

## CORPORATE OFFICE

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9 November 2018

[REDACTED]  
[REDACTED]  
[REDACTED]

[REDACTED]

[REDACTED]

### **RE Official Information Act request CDHB 9944 (aa) V3**

We refer to your email dated 19 October 2018 querying our response to your Official Information Act request to Canterbury DHB under the Official Information Act (CDHB 9944a). Your requests (paraphrased) are repeated below. Our response follows.

- **The current and any proposed transport/road plan for the main hospital.**
- **Where roads and parking will be, access points, etc.**
- **The hospital complex's internal roading and parking plans. This would clearly show how it will be integrated to and access the public roads adjoining and serving the hospital.**

To address your request, we have prepared plans, Appendices 1-6 below, to illustrate current traffic flows and parking. We also attach other information held that may be of interest.

We attach the following appendices:

1. Current ASB Construction Zone (Page 1)
2. Current Hospital Dock Delivery area off Rolleston Bridge (Page 2)
3. Current Ambulance routes (Page 3)
4. Current Traffic flow routes (Page 4)
5. Current Service Road layout plans (Page 5)
6. Parking places on site November 2018 (Page 6)
7. Christchurch Hospital Site Plan (Page 7)
8. Original Parking on ChCh campus prior to rebuild programme (Page 8)
9. Original parking on ChCh campus Labs site prior to rebuilds (Page 9)
10. Area where current Hagley OP building is. (Page 10)
11. Jacobs Hospital Corner Transport Safety Study, 14 June 2016. (Pages 11-56) **Note.** This is a 2016 report and therefore may be outdated.

I trust that this satisfies your interest in this matter.

Please note that this response, or an edited version of this response, may be published on the Canterbury DHB website after your receipt of this response.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Gullery', with a long, sweeping horizontal line extending to the right.

Carolyn Gullery  
**Executive Director**  
**Planning, Funding & Decision Support**

Current construction Zone only





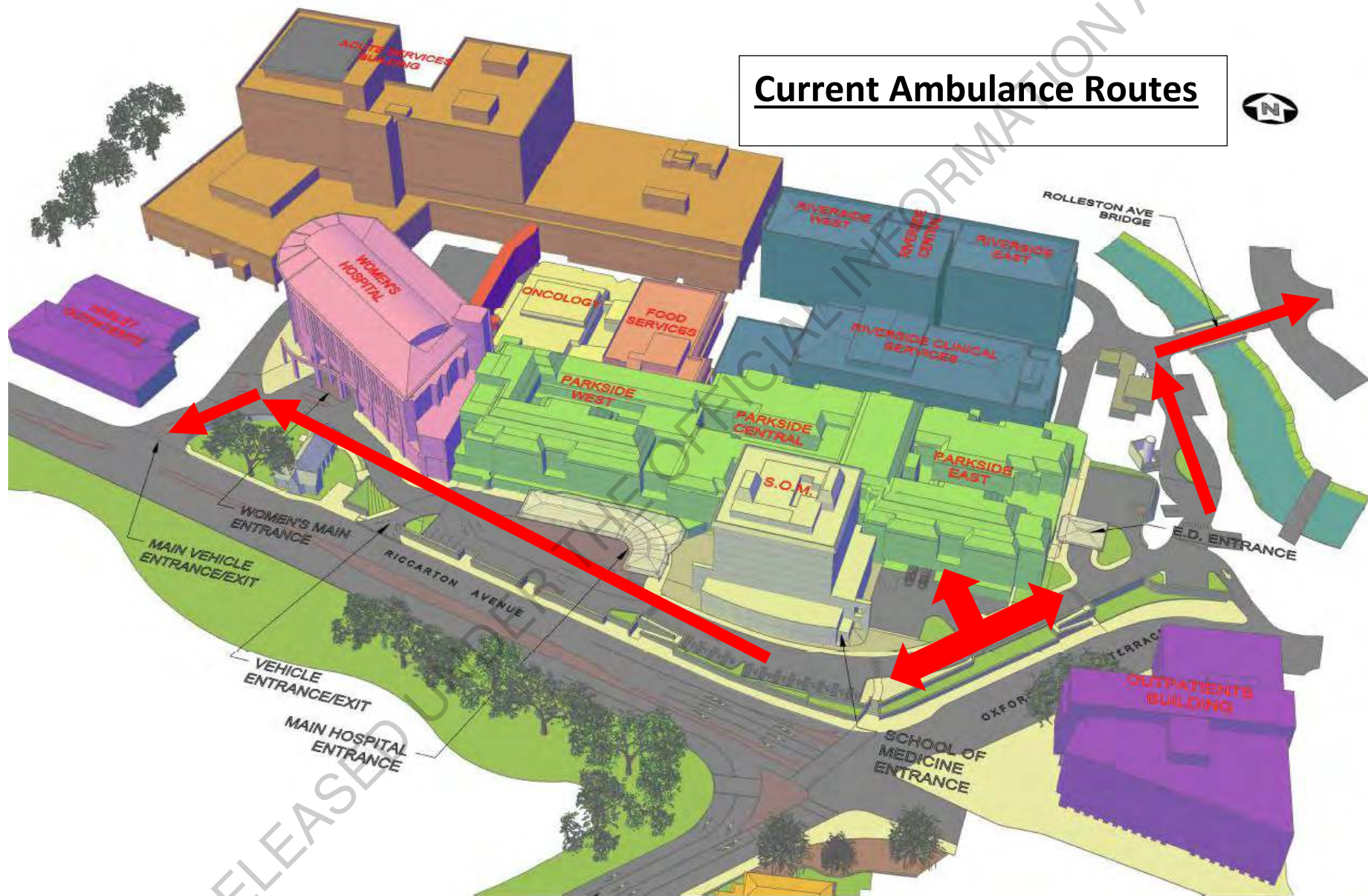


Current Dock  
Delivery Area for  
Hospital off  
Rolleston Bridge

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OFFICIAL INFORMATION ACT



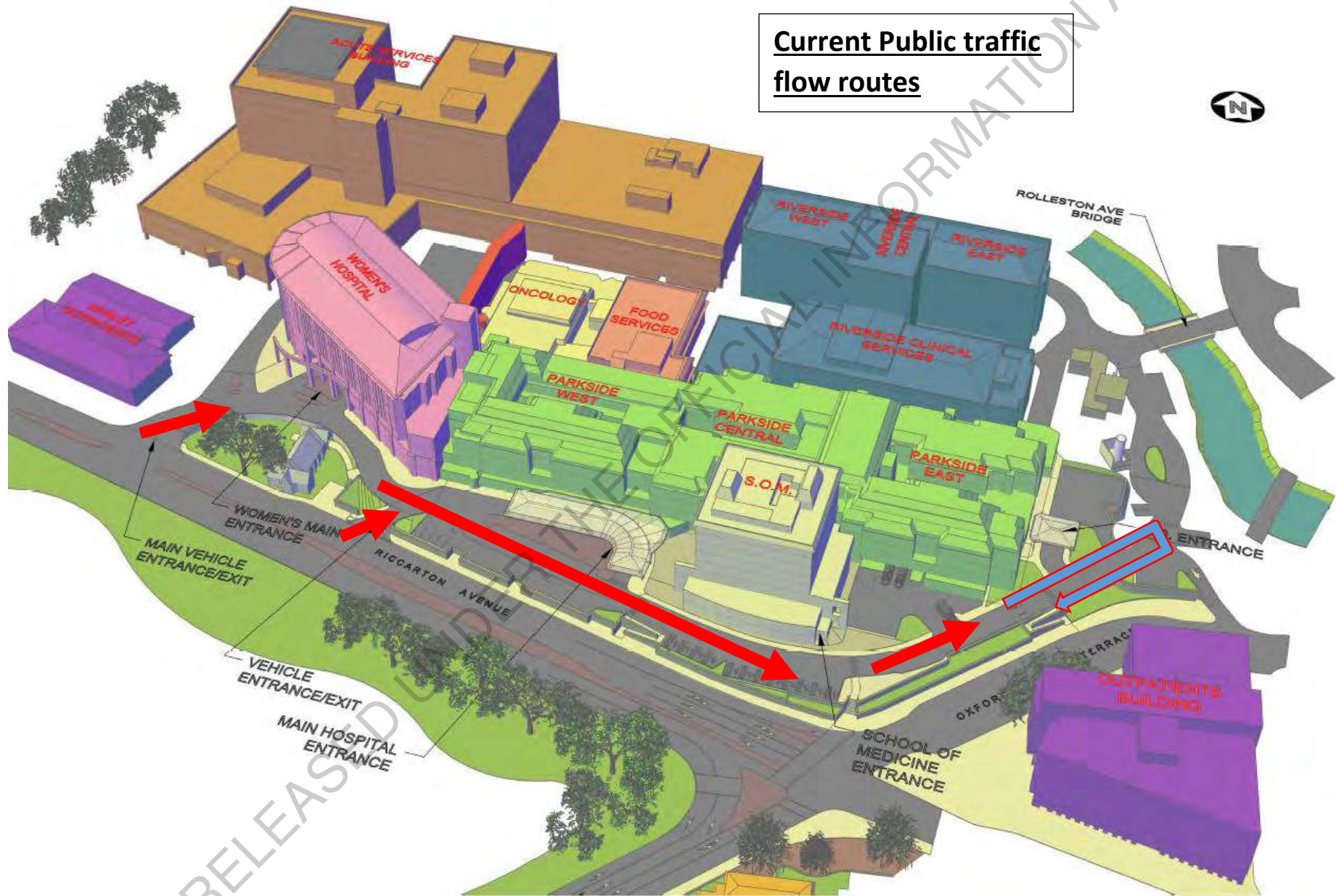
Current Ambulance Routes



RELEASED



**Current Public traffic  
flow routes**

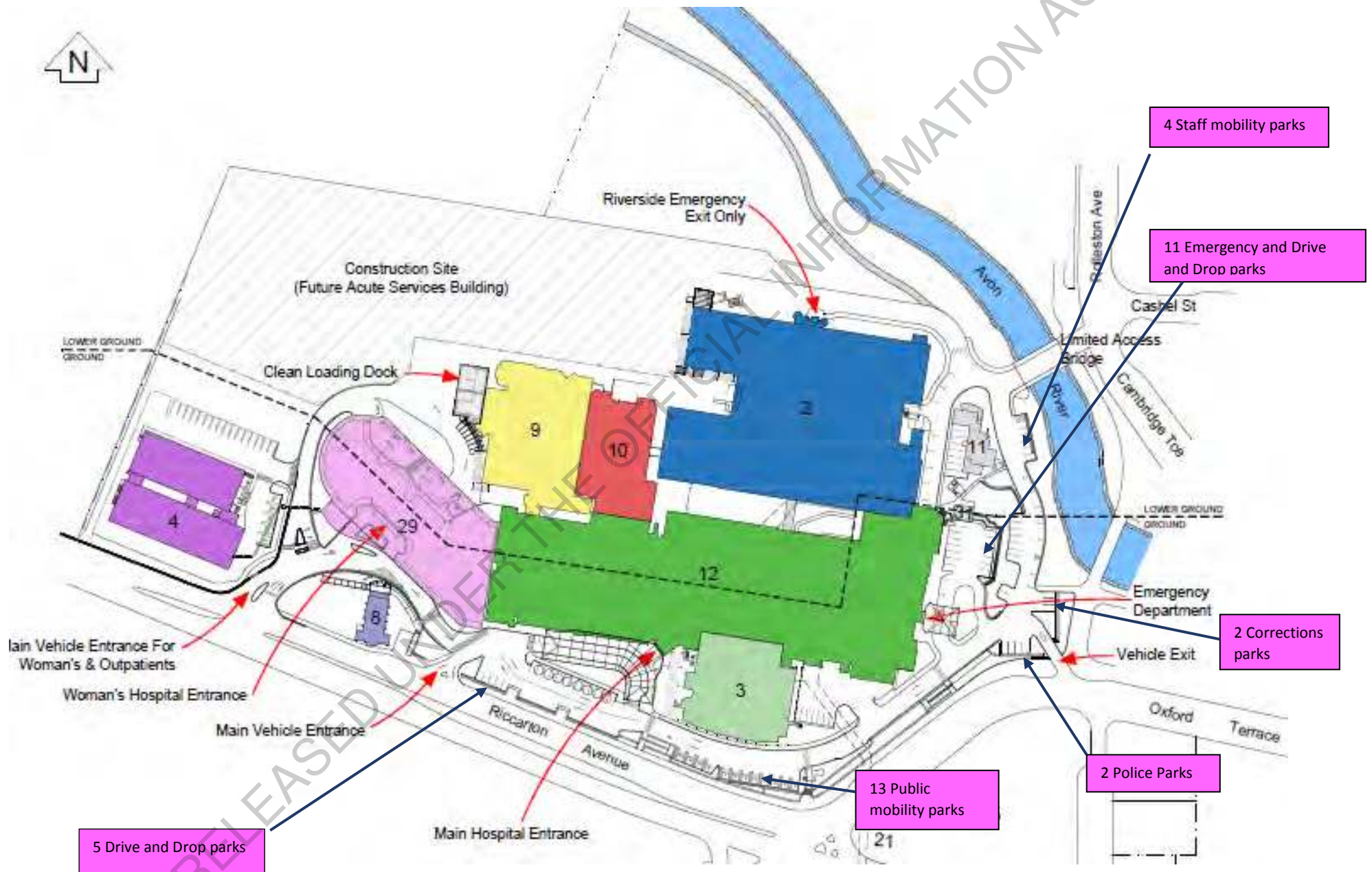
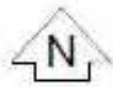


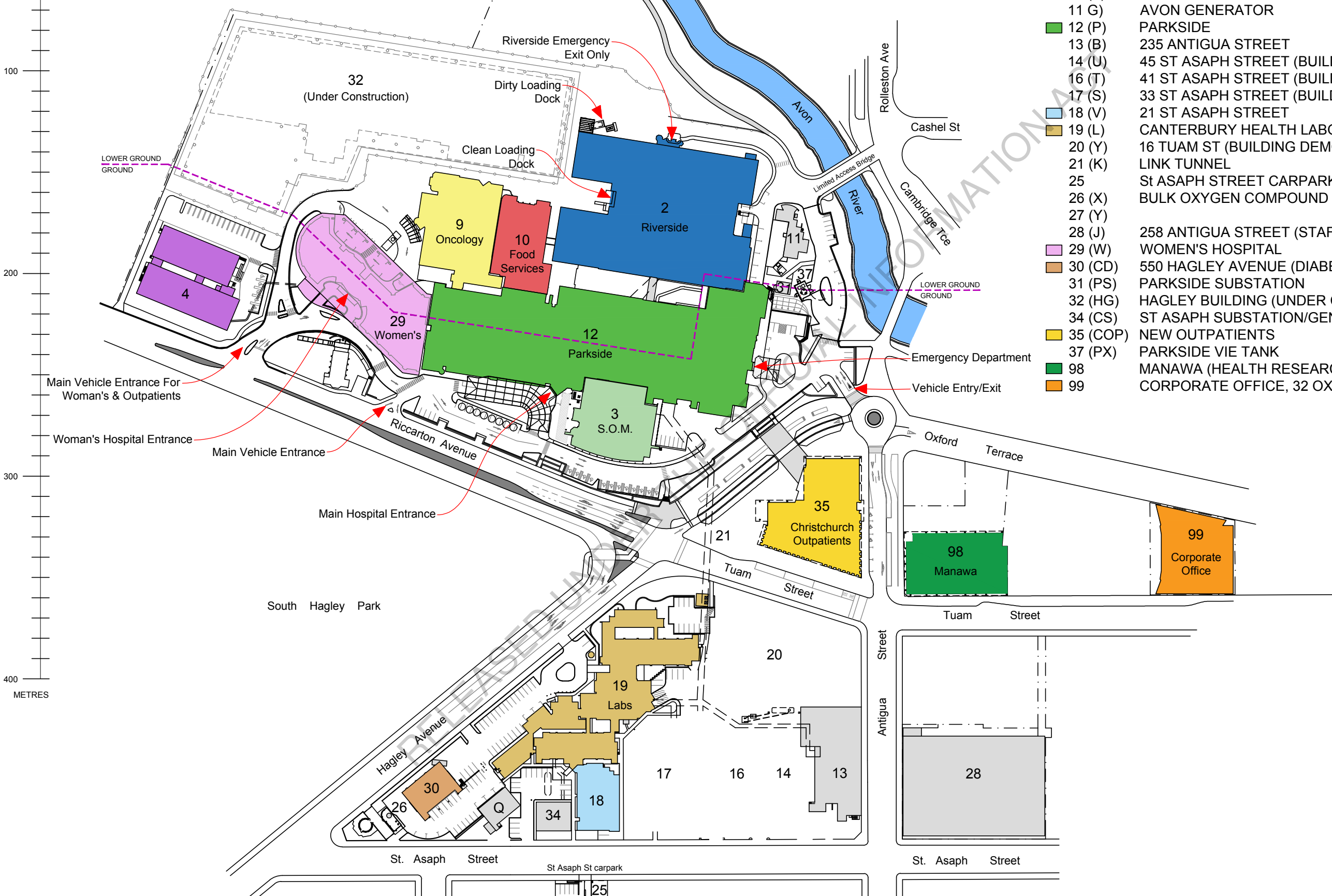
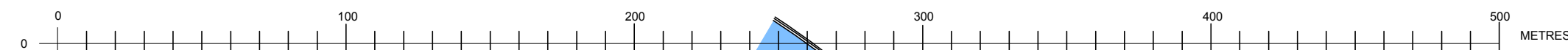




