowledged that student enrolments may come from 'out of zone' students however this is assumed to be a small proportion of the roll and therefore will not significantly impact the assessment. The breakdown of how student trips to and from the school would occur is difficult to quantify with any accuracy without travel survey results specific to the Redcliffs School. On this basis New Zealand Household Travel Survey data (2003 to 2010) has been used to assume a travel mode split, this estimates that 68% of school trips will be made by private motor vehicle and the remainder by either walking, cycling or public transport.

The assessment takes into account that the existing transport environment is not necessarily indicative of the future as since the 2010 and 2011 earthquakes traffic patterns have been disrupted. For example, with the closure of the Evans Pass Road route, which was also an over dimension vehicle route, there is no traffic using Main Road through Redcliffs as a through route to Lyttelton. The current traffic volume on Main Road is approximately 16,500 vehicles per day, whereas prior to the earthquakes it was approximately 18,000 vehicles per day.

Conclusion

Overall a school at Redcliffs Park is considered to fit well within the surrounding transport network and would have minimal negative impact on the local and wider transport network. However, the assessment has identified a number of issues that would need to be considered further if a school was established on Redcliffs Park, these are outlined below.

In general walking and cycling to Redcliffs Park from within the school zone is well catered for. In particular, the site is ideally located for access to and from the Coastal Pathway on the north and east sides of Beachville Road. To the south of Redcliffs Park there are several pedestrian crossings on Main Road allowing access from the residential areas located to the west of Main Road. It is likely that some children may be dropped off and picked up from Main Road south of Redcliffs Park given the presence of a zebra crossing near the existing school site.

Issues to be considered further

Local streets

Traffic volumes on Beachville Road and Celia Street will increase at the start and end of the school day. The majority of drop off and pick up activities are likely to occur on Beachville Road, and this is also where the school car park access will be located. This will require consideration of safety and efficiency impacts and possible mitigations measures such as promoting high turnover kerbside parking to avoid impacts such as double parking and congestion. This could be achieved through implementing parking time restrictions during the school peak periods. Ensuring safe walking and cycling connections to the school are located away from the parking areas, and that sight distances at the access are appropriate, are also important considerations.

Intersections

The intersection likely to be most impacted is the Main Road/Beachville Road/McCormacks Bay Road intersection however preliminary modelling indicates that the capacity of Main Road will not be adversely impacted. However, this will require further detailed analysis and discussion with Christchurch City Council prior to establishment of a school.

The Beachville Road/Celia Street intersection is currently an uncontrolled priority intersection which is appropriate for a low volume intersection. As the traffic volumes will increase at the start and end of the school day consideration to applying priority to one of the legs will be required. The skew angle at which the streets intersect may also need to be addressed.

Walking and cycling

A crossing facility for pedestrians and cyclists on the west side of Main Road accessing the school from McCormacks Bay Road requires consideration. A reduced speed limit at school start and finish times should be considered for any crossing in this vicinity.

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1. Introduction

The Ministry of Education (MOE) commissioned Abley Transportation Consultants Ltd to prepare a Transport Assessment for the relocation of Redcliffs School to Redcliffs Park in the suburb of Redcliffs, Christchurch.

The assessment will be used to support a regeneration project under the Greater Christchurch Regeneration Act 2016 which will insert a designation for “Education Purposes” into the Christchurch District Plan. The school will initially have a roll of 300 students and a maximum future roll of 400 students.

Provision is made within the designation for a ECE for up to 50 children, however the Ministry has advised that this will not be included as part of the initial development on the site for Redcliffs School. Any access and parking requirements would be assessed at the time of that development, if it is advanced.

The scope of the assessment was to provide sufficient confidence that a school on Redcliffs Park would not significantly impact the safety and efficiency of the local transport network. This assessment provided the opportunity to identify any issues that require further consideration should the Council decide that the MOE can purchase the site for a school. For the purposes of our assessment we have made a number of assumptions, these are outlined throughout the report.

This report is structured as follows:

- School Proposal
- Site Description
- Existing Transport Environment
- Strategic Context
- Predicted Travel Demands
- Assessment of Transport Effects
- Conclusion and Recommendations

Canterbury Maps aerials (Environment Canterbury) have been used to illustrate the site location where appropriate.

2. School Proposal

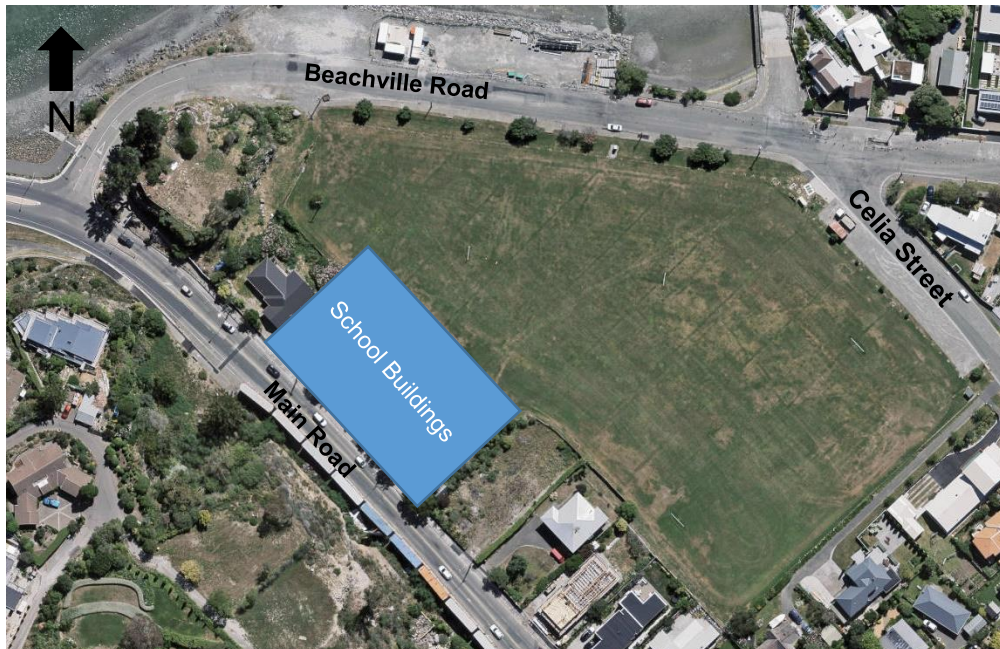
2.1 Overview

Based on the advice from the MOE the school buildings are likely to be located on Redcliffs Park directly adjacent to Main Road as shown in **Figure 2.1**. The school car park is likely to be located on the park at a lower elevation to the buildings. Vehicle access to the school car park will be from Beachville Road. The location and layout of the car park and the access will be established prior to construction. There is unlikely to any vehicle access from Main Road or Celia Street.

There will be no specific school bus services for the school. Occasional charter buses will be used for trips and special events and these will use Beachville Road for pick up and drop off.

Figure 2.1

Location on
Redcliffs Park



As is typical for any school catering for Years 0-8, some or all of the following are expected to be developed on the site:

- Buildings including classrooms, hall, library, gymnasium, IT units, administration office space, staff workspace, caretaker's facilities, dental clinic, sick bay, etc;
- Playing fields, hardcourts, playground structures;
- Vehicle accessways, parking space for staff and visitors, some drop-off/pick-up parking space, loading bays;
- Footpaths, landscaping, fencing; and
- Servicing including water, sewer, stormwater, electricity, heating, telecommunications, and outdoor lighting.

2.2 School Zone

For the purposes of the assessment we have assumed that the Redcliffs School zone will remain unchanged and is shown in **Figure 2.2**.

