Canterbury
District Health Board
Te Poari Hauora ō Waitaha

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19 February 2021

9(2)(a) [redacted]

[redacted]

[redacted]

RE Official information request CDHB 10497

I refer to your email received 1 December 2020, requesting the following information under the Official Information Act from Canterbury DHB. Specifically:

- **any correspondence in the last six months between the executive management team and senior clinical staff/leaders about the refurbishment of Parkside hospital wards and the business case for Tower three and/or tower four**

Please refer to **Appendix 1**, which contains correspondence between executive management team members and senior clinical staff/leaders regarding the refurbishment of Parkside hospital wards and the business case for Towers 3 and 4. This correspondence is for the six months from 1 June 2020 to 1 December 2020.

Please note: there are some sections of the correspondence which contain unmarked redactions due to being out of scope of the request. Additionally, one further section has been redacted due to the free and frank nature of expression, as pursuant to section 9(2)(g)(i) of the Official Information Act, i.e. "*maintain the effective conduct of public affairs through – the free and frank expression of opinions…*"

- **any correspondence between Sir John Hansen and MoH staff in the last six months about the refurbishment of Parkside hospital wards and the business case for Tower three and/or tower four**

Please refer to **Appendix 2**, which contains correspondence between Sir John Hansen and Ministry of Health staff regarding the refurbishment of Parkside hospital wards and the business case for Towers 3 and 4. This correspondence is for the six months from 1 June 2020 to 1 December 2020.

Please note: there are some sections of the correspondence which have been redacted, either due to the commercially sensitive nature of the information as part of ongoing negotiations, or in order to maintain legal privilege. We are therefore declining to release these pieces of information pursuant to

sections 9(2)(b)(ii) and 9(2)(h) of the Official Information Act, i.e. "*would be likely unreasonably to prejudice the commercial position*…" and to "*maintain legal professional privilege*…"

I trust this satisfies your interest in this matter.

You may, under section 28(3) of the Official Information Act, seek a review of our decision to withhold information by 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

Ralph La Salle
Acting Executive Director
Planning, Funding & Decision Support

Appendix 1

CANTERBURY DISTRICT HEALTH BOARD

Canterbury District Health Board
Te Poari Hauora o Waitaha

EXCERPT FROM PUBLIC EXCLUDED SPECIAL BOARD MEETING MINUTES
01 May 2020

Item 1
Christchurch Hospital Campus Master Plan - Tower 3 and Compliance Costs

Resolution (xx/20)
(Moved: Sir John Hansen/Seconded: Gabrielle Huria - carried)
(Jo Kane and Andrew Dickerson voted against)

"That the Board:

i. approves the $154m Campus Masterplan Tranche 1 Reduced Cost Tower 3 Option A (containing 5 ward floors -2 floors fitted out and 3 floors shelled) and recommend it to MOH and CIC for approval."

"The Board notes:

- the agreed Christchurch Hospital Campus Master Plan was developed in partnership between the Canterbury DHB and the Ministry of Health;
- the agreed Christchurch Hospital Campus plan Programme Detailed Business Case and First Tranche Detailed Business Case included agreed population, service demand and capacity forecasts;
- that the original request to the Capital Investment Committee was for $437.78m to deliver a 6-ward level Tower 3 and the design for Tower 4 and Central Podium plus enabling works and minimal refurbishment of Parkside and associated facilities. This had been agreed in partnership with the Ministry of Health, Management and Clinicians as required to meet the needs of the Canterbury community and function as a tertiary provider supporting service provision across the lower North Island and South Island;
- the Board, while accepting the capital constraints for the sector is disappointed that only $150m has been allocated to this project;
- that the Clinical Leaders Group did not support this option as they consider it does not provide the capacity required to deliver and sustain current service levels and impacts on the future configuration of the Christchurch Hospital Masterplan delivery;
- the time critical nature regarding the commencement of the T3 project and the critical need to move forward with urgency; and
- that future capital investment will be required within a short period of time to ensure the agreed capacity needs are met."

TO: **Chair and Members, Canterbury District Health Board**

ACCOUNTABILITY: **David Meates, Chief Executive Officer**

DATE: **1 May 2020**

Report Status – For:	Decision	☑	Noting	☐	Information	☐

1. ORIGIN OF THE REPORT

Following the presentation of the Christchurch Hospital Campus Masterplan – Tower 3 and Compliance Costs paper discussed by the Board on 16 April 2020, the Board instructed the Chief Executive to undertake a discussion with the Ministry of Health (*MoH*) and provide a recommendation to the Board based on those discussions.

This report provides that feed-back and the consequential recommendations.

2. RECOMMENDATION

That the Board:

i. notes the Campus Masterplan Tranche 1 Reduced Cost Options A – E developed in conjunction with Lowest Cost Compliance Options were presented to the Board and direction was given to management to clarify the amount of available Crown capital;
ii. notes that the Board, being cognisant of available Crown capital, directed management to seek guidance from the MoH in relation to either:
    (a) reduced Cost Option A (paired with Lowest Anticipated Compliance Cost); or
    (b) reduced Cost Option C, but with all six floors shelled;
iii. notes the feedback from the MoH in relation to the options above;
iv. approves the Campus Masterplan Tranche 1 Reduced Cost Option A Tower 3 **($154m)** in conjunction with Lowest Anticipated Compliance Cost Option **$80m** – ($29m funded by MoH and $51m by CDHB); and
v. approves the submission of the selected Reduced Cost Option to the MoH / CIC.

3. DISCUSSION

The Christchurch Hospital Campus Master Plan – Tower 3 report outlined a range of modified capital options A-E in response to advice being received from the MoH (via the Capital Investment Committee (*CIC*)) advising the CDHB that there is insufficient capital available nationally to support the preferred option contained in the co-commissioned Ministry of Health (*MoH*) and Canterbury District Health Board Programme Business Case (*PBC*) and the Detailed Business Case (*DBC*) Tranche 1.

The revised cost options ranged from $154m (Option A) through to the Executive recommended option $218m (Option E).

The challenge that was being outlined in the report was balancing capital constraint with being able to "just" have enough capacity to sustain services. There was a critical decision articulated as to whether to progress with five floors and thus forgo permanently future capacity or progress with six floors and delay access to new capacity as the additional cost would mean that the floors would need to be shelled until more capital became available. Engineering constraints meant that the five versus six floor decision

had to be taken at the initiation of the project. To fit within the $150m capital envelope, the Board choices were either:

- Option A (5 floors) or a revised
- Option C but with all 6 floors shelled.