Currently Service Vehicles only  
Ambulance emergency exit  
Staff Mobility Parks







**BUILDING KEY**

- 2 (R) RIVERSIDE
- 3 (M) SCHOOL OF MEDICINE (UNIVERSITY OF OTAGO)
- 4 (CH) OUTPATIENTS
- 9 (O) ONCOLOGY
- 10 (F) FOOD SERVICES
- 11 (G) AVON GENERATOR
- 12 (P) PARKSIDE
- 13 (B) 235 ANTIGUA STREET
- 14 (U) 45 ST ASAPH STREET (BUILDING DEMOLISHED)
- 16 (T) 41 ST ASAPH STREET (BUILDING DEMOLISHED)
- 17 (S) 33 ST ASAPH STREET (BUILDING DEMOLISHED)
- 18 (V) 21 ST ASAPH STREET
- 19 (L) CANTERBURY HEALTH LABORATORIES
- 20 (Y) 16 TUAM ST (BUILDING DEMOLISHED)
- 21 (K) LINK TUNNEL
- 25 St ASAPH STREET CARPARK
- 26 (X) BULK OXYGEN COMPOUND
- 27 (Y)
- 28 (J) 258 ANTIGUA STREET (STAFF CAR PARK)
- 29 (W) WOMEN'S HOSPITAL
- 30 (CD) 550 HAGLEY AVENUE (DIABETES AND HOME DIALYSIS)
- 31 (PS) PARKSIDE SUBSTATION
- 32 (HG) HAGLEY BUILDING (UNDER CONSTRUCTION)
- 34 (CS) ST ASAPH SUBSTATION/GENERATOR BUILDING
- 35 (COP) NEW OUTPATIENTS
- 37 (PX) PARKSIDE VIE TANK
- 98 MANAWA (HEALTH RESEARCH & EDUCATION FACILITY)
- 99 CORPORATE OFFICE, 32 OXFORD TERRACE

**CHRISTCHURCH HOSPITAL  
BUILDING LOCATION PLAN**

AMENDMENT	DRAWN	CHECKED	DATE
MANAWA BUILDING & OXFORD GAP ROADING CHANGES ADDED	JD		29-08-18
CORPORATE OFFICE ADDED TO MAP	JD		26-01-17
PARKSIDE VIE TANK ADDED	JD		01-05-17
ASB OUTLINE ADDED	JD		26-01-18
CLEAN LOADING DOCK MOVED TO RIVERSIDE	JD		21-05-18

**Canterbury**  
District Health Board  
Te Poari Hauora o Waitaha

DESIGNED: \_\_\_\_\_

DRAWN: B.Tudhope

CHECKED: \_\_\_\_\_

DATE: 05-95

DWG No. 01000174

SCALE 1:1000 AT A1

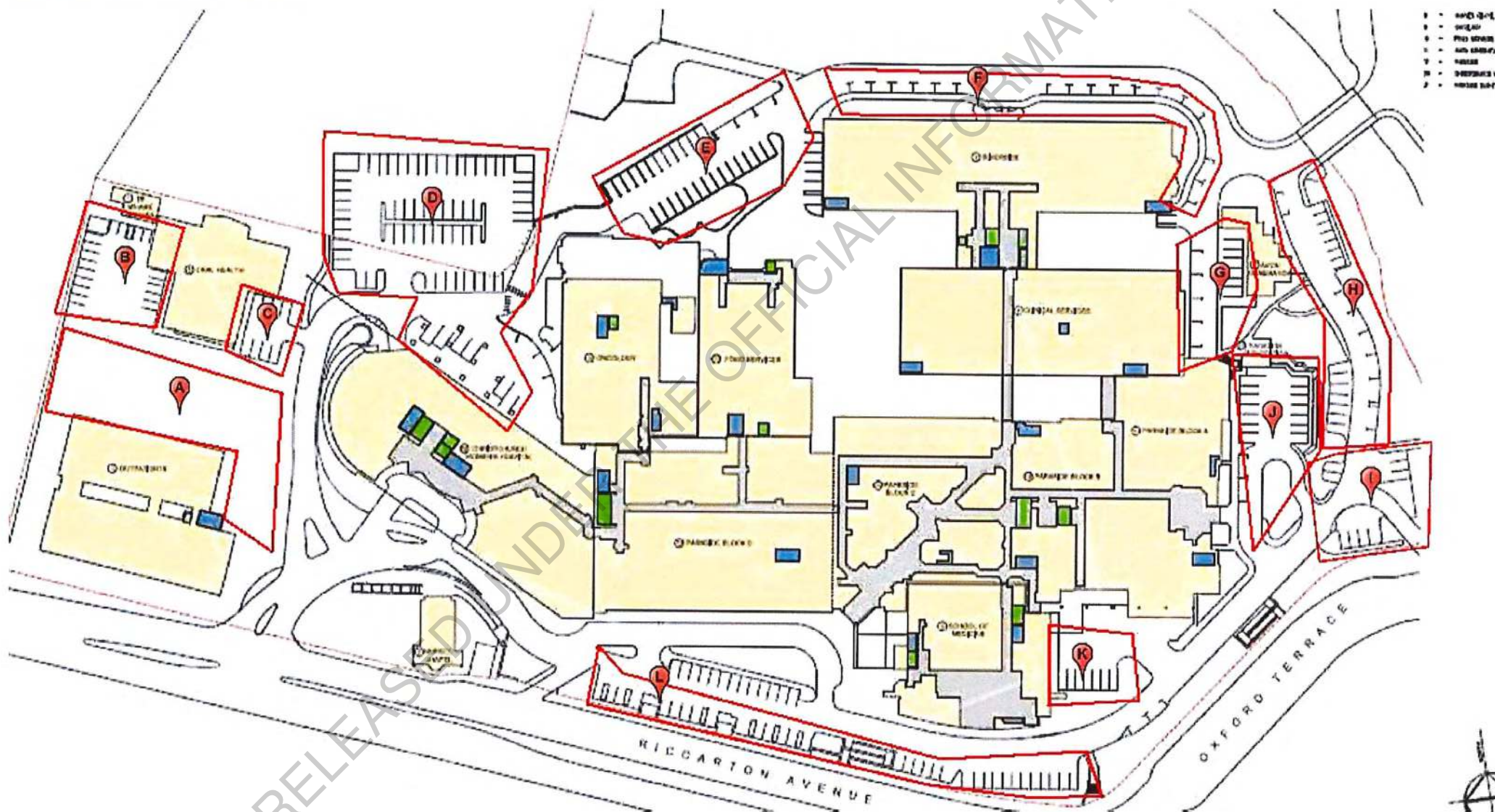
REVISED 29-08-18

XREFED DRAWING(S): 01000173

Maintenance and Engineering Department - Christchurch Hospital

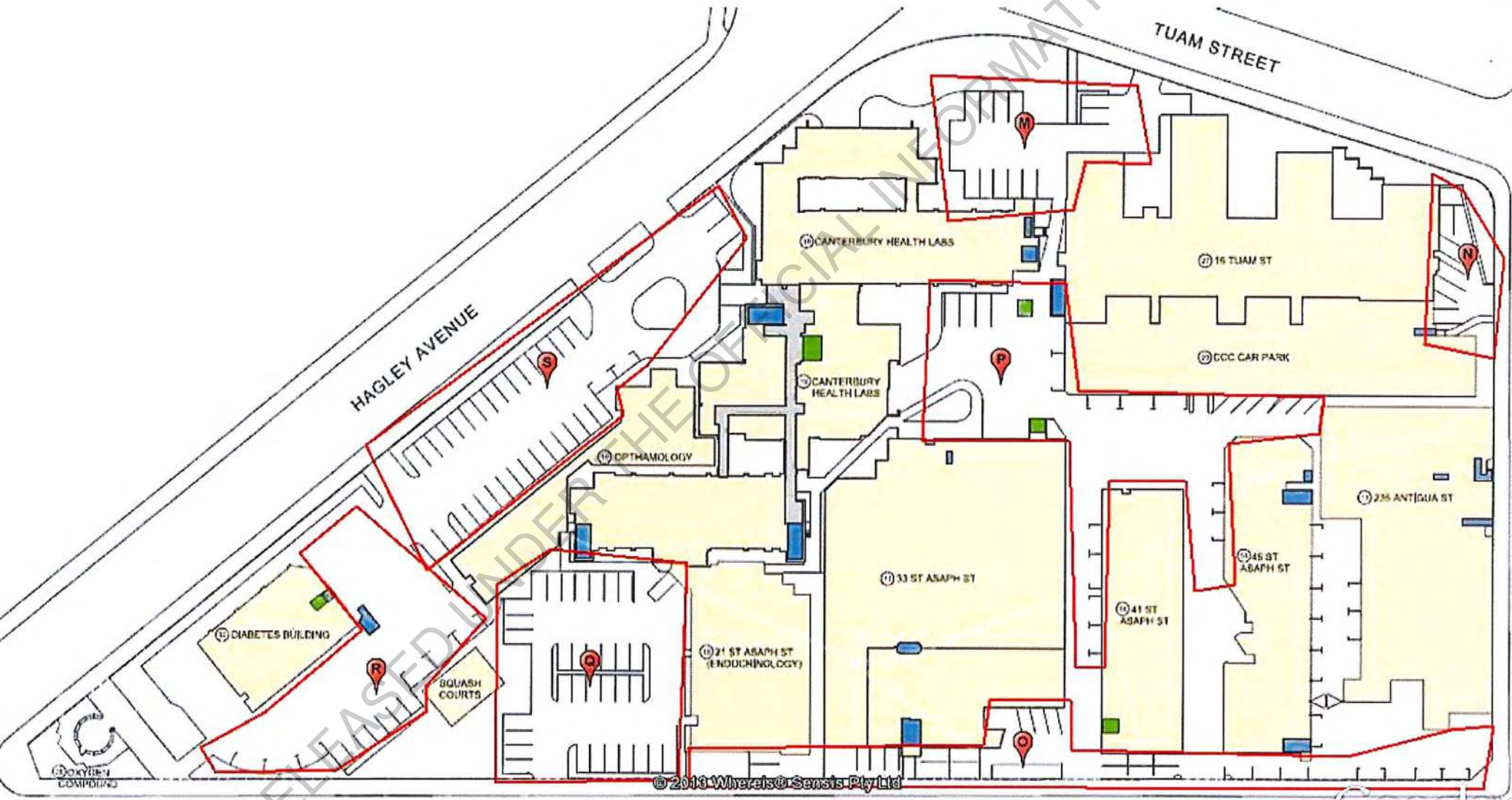


# Northern Campus

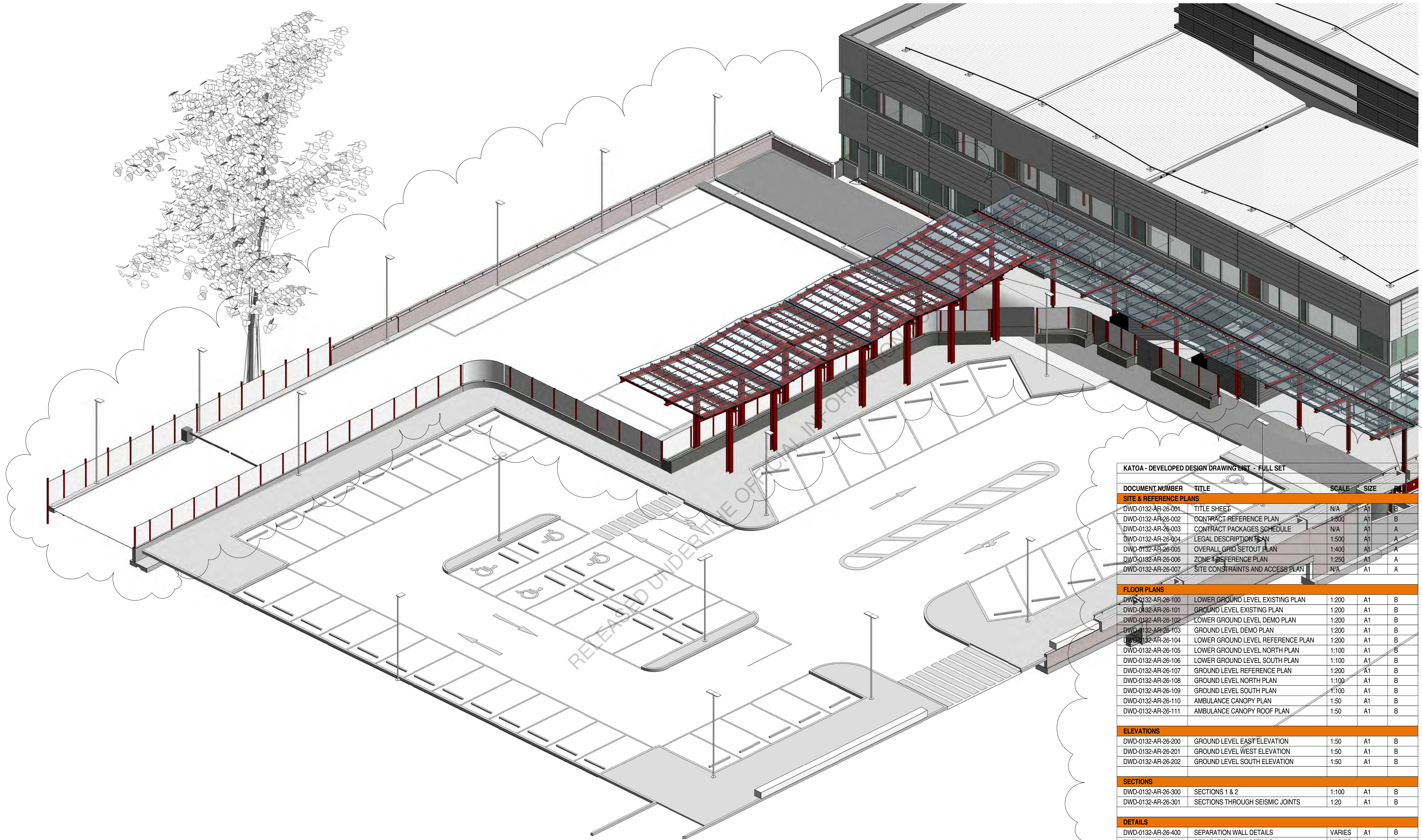




Southern Campus



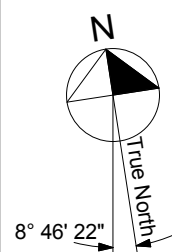




KATO A - DEVELOPED DESIGN DRAWING LIST - FULL SET				
DOCUMENT NUMBER	TITLE	SCALE	SIZE	PLT
SITE & REFERENCE PLANS				
DWD-0132-AR-26-001	TITLE SHEET	N/A	A1	B
DWD-0132-AR-26-002	CONTRACT REFERENCE PLAN	1:500	A1	B
DWD-0132-AR-26-003	CONTRACT PACKAGES SCHEDULE	N/A	A1	A
DWD-0132-AR-26-004	LEGAL DESCRIPTION PLAN	1:500	A1	A
DWD-0132-AR-26-005	OVERALL GRID SETOUT PLAN	1:400	A1	A
DWD-0132-AR-26-006	ZONE 4 REFERENCE PLAN	1:250	A1	A
DWD-0132-AR-26-007	SITE CONSTRAINTS AND ACCESS PLAN	N/A	A1	A
FLOOR PLANS				
DWD-0132-AR-26-100	LOWER GROUND LEVEL EXISTING PLAN	1:200	A1	B
DWD-0132-AR-26-101	GROUND LEVEL EXISTING PLAN	1:200	A1	B
DWD-0132-AR-26-102	LOWER GROUND LEVEL DEMO PLAN	1:200	A1	B
DWD-0132-AR-26-103	GROUND LEVEL DEMO PLAN	1:200	A1	B
DWD-0132-AR-26-104	LOWER GROUND LEVEL REFERENCE PLAN	1:200	A1	B
DWD-0132-AR-26-105	LOWER GROUND LEVEL NORTH PLAN	1:100	A1	B
DWD-0132-AR-26-106	LOWER GROUND LEVEL SOUTH PLAN	1:100	A1	B
DWD-0132-AR-26-107	GROUND LEVEL REFERENCE PLAN	1:200	A1	B
DWD-0132-AR-26-108	GROUND LEVEL NORTH PLAN	1:100	A1	B
DWD-0132-AR-26-109	GROUND LEVEL SOUTH PLAN	1:100	A1	B
DWD-0132-AR-26-110	AMBULANCE CANOPY PLAN	1:50	A1	B
DWD-0132-AR-26-111	AMBULANCE CANOPY ROOF PLAN	1:50	A1	B
ELEVATIONS				
DWD-0132-AR-26-200	GROUND LEVEL EAST ELEVATION	1:50	A1	B
DWD-0132-AR-26-201	GROUND LEVEL WEST ELEVATION	1:50	A1	B
DWD-0132-AR-26-202	GROUND LEVEL SOUTH ELEVATION	1:50	A1	B
SECTIONS				
DWD-0132-AR-26-300	SECTIONS 1 & 2	1:100	A1	B
DWD-0132-AR-26-301	SECTIONS THROUGH SEISMIC JOINTS	1:20	A1	B
DETAILS				
DWD-0132-AR-26-400	SEPARATION WALL DETAILS	VARIES	A1	B
DWD-0132-AR-26-401	SEPARATION WALL DETAILS	VARIES	A1	B
DWD-0132-AR-26-402	ZONE 4 CANOPY DETAILS	VARIES	A1	B
DWD-0132-AR-26-403	SEISMIC JOINT DETAILS	VARIES	A1	B
DWD-0132-AR-26-404	SEISMIC JOINT DETAILS	VARIES	A1	B
DWD-0132-AR-26-405	WHEEL STOP DETAILS	VARIES	A1	B
DWD-0132-AR-26-016	PRECAST CONCRETE PLANTER BOXES	VARIES	A1	1

1 GROUND LEVEL 3D

Revision	Notes
A	18.05.2018
B	25.05.2018



Project Title  
**Christchurch Hospital  
Acute Services Building**  
2 Riccarton Avenue, Christchurch Central,  
Christchurch, 4710  
Do not scale from drawings.  
All data to be verified on site prior to commencement of work.