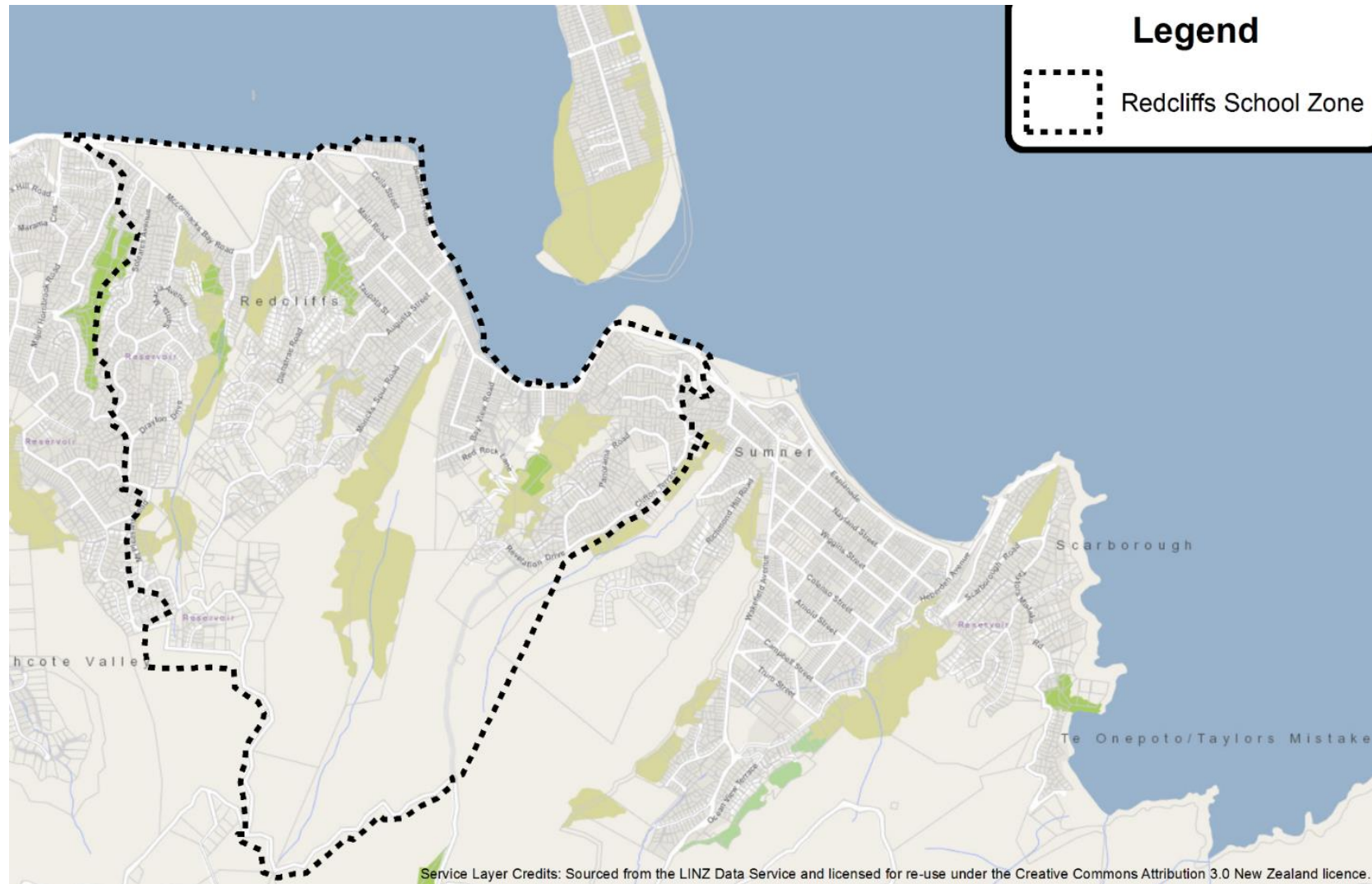
Our Ref:

Redcliffs School Transport
Assessment - FINAL

Issue Date:

25 May 2017

Figure 2.2 Redcliffs School Zone



3. Site Description

3.1 Site location

Redcliffs Park is located to the north east of Main Road at the north end of Redcliffs as shown in **Figure 3.1**.

Figure 3.1 Site location



3.2 Existing site information

The 2 hectare park currently features a large greenspace with two football fields, a playground, a small community building (pavilion) and a toilet block as shown in **Figure 3.2**.

Figure 3.2
Redcliffs Park
Overview



Figure 3.3 and **Figure 3.4** show the park as viewed from Celia Street and Beachville Road respectively.

Figure 3.3

View from Celia Street



Figure 3.4

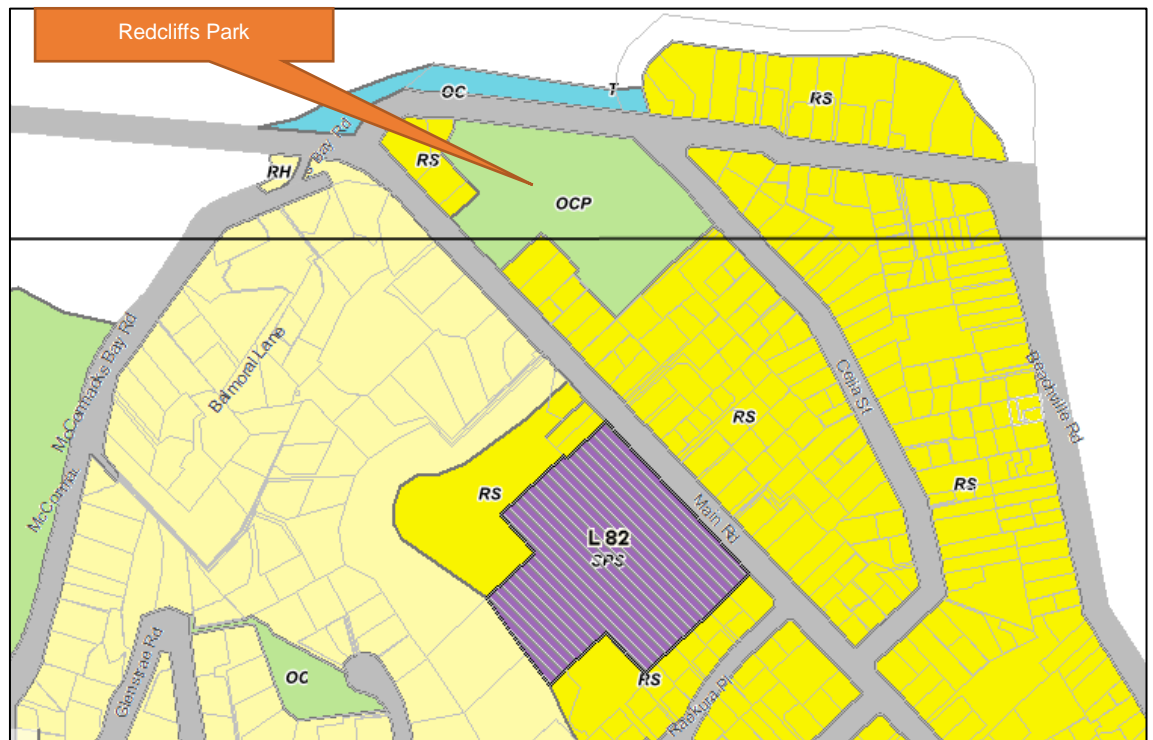
View from Beachville Road



3.3 Zoning and surrounding land use

The Redcliffs Park site is currently zoned as Open Space Community Parks and is adjacent to a Coastal Zone, Residential Hills (RH) and Residential Suburban (RS) zones, as shown in **Figure 3.5**. This results in the surrounding land use being entirely residential.

Figure 3.5 Zoning map



4. Existing Transport Environment

4.1 Introduction

This section describes the existing adjacent road network and frontage roads, walking and cycling networks and facilities and public transport services and facilities.