As a result of the Board meeting on 16 April 2020, the Board requested that the Chief Executive share the recommendations from the report with the MoH (Michelle Arrowsmith) and to seek guidance / advice as to how best we arrive at a position that the MoH and DHB could support recognising that neither option was ideal but recognising the capital constraints.

After discussion, a response in writing was received from the MoH on 27 April 2020 which advised that:

> **"CDHB take to CIC as soon as possible a solution for Tower 3 as close to $150m as possible from the information you have provided to me and my team we think the option for Tower 3 at $154m fits this. The other options you have considered that only provide a solution of shelled space are in our view very unlikely to be well received by CIC."**

On this basis, we are recommending that the Board progresses with Option A – five floors at a cost of $154m.

In addition, the final recommendation to be presented includes a programme for achieving minimal building compliance by progressing earthquake repairs and passive fire remediation for Parkside, Clinical Services Block and remaining parts of Riverside.

It should be noted that the minimum compliance cost option will see the bulk of the existing facilities in Parkside retained for the next 10 to 15 years without any upgrades. This includes a large portion of the hospital's theatre capacity and these are generally the original theatres now more than 35 years old which have not had any significant upgrades in their life.

Capital Funding

The minimal compliance (fire and seismic) equates to $80m – $29m funded by MoH (of which $5m is already included in the Option A budget allocation) and $51m by CDHB. The $51m has been included in all of the capital intentions / annual plans /long term investment plans as an identified part of the earthquake Programme of Works (*POW*).

The earthquake POW was developed in response to a level of damage (over $545m) which far exceeded the available funds including the maximised insurance settlement. Projects were prioritised to fit within a Board approved available funding which totalled $383.35m (POW) and consisted of $290m insurance settlement (total settlement received less costs pre-settlement) and $93.35m of DHB capital which was planned to come from free cash flow generated by depreciation charges over the period of the programme.

It is on this basis, consistent with the Board's decision-making framework for capital expenditure post-quake, that the full POW was initially created and approved by the Board in 2014 and presented to the Capital Investment Committee in September 2014. This has been the basis of all planning and reporting since 2014. This has also formed the basis of our annual plans, 10-year investment capital and regular reporting through to the Board and HRPG.

At this stage we have a further $100m of earthquake POW projects to complete (of which the $51m compliance projects are included – see Appendix 1: EQPOW yet to be approved project list presented

to March 2020 QFARC). To fund this there is a remainder of un-committed funds held by the Ministry of $21m and the remainder of the CDHB funds ($93m less $13m – which largely relates to Kaikoura) $79m.

All capital planning has the underpinning assumption that funding will be available to enable the capital programme (most recently approved in the Long Term Investment Plan approved by Board in August 2019 for submission, (s8.2)), this has also been identified as a key assumption in all asset management plans (s7.3) submitted to the Ministry, the most recent of which was submitted in January 2020 in direct response to a request for a three year view of capital. In order to enable this funding, there are three options – either:

a. A revised funding pathway; or
b. Equity support received that is at least equal to any deficit in each year; or
c. No deficit (this was the driver of the deficit reduction taskforce developed between DHB and MoH following the Truth and Reconciliation and EY processes, however, it only provided a pathway to break even at EBITDA, not a complete elimination of deficit).

Up until and including 2015/16, deficit funding was provided against an approved plan. This changed in the 2016/17 fiscal year with a direction that deficit funding was to change to equity support, alongside a direction to the sector that all available cash needed to be used before equity support would be considered. This injection at lower then deficit levels, in addition to the delays with Hagley and the requirement to outsource and outplace surgery over a more than 2½ year period has resulted in rising deficits and significant pressure on cash. It is worth noting that based on EBITDA CDHB has delivered a surplus in seven of the last nine years with 2018/19 being the first year to record an EBITDA deficit. The main differences in operating deficit during that time relate to an increase in capital charge from $15m (2011/12) to $53.8m (2019/20) and depreciation $46.5m (2011/12) to $83.1m (2019/20).

These changes have drawn over a $100m from CDHB cash reserves since 2015 (in addition to the cash CDHB provided for Burwood of $180m in 2015).

The issue of sustainable funding and enabling sufficient capital for meeting all of the earthquake repairs and compliance issues, if deficit funding was not available, was one of the key drivers for the initiation of the Truth and Reconciliation process (which commenced with an independent Chair appointed by the Minister in early 2018). This process with the Ministry, culminated as part of its outcomes, in an agreement with the Director-General of Health to have a jointly commissioned master plan, programme business case and detailed business case for tranche one, for the Christchurch campus. This process included the identification of all the costs including T3, T4, Central Podium and full compliance aspects (including but not limited to passive fire, Health and Safety, seismic).

Additionally, the earthquake POW has been used by HRPG to fund a number of activities that were NOT included in the original POW. This has continued to require ongoing and regular re-prioritisation of the POW to fit within the originally approved $383m fiscal envelope.

In the 10 years from 2009/10 until 2018/19 the DHB spent $712.4m on capital expenditure, the breakdown of the sources of which are shown below