Site No.  
**01**  
Building No.  
**32**

Sheet Title  
**TITLE SHEET**

Drawn: LC  
Checked: DH  
Original Scale:  
1 : 1 @ A1  
Printed: 25.05.18  
Job No.: 13301-7001

Drawing Number  
**KAT- DWD- 0132- AR-26-001**  
Drawing Status  
**TENDER AND CONSENT**  
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Revision  
**B**





## **Hospital Corner Transport Safety Study**

CDHB

### **Hospital Corner Transport Safety Study**

1 | 4

14 June 2016

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RELEASED UNDER THE OFFICIAL INFORMATION ACT



**Hospital Corner Transport Safety Study**

Project no: IZ054400  
 Document title: Hospital Corner Transport Safety Study  
 Document No.: 1  
 Revision: 4  
 Date: 14 June 2016  
 Client name: CDHB  
 Client no: -  
 Project manager: Thomas Small  
 Author: Sarah Hall  
 File name: I:\ZBIF\Projects\IZ054400\Deliverables (issued)\Reports\Hospital Corner Transport Safety Study\_v12.docx

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**Document history and status**

Revision	Date	Description	By	Review	Approved
0	26/1/16	Pre CERA workshop draft	SH	TS, AL	TS
1	27/1/16	Client comments addressed	SH	TS	TS
2	11/4/16	Post-workshop issue	GR	HP	TS
3	26/4/16	Final issue	GR	TS	TS
4	14/6/16	Updated hospital campus user numbers	GR	RD	RD

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## Executive Summary

Jacobs was commissioned to study of the transport conflicts and potential mitigation options in the Hospital Corner area for the Canterbury District Health Board (CDHB). Site data, surveys and observations were collected after the Hospital Corner Early Works (termed 'TP1a') were implemented in late 2014-early 2015. The following and final works at the Hospital Corner Stage 2 Final Works (termed 'TP1b') are still under design by Christchurch City Council (CCC), although the planning, traffic modelling, concept and scheme design, safety audits and public consultation have been completed. The TP1b measures proposed under CCC resolutions were developed with the best available knowledge, with acknowledgement that there was potential for 'tweaks', further refinement or additional measures to be incorporated.

The purpose of the assessment was to identify existing conflicts between pedestrians, cyclists and vehicles, and propose mitigation measures. A workshop was held with stakeholders to present the conflict diagrams and findings, discuss future developments planned in the area, and identify mitigation measures already planned under TP1b and further potential mitigation measures. These workshop outcomes informed further mitigation measures, outlined to include the conflict type, responsible agency, priority and measure. It is expected that CDHB, CERA and CCC will work through these recommendations with a view to incorporating them into campus planning and the TP1B and Oxford Terrace designs.

Potential 'tweaks' to the TP1b measures (further refinement or additional measures) include:

- Specific **threshold treatments** for the western gateway into the Central City
- **Super Stop bus queue space, footpath width and passenger queuing space**, with reinforcement of the crossings on Tuam Street to discourage midblock J-walking
- **Antigua Street** between Oxford Terrace and Tuam Street to be a **10km/h shared zone** similar to Oxford Terrace. This is expected to be heavily used for loading and short term parking.
- Use of pavement surfacing to reinforce **shared zones and raised pedestrian crossings of Oxford Terrace** and Antigua Street, with cyclists to give way to pedestrians (height, colour, texture, delineation)
- Implementation of **automated warning systems for car park vehicle crossings** and reinforcement of requirement to give way to path users
- **Refinements to the TP1a Early Works** pedestrian and cycle crossings at Riccarton Avenue and Hagley Avenue with respect to call buttons, delineation of the refuge area and phasing configuration

The recommendations are to integrate any further mitigation measures into TP1b, as appropriate, and also to:

- Clarify the **rain gardens planned along Tuam Street** (Antigua to Hagley) and Antigua (Tuam to Oxford) are of a sufficient height and obstacle to discourage J-walking
- Identify **treatments to reinforce western gateway, shared zones and pedestrian crossing forms** (height, colour, texture, delineation)
- Consider capacity, location and form of **cycle parking** required to meet demand, both staff and public. A recent commuter survey suggests demand may be up to 1560 cycle parks for staff alone, compared with 470 existing and 240 potential additional parks identified (assumed for staff and public).
- Confirm **car parking building** setbacks for visibility to adjacent paths at vehicle crossings, and trial/identify potential automated warning systems.
- Confirm the north-south **laneway** is not supported by CDHB and consider more appropriate **alternatives** within the block
- Identify **wayfinding** needs and solutions, including staff travel planning and safety education/awareness
- Reassess desire lines and intermodal conflicts upon detailed design of the **Metro Sports facility**



## Important note about your report

The sole purpose of this report and the associated services performed by Jacobs is to *provide a study of the transport conflicts and potential mitigation options in the Hospital Corner area* in accordance with the scope of services set out in the contract between Jacobs and Canterbury District Health Board (the Client). That scope of services, as described in this file note, was developed with the Client.

In preparing this file note, has relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the file note, has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this file note may change.

Jacobs derived the data in this file note from information sourced from the Client (if any) and/or available in the public domain at the time or times outlined in this file note. The passage of time, manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and re-evaluation of the data, findings, observations and conclusions expressed in this file note. Jacobs has prepared this file note in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this file note. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this file note, to the extent permitted by law.

This file note should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by Jacobs for use of any part of this file note in any other context.

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## 1. Introduction

The Hospital Corner Area in Christchurch is located in the south-west of Christchurch's Central City with Hagley Park to the west. Christchurch Hospital is located on the northern corner of Riccarton Avenue and Oxford Terrace, with various related buildings located or proposed on adjacent blocks bounded by Oxford Terrace, Tuam Street, Antigua Street, St Asaph Street and Hagley Avenue.

At present and going forward, Hospital Corner contains several multi-modal transport conflicts:

- Hagley Avenue, Riccarton Avenue, St Asaph Street, Antigua Street and Tuam Street all have high flows during peak traffic times, and these are expected to generally increase as the Central City is rebuilt and Christchurch Hospital develops to meet demand.
- A pair of bus Super Stop is proposed on Tuam Street between Antigua Street and Hagley Avenue, which is expected to increase pedestrian movements in this area (for example by 2041, it is expected there will be a threefold increase in public transport use<sup>1</sup>)
- Hagley Avenue, Oxford Terrace, St Asaph Street, Tuam Street (east of Antigua Street) and Antigua Street are part of the cycle priority routes for CERA's Accessible City plan and are currently highly frequented by cyclists at peak traffic times
- There are numerous pedestrian movements associated with Christchurch Hospital and related buildings
- There are numerous off street car parks in the area, both pre-existing and planned

A number of developments in the surrounding area add cumulative transport conflicts to those recognised above, including:

- The hospital redevelopment was identified as a key part of the Health Precinct, which include the Acute Services building to open in 2018 (to the north of the existing main building, with 400 beds, a new Emergency Department, expanded Intensive Care Unit, new radiology department, and a helipad)<sup>2</sup>
- The Outpatients Building (OPD) that is due for completion in 2017, which will be five storey building that includes various medical services, and no additional car parking is planned to be provided<sup>3</sup>
- Developments along Oxford Terrace associated with the Health Precinct, that includes the future Health Research Education facility (HREF) building on the east of Antigua Street and the CDHB corporate offices on Tuam Street east of Antigua
- The Metro Sports Centre that is due to be open in March 2020<sup>4</sup>, that includes various aquatic and indoor sport facilities for public and competitive use, seating for up to 2500 spectators, gym, administration and café, and 500 car parking spaces<sup>5</sup>
- The Hagley Oval development (completed)
- Potential additional off street car parking facilities

<sup>1</sup> CCDU, Inner city travel and access improvements, May 2015. Retrieved online April 2016. <https://ccdu.govt.nz/sites/default/files/page-4-from-future-christchurch-update-20150507.pdf>

<sup>2</sup> CDHB, Christchurch Hospital A Record Breaking Build, December 2015. Retrieved online April 2016. <http://www.cdhb.health.nz/What-We-Do/Projects-Initiatives/Facilities-Development-Project/Documents/CDHB-Chch%20hospital%20advent-The%20press-400x262mm-Proof%206%20%281%29.pdf>

<sup>3</sup> CDHB, It's all happening, "Outpatients on the go", Issue 8, Spring 2015. Retrieved online April 2016. <https://www.cdhb.health.nz/What-We-Do/Projects-Initiatives/Facilities-Development-Project/Documents/Its%20all%20happening%20-%20newsletter%20FINAL%20web.pdf>

<sup>4</sup> Future Christchurch Greater Canterbury, Metro Sports Facility. Retrieved online April 2016 <http://www.futurechristchurch.co.nz/central-city/metro-sports-facility>

<sup>5</sup> CCC, The Rebuild, Metro Sports. Retrieved online April 2016. <http://www.ccc.govt.nz/the-rebuild/sports-and-leisure/metro-sports/>



## 1.1 Background

### 1.1.1 Hospital Corner Early Works TP1a

In May 2014 the Christchurch City Council (CCC; the Council) approved the revised An Accessible City First Phase Transport Projects programme. The Council subsequently approved the scheme designs for various Transport Projects (TP), including 'TP1a Hospital Corner Stage 1 early works'.<sup>6</sup> The TP1a early works were implemented in late 2014-early 2015 to support the opening of the Bus Interchange and the current development of Te Papa Ōtākaro / Avon River Precinct (ARP).<sup>6</sup> These early works were driven by pedestrian amenity and safety concerns.

The CCC plans for the Hospital Corner early works are shown in **Appendix A**. As a summary, the TP1a works included:<sup>7</sup>

- Tuam Street converted from two-way to one-way between Hospital Corner and Durham Street to provide access to the new Bus Interchange
- Tuam Street and the connecting streets part of AAC 30 km/h speed zone
- Oxford Terrace between Hospital Corner and Antigua Street restricted to hospital and business vehicles, taxis, cyclists and pedestrians
- St Asaph Street extended as a one-way street all the way to Hagley Park.
- Hagley Avenue has two lanes heading north (towards Hospital Corner) between St Asaph Street and Riccarton Avenue. Southbound traffic uses Hagley Avenue, which will remain two-way between Hospital Corner and Selwyn Street
- Removal of 51 on-street parking spaces to allow for the ARP on Oxford Terrace and to accommodate general traffic, buses, cyclists and pedestrians within the existing 20 metre road width

### 1.1.2 Hospital Corner Final Works TP1b

The second and final stage of works is 'TP1b - Hospital Corner Stage 2 (final layout)', which includes sections of Hagley Avenue, St Asaph Street, Tuam Street and Antigua Street. Planning, consultation, traffic modelling and concept and scheme design safety audits have been undertaken for the Stage 2 Final Works at Hospital Corner.<sup>6</sup> The CCC plans for the Hospital Corner early works are shown in **Appendix B**.

As key matters to conform to Central City Recovery Plan and AAC, TP1b options were considered with regard to:<sup>8</sup>

- Conformity with / further enhancement of TP1a works
- Tuam Street becomes one-way distributor street eastbound between Hagley Avenue and Durham Street (South)
- Bus routing around Hospital Corner as shown in AAC road user hierarchy
- Creation of a bus super stop on Tuam Street between Hagley Avenue and Antigua Street
- Tripling of public transport use by 2041

<sup>6</sup> CCC Infrastructure, Transport and Environment (ITE) Committee Meeting Agenda Notes for 3 September 2015. Retrieved online April 2016. <http://www.ccc.govt.nz/assets/Documents/Transport/Improvements-planning/ITECommittee3September2015FULLOpenAgenda.pdf>

<sup>7</sup> CCC Resources document dated 3 September 2015. Retrieved online April 2016.

<http://resources.ccc.govt.nz/files/cityleisure/projectstoimprovechristchurch/transport/aac/aachospitalcornerearlyworks.pdf>

<sup>8</sup> CCC Infrastructure, Transport and Environment (ITE) Committee Meeting Agenda Notes for 16 April 2015. Retrieved online April 2016. <http://resources.ccc.govt.nz/files/TheCouncil/newsmedia/mediareleases/2015/ACC1Council16April2015FULLOpenAgenda.pdf>



- Establishment of key cycle routes
- Provide efficient and reliable main distributor routes, with posted speed limit of 30 km/h in the central zone including provision for heavy commercial use. Introduce low speed (30 km/h zone ) along Tuam, Antigua and Montreal Streets (Hagley Avenue and St Asaph Streets will remain 50 km/h)
- Significantly improve the amenity and streetscape quality through intensification of street tree planting and other measures
- Ensure continued bus operations within and on the routes through the project area

In summary, TP1b "includes finalising works associated with the new eastbound one-way layout on Tuam Street, from Oxford Terrace to just east of Durham Street South, and the complementary one-way westbound St Asaph Street route." While "this project does propose to remove a number of existing street trees and on-street car parking spaces it also proposes significant new landscaping, enhanced pedestrian and active travel infrastructure. It will also enable the new bus super stop on a widened section of Tuam Street between Hagley Avenue and Antigua Street." "The project will also create new and improved cycle and pedestrian facilities on those local streets including Tuam, St Asaph and Antigua Streets, along with Hagley Avenue and the Tuam Street intersections with Montreal and Durham Streets."<sup>9</sup>

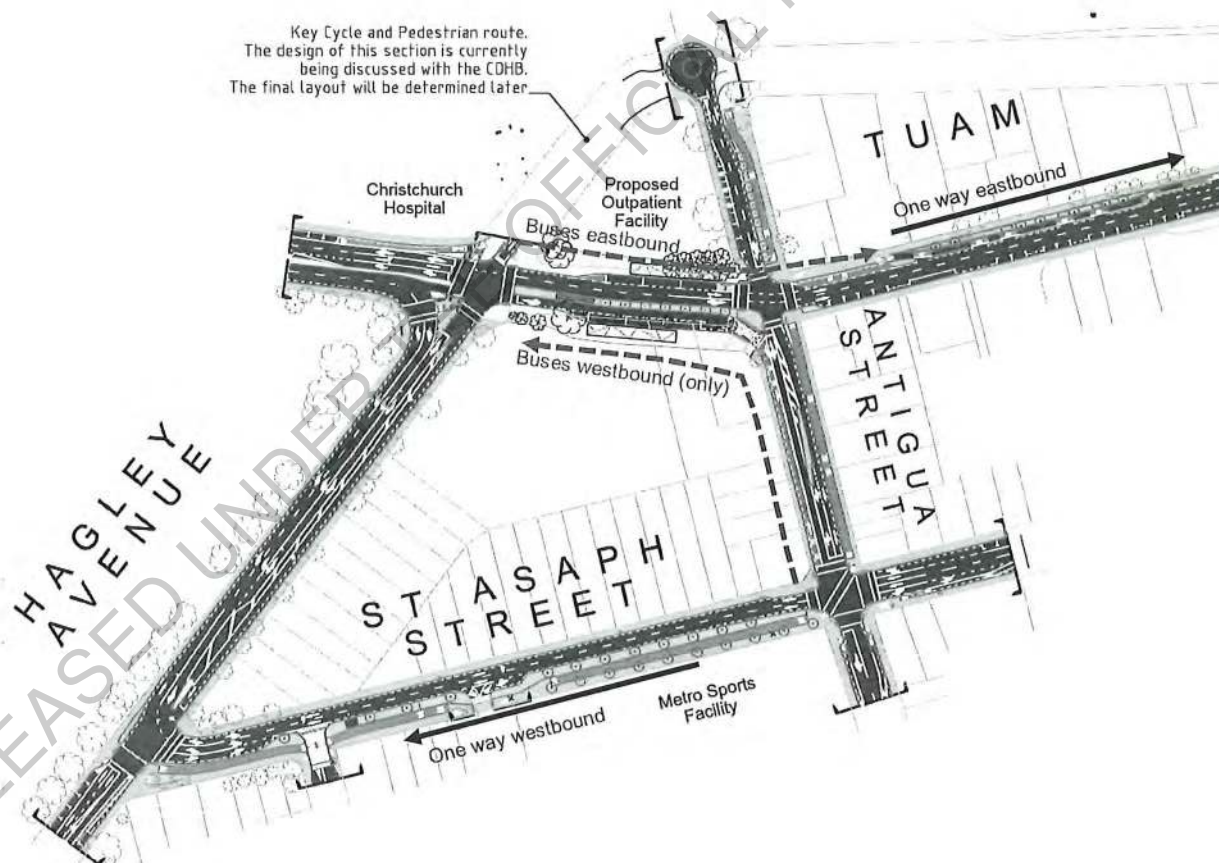


Figure 1-1: Planned changes to Hospital Corner under TP1b - Hospital Corner Stage 2 (final layout)<sup>6</sup>

<sup>9</sup> CCC Infrastructure, Transport and Environment (ITE) Committee Meeting Agenda Notes for 2 April 2015. Retrieved online April 2016, <http://www.ccc.govt.nz/assets/Documents/Transport/Improvements-planning/AACProjectsITECommittee2April2015OPENAgenda1.pdf>

## 1.2 Study Area

Jacobs have been commissioned to assess the transport safety in the Hospital Corner area, as depicted in Figure 1-2, with a particular focus on pedestrian movements. The Figure 1-2 also shows the changes planned for the final stage of works is TP1b - Hospital Corner Stage 2 (final layout).