The following information has been referenced where relevant:

- CCC Traffic Counts
- Christchurch Transport Strategic Plan June 2012
- Christchurch District Plan
- Main Road Master Plan (Christchurch City Council) 2015

An important consideration is the Main Road Master Plan as it relates in this area, see **Figure 4.1**. The redevelopment plans included the completion of a section of Coastal Pathway, a boat trailer parking area, road narrowing and parking provision. The majority of the work is complete however some of the implemented work differs from the plan, this is noted where relevant.

Figure 4.1 Extract
from Main Road
Master Plan



4.2 Adjacent road network

The roads in the vicinity of the site are shown in **Figure 4.2**.

Figure 4.2
Adjacent road network



Table 4.1 outlines the movement (road hierarchy) and place classification and traffic volumes (where known). All the roads are subject to a 50km/h speed limit.

Table 4.1 Road classifications and volumes

District Plan Classifications			
Road name	Movement	Place	Volume (vehicles per day)
Main Road	Minor Arterial	Urban residential	16,500 (surveyed 2012 – see below)
Beachville Road	Local road		500 – 1,000 (estimated)
Celia Street	Local road		200 (surveyed 2013)
McCormacks Bay Rd	Local road		3,400 (surveyed 2001)

Main Road through to Lyttelton is also noted as a ‘Freight-supporting’ route for further investigation in the Christchurch Transport Strategic Plan^[1], and is also an over-dimension route.

The Christchurch District Plan definitions for the road hierarchy classifications are:

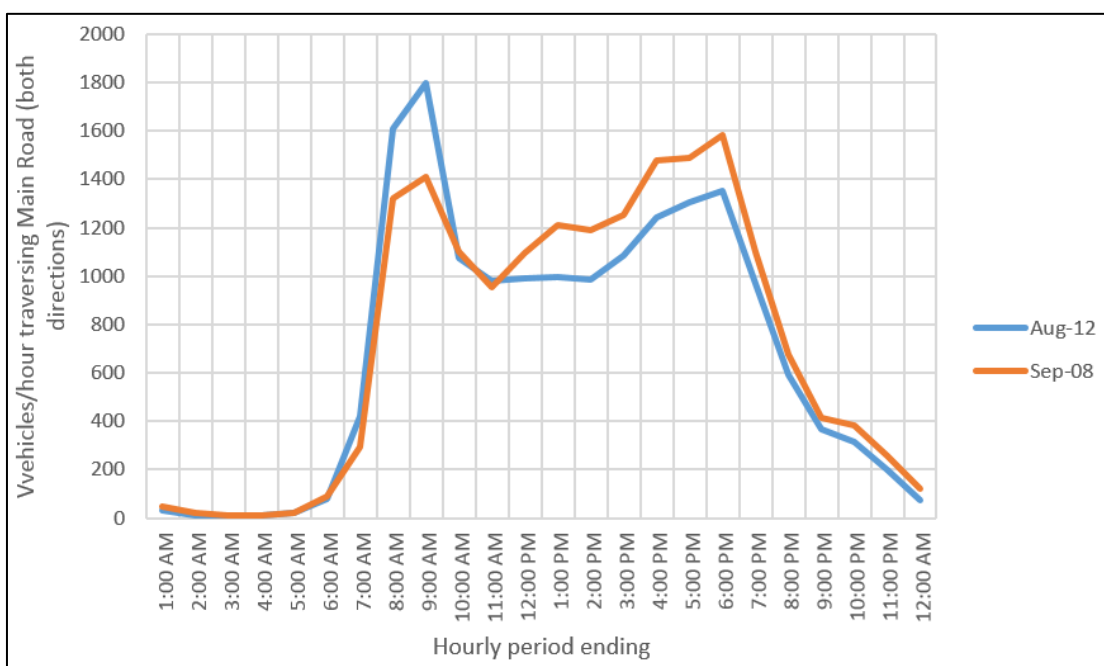
Minor arterials - “Roads that provide connections between major arterial roads and the major rural, suburban and industrial areas and commercial centres. Generally, these roads cater for trips of intermediate length. They will generally connect to other minor and major arterial roads and to collector roads. Arterial roads provide the most important movement function and as such require the highest degree of movement function protection. They may also define the boundaries of neighbourhood areas.”

Local roads “All other roads in Christchurch District. These roads function almost entirely for access purposes and are not intended to act as through routes for motor vehicles.”

^[1] Christchurch City Council 2012, Christchurch Transport Strategic Plan June 2012 – 2042, ISBN 978-0-9922462-0-4

Figure 4.3 shows the daily traffic profile for Main Road on the McCormacks Bay causeway before and after the Canterbury Earthquake Sequence (CES). This shows the morning (AM) peak has increased since the CES and is greater now than the afternoon (PM) peak, whereas previously the PM was the highest peak of the day. The AM peak has subsequently been used as the worst case scenario for assessment purposes. It is noted that the AM volumes are 50% higher at the school drop-off time than pick-up time.

Figure 4.3
Main Road daily
traffic volume
profile 2008 and
2012



4.3 Frontage Roads

Redcliffs Park is fronted by Beachville Road to the north, Main Road to the south and Celia Street to the east. Each of these roads are described below.

Main Road

Main Road on the western approach to Redcliffs Park is a two-way, two-lane road with on road cycle lanes in both directions, an off road shared path (Coastal Pathway) on the north/west side of the road and a footpath on the south/east side of the road as shown in **Figure 4.4**. There is no on-street parking on Main Road from Mount Pleasant until approximately 200m south of Beachville Road where on-street parking is then permitted on both sides of Main Road.

Figure 4.4 Main Road on western approach to Redcliffs Park



The width of Main Road directly adjacent to Redcliffs Park is constrained by the fenced off earthquake damaged slope on the west side of the road, see **Figure 4.5**. The carriageway has not yet been repaired in this location and currently features two traffic lanes and faded marked cycle lanes. Bus stops are located at the north end of the park frontage, as discussed further in Section 4.6.

Figure 4.5 Main Road adjacent to Redcliffs Park



Main Road on the eastern approach to Redcliffs Park features on-street parking, cycle lanes, traffic lanes and a flush median as shown in **Figure 4.6**.

Figure 4.6 Main Road on the eastern approach to Redcliffs Park



Beachville Road

The north end of Beachville Road is accessed via a priority intersection on Main Road (see Section 4.4) and then continues along the coast line re-joining Main Road with a priority intersection between the Augusta Street and Taupata Street intersections. Beachville Road provides access to residential properties and a boat ramp.

Beachville Road has one traffic lane in each direction with a centreline on the bend only. There is a footpath on the south and west sides of the road and the Coastal Pathway (a walking and cycling shared path) is located on the north and east side of the road as shown in **Figure 4.7**.

Figure 4.7 Beachville Road looking east



The section of Beachville Road adjacent to the Redcliffs Park site has recently been reconstructed as part of the Main Road Master Plan. The layout differs from the Master Plan in that a separate boat trailer parking zone has not been created. However, what appears to be a turning area has been provided, as shown in **Figure 4.8**.

Figure 4.8 Turning area on Beachville Road



An indented parallel parking area is provided on the north side of the road as shown in **Figure 4.9**. Parallel parking (unmarked) is also available on the south side of the street between two small buildouts.

Figure 4.9 Beachville Road looking west



Celia Street

Celia Street is a low volume street and has traffic calming measures present in the form of landscaped central median islands, see **Figure 4.10**. There are footpaths on both sides of the street. Celia Street links to Beachville Road at an unmarked intersection at the northeast corner of Redcliffs Park. The Celia Street intersection with Main Road is discussed in Section 4.4.

Figure 4.10 Celia Street looking south



There is an unsealed angle parking area on Celia Street adjacent to Redcliffs Park as shown in **Figure 4.11**. The Main Road Master Plan shows this area as being formalised with line marking (22 spaces), whether this will proceed requires clarification from the CCC.

