Canterbury
District Health Board
Te Poari Hauora ō Waitaha

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11 June 2019

Dan

Email: fyi-request-10258-6c9cb565@requests.fyi.org.nz

Dear Dan

RE Official Information Act request CDHB 10099

I refer to your email dated 6 May 2019 requesting the following information under the Official Information Act from Canterbury DHB.

- **Please send me the documented proposal to add two levels to the top of the staff car parking building at Christchurch Hospital**.

Please refer to **Appendix 1** (attached) for the Business Case document for the Antigua Street staff car park extension. Appendix 4 as referenced on page 7 of this document, the Canterbury DHB Quality Transport Planning (QTP) Draft Parking Strategy document, is also attached.

Please note we have redacted information under section 9(2)(b)(ii) i.e. *"….would be likely unreasonably to prejudice the commercial position of the person who supplied or who is the subject of the information".*

I trust that this satisfies your interest in this matter.

If you disagree with our decision to withhold information you may, under section 28(3) of the Official Information Act, seek an investigation and review of our decision from the Ombudsman. Information about how to make a complaint is available at www.ombudsman.parliament.nz; or Freephone 0800 802 602.

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

Carolyn Gullery
Executive Director
Planning, Funding & Decision Support

BUSINESS CASE Cover Sheet

Name of proposal	**Antigua Street Staff Carpark Extension**		
Service	Site Redevelopment Unit	**Cost Centre**	6400970
CAPEX	**Total Capital Requested**	9(2)(b)(ii) [redacted]	
Funding Source	Baseline AIP Budget (2019/20)		
	Baseline Divisional Discretionary Budget	$	
	Strategic AIP Budget	$	
	Facilities AIP Budget	$	
	Other [Insert Name]	$	

SUPPORTED & ENDORSED BY		
Name & Position	Signature	Date
Brad Cabell **Programme Director Construction & Property**		
Rachel Cadle **Support Services Manager**		
Leslie McLean Management Accountant **Corporate Finance**	L McLean.	7/3/19
Terry Walker **Facilities & Engineering Manager**		

APPROVALS (for corporate use only)		
APPROVED BY	Signature	Date
Mary Gordon **Executive Director of Nursing & Facilities**		
Carolyn Gullery **Executive Director, Planning & Funding and Decision Support**	Not Required	
Justine White **Executive Director Finance & Corporate Services**		
David Meates **Chief Executive**		

BOARD and other formal committee approvals, as per delegation:

QFARC		~~FACILITIES COMMITTEE~~		BOARD	
Date	**4th April 2019**	Date		Date	**18th April 2019**
SIRCC *(South Island Regional Capital Committee)*		Digital Advisory Board (DAB) (*IT related*)		HRPG *(Hospital Redevelopment Partnership Group)*	
Date		Date		Date	

Recommendation

The Business Case seeks approval for:

Capital Expenditure funding of 9(2)(b)(ii) to allow for the design and build of an additional two levels to be added to the existing staff car park located on the corner of Antigua and St Asaph Streets. This will add approximately 270 car parks to the buildings current capacity.

Justifications for the Investment

The issue being addressed:

The proposal to extend the Antigua St Car Park Building is in response to the ongoing shortfall in the number of dedicated car parks available to the Canterbury District Health Board (CDHB) on the Central Campus. The lack of parking has been an ongoing source of negative coverage both internally through staff and unions and externally through public and media.

The number of car parks available on the Central Campus has been reduced over the past years by:

- Demolition of the Blue Car Park building with the resulting loss of approximately 375 parking spaces. This was due to damaged sustained in the Canterbury Earthquakes.
- The loss of parking spaces behind Christchurch Women's Hospital in order to make way for the new Acute Services Building (ASB) development, with the loss of 50+ car parks.
- The removal of parks on the Oxford Triangle to allow for the new Outpatients Department development which reduced parking spaces by approximately 50.
- The closure of the old Brewery Car Park to allow for the start of development on that site for the Metro Sports Facility.
- Work around the removal of the old outpatients building (Hagley Outpatients) has reduced parking numbers in that area.
- The installation of water tanks to the front of the Parkside Building outside of the main entrance to the hospital post-quake.
- The land remediation work along the Avon River in conjunction with the install of the new O2 tank.

Other factors exacerbating the loss of campus parking include:

- Roading layout changes, including introduction of cycle lanes, which have reduced the number of on-street parks near the campus and increased competition for remaining parks;
- Major construction projects both on and near the hospital campus which have brought hundreds of contractors and labourers to the Health Precinct, increasing competition for on-street parking. The hospital has at least another 10 years of major redevelopment ahead, meaning there is unlikely to be a reduction in this demand in the medium term.

These factors have affected patient, public and staff access to the hospital, requiring substantial investment in temporary parking spaces away from site and shuttle/park and ride services to enable the hospital to continue to function.

In addition to the general inconvenience created by the long distances to available parks, the safety of staff (particularly after hour's staff) has become a major issue. There have been a number of reported assaults against staff while walking from their vehicles to the hospital. With the nearest major supply of available parking being on the opposite sides of Hagley Park, many staff have little option but to walk long distances, often alone and in the dark, through the poorly-lit park.

Further to the factors outlined above, the short-term holds further losses in spaces with the Afternoon Car Park (approximately 135 parks) and the temporary Metro Sports Annex Car Park (approximately 420 parks) being acquired by the Metro Sports Facility development from mid-2020. Any new provision of parking would need to become available on or before that date, which is a key driver for this business case.

A Long Term Parking Strategy undertaken by Quality Transport Planning (QTP) on behalf of CDHB and issued in July 2017 (refer Appendix 4) established a need for 700 car park spaces within close proximity to the Main Hospital and a 700 spaces further off site. The report also references similar advice provided to Hospital Redevelopment Partnership Group (HRPG) in 2012 in support of the proposed ASB development. During the planning stages of the ASB development it was proposed that a multi-level building be included on the former Hagley Outpatients Department site but this has been discarded in favour of an on-grade asphalt car park space to satisfy minimum requirements.

The Antigua Street Car Park building was originally constructed with the provision for an additional one or two levels of parking included in the design. Changes to the NZ Building Code and the values used to determine seismic risk following the 2011 earthquakes mean the additional capacity included in the original build is no longer sufficient to allow for the extra structural load. Strengthening work is required to the existing structure to meet the building code. This is predominantly on the ground floor where the foundation pads need to be increased in size and additional columns will need to be added. This work will mean at times parking spaces are not able to be used during certain phases of construction. It is possible that provision for up to 100 vehicles (depending on construction methodology) may need to be found on a temporary basis. The opportunity to use spare spaces on the Metro Sports parking is currently available and would reduce the impact of construction.

The 270 (approximately) additional parks that will be created following this extension are not going to achieve a complete solution to the shortages currently arising around available parking spaces. It will merely off-set the impending loss of the Afternoon Staff Car Park and alleviate some of the other losses incurred in other areas around the campus.

The **Benefits** and **Options**

Benefits

- Increased number of car park spaces available to be used at the CDHB's discretion. This will lessen the impact of the impending loss of the Afternoon Car Park and the Metro Sports Annex and the spaces already lost across the campus.
- Confidence in the CDHB's ability to provide a safer work environment through secured car park facilities, particularly for after-hours workers. A secured parking building offers confidence to staff, and requires less security personnel to manage compared to existing arrangements (i.e. escorting nursing staff to their cars parked at dispersed on-street locations).
- Reduction in the need to extend measures the CDHB has already taken to address parking issues. This includes Park and Ride Shuttles, additional leased car park spaces, and temporarily established accessible park spaces.
- Recruitment and retention of staff would be enhanced by improving (or mitigating the reduction of) staff parking. Availability of good quality, safe and proximate car parking can be an important factor in employee's decision-making on whether to take up a new role or, conversely, to leave a current role.
- Reduction in competition between CDHB staff and patients / visitors for available public parking, thereby making the hospital more accessible to the public.
- The CDHB has a limited allocation of land within the Health Precinct. The addition of two additional levels to the car park building would intensify the usage to maximise the utilisation of this space (short of complete demolition and rebuild).
- Meets our requirements in relation to Nurses Union agreements.

Options

- Do nothing
    - The current deficit of car park spaces will be further increased following the closure of the Afternoon and Metro Sports parking areas. The consequences of this are a) there are less spaces available for allocated parking and b) if the car park extension works were to be undertaken in the future these areas will not be available for required vehicle decanting.
    - The loss of the Afternoon Staff Park with no replacement will result in increased risk to staff safety for after-hours workers.

- There will be further negative sentiment amongst elements of staff and public due to the continued loss of parking spaces available and an apparent lack of visible action to remediate the issue.
- There is speculation that there could be some spare capacity in the parking on the completed Metro Sports Facility that may be accessible to the public. If and when this is available it may be an advantage but the likely number is unknown. The level of uncertainty, and the likely variable nature of any potential availability, makes this a very unreliable planning option.

- Build a new car park on an alternative site on campus –
  - Current free space for a new car park is limited by those spaces being earmarked for future works. There is little provision on the main campus for the construction of a new building, with the Hagley Outpatients site being used for an asphalt car park only, leaving only vacant lots on the St Asaph Street campus as an option:
  - Former 'Blue Car park' site – has had temporary buildings installed at the end of 2018 in order to accommodate hospital staff. A removal of these to make way car park space would undo an approximately $400,000 investment in staff accommodation. This site is currently under consideration as a long term replacement option for the Laboratories and Oncology services.
  - Vacant section that was numbers 33 and 45 St Asaph Street – is the proposed location of the new Energy Centre so an investment in car parks on this site will have a limited life span so would not provide an ongoing option.
- Build a new car park on an alternate site off campus –
  - Proximity becomes an issue with potential long walking distances to the hospital, as does the extended period required to identify and purchase land. Consenting may also be a problem.
  - The option of a car park on land provided as part of a land swap is a real possibility but until this has been finalised we cannot commit to any time frames.
  - The most recent car park building construction in the central business district (CBD) has ranged in cost per park depending on the complexity of the structure and the technology included in the building.
    - Litchfield car park at approximately 9(2)(b)(ii) /car park is at the upper end of the cost scale per park.
    - The lower end cost per park is approximately 9(2)(b)(ii) /car park.
    - Proposed Antigua Street extension is approximately 9(2)(b)(ii) /car park based on high level budget advice.
- Add one level only – Economies of scale would reduce the cost efficiency of adding one level only to the building. The work required to strengthen the ground floor level of the building to accommodate the additional floors would be necessary to accept one or two additional levels so no significant saving would be gained from reducing the scope to one floor only.
- Add three additional floors – The contingency included in the original build was for an additional two levels only to be added meaning that an entire rebuild would be necessary and any implications of building a new building on the site as opposed to adding on to an existing structure would need to be investigated -
  - Demolition costs rather than full new build costs means the cost per park is likely to be in excess of 9(2)(b)(ii) .
  - Increased demand for decanting spaces during construction, and for a longer period.
  - The timeframe for completion of the work would be longer given a demolition and rebuild is required as opposed to an extension. The loss of car parking in the interim would be unacceptable.

Benefit Delivery of Recommended Option	
Business owner	Brad Cabell
Benefit Measure	Replacement of lost carparks
Target Benefit Measure	Availability of 270 replacement carparks
Date the benefit will be achieved	April 2020

Financials & Resourcing

Capital expenditure funds requested of 9(2)(b)(ii) as summarised below:

Description	Cost $	Basis
Construction Costs	9(2)(b)(ii) [redacted]	
Design Contingency		
Construction Contingency		
Professional Fees		
Building Consent		
Project Contingency		
Escalation Completion		
Elevator Replacement		
Total		

Project Delivery

Work to Date

In response to direction from the CEO, Site Redevelopment Unit (SRU) engaged consulting engineers to reconfirm the feasibility of adding two additional levels or Car parking on to the existing CDHB car park. This had been previously investigated in 2013 but was not pursued past the concept stage, presumably because a separate proposal for a new public car park was being progressed at that time and the initial costs were prohibitive. 9(2)(b)(ii) provided a design advice (refer Appendix 1) containing three options of for achieving the additional two levels. The difference in options represented different degrees to which the building code was met or exceeded, and the impact that the work would have on the usability of the car park during construction.

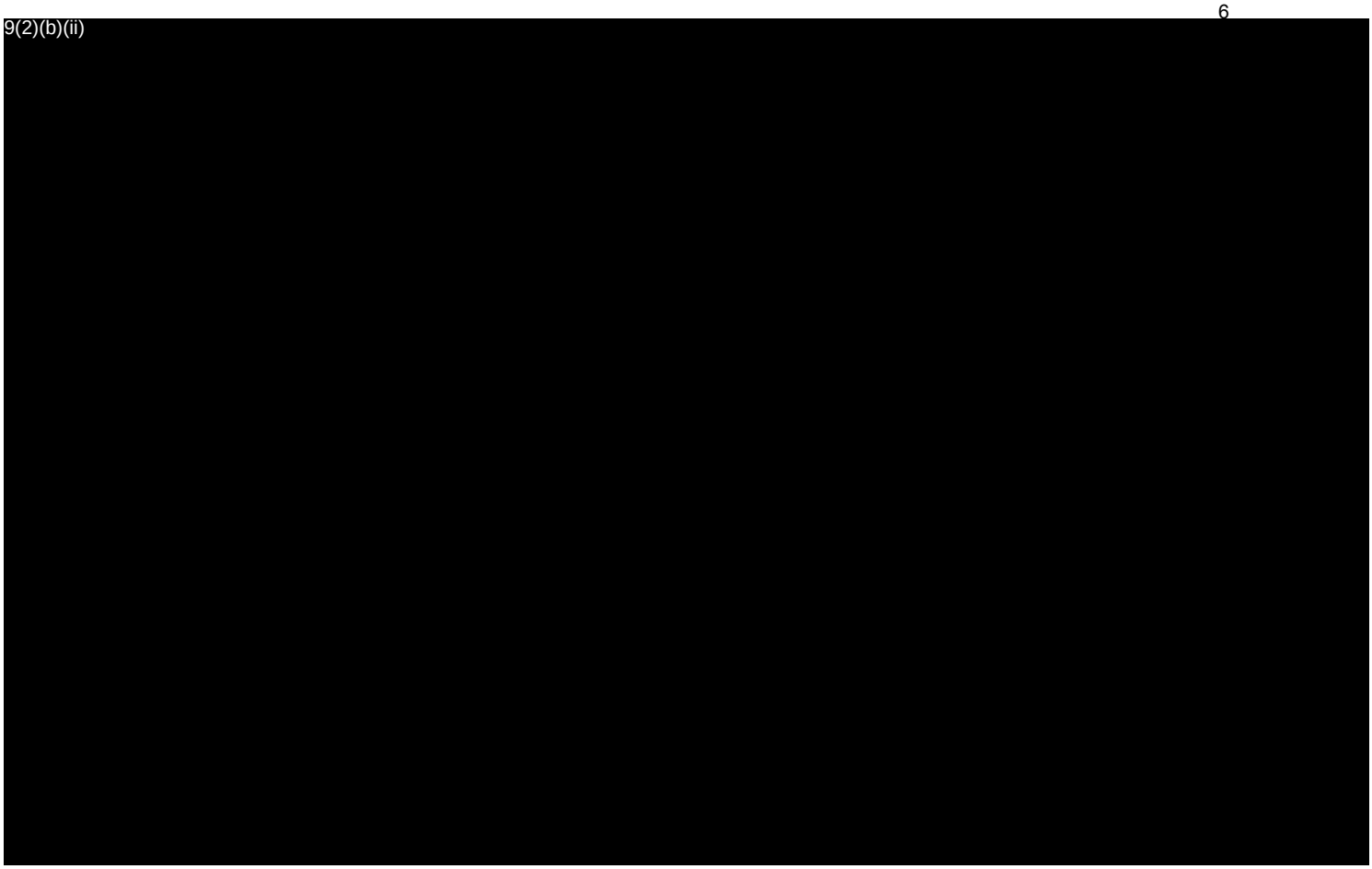
Cost consultants 9(2)(b)(ii) were provided with these concept drawings in order to provide a budget estimate for the costs of complete design and construction of options A and B (refer Appendix 2). Option C was discounted due to the number of existing parks that would be permanently lost due to the configuration of the structural steel work. Their budget estimate for Option A, designed to meet minimum code requirements for Ultimate Limit State (Life Safety) and Serviceability Limit State, is the basis for this business case, as directed by the Executive Management Team. Option B was designed to exceed these requirements and contained a capacity for continued function. The final costs of construction are subject to the results of the procurement/tender process for consultants and main contractor, however the relative simplicity of this work and the inclusion of contingencies provides a sufficient degree of confidence in this concept stage estimate to proceed with a single-stage business case.

Work to Complete

Following approval of this business case and the release of funds then the remainder of the work will commence.

The procurement of the consultant team for the project will be a priority in order to develop the concept design through to consent/tender and then construction stages.

9(2)(b)(ii)



Following the procurement of consultants the design process will proceed. The building is seen as a comparatively straight forward design due to:

- The concept design for structural works is already in place
- The remaining works – architectural, electrical etc. – will be based on the existing building.
- The structure is not an overly complex design in terms of structure, services, aesthetic.

While design documentation is being progressed the main contractor procurement will begin. This will be done in a two-stage process with an open ROI stage being undertaken and the short listed candidates being invited to submit an RFP following the availability of the tender issue documentation. The ROI stage is able to be started in a short space of time based on concept designs and the use of site visits to give the applicants an appreciation on what we are looking to purchase.

Building and resource consents will be required for this work and will be applied for as documentation allows. Early engagement of town/environmental planners will be able to highlight any major consenting requirements early so that they can be addressed ahead of time.

The emphasis will be on the quickest practicable turnaround on procurement and design to enable construction to begin as soon as it is able in order to use the benefit of the existing spare space for potential decant.

It is envisaged that this project will be Project Profile Level 2

Project Delivery (On Time, Deliverable, On Budget)	
Target Implementation Start	April 2019
Target Implementation Completion	April 2020
Target Deliverable Description	Two additional levels of car parking added to Antigua Street Carpark Building (approx. 270 additional parks)

Total Budget (Copy from Cover Page)	9(2)(b)(ii) [redacted]

Appendices

9(2)(b)(ii) [redacted]

Appendix 4

QTP CDHB Draft Parking Strategy

Appendix 4 QTP CDHB Draft Parking S

Oracle Project Accounting and Delegation Requirements *(for Corporate Finance use)*

For completion by Finance Manager

Oracle Project Set Up			
Budget Holder	**Brad Cabell**	**Oracle Project Start**	**April 2019**
Project Manager	**Mike Wheeler**	**Oracle Project Completion** **(date all transactions to be processed by)**	**May 2020**
Accountant(s)	**Leslie McLean**	**Asset Category**	**CDHB Building**

Optional – Task Set Up in Oracle (if required)						
Task Name	**Task Budget $**	**Task Approver Name**	**Task approver $ delegation**	**Task Start date**	**Task Finish Date** (last transaction date)	**Asset Category** (

Antigua St Carpark Extension	9(2)(b)(ii)	Mike Wheeler	9(2)(b)(ii)	April 2019	May 2020	CDHB Building

Quality Transport Planning

Long term Hospital Parking Strategy

Final Workshop Draft

This report is intended for internal CDHB consideration and approval.

Once finalised it is intended that the report
will serve as the basis for further consultation with
Council, Environment Canterbury and other key stakeholders.

July 2017

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Document Issue Record

Version No	Prepared By	Description	Date
01	Paul Roberts	Draft issue for Client Review.	26/07/17
02	Paul Roberts	Minor typographical corrections	31/07/17
03	Paul Roberts	Final issue	06/09/17

Document Verification

Role	Name	Signature	Date
Preparation	Paul Roberts		26/07/17
Reviewer	John Falconer		
Approval	Paul Roberts		06/09/17

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Contents

Appendices:

1 Executive Summary

1.1 A Hospital stay or visit is often likely to be a time of great stress for patients and their families alike and transport options can play an important role in mitigating (or potentially exacerbating) this stress. Similarly, for health-care staff, transport to and from work has the potential to add to, or reduce, the inherent stress of their daily work.

1.2 Desirable outcomes in terms of Hospital access for patients, visitors and staff have not been achieved in the recent past. While a number of studies have been progressed by the Canterbury District Health Board (**CDHB**) and others, including by the Ministry of Health (**MoH**), Development Christchurch Ltd (**DCL**) and the Christchurch City Council (**CCC**), there remains considerable uncertainty, particularly in the longer-term, regarding a firm plan for improvements that will meet projected needs.

1.3 CDHB requested QTP to assist them to "develop a Long-term Hospital Parking Strategy", in order to assist their consultation with the above agencies and work together to achieve desired outcomes for Hospital access. It is not intended that short-term needs are the focus of this report.

1.4 One of the issues contributing to the current uncertainty, is that a clearly-expressed 'strategic framework' for Parking (or indeed for wider Transport matters) that is *specifically focussed* on the needs of the future Hospital campus itself does not exist – let alone one that is, desirably, shared by both the CDHB and other agencies.

1.5 This report therefore sets out such a framework. It proposes a *draft* Vision and Goals for Board consideration – what a Long-term Hospital *Transport* Plan should seek to deliver.. The Vision is that "**Christchurch Hospital will be viewed as accessible by patients, visitors and staff and the transport needs of each of these groups are met by a range of safe and attractive transport choices**". We have also sought to identify the key principles, responsibilities, targets, priorities (for car parking) and recommended actions, in order to provide guidance to decision-makers.

1.6 The Hospital operates 24 hours per day, 7 days per week. Many health care workers are shift workers and are required to start work early in the morning or leave work late at night. Alternative transport modes to the car may not always provide an adequate level of accessibility for all employees, or indeed, for patients and visitors. From a user perspective, sufficient car parking for patients and visitors in particular would ideally be met on-site (and at minimal cost). However, it has to be recognised that space constraints (and fiscal responsibility) preclude such 'ideal' provision. Rationing of space, as well as fiscal responsibility, requires that car parking access should be affordable and fair – but not necessarily free.

1.7 The proposed strategic framework is based upon an updated review of Hospital transport needs (expanded upon within this report). This has identified that car access is and will continue to be the preferred mode of access for most staff, patients and visitors. Indeed, the review suggests that the existing and future demands for car parking made previously may have been (significantly) under-estimated.

1.8 Given this conclusion, and that the Campus spans over a distance of nearly 500 metres (a 7-8 minute walk for elderly pedestrians), it is in our view unfortunate that adequate (accessible) car parking provision, particularly to support crucial staff and visitor needs does not appear to have been implemented *as a critical and integral element of the current building programme*[1].

1.9 There has been some expectation that there may be some 'spare' parking capacity at the 550 space car park that will be provided at the Metro Sports Facility (**MSF**) by 2020 and that this could assist in serving the needs of the Hospital. However, recent discussions with the operator have confirmed that MSF car park management will be focussed on serving the needs of bona-fide visitors and there can be no expectation of any dedicated capacity for Hospital users - at least at the times when it is most required.

1.10 Given our revised (increased) estimates for both existing and future parking demand at the Hospital and surrounding Health Campus (including HREF), it is most unlikely that *all* estimated parking needs of all visitors *and* staff could be met in the *immediate* area, and thus some continued reliance is to be expected on more remote on and off-street parking sites. It is also essential to acknowledge that the estimates are only based on *known* developments - and the 'unknowns' may lead to additional further parking demands in the area that may not be fully-accommodated on those sites.

1.11 Allied to what is a significant reduction in parking supply originally recommended on the Main Site, the likelihood of future reductions in on-street parking availability and the absence of spare capacity at the MSF, it is even now more critical, in our view, that adequate alternative parking supply be secured on available land as soon as possible, and that appropriate steps are taken to manage associated risks by safeguarding options in the meantime.

Recommendations for Parking Provision

1.12 In line with the anticipated *minimum* Hospital and wider (known) Health Precinct off-street requirements and the October 2016 study completed by QTP on behalf of CCC (which was focussed only on the capacity of the surrounding network to accommodate additional parking facilities), the CDHB and partner agencies should work together to urgently investigate the viability of both a **700 space building within close proximity to the Main Hospital site (within 5-7min walk from the hospital centre) and a further 700 space building to the east of the Staff parking building** (the latter with access to both St Asaph and Tuam Streets).

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[1] Advice provided to the HRPG in late 2012 in support of the ASB development (and to which QTP then contributed) was to seek provision of 700 car parking spaces on the Main Site (100 of which were considered necessary to accommodate critical staff and service needs, the remainder for visitors)[1] and a further 700 spaces to the east (on or close by the St Asaph campus), to serve both visitors in that vicinity and staff. We understand that a much smaller provision for the Main Site facility was subsequently pursued as a separate procurement exercise and proved not to be a (financially) viable proposition.

1.13 Pending the outcome of these investigations and discussions, we recommend the CDHB should 'reserve' a more-viable area for a potential replacement 'Blue' Parking Building (if this ultimately is a preferred site), as our understanding of the currently-planned space would be a relatively inefficient and therefore potentially increase costs per space.

1.14 The more-detailed financial investigations should, for the facilities in the above locations, consider alternatives that allow for potential 're-purposing' at some future date. This may be prudent in the light of potential technology change (e.g. personalised self-driving taxis) in the medium-long term. Such changes, whilst uncertain, do have some potential to reduce or even eliminate the need for much static 'near-site' parking. Whilst higher capital costs may be initially anticipated (as a flat-slab structure and increased floor-floor height is required), we suggest that such flexibility may reduce overall life-cycle cost risk.

1.15 Further, in terms of minimising risk, we recommend that the CDHB continue to hold the former Christchurch Women's Hospital site for potential use as a Park and Ride facility, until such time as the availability of adequate alternative (and more attractive) parking provision close to the Campus is certain – or the need for some 'next-best' alternative becomes clear. This site has the capacity to accommodate around 650 cars and, whilst in some respects is less well-located than the temporary Deans Avenue site, it does have the advantage of CDHB ownership and thus (current) long-term security without lease cost.

Recommendations for Demand Management

1.16 Notwithstanding the above (key) recommendations on Car Parking provision, there will be significant potential benefits if the CDHB supports greater efforts to encourage a reduction in single-occupancy car use, particularly by staff. This can be achieved through measures which may include:

- Adoption of more-flexible employment practices for 'regular hours' staff, as this could help reduce the afternoon peak parking demands, which occur during the necessary shift-staff handover.
- Flexibility of visitor times to reduce peak parking demands ahead of the start of the (currently-advertised 'official') afternoon visiting times (from 3pm), as this is also partly coincident with peak staff-parking demand at morning and afternoon shift-handover (2:15-3:15pm), with respect to use of available public parking spaces;
- Incentivise staff to reduce single-occupant car driver trips through:
    - Car-Pooling (e.g. pool organisation, preferential space allocation and reduced fees);
    - Bus use (e.g. subsidy for Metrocard use)
    - Cycle-use (e.g. ensure attractive parking and end-of-trip facilities, the latter including adequate shower capacity, lockers and drying facilities)

2 Introduction

2.1 QTP have been requested to assist the CDHB "develop a Long-term Hospital Parking Strategy". This document represents a draft of such a document for their consideration.

2.2 In order to identify the elements of such a Strategy, we have reviewed a range of previous (publicly-available) studies that have considered such matters, either specifically or as part of wider transport strategy/plan development.