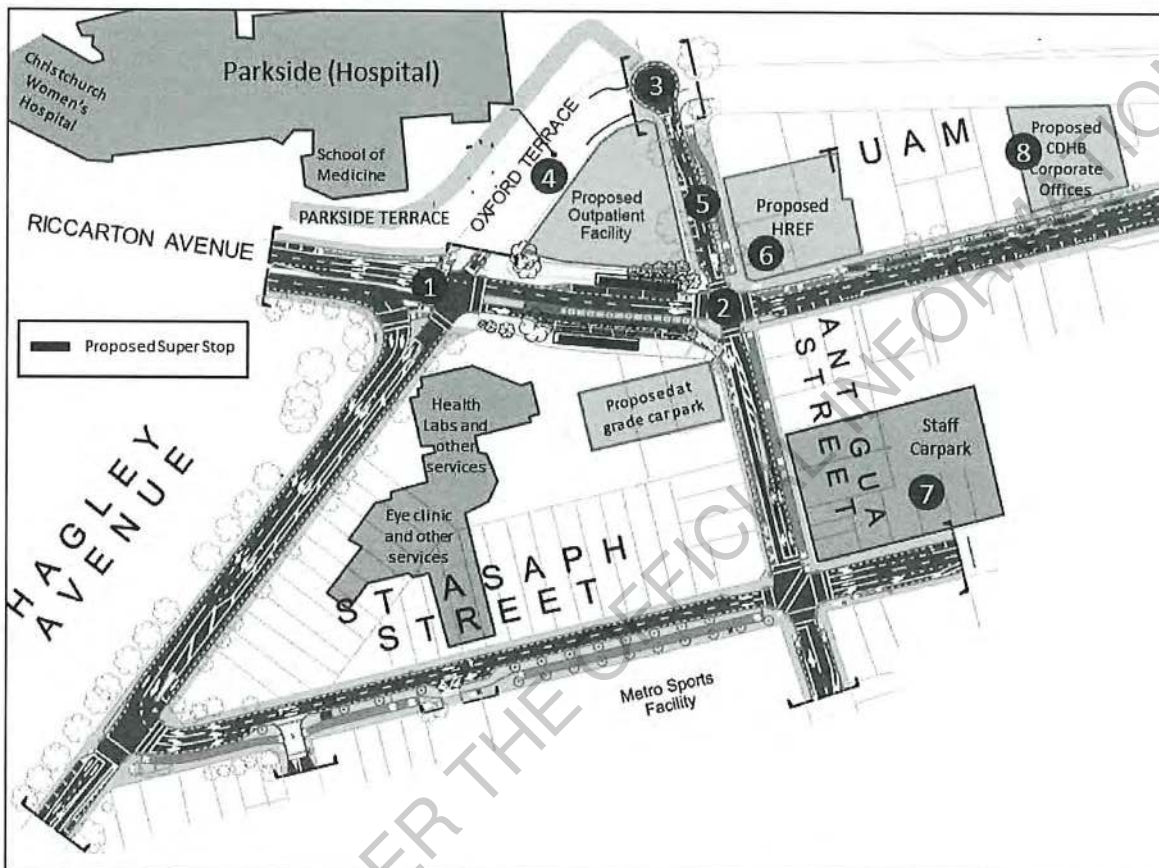


Figure 1-2: Study area

There are eight specific localities of interest (labelled on Figure 1-2):

- 1) Riccarton Avenue / Hagley Avenue / Tuam Street / Oxford Terrace intersection (or Hospital Corner intersection) – pedestrians, cyclists (An Accessible City cycle route) and vehicles. CDHB staff and patients moving between the laboratory buildings and Parkside Terrace, and the OPD. Bus Super Stop users through Oxford Terrace, via hospital and OPD buildings, and between the Super Stop (bus facilities) and Metro Sports Centre.
- 2) Tuam Street / Antigua Street intersection – pedestrians, cyclists and vehicles. Car park users as well as issues listed in item 1.
- 3) Oxford Terrace / Antigua Street / Antigua Street footbridge junction / hospital exit / entrance – as per item 1 above.
- 4) Oxford Terrace – between OPD and hospital campus.
- 5) Antigua Street – access to OPD from Antigua St.
- 6) Future Health Research Education facility (HREF) building on east of Antigua Street – hospital staff and students will frequently cross between HREF, hospital and OPD.
- 7) Staff car park – Antigua Street to Parkside Terrace and OPD.



8) CDHB Corporate office at Oxford Terrace – staff movement between Tuam Street, hospital and OPD.

This report builds on the TP1b, TP3 and TP4 Design Road Safety Audit prepared for CERA / CCC in April 2015.

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## 2. Problem Qualification

The problem is outlined with regard to the site, the users and their desire lines, the surrounding land use and future developments. Christchurch Hospital campus has maximum approximately 2,800 staff at the main campus (includes the hospital building and additional buildings but excludes the School of Medicine) and 350 staff at the Christchurch Laboratories.<sup>10</sup> These buildings are shown in Figure 2-1.

The hospital operates 660 general beds and 125 beds at Christchurch Women's Hospital. The campus attracts approximately 595,000 patients per year (93,000 inpatients, 410,000 outpatients and 92,000 Emergency Department visits). These outpatients visits include the temporary Hagley OPD, Eyes, Diabetes, Endoscopy, and Dental services. In addition, there are 1.5 supporters per outpatient visiting the hospital, and a greater proportion of supporters for inpatients from anecdotal evidence.

All staff, patients and support people must either drive and park, walk, cycle or catch a bus/taxi to/from the Hospital Campus, adding a significant amount of traffic to the across all modes but particularly walking, because all trips by other modes require some walking in the hospital campus.

<sup>10</sup> CDHB, Christchurch Hospital. Data provided directly 3 June 2016 via Colin Messent. This data was based on allowing for some growth over the past year and is based on 243 days open per year (260 work days per year less 10 public holidays and less 7 days over Christmas/New Year).



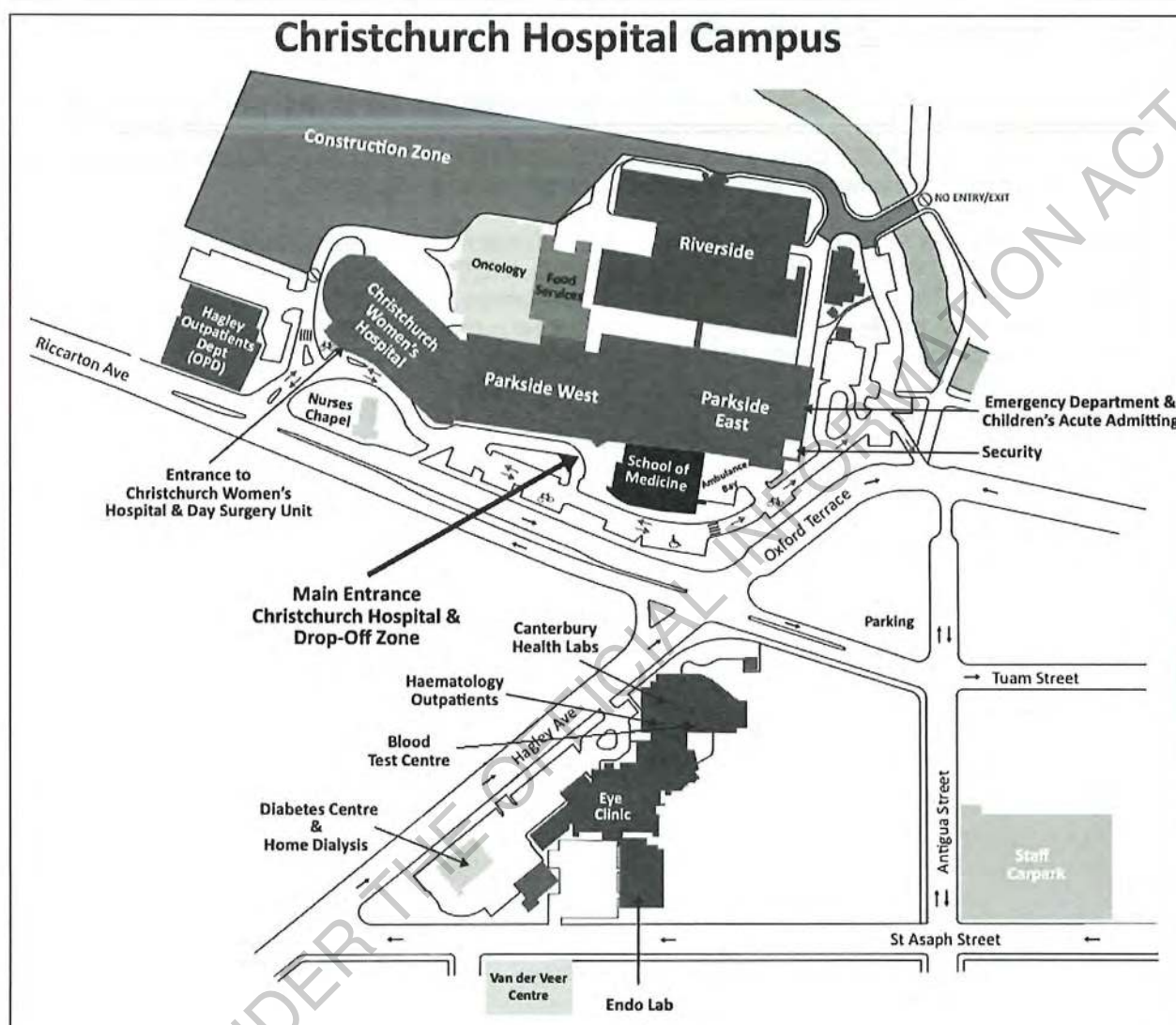


Figure 2-1: Hospital Campus

The hospital campus has five streets crossing through it: Hagley Avenue, Riccarton Avenue, Oxford Terrace, Tuam Street and Antigua Street. Hospital staff can become familiar with the hospital campus, and may show less caution when crossing roads and car park accesses in the area. Patients are generally less familiar with the campus and surrounding streets, and rely more heavily on the urban form, signage and access to and from the hospital facilities to navigate their access. Given the strategic location of the hospital, the public use each of these streets as a means to get to their destinations. Potentially there could be a high number of people crossing the streets with physical or mental disabilities. To this extent there are broadly three categories of users that each has their own defined problems. These have been summarised as follows:

Table 2-1: General transport users and their extent of problems

Transport Users	Objectives	Extent of problems
Hospital Staff	Both car and cycle parks surrounding the hospital requiring vehicle or cycle access and pedestrian access to their	Familiar with surrounds and do not always follow the transport plans and road code rules, such as those applying to signalised

	employment source.	crossings.
Hospital patients and support people	Car parks surrounding the hospital, and use of taxi and public transport to gain access to the facilities.	Generally, unfamiliar with surrounds and rely on the urban form and operation of efficient roads and crossings. Patients can be in a stressed condition or have mental or physical disabilities, which does not assist with safe transport access to, or from the hospital.
Public	<p>Strong desire lines through the hospital campus are west-east or east-west bound for vehicular traffic.</p> <p>Strong desire lines through the hospital campus for pedestrians and cyclists, especially for north - south and south - north, using Antiqua Street bridge.</p>	Often seek the most efficient routes to transport through the hospital campus, which can conflict with hospital destinations and intentions. Volumes of pedestrians and cyclist in peak commute times can compound the conflicts.

Antigua Street, Oxford Terrace, Tuam Street east of Antigua Street and park edges along Hagley and Riccarton Avenue provide cycle infrastructure and those roads are popular for cyclists commuting through the area during the AM and PM peaks.

Hagley College has approximately 2,300 students and is located west of the hospital campus along Hagley Avenue. Its students walk through the hospital campus before and after school. They are often distracted talking in groups and show little risk aversion while crossing roads.

The bus stops on Tuam Street between Hagley Avenue and Antigua Street attract and release additional pedestrians to the hospital campus, both hospital staff, patients and support people and Hagley College students as well as bus users boarding / alighting at the stops and travelling through the hospital campus for other purposes.

Developments in the surrounding area add cumulative transport conflicts to those recognised above:

- The Outpatients Building (OPD) due for completion in 2017 adds another node for hospital related pedestrian trips. It is surrounded by roads, so all pedestrians will need to cross a road to reach the building. In addition it will attract more patients, support people and staff, who each will reach the area by driving and parking, walking, cycling or catching the bus and adding more traffic to that mode.
- The Metro Sports Centre (to be developed) and Hagley Oval development (completed) are located outside study area but increase traffic flows for all modes travelling through the area.
- The HREF building and the CDHB corporate offices will be located on the corner of Tuam and Antigua Street and on Oxford Terrace to the east respectively (items 6 and 8 in Figure 1-2 on page 6). These two buildings will add additional nodes for hospital related pedestrian trips and staff and students will increase traffic in all modes travelling to the area.
- The bus stops on Tuam Street will be converted to Super Stops as part of the Accessible City plan, attracting greater numbers of pedestrian bus users to the area.

In summary, the competing transport demands within the hospital campus area are projected to increase, because the CBD is re-populating both with residents and workers. Additionally the planned Super Stop on Tuam Street, OPD and HREF buildings and their operations will increase local transport movements across all modes in the hospital campus area.

A crash history can be provided for the area. It is not documented in this report because the changes in both transport layout and land use in the area have been major over the past 5 years, and the crash history would provide false certainty about the current safety levels of the area.



### 3. Conflict Assessment

#### 3.1 Methodology

- 1) A site visit was conducted on Monday 30<sup>th</sup> November 2015 between 2-4pm in order to observe transport patterns. The timing of this site visit coincided with a hospital shift change and the first hour of the afternoon visiting period (3-8pm).
- 2) A map of desire lines for each transport mode and movement identified in the eight key locations of interest was developed with reference to observations from the site visit.
- 3) Multi-modal conflict areas, noted as "high risks" were identified on the map from step 2.
- 4) Land use and traffic flow data was analysed to add a quantitative aspect to the conflict areas.
- 5) Mitigation options were developed with reference to the conflict map.

#### 3.2 Desire Lines

Figure 3-1 shows the initial desire line map drawn up after the site visit on Monday 30<sup>th</sup> November. From this map, conflict zones were identified and highlighted. This map also aided in the identification of land use and flows to quantify.