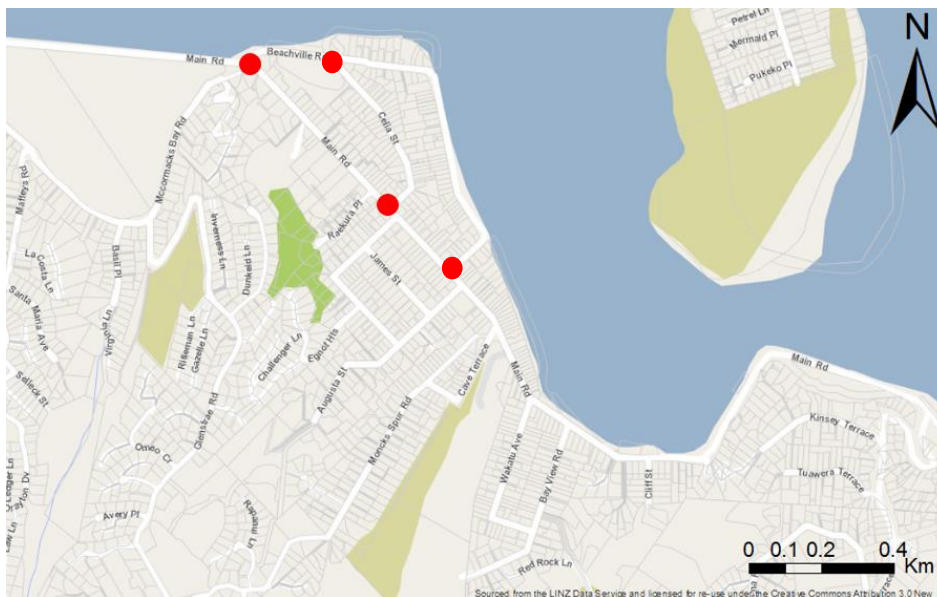
Figure 4.11 Celia Street adjacent to Redcliffs Park



4.4 Key intersections

The key intersections considered to be associated with school related traffic are shown in **Figure 4.12** and discussed below.

Figure 4.12
Location of key intersections



Beachville Road North/McCormacks Bay Road/Main Road

A staggered-tee intersection arrangement with raised median and right turn lane is located where Main Road intersects McCormacks Bay Road and Beachville Road, see **Figure 4.13**. There is no marked right turn bay present for vehicles turning right into Beachville Road although space exists to wait out of the through traffic lane. It is noted that the Main Road Master Plan included a pedestrian refuge in the island between the two side roads however a solid island has been implemented.

Figure 4.13 Main Road intersection with Beachville Road and McCormacks Bay Road



Main Road/Celia Street

Celia Street intersects with Main Road at an unmarked priority controlled intersection as shown in **Figure 4.14**. A flush median on Main Road accommodates right turners awaiting to enter Celia Street.

Figure 4.14 Main Road intersection with Celia Street



Main Road/Beachville Road

Beachville Road intersects with Main Road at a priority controlled intersection as shown in **Figure 4.15**. A right turn bay on Main Road accommodates right turners awaiting to enter Beachville Road.

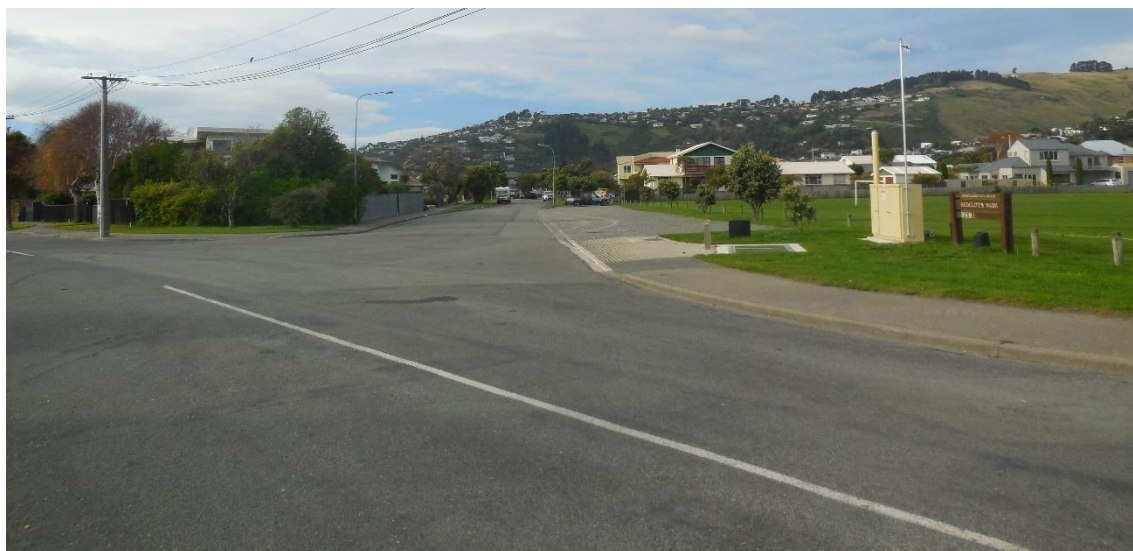
Figure 4.15 Main Road intersection with south end of Beachville Road



Beachville Road/Celia Street

Beachville Road intersects with Celia Street at uncontrolled priority intersection as shown in **Figure 4.16**.

Figure 4.16
Beachville Road
intersection with
Celia Street



4.5 Walking and cycling facilities

Figure 4.17 shows the walking facilities in the adjacent area. Most roads have footpaths on both sides however there are two sections of road without a footpath; these are Celia Street along the Redcliffs Park frontage and the west side of Main Road directly opposite Redcliffs Park due to a fenced off earthquake damaged slope on the west side of the road.

Figure 4.18 shows the cycling facilities in the adjacent area. Main Road features marked on-road lanes except for directly adjacent to Redcliffs Park where the road width is restricted by the earthquake damaged slope.

The Coastal Pathway is shown in both figures as it is a shared walking and cycling facility.

Pedestrian crossing facilities are also shown on both figures. There are five crossings on Main Road between Beachville Road and the traffic signals at the Redcliffs Village as follows:

- Pedestrian refuge island south of Beachville Road (north end)
- Pedestrian zebra crossing outside the existing school site
- Pedestrian refuge island south of Tuapata Street
- Pedestrian refuge island north of Beachville Road (south end)
- Signalised crossings at the Augusta Street traffic signals

There are two courtesy crossings on Beachville Road, the Main Road Master Plan shows three crossing points between the pathway and the Redcliffs Park side of the road however the middle one has not been implemented.

There is a pedestrian refuge island on McCormacks Bay Road at the intersection with Main Road.

Figure 4.17 Walking facilities in the adjacent area



Figure 4.18 Cycle facilities in the adjacent area



4.6 Public Transport

The Metro Purple Line public bus service operates on Main Road and connects Sumner with the Central City. The service is operated at 15 minute frequencies on weekdays. Bus stops are located on both sides of the road as shown in **Figure 4.19** and **Figure 4.20**.