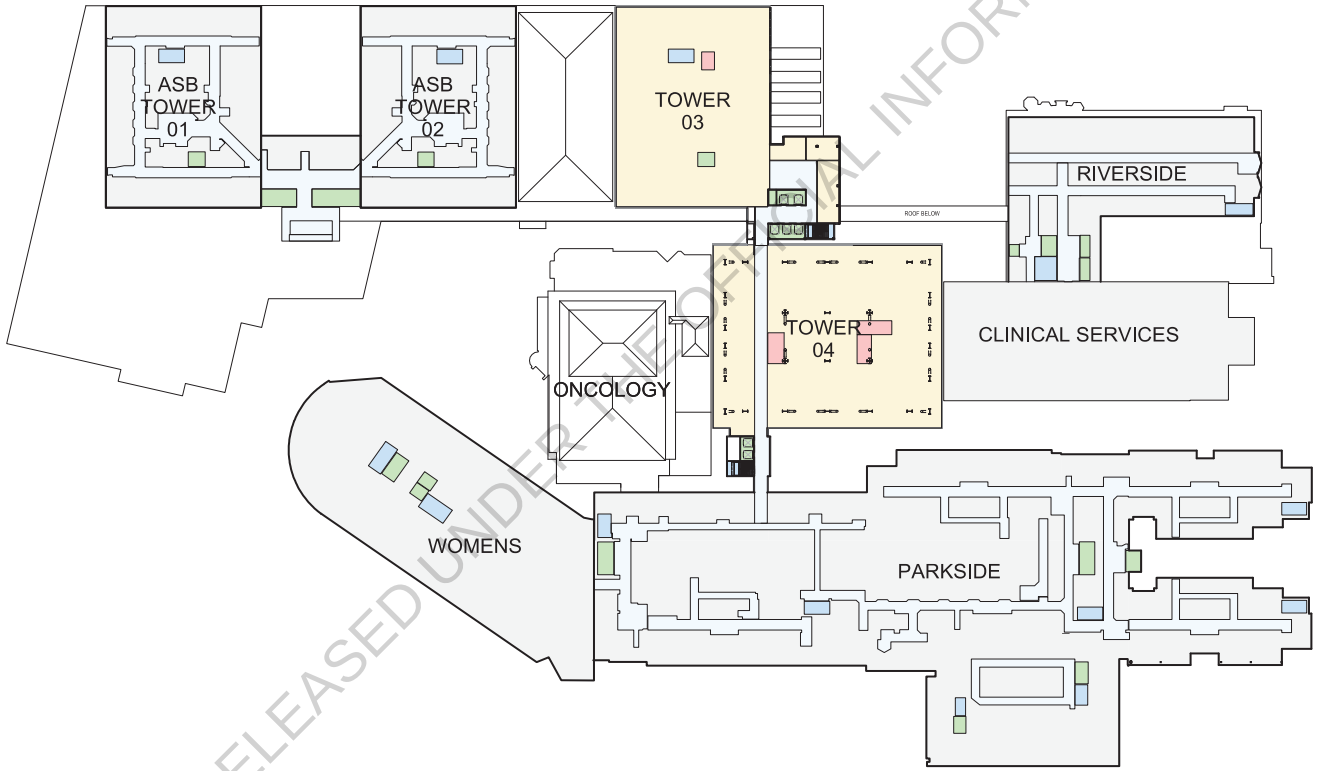
CDHB Insurance revenue	$128.5m	(18%)
Donations	$ 21.6m	(3%)
CDHB Depreciation	$504.0m	(71%)
Crown (MoH) funding	$ 58.0m	(8%)
Total	**$712.4m**	

4. APPENDICES

Appendix 1: EQPOW Yet To Be Approved Project List

Canterbury DHB Campus Master Plan Implementation: Reset & Refresh

June 2020



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Content

- Purpose of the document
- COVID learning and impact
- Burwood capacity options
- Population projections review
- Existing bed capacity and condition
- Existing theatre capacity and condition
- Passive Fire implications
- Seismic Implications
- 5 year status if no further approvals - followed by actions, consequences and potential mitigations
- 10 year status if no further approvals - followed by actions, consequences and potential mitigations
- 15 year status if no further approvals - followed by actions, consequences and potential mitigations

Background / Purpose of this paper

- This document is to support the workshop requested to “Reset & Refresh” the current capital process
- The base assumptions are drawn from the current DBC 1b
- The agreed Masterplan is adopted as the pathway forward
- Assumptions based on $154m project proceeding providing 5 ward levels with 2 finished and 3 shelled and critical enabling works

Structure and Inputs

- The document is structured to reflect questions raised in the recent video conference
- Contents are formative and will be guided by the workshop
- Base information is included to foster discussion
- After the workshop the slides will be updated and represented to the group

COVID Learning & Impact

- Current facilities
  - ED*
  - ICU*
  - Operating theatres
  - Wards
- Hagley Facility
  - ‘Pandemic’ wards
- Requirements of future facilities

* Improved or partially improved with Hagley

COVID Learning & Impact

- Current facilities
  - ED*
  - ICU*
  - Operating theatres
  - Wards
- Hagley Facility
  - ‘Pandemic’ wards
- Requirements of future facilities

* Improved or partially improved with Hagley

COVID learning
Current facilities (Parkside etc)

- ED
  - No negative pressure facilities*
  - No segregated processing*
  - Insufficient Donning and Doffing space
- ICU
  - Insufficient ICU capacity overall*
  - No Negative pressure facilities*
- Operating Theatres
  - ill-equipped to manage infectious patients and AGPs
  - At risk COVID patients most likely to be harmed
  - Not resolved with Hagley

* Improved with Hagley

COVID learning
Current wards (Parkside et al)

- Amenity overwhelmingly inadequate for pandemic care
- [Clear H&S issues for staff]
- 20% single rooms
- No negative pressure rooms Parkside wards
  [and only 2 in Riverside adult wards]
- 6 bed patient rooms
  - inadequate for social distancing
  - inappropriate for infection control
  - As 4 bed space does not meet IPCC requirement re curtains etc
- Ablutions
- Single ward corridor = no segregation
- No Donning and Doffing space
- Inadequate waste disposal