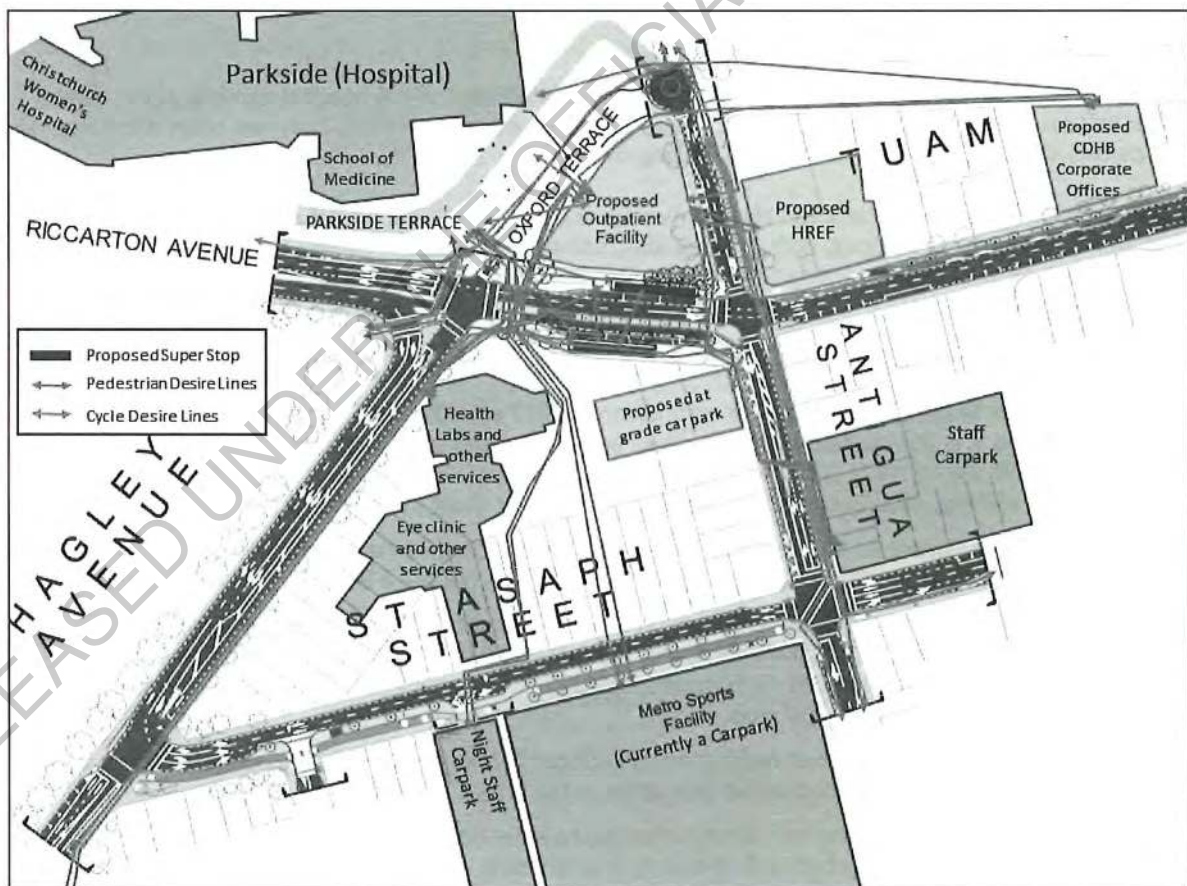


Figure 3-1: Desire lines and conflict zones in the study area

### 3.3 Data

Table 3-1 contains land use and flow data relevant to the study area as well as a summary of the key findings from the data source.

Table 3-1: Land use and flow data

Source	Details	Key findings
Christchurch Assignment and Simulation Traffic (CAST) model	Vehicle flow volumes during AM and PM peaks projected for 2031. Provides a "future proof" indication of vehicle demand in the area.	<p>For each intersection, 2031 flows through the intersection during peak times are projected to be:</p> <ul style="list-style-type: none"> <li>Hagley / Riccarton / Oxford / Tuam = 2700 vehicles per hour</li> <li>Antigua / Tuam = 1700 vehicles per hour</li> <li>Antigua / St Asaph = 2300 vehicles per hour</li> </ul> <p>The AM peak is 8-9am and the PM peak is 5:30-6:30pm</p>
Current OPD operating statistics	Spreadsheet of the Average Number of Attendances at OPD between December 2013 and November 2015.	Peak OPD attendance time is 9-10am with 256 attendance average.
OPD building operating statistics assumptions	Email from Colin Messent stating the new OPD will typically have 210,000 outpatient visits per annum. The existing outpatient clinics within Christchurch Hospital will have 200,000 outpatient visits per annum. <sup>10</sup>	<p>There will be approximately 1,700 outpatients visits per day.</p> <p>This includes 870 outpatient visits per day to the new OPD and 830 outpatient visits to existing clinics within Christchurch Hospital.</p>
Count of Personnel Rostered March 2015	Spreadsheet of Personnel Rostered in March 2015 for all services with the exception of the School of Medicine and Christchurch Laboratories Ltd staff.	The peak rostered hour is 2:15-3:15pm where rostered numbers can reach up to 2,761 people, with a daytime (7am-7pm) average weekday (Tuesday, Wednesday, Thursday) rostered average of 1962 people.



Source	Details	Key findings																																								
Shift time data	Spreadsheet of volumes of staff starting and finishing their shifts per half hour over the 10 <sup>th</sup> and 19 <sup>th</sup> Nov 2015. Excludes Christchurch Laboratories Ltd staff.	Largest peak of starters / finishers is between 6:30-9:30AM with approximately 2,800 movements, specifically 8-8:30am, with approximately 1,300 movements.																																								
Commuter travel survey	<p>Commuter travel mode survey for Christchurch Campus staff in early 2016; 2094 responses (44% response rate). Questions to staff included: their usual mode for travel to work (usual) and how else (sometimes), and how likely they were to consider cycling/carpooling/walking/taking a bus.</p> <p>Survey suggested the campus had staff cycling population of 1556, with 1105 (21%) cycling regularly.</p> <p>At Hillmorton Campus, monitoring of bike parks suggested an increase in the numbers of cyclists by 41% (indicates another 640 cyclists at the Christchurch Campus from those who usually and sometimes cycle).</p> <p>The survey had a notional margin of error of around 2 %.<sup>11</sup></p>	<p>Scaling for 5200 total staff population:</p> <table><thead><tr><th>Mode</th><th>Usual</th><th>Sometimes</th><th>Total</th><th>Usual (%)</th></tr></thead><tbody><tr><td>Car alone</td><td>3151</td><td>-</td><td>-</td><td>61%</td></tr><tr><td>Bike</td><td>1105</td><td>451</td><td>1556</td><td>21%</td></tr><tr><td>Carpool</td><td>310</td><td>407</td><td>717</td><td>6%</td></tr><tr><td>Bus</td><td>286</td><td>569</td><td>854</td><td>6%</td></tr><tr><td>Walk</td><td>221</td><td>337</td><td>558</td><td>4%</td></tr><tr><td>Other</td><td>127</td><td>-</td><td>-</td><td>2%</td></tr><tr><td>Total</td><td></td><td></td><td>5200</td><td></td></tr></tbody></table> <p>This suggests the total current demand for cycle parking may be up to 1,560.</p>	Mode	Usual	Sometimes	Total	Usual (%)	Car alone	3151	-	-	61%	Bike	1105	451	1556	21%	Carpool	310	407	717	6%	Bus	286	569	854	6%	Walk	221	337	558	4%	Other	127	-	-	2%	Total			5200	
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<sup>11</sup> CDHB Christchurch Campus Commuter travel survey results as summarised by James Young, Environmental Sustainability Adviser, Canterbury District Health Board, April 2016. Survey assumed undertaken early 2016.

Source	Details	Key findings
Transport mode survey	Transport mode survey for the Canterbury Health Labs; 96 responses.	<p>Mode split for staff at Canterbury Health Labs is below:</p> <ul style="list-style-type: none"> <li>• Car: 49%</li> <li>• Bus: 9%</li> <li>• Carpool: 9%</li> <li>• Cycle: 23%</li> <li>• Walk: 9%</li> </ul> <p>This indicates a relatively high cycle and walking mode share, where cycle parks were noted in the survey as over capacity.</p>
Staff parking data	A record of timestamps for staff accessing the multi-storey staff car park at the corner of Antigua and St Asaph Street and the vacant former brewery site (new Metro Sports site) car park opposite, for one week between Monday 6am 16 <sup>th</sup> to Monday 6am 23 <sup>rd</sup> November 2015.	A total of 4,600 staff car parking movements were recorded in the week, 72% of which were using the car park at the corner of Antigua and St Asaph Street. This would represent only those staff that drive and also use the hospital staff off-street car parking.
Cycle counts 2014	Cycle counts taken between 7-9am and 2-6pm in March 2014, before the Antigua Street bridge was implemented.	<p>Oxford Terrace / Antigua Street intersection cycle counts:</p> <ul style="list-style-type: none"> <li>• 51 in the AM peak (7-8am)</li> <li>• 71 in the PM peak (5-6pm)</li> </ul> <p>Tuam / Hagley / Riccarton Avenue intersection cycle counts:</p> <ul style="list-style-type: none"> <li>• 110 in the AM peak (7-8am)</li> <li>• 283 in the PM peak (5-6pm)</li> </ul>



Source	Details	Key findings
Cycle counts 2015	Cycle counts on the Antigua Street bridge taken between 7-9am in September 2015.	Two hour total of 271 cyclists. Peak hour of 7.30-8.30am has total of 179 cyclists. Most cyclists on bridge will pass along Oxford Terrace west of the intersection or Antigua Street.
Cycle parking info	Currently there are 320 secure cycle parks and 150 unsecured; these are full and in addition bikes are attached to railings, lampposts, trees and so forth in the area.  60 new cycle parks are to be installed Parkside, and potentially a further 60 after that dependent on the Mortuary compound staying. There is also potential for 120 more parks if old racks are re-purposed.	Currently there are 470 cycle parks (assumed for staff and public use). This provision does not meet demand.  There is the potential for an additional 240 cycle parks in the future. This brings the best case cycle park future scenario to 710 parks.
The Hospital Park and Ride Shuttle Data	Frequency and new route for the public park and ride shuttle which services the Deans Avenue Car Park.	Route: The shuttle leaves the Deans Avenue car park and heads down Riccarton Avenue to the hospital. Passengers are dropped off near the main entrance to the hospital off Parkside Terrace. The shuttle then returns to the car park via Antigua Street, St Asaph Street, Hagley Avenue and then Riccarton Avenue.  The shuttle does about 800 – 900 movements per week day and 150- 200 on weekend days. Staff are not permitted to use the shuttle.
CERA Accessible City	Developed in 2013 as a vision for how transport in Christchurch City Centre will work.	Roads prioritised for different transport modes as shown in Figure 3-2. 30kmph slow speed zone shown in Figure 3-6, does not include Riccarton and Hagley Avenues.

Figure 3-2 shows the Central City Development Unit (CCDU, CERA) An Accessible City road use hierarchy. Figure 3-3, Figure 3-4 and Figure 3-5 show the transport networks roads in more detail including relevant facilities for different transport modes as part of the CCDU Streets and Spaces Design Guide.<sup>12</sup> Figure 3-6 shows the 30kmph slow speed zone as part of the Accessible City plan.

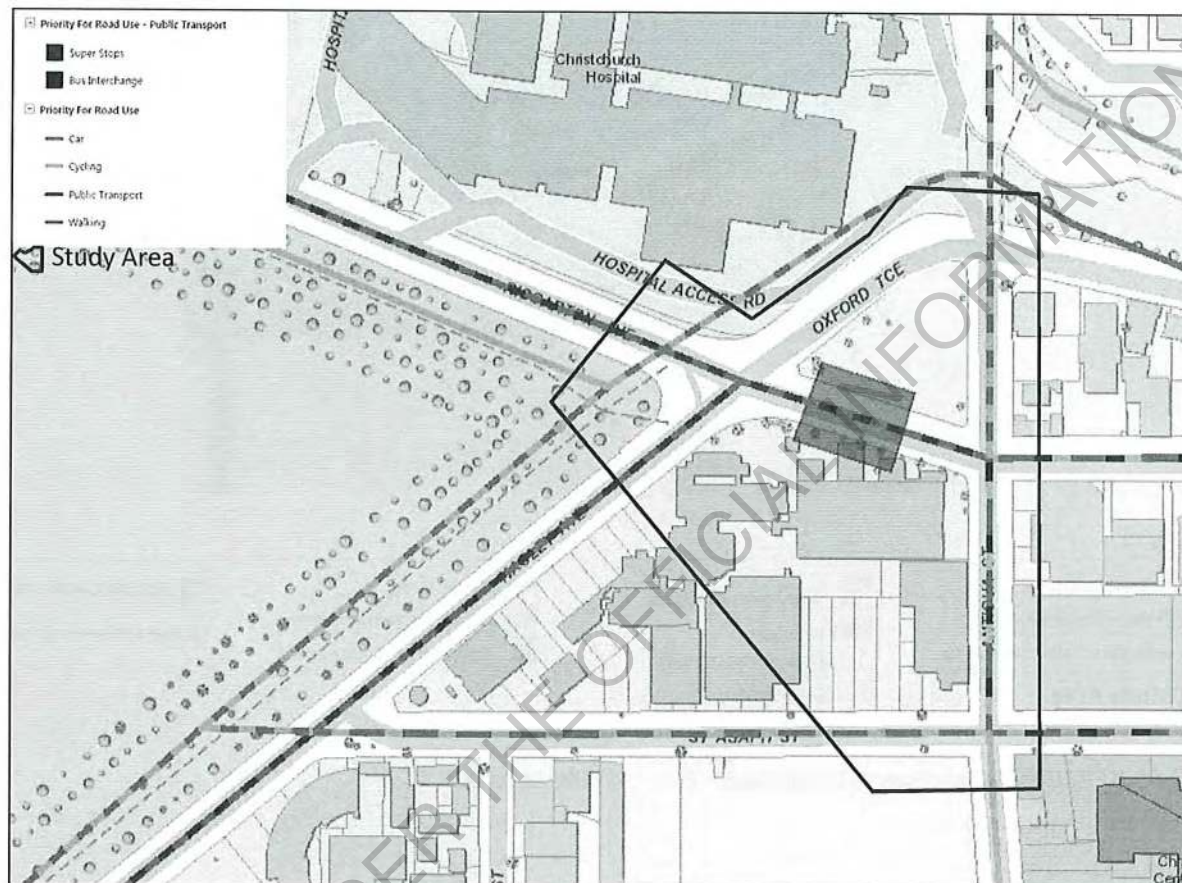


Figure 3-2: CCDU Accessible City Plan – Road use priority

<sup>12</sup> CCDU Streets and Spaces Design Guide, Chapter 5, . <https://ccdugovt.nz/sites/default/files/streets-and-spaces-design-guide-june-2015-chapter-5.pdf>



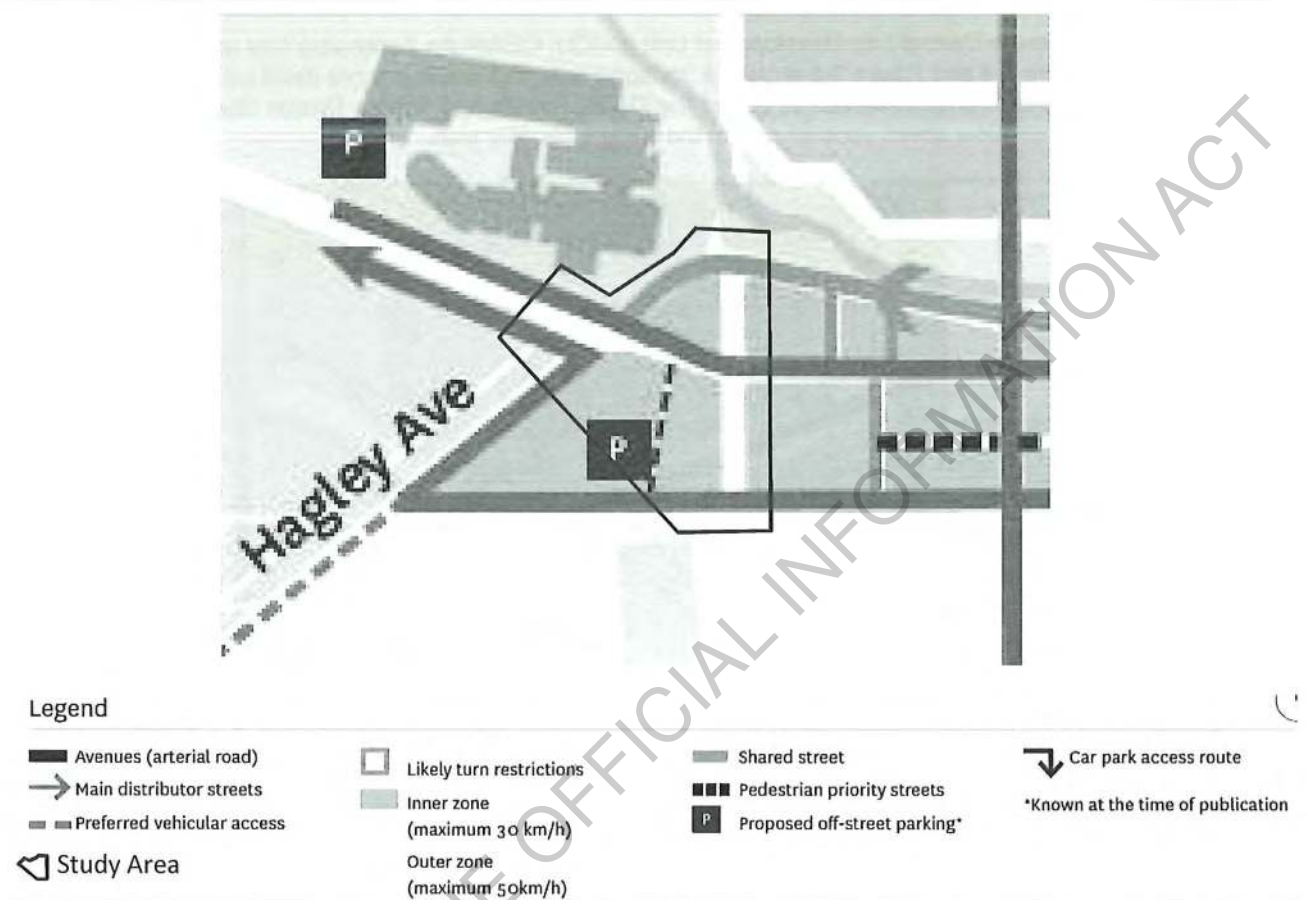
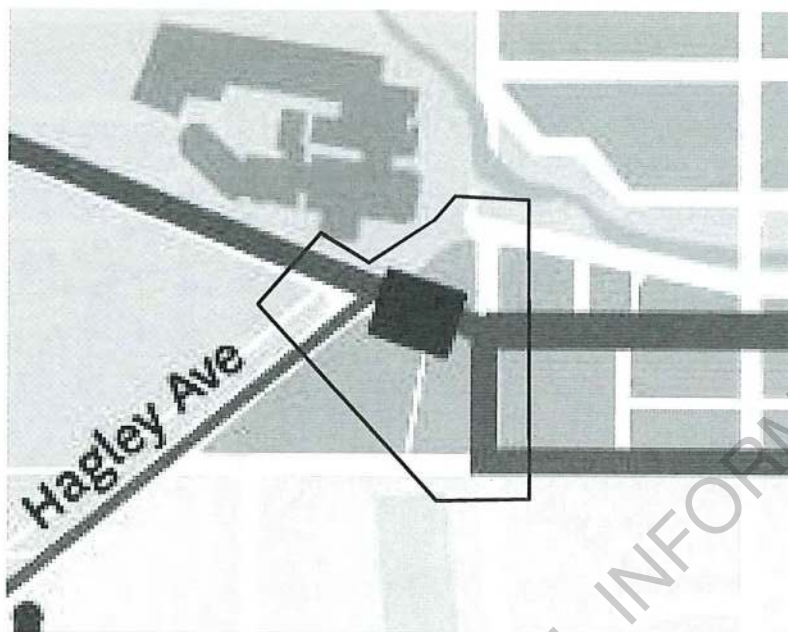