Figure 4.19

Bus stops on Main Road near Redcliffs Park

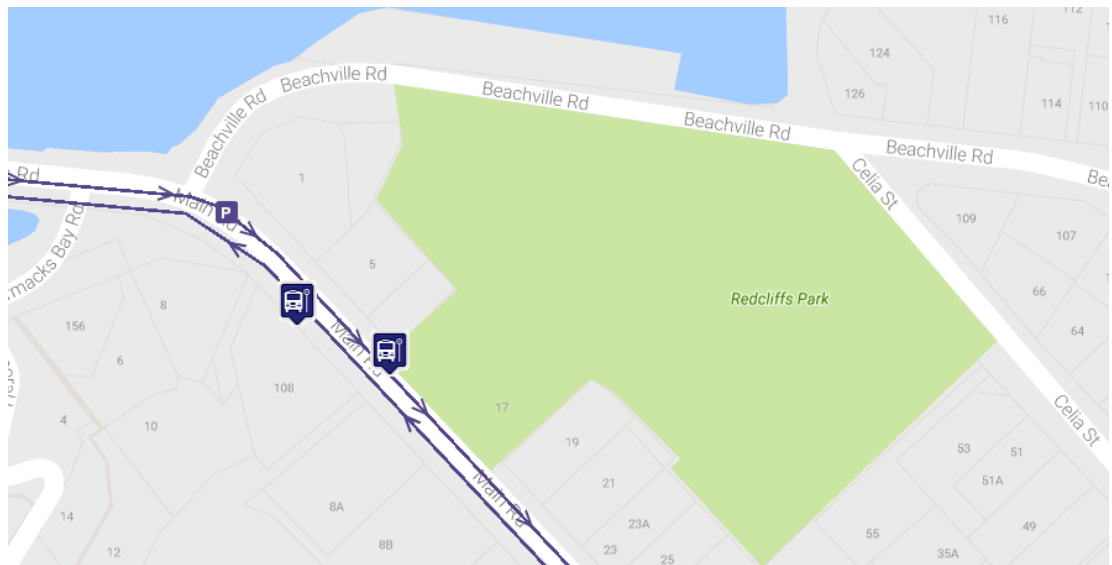
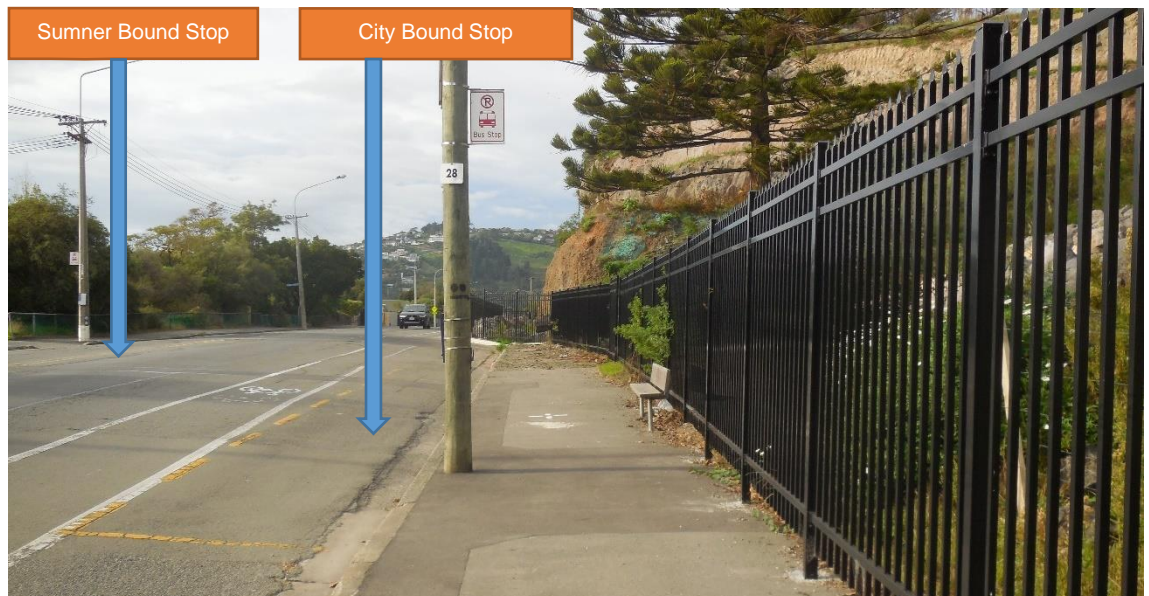


Figure 4.20 Bus stops near Redcliffs Park, looking south east



4.7 Road safety

In the area bounded by Main Road and Beachville Road during the 2012-2016 crash period, there was 1 crash resulting in severe injuries, 2 crashes resulting in minor injuries and 2 non-injury crashes. All crashes occurred on Main Road. Three crashes occurred during the weekend and the remaining two crashes occurred on weekdays.

The crashes occurred at varying locations along Main Road. There are no common crash movements and the only common crash factor relates to intoxicated drivers which occurred in two of the weekend crashes.

During this crash period Redcliffs School was operating from a temporary location in Sumner although some students catch buses from the existing Redcliffs School Site. Therefore, when the school relocates to Redcliffs Park the transport patterns in the area will change.

It is therefore considered more appropriate to take a pro-active approach through consideration of crash risk (identifying crash risk based on historical crash data) rather than a reactive approach. The New Zealand Road Assessment Process, Urban KiwiRAP^[2], is used to analyse the road safety of urban road corridors. The two types of risk metric that form the fundamental risk mapping protocols for Urban KiwiRAP are Collective Risk and Personal Risk as described below:

- Collective Risk is a measure of the total estimated death and serious injury^[3] (DSi) casualty equivalents for a site. It is effectively a measure of the number of deaths and serious injuries that can be expected at a site over the next analysis period (typically five years). At a corridor level, Collective Risk is the total estimated DSi casualty equivalents derived from the intersection and midblock components divided by the length of the corridor. It is expressed as estimated DSi / km.
- Personal Risk is a measure of the risk of an individual dying or being seriously injured at a site. It is calculated by dividing Collective Risk by a measure of traffic volume exposure.

The risk rating categories are low, low-medium, medium, medium-high and high (worst).

The risk maps^[4] for Christchurch show that:

- Main Road is ranked as Low-Medium for both Personal and Collective Risk.
- Beachville Road, Celia Street and McCormacks Bay Road are all Low (for both risk types).

The risk ratings of the Redcliff Park frontage roads provide a good indication that a school at this site will be located within a low traffic safety risk environment.

^[2] <https://roadsafetyrisk.co.nz/kiwi-rap>

^[3] Serious injuries- Fractures, concussion, internal injuries, crushings, severe cuts and lacerations, severe general shock necessitating medical treatment, and any other injury involving removal to and detention in hospital.

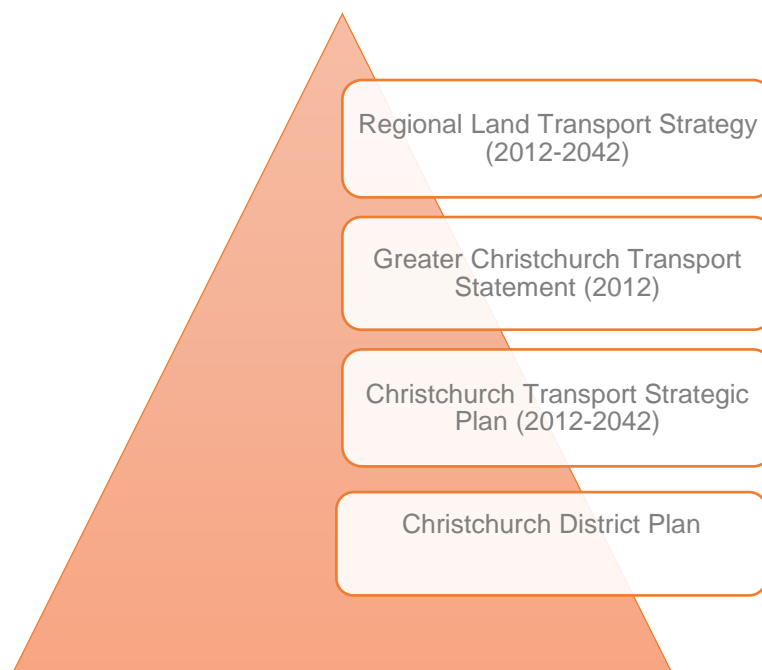
^[4] <https://roadsafetyrisk.co.nz/maps/personal-risk#Canterbury>

5. Strategic Context

5.1 Relevant strategies and policies

The consideration of regional, Greater Christchurch and local transport strategies and plans, as shown in **Figure 5.1**, are outlined below.

Figure 5.1
Strategies and
plans reviewed



Regional Land Transport Strategy 2012-2042

The Canterbury Regional Land Transport Strategy (RLTS) 2012-2042 has been prepared under the Land Transport Management Act 2003 by the Canterbury Regional Transport Committee on behalf of the Canterbury Regional Council. The RLTS sets the direction for the region's transport system for the next 30 years.