2.3 This document seeks to set a Strategic framework for future Hospital Transport that includes:

- A Vision, Goals and Principles for Hospital Transport
- The broad elements of a Transport (including Parking) Strategy that will assist in achieving these outcomes

2.4 In order to provide the basis for this framework, following sections of the document provide in turn:

- A Preamble of important matters that includes (our) suggestion for the appropriate elements to include in a final Strategy. Our belief is that a lack of a Vision and goals in particular, and indeed (apparently) agreement on responsibility for satisfying such, arguably has and could continue to lead to sub-optimal transport outcomes for both Hospital visitors and staff, and potentially fail to meet the needs of either or both groups
- A precis of existing (publicly-available) evaluations conducted, including recent reviews by CCC, MoH and DCL
- Revised estimates of *existing* parking supply and demand, using updated data provided by CDHB
- Consideration of alternative scenarios for future ('long-term') changes in demand;
- Identification and broad evaluation of options for addressing these scenarios through potential alternative Plans.

3 Strategy Outline

3.1 Strategic Framework

3.1.1 In being asked to develop a "Long-term Parking Strategy" for the Hospital, QTP have reviewed a number of previous studies that have considered such matters, either specifically or as part of wider transport strategy/plan development.

3.1.2 What is apparent from these documents is that, while a number attempt to provide a 'plan', none appear to have clearly set out a 'strategic framework' for Parking (and indeed wider Transport matters) that is *specifically focussed* on the needs of the future Hospital campus itself, or indeed the South West area of the Central City including the wider Health and Metrosport precincts.

3.1.3 A clear strategic framework - by which we mean a Vision and goals (these being the outcomes which a Strategy seeks to deliver and may be measured against) - provides the ability to consider potential options for a Plan against desired Goals and thus finalise such a Plan for their delivery[2].

3.1.4 Given the apparent lack of one, in this chapter we have set out a preliminary view of (our) suggestions for such a framework, although do acknowledge that the Board (and other key stakeholders) will naturally wish to consider and potentially amend these, in light of their own priorities.

3.1.5 Before coming onto these suggestions, we also consider it important from the outset to state our view that what the Hospital (and arguably the wider South-west Central City) really requires is a *Transport* Strategy, rather than one focussed only upon Parking: Whilst the latter is clearly an important (indeed vital) component to achieve a Vision for transport to and from the Hospital, a Strategy (and/or Plan) for Parking should represent only one component of delivery, there being a range of other transport (and transport demand management) measures that are and will be complementary to support a wider Hospital Transport Strategy (vision). We have proceeded on this basis.

3.2 Purpose

3.2.1 The purpose of a Hospital Transport Strategy should be to provide:

- A framework to assist informed discussions between the CDHB, other agencies and key community stakeholders and their decisions on the long-term provision and management of transport options to and from the Christchurch Hospital;
- A framework within which the Board can make decisions on future provision and management of car parking to serve the Hospital, where this is feasible;
- A means to prioritise and manage the demand for the finite numbers of car parking spaces that are (and planned to be) available for staff, patients and visitors;
- The rationale for why encouragement to reduce single-occupant car access to the Hospital, where feasible, makes sense for fiscal as well as wider health and

[2] We accept that such a Vision and/or Goals may have been implicitly assumed by authors of previous studies, but such assumptions do not appear to have been clearly defined.

environmental reasons; and

- Other policy measures which will ensure that a Vision and Goals ultimately agreed for Hospital Transport are delivered.

3.3 Towards a Vision for Hospital Transport

3.3.1 The vision of CCC's Christchurch Transport Strategic Plan (**CTSP**, June 2012), which considers future transport for the whole of Christchurch City, is "to keep Christchurch moving forward by providing transport choices to connect people".

3.3.2 The An Accessible City (**AAC,** October 2013) plan was developed by CERA on behalf of Minister for Canterbury Earthquake Recovery as part of the wider Christchurch Central Recovery Plan (**CCRP**). Its vision is for the central city to be vibrant and well-formed, and to attract people to live, work, play, learn, stay and invest. It will be safe, compact, accessible to everyone, sustainable and responsive to future changes. It aims to provide a Central City travel network that will meet the current and future needs of all inner city travellers across a range of different modes of travel.

3.3.3 To support the AAC, in 2015 the Council released their Christchurch Central Parking Plan (**CCCP**), with its intention being to help the Council, CERA, the Christchurch Central Development Unit (**CCDU**) and the development and business communities alike, to gain a shared understanding of ongoing parking needs and supply across the Central City during the recovery phase. The purpose of this Plan is to provide clear information on expected parking demand and likely supply. It does include a (helpful) set of parking principles (along with potential actions and results) to help guide the design and location of parking facilities, but contains no clear statement of a Vision for Parking. Nor was its purpose to have a specific focus on the SW Central City.

3.3.4 The **CDHB Vision** is for *"an integrated health system that keeps people healthy and well in their own homes by providing the right care and support, to the right person, at the right time and in the right place".* To achieve this vision, one of the methods is to take a "whole-of-system" approach, where everyone in the health system works together to do the right thing for the patient and the right thing for the system.

3.3.5 Where care *is* required at the Hospital campus, transport to enable such care clearly has an important role to play in a "whole of system" approach.

3.3.6 Further, an integrated view of patient welfare will recognise the vital contribution that patient's supporters and, of course, health-care staff can make to a patient's care and recovery: A hospital stay or visit is often likely to be a time of great stress for patients and their families alike and transport options will play an important role in mitigating (or potentially exacerbating) this stress. Similarly, for health-care staff, transport to and from work has the potential to add to, or reduce, the inherent stress in their daily work.

3.3.7 To support a CDHB Vision that is focussed on patient care, we therefore propose the Board considers the following draft Vision for Hospital Transport:

> "Christchurch Hospital will be viewed as accessible by patients, visitors and staff and the transport needs of each of these groups are met by a range of safe and attractive transport choices"

3.4 Goals

3.4.1 To support this Vision, the following draft Goals (outcomes) for a Hospital Transport Strategy are proposed:

- Equitable, safe, legible and sustainable access choices are provided to Hospital users, including patients, visitors and staff.
- A fiscally-responsible approach is taken to provide, manage and price transport services (including parking facilities) and that the overall benefits will meet or exceed the costs.

It is important, however, to acknowledge the reality that both of these goals may not always be fully-compatible and that one, or both, may require a degree of compromise.

3.5 Principles

3.5.1 To support the desired outcomes, and guide development of more detailed policies that may be incorporated within a finalised Strategy, the following (draft) principles are proposed:

- Hospital access options will be responsive to user needs
- Hospital access options will represent value-for-money
- While there are costs associated with providing Hospital access options, such services will not detract from the ability of the Board to fund and provide clinical care. In particular the Board expects car parking to be self-financing: “fair access, not free access”
- Available car parking space will be prioritised according to needs, not by perceived entitlement
- There should be no financial disadvantage between employees with priority access to parking and those without priority access to parking.
- Parking management will seek to maintain high occupancy levels (over 90%), to support efficient use of land
- Parking supply will be managed to maintain adaptability wherever feasible, to accommodate potentially-changing health-care delivery and transport environments; and
- The Board will seek to minimise the impact of hospital parking on others.

3.6 Responsibilities

3.6.1 We recommend that the key responsibilities and duties for implementation of a Long-Term Hospital Transport Strategy (and subsequently Plan[3]) are more clearly identified (and communicated), e.g. responsibilities and duties may be anticipated as follows:

- The **Board** may wish to delegate approval to progress discussions on a draft Strategy with relevant stakeholders and will bear responsibility for approval of a finalised Strategy.

[3] This should include development and adoption of a Hospital Travel Plan, which would include car parking policies as well as the plan for implementation and management of the parking stock.

- The **Chief Executive**, whom it is suggested should bear responsibility for the implementation of a finalised Strategy adopted by the Board, *including agreement with other agencies over specific responsibility for delivery of supporting transport infrastructure, within agreed timeframes*;
- An **Executive Manager**, whom it is suggested should bear responsibility to ensure that the development and management of transport and parking services is aligned with the Transport Vision, goals and principles (including being responsive to user needs and representing value-for-money);
- A **Manager** designated with primary accountability for Transport and Parking and responsible for day-to-day implementation, including specification and procurement of car park supply and management services - and any delegated responsibilities for these matters.
- A **Travel Plan Coordinator**, with accountability for development and implementation of a Hospital Travel Plan, including measures to promote and sustain increased car-sharing, public transport, cycling and pedestrian access by Hospital staff, patients and visitors.
- In addition, it would also be useful to consider and clearly set out the responsibilities and duties expected of Parking Permit Holders, other Members of staff and members of the Public, **and other agencies**.

3.7 Key Targets

3.7.1 Pending further investigation to confirm patient and visitor use of transport options in particular, we suggest that the following tentative long-term access mode-share targets be adopted on an interim basis to guide decision-making. More detail on the basis for these targets is provided within subsequent sections of this report.

Mode of Travel	Staff		Patient & Visitors	
	Estimated Current	Potential 2031 Target	Estimated Current	Potential 2031 Target
Drive a Car	65.0%	50.0%	49.3%	45.0%
Car Passenger	5.0%	15.0%	44.9%	46.3%
Cycle	15.0%	19.0%	1.5%	2.3%
Walk or Jog	6.0%	6.0%	1.3%	2.0%
Bus	7.0%	8.0%	2.0%	3.0%
Other (including M/C/scooter)	2.0%	2.0%	1.0%	1.5%
Total	100.0%	100.0%	100.0%	100.0%

Table 3-1: Hospital Mode Split Targets

3.7.2 Other targets (and a monitoring action plan) may also be appropriate to include within a finalised Transport Strategy and Travel Plan, by which to measure progress towards desired outcomes/objectives.

3.8 Priorities for Parking

3.8.1 Given existing and likely-future constraints on space available for parking, there is a need to clearly prioritise available parking space and inform decisions regarding potential development of additional capacity. Logically, these are ultimately likely to vary according to specific locations, accessible parking supply and relative demand, but the following five broad priority categories are suggested as an initial basis for consideration:

Priority Category	User Group
1	EAS Vehicles
	Mobility Parking Permit Holders
	Drop-off/pick up for acute patients
2	Drop-off/pick up for outpatient admissions
3	Other Patients and visitors.
	Meeting contract-commitments for parking to accommodate rotating shift workers (working outside 7:00 am to 6:30 pm), where required by the user.
	Medical Consultants.
	Any employees working between campuses on a routine basis of 3 times or more per week.
	Emergency call out staff while on call.
	Emergency services, corrections, courier, maintenance, contractor and CDHB fleet vehicles
	Volunteers.
4	Parking to accommodate rotating shift workers (working outside 7:00 am to 6:30 pm), where a contractual obligation to a parking space does not exist[4].
	Staff Car Pooling Scheme(s)
	Demonstrated primary carer needs
	Staff where comparative total travel time via public transport exceeds private-vehicle travel time by more than 30 minutes per journey
5	Staff who only work Monday to Friday 7:00 am to 6:30 pm[4].

Table 3-2: Proposed Priorities for Allocation of Available Car Parking Supply

[4] The provision of a car parking space should not, however, be seen as a contractual entitlement for any staff, beyond agreements that are already in place and on-going.

3.9 **Actions**

3.9.1 The Board will develop and adopt a Transport Strategy by _____

3.9.2 A Hospital Travel Plan to support this Strategy will be developed and adopted by _____ . The aim of this Plan will be to confirm specific targets and objectives for approval by the Board, in order to encourage, whenever possible, alternative options to single-occupant car travel and to better plan and manage available car parking provision.

3.9.3 The development and implementation of the Travel Plan should be informed by additional (and on-going) surveys including market research of Hospital users (and patients and visitors in particular), to confirm their existing and potential mode-share (including existing and preferred parking locations where applicable), access needs and priorities, degree of satisfaction with access experience, willingness-to-pay for added value improvements, and monitor progress towards targets, etc.

3.10 In line with the anticipated *minimum* Hospital and wider (known) Health Precinct off-street requirements the CDHB and partner agencies should work together to urgently investigate the viability of both a **700 space building within close proximity to the Main Hospital site (within 5-7min walk from the hospital centre) and a further 700 space building to the east of the Staff parking building** (the latter with access to both St Asaph and Tuam Streets).

3.11 Pending the outcome of these investigations and discussions, we recommend the CDHB should 'reserve' of a more-viable area for a replacement 'Blue' Parking Building, as our understanding of the currently-planned space would be a relatively inefficient and therefore potentially increase costs per space;

3.12 The more-detailed financial investigations should consider alternatives that allow for potential 're-purposing' at some future date. This may be prudent in the light of potential technology change (e.g. personalised self-driving taxis) in the medium to long-term. Such changes, whilst uncertain, do have some potential to reduce or even eliminate the need for much static 'near-site' parking. Whilst higher capital costs may be initially anticipated (as a flat-slab structure and increased floor-floor height is required), we suggest that such flexibility may reduce overall life-cycle cost risk.

3.13 Further, in terms of minimising risk, we recommend that the CDHB continue to hold the former Christchurch Women's Hospital site for potential use as a Park and Ride facility, until such time as the availability of adequate alternative (and more attractive) parking provision close to the Campus is certain – or the need for some 'next-best' alternative becomes clear. This site has the capacity to accommodate around 650 cars and, whilst in some respects is less well-located than the temporary Deans Avenue site, it does have the advantage of CDHB ownership and thus (current) long-term security without lease cost.

4 Parking Costs

4.1 Historical Context

4.1.1 The former 'Blue' off-street public parking building (Hospital Car Park) located on the St Asaph campus was opened in 2000, with a capacity of 353 spaces. Following completion of the Women's Hospital, from May 2005, the on-site supply (Main campus only) was around 258 spaces. The Council managed both this building and on-site parking at the hospital, through a Parking Management Agreement and a Deed of Sublease.

4.1.2 Given its location (and surrounding pre-quake land use), clearly the majority of users of the former Hospital Car Park were also Hospital users - A 2004 survey for CCC found that the proportion was 95%+, depending on the time, and this convenience accords with a Customer Satisfaction survey conducted in 2007:

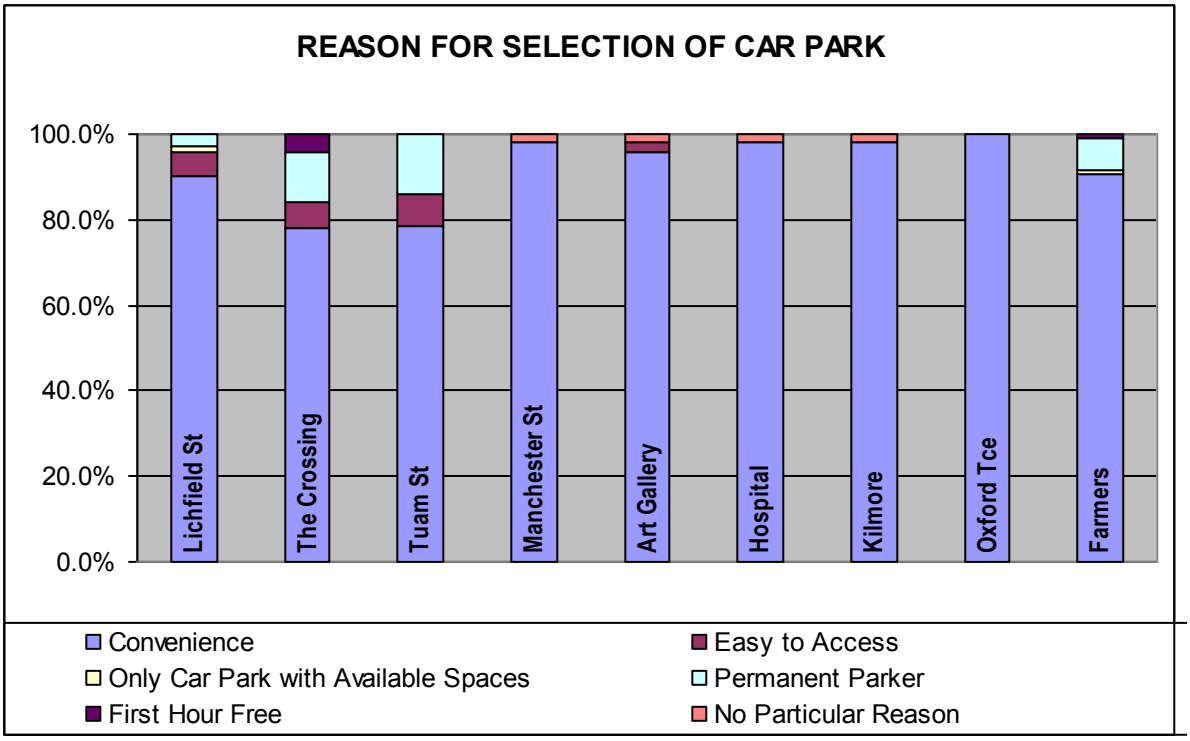

Figure 4-1: Reason for Selection of Car Park (2007)[5]

4.1.3 Also in 2007, a study for CCC conducted by Deloittes reported that although the building then generated a surplus of around $300,000/year, average occupancy was not high, particularly at weekends (when both demand was lower and the availability of on-street parking was higher). This is illustrated by Figure 4-2 and Figure 4-3.

[5] Source: 'Annual Off-Street Parking Customer Satisfaction Survey' (Spire Consulting on behalf of CCC, May 2007).

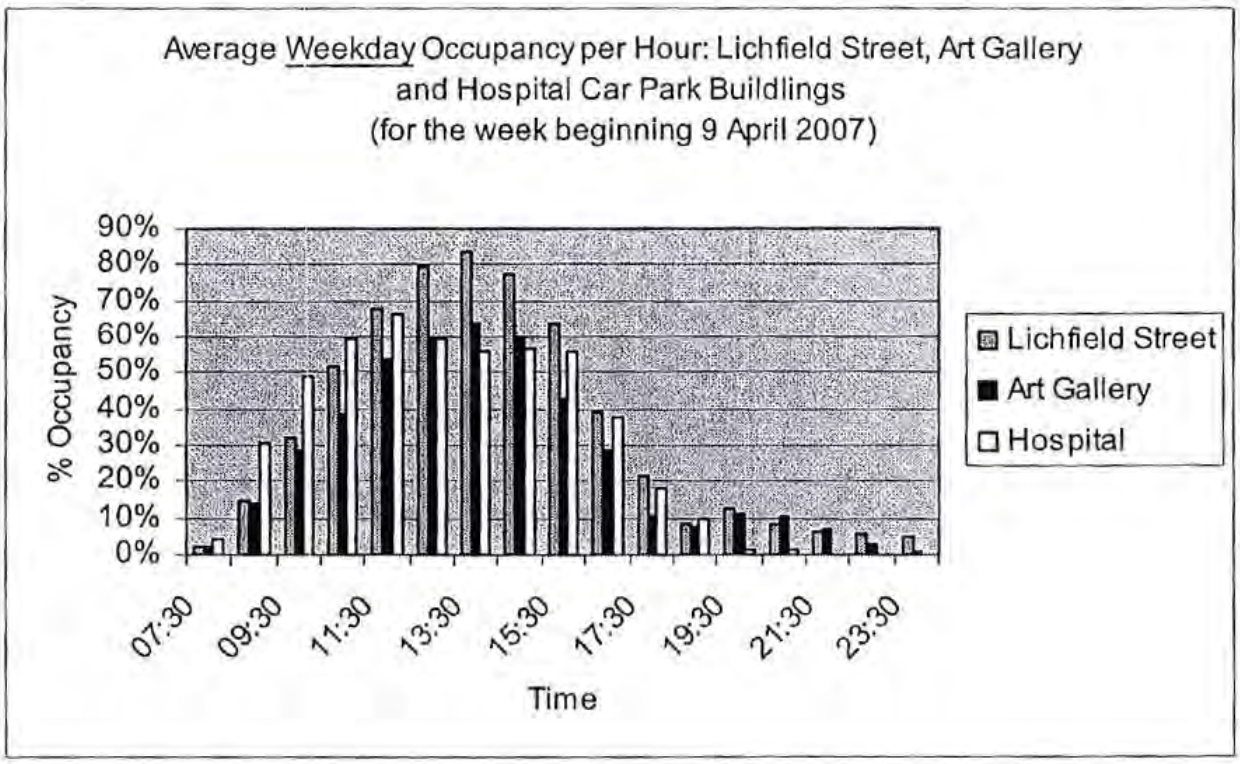

Figure 4-2: Example of Former Hospital Car Park Weekday Occupancy (2007)[6]

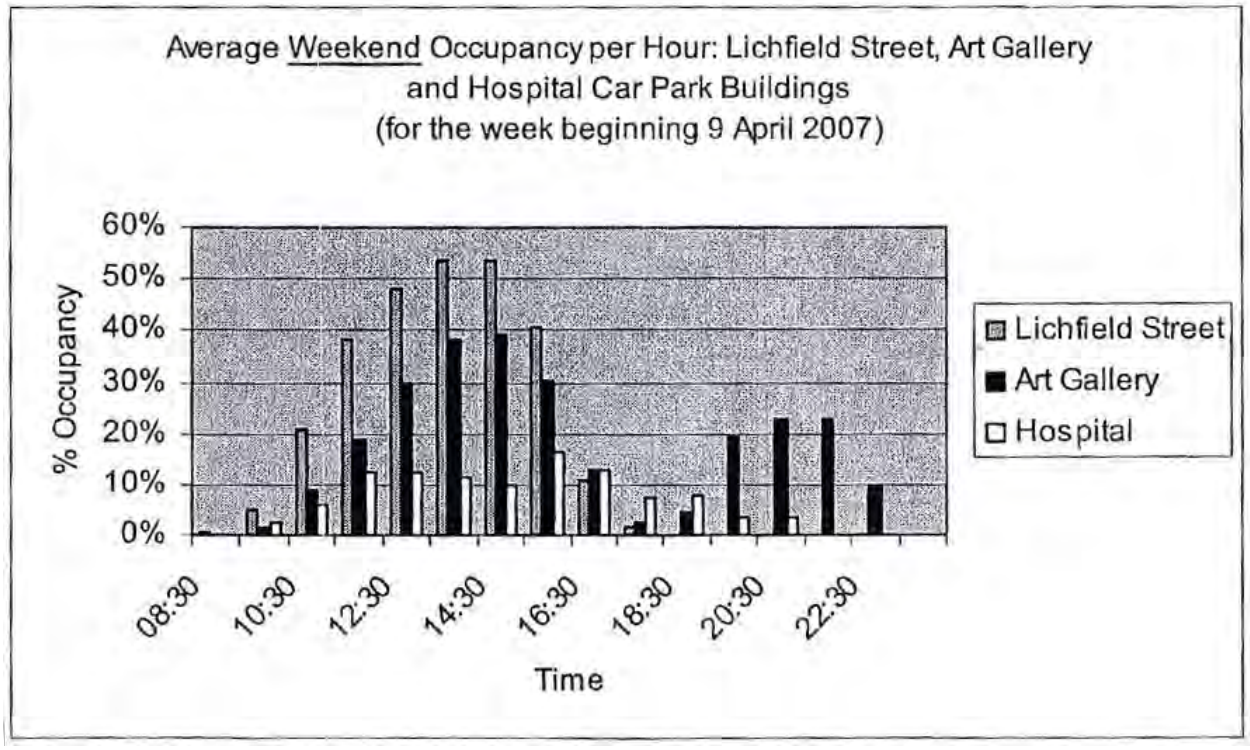

Figure 4-3: Example of Former Hospital Car Park Weekend Occupancy (2007)

6 Source: 'High Level Review of Central City Parking' (Deloittes on behalf of CCC, May 2007)

4.1.4 Council data from that time suggested that there were around 195,000 parking transactions at the building each year. Assuming 50% average occupancy during the week and 12% at weekends, this would imply an average weekday would have had around 685 (casual parker) users.

4.1.5 At the time of the above occupancy reports, charges levied were $0.50c/half hour in the building and $0.75c/half hour for on-site parking (at the Main hospital site), thus providing some incentive to use the off-street parking, which would have represented a less-attractive position for many users, compared to if a space was available on the Main site (or on-street close-by).

4.1.6 In September 2007 (following consultation by the CDHB with staff and patients, where 199 of 200 responses expressed negative views about a proposal by CCC to raise both on-site and building charges to $1.10/half hour, citing impact on patients, visitors, and staff), the charges were amended to $1.10/half hour for the building ($17/day) and $0.80/half hour for on-site parking.

4.2 In this context, it is of little surprise that the building (reportedly) would have continued to have relatively low (or indeed lower) occupancy and that the nearer and lower-cost parking on the Main site continued to be preferred, with very high occupancy rates of the latter as a result.

4.3 At that time, on-street parking charges, where levied, were $1.10/hr. Despite this, demand for both charged on-street parking close to the Hospital and free parking further afield was heavy, Deloittes reporting that 6 parking meters located in Riccarton Avenue were the highest-grossing of any in the city.

4.4 In the last parking inventory surveys conducted on behalf of CCC prior to the earthquakes (December 2009), there were a total of 1,000 on-street spaces in the Health and Metrosport AAC precincts combined[7], 608 (61%) of these allowing long-term parking. The total on-street parking did not change significantly following the earthquakes (in March 2016 1,016 spaces in these areas were recorded) but, by this time, the proportion allowing long-term parking had risen to 72% (730 spaces, 713 of which were free). Further information on *current* availability is provided in the following chapter.

[7] Note that these surveys did not include Riccarton Avenue and the precinct definitions also exclude parking beyond Moorhouse Avenue.

4.5 The 'Real' (Current) Costs of Parking

4.5.1 Clearly, despite a number of changes that have occurred following the Canterbury earthquakes that may have reduced accessibility, transport by car is still currently perceived as representing a (relatively) attractive (i.e. 'most-viable') transport option by the majority of staff and other users (including patients and visitors) of Hospital facilities.

4.5.2 The Hospital operates 24 hours per day, 7 days per week. Many health care workers are shift workers that are required to start work early in the morning (before 7.00 am) or leave work late at night. For these employees, alternative transport modes to the car may not always provide an adequate level of accessibility. Access and parking provision must give consideration to maximising safety of all staff and where feasible help promote a healthy workforce and minimise travel time, beyond specific contractual obligations to some staff.

4.5.3 The car parking needs of patients and visitors would, from a user perspective, clearly ideally be met on-site (and at minimal cost). However, it must be recognised that space constraints (and fiscal responsibility) will almost certainly preclude such 'ideal' provision to cater for all such demand.

4.5.4 Where a viable choice, an increased use of more 'active' transport options (including walking and cycling) is likely to have wider health benefits both through reduced stress and increased activity, for staff, visitors and indeed even some patients.

4.5.5 Encouragement of increased use of such 'active' modes, along with other mechanisms to reduce single-driver car use (e.g. increasing public transport use and car passenger numbers) also has the potential to deliver significant financial as well as wider economic (e.g. health-saving) benefits, by potentially 'avoiding' – or reducing - the 'real' costs of providing parking where the latter might only be achieved, in an attractive position, via multi-storey car park(s):

- Whilst many may perceive it as such (and be attracted as a result), no parking is actually 'free': Car parking, in particular, takes space and thus there is at a minimum, an opportunity cost associated with that space[8]. As will be seen later in this report, currently there are a significant number of at-grade parking spaces on vacant sites within walking distance of the Hospital campus (with many apparently awaiting economic conditions that will enable a more-viable use through development). Part of this economic equation is that post-earthquake construction costs in Christchurch have risen significantly - and this applies also to development of (multi-storey) car parking buildings.
- Our understanding is that the typical present value of cost per multi-storey car parking space in Central Christchurch may lie between about $30,000-$45,000 (when land and life-cycle operational costs are included), depending on location and design factors, including space efficiency. This means that (based on typical cost of capital and desired margins) each of those spaces may need to generate revenue of between around $10-$15/day, or *at least* $50/week, to represent a

[8] Even if it makes use of 'available' space 'on-street', such parking space might be used for other purposes, such as easing traffic flow, providing facilities for other transport modes, enhancing landscaping amenity, etc.

viable financial proposition[9]. This can be achieved at centrally-located buildings with relatively-high turnover and hourly-based commercial rates (of between $3.20-$4:00/hr), focussed on accommodating shorter-term visitors.