Figure 3-3: CCDU Streets and Spaces Design Guide - General Traffic Network



**Legend**

-  Bus routes
-  Bus Interchange
-  Study Area

-  Bus super stop
-  Potential bus stops\*

-  Inner zone (maximum 30 km/h)
-  Tram route

\*Subject to detailed route and scheduling considerations and consultation approvals

Figure 3-4: CCDU Streets and Spaces Design Guide – Public Transport Network



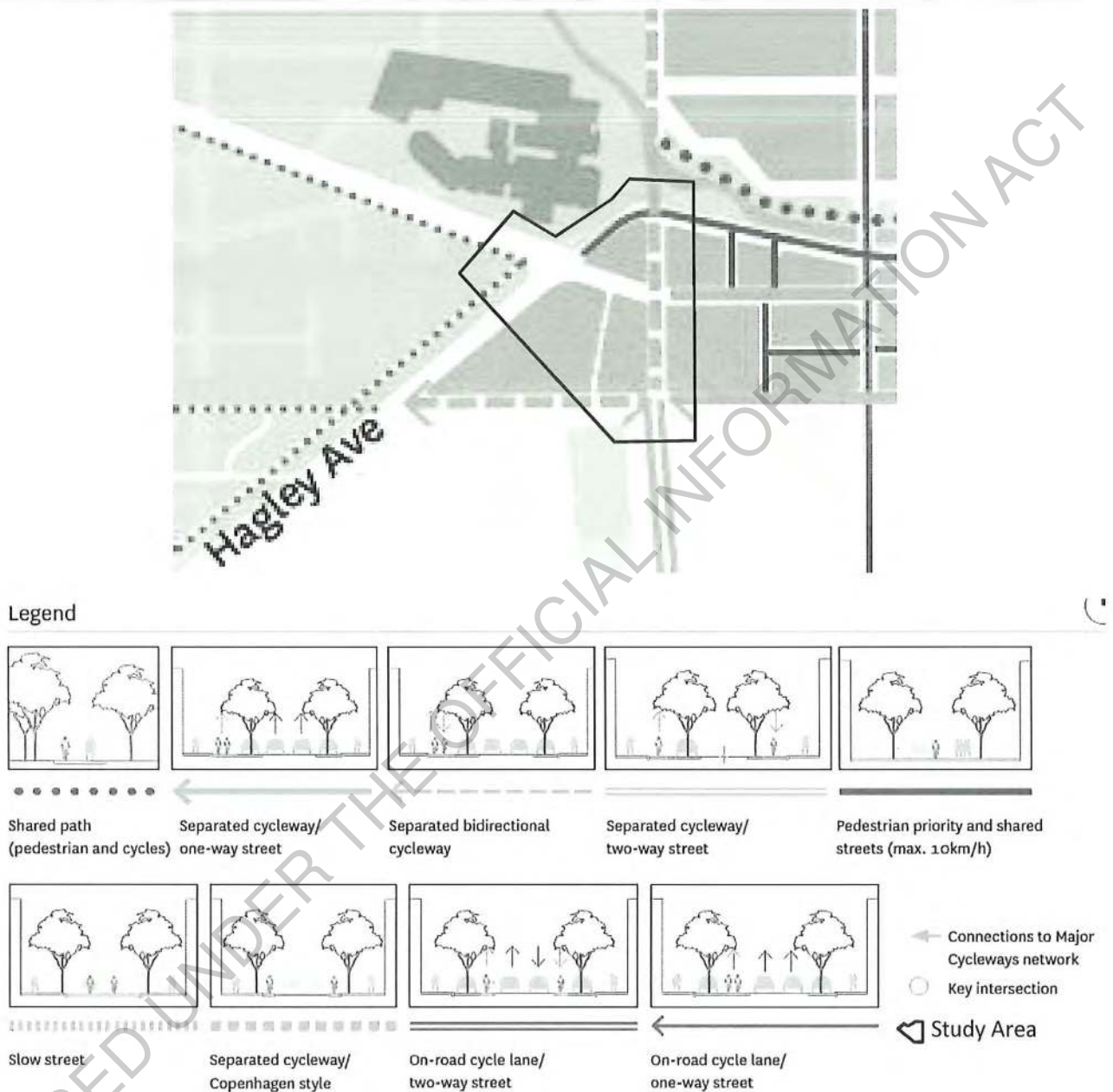


Figure 3-5: CCDU Streets and Spaces Design Guide - Cycle Network

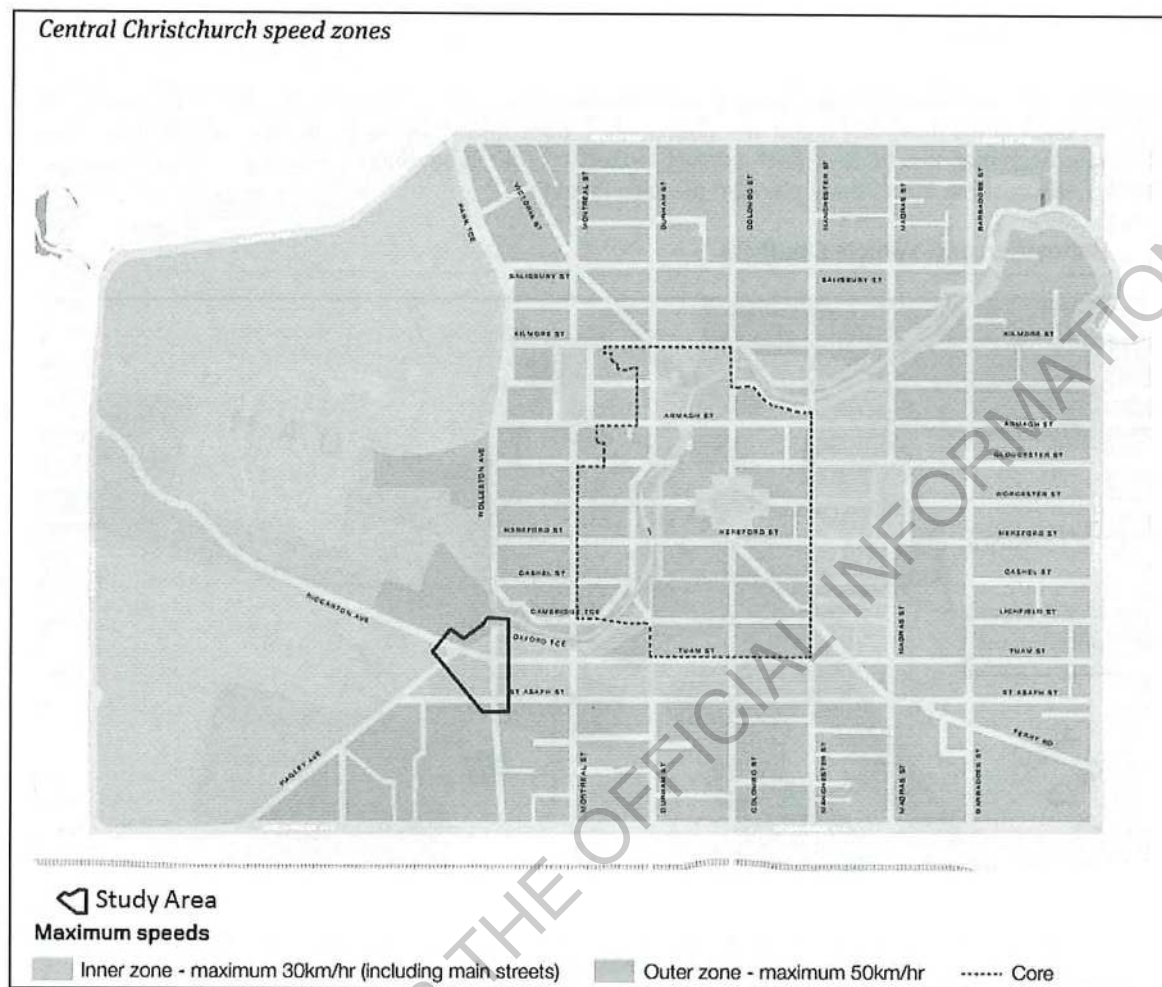


Figure 3-6: CERA Accessible City Plan – Speed limits



### 3.4 Conflict Maps

Conflict maps were produced from consideration of the desire line map and analysis of the above data. There is one map for each of the three key types of modal conflict: pedestrian / vehicle; pedestrian / cyclist and vehicle / cyclist. Under each map is a table of each conflict ranked in order of severity / frequency, and any relevant mitigation measures that are already planned are also identified.

#### 3.4.1 Pedestrian and Vehicle Conflicts

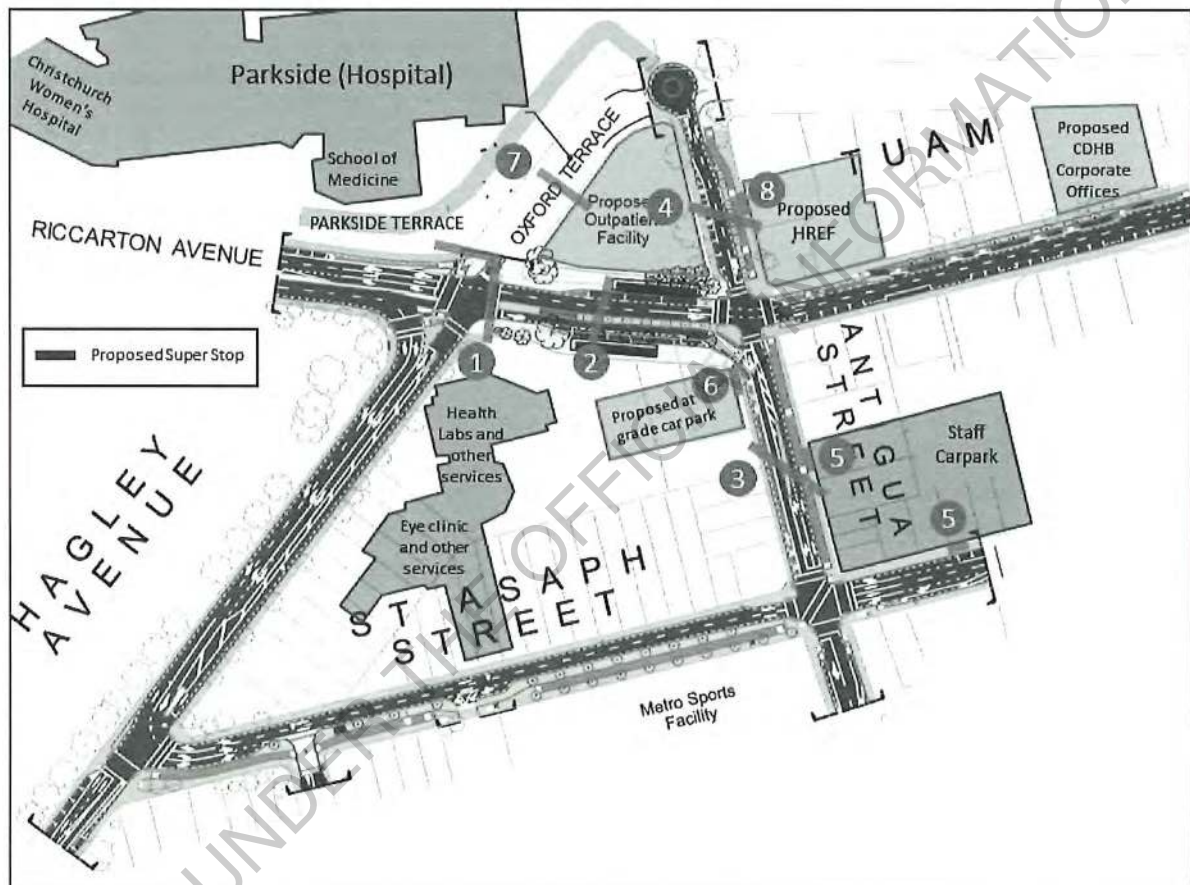


Figure 3-7: Pedestrian and vehicle conflicts (PV)

Table 3-2: Summary of pedestrian and vehicle conflicts

Conflict No.	Conflict Description	Mitigation Already Planned
PV1	Pedestrians J-walk across Tuam and Oxford Terrace approaches to the Hagley / Riccarton / Oxford / Tuam intersection. The Tuam Street approach is projected to have approximately 1400 vehicles over both per peak hour over both directions in 2031; that is just over one car every three seconds.	Under TP1b countdown timers for these crossings are planned.
PV2	Pedestrians J-walk across Tuam Street between the existing bus stops. The bus stops are planned to be the Hospital Super Stop in the future, which will bring a greater number of pedestrians to the area, some of whom will also attempt to J-walk. In 2031 this stretch of Tuam Street is projected to have approximately 44 buses per peak hour over both lanes and 1200 vehicles traffic heading east bound per peak hour in addition to the buses.	Under TP1b Tuam Street will be widened and a divided median added which will reduce the likelihood of J-walking behaviour.
PV3	Staff car park users and other pedestrians J-walk between the east and west sides of Antigua Street in the block between Tuam and St Asaph street. Staff car park users especially have a tendency to J-walk because the block is familiar to them. By 2031, a projected approximately 800 vehicles per hour will drive both ways along this block during peak hours.	Under TP1b the east side footpaths will be improved, so the desire to make this midblock crossing may diminish.
PV4	When the OPD is operational, pedestrians will cross between the rear entrance on the west side of Antigua Street and the east side of Antigua Street. Numbers making this trip will increase with the opening of the HREF building, directly across Antigua Street from the OPD rear entrance.	Under TP1b landscaping by rain gardens are planned along this section of Antigua Street, which will inhibit the desire to make this midblock crossing.  There may be a lower speed regime of 10km/h in this area as a shared zone to mitigate severity of collisions.