The vision of the RLTS is "Canterbury has an accessible, affordable, integrated, safe, resilient and sustainable transport system". This supported by the following objectives:

- Ensure a resilient, environmentally sustainable and integrated transport system
- Increase transport safety for all users
- Protect and promote public health
- Assist economic development
- Improve levels of accessibility for all.

The Greater Christchurch Transport Statement 2012

The Greater Christchurch Transport Statement (GCTS) provides an overarching framework to enable a consistent, integrated approach to planning, prioritising, implementing and managing the transport network and services in the Greater Christchurch area.

The GCTS focuses on the strategic links between key places within the Greater Christchurch area. The agreed outcomes will be delivered through the transport activities of the various partners. Further and other localised activities for active transport and improvements will continue to be developed through the local area transport plans of the Urban Development Strategy (UDS) partners. **Figure 5.2** shows the transport outcomes sought by the GCTS and the associated objectives. The GCTS outlines the top priorities for transport in an Action Plan; all of the outcomes are relevant to this.

Figure 5.2 GCTS
Transport
outcomes and
objectives

Transport Outcomes		Objectives
Journey Links between people & places	Connectedness	Integrate land-use activities with transport solutions, enabling ease of movement between places
	Resilience, reliability and efficiency	Optimise the use of existing transport assets through managing travel demand and networks
		Provide safe, efficient and resilient links to connect people and places
		Ensure efficient and predictable travel time between key places
Safety	Safe journeys	Provide more options for people to walk, cycle and use public transport
		Minimise the severity and social cost of crashes
Environment	Liveable communities	Improve personal security
	Low environmental impacts	Support place-making, and 'active travel' and public transport, reducing emissions and improving public and environmental health

The Christchurch Transport Strategic Plan 2012 -2042

The Christchurch Transport Strategic Plan (CSTP) is a non-statutory Plan that updates Christchurch's local transport policy in relation to relevant statutory plans, in particular the Canterbury Regional Land Transport Strategy, Regional Policy Statement, Greater Christchurch Urban Development Strategy and Regional Public Transport Plan, placing a strong emphasis on travel choice by establishing strong networks for all transport options during the next 30 years.

The CSTP outlines a series of network maps that define each road's role in the overall network from a strategic level including freight priority, core public transport and walking and cycling.

5.2 Conclusion

From the review of the strategies and plans the following transport aspects need to be considered in the development of the site for use as a school.

- **Accessibility** – The school site needs to have a high level of accessibility by all modes to support travel choice. This means that access by bus, either school bus or public transport is well catered for, and that walking and cycling are provided by ensuring the school is well connected with the surrounding transport network.
- **Safety** – Access to the school is developed with safety as a key criteria. This means measures such as suitable road crossings, access to the bus bays without crossing roads and sufficiently wide shared paths
- **Efficiency** – Traffic generated by the site should not have an unacceptable adverse impact on the surrounding road network in terms of travel time.

The assessment of the proposed site outlined in the following section considers these three key aspects.

6. Predicted Travel Demands

6.1 Introduction

The re-opening of a school in Redcliffs has the potential to alter travel patterns in the area. Rather than generating additional trips on the road network, trip re-distribution is likely to occur. This is because students will migrate back to a school in Redcliffs from the van Asch Deaf Education Centre, from which Redcliffs School has been operating since 2011, or other schools around Christchurch. It is noted that students are able to catch buses to and from the existing school each day to the van Asch site.

Therefore, it is predicted that the overall number of trips in the area is unlikely to increase. By locating a school back within the school zone, trips will be shorter and it is expected more walking and cycling trips will occur, potentially reducing the number of vehicle trips currently being made.

The Redcliffs School bus currently departs in the morning from opposite the Main Road school site at 8.45am to the van Asch site. The Wakatu Ave bus leaves at 8.45am, from near the Main Road end of Wakatu Ave, returning from van Asch the drop off in the afternoon are at the same places.

The transport network assessment focuses on the impacts of increased vehicle movements on adjacent intersections and site accesses. The existing Redcliffs School zone is used as the catchment for school trips. It is acknowledged that student enrolments may come from 'out of zone' students however this is assumed to be a small proportion of the roll and will not impact the assessment significantly. The breakdown of how student trips to and from the site would occur is difficult to quantify with any accuracy without travel survey results specific to Redcliffs School. On this basis New Zealand Household Travel Survey data (2003 to 2010) has been used to assume a travel mode split.

The assessment takes into account that the existing transport environment is not necessarily indicative of the future as since the 2010 and 2011 earthquakes traffic patterns have been disrupted. For example, with the closure of the Evans Pass Road route (that was also an over dimension vehicle route) and Summit Road to Dyers Pass Road, there is no traffic using Main Road through Redcliffs as a through route to Lyttelton or Dyers Pass Road. The current traffic volume on Main Road is approximately 16,500 vehicles per day, but prior to the earthquakes it was approximately 18,000 vehicles per day.

6.2 Trip generation

For the purposes of considering trips the school roll is assumed to be a maximum of 400 students. It is noted that the roll at the time of the earthquakes was 221. In lieu of any other information the New Zealand Household Travel Survey NZHTS School Travel Model⁵ was used to estimate the likely modal split of a Canterbury urban primary school of 400 students. In the model the NZHTS data has been arranged in a manner that enables a first-cut estimate of likely trip^[6] generation of schools depending on region within New Zealand and size. **Table 6.1** shows the estimated modal split and total number of trips by private motor vehicle. The full model output sheet is included in Appendix A.

The total number of student trips as vehicle passengers is slightly higher than the number of students travelling by vehicle because students are sometimes picked up and then dropped off during the day for a variety of reasons such as appointments, field trips or other circumstances. The overall number of private

⁵ Milne, A, S Rendall and S Abley (2011) National travel profiles part B: Trips, trends and travel predictions. NZ Transport Agency research report 467. 94pp.

^[6] A 'trip' is the sum of an arrival and a departure, i.e. 100 vehicle trips associated with a site equates to 50 vehicles

vehicles arriving in the peak hour is lower than the number of arrival trips taken by vehicle because not all students are dropped off between 8am and 9am and some parents drop off more than one child.

The model estimates that 68% of school trips will be made by private motor vehicle and the remainder by either walking, cycling or public transport. Although the estimated cycle trips are low it is best to consider walking and cycling together given the adjacent Coastal Pathway i.e. 27% of trips will be either walking (including scooters) or cycling.

Table 6.1 Mode of travel and associated trips

Mode	Walk	Cycle	Public Transport	Vehicular Passenger
Share (%)	25%	2%	4%	68%
All day student passenger vehicle trips				543
All day staff and service vehicle trips				44
AM peak hour private motor vehicles (8-9am)				218

7. Assessment of transport effects

7.1 Walking and cycling provision

In general walking and cycling to Redcliffs Park from within the school zone is well catered for. In particular, the site is ideally located for access to and from the Coastal Pathway on the north and east sides of Beachville Road. Access between the pathway and Redcliffs Park is via a raised platform courtesy crossing as shown in **Figure 7.1**.

Figure 7.1
Crossing between
the Coastal
Pathway and
Redcliffs Park



To the south of Redcliffs Park there are several Main Road crossings allowing access from the residential areas located to the west of Main Road (as detailed in Section 4.5).

The pedestrian zebra crossing outside the existing Redcliffs School, shown in **Figure 7.2** is located 230m from the Main Road frontage of Redcliffs Park. The Main Road Master Plan does not appear to show any future plans for the crossing, therefore it has been assumed that this will remain in place. It is likely that some children may be dropped off and picked up from this location given the presence of the zebra crossing.

Figure 7.2 Zebra
crossing on Main
Road near existing
school site



Issues to be addressed

If a footpath is not reconstructed on the west side of Main Road opposite Redcliffs Park students walking and cycling from McCormacks Bay will be required to cross Main Road at the existing refuge island shown in **Figure 7.3** and **Figure 7.4**.