- However, clearly it does not presently represent a viable (commercial) proposition for longer-term parking, where alternative capacity (competition) exists and is perceived as more-attractive.
- Within walking distance of the Hospital, this 'competition' presently includes unrestricted on-street parking and off-street (at-grade) rates on currently-vacant sites that may typically currently be around $20/week (with some even lower on a monthly contract). What this implies is that any new parking building focussed on accommodating *long-term* parking, is likely to require a heavy subsidy (that may be in the region of $30-40 per space per week) in the foreseeable future to be 'viable' (to a commercial promotor).

4.5.6 These figures may be compared to rates currently charged to staff for the use of CDHB car parks, which we understand to be $27/week, or $2/day for use of the Afternoon car park.

4.5.7 Charging for short-term visitor parking at Hospitals, whilst clearly not welcomed by users, is being increasingly used in NZ and overseas as an appropriate means to manage space allocation (where sufficient space is not available to provide 'free' parking to accommodate all demand), generate a transactional benefit for the user (as a space may be purchased in a more-attractive location), and to cover the real operational and/or the opportunity cost of providing the space required.

4.5.8 By way of examples, parking at Auckland City and Waitemata Hospitals currently costs $7 per 2 hours (and $18-$20/day), Wellington Hospital charge $6 per 2 hrs (& $10/day during the week), while lower charges are levied at Palmerston North ($4 per 2 hours and $8/day) and Waikato Hospitals ($3 per 2 hours and $7.50/day), reflecting their relative demand and local commercial rates.

4.5.9 Short-term (<4hr) rates in Christchurch Parking Buildings currently vary, but range from around $8 per 2 hours (and $12/day Earlybird) at the West End Car Park (Cashel Street) to $4 per 2 hours at the Art Gallery. On-street rates are (mostly) $6.20 per 2 hours.

[9] Indeed, these revenue requirements may even possibly increase in the future (unless costs reduce substantially), given the potential risk that the traditional viable life of such a building (30-50 years) may be reduced at some point in the not-so-distant future through anticipated technology, but as-yet uncertain resulting potential for changes in travel behaviour including a potential reduction in private ownership and rise in self-driving 'taxi-like' (personal PT) modes.

5 Previous Hospital Parking-related Evaluations

5.1 Introduction

5.1.1 As noted above, a number of previous evaluations have been reviewed for the purpose of this study. The most recent and relevant of these (which are in the public domain) are briefly summarised below.

5.2 March 2017 Review on behalf of MoH[10]

5.2.1 In March 2017, the MoH received a report that provides a valuable review of previous studies by their consultants Urbis TPD Ltd. It also updated some of the previous assumptions, leading to modest revision of estimates of both existing (and future) demand and supply, and clear recommendations for the latter, based on this analysis. (**Appendix A** provides further brief commentary on this and its preceding documents).

However, in summary, the report:

- Discussed changes in the parking demand of Hospital activity since a 'Construction ITA' was prepared (for the ASB) in October 2015;
- Provided a copy of a parking demand analysis table (prepared by Deloitte), with commentary on where this changed from the 'Construction ITA' demand analysis;
- Discussed changes in the parking supply in the vicinity of the Hospital since 2015; and
- Provided recommendations for the short, medium and long term scenarios to improve parking supply for the Hospital.

5.2.2 The key conclusions of this review were:

- That there is a parking shortfall associated with the current operation of the hospital site and this primarily arises from the loss of parking on the Metro Sports site and the streets surrounding that site;
- There is spare parking capacity at the sale yard site to compensate for parking displaced from the Metro Sports site and the streets surrounding that site;
- There will need to be changes made in the operation of this remote parking facility to maximise its use in order to properly compensate for parking lost from locations closer to the Hospital site; and
- Uncertainty about the parking demand at alternate permanent parking supply options such as the Metro Sports site means that it is inappropriate to replace the blue parking building now.

5.2.3 In the interim a number of changes could be made to the current parking supply situation that would certainly assist, and possibly fully rectify, the parking shortfall issues associated with the operation of the Hospital.

[10] 'Christchurch Hospital – March 2017 Review of Parking Supply and Demand', (Urbis TPD Ltd, April 2017, on behalf of MoH. http://www.health.govt.nz/system/files/documents/pages/urbis-review-of-parking-supply-and-demand-for-christchurch-hospital.pdf (Retrieved 19/7/17).

5.3 January 2017 Review by Development Christchurch Ltd (DCL)[11]

5.3.1 This evaluation was undertaken by DCL to respond to a request by the Christchurch Mayor and Greater Christchurch Regeneration Minister to prepare a comprehensive business case for car parking solutions for the south-west central city and include consideration of the demand from CDHB, Metro Sport Facility (MSF), South Frame and other nearby facilities.

5.3.2 In summary, the report:

- Sets out DCL's view of current and future estimated parking demand and supply in the south-west of the central city. It specifically focusses on the estimated number of car parks required for the proposed Metro Sport Facility (MSF) and the potential long term shortfall of parking supply in the health precinct;
- It provides an analysis of the MSF parking demand estimates, noting that Ōtākaro's preliminary design supply of 550 parks indicates that there could be sufficient parking during peak hours approximately 60% of the time. They noted that 'to accommodate for (MSF) overflow, there is unmetered, unrestricted parking nearby'[12].
- From the analysis performed, it was also, however, identified that there could be a significant shortfall of parking within the health precinct in the long-term. This shortfall could be up to 2,900 parks during the construction of the new health facilities, and up to 2,000 in the long term.
- A number of potential solutions were identified, including a new parking building (considered on various sites), park-and-ride options, and efficiencies that could be obtained from the key parties sharing parking resources (when their demand peaks do not coincide) .
- These potential solutions were evaluated against the critical success factors of: strategic fit, value for money, user affordability, facility proximity, traffic impact and achievability.
- Based on the results of the evaluation, the key options (not mutually exclusive) which the authors recommended be explored further are:
    - CDHB finding a partner to build a total of 1,000 to 1,400 car parks 'on CDHB land';

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11 'Car Parking in the South-West Central City, Final Issue', (Development Christchurch Ltd, January 2017). The copy reviewed was retrieved from: https://www.ccc.govt.nz/assets/Documents/The-Council/How-the-Council-works/LGOIMA-responses/DCL-Report-on-Health-Precinct-Car-Parking.pdf (19/7/17), As this version was provided in response to a LGOIMA request, it is noted that it does include some redactions, to preserve commercially-sensitive information.

12 We would add that our own-spot check surveys indicate that over-night and early-morning demand for this parking is already effectively at capacity (Our own observations being undertaken for 5 days between 6-7am, to minimise observation of 'construction parker' use) - not least because of its apparent current attractiveness for Hospital staff. Regular peak MSF demand is, however, anticipated to occur between 5:30pm-8:00pm and thus precede the arrival of night-shift hospital staff (10:30pm-07:00am).

- MSF providing car parks up to a practical maximum of 650; and
- Implementing technology to allow for shared use of car parks.

5.3.3 Subsequent discussions with the operator of the MSF (by CDHB and the author) reveal that detailed planning of the facility has progressed since the preparation of DCL's January 2017 report: Technology will indeed be implemented to manage parking at the MSF, but this will be used to support a management plan that is focussed on meeting the needs of bona-fide MSF users first-and-foremost. The facility is thus unlikely to provide any significant potential capacity for hospital staff and visitors (except, potentially, for periods of low demand at the MSF, generally anticipated to be between 8pm-6am). However, as will be seen subsequently, Hospital demand is (relatively) low during this period and even this capacity could not be relied upon '24/7', given that occasional major events, including in late evening, may be expected at the MSF.

6 Existing Parking Supply and Demand

6.1 Introduction

6.1.1 The following estimates of current parking supply and demand have been up-dated to account for recent surveys (CDHB/QTP), accounting for current construction operations on the Main Hospital campus and within the immediate area.

6.2 Existing Off-Street Parking Supply

6.2.1 Table 6-1 and Figure 6-1 overleaf indicate the existing off-street parking supply locations (CDHB-controlled and other parking available for public use), within an approximate 15 minute walking catchment of the Main Hospital site[13].

Category	Estimated Walking Time			
	Less than 5mins	5- 10min	10-15mins	Within 15 mins
CDHB-controlled Staff	74	774[14]	175	1,023
CDHB-controlled Public	101	0	0	101
CDHB-controlled Total	**175**	**774**	**175**	**1,124**
Other Public Off-Street	269	290	3,037	3,596
Total Off-Street	**444**	**1,064**	**3,212**	**4,720**

Table 6-1: Total Off-Street Parking Supply within 15minutes Walk[15]

6.2.2 It will be noted that the figures cited in Table 6-1 *exclude* the current Sale Yards Park and Ride capacity, which lies just beyond a 15 minute walk (for a healthy adult) from the Main Hospital *centre*. This site currently provides a further 250 spaces (approximately[16]) - albeit that these are not sealed, nor formally laid out to a high standard, nor may be viewed as providing secure overnight parking. Our understanding is that the site has resource consent for a total of up to 816 spaces.

13 Walk catchments have been taken to a centroid of Oncology which is anticipated to reflect a future centre of demand for the site.

14 This includes the Afternoon Car Park (St Asaph Street) – including approx. 117 spaces being currently-within the MSF site - as well as the Staff Car Park (Antigua Street) and leased parking on the KEB site.

15 This is measured to Main Site centroid NOT the edge of campus - See Notes on Figure 6-1.

16 Note the existing licence to occupy is for 300 spaces and the wider site has capacity for around 816 cars.

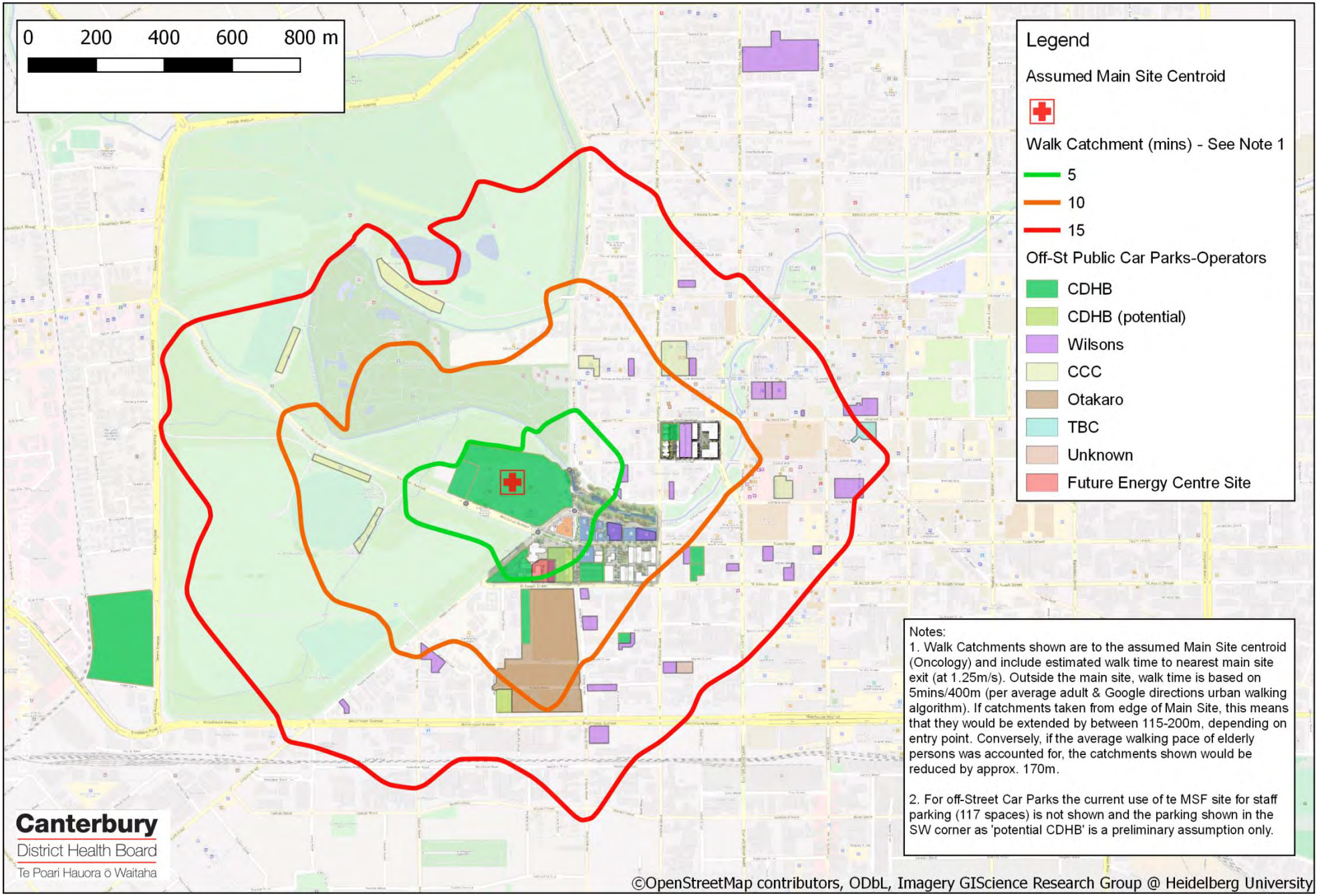

Figure 6-1: Current Off-Street Staff and Public Parking within 15mins Walk of Hospital

6.2.3 Current parking supply on the campus itself is summarised in Table 6-2.

6.2.4 It is notable that substantial improvement has been made since 2013 to the campus cycle parking provision (through the addition of a secure compound outside the Main Entry and installation of some double-cycle racks).

Type	Main Site	St Asaph[17]	Total
Drop-off	12	0	12
Mobility	29	4	33
Staff	18	56	74
Public/Contractor	33	23	56
Total Car Parking	92	83	175
Secure Cycle Parking	382	0	382
Unsecure Cycle Parking	135	53	188
Total Cycle Parking	517	53	570

Table 6-2: Current Campus Parking[18]

6.3 Existing On-Street Parking Supply

6.3.1 Figure 6-2 overleaf indicates existing on-street parking supply within an approximate 15 minute walking catchment of the Main Hospital site. The parking legend colours have been selected to broadly differentiate between Paid (red-orange) and Unpaid Parking (green), as well as any applicable time-restrictions.

6.3.2 Note that because the assumed catchments include walking time *within* the campus, parking on Deans Avenue - which early-morning observations indicate is likely to be used by some staff - is not included, as this lies beyond the estimated catchment adopted.

17 'St Asaph' is defined as the 'triangle' bounded to the south by St Asaph St and east by Antigua St. It includes cycle parking and car parking (reserved for on-call medical staff) at the sub-station site but does *not* therefore include either the Afternoon Car Park (St Asaph Street) or Staff Car Park (Antigua Street).

18 Note that motorcycle, scooter and ED ambulance parking spaces are excluded.

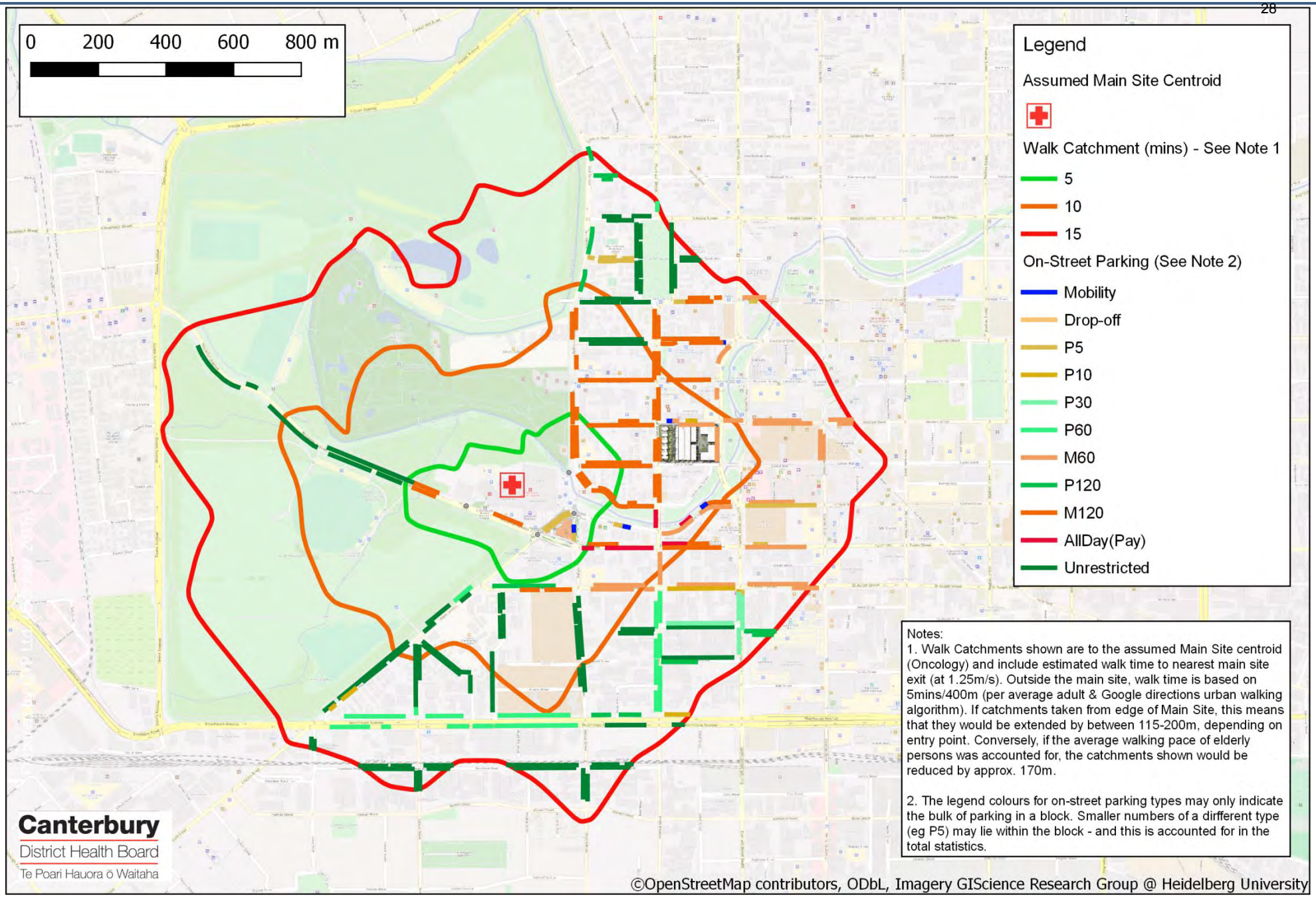

Figure 6-2: Current On-Street Public Parking within 15mins Walk of Hospital

6.3.3 The numbers of these on-street parking spaces are presented in Table 6-3 below.

On-street Parking Type	Walk Time from Hospital			
	Less than 5mins	5- 10min	10-15mins	Within 15 mins
Mobility	4	4	7	**15**
Drop-Off (P5,P10)	3	19	77	**99**
Time-Limited (<=3hrs, Free)	0	28	312	**340**
Time-Limited (<=3 Hrs, Pay)	117	348	226	**690**
All-Day Pay	0	36	0	**36**
Unrestricted (Free)	4	286	617	**908**
Total	**128**	**721**	**1,239**	**2,088**

Table 6-3: Existing On-Street Parking within 15mins walk of Hospital[19]

6.4 Future Parking Supply

6.4.1 This section *only* reports 'anticipated' parking supply, that is, where (some) long-term certainty exists, or rather is considered 'reasonably-likely'. Options for additional supply are canvassed in Section 8.

6.4.2 Currently-anticipated 'certain' future parking supply (with changes from the existing provision in brackets) on the Hospital campus itself is summarised in Table 6-4. Note that this **excludes** potential parking (to be examined later under Options) on land such as the sites of the former Blue Parking building and the current Diabetes building.

[19] Note that motorcycle and scooter parking is excluded.

Type	Main Site	St Asaph	Total
Total Car Parking	167[20] (+75)	44[21] (-39)	211 (+36)
Secure Cycle Parking	532[22]	0	532
Unsecure Cycle Parking	135	53	188
Total Cycle Parking	667 (+150)	53	720 (+150)

Table 6-4: Presently-Anticipated Future Campus Parking[23]

Category	Estimated Walking Time			
	Less than 5mins	5- 10min	10-15mins	Within 15 mins
CDHB-controlled Staff	39 (-35)	657 (-117)	290(+115)	986(-37)
CDHB-controlled Public	172(+71)	0	0	172(+71)
CDHB-controlled Total	**211(+36)**	**657(-117)**	**290(+115)**	**1,158(+34)**
Other Public Off-Street	269 (0)	840(+550)	3,072(+35)	4,181(+385)
Total Off-Street Staff and Public	**480 (+36)**	**1,497 (+433)**	**3,362(+150)**	**5,339(+619)**

Table 6-5: Presently-Anticipated Future-Minimum Total Off-Street Parking Supply within 15minutes Walk

6.4.3 The key points to note about the above are:

- Account has been taken of the potential which exists to replace parking presently-used by Afternoon staff on land 'borrowed' from the Major Sports Facility (**MSF**), by potentially securing land that may be available at the SW corner of the MSF site. Whilst this is assumed within the above table, we note that such exchange would still be the subject of negotiation with Ōtākaro and we suggest that long-term security of this space via lease or purchase is unlikely to be certain (as the owner will likely wish to retain rights to integrate this land within the MSF parking, should facility demand require it at some point in the future). The land is obviously further-

20 Assumes existing parking on the current Outpatients site (22 spaces) is replaced by the proposed 97-space ASB LG/GL car park.

21 Anticipates loss of 8 staff parks in SE corner and demolition of Diabetes building following vacation by August 2018 (resulting in removal of 23 staff and 8 visitor spaces); with replacement use not known, no net parking has been assumed, to be 'conservative'.

22 Anticipates +150 secure cycle spaces will be provided on the LG of the ASB (per submitted Designation plans) **and** retention of the Main Entry compound (or its relocation elsewhere).

23 Motorcycle, scooter and ED ambulance parking is excluded

removed from the site than the present afternoon parking and as such, would present a less-attractive option for its users, nor guarantee security for staff returning to vehicles late at night.

- Indeed the catchment totals already account for replacement of (more than) the total to be lost on construction of the MSF, via temporary parking recently-secured on Tuam Street (140 spaces) and off Montreal Street ('KEB', 98 spaces[24]).
- However, the securing of the 'MSF SW corner' parcel, however temporarily, would provide options to accommodate some staff demand within a reasonable walking distance of the campus.
- The addition of the MSF parking has been included (for the purposes of this table) within the 'Other Public Off-Street' category. However, it is clear from discussions with the operator that, whilst opportunities for shared-use of facilities would be welcome and further explored, there can simply be no guarantee of the availability of this space for hospital (staff or public) users (*"except potentially for the period between 8pm and 6am when use by MSF visitors will be low"*).
- The MSF facility is to be managed to attract as many bone-fide patrons as possible and as such, a barrier-controlled parking management regime is to be implemented that offers free parking to (most) patrons, for a time-limited period[25], upon validation of a ticket at the facility. Notwithstanding that the potential for some synergy of existing and future Hospital and MSF activities does exist (e.g. injury rehabilitation, sports health research, etc.) and as a consequence, benefits which include an lower overall parking demand from the MSF and Hospital combined could be anticipated, at this stage the scale of these activities and therefore the potential reduction in parking demands remains unknown and (to be conservative) has not been accounted for in our future (parking) demand estimates which follow later.
- The above totals exclude any (off-street) parking for both the New Outpatients facility nor the Health Research and Education Facilty (**HREF**), because, as far as we are aware at this stage, none is planned.

[24] Note that although still included (within this table) as part of the 'future potential supply', the totals should be treated as indicative: This is because the 'KEB" site (98 spaces) is only leased until 16 April 2019, with no right of renewal after that date (as the site is signalled for residential development within the wider King Edwards Barracks development plan). Similarly the Tuam Street site (140 spaces) is presently leased until July 2019, with right of renewal for a further year and the Acton Street site (35 spaces) has a 3-year lease term (to 31 July 2020). Thus beyond August 2020 a total of 323 'staff' spaces are **not** actually guaranteed to be available (at least on these sites); This potential loss is, however, considered within the long-term strategy options considered later in this report.

[25] It should thus be assumed that the MSF operator anticipates a potential need to actively prevent the potential for **long-term** parking by staff (or Hospital visitors) who may *also* be bone-fide MSF patrons.

6.4.4 Currently-anticipated future *on-street* parking supply is presented in Table 6-6. These numbers take account of where plans exist for changes to the surrounding streets, but planned construction has yet to be completed (e.g. around the new Outpatients, along Oxford Terrace, Tuam and St Asaph Streets, etc.).

On-street Parking Type	Walk Time from Hospital			
	5mins	10mins	15mins	<=15mins
Mobility[26]	7	6	7	20
Drop-Off (P5,P10)	22	21	77	120
Time-Limited (<=3hrs, Free)	0	12	312	324
Time-Limited (<=3 Hrs, Pay)	117	236	226	579
All-Day Pay	0	22	0	22
Unrestricted (Free)	4	286	617	908
Total	**150**	**584**	**1,239**	**1,973**

Table 6-6: Future On-Street Parking within 15mins walk of Hospital

6.4.5 Whilst the totals shown above are likely to be indicative of the future, the numbers presented under particular types, should, however, be treated with considerable caution, not least because as the on-going recovery of the Central City continues, further changes to parking restrictions may occur, including the reversion of some current Unrestricted Parking to time-limited and/or charged parking.

6.4.6 Furthermore, at this point in time, the future plans for the linking the Quarryman's Trail Major Cycle Route (**MCR**) between Moorhouse Avenue (where it terminates) and St Asaph Street (past the MSF) are also uncertain – and may result in a loss of (presently-unrestricted) parking along this section which is included in the above totals, pending further certainty.

[26] Recent changes in the criteria for Mobility Parking Permit Scheme are likely to result in increased need for mobility parking with a new eligibility criteria "*..a medical condition or disability that requires they have physical contact/close supervision to safely get around and cannot be left unattended (for example they experience disorientation, confusion or severe anxiety)"* With the increase in age-related dementia this could double the requirement for Mobility spaces, which until recently are understood to have been excluded from the mobility parking scheme.

6.5 Existing Parking Demands

6.5.1 The previous studies summarised in the preceding chapter have made estimates that suggest the existing Hospital car parking demand, for staff and visitors combined, may range between 1,200-2,210 spaces.

6.5.2 However, based upon updated information and analysis, described below, we believe that these potentially represent a (significant) under-estimate, despite the variance. As this is the foundation used to identify potential future needs (including accommodation of anticipated growth), the differences are, naturally, potentially significant when it comes to development of a Long-Term Parking Strategy.

6.5.3 Prior to this review, the most-recent estimates of the existing demand (made on behalf of the MoH in March 2017), are those shown in Table 6-7:

Design years (based on a 2pm daily frequency)	Existing
	2017
Hospital Activities including ASB and including afternoon park changeover	1200
Registrars and surgeons etc	50
Allowance for population growth catered for by ASB (nominal values)	0
HREF facility (nominal values)	0
Corporate Services (nominal values)	150
Fleet vehicle storage (nominal values)	25
On-street construction worker parking (nominal values)	150

Table 6-7: March 2017 summary of estimated parking demand (Per Urbis report, Table 4)

6.5.4 The January 2017 DCL report provided a range of estimates for existing (Hospital) peak car parking demand, this ranging between 1,325 (being based upon October 2015 rather than March 2017 Urbis estimates) and up to 2,210.