AUSTRALASIAN HFG STANDARD COMPONENTS

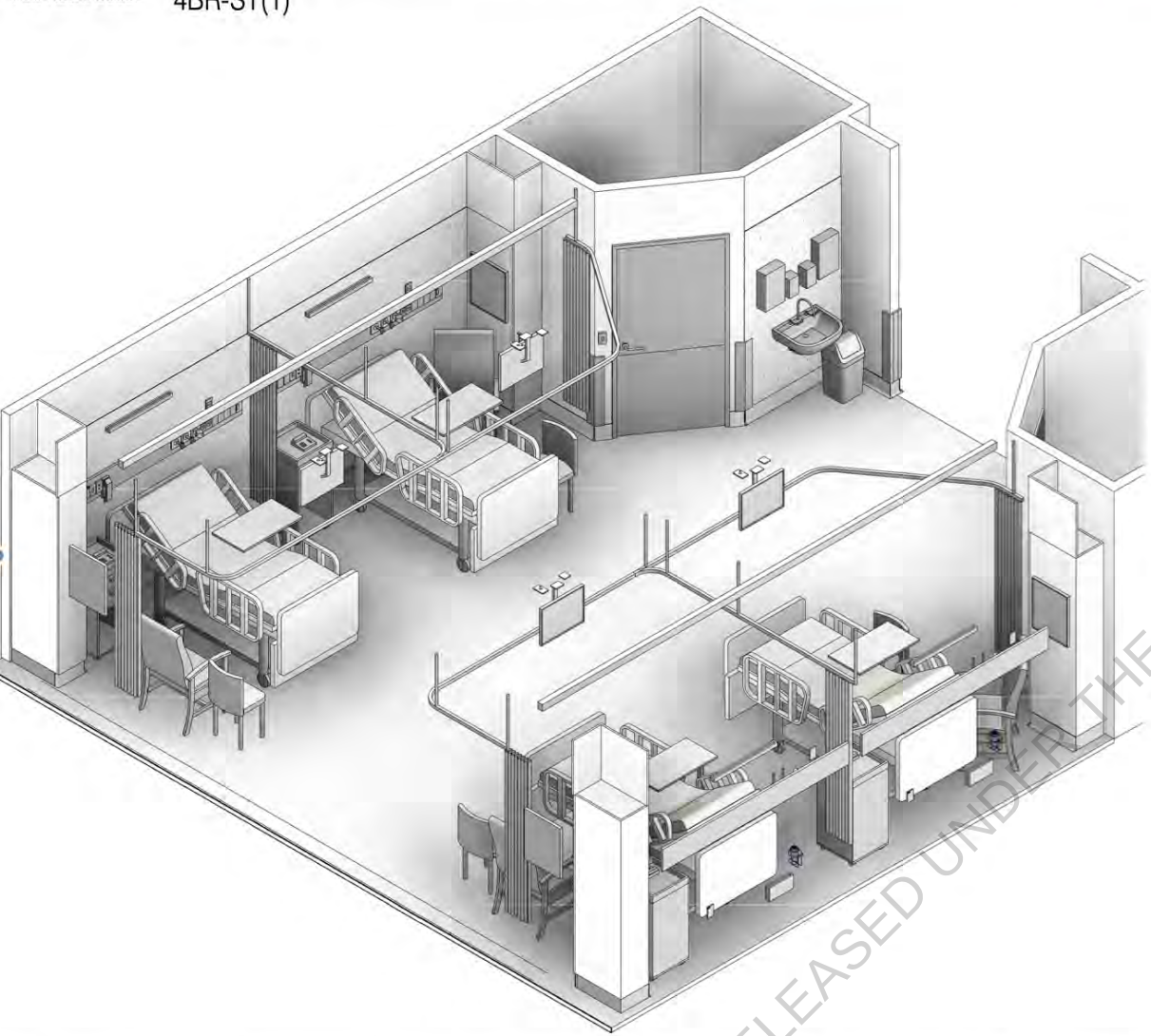
Room Layout Sheet

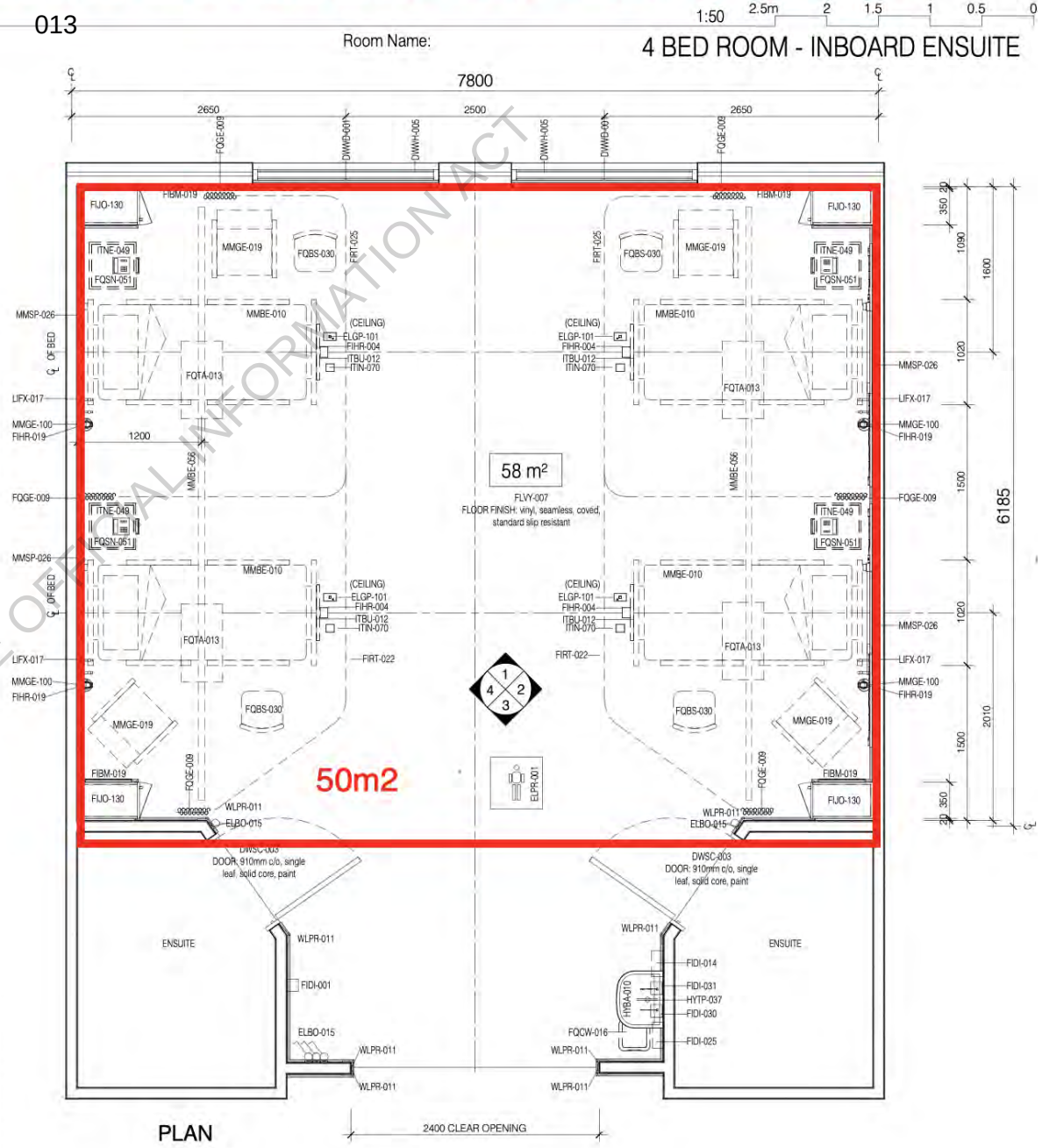
This overlay provides some context to the current 6 beds per room relative to modern 4 beds per room

013

RLS Room Code: 4BR-ST(1)

Room Name: 4 BED ROOM - INBOARD ENSUITE





PLAN

CODE	DESCRIPTION
GE-001	CEILING: plasterboard, bulkhead, paint
VPR-005	DOOR PROTECTION: protection plate to 900 AFFL
WD-001	BLIND: blackout
WH-005	WINDOW
BO-015	SWITCH: light, single
GP-101	GPO: single, ceiling mounted
GP-105	GPO: single, on services panel
GP-109.1	GPO: single, wall mounted (V)

CODE	DESCRIPTION
FIHR-019	BRACKET: for suction bottle
FIJO-130	CUPBOARD: tall, single door, adj shelves and clothes rail
FIRT-022	TRACK: curtain, bedscreen, 2nd bed
FIRT-025	TRACK: curtain, bedscreen, U shaped
FLSK-010	SKIRTING: vinyl, floor vinyl coved, 150H, prefinished
FLVY-007	FLOOR FINISH: vinyl, seamless, coved, standard slip resistant
FQBS-030	CHAIR: visitor, patient