PV5	The staff car park on the corner of Antigua and St Asaph Street has 354 car park spaces with a total of 90 cars entering and exiting from the accesses on Antigua and St Asaph Street during the morning 8-9am weekday peak hour. Cars cross the footpath to use the car park, and conflict with pedestrians.	Under final proposals for TP1b, the shared facility was converted to separate pedestrians and faster moving cyclists, moving the new cycleway away from the building frontage. Other mitigation could be use of flashing lights / audible signs at vehicle exit to alert path users to the presence of exiting vehicles. Path markings may be beneficial to further reinforce that drivers must give way to path users.
PV6	The site of the old multi-story car park is planned to become an at grade car park. Cars using this car park conflict with pedestrians on the footpath on the west side of Antigua Street.	Sufficient offset from the boundary of the building may be possible. Other mitigation could be use of flashing lights / audible signs at vehicle exit to alert path users to the presence of exiting vehicles.
PV7	When the OPD is operational pedestrians will cross between the hospital and OPD on Oxford Terrace and conflict with north-east bound vehicles on Oxford Terrace (probably a pick up / drop off zone) and the cyclists on the cycle way	Under TP1b this section of Oxford Terrace may be a lower speed regime of 10km/h in this area (consistent with other sections of the ARP) to assist in the integration of traffic movements, give drivers more time to anticipate and give way to other modes, and mitigate severity of potential collisions.
PV8	Approximately 8 car parks are planned as part of the HREF building. Cars using this car park conflict with pedestrians on footpath on the east side of Antigua Street. This car park is small and of little transportation significance within the overall scheme	As per PV5.

### 3.4.2 Pedestrian and Cycle Conflicts

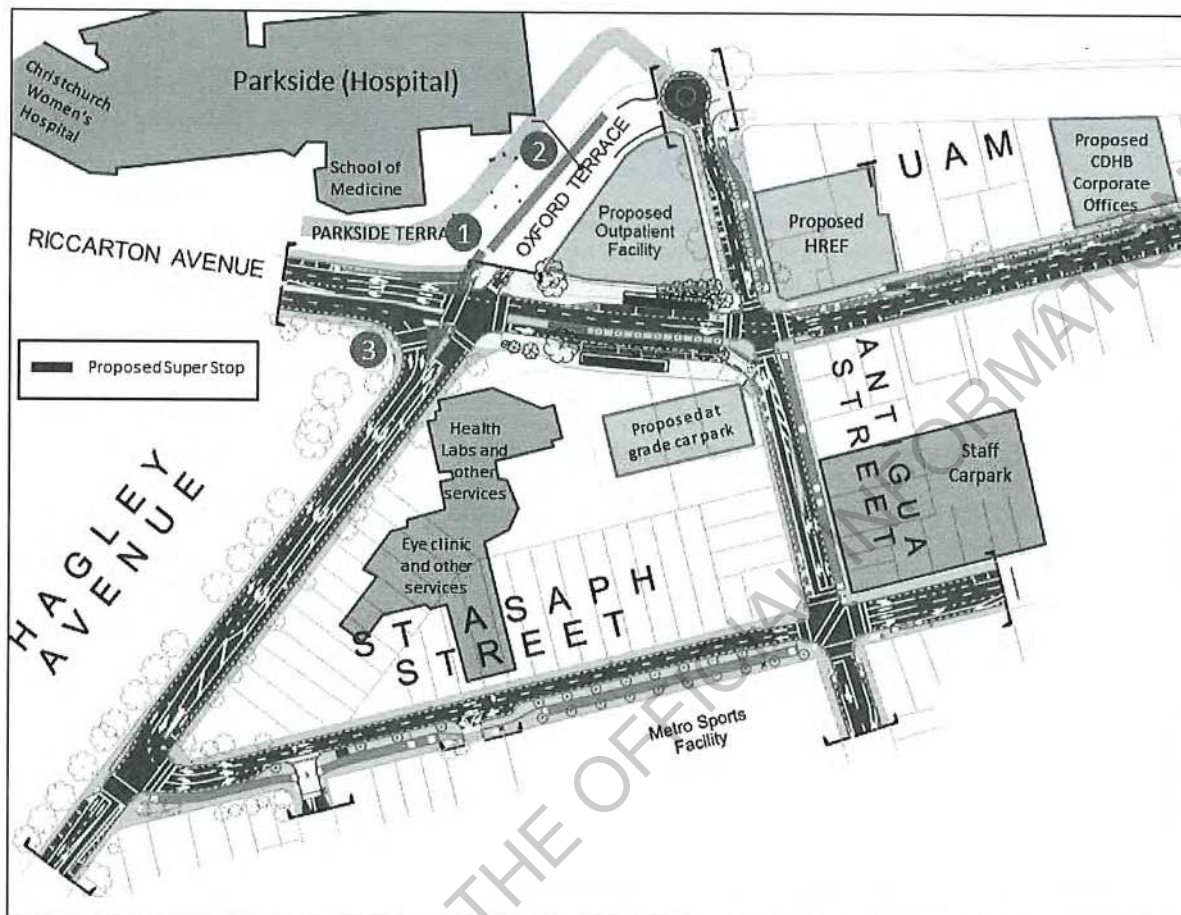


Figure 3-8: Pedestrian and cycle conflicts (PC)



Table 3-3: Summary of Pedestrian and cycle conflicts

Conflict No.	Conflict Description	Mitigation Already Planned
PC1	Pedestrians descending the stairs from hospital grounds to the corner of Riccarton Ave and Oxford Terrace have limited sight of cyclists using the cycle lane adjacent to the footpath on that side of the street heading round the corner from Riccarton Ave to Oxford Terrace. Signage indicates cyclists have to give way to pedestrians crossing the cycle lane at this point.	None known.
PC2	The cycle lane along Oxford Terrace, which is part of the planned Accessible City cycle route, will have pedestrians crossing it to get between the hospital and OPD when the OPD is open.	As per PV7.
PC3	Cyclists and pedestrians share the crossing space and waiting areas on the corner of Riccarton Ave and Oxford Terrace and the traffic island at Hagley and Riccarton Ave. Push buttons were observed to be sometimes confusing for cyclists during the site visit. There is limited space on the island to fit both cyclists and pedestrians. These crossings are part of the planned Accessible City cycle routes and are also popular with pedestrians accessing the park.	None known.

### 3.4.3 Cycle and Vehicle Conflicts

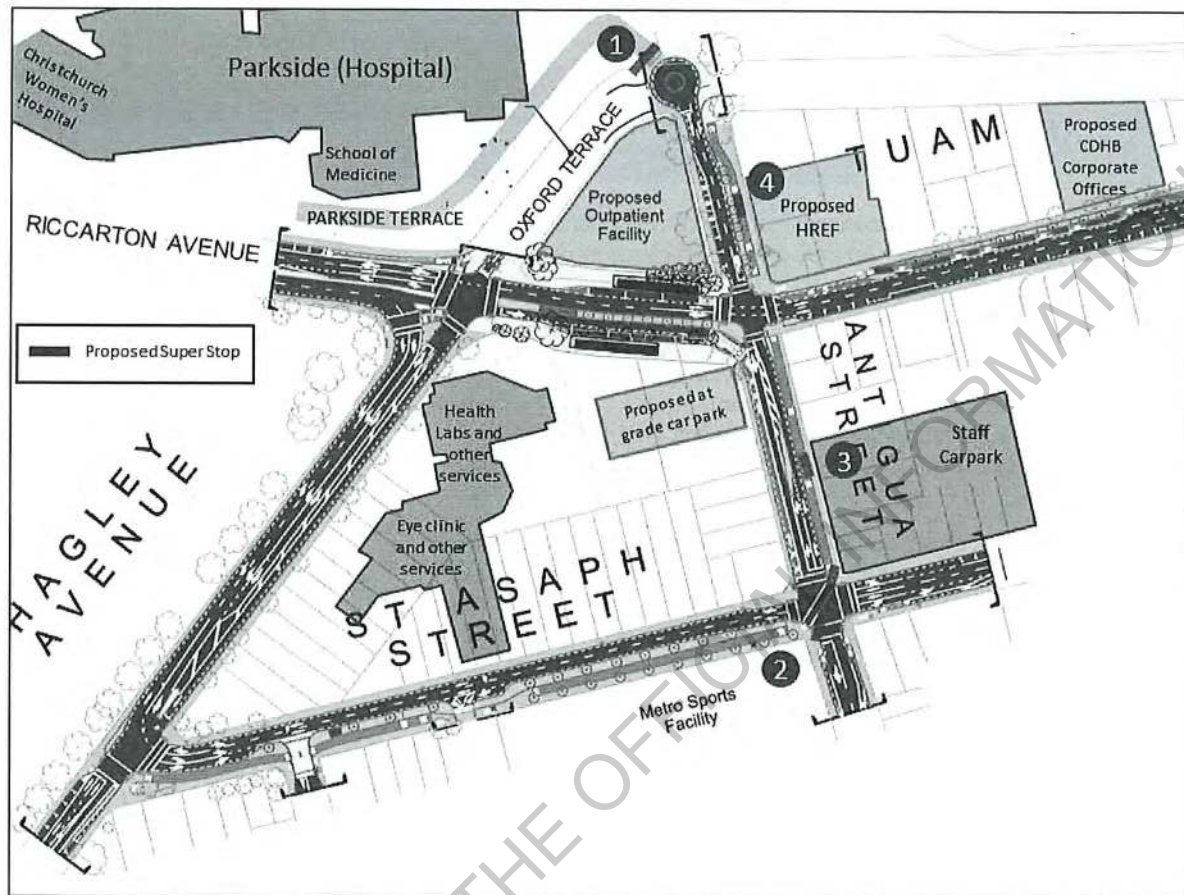


Figure 3-9: Cycle and vehicle conflicts (CV)



Table 3-4: Summary of Cycle and vehicle conflicts

Conflict No.	Conflict Description	Mitigation Already Planned
CV1	Vehicles leaving Parkland Terrace at the Oxford Terrace / Parkside Terrace / Antigua Street intersection conflicts with cyclists travelling the Oxford Terrace cycle lane (part to the Accessible City key cycle routes) heading to or from Antigua Street or Antigua Street bridge, both popular with cyclists and part of the Accessible City key cycle routes. This conflict will be exacerbated in the future, when the Parkland Terrace leg of the intersection becomes two ways and no longer signalised. Poor visibility due to vegetation is also noted.	As per PV7.
CV2	Cyclists heading north on the Accessible City cycle route up Antigua Street have to cross diagonally at the Antigua / St Asaph Street intersection to move from the north bound cycle lane on the west of Antigua Street to the two way cycle lane on the east of Antigua Street. This will need to occur in a pedestrian phase or separate cycle phase to avoid clashes with vehicles.	None known, likely considered in the design as proposed.
CV3	The staff car park on the corner of Antigua and St Asaph Street has 354 car park spaces with a total of 90 cars entering and exiting from the accesses on Antigua and St Asaph Street during the morning 8-9am weekday peak hour. Cars using the Antigua Street access conflict with cyclists using the dedicated cycle lane on the east side of Antigua Street, a key cycle route in the Accessible City plan. In particular, cars using the Antigua Street access may not notice the contraflow cycle lane, increasing the potential for a vehicle / cyclist conflict.	As per PV5.
CV4	Approximately 8 car parks are planned as part of the HREF building. Cars using this car park conflict with cyclists using the dedicated cycle lane on the east side of Antigua Street, a key cycle route in the Accessible City plan. This car park is small and of little transportation significance within the overall scheme	As per PV5.

## 4. Mitigation Options

Table 4-1 contains mitigation options which are referenced by the conflict areas in the maps above and ranked by priority (1 high priority; 2=moderate priority; 3 low priority) based on an estimate of relative risk (consequence and frequency of conflicts).

Each area is prefixed:

- PV is a pedestrian / vehicle conflict area
- PC is a pedestrian / cycle conflict area
- CV is a cycle / vehicle conflict area
- The Super Stop has two associated mitigation options which pertain to a single mode; the area in these cases is "Super Stop".

Table 4-1: Mitigation options

No.	Area	Priority (1 to 3)	Agency Responsible	Mitigation options
1.	PV1	1	CCC	As per TP1b, a continuous barrier in the median as rain gardens will reinforce the pedestrian crossing points across Tuam Street at the Tuam Street / Oxford Terrace and Tuam Street / Hagley Avenue. This highlights the need for sufficient pedestrian waiting space at the Super Stops and at the crossings.
2.	Super Stop	2/3	ECan and Bus Operators	Ensure public transport operations are such that bus queueing at the eastbound stop does not block the pedestrian crossing across the Tuam Street approach to Hospital Corner intersection. This could include communication between bus drivers when the Super Stops are congested to layover on advance (layover areas could be provided for this purpose).
3.	PV1	1	CCC	Paint diagonal pedestrian crossing paths on the Hospital Corner intersection to encourage use of the diagonal crossing from the Hospital Corner side to the Tuam / Hagley side and vice versa instead of J-Walking on Tuam Street. This diagonal crossing movement appears safely possible from observations but rarely undertaken. Ensure signal phasing is designed to provide a high level of safety and service for pedestrians.
4.	PV1	1	CCC	As per TP1b, implement countdown timers for pedestrian signals to increase efficiency and safety for pedestrians.
5.	PC1 PV1	2	CDHB	Add signage to the Christchurch Hospital staircase to increase consciousness for pedestrians to be aware of and anticipate cyclist and vehicle conflicts.
6.	PC1	1	CCC	Install give way markings in the cycle lane to ensure cyclists give way to pedestrians crossing at the Riccarton Avenue / Oxford Terrace corner.  Alternatively, cyclists from Riccarton Avenue could be redirected north of the Hospital to use the off-road gravel pathway beside the river and over the road bridge to Cambridge Terrace, with access possible during daylight hours.



No.	Area	Priority (1 to 3)	Agency Responsible	Mitigation options
7.	PV1	2	CCC	<p>Reflecting TP1b, reinforce the start of the 30km/h zone at the Riccarton and Hagley Avenue intersection as the 'western gateway' with a threshold treatment at Hospital Corner, so that vehicles are travelling 30km/h into the hospital campus and Super Stop area. Treatment could include contrasting surfacing (extended from Oxford Terrace), landscaping and visual narrowing. An air bridge across Tuam Street between Super Stops could contribute to this threshold.</p> <p>Alternatively, the threshold treatment and 30km/h speed restriction could be started earlier at the Christchurch Women's Hospital signalised entrance for eastbound traffic, some 200m west of Hospital Corner.</p>
8.	PC3	1	CCC	Change the location of signal buttons on Riccarton Avenue / Hagley Avenue island and the Riccarton Avenue / Oxford Terrace corner to minimise cyclist / pedestrian conflict (so that the push buttons are adjacent to users in the direction in which they are travelling).
9.	PC3	1	CCC	Allowing a two second lead for cycle signals between the Riccarton Ave / Hagley Ave island and the Riccarton Avenue / Oxford Terrace corner to minimise cyclist / pedestrian conflict. It is noted that this would introduce a greater intersection delay and so would have some efficiency impacts.
10.	PC3	2	CCC / CERA	Extend the Riccarton Avenue / Hagley Avenue island north west and widen the crossing space between the Riccarton Avenue / Hagley Avenue island and the Riccarton Avenue / Oxford Terrace corner to reduce conflict between cyclists and pedestrians.
11.	PV2	1	CCC	As per TP1b, continuous barrier fence in median of Tuam Street to be along block between Hagley Avenue and Antigua Street to prevent mid-block pedestrian crossing between Super Stops.
12.	Super Stop	2/3	CCC / CERA	Signage and pavement markings such as hatching or a clearway to encourage Super Stop users not to crowd the footpath while queuing for or boarding a bus, to mitigate blocking of the footpath for passing pedestrians.
13.	PV7	1	CDHB / CERA / CCC / MOH	Ensure the pedestrian crossing across Oxford Terrace is designed and located so that it will be clearly identified as the primary crossing point for pedestrians between the hospital and OPD. This could be as a raised platform and with contrasting surfacing to reinforce a courtesy crossing or shared zone.
14.	PV8	2	CCC / CERA	<p>Make Antigua Street between Oxford Terrace and Tuam Street a 10km/h shared zone, similar to the Oxford Terrace shared zone under An Accessible City (see Figure 3-5).</p> <p>Add a mid-block pedestrian crossing on Antigua Street between HREF building and OPD back entrance, dependant on demand for this movement.</p>
15.	PV3	2	CCC	Add a mid-block crossing on Antigua Street between St Asaph and Tuam Streets depending on demand. The crossing should utilise the planned island and could include a cage on the island dependent on traffic flow and pedestrian demand.