6.5.5 The higher estimate was founded upon a March 2016 CDHB staff survey, which revealed that 60% of (DCL's estimate of) 2,650 staff present at peak were 'car-drivers'. This implied demand for around 1,350 staff car parking spaces at this time, to which was added 'other information available on patient and visitors volumes'[27], in order to provide a range of possible total (peak) car parking demand.

6.5.6 By overlaying DCLs adopted existing (car parking) demand scenario(s) upon the staff accumulation profile used by Urbis (with y axes scaled for comparability), the following may be noted (from Figure 6-3):

- The 'Urbis' demand profile (DCL 'Scenario A'), shown by the dark red columns, mirrors and thus appears directly-predicated *only* on the adopted staff accumulation (scaled to an assumed maximum peak of around 1,350); and
- DCL 'Scenario B' closely reflects the adopted staff accumulation, except for a relatively small increase, presumably due to additional assumptions made for

[27] The basis of the existing patient and visitor parking demand estimates is not clear from the report.

evening visitors, in the period 6pm-9pm.

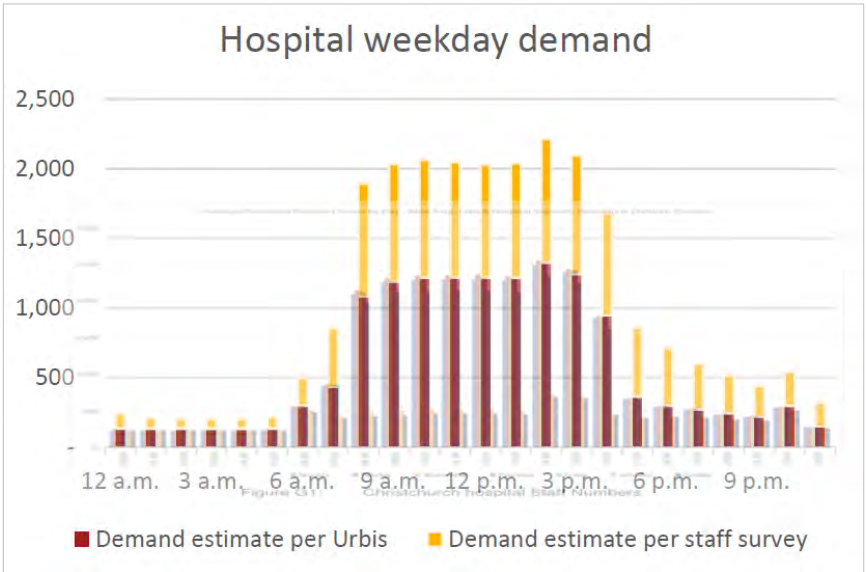

Figure 6-3: Overlay of DCL Parking Demand estimates vs Urbis Staff Data

6.5.7 Given the importance of the estimation of existing parking demands, we have undertaken a detailed review to check these, using recent and some new data from a variety of sources. This updated estimate is described more-fully below.

Staff Parking

6.5.8 In terms of staff parking, we have compared the March 2016 staff survey against other (2013 Census) data (see **Table 6.8**). Notwithstanding the high response rate for this type of survey, we believe that the results may, potentially, include some potential self-selection bias (and potentially understate the private vehicle travel demands as a consequence)[28].

[28] e.g. Updated roster analysis provided by CDHB (July 2017), covered in more detail below, suggests that Mon-Thurs rostered (only) max accumulation = c. 2,806 staff on Main Campus and this excludes an estimated 100 additional staff (e.g. around 55 SMO's,. 15 security staff and volunteers and 30 University Staff).. However, IF 21.9% of the (minimum) number present cycled, as suggested by the staff survey, then parking would be currently be observed for around 2,806 x 0.219= 615 cycles. This is not substantially different from existing supply (total of 570 secure and unsecure spaces exist across the wider Hospital site), **if** this operating at maximum capacity - with no room for visitors by cycle.

Main Means of Travel to Work	2013 Census[1]				CDHB Campus Travel Survey 2016[4]
	All People employed in Heathcare and Social Assistance[2.]		All people that work in Hagley Park CAU[3.]		
	% Total	% Travelling	% Total	% Travelling	% Travelling
Work at Home/Did not Work	20.5%		16.4%		
Drive a Car	60.9%	76.6%	54.3%	65.0%	62.4%
Car Passenger	2.5%	3.1%	3.6%	4.4%	3.2%
Cycle	7.0%	8.8%	12.2%	14.6%	21.9%
Walk or Jog	4.5%	5.6%	5.5%	6.5%	4.4%
Bus	3.4%	4.3%	6.0%	7.2%	5.7%
Other (including M/C/scooter)	1.3%	1.6%	1.9%	2.3%	2.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

[1] Note that Pre-quake (2006) Census results were not notably different: The proportion cycling increased slightly in 2013, travel by foot and bus reduced slightly and travel by car remained unchanged.

[2] that are usually resident in Christchurch City: Total people stated = 18,264.

[3] this includes employment in ALL work types. Total people stated = 7,563.

[4.] March 2016? (Date tbc): 2034 responses (approx. 40% eligible). Note that 'carpooling' repondents have been distributed equally to 'Drive a Car and 'Car Passenger' for comparability with Census data.

Table 6.8: Comparison of Travel to Work Mode-Split Information

6.5.9 We suggest that, as the basis of *existing* parking demand estimation, although from 2013, it would be more appropriate and prudent to adopt the wider 'Census' values for all people that work in the Hagley Park Census Area Unit (i.e. 65% Car driver, as an average over all shifts, rather than the 60% adopted by DCL).

6.5.10 We have applied this assumption to updated and refined recent roster analysis provided by CDHB. The average weekday data is shown in Figure 6-4 below. It may be seen that the data has been collated in half-hourly rather than hourly periods and also disaggregated by shift (group) allocation. The data also includes some staff (e.g. Kitchen) activities only recently brought under the roster system. Further, the data shown is taken as the average of Monday-Thursday only, because the somewhat-atypical nature of Friday staffing slightly distorts (lowers) a Monday to Friday-based average.

6.5.11 The data presented is the total across all current Christchurch Hospital activities, including the recently-occupied Corporate Office but excluding (only) small sites in Montreal and Manchester Streets that are considered unlikely to contribute to parking demand around the immediate Campus.

6.5.12 This data confirms an accumulation of **3,138** (rostered) staff occurs across the Campus at the peak time (out of 3,697 staff on-site over the whole day (av. Monday-Thursday) this being somewhat higher than indicated by less-recent analyses by others.

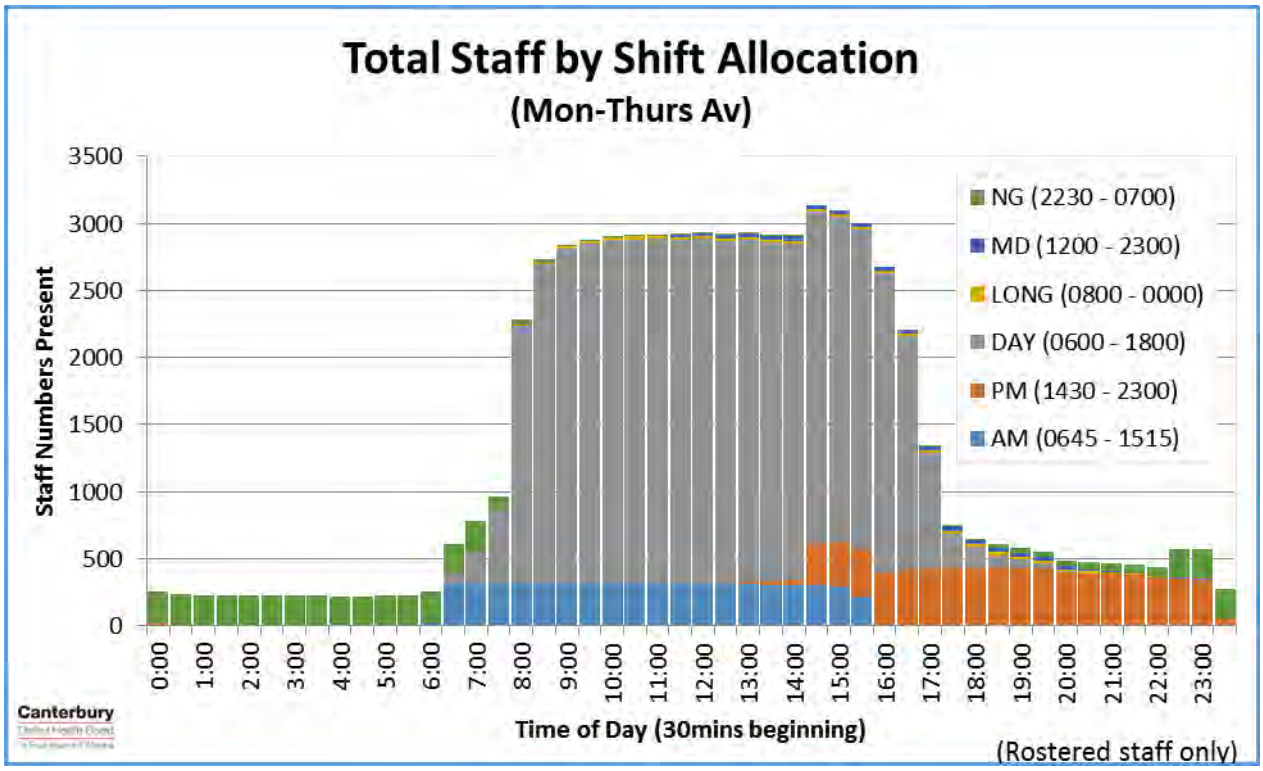

Figure 6-4: Updated Weekday Roster Analysis (July 2017)

6.5.13 The key points to note from the above figure are:

- The peak staff accumulation occurs in the period between 2:30pm-3:00pm and coincides with the changeover between morning and afternoon shifts, this being consistent with all previous analyses;
- However, staff working a more 'conventional' day (between 6am-6pm), comprise the vast majority (79%) of all staff present at this time.
- While there would, presumably, be very limited (or no) potential to reduce the peak parking demand 'spike' caused by *shift* staff demands during their required handover time, the total demands at this time might be mitigated, by reducing demand from staff within the 'grey area' above, e.g. via adoption of more-flexible working practices (e.g. '9-day fortnights', working from home, etc., - where this would not affect clinical outcomes.
- Total Staff finishing 'late' (10:30pm-midnight) comprise an average of around 480/day.

6.5.14 On a weekend, staff numbers are much lower, with some 400 (rostered) staff on site at peak (this being 12% of the average Monday-Thursday peak), albeit with total attendance of around 600 staff over the whole day. The profile of attendance is shown in Figure 6-5 overleaf.

6.5.15 The staff numbers finishing 'late' (10:30pm-midnight) on a weekend comprise an average of around 200/day.

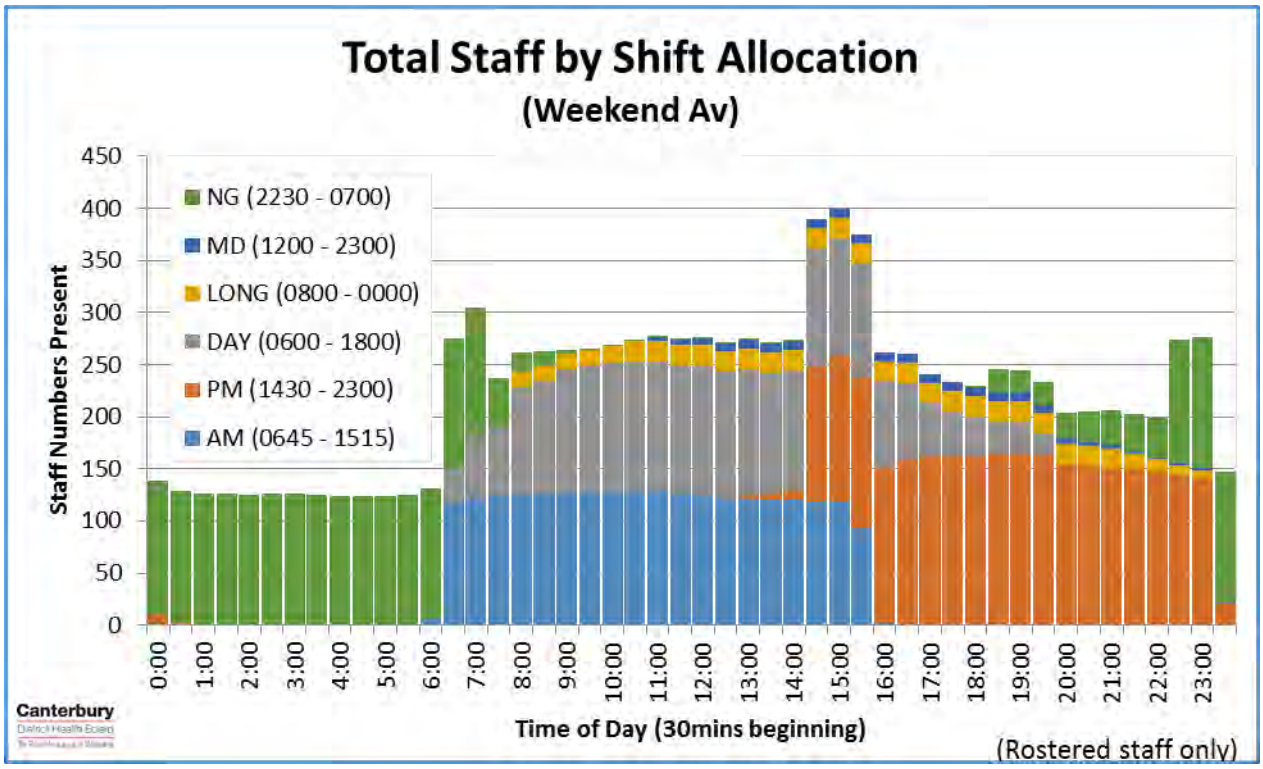

Figure 6-5: Updated Weekend Roster Analysis (July 2017)

6.5.16 In terms of 'mode-split' (or, more specifically, the proportion of staff driving cars) during the week, we consider it prudent to assume this is likely to vary somewhat by shift ('type'), with the following assumptions being chosen to ensure the calculated average across all staff accords with the 65% assumed as a (time-weighted) average for all staff across the whole weekday:

Assumed Car Driver % by Shift Allocation						
AM (0645 - 1515)	PM (1430 - 2300)	DAY (0600 - 1800)	LONG (0800 - 0000)	MD (1200 - 2300)	NG (2230 - 0700)	Total*
70%	75%	60%	85%	80%	90%	**65.1%**

Table 6-9: Assumed Staff Car Driver Mode-Split by Shift Allocation (Monday-Thursday)

6.5.17 Application of the above assumptions, together with additional allowance for staff not on the roster system would result in an estimate of existing total peak parking demand, shown in Figure 6-6, of **2,033** cars (excluding fleet vehicles) for staff working across the campus - representing 63% of those present at this time. For the purposes of considering an overall parking plan, we consider a rounded base estimate of demand for **2,050 staff spaces** as the existing staff requirement (including fleet vehicles) would be appropriate. (This compares to a figure of 1,590 implied by DCL as the 'staff demand' component of their 'Scenario B', obtained by applying a 60% factor to their assumption of 2,650 staff present at peak).

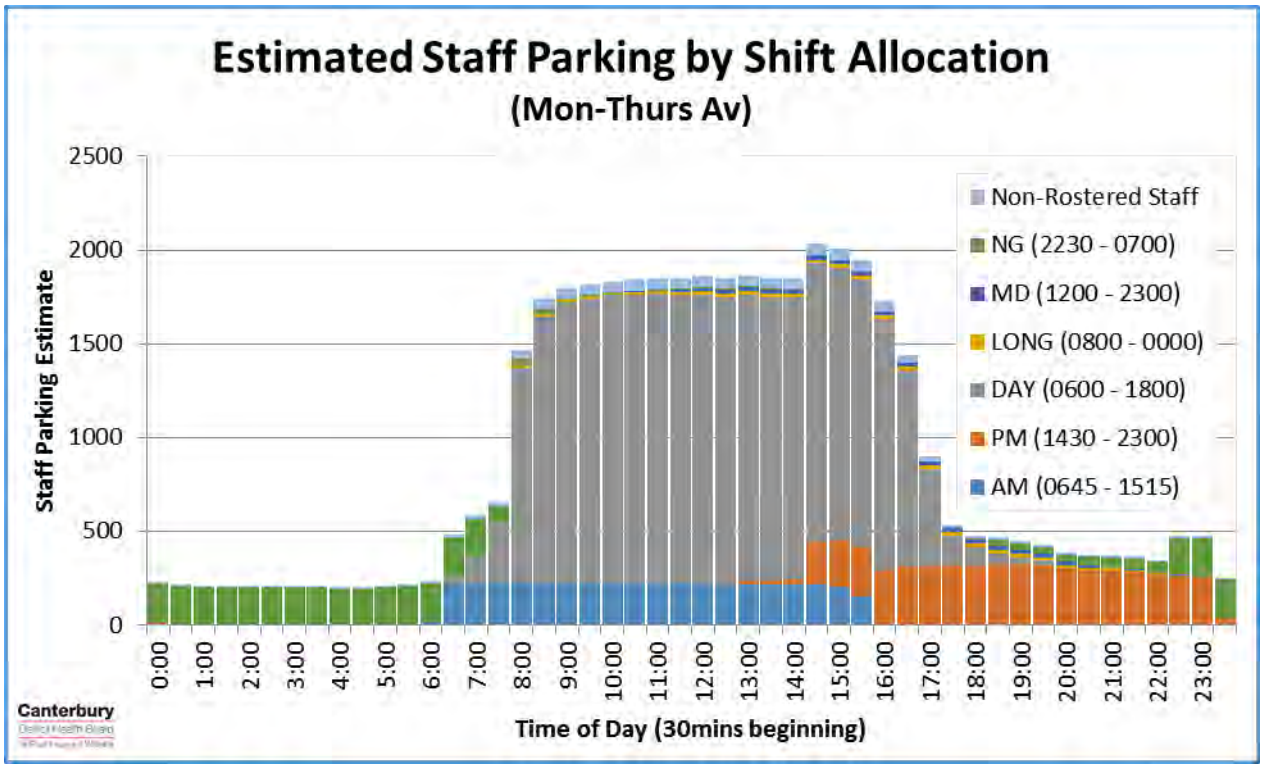

Figure 6-6: Updated Staff Weekday Parking Demand Assessment

6.5.18 We do consider our updated estimate of 2,050 spaces to be a 'realistic' figure for staff peak parking demand. However, it is also important to acknowledge the potential uncertainty that exists (as identified by others), which could mean that the 'true' figure may actually be higher - or indeed lower.

6.5.19 Previous studies have been informed by survey information from the Forth Valley Royal (**FVR**) Hospital in Stirling, Scotland. This is a very modern facility, first opened in 2010. It has 860 beds/day care spaces, 25 wards and 16 operating theatres, and with a similar range of ED, outpatient, diagnostic and research activities as at Christchurch Hospital, particularly on completion of the ASB and Outpatients building that are under construction. It also has the advantages as a source reference of being an edge-of-town site with effectively a single access (thus permitting isolation of car use) and has been significantly surveyed periodically since opening, the last (publicly-available) surveys being conducted in 2015.

6.5.20 In their 2015 surveys, that hospital generated around 12,700 vehicle movements per day, of which 10,150 were associated with car parking (the balance being service and drop-off/pick-up only trips). The hospital generated peak parking demand (at around 2:30pm) was around *1,000* staff and 800 patient/visitor cars.

6.5.21 Furthermore, the FVR surveys include an extensive interview regime for staff, patients and visitors (with an overall sample of 24% of pedestrians at all building entries, except for the ED). These surveys revealed a staff mode-split (as car driver) of 77.0%, as shown in Table 6-10 below:

Mode of Travel	Staff	Other[29]		
		Patients	Visitors	Total
Car Driver	77.0%	88.4%	89.3%	88.8%
Car Passenger	8.7%			
Bus/Train	10.4%	10.6%	8.4%	9.5%
Cycle	1.3%	0.4%	0.5%	0.4%
Walk	2.7%	0.6%	1.8%	1.2%
Other[30]	0.0%			
Total	100.0%	100.0%	100.0%	100.0%

Table 6-10: Weekday Mode of Travel at Forth Valley Royal Hospital, UK

6.5.22 Now as noted above, we consider that the overall existing car-driver mode split of staff at Christchurch is likely to be lower, at around 65%. Further, assuming similar staff/bed ratios but adjusting for a lower number of beds (667 compared to 860), *might* suggest that the expected (peak) staff parking requirement at Christchurch could therefore be as low as **655 spaces** [calculated as1,000 x 65/77 x 667/860].

6.5.23 However, we consider that even our 'base' estimate of around 2,000 spaces above may actually possibly err slightly on the 'low' side of the 'true' total staff car parking demand (at peak). This belief is founded on the observations we have recently undertaken on 5 weekdays between 6-7am, this period being chosen to precede the arrival of most local construction staff.

6.5.24 These observations suggest that the current unrestricted parking within 15 minutes' walk of the Hospital (observed to the south and west only) is currently almost entirely 'parked-out' at this time. The capacity of these is some 512 spaces, which, together with observations of the secure staff parking building occupancy (estimated to be around 50% full at the time) would mean that *no more* than around 70% of the observed unrestricted on-street parking demand could be hospital staff (or a very small number of other hospital users at this time), in order to provide a total of 570 spaces – this being around the *estimated* accumulation of staff demand at 7:00am (586 cars) shown in Figure 6-6.

6.5.25 Whilst some of the on-street parking (to the South of the Hospital, in Hagley Avenue, Waller Terrace and Stewart Streets) will, presumably, be residents and other non-hospital users, based on our observations of parking activity at this time, we consider that 70% use by hospital users may actually *underestimate* the true proportion of staff currently making use of the existing unrestricted parking in this locality, *at this time* – thus implying that the calculated accumulation shown in Figure 6-6 (at 7:00am) may actually be somewhat low[31].

[29] Car driver/passenger split not reported for patients and visitors

[30] Other modes would presumably include hospital transport and taxis but has not been reported for patients and visitors.

[31] For example, if instead 90% of the observed unrestricted parking is Hospital-related this would

6.5.26 Actual staff numbers at the FVR Hospital itself are, unfortunately, not available for comparison to Christchurch Hospital. It is known that the FV NHS had total employment of around 6,182 (5,200 FTE), compared to total CDHB staff of some 9,634 (of whom, as noted above, about 3,700 are rostered to work at, or immediately adjacent to Christchurch Hospital on a typical weekday). Other relevant available comparisons are provided in Table 6-11.

Measure	Christchurch Hospital(16/17[32])	FV NHS (15/16)	Ratio
Inpatient/Daycare Discharges	96,430	59,484	1.62
ED Attendance	97,580	80,699	1.21
OP Attendance	430,320	237,623[33]	1.81
Total	**624,330**	**377,806**	1.65
Population Served	543,820	300,000	1.81
Total Patient/Population Ratio	1.15	1.26	

Table 6-11: Comparison between Christchurch Hospital and NHS Forth Valley Statistics

6.6 If it is assumed that the FVR Hospital accounts for approximately 85% of the FV NHS patient activity (it's other facilities being apparently small), this would accord with an expectation of 'around double' the activity at Christchurch Hospital, compared to FVR[34].

6.6.1 Assuming a (rounded) range of car driver mode split between 60% (being the staff survey results without adjustment for potential misinterpretation between 'car-poolers' and 'car passengers') and 66%, would suggest a potential range only between 1,900-2,100 peak car parking demand however.

6.6.2 Given this fairly modest range is outweighed by the potential estimated range of visitor demand, described below, we consider that a working assumption of **2,050** staff (plus fleet) spaces is, however, appropriate to adopt as the existing base staff demand for all scenarios examined (later).

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imply a 7:00am parking accumulation of *at least* (because use of other off-street public sites, street parking to the north and west of Hagley Park was not counted) 672 cars, compared to the calculated 586 at 7:00am.

32 Christchurch Hospital 16/17 estimates are based upon projected trends between 12/13 and 15/16, being +2.0%p.a. (Inpatient discharges), +2.4% p.a. (Outpatient attendance) and +3.3%p.a. (ED attendance), the % being measured about 15/16. Also note that Christchurch Hospital is estimated to account for around 97% of all ED admissions, 79% of inpatient discharges and 62% of outpatient attendance activity across the whole CDHB.

33 Includes attendance at the Minor Injury Unit

34 Based on total estimated attendance 624,000/(377,000 x 0.85) = 1.9; based on population served 544,000/(300,000 x 0.85) = 2.1.

Patient/Visitor Parking

6.6.3 To the above estimated staff parking demand, the demand from other users (principally patients and visitors but also including visits on business by non-CDHB employees), must obviously be added. The latest-available FVR surveyed parking demand is shown in Figure 6-7, while the non-staff-only parking (i.e. patients and visitors) is shown in Figure 6-8.

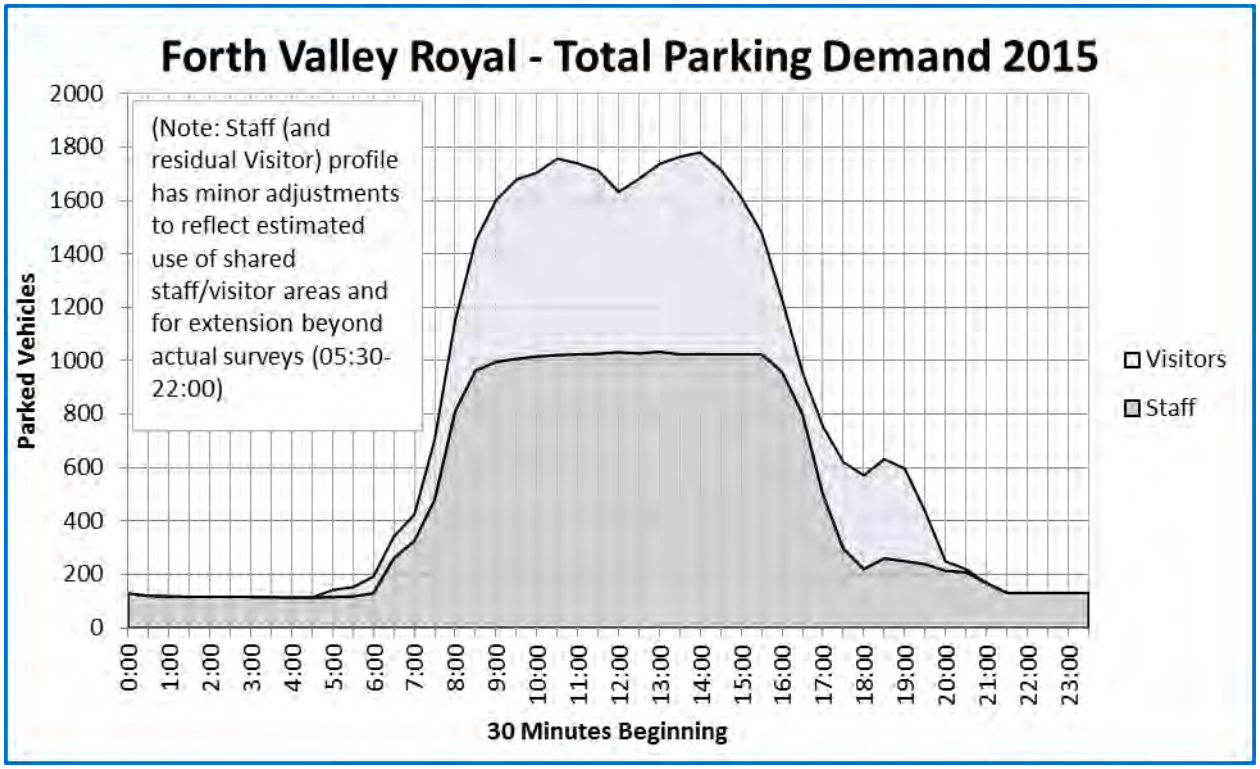

Figure 6-7: 2015 Forth Valley Royal Hospital Total Parking

6.6.4 Figure 6-7 shows 3 distinct demand peaks, being around 10:00am (when Outpatient attendance is high), around 2pm (when traditionally afternoon visits have commenced) and between 5:30-7pm.