CODE	DESCRIPTION
ITIN-025	OUTLET: data, double RJ45, on services panel
ITIN-070	OUTLET: MATV
ITNE-049	TELEPHONE: handset, desktop
LIFX-011	LIGHT: reading light
LIFX-017	LIGHT: night light
MGAS-022	OUTLET: medical air (MA), on services panel
MGAS-042	OUTLET: oxygen (O2), on services panel
MGAS-062	OUTLET: suction, on services panel

COVID Learning & Impact

- Current facilities
  - ED*
  - ICU*
  - Operating theatres
  - Wards

- Hagley facility
  - ‘Pandemic’ wards
  - ED/ICU/Operating theatres
- Requirements of future facilities

* Improved or partially improved with Hagley

COVID learning -Hagley

- 3 ‘Pandemic’ wards
  - 88 beds
  - On/off stage limitation
  - Number Negative pressure/isolation rooms
- ED – pandemic ventilation and negative pressure rooms ✔
- ICU – 4th Pod
- Operating theatres**

COVID Learning & Impact

- Existing facility
  - ED*
  - ICU*
  - Operating theatres
  - Wards

- Hagley Facility
  - 'Pandemic' wards
  - ED/ICU/Operating theatres

- Requirements of future facilities

* Improved or partially improved with Hagley

COVID learning –Future Facilities

- T3
  - General medical and respiratory
  - 2 wards contemporary learnings pandemic
    - On/off stage
    - Donning/doffing etc
    - May impact bed numbers modestly
  - Logistics
  - Ventilation and HEPA filtration
- ICU – shelled Pod reconfiguration to include pandemic mode
- Operating theatres eg CT4 –
  - negative pressure
  - segregated logistics

Burwood Hospital Capacity Options

- Rehabilitation bed demand projections have been re-run several times since Burwood redevelopment opened.
- Consistently show that 230 bed capacity will be met around 2022/23 – 2016 projection, 2018 projection and 2019 projection.
- Compared to the original detailed business case from 2012, over 14,000 occupied bed days have been saved by reducing lengths of stay in rehab, and by preventing initial acute admissions.
- Average length of stay for Geriatric AT&R has reduced from 18.9 days to 18.0, while PSE LOS has reduced from 38 days to under 30.

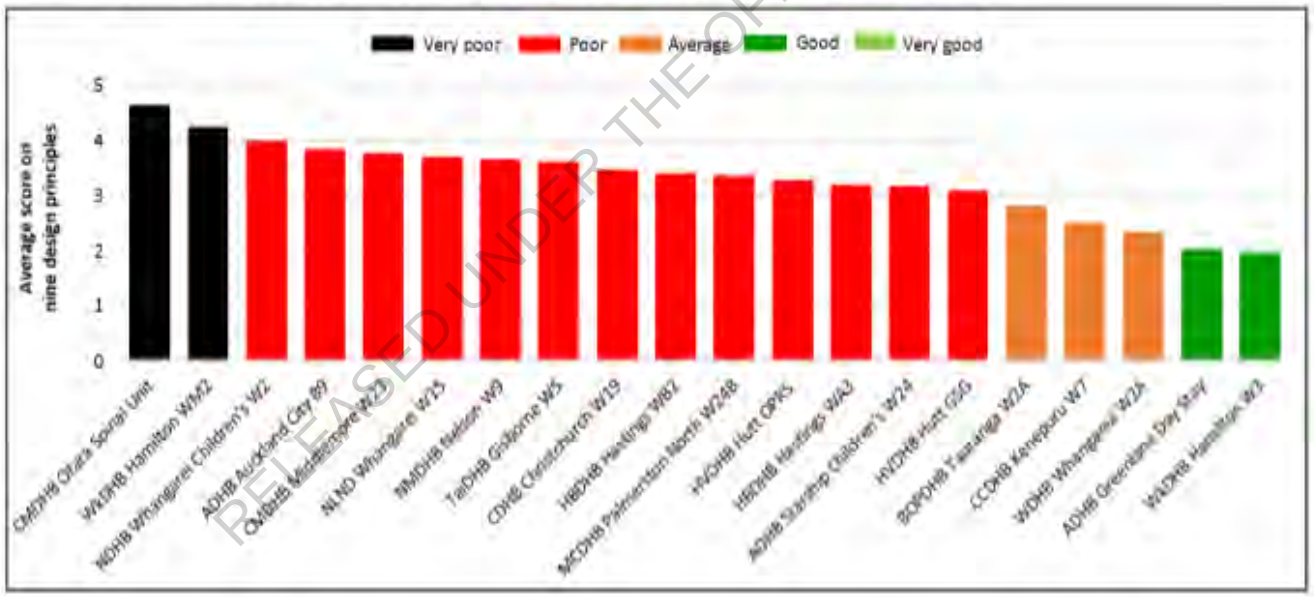
Population Projections – Forecast v's Latest Data plus future assumptions

- Complete before meeting
- Need to have a summary showing 2012 projections, DBC projections and latest stats updates (even if they are not finalised)
- Need some commentary on impact of earthquakes – view was a falling population in Chch but opposite has happened
- Thoughts that any COVID impact is only a moment in time and growth will continue at forecast levels but potentially a slight stall for a period

Existing bed capacity, condition

- As part of the 2012 ASB DBC the MOH provided a report from Margaret Wilshire CMO, ADHB and Jane O'Malley Chief Nurse, MOH that noted the Riverside wards as "cramped, suffer from high occupancy, lack of privacy and posed an infection control risk". Because of this and several other noted issues the 2012 DBC was accepted and the wards were agreed to be vacated upon the opening of the new Hagley building.
- MOH asset review – Clinical Facility fitness for Purpose report 2019 – this document was issued to attendees as a reference. CDHB has requested further information from the MOH that will enable our built facility to be assessed on a National basis – we hope to have this information for the Workshop.