Figure 7.3
Pedestrian refuge crossing on Main Road, near Beachville Road intersection



Figure 7.4
Pedestrian refuge access from east side of Main Road



The gap in the guard rail shown in Figure 7.4 allows connection to the footpath on the east side of Main Road as shown in **Figure 7.5**.

Figure 7.5
*Footpath looking
south along Main
Road*



This crossing facility requires further consideration in terms of location (e.g. sight distances) and quality. It is also noted that this part of Main Road appears to only have been partially earthquake repaired. Discussion with CCC is required as there maybe future plans that apply to this area that are not shown in the Main Road Master Plan. A crossing facility in this area also needs to consider access to and from the City Bound bus stop on the west side of Main Road. A reduced speed limit at school start and finish times to enhance the safety of a crossing in this area should also be considered.

7.2 Transport network operations

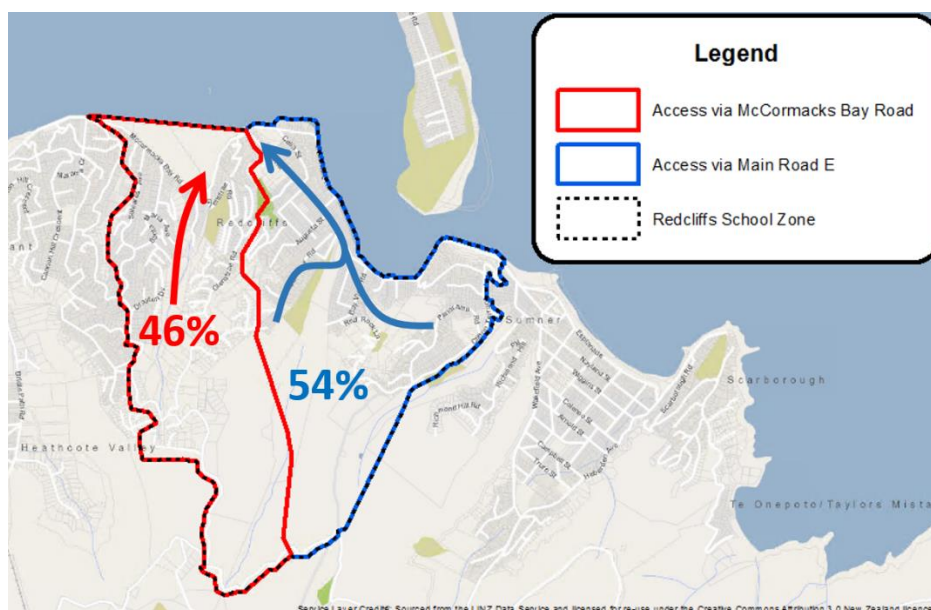
The assessment focuses on the impact of school traffic on key adjacent intersections and the roads where school traffic will be higher due to school access and drop off/pick up. No network analysis is considered necessary. It should be noted that the majority of school drop offs and pick ups tend to occur in a very short window of time therefore any traffic impacts will generally be short in duration.

Intersections

A coarse evaluation of intersection performance was undertaken in a previous site options assessment stage assuming the school is operated at maximum capacity^[7]. The SIDRA^[8] modelling (for the AM peak) results provided an indication of possible capacity issues however they were not based on recent intersections counts or calibrated. Any potential measures to mitigate capacity issues require further detailed analysis and discussion with the CCC.

Figure 7.6 shows the percentage of households which are expected to access the school from each direction with a school located at Redcliffs Park, providing a proxy for estimating the proportion of students in each traffic catchment. This information was used to estimate traffic volumes at the intersections and undertake the earlier coarse evaluations. The MOE have since verified (based on Year 1-8 state school students at July 2016) that is likely that between 37-39% of Redcliffs students in the future will be drawn from the McCormacks Bay Road area and 63-66% will be drawn from the Main Road East areas shown in Figure 7.6.

Figure 7.6
Traffic catchments
and associated
traffic proportions



The intersection of Main Road with McCormacks Bay Road and Beachville Road as discussed in Section 4.5 was considered to be the intersection where volumes would increase the most at school times given that the almost half the traffic catchment would use McCormacks Bay Road.

^[7] Appendix 5 Site Options Assessments (Appendix 7) <http://shapingeducation.govt.nz/read-more-2/recent-announcements>

^[8] SIDRA is a software package used for intersection level of service and performance analysis.

The coarse modelling of the Beachville Road North/McCormacks Bay Road/Main Road intersection indicated that the Main Road traffic will not experience any reduction in Level of Service (LOS) as it is assumed that the Main Road traffic can move around the right turning vehicles. A right turn bay exists for Main Road traffic into McCormacks Bay Road, and there is space available (although not marked as a right turn bay) for Main Road traffic turning into Beachville Road. It is acknowledged that there are likely to be short lived delays for McCormacks Bay Road and Beachville Road traffic accessing the school, however this requires further analysis.

Vehicle access onto Main Road from Beachville Road (north end) is likely to result in some queuing as right turning vehicles out of Beachville Road wait for sufficient gaps in the traffic will block the exit for left turners out of the road. This could potentially be addressed by widening Beachville Road at Main Road to accommodate left and right turns out of the access however this is not recommended due to the impact on pedestrians and cyclists crossing the Beachville Road intersection.

Traffic signals would be another way to manage the exiting vehicles and would also facilitate a controlled crossing for walking and cycling access between McCormacks Bay Road and Beachville Road, however this level of intervention would require detailed analysis (using Paramics^[9] rather than SIDRA) and discussion with CCC.

Beachville Road and Celia Street

Traffic volumes on Beachville Street and Celia Street will increase at the start and end of the school day. The majority of drop off and pick up activity is likely to occur on Beachville Road, this is also where the school car park access will be located. This requires consideration of safety and efficiency impacts and possible mitigations measures such as:

- Promoting high turnover kerbside parking to avoid impacts such as double parking and congestion could be achieved through implementing parking time restrictions at the school peaks.
- Ensuring safe walking and cycling connections to the school are located away from the parking areas.
- Ensuring the access sight distances are appropriate.

The Beachville Road/Celia Street intersection is currently an uncontrolled priority intersection which is appropriate for a low volume intersection. As the traffic volumes will increase at the start and end of the school day consideration to applying priority to one of the legs will be required. The skew angle at which the streets intersect may also need to be addressed.

7.3 Parking and servicing

Adjacent on-street car parking would be utilised for student drop-off and pick-up activities. There are parallel parking spaces on Beachville Road and angle parking spaces on Celia Street. The angle parking zone is currently unsealed (as shown in Figure 4.11). The extent of the on-street parking activity on these residential streets beyond the site boundaries is unknown however consideration of the impacts on residents will be required.

The provision of appropriate walking access between these on-street parking zones and the school site will be required. There will be no parking permitted on Main Road along the school frontage.

Service and delivery vehicles will access designated spaces in the car park via the Beachville Road access.

^[9] Paramics Microsimulation Modelling would be appropriate for assessing two off-set intersections.

Provision for emergency vehicle access from Main Road may be considered in the design stage of the project in consultation with emergency services.

There will be no specific school bus services for the school. Occasional charter buses will be used for trips and special events and these will use Beachville Road for pick up and drop off activities.

Cycle and scooter parking will be located near the buildings and will require access from the frontage roads via designated cycle/shared paths.

The school site will include car parking for staff, visitors, mobility parking and servicing. The Christchurch District Plan sets out the minimum amount of car and cycle parking spaces to be provided on a site, this is considered to provide broad guidance with the expectation of this informing the parking expectation prior to development. An assessment of the District Plan parking requirements for a school with a maximum of 400 students from Year 0 to Year 8 is shown below in **Table 7.2**.