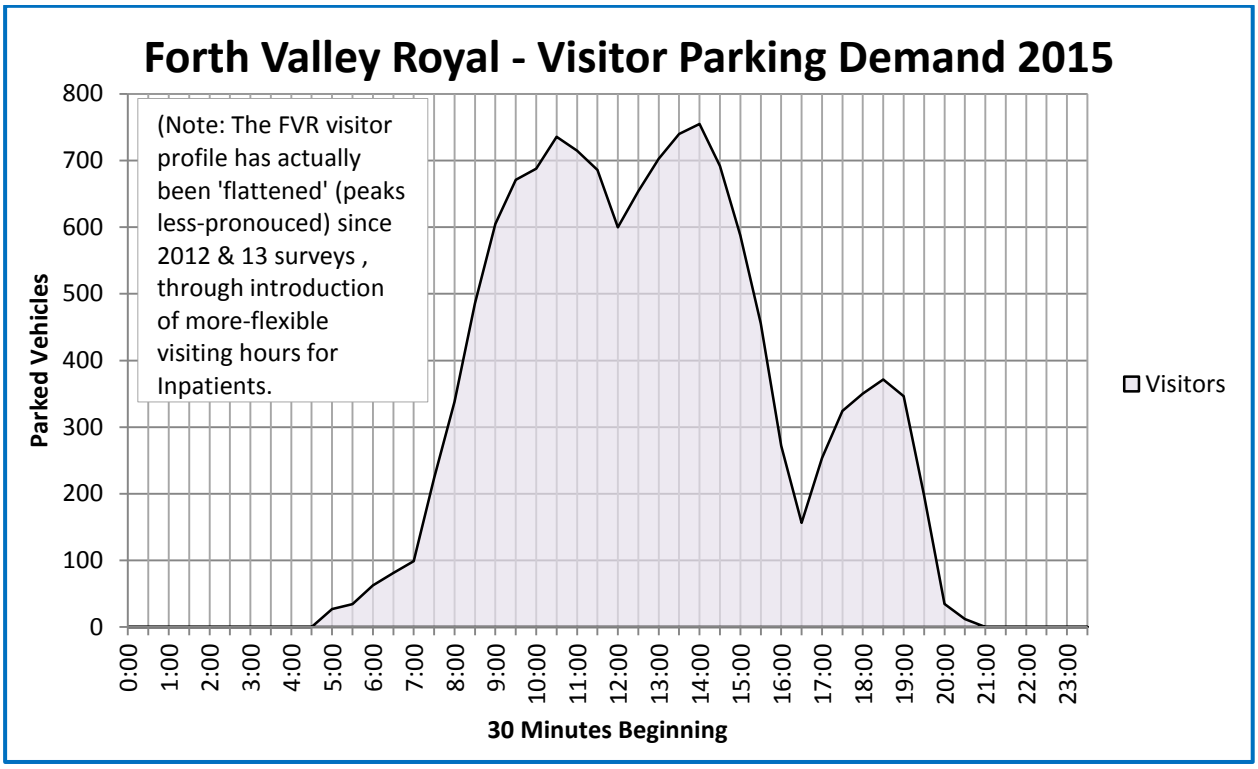

Figure 6-8: 2015 Forth Valley Royal Hospital Patient/Visitor Parking

6.6.5 Comparison of the 2015 FVR surveys below (noting that these are more recent than those previously used by others) to the estimated Christchurch staff parking profile shows a relatively-similar pattern of parking accumulation:

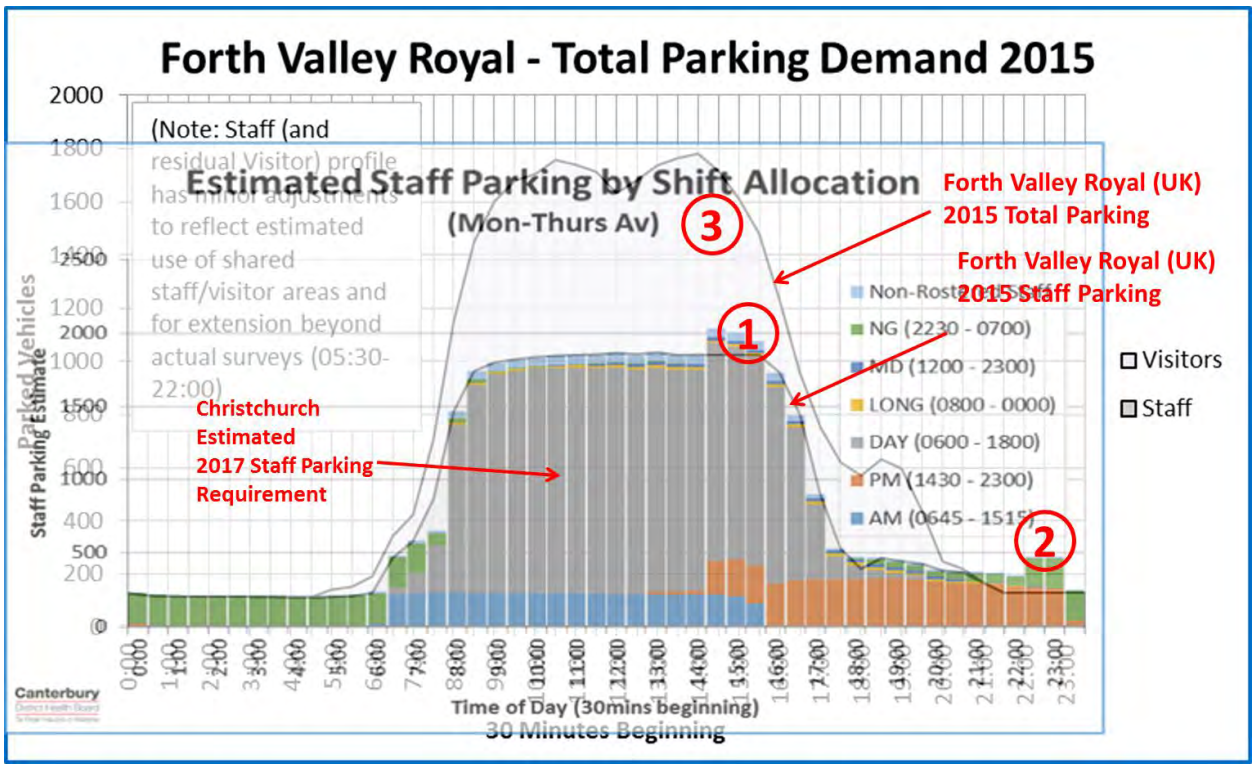

Figure 6-9: Overlay of Estimated Chch Hospital Staff Parking against 2015 Forth Valley Royal Surveys of Total Parking Demand

6.6.6 Other notable features of the above comparison are however:

- The estimated Christchurch *staff* demand profile peaks slightly above that observed at FVR, between 2:00-4:00pm (1); and 10:30-11:30pm (2)
- The difference between the two black lines represents the balance of FVR parking demand, attributed to patients and visitors. Clearly this represents a substantial addition to the overall (and specifically the afternoon peak) parking demands (3). The (smaller) morning visitor peak coincides with both the opening of in-patient visiting opportunities and the heaviest demand on outpatient services.
- Although not shown on either Figure 6-8 or Figure 6-9, it is also worth noting that the above 2015 FVR visitor profile has been 'flattened' somewhat compared to earlier surveys of that Hospital, by changes in parking provision and visitor management that have been implemented between 2012 and 2015 (in an attempt to better manage parking peaks). This has included the adoption of more-flexible visiting hours.
- 'Official' Christchurch In-patient visiting is presently between 11am - 1pm and 3pm - 8pm (although parents can visit children's wards at any time). This may suggest slightly different timings are likely compared to the FVR visitor profile shown in Figure 6-8, with arrivals just prior to 3pm likely to coincide with the shift-handover staff demand peak. However, given that overall patient/visitor numbers are likely to be driven more by outpatient attendance, we consider that it is appropriate to adopt the FVR patient/visitor profile pattern to inform estimates of likely demand at Christchurch Hospital (in the absence of better data).

6.6.7 There are some further differences between FVR and Christchurch Hospital that it is, however, prudent to take into account when using that data to estimate potential parking demand for visitors to Christchurch:

6.6.8 While similar in scale (860 beds at FVR vs. around 757 beds anticipated at Christchurch following completion of the ASB and what is understood to be 637 now), Table 6-11 shows that the NHS Forth Valley as a whole accommodates *significantly* fewer patient admissions and discharges than estimated (in 16/17) for the current Christchurch Hospital.

6.6.9 This suggests that it is prudent to apply a range of potential assumptions (yielding alternative scenarios) to develop an estimate of Christchurch Hospital Patient/Visitor needs.

6.6.10 The first scenario below represents a 'Base Estimate', this being the minimum number of parking spaces we consider likely to be demanded by current patients and visitors. This combines data both on annual attendance by type (IP, OP & ED), records of patient residential locations and assumptions regarding both group size and mode-share, that are considered likely to vary for each of these.

Residential Location	Type	Christchurch (ex Banks Peninula)	Adjacent Districts	Remainder Canterbury	Further Afield	Totals
Estimated 16/17 Annual patients (based on growth from 15/16)	IP	56,350	23,150	6,810	10,120	96,430
	OP*	251,450	103,290	30,410	45,170	430,320
	ED	72,980	17,110	3,050	4,440	97,580
	Total	380,780	143,550	40,270	59,730	624,330
Annual Visitors (assumed)	IP	314,140	103,230	15,200	11,290	443,860
	OP	188,580	103,290	30,410	22,580	344,860
	ED	145,960	17,110	3,050	4,440	170,560
	Total	648,680	223,630	48,660	38,310	959,280
Annual Group Visits (including Patients)	IP	171,870	61,120	12,390	14,270	259,650
	OP	251,450	103,290	30,410	45,170	430,320
	ED*	114,770	21,200	3,600	4,970	144,540
	Total	538,090	185,610	46,400	64,410	834,510
Annual Car Visits (including Patients)	IP	163,280	61,120	12,390	10,700	247,490
	OP	238,880	103,290	30,410	22,590	395,170
	ED*	109,030	21,200	3,420	4,720	138,370
	Total	511,190	185,610	46,220	38,010	781,030
Weekday Car Visits (including Patients)	IP	523	196	40	34	793
	OP	835	361	106	79	1,382
	ED*	323	63	10	14	409
	Total	1,681	620	156	127	2,584

Table 6-12: Estimate of Patient/Visitor Parking Demand (Origin of Base Estimate)

6.6.11 When combined with weekday staff visits of around 3,700/day and weekend staff visits of 600/day, the above assumptions suggest that on a typical weekday, the Hospital is likely to generate a total of around 8,800 visits/day by staff, patients and their visitors combined (by all modes). Visits for drop-off/pickup, service purposes and other (non-staff) hospital business activities are however additional to this.

6.6.12 The estimated weekday visits shown in Table 6-12 (noting that these represent one-way trips and will exclude drop-off activity) may be doubled to represent two-way daily trips and the maximum accumulation determined by application of an FVR-derived factor between observed daily visitor trips (by car, after removing estimated service trip activity) at that facility and the maximum visitor parking accumulation, being a factor of 10.9% (typical attendance by visitors being naturally, far shorter on average than for staff). This yields a Minimum estimate of current peak visitor car parking requirement of **562 car parking spaces**. This is also reasonably close to an estimate based only on factoring

relative IP/Daycare bed numbers (667/860) and applying this to 2015 FVR peak visitor parking (755) = 585 spaces, and suggests that a figure rounded to 550 spaces would be a reasonable minimum assumption.[35]

6.6.13 However, if the visitor numbers are assumed to be proportional to overall patient visits between the Christchurch Hospital and NHS Forth Valley, this could suggest a far higher number (1.65 per Table 6-11 x 755= 1,246, say **1,250** cars).

6.6.14 Thus our estimates of the existing peak parking demands may be summarised as follows (between 14:00-15:00, it will be noted that the visitor and staff peaks can be expected, given current policies, to be broadly coincident):

Users	Scenario		
	Low	Medium	High
Staff+Fleet	2,050	2,050	2,050
Patients/Visitors	550	900	1,250
Total	**2,600**	**2,950**	**3,300**

Table 6-13: Summary of Existing Peak Car Parking Requirements (2:30-3:00pm)

6.6.15 Based on bed numbers alone, the above estimates equate to demand for between 4.1-5.1 spaces/ bed, which is higher than that at other hospitals surveyed. For example, the 860-bed FVR demand is equivalent to 2.1 spaces/bed and the 337 Tauranga Hospital is understood to be around 3.41 spaces/bed. The reason for the differences, we believe, is that inpatient/day care activity at Christchurch Hospital forms a *relatively* small proportion of the overall throughput (and staffing demands) and Christchurch has significantly more outpatient/ED activity than these other facilities.

6.6.16 Our estimate of (a minimum) of 550 patient/visitor spaces as the existing demand may be compared to 'DCL's' January 2017 estimate. Although the latter doesn't state it, by working back from their Total Demand of 2,210 spaces (Scenario B) and subtracting the implied staff demand (1,590 spaces), it suggests that their estimate for patients & visitors was 620 spaces.

6.6.17 Although we would consider it a *significant* under-estimate of the true demand (as it is clearly inconsistent with rostered peak staff numbers and assumed mode split of 65% by car driver), and it is therefore not reflected in the above scenarios, if what we would consider to be the 'lowest-possible' staff demand of 655 spaces (2:30-3pm, para 6.5.23 above) *was* combined with our lowest estimate of peak patient demand of 550 spaces (2-2:30pm), the total (approximate) absolute minimum combined parking demand in the period 2-3pm would be around 1,200 spaces - which we note is similar to the estimate adopted for the MoH March 2017 Review.

[35] It is also notable that the adopted profile suggests a peak hour proportion of patient/visitor trips (11.3% of trips between 7am-9pm) which is very consistent indeed with the observed (Jan-Mar 2017 data) use of the park and ride shuttle, which peaks at 11.3% (1-2pm) and 11.2% (2-3pm) and declines thereafter (e.g. to 9.5% 3-4pm)

6.7 Park and Ride Use

6.7.1 The above estimates represent the totality of (existing) parking demand for the existing Hospital (only). This section looks at the how the current Park and Ride service contributes to accommodating some of this demand.

6.7.2 The existing shuttle is advertised as operating from 7am-9pm[36] with a 15-20 minute frequency. As shown by Figure 6-10 below, the average weekday use (according to January and March 2017 data provided) was 888 passengers/day - although this varied up to 1,385 transfers/day and recently does appear to be showing clear signs of growth.

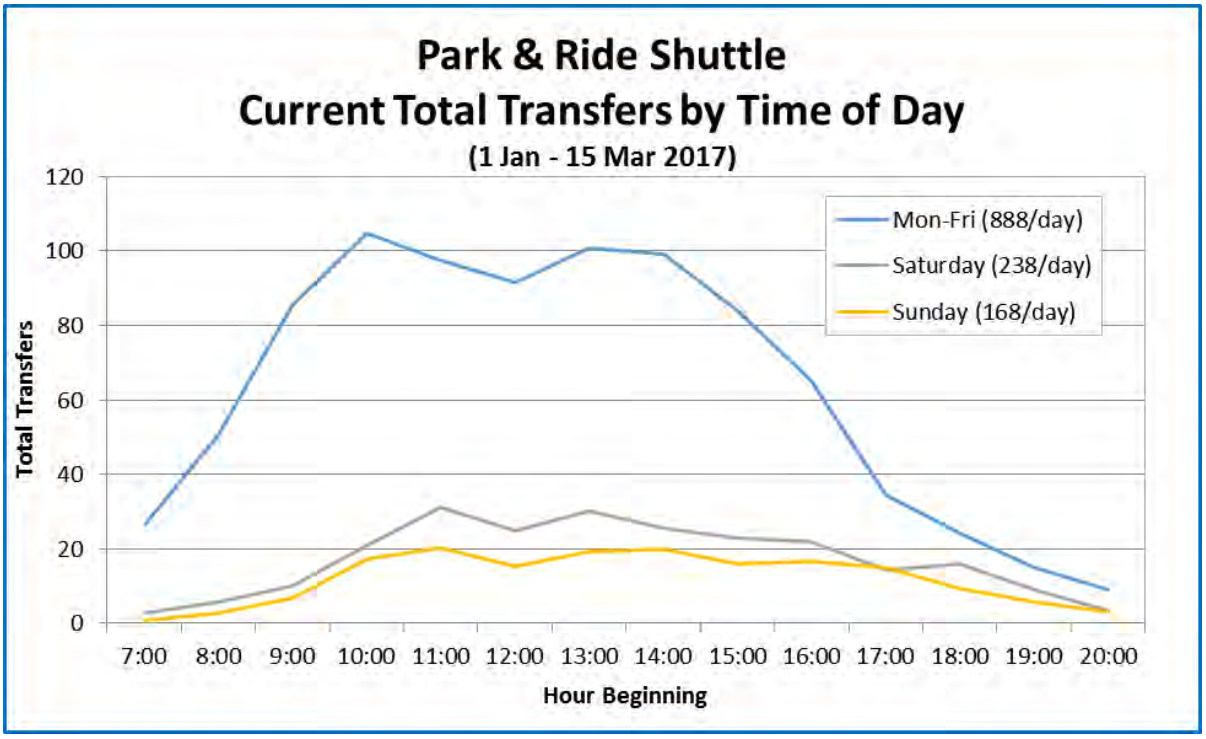

Figure 6-10: Existing Park & Ride Shuttle Use by Time of Day

6.7.3 Observations conducted by both others previously and by QTP suggest that the typical maximum weekday (parking) accumulation on the Old Sale Yards site is currently likely to be around 110 spaces – although reference to the variation in passenger transfer numbers suggests that at the peak of 'peak' days, this may rise to as high as about 200 cars.

6.7.4 It may be seen from Figure 6-10 that the *average* weekday peak transfers between 10-11am (over the January-March 2017 period for which data was made available), was 105/hr. Given that the existing shuttle seated capacity is 11 passengers in each of the 3 shuttles, this either suggests some passengers have to stand during this period and/or the headway must be lower than the 15-20 minutes stated on CDHB website, because at a 15 minute headway this means 8 transfers in both directions, 105/8=13 passengers/service) – and the maximum (rather than average) number of transfers recorded has actually been 184 passengers/hr.

[36] This time has recently been extended to cover early and late staff shift changes and now runs until midnight. Updated usage data is not yet available, although anecdotally it is reported as 'low'.

6.7.5 In fact potential headways look certainly capable of a more-frequent service (than advertised), even given the potential unreliability of the existing inbound route in the evening peak hour (which could be mitigated at such times by travelling to the Hospital via Moorhouse Avenue and Selwyn Streets).

6.7.6 The current demand for the existing service is estimated to comprise around 10-20% of patients and visitors[37]. Average patient/visitor off-peak driving distances to either the Old Sale Yards site or alternatively to, say, the site of the former Blue Parking building on Antigua Street, are estimated to be approximately equal, at 10.3km[38].

6.7.7 However, the attraction of the current Park and Ride offering and resulting uptake is likely to be limited currently by comparison due to several further factors, including the relative remoteness from the Hospital, as well as the current level of service. The time taken to wait for the shuttle (at advertised frequency) and travel would typically add around 20 minutes, each way, compared to the (potential) alternative parking location. While costs may be expected to be lower (currently $5/day) compared to the cost of paid parking close by, if the latter is (or was to be) available, when the total 'generalised cost' is considered, the Park and Ride service does not currently make an attractive offering.

6.7.8 This could, for example, be improved by a combination of increased frequency (no more than 10 minutes headway), reduced cost and improvements to the surface and perceived security of the Park and Ride site, both of which are currently poor[39].

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37 Expected yr 16/17 (2-way) transfers=271,300, implies c.135,000 1-way trips out of an estimated total of 1.58m patients & visitors p.a, (8.5%) but 110 cars observed at peak could represent up to 20%, *if* the peak requirement for all patients and visitors is around the minimum 550 estimated above.

38 These estimates are based on analysis using the Council's CAST transport model, but only use the 80% of patient residential locations that lie within the UDS, this being the area represented by the transport model.

39 A simple generalised cost model with a base of 10% P&R use suggests that with a reduction to 10 minute headways and cost to $4/day (effectively $2 each way), Park and Ride transfers might be increased by around 120% (to 22%). Of course the increased frequency would increase fleet requirement (to 5 shuttles) and thus operating costs, partially offset by increase in revenue, such that net costs may increase from around $300,000p.a., to $360,000p.a. However, if the cost of providing the same amount of additional (peak) parking capacity potentially attracted to the Park and Ride site at a multi-storey facility was taken into account, the latter could require an estimated net subsidy requirement estimated to be around $750,000 p.a. (per the 240 spaces potentially saved).

6.8 How Existing Overall Parking Demands Are Estimated to be Met

6.8.1 The most-recent preceding assessment by others (March 2017) is provided on the final page of **Appendix A** within this report. This assessment is based on an estimated total peak parking demand for 1,575 spaces and estimated (effective) supply of 1,105 spaces, suggesting that demand for a further 470 spaces is being met, by implication 'elsewhere', in addition to the assumed level of (local) on-street parking. However, as noted in our commentary within Appendix A, this assessment was also heavily-predicated on an assumption that the existing peak demand for (the bulk of) Hospital users was (and still is) around 1,200 spaces.

6.8.2 Because the updated assessment we have prepared above has revised this estimate, to a *minimum* of 2,600 spaces (including allowance for fleet vehicles only), clearly a significant proportion of this must be accommodated by alternative supply.

6.8.3 Our estimates for how the demand is accommodated are tabulated overleaf (noting that this is for our 'Low Base' estimate only, which is based on our view of the minimum estimated Visitor Requirement), For this table, we have adopted a similar format as the most-recent assessments by others.

6.8.4 When nominal values are adopted for Construction workforce use, this indicates a total peak demand of 2,750 spaces (compared to the previous 1,575 above). Taking into account updated estimates for both on-street and off-street supply described earlier, this suggests that at the peak time, it is estimated that a *minimum* of 1,568 Hospital User vehicles must be being accommodated on sites other than those under the control of CDHB (including use of on-street parking).

6.8.5 The estimation of the *future* potential parking demands and how these may be met, in the face of both alternative estimates of existing demand and future growth projections, is covered in the following sections.

			Scenario 1= Existing Situation (Low Demand Estimate)	
		Design years (based on a 2pm daily frequency)	Existing	Notes
			2017	
Hospital parking demand	1	Hospital Staff (including Corporate)	**2025**	
	2	Hospital Visitors	**550**	
	3	Registrars and surgeons etc	0	< 50 (consistent with Urbis and advice from CDHB Roster staff) is now reflected in QTP Base Estimates
	4	HREF facility (nominal values)	0	
	5	Fleet vehicle storage (nominal values)	25	
	6	On-street construction worker parking (nominal values)	150	
	7	**Design demand**	**2750**	
Hospital parking supply	8	Existing main campus supply	92	
	9	ASB LG parking level supply	0	
	10	ASB ground parking level supply	0	
	11	Staff parking building supply	423	
	12	Balance of St Asaph Street campus	83	
	13	Afternoon staff car park	253	
	14	Saleyards	120	< 2017 'supply' reflects assumed occupancy of 114/0.95
	15	Blue parking building site (initially on grade and then a replacement building)	0	< St Asaph St Campus
	16	Other more-remote off-street staff sites (leased)	273	< 2017 'supply' reflects Tuam/Montreal & Acton Sts. LT reflects lease expiry.
	17	41-45 St Asaph Street (gravel pit site)	0	
	18	Potential Additional Staff and/or Visitor Facility/Facilities	0	
	19	Assumed occupancy	95%	
	20	**Available Supply**	**1182**	
	21	**Balance to find**	**1568**	
On-street	22	On-street parking (use **at 2:30pm**)	1068	
	23	Assumed occupancy	100%	
	24	**Available Supply**	**1068**	
	25	**Balance to find**	**500**	
Public Off-Steet	26	Off-Street Public Facilities	500	< 2017 'supply' reflects *assumption* that approx 1/3 net demand accomodated off-st.
	27	Assumed occupancy	100%	
	28	**Available Supply**	**500**	
	29	**Balance to find**	**0**	
MSF	30	Metro Sports demand at 2pm	0	
	31	Assumed occupancy	95%	
	32	Metro equivalent demand	0	
	33	**Available Supply for Hospital Users**	**0**	< No Capacity is now assumed (at 2:30pm) for Hospital
Summary	34	**Balance to find**	**0**	

Table 6-14: Assessment of Existing Demand & Supply (Low Base Demand Estimates)

7 Future Transport and Parking Demands

7.1 Introduction

7.1.1 Previous studies have looked at a potential range of scenarios for future growth in demands at Christchurch Hospital. The ASB Construction ITA (October 2015), for example looked at the following:

- Option 1 – Parking Required by the Historic City Plan, which suggested the total parking space demand may increase from 1,380 spaces to 1,645 spaces;
- Option 2 –Evaluation of Parking Occupancy across the Hospital Campus, which suggested the total parking space demand may increase from 1,200 spaces to 1,585 spaces;
- Option 3 – A Bed Numbers Demand Assessment based on Good Friday 2013 Survey Data, which suggested the total parking space demand may increase from 1,200 spaces to 1,429 spaces;
- Option 4 – A Gross Floor Area Demand Assessment based on Good Friday 2013 Survey Data, which suggested the total parking space demand may increase from 1,200 spaces to 1,524 spaces;
- Option 5 – Reference to the Urban Development Strategy Rapid Population Growth Rate, which adopted an assumed 1.5% growth rate from 2011, suggesting potential growth in total parking space demand of 30% by 2031 and thus increase from 1,200 spaces (assumed as 2011 demand) to 1,560 spaces by 2031;
- Option 6 – A CDHB 1.5% Compounding Annual Demand Growth approach, with additional assumptions for mode-share change, which suggested the total parking space demand may increase from 1,012 spaces to 1,568 spaces; and
- Option 7 – Comparison with Parking Demand Data from Similar Facilities Elsewhere (FVR 2012 survey data), which suggested the total parking space demand may increase from 1,229 spaces to 1,461spaces;
- We have used the range of these estimates

7.1.2 The population growth assumptions adopted for Option 5 above originally stem from assumptions for UDS partners made shortly after the Canterbury earthquakes (in 2012). They have since been superseded by subsequent projections based on a 2014 CCC growth model (using the 2013 Census population as a base). The later projections suggested a (UDS) growth in residential population of +17% between 2013 and 2031 (+13.4% between 2016 and 2031).