No.	Area	Priority (1 to 3)	Agency Responsible	Mitigation options
16.	PV5 PV8 CV4 CV3	2	CERA / CDHB / building owners	Install flashing lights (red/green) at car park (at grade or multi-storey) vehicle crossings that provide access to warn pedestrians of vehicle movements out of car parks. The staff car park is planned to have a detector system warning drivers for approaching pedestrians and cyclists (section 2.2.5, TP1b, TP3 and TP4 Design Road Safety Audit). This detector system could be implemented across all car parks in the area.
17.	CV3	2	CDHB	Install signs at the Antigua Street staff car park entrance / exit to remind drivers that there is a contraflow cycle lane on Antigua Street east and that they are required to give way.
18.	PV7	3	CCC / CERA	Make Oxford Terrace a 10km/h shared zone, as per the An Accessible City (see Figure 3-5). In addition to speed signage, use alternate means to highlight the change of speed area, such as contrasting pavement surfacing, landscaping to visually 'narrow' the space, an arch over the start of the road.
19.	PV1	2	CCC / CERA	Raise the Riccarton Avenue / Hagley Avenue / Tuam Street / Oxford Terrace refuge islands to better delineate the safe waiting area and encourage driving at lower speeds past the waiting area.
20.	All	1	CDHB	A way finding strategy is expected to be implemented for the Hospital Campus, which will assist patients in determining their best route between car parking, cycle parking, bus services and stops and walking through the campus. This is expected to cater for visitors, patients and through traffic. This could include pocket maps and interactive signboards.
21.	All	3	CCC / CERA / CDHB	<p>Reassessment with the detailed design of the Metro Sports facility and the likely conflicts associated with this major development to the south. This assessment will relate to the Metro Sports site access, and north-south movements to the Super Stops, the Health Precinct and the Hospital night staff car park.</p> <p>With the co-location of the Health and Metro Sports Precincts there is an acknowledged desire to maximise benefits from the "unique opportunity to develop premier sports medicine and research programmes".<sup>5</sup></p> <p>Further, event management needs consideration with regard to coinciding of events at Metro Sports and hospital shift changes, which would increase movements and have the potential to increase conflict frequency.</p>



## 5. Workshop Outcomes

The workshop was held on 8 March 2016 and attendees included representatives from CDHB, CCC, CERA, CCM Architects (Outpatients Building Designers), Johnstaff (Project Managers) and Jacobs. The workshop agenda went through the conflict diagrams and findings, future developments planned in the area, mitigation measures already planned under TP1b, and further potential mitigation measures.

Of note are the following points:

- CDHB clarified that they did not support a **potential laneway** on their land, as had been previously suggested by An Accessible City (see Figure 3-3), running north-south in the block bounded by Antigua / St Asaph / Hagley / Tuam. Such a laneway was intended to link the Metro Sports and Health Precincts. This laneway **may be relocated within the block**, for example to run parallel along the western side of Antigua Street.
- The TP1b measures proposed under Council resolutions were developed with the best available knowledge, with acknowledgement that there was potential for 'tweaks', which allow further refinement or additional measures to be incorporated. Some such mitigations are:
  - Specific **threshold treatments** for the western gateway into the Central City
  - Provide **Super Stop bus queue space for waiting buses, footpath width and passenger queuing space**, with reinforcement of the crossings on Tuam Street to discourage midblock J-walking
  - **Antigua Street** between Oxford Terrace and Tuam Street is intended to be a **10km/h shared zone** similar to the Oxford Terrace shared zone under An Accessible City. This is expected to be heavily used for loading and short term parking, activities which may pose additional hazards to road users. The workshop agreed consistency with Oxford Terrace (10km/h) had significant benefits.
  - Use of pavement surfacing to reinforce **shared zones and raised pedestrian crossings of Oxford Terrace and Antigua Street**, with cyclists to give way to pedestrians (height, colour, texture, delineation)
  - Implementation of **automated warning systems for car park vehicle crossings** and reinforcement of requirement to give way to path users
  - **Refinements to the TP1a Early Works** pedestrian and cycle crossings at Riccarton Avenue and Hagley Avenue with respect to call buttons, delineation of the refuge area and phasing configuration
- The Hospital campus work was developed with the assumption that some **air bridges** could in place to assist with movements within the campus across public streets, such as across Oxford Terrace and Tuam Street. The Outpatient building has been designed to future proof for air bridges, however adjoining developments do not. These air bridges will not be built in the short term.

## 6. Summary and Recommendations

This report identified a number of conflicts in the Hospital Corner area, based on data obtained for the existing context, following implementation of TP1a Early Works. Along with proposed TP1b works, a number of further mitigation measures were identified and outlined in Section 5. These measures include the conflict type, responsible agency, priority and would ideally be included into the TP1b works where possible.

The recommendations are to integrate the further mitigation measures into TP1b as appropriate, and also to:

- Reassess desire lines and intermodal conflicts upon detailed design of the **Metro Sports facility**
- Confirm **laneway** is not supported by CDHB and consider more appropriate **alternatives**
- Confirm **car parking building** setbacks for visibility to adjacent paths at vehicle crossings, and trial / identify potential automated warning systems. These may include signs on buildings to warn all users, hatched markings to discourage queuing over the crossing and to highlight the vehicle access, consideration of queue storage inwards to barrier arms.
- Clarify the **rain gardens planned along Tuam Street** (Antigua to Hagley) and Antigua (Tuam to Oxford) are of a sufficient height and obstacle to discourage J-walking
- Identify **treatments to reinforce western gateway, shared zones and pedestrian crossing forms** (height, colour, texture, delineation)
- Identify **wayfinding** needs and solutions, including staff travel planning and education/awareness of traffic safety
- Consider capacity, location and form of **cycle parking** required to meet demand, both staff and public. A recent commuter survey suggests demand may be up to 1560 cycle parks for staff alone, with 470 existing and 240 potential additional parks identified.

It is expected that CDHB, CERA and CCC will work through these recommendations with a view to incorporating them into campus planning and the TP1B and Oxford Terrace designs.



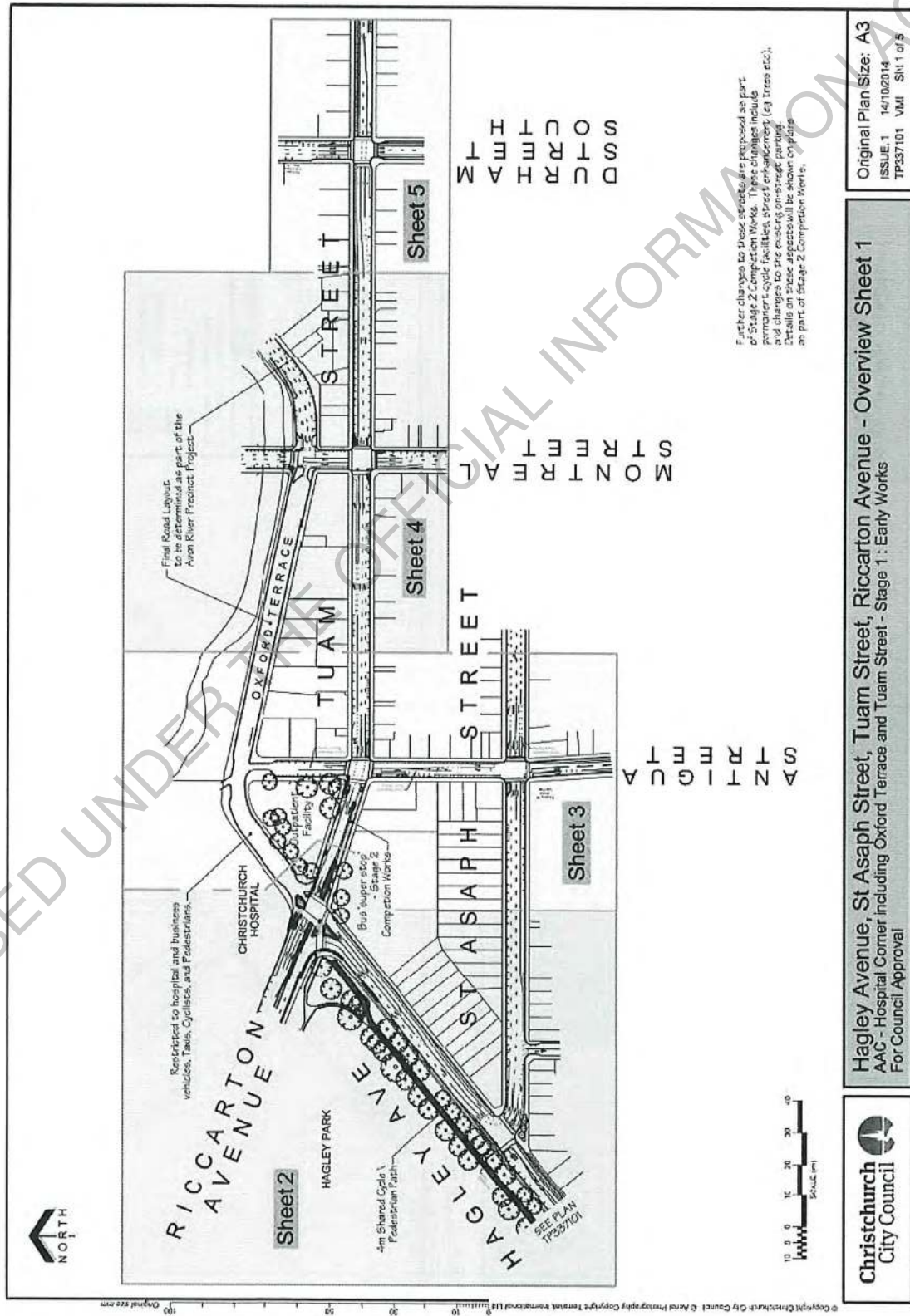
## **Appendix A. AAC TP1a Hospital Corner Early Works Plans**

Sourced from CCC, issued "For Council Approval" for consultation purposes. <sup>13</sup>

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<sup>13</sup> CCC Transport Improvements planning, Documents. Retrieved online April 2016.  
<http://www.ccc.govt.nz/assets/Documents/Transport/Improvements-planning/AACConsultationNo1Plans15102014.pdf>

















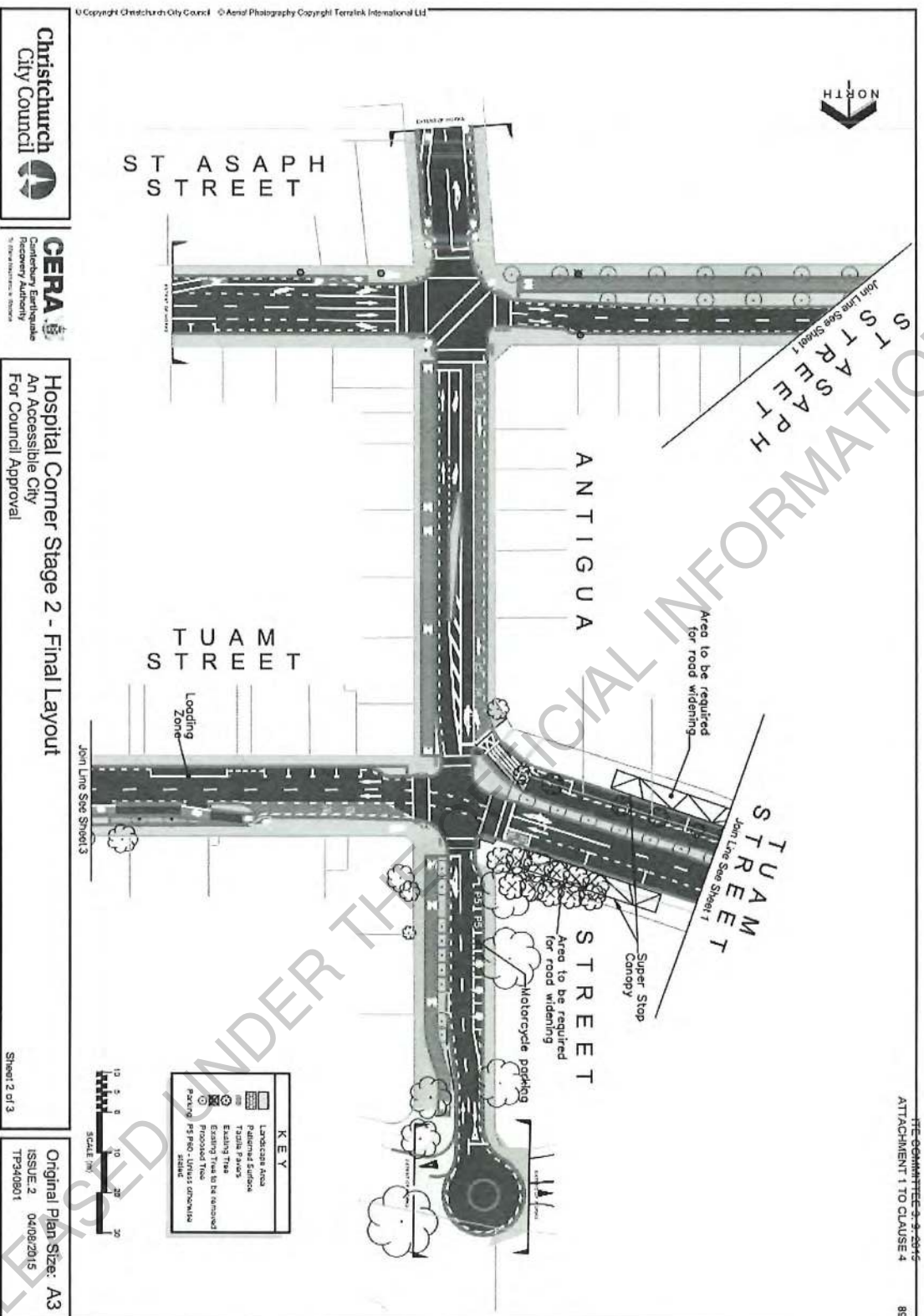
## **Appendix B. AAC TP1b Hospital Corner Final Work Plans**

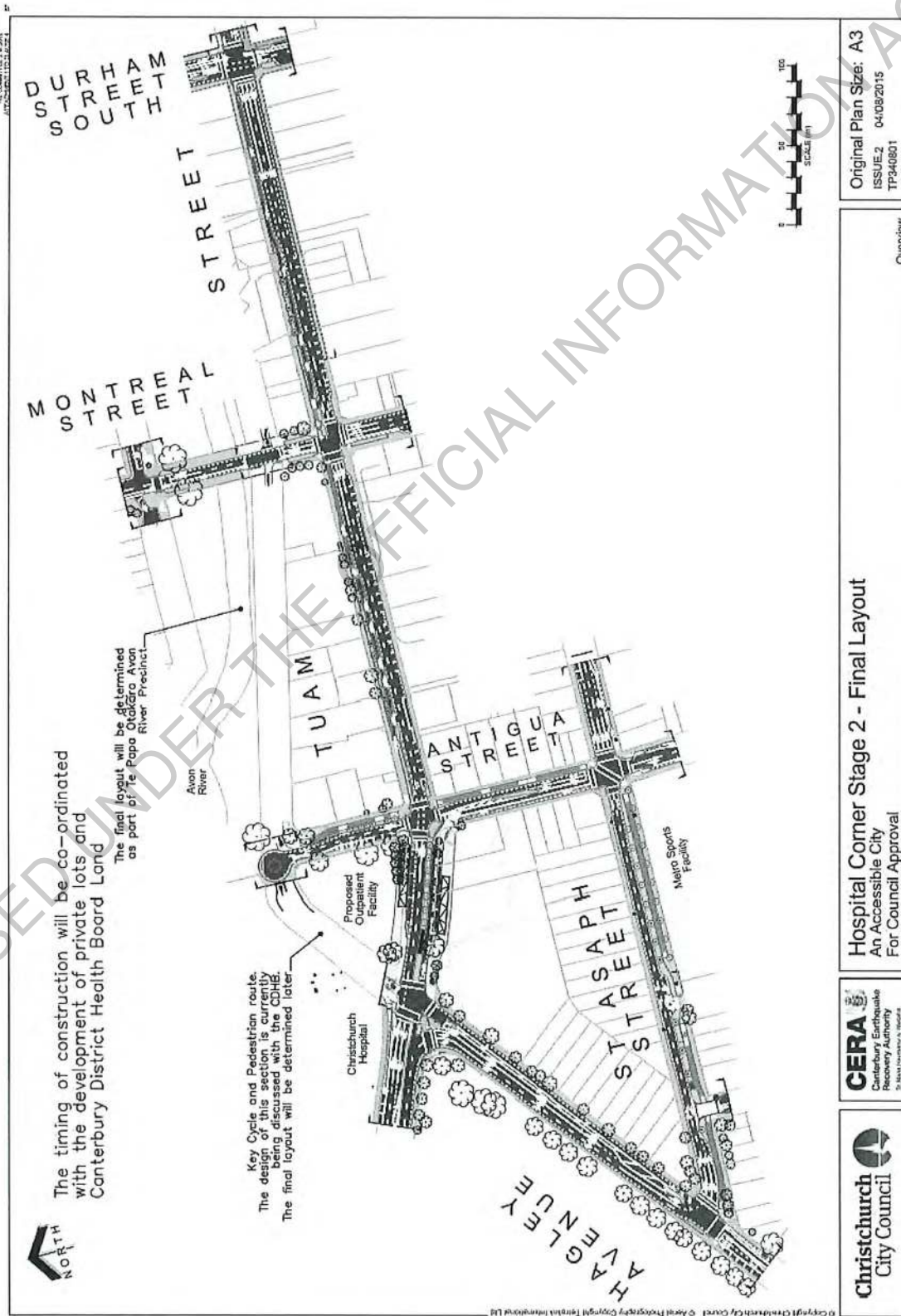
Sourced from CCC, issued "For Council Approval" for consultation purposes. <sup>7</sup>

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Original Plan Size: A3  
ISSUE 2 04/08/2015  
TP940801

Hospital Corner Stage 2 - Final Layout  
An Accessible City  
For Council Approval

**CERA**  
Canterbury Earthquake  
Recovery Authority  
To Make Canterbury a Better Place

**Christchurch**  
City Council

Overview