Figure 17: Mean scores on nine design principles for inpatient units



Existing bed capacity, condition

Parkside bedroom and ablution metrics based on typical ward	
(8 of the 10 wards follow this layout)	
Bed numbers	
overall beds per ward	30
number of beds in 6 bed layout	24
number of beds with single rooms	4
number of beds with ensuites	2
Area comparisons	
area 6 bed patient room	43m2 for 6 patients
area extrapolated for a AusHFG compliant size 6 bed patient room noting that they are not acceptable practice any more	87m2 for 6 patients
area AusHFG for 4 bed patient room	58m2 for 4 patients
clinical treatment area around bed in current 6 bed layout	7m2
clinical treatment area around bed if converted to 4 bed layout	10.8m2
clinical treatment Aus HFG area around bed in 4 bed layout	14.5m2
ratios	
% single rooms	20%
ratio of beds per shared toilets	28 patients sharing 5 toilets
ratio of beds per shared showers	28 patients sharing 3 showers
Riverside bedroom and ablution metrics based on typical ward	
Bed numbers	
overall beds [average] per ward	28
number of beds in 7.2m2 per bed layout [4-6 beds]	22.5
area extrapolated for a AusHFG compliant size 6 bed patient room noting that they are not acceptable practice any more	87m2 for 6 patients
number of beds with single rooms [S-class]	0
number of beds in Negative pressure rooms [N-Class] *in adult wards there are total 2 Negative press rooms]	0.33
Area comparisons	
area 6 bed patient room	44m2 for 6 patients
area AusHFG for 4 bed patient room	58m2 for 4 patients
	7.2m2
ratios	
% single rooms	18%
ratio of beds per shared toilets	28 patients sharing 5 toilets
ratio of beds per shared showers	28 patients sharing 3 showers

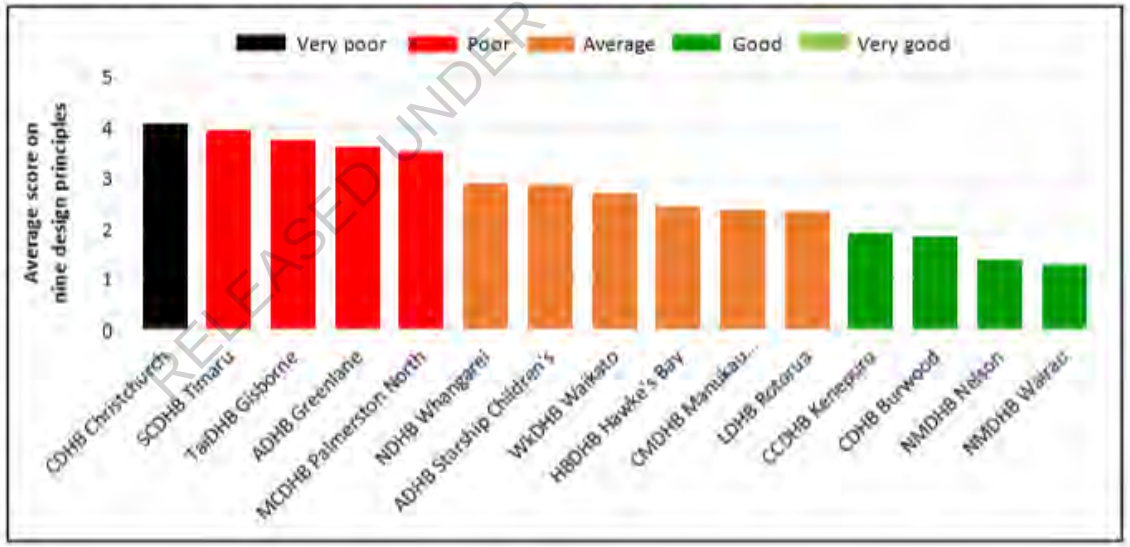
Existing bed capacity, condition

- Operational inefficiencies – if renovated to comply there will be loss of additional beds as the Parkside building footprint is unable to be extended as required (like was done on 10/11). We believe that this would result in a potential 18 – 20 bed ward layout. Before this the reduction of the six bed rooms to four will also have operational costs from staffing as the 30 bed wards will be reduce to in capacity to 22 beds. As a note a wards operational costs are between $3.5 - $4m p.a.
- Current condition – beds/shower/toilets per ward, age, last refurbished, structural issues, Riverside, Parkside split into A,B,C & D – see following slides
- Cost to renovate a ward – estimated to be between $8m - $10m per ward
- Time to remediate – we anticipate that each ward would take 12 months to complete and ideally should be carried on in pairs with one above the other to reduce construction impact – if commenced on the occupation of Hagley there is the best potential for decanting. Each year sees an additional 20 beds required for this campus so the longer work is delayed the harder it will be to implement
- There are issues with some of the Parkside egress stairs that will be resolved once the stiffness of the building has been addressed
- 6 bed space compared to 4 bed requirements – see following slides
- If beds in Parkside are to have an additional 20yr life they should be refitted now to give the best value for money

Existing theatre capacity, condition

- MOH asset review – Clinical Facility fitness for Purpose report 2019 – this document was issued to attendees as a reference. CDHB has requested further information from the MOH that will enable our built facility to be assessed on a National basis – we hope to have this information for the Workshop.

Figure 15: Mean scores on nine design principles for operating theatre suites



Existing theatre capacity, condition

- Operational inefficiencies – discuss
- Current condition –30 yrs old, no full refurbishments completed, structural issues Parkside C & D
- Cost to renovate – RLB once a scope is known
- Time to remediate – Woods Harris – rolling programme of theatres once scope understood and note ability to decant which reduces with time
- If theatres in Parkside are to have an additional 20yr life they should be refitted now to give the best value for money