7.1.3 However, recent work (December 2016) by Statistics NZ now suggests that the population of Christchurch and surrounding districts has been and is likely to continue to rise at a higher rate that projected earlier. These estimates have yet to be incorporated in 'official' forecasts for the greater Christchurch (UDS) area only (which does not include the full areas of Waimakariri, Selwyn and the former Banks Peninsula Districts), but indicative assumptions suggest growth of around +21.7% from the 2016 population may now be expected to occur by 2031 (around 10 years ahead of previous forecasts). This is a similar ratio to the anticipated increase in inpatient/daycare beds (+19.2%) following

completion of the ASB.

7.1.4 In order to reflect a revised range of potential growth scenarios in parking demand to 2031, we have combined the range of the above updated *population* estimates from 2016 (a minimum of +13.4% up to a maximum of +21.7%), with the following assumptions over the potential range of *mode-split* change that might be achievable - the latter given a concerted approach to complementary travel-demand (including parking) policies.

Mode of Travel	Staff		Patient & Visitors (By group)	
	Current	Potential 2031 Target	Current	Potential 2031 Target
Drive a Car	65.0%	50.0%	49.3%	45.0%
Car Passenger	5.0%	15.0%	44.9%	46.3%
Cycle	15.0%	19.0%	1.5%	2.3%
Walk or Jog	6.0%	6.0%	1.3%	2.0%
Bus	7.0%	8.0%	2.0%	3.0%
Other (including M/C/scooter)	2.0%	2.0%	1.0%	1.5%
Total	100.0%	100.0%	100.0%	100.0%

Table 7-1: Existing Hospital Mode Split and Potential Targets with Travel Demand Management

7.1.5 It may be noted that the 'current' estimates for total patient and visitor access by car, at just over 94% have been determined by considering patient residential location and aligning to overall known patient and assumed visitor numbers. However, not *all* car-borne visitors might be expected to require a car park as a separate trip, e.g. inpatient visitors that have already travelled to the Central City for other purposes and may visit during the day by walking. Thus the above numbers should be treated as the mode of their original trip - not necessarily how they may arrive at the Hospital itself.

7.2 Adopted Growth Scenarios

7.2.1 Applying the above assumptions to our revised 'base' (2016) estimates of parking demand, the following growth scenarios are presented (values being rounded to the nearest 10 spaces). These scenarios are summarised graphically in Figure 7-1 (overleaf).

Basis of Future Scenario	User Group	Range of 2016 Demand Estimates		
		Low	Medium	High
Existing	Staff+Fleet	2,050	2,050	2,050
	Visitors	550	900	1,250
	Total	**2,600**	**2,950**	**3,300**
2031 (Low Growth-No Mode Change)	Staff	2,320	2,320	2,320
	Visitors	620	1,020	1,420
	Total	**2,940**	**3,340**	**3,740**
2031(High Growth-No Mode Change)	Staff	2,490	2,490	2,490
	Visitors	670	1,100	1,520
	Total	**3,160**	**3,590**	**4,010**
2031 (Low Growth-Target Mode Change)	Staff	1,790	1,790	1,790
	Visitors	570	930	1,290
	Total	**2,360**	**2,720**	**3,080**
2031(High Growth-Target Mode Change)	Staff	1,920	1,920	1,920
	Visitors	610	1,000	1,390
	Total	**2,530**	**2,920**	**3,310**

Table 7-2: Maximum Parking Demand Estimates Under Alternative Scenarios[40]

[40] Note that these are subsequently further amended to reflect desirable service levels (occupancy factor) for each group

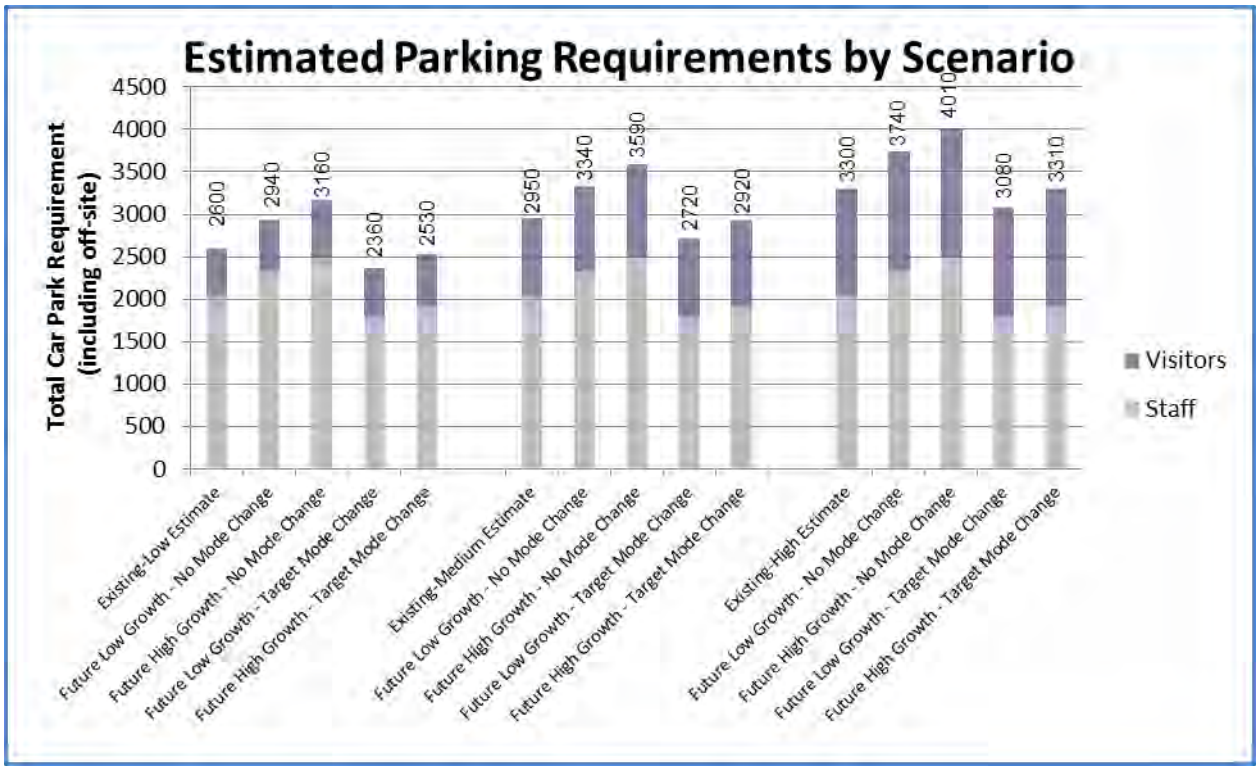

Figure 7-1: Summary of Hospital-Only Parking Scenario Requirements

7.2.2 Whilst the inherent uncertainty suggested by the range of forecasts will be apparent (Given total existing demand estimates that range from 2,600 spaces to 3,300 spaces), so too will the potential benefits of supporting travel demand-management: If the (suggested) target mode share changes could be effected, then this would serve to reduce overall parking demands compared to those existing today - despite the potential growth in demand by patients and visitors for Hospital facilities.

7.2.3 Changes in potential staff parking demand must, however, be acknowledged as being even less certain that patient demand, because the potential for long-term efficiencies in care delivery is uncertain (to the authors) i.e. staff numbers and resulting parking demands *may* not rise in direct proportion to accommodate potential growth in patient numbers and has not been assumed for the purpose of the above estimates.

7.3 Proposed HREF Parking Demands

7.3.1 The above estimates relate only to the demands from the Hospital itself (including the St Asaph campus, new Outpatients Building and Corporate offices).

7.3.2 Other developments, both 'known' and 'unknown', have the potential to increase parking demand in the area.

7.3.3 One of the 'known' developments is the HREF, presently under construction on the north-east corner of the Antigua/Tuam intersection. The floor area of this facility is understood to be around 10,000m^2 GFA. The facility will have 2 carparks on site (one standard and one mobility space[41]) and around 160 bike parks.

41 This is likely to be insufficient to meet the facility needs, given that Ara has at least one staff member who is disabled.

7.3.4 The CDHB have advised that there is quite a complicated situation around whether these building users represent new or additional parking demand in the health precinct. Most CDHB staff that will be based in the building will already work on campus (and thus be accounted for in the staff parking demand estimates made above). Ara teaching staff are however likely to represent new demand to the area. Likewise, some students will already be on the hospital campus, but some will be new demand and training events and UC components can also be expected to generate new demand.

7.3.5 The total maximum (fire-rated) design occupancy (Grd-6th floor) is understood to be 2,385 occupants[42]. The fire-rated capacity is however, considered unlikely to reflect regular occupancy (given that 10,000sqm/2,385 represents 4.2m^2/occupant).

7.3.6 However, even if assumed to be only *one-third* of this, it would suggest regular occupancy of 'around' 800 people might be expected. Assuming cycle use increases to say 12%, bus use remains high at 15%, walk use increases to 8% and a significant rise in car-sharing (to 23%) by students and staff, this would still suggest that around 40% occupants present at peak times might be expected to be a car driver (and thus the same proportion requiring a parking space).

7.3.7 This is considered fairly 'optimistic', as the current-mode surveys below (which also give some indication of the propensity to change mode) are based only upon student responses.

7.3.8 We thus estimate an absolute *minimum* additional demand of around **250 car parking spaces**[43] will be generated by this facility. This may be compared to an adopted demand estimate of 100 parking spaces adopted in previous (Urbis/DCL) studies.

Mode	Current	Potential Target
Drive a Car	62.6%	40.4%
Car Passenger	11.7%	23.1%
Cycle	4.2%	11.6%
Walk or Jog	4.2%	7.5%
Bus	15.3%	15.4%
Other (including M/C/scooter)	2.0%	2.0%
Total	100.0%	100.0%

Table 7-3: Ara Department of Nursing, Midwifery and Allied Health students: Current and Potential Mode Share assumed for HREF

42 The top floor (1500m^2) is not leased by HREF and occupation (by UC?) is therefore presently uncertain.

43 For the sake of this estimate we have adopted an assumption that there may be 1 staff member per 10 students and that 50% of staff & 20% of students will have already been accounted for in parking estimates for the Hospital. We have then applied the 'potential target' car driver mode split to both 'new' students *and* staff.

7.4 Potential Metro Sport Facility Overflow

7.4.1 The degree and potential frequency of this, and the 'competition' it may engender between current (Hospital) users of on-street parking in particular, are at present uncertain.

7.4.2 We note from DCL's report that 'CCC considers that an acceptable parking supply would provide for peak demand up to the 75th percentile, which equates to approximately 650 parks', figures which appear consistent with DCL's interpretation that the 550 spaces now proposed 'could be sufficient parking during peak hours approximately 60% of the time'.

7.4.3 However, we suggest that this conclusion may possibly be founded on a misinterpretation of the adopted trip-rate origins by DCL and/or Ōtākaro's consultants: Our understanding is that the '85%ile' level of demand cited has its origins in a variation of surveyed values (from a UK (TRICS) database) – but that this statistical measure reflects a (limited) range of surveyed values regarding the *absolute* peak level of observed demand at facilities considered 'similar'. In other words, it may be more-appropriately interpreted as 'there is 35% chance that the (50^{th} %ile) demand estimates adopted may be exceeded', *not* as the potential for variation based on the proportion *of time* a particular demand threshold is exceeded at each or even all (on average) of the surveyed facilities.

7.4.4 Notwithstanding this and the acknowledged level of uncertainty that will, naturally, currently exist regarding the actual level of parking demand that the MSF will ultimately generate (given it's rather unique location and features), more pertinent to the Hospital is whether there *is* likely to be any significant MSF overflow at times when demand by Hospital users is greatest.

7.4.5 In this respect, we do not consider there to be a significant risk, given the anticipated regular weekday MSF peak is likely to occur between 5:30-8pm - when demand by Hospital users declines significantly. So, even if MSF parking overflow does occur, at the times this is most likely to happen, it should not (generally) conflict with Hospital users, except perhaps during occasional major events that may be held in the daytime.

8 How Future Parking Demands May be Met

8.1 As noted previously, we consider that the existing parking supply is not meeting desirable outcomes for Hospital access, either for Staff or Visitors.

8.2 We have considered the alternative future scenarios for the Hospital Demand (presented in Figure 7-1 and Table 7-2 above) and HREF together with our updated estimates of future (base) supply. This suggests that (the maximum) parking previously identified as 'sustainable' by the CCC October 2016 network assessment (conducted by QTP), being a total of around 1,400 spaces on both the St Asaph St Campus and east of Antigua Street (and spread equally between the two), is likely to form a baseline for additional provision.

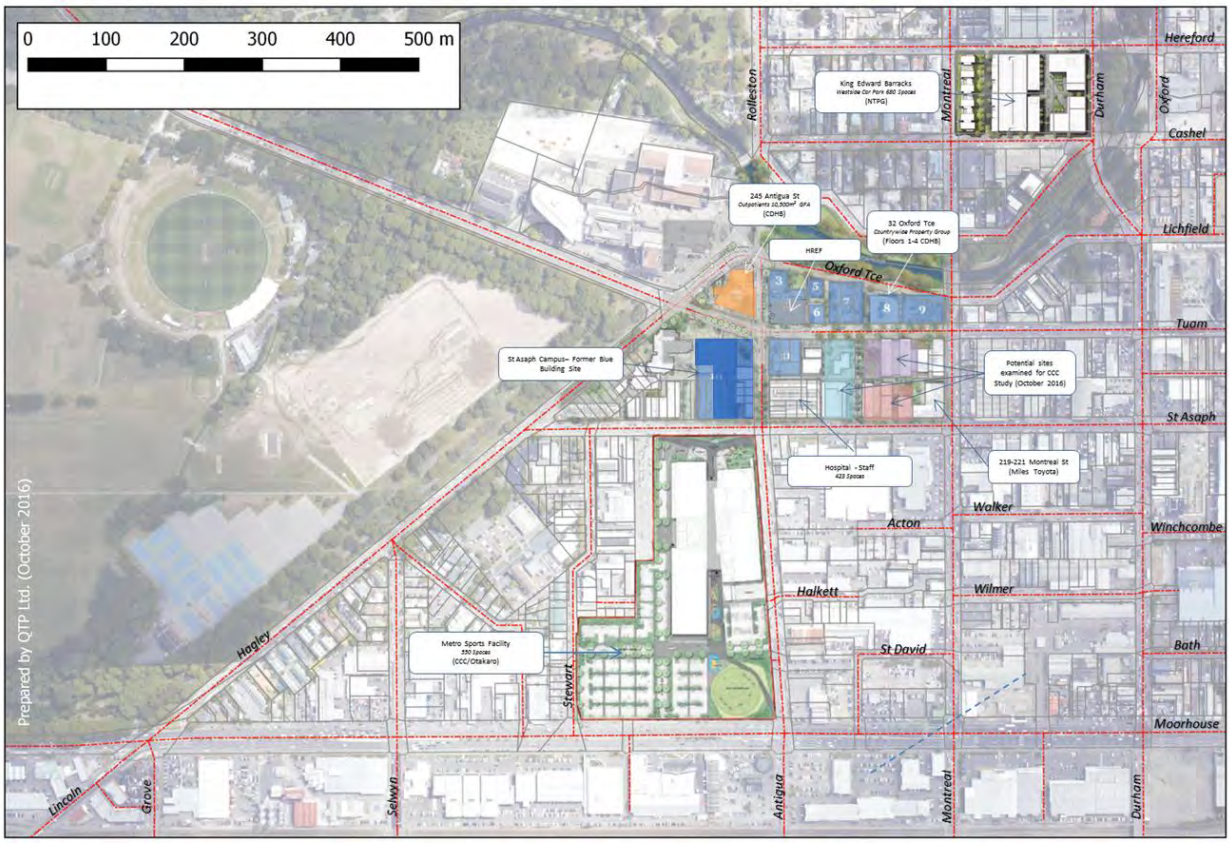

Figure 8-1: Locations of Potential Additional Parking Provision

8.3 An example of this consideration is presented in Table 8-1 overleaf. This demonstrates that, under the assumptions behind this scenario (being our lowest estimate of the existing demand, no future mode-change but low growth) there is likely to be an increase in the long-term shortfall of effective parking supply for Hospital users (at 2031). This is, literally, the 'bottom-line' of the table, where it shows an (increased) shortfall to 137 more than currently. Of course, with an additional 1,400 spaces assumed in total in closer proximity to the Hospital this would, of course, represent a very significant increase in the Level-of-Service, compared to the existing situation, given the higher proximity to the Hospital.

8.4 Whether this would be fully-utilised however, would depend, of course, on detailed management matters (including pricing), that are beyond the scope of this relatively coarse investigation and further investigation will be required of such financial matters.

8.5 Both this table and indeed 11 others (reflecting the other various combinations of assumptions - and uncertainty - about potential parking demand), are provided within **Appendix B**. It is noted that for the purposes of a comparative exercise, all the scenarios (presented here) have been predicated on the same basis, being the provision of an additional 1,400 spaces close to the Hospital.

8.6 The 'bottom-line' (being the wider-area Shortfall) of all the scenarios examined is compared below in Table 8-2.

8.7 It is important to note when reading this table that the interpretation of 'reduced LoS' relates more to the overall capacity to accommodate Hospital Parking Demand within the wider area – and relativity between scenarios: Again, if 1,400 additional spaces were to be provided in close proximity to the Hospital, as assumed for the comparison, this would represent a significant (potential) improvement in the Level of Service to Hospital Users (depending on pricing).

		Future Scenario	Scenario 2A= Low Base, No Mode Change, Low Growth Estimates		
		Design years (based on a 2pm daily frequency)	Existing	Long-term	Notes
			2017	2031	
Hospital parking demand	1	Hospital Staff (including Corporate)	**2025**	**2295**	
	2	Hospital Visitors	**550**	**620**	
	3	Registrars and surgeons etc	0	0	< 50 (consistent with Urbis and advice from CDHB Roster staff) is now reflected in QTP Base Estimates
	4	HREF facility (nominal values)	0	250	< LT reflects revised MINIMUM estimate for HREF
	5	Fleet vehicle storage (nominal values)	25	25	
	6	On-street construction worker parking (nominal values)	150	0	
	7	**Design demand**	**2750**	**3190**	
Hospital parking supply	8	Existing main campus supply	92	70	< LT reflects assumed loss of parking on St Asaph
	9	ASB LG parking level supply	0	61	
	10	ASB ground parking level supply	0	62	
	11	Staff parking building supply	423	423	
	12	Balance of St Asaph Street campus	83	44	
	13	Afternoon staff car park	253	136	
	14	Saleyards	120	0	< 2017 'supply' reflects assumed occupancy of 114/0.95
	15	Blue parking building site (initially on grade and then a replacement building)	0	**700**	< St Asaph St Campus
	16	Other more-remote off-street staff sites (leased)	273	0	< 2017 'supply' reflects Tuam/Montreal & Acton Sts. LT reflects lease expiry.
	17	41-45 St Asaph Street (gravel pit site)	0	0	
	18	Potential Additional Staff and/or Visitor Facility/Facilities	0	**700**	< East of Antigua
	19	Assumed occupancy	95%	95%	
	20	**Available Supply**	**1182**	**2086**	
	21	**Balance to find**	**1568**	**1104**	
On-street	22	On-street parking (use **at 2:30pm**)	1068	768	< LT reflects expected ACC losses within 10 mins AND reversion of 30% of unrestricted parking in 10-15 band to time-limited
	23	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	24	**Available Supply**	**1068**	**730**	
	25	**Balance to find**	**500**	**374**	
Public Off-Steet	26	Off-Street Public Facilities	500	250	< 2017 'supply' reflects *assumption* that approx 1/3 net demand accomodated off-st. LT reflects assumption that 50% of current capacity may be 'lost' to redevelopment
	27	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	28	**Available Supply**	**500**	**238**	
	29	**Balance to find**	**0**	**137**	
MSF	30	Metro Sports demand at 2pm	0	350	
	31	Assumed occupancy	95%	95%	
	32	Metro equivalent demand	0	368	
	33	**Available Supply for Hospital Users**	**0**	**0**	< No Capacity is now assumed (at 2:30pm) for Hospital
Summary	34	**Balance to find**	**0**	**137**	

Table 8-1: Assessment of Future Demand & Supply (Low Base, No Mode Change, Low Growth Estimates)

Scenario	Area Shortfall			Interpretation (see important note)
	2017	2031	Change	
Scenario 2A= Low Base, No Mode Change, Low Growth Estimates	0	137	137	Lower risk for reduced LOS, with 1400 additional spaces
Scenario 2B=Medium Base, No Mode Change, Low Growth Estimates	350	537	187	Lower risk for reduced LOS, with 1400 additional spaces
Scenario 2C=High Base, No Mode Change, Low Growth Estimates	700	937	237	Medium risk of degraded LOS, even with 1400 additional spaces
Scenario 3A= Low Base, No Mode Change, High Growth Estimates	0	357	357	Medium risk of degraded LOS, even with 1400 additional spaces
Scenario 3A= Medium Base, No Mode Change, High Growth Estimates	350	787	437	High risk of degraded LOS, even with 1400 additional spaces
Scenario 3A= High Base, No Mode Change, High Growth Estimates	700	1,207	507	High risk of degraded LOS, even with 1400 additional spaces
Scenario 4A= Low Base, Target Mode Change, Low Growth Estimates	0	-443	-444	Improved LOS with 1400 spaces or potentially provide only c. 950 in total
Scenario 4B= Medium Base, Target Mode Change, Low Growth Estimates	350	-83	-434	Improved LOS with 1400 spaces or potentially provide only c.1300 in total
Scenario 4C= High Base, Target Mode Change, Low Growth Estimates	700	277	-424	Improved LOS with 1400 spaces but still short of ideal provision
Scenario 5A= Low Base, Target Mode Change, High Growth Estimates	0	-273	-274	Improved LOS with 1400 spaces - or potentially provide only c.1100 in total
Scenario 5B= Medium Base, Target Mode Change, High Growth Estimates	350	117	-234	Improved LOS with 1400 spaces but still short of ideal provision
Scenario 5C= High Base, Target Mode Change, High Growth Estimates	700	507	-194	Improved LOS with 1400 spaces but still short of ideal provision

Table 8-2: Comparison of Wider-area Parking Shortfall Under Alternative Future Demand Scenarios

9 Key Conclusions and Recommendations

9.1 Strategic Framework

9.1.1 The Board should consider finalisation and adoption of a Long-term Hospital Transport Strategy (rather than simply a Parking Strategy or Plan), to assist their consultation with the key agencies and stakeholders, and ultimately work together to achieve desired (and shared) outcomes for Hospital access.

9.1.2 The draft Vision recommended for Board consideration and approval is that:

"**Christchurch Hospital will be viewed as accessible by patients, visitors and staff and the transport needs of each of these groups are met by a range of safe and attractive transport choices**".

9.1.3 The adopted Vision should be supported within the finalised Strategy by clear definition of the Strategy's purpose, goals and principles, as well as identification of key responsibilities, key targets, priorities and actions. Suggestions for each of these are provided within Section 3 of this report.

9.2 Hospital Travel Plan

9.2.1 The Strategy should ultimately be supported by a Hospital Travel Plan, this being a key implementation mechanism for the Strategy.

9.2.2 Irrespective of decisions ultimately made on potential additional car parking provision, a focus on measures to promote increased car-sharing, public transport, cycling and pedestrian access by Hospital staff, patients and visitors is likely to yield dividends, not least in terms of minimising the risk that the available car parking supply will be insufficient to meet Hospital user needs.

9.2.3 The promotion of such measures to reduce single-occupant car use will require effort to both implement and sustain and we recommend a dedicated Travel Plan Coordinator role be created by the CDHB to do this.

9.2.4 Measures which should be considered include:

- Adoption of more-flexible employment practices for 'regular hours' staff, as this could help reduce the afternoon peak parking demands, which occur during the necessary shift-staff handover.
- Flexibility of visitor times to reduce peak parking demands ahead of the start of the (currently-advertised 'official') afternoon visiting times (from 3pm), as this is also partly coincident with peak staff-parking demand at morning and afternoon shift-handover (2:15-3:15pm), with respect to use of available public parking spaces;
- Incentivise staff to reduce single-occupant car driver trips through:
    - Car-Pooling (e.g. pool organisation, preferential space allocation and reduced fees);
    - Bus use (e.g. subsidy for Metrocard use)
    - Cycle-use (e.g. ensure attractive parking and end-of-trip facilities, the latter including adequate shower capacity, lockers and drying facilities)

9.2.5 The development and implementation of the Travel Plan would benefit from additional (and on-going) surveys including market research of Hospital users (and patients and visitors in particular), to confirm:

- existing and potential mode-shares;
- existing and preferred parking locations (where applicable);
- access needs and priorities;
- degree of satisfaction with access experience (to complement the current 'Patient Experience' surveys which focus on satisfaction with clinical matters);
- willingness-to-pay for added value improvements; and
- monitor progress towards targets.

9.3 Car Parking Demand and Supply

9.3.1 We have concluded that previous estimates for the existing total car parking demand of Hospital users are likely to have understated the true level of demand.

9.3.2 Much of the demand (particularly for staff) is presently met by on-street capacity, along with temporary supply arrangements through facilities leased by the CDHB. These leased facilities also include the Sale Yards Park and Ride site, which is estimated to be used, at present, by a relatively small proportion of (predominantly) patients and visitors.

9.3.3 If the suggested potential mode-share targets can be achieved, this could reduce the long-term Hospital Parking total car parking demand (by 2031) to below existing levels, even given potential growth in overall hospital use.

9.3.4 However, the current (and previously-anticipated) parking supply that serves the Hospital will likely be reduced in the long-term, by a combination of:

- Expiry of current leases on temporary facilities for Staff Parking and the Park and Ride site;
- Redevelopment in the wider area which can be expected to reduce the supply of (at-grade) temporary car-parking that is presently-used by some staff and visitors;
- Potential reductions in the present supply of on-street parking, both in close proximity to the Hospital (as a result of AAC and other planned network improvements) and in the presently-unrestricted on-street parking further afield used by some staff; and
- Recent discussions with the MSF operator, which have confirmed that management of that facility, will be focussed on serving the needs of bona-fide visitors and there should now be no expectation of any dedicated capacity for Hospital users, at least at the times when it is most required.

9.4 The above potential reductions in supply, when coupled with the fact that the present level of demand (and supply) is not currently meeting desirable goals (outcomes) for Hospital staff and visitors, leads us to conclude that an increase in off-street parking supply in close-proximity to the Hospital, dedicated (primarily) to better meet Hospital user needs, would now be desirable and will be required in the long-term.

9.4.1 Given our revised (increased) minimum estimates for future parking demand at the Hospital and known developments at the surrounding Health Campus (including HREF), we recommend that the CDHB and partner agencies should work together to urgently investigate the viability of both a **700 space building within close proximity to the Main Hospital site (within 5-7min walk from the hospital centre) and a further 700 space building to the east of the Staff parking building** (the latter with access to both St Asaph and Tuam Streets).

9.4.2 The above recommendation is based upon an assumption that it is no longer feasible to consider meeting a reasonable proportion of anticipated visitor demand to the wider campus on the Hospital's Main site, which would clearly be a preferred location from both a user and network management perspective, if also complemented by greater provision to meet the needs of the eastern campus in that vicinity.

9.4.3 The above recommendation is however also in line with investigations by CCC on the capacity of the surrounding network to accommodate additional off-street parking capacity in the area.

9.4.4 However, even if the above additional supply is ultimately achieved, it is important to recognise that *all* potential parking needs of all Hospital staff and visitors may still not be met in the *immediate* area of the Hospital campus – particularly if continued growth in the use of Hospital services occurs and mode-share targets were not achieved. Thus some continued reliance is to be expected on more remote on and off-street parking sites.