The requirement for cycle parking is also outlined in **Table 7.2**. The staff numbers are based on an assumed teacher-to-student ratio of 1:15.

Table 7.2
District Plan
parking
requirements

Rule	Plan description	Assessment	Parking requirement
Minimum number of car parks required	Residents/ Visitors/ Students 1 space/ 25 pupils (year 8 and below) 0.5 spaces/ 25 pupils (year 9 and above) Staff 0.5 space per FTE staff	Assume 400 students Y0 to Y8. $(400/25) * 1 = 16$ spaces Staff = $0.5 * 26 = 13$	29 spaces required (13 to be marked for Staff use)
Minimum number of mobility parking spaces	For 21-50 parking spaces min. 2 mobility spaces required	2 min. mobility spaces required	2 min. mobility spaces required Mobility parking spaces shall be provided at the closest possible point to the accessible entrance
Minimum number of cycle parking spaces	Visitors: 1 space/ 30 students (year 8 and below) and 1 space/ 100 students (year 9 and above) Staff/ residents/ students cycle parks 1 space/ 7 students (year 8 and below) and 1 space/ 5 students (year 9 and above)	$(400/30)*1 = 13.3$ cycle spaces $(400/7)*1 = 57.1$ Total cycle parking = 70.4 cycle spaces	Total cycle parking = 70 cycle spaces Staff/ residents/ tertiary students' cycle parking facilities shall be located in: a covered area; and a secure area, unless located in an area where access by the general public is generally excluded.

8. Conclusion

Overall a school at Redcliffs Park is considered to fit well within the surrounding transport network and would have minimal negative impact on the local and wider transport network. However, the assessment has identified a number of issues that would need to be considered further if a school was established on Redcliffs Park, these are outlined below.

In general walking and cycling to Redcliffs Park from within the school zone is well catered for. In particular, the site is ideally located for access to and from the Coastal Pathway on the north and east sides of Beachville Road. To the south of Redcliffs Park there are several pedestrian crossings on Main Road allowing access from the residential areas located to the west of Main Road. It is likely that some children may be dropped off and picked up from Main Road south of Redcliffs Park given the presence of a zebra crossing near the existing school site.

Note that provision is made within the designation for a ECE for up to 50 children, however the Ministry has advised that this will not be included as part of the initial development on the site for Redcliffs School. Any access and parking requirements would be assessed at the time of that development, if it is advanced.

Issues to be considered further

Local streets

Traffic volumes on Beachville Road and Celia Street will increase at the start and end of the school day. The majority of drop off and pick up activities are likely to occur on Beachville Road, and this is also where the school car park access will be located. This will require consideration of safety and efficiency impacts and possible mitigations measures such as promoting high turnover kerbside parking to avoid impacts such as double parking and congestion. This could be achieved through implementing parking time restrictions during the school peak periods. Ensuring safe walking and cycling connections to the school are located away from the parking areas, and that sight distances at the access are appropriate, are also important considerations.

Intersections

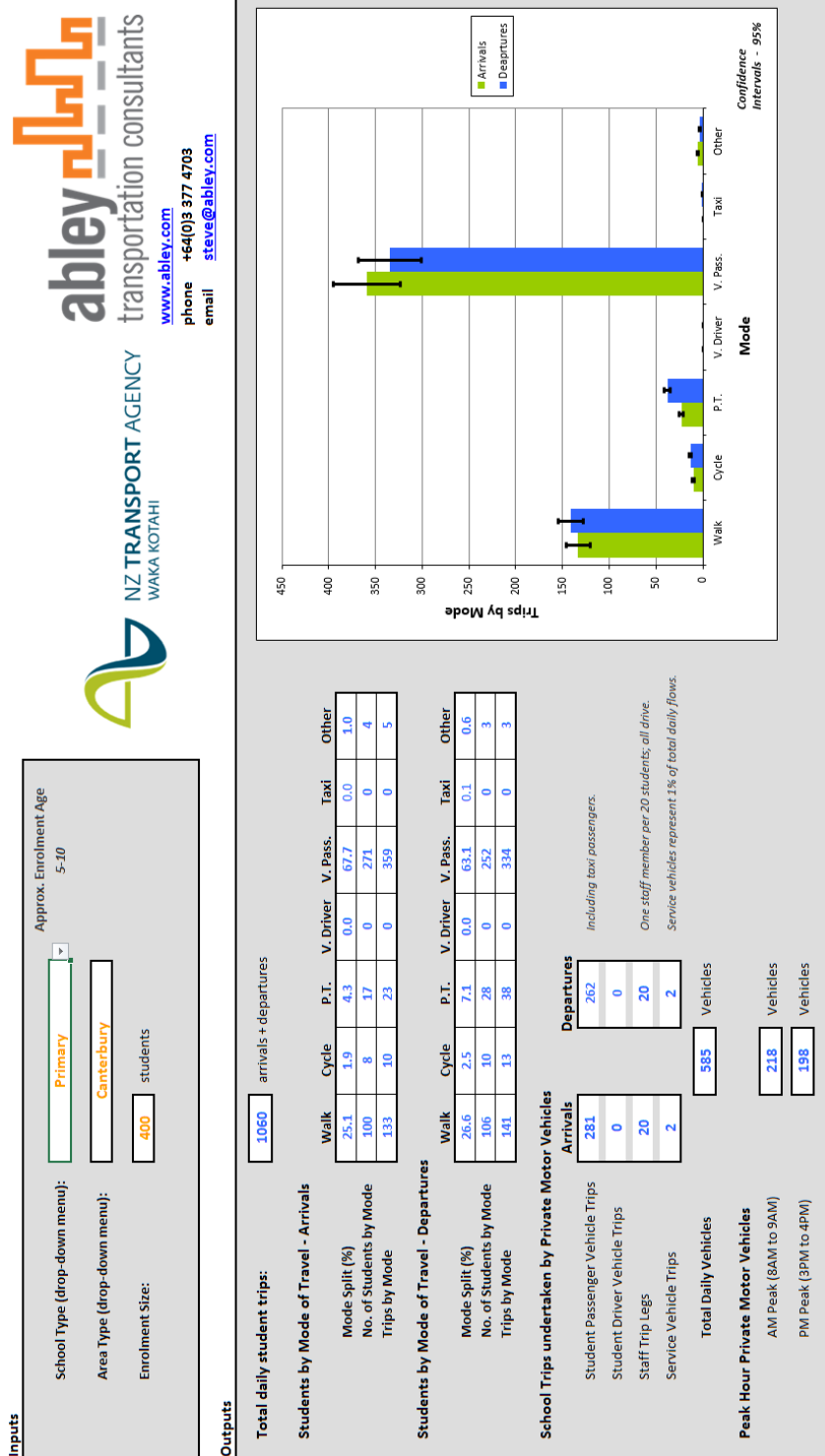
The intersection likely to be most impacted is the Main Road/Beachville Road/McCormacks Bay Road intersection however preliminary modelling indicates that the capacity of Main Road will not be adversely impacted. However, this will require further detailed analysis and discussion with Christchurch City Council prior to establishment of a school.

The Beachville Road/Celia Street intersection is currently an uncontrolled priority intersection which is appropriate for a low volume intersection. As the traffic volumes will increase at the start and end of the school day consideration to applying priority to one of the legs will be required. The skew angle at which the streets intersect may also need to be addressed.

Walking and cycling

A crossing facility for pedestrians and cyclists on the west side of Main Road accessing the school from McCormacks Bay Road requires consideration. A reduced speed limit at school start and finish times should be considered for any crossing in this vicinity.

Appendix A - NZHTS School Travel Model Results



T +64 9 974 9820 (Akl)

T +64 3 377 4703 (Chch)

F +64 3 377 4700

E office@abley.com

Auckland

Level 8, 57 Fort Street

PO Box 911336

Auckland 1142

New Zealand

Christchurch

30a Carlyle Street

PO Box 25350

Christchurch 8144

New Zealand

www.abley.com