Christchurch Hospital DBC reset

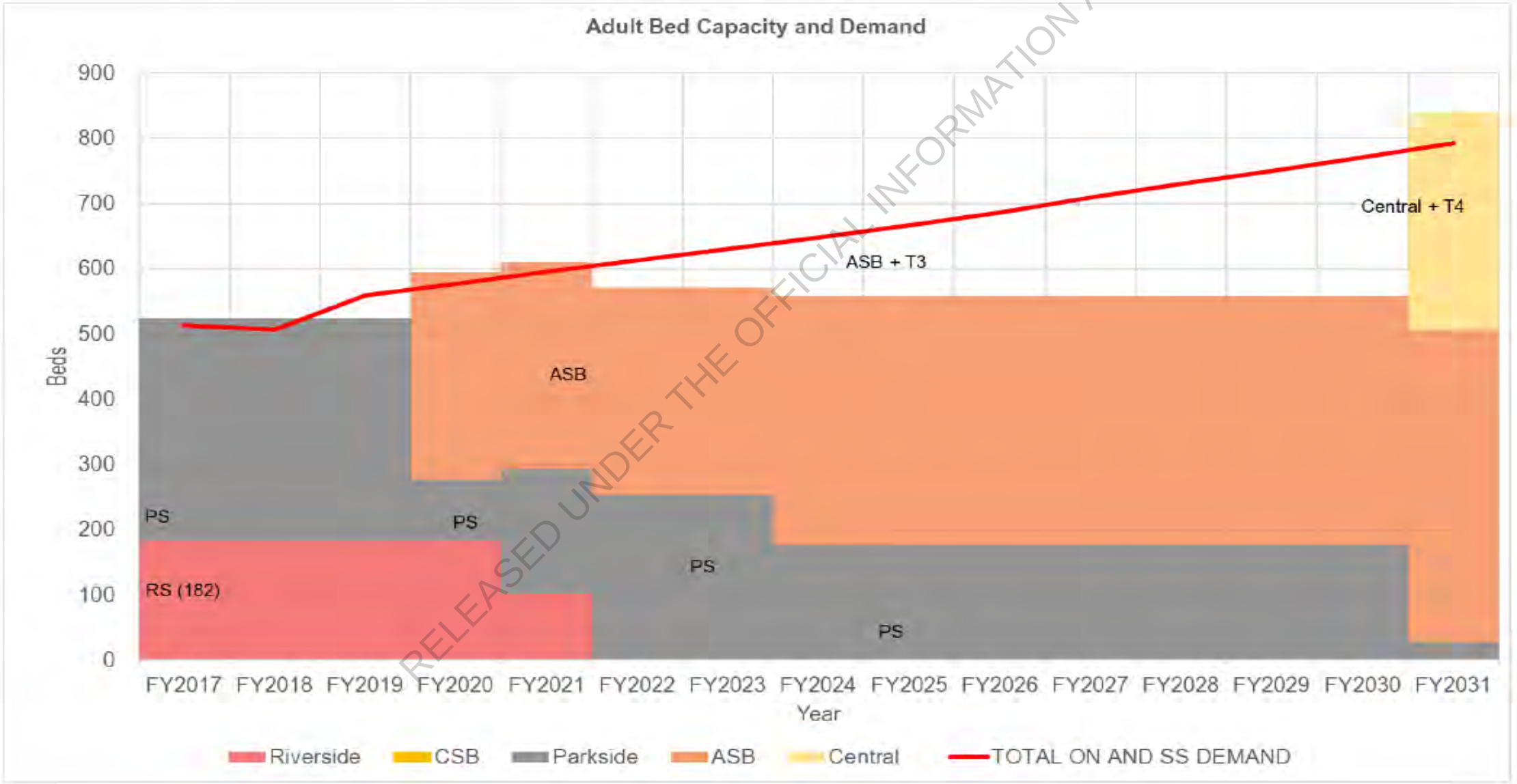
Tower 3 (2 floor fit-out)

DESTRAVIS GROUP

ADULT BED CAPACITY TOTAL ON & SS DEMAND		FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031
RS-W	Inpatient	80	80	80	80	Vacate	DEMO									
RS-E	Inpatient	102	102	102	102	102	Refurb	Refurb	Refurb	Workspace	Workspace					
Riverside		**182**	**182**	**182**	**182**	**102**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
CSB-W		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CSB-E		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CSB		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PS EAST (PS-A-N)	Inpatient	57	57	57	Compliance	37	37	37	Close							
PS EAST (PS-A-S)	Inpatient	60	60	60	Compliance	40	40	40	Close							
PS Ex AMAU & ICU / SSS	Short Stay	36	36	36	28	28	28	28	28	28	28	28	28	28	28	28
PS EAST (PS-B)	Inpatient	10	10	10	-	-	-	-	-	-	-	-	-	-	-	-
PS WEST (PS-C-N)	Inpatient	58	58	58	Compliance	38	38	38	38	38	38	38	38	38	38	Close
PS WEST (PS-C-S)	Inpatient	54	54	54	Compliance	48	48	48	48	48	48	48	48	48	48	Close
PS WEST (PS-D-N)	Inpatient	9	9	9	9	Compliance	9	9	9	9	9	9	9	9	9	Close
PS WEST (PS-D-S)	Inpatient	58	58	58	58	Compliance	54	54	54	54	54	54	54	54	54	Close
Parkside		**342**	**342**	**342**	**95**	**191**	**254**	**254**	**177**	**177**	**177**	**177**	**177**	**177**	**177**	**28**
Podium - AMAU	Short Stay				40	40	40	40	40	40	40	40	40	40	40	40
Tower 1	Inpatient	-	-	-	128	128	128	128	128	128	128	128	128	128	128	128
Tower 2	Inpatient	-	-	-	149	149	149	149	149	149	149	149	149	149	149	149
Tower 3	Inpatient	-	-	-	design		construct		64	64	64	64	64	64	64	160
ASB		**0**	**0**	**0**	**317**	**317**	**317**	**317**	**381**	**381**	**381**	**381**	**381**	**381**	**381**	**477**
Central podium	Short Stay	-	-	-	-	-	-	-	-	design			construct			16
Central T4	Inpatient	-	-	-	-	-	-	-	-	design						160
PodiumExpansion		-	-	-	-	-	-	-	-	design			construct			-
Central T5	Inpatient	-	-	-	-	-	-	-	-	design			construct			160
Central		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**336**
PS Replacement podium (PS-ABC location)																
Tower 6						-	-	-	-	-	-	-	-	-	-	
Tower 7						-	-	-	-	-	-	-	-	-	-	
PS MKII		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
CWH		15	15	15												
CWH		**15**	**15**	**15**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
TOTAL CAPACITY		539	539	539	594	610	571	571	558	558	558	558	558	558	558	841
TOTAL ON AND SS DEMAND		513	506	559	577	595	613	630	648	667	687	709	730	750	771	793
		26	33	-20	17	15	-42	-59	-90	-109	-129	-151	-172	-192	-213	48

Christchurch Hospital DBC reset

Tower 3 (2 floor fit-out)



Passive Fire Implications

- Current building status following post-earthquake assessments
- Interim BWOF under current situation – agreement with FENZ and CCC
- Legal implications – CCC's powers
- Next steps:
  - Establish occupation criteria (clinical / operational) to assess risk across all campus buildings
  - Complete physical survey (as reasonably possible) for analysis
  - Analyse / model data – develop options for remediation; looking to invest in areas that return the greatest benefits in the most needed areas within a constrained capital envelope
  - Review options with CCC/FENZ – balancing risks, costs, benefits and implement agreed improvements
- Anticipated costs – range between $30m - $58m based on understood scope