9.4.5 Pending the outcome of further investigations and discussions, we recommend the CDHB should 'reserve' a more-viable area for a replacement 'Blue' Parking Building on the St Asaph campus (if this ultimately is a preferred site), as our understanding of the currently-planned space would be a relatively inefficient and therefore potentially increase costs per space.

9.4.6 Further, in terms of minimising risk, we recommend that the CDHB continue to hold the former Christchurch Women's Hospital site for potential use as a Park and Ride facility, until such time as the availability of adequate alternative (and more attractive) parking provision close to the Campus is certain – or the need for some 'next-best' alternative becomes clear. This site has the capacity to accommodate around 650 cars and, whilst in some respects is less well-located than the temporary Deans Avenue site, it does have the advantage of CDHB ownership and thus (current) long-term security without lease cost.

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Appendix A Summary Reviews of Preceding Assessments

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Christchurch Hospital – March 2017 Review of Parking Supply and Demand (Urbis TPD Ltd, April 2017, on behalf of MoH)[44].

A.1 This is the most recent analysis of parking supply and demand. A full review is not presented here, but rather, a few key statements and tables have been highlighted, with QTP comments appended.

A.2 [Para 18]: *"It is clear that there is a public expectation that there should be convenient parking for all Hospital visitors and staff. While there is readily available publicity and information on parking supply locations such as the sale yard site, there is repeated feedback that this is not convenient enough particularly for less-mobile patients and visitors, or other visitors with special parking requirements such as returning loan equipment."*. [QTP agree with this statement].

A.3 [Para 19]: *"The increased demand for on-street parking, and the current waiting lists for an off-street staff parking space, is forcing staff to park further away from the Hospital site. There was repeated feedback to the on- line articles that some staff do not feel safe walking increased distances to their vehicles during hours of darkness[2]. Also, the shuttle bus ceases operation at 8:30pm yet the afternoon staff shift ends around 11:00pm. While the CDHB does provide security staff that can escort staff to the staff parking building and the afternoon staff car park, such a service is apparently not available if the staff member is not able to park in either staff parking facility and is instead parked on-street somewhere. There is also no late night or early morning shuttle service that could be used by staff parked at the sale yard site."* [QTP agree with this statement, although understand that, since publication of this report, the Shuttle service hours have now recently been extended].

A.4 [Para 33]: "*The fact that the saleyard site is not developed to the full potential afforded by its resource consent is of no consequence because the 2017 parking demand surveys show that it is operating at very low occupancy levels anyway."* [QTP agree and (notwithstanding Urbis recommendations elsewhere on measures to improve the attractiveness of the site, with which we also agree), note that the full potential capacity was assumed as potential supply for the purposes of 'Table 2', until 2020 but this does exceeds the current CDHB licence-to-occupy (300 spaces). The Table 4 assessment presented does supersede this with a 250-space assumption, but only insofar as it presents an 'Existing' situation assessment (despite the table title)]

A.5 Further brief comments on assumptions adopted in key parking tables are included in the landscape-format tables, located at the rear of this appendix.

[44] http://www.health.govt.nz/system/files/documents/pages/urbis-review-of-parking-supply-and-demand-for-christchurch-hospital.pdf

Christchurch Hospital Acute Services Building Integrated Transport Assessment (Urbis TPD Ltd, October 2015, on behalf of MoH)[45]

A.6 [para 1.1.1] We note that the Building GFA is cited as 62,000m^2, compared to the 52,604m2 cited within the Urbis/QTP Preliminary could be important, if it has increased to this extent?

A.7 [para 1.2.5] "*Seven different parking demand estimates based on differing methodologies have been considered in this report. A comparative evaluation of these estimates suggests a short terms parking demand for the existing Hospital + ASB of around 1,230 spaces and a longer terms parking demand of around 1,540 spaces. It is important to note that these estimates are not considered to be definitive."* [QTP Comment: A fair caveat and one which applies to any estimates (including our own revised ones). The Options examined also represent a fair attempt of alternative estimation methods, although do appear heavily-predicated on what are (in our opinion) understated estimates of the existing demands] – refer below.

A.8 [para 1.2.7] "*It is also considered inappropriate to provide for a significant increase on on-site parking supply over the historic situation when there are so many unknowns about future parking demand levels not only as a result of the ASB project but also as a result of nearby developments such as the Metro Sports facility. Instead it is considered prudent to provide for parking as a staged roll-out of facilities across the campus with the final parking supply being decided at a later date following monitoring of parking demand over time. Certainly from the outset there should be provision for around 1,200 spaces. As further site development progresses in the longer time frame, and depending upon parking availability on the Metro Sports Centre site, then an increased optimum supply of 1,500 to 1,800 spaces can be reconsidered at a later date."* [As noted within the body of the report, it is now clear that no presumption can be made of any capacity on the MSF site to accommodate Hospital use (except where this represents bona-fide short-term parking associated with use of MSF facilities, or possibly between 8pm and 6am). The 'desirability' or 'acceptability' of staged roll-out is somewhat dependent upon a presumption that Park & Ride option(s) are an acceptable solution for 5+ years – although it must certainly be accepted that both the use of the former Brewery site and now Sale Yards has been the only-practical option, given the lack of planned capacity being implemented in parallel with building development]

A.9 [para 1.2.8 + Table 5] Assumed Blue Building replacement (380 spaces) by 2018, expanded to 700 by 2020 [QTP Comment: A two year gap between expansion appears questionable in terms of efficiency of contract, although may have been predicated on reasonable assumptions around land-availability – and, presumably, that the expansion occurs *adjacent to,* rather than above, the 380 spaces, to minimise disruption & avoid added cost?], Regarding 150 Afternoon car park residual capacity, it is noted that, at this stage, no allowance was made for desirable max occupancy levels (which have been incorporated in later assessments, albeit still appear to rely

[45] Provided by CCC.

upon undesirable 100% occupation of assumed on-street capacity)[

A.10 [para 1.5.1]: Estimate of former Blue Building generation was *"an additional 450 trips per day".* [QTP comment: This almost certainly represents a significant under-estimate – e.g. CCC data (albeit from 2003) looked at origins and destinations of people using this building, confirming that during the morning and interpeak hours surveyed around 95%+ were destined for the Hospital. It also confirmed that 2-way vehicle movements were 168 (7:30-8:30am), 102 (2-3pm) and 130 (4:30-5:30pm) – in other words a total of 400 movements observed over only 3 surveyed hours. Further, transaction data from 2007 suggests the car park had 195,000 annual transactions and if the mean weekday occupancy was assumed to be 50% and average weekend occupancy 12% (per Deloitte 2007 figures), this would imply an estimated average of 685 parking transactions/weekday – or 1,370 (2-way) car trips/day.

A.11 [para 1.6.3]: "*Entering the blue parking building via a right turn from Antigua Street provided convenience accessing the blue parking building and this right- turn movement must be retained in future road layout options for Antigua Street if the viability of a replacement blue parking building is to be maximised. It is understood that the design of the road network proposals for the surrounding road network now allow for a right turn entry into the existing 'blue' parking building site access."* [QTP comment: This understanding does not accord with our reading of the approved AAC plans. However, the GHD appendix is noted and appears to support the potential]

A.12 [para 1.6.4]: "*If a replacement of the blue parking building is to be provided, then it is considered critical that a more convenient return route is provided between the blue parking building site and the northern campus. This is able to be provided through the proposed roundabout at the Antigua/Oxford intersection and the proposed conversion of this egress point to cater for two way traffic flow."* [QTP comment: The latest CCC plans do provide for this two-way movement. We have, however, yet to see an updated long-term circulation plan for the northern campus ('Main site'), post-Masterplan implementation, that includes and accommodates this?]

A.13 [para 2.3.2]: "*A total of around 600 cycle-parking spaces should be provided on the northern hospital campus, with the majority of these (say 500) being reserved for staff use. These should meet modern standards for space and security, and be provided undercover where possible."* [QTP Comment: We concur with Urbis recommendations over the quality requirements. The space recommendations now appear feasible, given that there are currently 382 secure spaces (and 135 unsecure spaces) on the northern campus, but this does not include either the potential capacity that could, presumably, be restored within the quadrangle on completion of the building programme (This formerly had capacity for around 260 staff spaces, using old single stands rather than double racks), nor the provision understood to be anticipated within the ASB building, where plans suggest the LGF will have nominal provision for around 150 spaces]

A.14 [Para 3.2.11]: "*As a result of both these surveys and additional information from the CDHB on the estimated parking effects of the ASB development, it became*

increasingly apparent that, in the short term, the proposed ASB is unlikely to affect the parking demand of the wider Hospital activity to the extent previously thought". [QTP Comment: '…in the short-term' is, presumably, a potentially-important qualifier?]

A.15 [Para 4.2.2]: *"Figure 3 on the next page provides a profile of staff numbers at the hospital excluding, on weekdays, around 500-600 staff detailed in Table 2 below:"* [QTP Comment: The Monday-Friday staff numbers shown in Table 2 total 912, so either there is a typographical error in this table, or the '500-600' figures may be incorrect?]

A.16 [Para 7.3.4]: *"Appendix G provides an analysis of seven different parking demand estimates based on differing methodologies based around Options a) and b) above."* [We note that Options 3-6 all stem from the Option 2 estimate of **existing** on-site parking demand for around **1200 spaces**, derived by subtracting 50% of the Blue Building capacity from on-site supply of 1,425 spaces shown in Table 2[46], reproduced below. Put another way, although some reference is made to use of on-street parking, essentially all estimates appear **heavily-predicated** on an assumption that the (former) 'on-site' **supply** effectively represented the sum totality of 'existing' Hospital Parking **demand**?]

GFA of Existing Site	Visitor Parks	Staff parks	Total
Northern Campus	197	75	**272**
Southern Campus	80	80	**160**
'Blue' Parking Building	389		**389**
Staff Parking Building		420	**420**
26 St Asaph Street Car Park		184	**184**
Total	**666**	**759**	**1425**

Table 3: Existing (mid- 2014) Hospital campus vehicle parking provision

A.17 For Option 5, we note that the 30% increase applied is, apparently, influenced by a typographical error in Table G2 used to derive it: Where the projected number of adults was as 532,686, it should have read 432,686 (the number of adults being less than the total population). Thus the Average Estimated Growth 130% should have been calculated as 124% (Also note that this growth was from 2011 post-quake projections, not 2015) However, as noted within the body of this report, these projections since been superseded (twice) since 2012 anyway.

[46] The reference should be to Table 3. Also note that this cites the former Blue building capacity at 389 spaces, compared to a capacity of 353 spaces noted in CCC inventory surveys of 2002, 2006 and 2009.

Christchurch Hospital ASB, Preliminary Transport Assessment June 2014 Update (Urbis TPD Ltd)[47].

A.18 [para 1.1.1] *"If there is to be less short-medium term visitor parking on the site itself then any remote parking facilities need to provide an extremely high level of pedestrian connectivity to the main site. It is our option* (sic) *that a fundamental design failing of the proposed* (sic) *'blue' Hospital parking building was the very poor pedestrian connectivity to the main Hospital site. Visitors instead preferred to park on the site itself and thus contributed towards the on-site parking congestion issues."*

A.19 [QTP do agree with first and last sentences above. However, our opinion is that it is arguable whether the well-lit and wide pedestrian sub-way, free of traffic conflict, with lift access available at either end (and wheelchair assistance if required) did indeed represent such a 'fundamental design failing' of the former Hospital Car Park? (Unfortunately, much opinion, including ours, is founded on conjecture and there appears to be an absence of robust market-research undertaken to identify the true barriers to positive visitor access experience and ways to remove or mitigate these).

A.20 It might alternatively be argued that such or similar segregated-provision might even be preferable to a (future) requirement to traverse one of two busy intersections at-grade?]

A.21 [para 2.6.5] *"It also remains a recommendation that with further redevelopment of the Hospital activity that further improvements in the parking supply convenient to the site be made with around 1400-1500 spaces being a target final supply."* [This broadly aligns with QTP's recommendations]

A.22 Given these statements, we suggest there may be some irony in the argument that, if the level of (perceived) accessibility afforded by the former Hospital Car Park represented such a 'fundamental design failing', and an implied requirement for success will be sufficient parking convenient to the site, that subsequent reports (October 2015, March 2017) would suggest (by implication) that the Sale Yards would be an acceptable (if interim) solution, given that potential users are required to park 20 minutes travel away, by the time they have waited for and travelled in a Shuttle?

A.23 [section 4.2] It is noted that the anticipated future generation of the (main) site in this assessment appears predicated on extrapolating observed access use by the adopted (30%) increase in patient numbers, when clearly it should/will be limited by the proposed level of parking on the main site and would be more appropriately assessed on this basis?

A.24 Note that QTP shared input to the preceding 'Preliminary Transport Assessment' appended to this document. (The version appended is however dated 3 February 2014 and as we had no involvement to this project beyond June 2013, can't attest to any changes that may have been made in the interim).

[47] http://cera.govt.nz/sites/default/files/common/christchurch-hospital-transportation-report.pdf

Christchurch Hospital – Acute Services Building Designation Detail (Preliminary Design Report, May 2014 on behalf of MoH & CDHB)[48].

A.25 No comments of significance.

Car Parking in the South-West Central City, Final Issue (Development Christchurch Ltd, January 2017) [49]

A.26 Add key comments if time.

48 http://cera.govt.nz/sites/default/files/common/christchurch-hospital-acute-services-building-designation-detail.pdf

49 Note this is a copy available to the public on CCC site (at https://www.ccc.govt.nz/assets/Documents/The-Council/How-the-Council-works/LGOIMA-responses/DCL-Report-on-Health-Precinct-Car-Parking.pdf , (in response to a LGOIMA request so therefore includes some redactions to preserve commercially-sensitive information).

December 2015: Deloite, with assistance from Urbis - nb Update of Construction ITA Estimates (October 2015)

Table 2 Copy of 'Deloitte' Table. Summary of estimated parking demand and an example of parking provision through to 2031 design year

Christchurch Hospital
March 2017 Review of Parking Supply and Demand
Source:
http://www.health.govt.nz/system/files/documents/pages/urbis-review-of-parking-supply-and-demand-for-christchurch-hospital.pdf

		Design years (based on a 2pm daily frequency)	Existing	Short Term	Short Term	Medium Term	Long Term	QTP Comments
			2015	2016-2018	2018-2020	2020-2025	2025-2031	
Hospital parking demand	1	Hospital Activities including ASB and including afternoon park changeover	1200	1200	1200	1200	1200	< This requires confirmation as it patently critical to ultimate demand/supply calculations. Eg. Does it include observed Salevards & on-street?
	2	Registrars and surgeons etc	50	50	50	50	50	< Confirm with CDHB
	3	Allowance for population growth catered for by ASB (nominal values)	0	0	100	200	300	< What support is there for 'nominal values' adopted and what potential range is there?
	4	HREF facility (nominal values)			100	100	100	< What support is there for 'nominal values' adopted and what potential range is there? CDHB suggest (fire-rated) occupancy *could* be 2,385 people (albeit many presumably students)
	5	Corporate Services (nominal values)	150	150	150	150	150	< What support is there for 'nominal values' adopted and what potential range is there?
	6	Fleet vehicle storage (nominal values)	25	25	50	50	50	< What support is there for 'nominal values' adopted and what potential range is there?
	7	On-street construction worker parking (nominal values)	150	150	0	0	0	< Urbis report suggests 2,000 construction workers. Note allowance is for ON-STREET demand only
	8	**Design demand**	**1575**	**1575**	**1650**	**1750**	**1850**	< Note design envelope altered slightly from previous assessments
Hospital parking supply	9	Existing main campus supply	91	91	91	91	91	< Urbis March 2017 surveys suggest this figure should be 60 (see right). CDHB figures suggest 59 (**excluding** contractor & INCLUDING drop-off, mobility and critical staff. Otherwise other public
	10	ASB LG parking level supply	0	0	61	61	61	<tbc (Review Plans)
	11	ASB ground parking level supply	0	0	62	62	62	<tbc (Review Plans)
	12	Staff parking building supply	423	423	423	423	423	<tbc (CDHB say 430)
	13	Supply on balance of St Asaph Street campus around labs etc.	63	63	86	86	86	< Urbis March 2017 surveys suggest this figure should be 77. CDHB say 51 (including 1 contractor space)
	14	Blue parking building site (initially on grade and then a replacement building)	0	67	67	600	600	< Urbis remove later (because, presumably, unavailable during construction)
	15	41-45 St Asaph Street (gravel pit site)	0	0	0	60	161	< tbc likely to be available - This was assumed to be extention to 600-space Blue Building
	16	Assumed occupancy	95%	95%	95%	95%	95%	
	17	**Available Supply**	**548**	**612**	**751**	**1314**	**1410**	
	18	**Balance to find**	**1027**	**963**	**899**	**436**	**440**	
On-street	19	On-street parking (nominal)	310	310	310	310	310	
	20	Assumed occupancy	100%	100%	100%	100%	100%	< This assumption is overly-optimistic and would guarantee inefficient searching etc
	21	**Available Supply**	**310**	**310**	**310**	**310**	**310**	
	22	**Balance to find**	**717**	**653**	**589**	**126**	**130**	
Sale Yards	23	Sale Yard Site	813	813	813	0	0	< Early period estimates clearly out of sync with demand (0.17*813= c. 140 at 2:00pm). Urbis recently noted the 813 assumption reflected (apparently) consented potential supply to 2020, but did
	24	Assumed occupancy	90%	90%	90%	90%	90%	(Resolved, to some extent, in Urbis '2017' assessment (see right)
	25	**Available Supply**	**732**	**732**	**732**	**0**	**0**	
Metro Sports and afternoon car park sites	26	500 space Metro Site (nominal shared parking)	184	184	500	500	500	
	27	Metro Sports demand at 2pm	0	0	**350**	350	350	< Identify potential impact of risk around this figure?
		Assumed occupancy	95%	95%	95%	95%	95%	
		Metro equivalent demand	0	0	368	368	368	
	28	**Available Supply**	**184**	**184**	**132**	**132**	**132**	< Why is occupancy allowance made for Metrosports but not (effectively) for all potential Hospital Use??
	29	**Available Supply Sale yards and Metro Sport**	**916**	**916**	**864**	**132**	**132**	
	30	**Balance to find**	-199	-263	-275	-6	-2	

(nb presumed typo in header corrected)

March 2017: Urbis

Table 4 March 2017 summary of estimated parking demand and an example of parking provision through to 2031 design year *(sic)*

Christchurch Hospital
March 2017 Review of Parking Supply and Demand
Source:
http://www.health.govt.nz/system/files/documents/pages/urbis-review-of-parking-supply-and-demand-for-christchurch-hospital.pdf

		Design years (based on a 2pm daily frequency)	Existing		QTP Comments
			2017		
Hospital parking demand	1	Hospital Activities including ASB and including afternoon park changeover	1200		< This requires confirmation as it patently critical to ultimate demand/supply calculations. Eg. Does it include observed Saleyards & on-street?
	2	Registrars and surgeons etc	50		< Registrar nos (& parking requirements) to be confirmed with CDHB. 18 Critical Staff CP Supply on main Site
	3	Allowance for population growth catered for by ASB (nominal values)	0		
	4	HREF facility (nominal values)	0		
	5	Corporate Services (nominal values)	150		< 340+ staff
	6	Fleet vehicle storage (nominal values)	25		(CM survey suggests 21 on PM Car Park, so close enough)
	7	On-street construction worker parking (nominal values)	150		< 2,300 contractors??
	8	**Design demand**	**1575**		
Hospital parking supply	9	Existing main campus supply	60		< CDHB = 59 (ex 33 Contractor spaces) - *including drop-off, but really 47 (29 mobility+18 Critical staff)*
	10	ASB LG parking level supply	0		
	11	ASB ground parking level supply	0		
	12	Staff parking building supply	423		<tbc (CDHB say 430)
	13	Supply on balance of St Asaph Street campus around labs etc.	77		<CDHB say 51 (including 1 contractor space)
	14	Blue parking building site (initially on grade and then a replacement building)	0		< CDHB to confirm when will this be available for at-grade parking?
	15	41-45 St Asaph Street (gravel pit site)	0		< Note Urbis comments that " it is understood that the replacement energy centre at 31-33 St Asaph Street will commence construction in approximately one year" & " A preliminary design
	16	Assumed occupancy	95%		**Note No allowance for KEB, Tuam St, Acton St**
	17	**Available Supply**	**532**		
	18	**Balance to find**	**1043**	204.8	
On-street	19	On-street parking allowing for recent parking restrictions to facilitate construction (nominal 310 spaces ;less 200 spaces)	110		(Urbis report suggests MSF loss is actually 170 within 500m of Main Site (closure of Balfour, Horatio and parts of Stewart/Antigua Streets) and 86 on St Asaph St during rebuild works. Figures here reflects assumption that 80% of this demand hospital-related (0.8 x (170+86) = 205) & will need to be compensated elsewhere
	20	Assumed occupancy	100%		
	21	**Available Supply**	**110**		
	22	**Balance to find**	**933**		
Sale Yards	23	Sale Yard Site	250		< Urbis suggest only central third developed with capacity for around **200** vehs [March 2017, para 281
	24	Assumed occupancy	90%		< Also note Urbis comments re loss of on-street options on Deans Av for Afternoon shift staff. (although questionable whether this a responsible option anyway if shuttle has soppped and such staff required to traverse Park at end of shift??!!)
	25	**Available Supply**	**225**		
Metro Sports and afternoon car park sites	26	Afternoon staff car park	250		< CM Survey = 253 (136+117), with 117 due to be lost (date tbc)
	27	Metro Sports demand at 2pm	0		
		Assumed occupancy	95%		
		Metro equivalent demand	0		
	28	**Available Supply**	**238**		
	29	**Available Supply Sale yards and Afternoon Car Park**	**463**		
	30	**Balance to find**	**471**		(Note that no allowance made for KEB "as likely to be allocated to other users in the area"

Appendix B Updated Assessments of Future Supply & Demand (Alternative Scenarios)

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		Future Scenario	Scenario 2A= Low Base, No Mode Change, Low Growth Estimates		
		Design years (based on a 2pm daily frequency)	Existing	Long-term	Notes
			2017	2031	
Hospital parking demand	1	Hospital Staff (including Corporate)	**2025**	**2295**	
	2	Hospital Visitors	**550**	**620**	
	3	Registrars and surgeons etc	0	0	< 50 (consistent with Urbis and advice from CDHB Roster staff) is now reflected in QTP Base Estimates
	4	HREF facility (nominal values)	0	250	< LT reflects revised MINIMUM estimate for HREF
	5	Fleet vehicle storage (nominal values)	25	25	
	6	On-street construction worker parking (nominal values)	150	0	
	7	**Design demand**	**2750**	**3190**	
Hospital parking supply	8	Existing main campus supply	92	70	< LT reflects assumed loss of parking on St Asaph
	9	ASB LG parking level supply	0	61	
	10	ASB ground parking level supply	0	62	
	11	Staff parking building supply	423	423	
	12	Balance of St Asaph Street campus	83	44	
	13	Afternoon staff car park	253	136	
	14	Saleyards	120	0	< 2017 'supply' reflects assumed occupancy of 114/0.95
	15	Blue parking building site (initially on grade and then a replacement building)	0	**700**	< St Asaph St Campus
	16	Other more-remote off-street staff sites (leased)	273	0	< 2017 'supply' reflects Tuam/Montreal & Acton Sts. LT reflects lease expiry.
	17	41-45 St Asaph Street (gravel pit site)	0	0	
	18	Potential Additional Staff and/or Visitor Facility/Facilities	0	**700**	< East of Antigua
	19	Assumed occupancy	95%	95%	
	20	**Available Supply**	**1182**	**2086**	
	21	**Balance to find**	**1568**	**1104**	
On-street	22	On-street parking (use **at 2:30pm**)	1068	768	< LT reflects expected ACC losses within 10 mins AND reversion of 30% of unrestricted parking in 10-15 band to time-limited
	23	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	24	**Available Supply**	**1068**	**730**	
	25	**Balance to find**	**500**	**374**	
Public Off-Steet	26	Off-Street Public Facilities	500	250	< 2017 'supply' reflects *assumption* that approx 1/3 net demand accomodated off-st. LT reflects assumption that 50% of current capacity may be 'lost' to redevelopment
	27	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	28	**Available Supply**	**500**	**238**	
	29	**Balance to find**	**0**	**137**	
MSF	30	Metro Sports demand at 2pm	0	350	
	31	Assumed occupancy	95%	95%	
	32	Metro equivalent demand	0	368	
	33	**Available Supply for Hospital Users**	**0**	**0**	< No Capacity is now assumed (at 2:30pm) for Hospital
Summary	34	**Balance to find**	**0**	**137**	

		Future Scenario	Scenario 2B=Medium Base, No Mode Change, Low Growth Estimates		
		Design years (based on a 2pm daily frequency)	Existing	Long-term	Notes
			2017	2031	
Hospital parking demand	1	Hospital Staff (including Corporate)	**2025**	**2295**	
	2	Hospital Visitors	**900**	**1020**	
	3	Registrars and surgeons etc	0	0	< 50 (consistent with Urbis and advice from CDHB Roster staff) is now reflected in QTP Base Estimates
	4	HREF facility (nominal values)	0	250	< LT reflects revised MINIMUM estimate for HREF
	5	Fleet vehicle storage (nominal values)	25	25	
	6	On-street construction worker parking (nominal values)	150	0	
	7	**Design demand**	**3100**	**3590**	
Hospital parking supply	8	Existing main campus supply	92	70	< LT reflects assumed loss of parking on St Asaph
	9	ASB LG parking level supply	0	61	
	10	ASB ground parking level supply	0	62	
	11	Staff parking building supply	423	423	
	12	Balance of St Asaph Street campus	83	44	
	13	Afternoon staff car park	253	136	
	14	Saleyards	120	0	< 2017 'supply' reflects assumed occupancy of 114/0.95
	15	Blue parking building site (initially on grade and then a replacement building)	0	**700**	< St Asaph St Campus
	16	Other more-remote off-street staff sites (leased)	273	0	< 2017 'supply' reflects Tuam/Montreal & Acton Sts. LT reflects lease expiry.
	17	41-45 St Asaph Street (gravel pit site)	0	0	
	18	Potential Additional Staff and/or Visitor Facility/Facilities	0	**700**	< East of Antigua
	19	Assumed occupancy	95%	95%	
	20	**Available Supply**	**1182**	**2086**	
	21	**Balance to find**	**1918**	**1504**	
On-street	22	On-street parking (use **at 2:30pm**)	1068	768	< LT reflects expected ACC losses within 10 mins AND reversion of 30% of unrestricted parking in 10-15 band to time-limited
	23	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	24	**Available Supply**	**1068**	**730**	
	25	**Balance to find**	**850**	**774**	
Public Off-Steet	26	Off-Street Public Facilities	500	250	< 2017 'supply' reflects *assumption* that approx 1/3 net demand accomodated off-st. LT reflects assumption that 50% of current capacity may be 'lost' to redevelopment
	27	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	28	**Available Supply**	**500**	**238**	
	29	**Balance to find**	**350**	**537**	
MSF	30	Metro Sports demand at 2pm	0	350	
	31	Assumed occupancy	95%	95%	
	32	Metro equivalent demand	0	368	
	33	**Available Supply for Hospital Users**	**0**	**0**	< No Capacity is now assumed (at 2:30pm) for Hospital
Summary	34	**Balance to find**	**350**	**537**	

		Future Scenario	Scenario 2C=High Base, No Mode Change, Low Growth Estimates		
		Design years (based on a 2pm daily frequency)	Existing	Long-term	Notes
			2017	2031	
Hospital parking demand	1	Hospital Staff (including Corporate)	**2025**	**2295**	
	2	Hospital Visitors	**1250**	**1420**	
	3	Registrars and surgeons etc	0	0	< 50 (consistent with Urbis and advice from CDHB Roster staff) is now reflected in QTP Base Estimates
	4	HREF facility (nominal values)	0	250	< LT reflects revised MINIMUM estimate for HREF
	5	Fleet vehicle storage (nominal values)	25	25	
	6	On-street construction worker parking (nominal values)	150	0	
	7	**Design demand**	**3450**	**3990**	
Hospital parking supply	8	Existing main campus supply	92	70	< LT reflects assumed loss of parking on St Asaph
	9	ASB LG parking level supply	0	61	
	10	ASB ground parking level supply	0	62	
	11	Staff parking building supply	423	423	
	12	Balance of St Asaph Street campus	83	44	
	13	Afternoon staff car park	253	136	
	14	Saleyards	120	0	< 2017 'supply' reflects assumed occupancy of 114/0.95
	15	Blue parking building site (initially on grade and then a replacement building)	0	**700**	< St Asaph St Campus
	16	Other more-remote off-street staff sites (leased)	273	0	< 2017 'supply' reflects Tuam/Montreal & Acton Sts. LT reflects lease expiry.
	17	41-45 St Asaph Street (gravel pit site)	0	0	
	18	Potential Additional Staff and/or Visitor Facility/Facilities	0	**700**	< East of Antigua
	19	Assumed occupancy	95%	95%	
	20	**Available Supply**	**1182**	**2086**	
	21	**Balance to find**	**2268**	**1904**	
On-street	22	On-street parking (use **at 2:30pm**)	1068	768	< LT reflects expected ACC losses within 10 mins AND reversion of 30% of unrestricted parking in 10-15 band to time-limited
	23	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	24	**Available Supply**	**1068**	**730**	
	25	**Balance to find**	**1200**	**1174**	
Public Off-Steet	26	Off-Street Public Facilities	500	250	< 2017 'supply' reflects *assumption* that approx 1/3 net demand accomodated off-st. LT reflects assumption that 50% of current capacity may be 'lost' to redevelopment
	27	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	28	**Available Supply**	**500**	**238**	
	29	**Balance to find**	**700**	**937**	
MSF	30	Metro Sports demand at 2pm	0	350	
	31	Assumed occupancy	95%	95%	
	32	Metro equivalent demand	0	368	
	33	**Available Supply for Hospital Users**	**0**	**0**	< No Capacity is now assumed (at 2:30pm) for Hospital
Summary	34	**Balance to find**	**700**	**937**	

		Future Scenario	Scenario 3A= Low Base, No Mode Change, High Growth Estimates		
		Design years (based on a 2pm daily frequency)	Existing	Long-term	Notes
			2017	2031	
Hospital parking demand	1	Hospital Staff (including Corporate)	**2025**	**2465**	
	2	Hospital Visitors	**550**	**670**	
	3	Registrars and surgeons etc	0	0	< 50 (consistent with Urbis and advice from CDHB Roster staff) is now reflected in QTP Base Estimates
	4	HREF facility (nominal values)	0	250	< LT reflects revised MINIMUM estimate for HREF
	5	Fleet vehicle storage (nominal values)	25	25	
	6	On-street construction worker parking (nominal values)	150	0	
	7	**Design demand**	**2750**	**3410**	
Hospital parking supply	8	Existing main campus supply	92	70	< LT reflects assumed loss of parking on St Asaph
	9	ASB LG parking level supply	0	61	
	10	ASB ground parking level supply	0	62	
	11	Staff parking building supply	423	423	
	12	Balance of St Asaph Street campus	83	44	
	13	Afternoon staff car park	253	136	
	14	Saleyards	120	0	< 2017 'supply' reflects assumed occupancy of 114/0.95
	15	Blue parking building site (initially on grade and then a replacement building)	0	**700**	< St Asaph St Campus
	16	Other more-remote off-street staff sites (leased)	273	0	< 2017 'supply' reflects Tuam/Montreal & Acton Sts. LT reflects lease expiry.
	17	41-45 St Asaph Street (gravel pit site)	0	0	
	18	Potential Additional Staff and/or Visitor Facility/Facilities	0	**700**	< East of Antigua
	19	Assumed occupancy	95%	95%	
	20	**Available Supply**	**1182**	**2086**	
	21	**Balance to find**	**1568**	**1324**	
On-street	22	On-street parking (use **at 2:30pm**)	1068	768	< LT reflects expected ACC losses within 10 mins AND reversion of 30% of unrestricted parking in 10-15 band to time-limited
	23	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	24	**Available Supply**	**1068**	**730**	
	25	**Balance to find**	**500**	**594**	
Public Off-Steet	26	Off-Street Public Facilities	500	250	< 2017 'supply' reflects *assumption* that approx 1/3 net demand accomodated off-st. LT reflects assumption that 50% of current capacity may be 'lost' to redevelopment
	27	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	28	**Available Supply**	**500**	**238**	
	29	**Balance to find**	**0**	**357**	
MSF	30	Metro Sports demand at 2pm	0	350	
	31	Assumed occupancy	95%	95%	
	32	Metro equivalent demand	0	368	
	33	**Available Supply for Hospital Users**	**0**	**0**	< No Capacity is now assumed (at 2:30pm) for Hospital
Summary	34	**Balance to find**	**0**	**357**	

		Future Scenario	Scenario 3A= Medium Base, No Mode Change, High Growth Estimates		
		Design years (based on a 2pm daily frequency)	Existing	Long-term	Notes
			2017	2031	
Hospital parking demand	1	Hospital Staff (including Corporate)	**2025**	**2465**	
	2	Hospital Visitors	**900**	**1100**	
	3	Registrars and surgeons etc	0	0	< 50 (consistent with Urbis and advice from CDHB Roster staff) is now reflected in QTP Base Estimates
	4	HREF facility (nominal values)	0	250	< LT reflects revised MINIMUM estimate for HREF
	5	Fleet vehicle storage (nominal values)	25	25	
	6	On-street construction worker parking (nominal values)	150	0	
	7	**Design demand**	**3100**	**3840**	
Hospital parking supply	8	Existing main campus supply	92	70	< LT reflects assumed loss of parking on St Asaph
	9	ASB LG parking level supply	0	61	
	10	ASB ground parking level supply	0	62	
	11	Staff parking building supply	423	423	
	12	Balance of St Asaph Street campus	83	44	
	13	Afternoon staff car park	253	136	
	14	Saleyards	120	0	< 2017 'supply' reflects assumed occupancy of 114/0.95
	15	Blue parking building site (initially on grade and then a replacement building)	0	**700**	< St Asaph St Campus
	16	Other more-remote off-street staff sites (leased)	273	0	< 2017 'supply' reflects Tuam/Montreal & Acton Sts. LT reflects lease expiry.
	17	41-45 St Asaph Street (gravel pit site)	0	0	
	18	Potential Additional Staff and/or Visitor Facility/Facilities	0	**700**	< East of Antigua
	19	Assumed occupancy	95%	95%	
	20	**Available Supply**	**1182**	**2086**	
	21	**Balance to find**	**1918**	**1754**	
On-street	22	On-street parking (use **at 2:30pm**)	1068	768	< LT reflects expected ACC losses within 10 mins AND reversion of 30% of unrestricted parking in 10-15 band to time-limited
	23	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	24	**Available Supply**	**1068**	**730**	
	25	**Balance to find**	**850**	**1024**	
Public Off-Steet	26	Off-Street Public Facilities	500	250	< 2017 'supply' reflects *assumption* that approx 1/3 net demand accomodated off-st. LT reflects assumption that 50% of current capacity may be 'lost' to redevelopment
	27	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	28	**Available Supply**	**500**	**238**	
	29	**Balance to find**	**350**	**787**	
MSF	30	Metro Sports demand at 2pm	0	350	
	31	Assumed occupancy	95%	95%	
	32	Metro equivalent demand	0	368	
	33	**Available Supply for Hospital Users**	**0**	**0**	< No Capacity is now assumed (at 2:30pm) for Hospital
Summary	34	**Balance to find**	**350**	**787**	

		Future Scenario	Scenario 3A= High Base, No Mode Change, High Growth Estimates		
		Design years (based on a 2pm daily frequency)	Existing	Long-term	Notes
			2017	2031	
Hospital parking demand	1	Hospital Staff (including Corporate)	**2025**	**2465**	
	2	Hospital Visitors	**1250**	**1520**	
	3	Registrars and surgeons etc	0	0	< 50 (consistent with Urbis and advice from CDHB Roster staff) is now reflected in QTP Base Estimates
	4	HREF facility (nominal values)	0	250	< LT reflects revised MINIMUM estimate for HREF
	5	Fleet vehicle storage (nominal values)	25	25	
	6	On-street construction worker parking (nominal values)	150	0	
	7	**Design demand**	**3450**	**4260**	
Hospital parking supply	8	Existing main campus supply	92	70	< LT reflects assumed loss of parking on St Asaph
	9	ASB LG parking level supply	0	61	
	10	ASB ground parking level supply	0	62	
	11	Staff parking building supply	423	423	
	12	Balance of St Asaph Street campus	83	44	
	13	Afternoon staff car park	253	136	
	14	Saleyards	120	0	< 2017 'supply' reflects assumed occupancy of 114/0.95
	15	Blue parking building site (initially on grade and then a replacement building)	0	**700**	< St Asaph St Campus
	16	Other more-remote off-street staff sites (leased)	273	0	< 2017 'supply' reflects Tuam/Montreal & Acton Sts. LT reflects lease expiry.
	17	41-45 St Asaph Street (gravel pit site)	0	0	
	18	Potential Additional Staff and/or Visitor Facility/Facilities	0	**700**	< East of Antigua
	19	Assumed occupancy	95%	95%	
	20	**Available Supply**	**1182**	**2086**	
	21	**Balance to find**	**2268**	**2174**	
On-street	22	On-street parking (use **at 2:30pm**)	1068	768	< LT reflects expected ACC losses within 10 mins AND reversion of 30% of unrestricted parking in 10-15 band to time-limited
	23	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	24	**Available Supply**	**1068**	**730**	
	25	**Balance to find**	**1200**	**1444**	
Public Off-Steet	26	Off-Street Public Facilities	500	250	< 2017 'supply' reflects *assumption* that approx 1/3 net demand accomodated off-st. LT reflects assumption that 50% of current capacity may be 'lost' to redevelopment
	27	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	28	**Available Supply**	**500**	**238**	
	29	**Balance to find**	**700**	**1207**	
MSF	30	Metro Sports demand at 2pm	0	350	
	31	Assumed occupancy	95%	95%	
	32	Metro equivalent demand	0	368	
	33	**Available Supply for Hospital Users**	**0**	**0**	< No Capacity is now assumed (at 2:30pm) for Hospital
Summary	34	**Balance to find**	**700**	**1207**	

		Future Scenario	Scenario 4A= Low Base, Target Mode Change, Low Growth Estimates		
		Design years (based on a 2pm daily frequency)	Existing	Long-term	Notes
			2017	2031	
Hospital parking demand	1	Hospital Staff (including Corporate)	**2025**	**1765**	
	2	Hospital Visitors	**550**	**570**	
	3	Registrars and surgeons etc	0	0	< 50 (consistent with Urbis and advice from CDHB Roster staff) is now reflected in QTP Base Estimates
	4	HREF facility (nominal values)	0	250	< LT reflects revised MINIMUM estimate for HREF
	5	Fleet vehicle storage (nominal values)	25	25	
	6	On-street construction worker parking (nominal values)	150	0	
	7	**Design demand**	**2750**	**2610**	
Hospital parking supply	8	Existing main campus supply	92	70	< LT reflects assumed loss of parking on St Asaph
	9	ASB LG parking level supply	0	61	
	10	ASB ground parking level supply	0	62	
	11	Staff parking building supply	423	423	
	12	Balance of St Asaph Street campus	83	44	
	13	Afternoon staff car park	253	136	
	14	Saleyards	120	0	< 2017 'supply' reflects assumed occupancy of 114/0.95
	15	Blue parking building site (initially on grade and then a replacement building)	0	**700**	< St Asaph St Campus
	16	Other more-remote off-street staff sites (leased)	273	0	< 2017 'supply' reflects Tuam/Montreal & Acton Sts. LT reflects lease expiry.
	17	41-45 St Asaph Street (gravel pit site)	0	0	
	18	Potential Additional Staff and/or Visitor Facility/Facilities	0	**700**	< East of Antigua
	19	Assumed occupancy	95%	95%	
	20	**Available Supply**	**1182**	**2086**	
	21	**Balance to find**	**1568**	**524**	
On-street	22	On-street parking (use **at 2:30pm**)	1068	768	< LT reflects expected ACC losses within 10 mins AND reversion of 30% of unrestricted parking in 10-15 band to time-limited
	23	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	24	**Available Supply**	**1068**	**730**	
	25	**Balance to find**	**500**	**-206**	
Public Off-Steet	26	Off-Street Public Facilities	500	250	< 2017 'supply' reflects *assumption* that approx 1/3 net demand accomodated off-st. LT reflects assumption that 50% of current capacity may be 'lost' to redevelopment
	27	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	28	**Available Supply**	**500**	**238**	
	29	**Balance to find**	**0**	**-443**	
MSF	30	Metro Sports demand at 2pm	0	350	
	31	Assumed occupancy	95%	95%	
	32	Metro equivalent demand	0	368	
	33	**Available Supply for Hospital Users**	**0**	**0**	< No Capacity is now assumed (at 2:30pm) for Hospital
Summary	34	**Balance to find**	**0**	**-443**	

		Future Scenario	Scenario 4B= Medium Base, Target Mode Change, Low Growth Estimates		
		Design years (based on a 2pm daily frequency)	Existing	Long-term	Notes
			2017	2031	
Hospital parking demand	1	Hospital Staff (including Corporate)	**2025**	**1765**	
	2	Hospital Visitors	**900**	**930**	
	3	Registrars and surgeons etc	0	0	< 50 (consistent with Urbis and advice from CDHB Roster staff) is now reflected in QTP Base Estimates
	4	HREF facility (nominal values)	0	250	< LT reflects revised MINIMUM estimate for HREF
	5	Fleet vehicle storage (nominal values)	25	25	
	6	On-street construction worker parking (nominal values)	150	0	
	7	**Design demand**	**3100**	**2970**	
Hospital parking supply	8	Existing main campus supply	92	70	< LT reflects assumed loss of parking on St Asaph
	9	ASB LG parking level supply	0	61	
	10	ASB ground parking level supply	0	62	
	11	Staff parking building supply	423	423	
	12	Balance of St Asaph Street campus	83	44	
	13	Afternoon staff car park	253	136	
	14	Saleyards	120	0	< 2017 'supply' reflects assumed occupancy of 114/0.95
	15	Blue parking building site (initially on grade and then a replacement building)	0	**700**	< St Asaph St Campus
	16	Other more-remote off-street staff sites (leased)	273	0	< 2017 'supply' reflects Tuam/Montreal & Acton Sts. LT reflects lease expiry.
	17	41-45 St Asaph Street (gravel pit site)	0	0	
	18	Potential Additional Staff and/or Visitor Facility/Facilities	0	**700**	< East of Antigua
	19	Assumed occupancy	95%	95%	
	20	**Available Supply**	**1182**	**2086**	
	21	**Balance to find**	**1918**	**884**	
On-street	22	On-street parking (use **at 2:30pm**)	1068	768	< LT reflects expected ACC losses within 10 mins AND reversion of 30% of unrestricted parking in 10-15 band to time-limited
	23	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	24	**Available Supply**	**1068**	**730**	
	25	**Balance to find**	**850**	**154**	
Public Off-Steet	26	Off-Street Public Facilities	500	250	< 2017 'supply' reflects *assumption* that approx 1/3 net demand accomodated off-st. LT reflects assumption that 50% of current capacity may be 'lost' to redevelopment
	27	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	28	**Available Supply**	**500**	**238**	
	29	**Balance to find**	**350**	**-83**	
MSF	30	Metro Sports demand at 2pm	0	350	
	31	Assumed occupancy	95%	95%	
	32	Metro equivalent demand	0	368	
	33	**Available Supply for Hospital Users**	**0**	**0**	< No Capacity is now assumed (at 2:30pm) for Hospital
Summary	34	**Balance to find**	**350**	**-83**	

		Future Scenario	Scenario 4C= High Base, Target Mode Change, Low Growth Estimates		
		Design years (based on a 2pm daily frequency)	Existing	Long-term	Notes
			2017	2031	
Hospital parking demand	1	Hospital Staff (including Corporate)	**2025**	**1765**	
	2	Hospital Visitors	**1250**	**1290**	
	3	Registrars and surgeons etc	0	0	< 50 (consistent with Urbis and advice from CDHB Roster staff) is now reflected in QTP Base Estimates
	4	HREF facility (nominal values)	0	250	< LT reflects revised MINIMUM estimate for HREF
	5	Fleet vehicle storage (nominal values)	25	25	
	6	On-street construction worker parking (nominal values)	150	0	
	7	**Design demand**	**3450**	**3330**	
Hospital parking supply	8	Existing main campus supply	92	70	< LT reflects assumed loss of parking on St Asaph
	9	ASB LG parking level supply	0	61	
	10	ASB ground parking level supply	0	62	
	11	Staff parking building supply	423	423	
	12	Balance of St Asaph Street campus	83	44	
	13	Afternoon staff car park	253	136	
	14	Saleyards	120	0	< 2017 'supply' reflects assumed occupancy of 114/0.95
	15	Blue parking building site (initially on grade and then a replacement building)	0	**700**	< St Asaph St Campus
	16	Other more-remote off-street staff sites (leased)	273	0	< 2017 'supply' reflects Tuam/Montreal & Acton Sts. LT reflects lease expiry.
	17	41-45 St Asaph Street (gravel pit site)	0	0	
	18	Potential Additional Staff and/or Visitor Facility/Facilities	0	**700**	< East of Antigua
	19	Assumed occupancy	95%	95%	
	20	**Available Supply**	**1182**	**2086**	
	21	**Balance to find**	**2268**	**1244**	
On-street	22	On-street parking (use **at 2:30pm**)	1068	768	< LT reflects expected ACC losses within 10 mins AND reversion of 30% of unrestricted parking in 10-15 band to time-limited
	23	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	24	**Available Supply**	**1068**	**730**	
	25	**Balance to find**	**1200**	**514**	
Public Off-Steet	26	Off-Street Public Facilities	500	250	< 2017 'supply' reflects *assumption* that approx 1/3 net demand accomodated off-st. LT reflects assumption that 50% of current capacity may be 'lost' to redevelopment
	27	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	28	**Available Supply**	**500**	**238**	
	29	**Balance to find**	**700**	**277**	
MSF	30	Metro Sports demand at 2pm	0	350	
	31	Assumed occupancy	95%	95%	
	32	Metro equivalent demand	0	368	
	33	**Available Supply for Hospital Users**	**0**	**0**	< No Capacity is now assumed (at 2:30pm) for Hospital
Summary	34	**Balance to find**	**700**	**277**	

		Future Scenario	Scenario 5A= Low Base, Target Mode Change, High Growth Estimates		
		Design years (based on a 2pm daily frequency)	Existing	Long-term	Notes
			2017	2031	
Hospital parking demand	1	Hospital Staff (including Corporate)	**2025**	**1895**	
	2	Hospital Visitors	**550**	**610**	
	3	Registrars and surgeons etc	0	0	< 50 (consistent with Urbis and advice from CDHB Roster staff) is now reflected in QTP Base Estimates
	4	HREF facility (nominal values)	0	250	< LT reflects revised MINIMUM estimate for HREF
	5	Fleet vehicle storage (nominal values)	25	25	
	6	On-street construction worker parking (nominal values)	150	0	
	7	**Design demand**	**2750**	**2780**	
Hospital parking supply	8	Existing main campus supply	92	70	< LT reflects assumed loss of parking on St Asaph
	9	ASB LG parking level supply	0	61	
	10	ASB ground parking level supply	0	62	
	11	Staff parking building supply	423	423	
	12	Balance of St Asaph Street campus	83	44	
	13	Afternoon staff car park	253	136	
	14	Saleyards	120	0	< 2017 'supply' reflects assumed occupancy of 114/0.95
	15	Blue parking building site (initially on grade and then a replacement building)	0	**700**	< St Asaph St Campus
	16	Other more-remote off-street staff sites (leased)	273	0	< 2017 'supply' reflects Tuam/Montreal & Acton Sts. LT reflects lease expiry.
	17	41-45 St Asaph Street (gravel pit site)	0	0	
	18	Potential Additional Staff and/or Visitor Facility/Facilities	0	**700**	< East of Antigua
	19	Assumed occupancy	95%	95%	
	20	**Available Supply**	**1182**	**2086**	
	21	**Balance to find**	**1568**	**694**	
On-street	22	On-street parking (use **at 2:30pm**)	1068	768	< LT reflects expected ACC losses within 10 mins AND reversion of 30% of unrestricted parking in 10-15 band to time-limited
	23	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	24	**Available Supply**	**1068**	**730**	
	25	**Balance to find**	**500**	**-36**	
Public Off-Steet	26	Off-Street Public Facilities	500	250	< 2017 'supply' reflects *assumption* that approx 1/3 net demand accomodated off-st. LT reflects assumption that 50% of current capacity may be 'lost' to redevelopment
	27	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	28	**Available Supply**	**500**	**238**	
	29	**Balance to find**	**0**	**-273**	
MSF	30	Metro Sports demand at 2pm	0	350	
	31	Assumed occupancy	95%	95%	
	32	Metro equivalent demand	0	368	
	33	**Available Supply for Hospital Users**	**0**	**0**	< No Capacity is now assumed (at 2:30pm) for Hospital
Summary	34	**Balance to find**	**0**	**-273**	

		Future Scenario	Scenario 5B= Medium Base, Target Mode Change, High Growth Estimates		
		Design years (based on a 2pm daily frequency)	Existing	Long-term	Notes
			2017	2031	
Hospital parking demand	1	Hospital Staff (including Corporate)	**2025**	**1895**	
	2	Hospital Visitors	**900**	**1000**	
	3	Registrars and surgeons etc	0	0	< 50 (consistent with Urbis and advice from CDHB Roster staff) is now reflected in QTP Base Estimates
	4	HREF facility (nominal values)	0	250	< LT reflects revised MINIMUM estimate for HREF
	5	Fleet vehicle storage (nominal values)	25	25	
	6	On-street construction worker parking (nominal values)	150	0	
	7	**Design demand**	**3100**	**3170**	
Hospital parking supply	8	Existing main campus supply	92	70	< LT reflects assumed loss of parking on St Asaph
	9	ASB LG parking level supply	0	61	
	10	ASB ground parking level supply	0	62	
	11	Staff parking building supply	423	423	
	12	Balance of St Asaph Street campus	83	44	
	13	Afternoon staff car park	253	136	
	14	Saleyards	120	0	< 2017 'supply' reflects assumed occupancy of 114/0.95
	15	Blue parking building site (initially on grade and then a replacement building)	0	**700**	< St Asaph St Campus
	16	Other more-remote off-street staff sites (leased)	273	0	< 2017 'supply' reflects Tuam/Montreal & Acton Sts. LT reflects lease expiry.
	17	41-45 St Asaph Street (gravel pit site)	0	0	
	18	Potential Additional Staff and/or Visitor Facility/Facilities	0	**700**	< East of Antigua
	19	Assumed occupancy	95%	95%	
	20	**Available Supply**	**1182**	**2086**	
	21	**Balance to find**	**1918**	**1084**	
On-street	22	On-street parking (use **at 2:30pm**)	1068	768	< LT reflects expected ACC losses within 10 mins AND reversion of 30% of unrestricted parking in 10-15 band to time-limited
	23	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	24	**Available Supply**	**1068**	**730**	
	25	**Balance to find**	**850**	**354**	
Public Off-Steet	26	Off-Street Public Facilities	500	250	< 2017 'supply' reflects *assumption* that approx 1/3 net demand accomodated off-st. LT reflects assumption that 50% of current capacity may be 'lost' to redevelopment
	27	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	28	**Available Supply**	**500**	**238**	
	29	**Balance to find**	**350**	**117**	
MSF	30	Metro Sports demand at 2pm	0	350	
	31	Assumed occupancy	95%	95%	
	32	Metro equivalent demand	0	368	
	33	**Available Supply for Hospital Users**	**0**	**0**	< No Capacity is now assumed (at 2:30pm) for Hospital
Summary	34	**Balance to find**	**350**	**117**	

		Future Scenario	Scenario 5C= High Base, Target Mode Change, High Growth Estimates		
		Design years (based on a 2pm daily frequency)	Existing	Long-term	Notes
			2017	2031	
Hospital parking demand	1	Hospital Staff (including Corporate)	**2025**	**1895**	
	2	Hospital Visitors	**1250**	**1390**	
	3	Registrars and surgeons etc	0	0	< 50 (consistent with Urbis and advice from CDHB Roster staff) is now reflected in QTP Base Estimates
	4	HREF facility (nominal values)	0	250	< LT reflects revised MINIMUM estimate for HREF
	5	Fleet vehicle storage (nominal values)	25	25	
	6	On-street construction worker parking (nominal values)	150	0	
	7	**Design demand**	**3450**	**3560**	
Hospital parking supply	8	Existing main campus supply	92	70	< LT reflects assumed loss of parking on St Asaph
	9	ASB LG parking level supply	0	61	
	10	ASB ground parking level supply	0	62	
	11	Staff parking building supply	423	423	
	12	Balance of St Asaph Street campus	83	44	
	13	Afternoon staff car park	253	136	
	14	Saleyards	120	0	< 2017 'supply' reflects assumed occupancy of 114/0.95
	15	Blue parking building site (initially on grade and then a replacement building)	0	**700**	< St Asaph St Campus
	16	Other more-remote off-street staff sites (leased)	273	0	< 2017 'supply' reflects Tuam/Montreal & Acton Sts. LT reflects lease expiry.
	17	41-45 St Asaph Street (gravel pit site)	0	0	
	18	Potential Additional Staff and/or Visitor Facility/Facilities	0	**700**	< East of Antigua
	19	Assumed occupancy	95%	95%	
	20	**Available Supply**	**1182**	**2086**	
	21	**Balance to find**	**2268**	**1474**	
On-street	22	On-street parking (use **at 2:30pm**)	1068	768	< LT reflects expected ACC losses within 10 mins AND reversion of 30% of unrestricted parking in 10-15 band to time-limited
	23	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	24	**Available Supply**	**1068**	**730**	
	25	**Balance to find**	**1200**	**744**	
Public Off-Steet	26	Off-Street Public Facilities	500	250	< 2017 'supply' reflects *assumption* that approx 1/3 net demand accomodated off-st. LT reflects assumption that 50% of current capacity may be 'lost' to redevelopment
	27	Assumed occupancy	100%	95%	< LT reflects more-desirable occupancy
	28	**Available Supply**	**500**	**238**	
	29	**Balance to find**	**700**	**507**	
MSF	30	Metro Sports demand at 2pm	0	350	
	31	Assumed occupancy	95%	95%	
	32	Metro equivalent demand	0	368	
	33	**Available Supply for Hospital Users**	**0**	**0**	< No Capacity is now assumed (at 2:30pm) for Hospital
Summary	34	**Balance to find**	**700**	**507**	