Seismic Implications

- Earthquake Prone buildings – timeframes against compliance work and importance level
- Legal implications of non-compliance with Act
- Parkside – detailed seismic review underway, investigation to reduce shear tower upgrade extent (to protect stairs) and lessen disruptive construction methodologies
- Health and Safety in the Workplace – panel repairs; work aligned to commence post Hagley and ongoing programme
- Insurance implications – items identified but not repaired as not strictly EQP, increase risks around reduced insurance cover and consequential costs
- Building importance level changes post Hagley – Parkside blocks A and B from IL4 to IL3; Riverside once clinical functions vacate IL3 to IL2
- Minimum level of works anticipated
- Anticipated costs – range between $50m - $75m based on understood scope

5 Year Look Ahead

DBC - Theatre & Annual Bed Demand Projections – Adult Inpatient and Short Stay:

Orange = bed capacity exceeded frequently during the year

Red = bed deficit

Current status assuming $154m Capital Project approval:

	Year	2020	2021	2022	2023	2024	2025
Adult Inpatient and Short Stay Bed Supply:		594	610	571	571	571	558
Annual Bed Demand Projections – Adult Inpatient and Short Stay:		577	596	613	631	649	667
Gap		17	14	-42	-60	-78	-109
Theatre supply		26	26	26	26	26	26
Theatre demand		26	26	26	27	28	28
Gap		0	0	0	-1	-2	-2
$154m Capital Project		Confirm Funds					T3 delivery 64 beds

Approvals:

This option is based on an approval for the project prior to June 2020 that allows the full scope included to commence at the start of June 2020. Any delay to the approval will result in an extension of the programme by the amount of the delay.

Operational Consequences:

- Central Building and Tower 4 construction is assumed to be on hold as are all following Tranches of work such as Hagley Annex
- From a bed modelling perspective we have assumed the balance of shell wards in Tower 3 will not be completed in the near future. Adding bed capacity will be relatively simple with only fit-outs required as funding is available
- Agreed bed and theatre demand will not be met
- Many services and wards will have to move into old unsuitable areas and remain there without improvements for potentially ten years

Master Plan Consequences:

- We have not located departments in places that would impede the eventual agreed Master Plan implementation
- Original Master Plan staging had CT4 being occupied so that seismic and fire repairs could be completed in Parkside and now this sequence cannot be followed. This may require outsourced theatre and bed resource to provide capacity during implementation
- Following stages will all be delayed as opportunity to design CT4 and enabling works will form the next critical path

Programme:

Occupy Tower 3 – January 2025

No further projects are anticipated after this in this option

5 Year - Actions and Implications:

- Undertake fire compliance works $30m - $58m depending on time in buildings and range - allows BWOF to be issued giving legal occupation of the building
- Undertake seismic compliance works $50m - $75m - allows buildings to have Earthquake Prone notices removed, removes H & S issues
- Fit-out remaining three shelled levels of Tower 3 - $30m – improves bed deficit – include data on this
- Should we consider CT4 design, kitchen move, Hagley offices etc. that make the implementation of the Masterplan easier?

DBC – Theatre & Annual Bed Demand Projections – Adult Inpatient and Short Stay:

Orange = bed capacity exceeded frequently during the year

Red = bed deficit

10 Year Look Ahead

Current status assuming $154m Capital Project approval:												
	Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Adult Inpatient and Short Stay Bed Supply:		594	610	571	571	571	558	558	558	558	558	558
Annual Bed Demand Projections – Adult Inpatient and Short Stay:		577	596	613	631	649	667	687	709	730	751	771
Gap		17	14	-42	-60	-78	-109	-129	-151	-172	-193	-213
Theatre supply		26	26	26	26	26	26	26	26	26	26	26
Theatre demand		26	26	26	27	28	28	29	29	30	31	31
Gap		0	0	0	-1	-2	-2	-3	-3	-4	-5	-5
$154m Capital Project		Confirm Funds					T3 delivery 64 beds					

Approvals:

This option is based on an approval for the project prior to June 2020 that allows the full scope included to commence at the start of June 2020. Any delay to the approval will result in an extension of the programme by the amount of the delay.

Operational Consequences:

- Central Building and Tower 4 construction is assumed to be on hold as are all following Tranches of work such as Hagley Annex
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- Fit-out remaining three shelled levels of Tower 3 - $30m – improves bed deficit – include data on this
- Should we consider CT4 design, kitchen move, Hagley offices etc. that make the implementation of the Masterplan easier?
- Parkside Theatres 40 years old – need upgrade – false economy to leave too long as useful life of fit-out will be reduced
- Parkside wards will need an upgrade as they will be expected to last for another 15 years minimum – if capital project approved there will be a 5 -7 year construction phase – lifecycle costing suggested as economic life will be reduced compared to a new building and operational costs will be higher due to configuration
- CT4 option – again will take 7 years to procure but will reduce amount of investment in old facilities – if this is not built then beds need to be found elsewhere

DBC - Theatre & Annual Bed Demand Projections – Adult Inpatient and Short Stay:

Orange = bed capacity exceeded frequently during the year

Red = bed deficit

15 Year Look Ahead

Current status assuming $154m Capital Project approval:

	Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Adult Inpatient and Short Stay Bed Supply:		594	610	571	571	571	558	558	558	558	558	558	558	558	558	558	558
Annual Bed Demand Projections – Adult Inpatient and Short Stay:		577	596	613	631	649	667	687	709	730	751	771	782	803	824	845	866
Gap		17	14	-42	-60	-78	-109	-129	-151	-172	-193	-213	-224	-245	-266	-287	-308
Theatre supply		26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
Theatre demand		26	26	26	27	28	28	29	29	30	31	31	32	32	33	33	34
Gap		0	0	0	-1	-2	-2	-3	-3	-4	-5	-5	-6	-6	-7	-7	-8
$154m Capital Project		Confirm Funds					T3 delivery 64 beds										

Approvals:

This option is based on an approval for the project prior to June 2020 that allows the full scope included to commence at the start of June 2020. Any delay to the approval will result in an extension of the programme by the amount of the delay.

Operational Consequences:

- Central Building and Tower 4 construction is assumed to be on hold as are all following Tranches of work such as Hagley Annex
- From a bed modelling perspective we have assumed the balance of shell wards in Tower 3 will not be completed in the near future. Adding bed capacity will be relatively simple with only fit-outs required as funding is available
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Occupy Tower 3 - January 2025

No further projects are anticipated after this in this option

15 Year - Actions and Implications:

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- Parkside wards will need an upgrade as they will be expected to last for another 15 years minimum – if capital project approved there will be a 5 -7 year construction phase – lifecycle costing suggested as economic life will be reduced compared to a new building and operational costs will be higher due to configuration
- CT4 option – again will take 7 years to procure but will reduce amount of investment in old facilities – if this is not built then beds need to be found elsewhere
- T5 & Hagley Annex is now required to meet theatre and bed demand

1.0 EXECUTIVE SUMMARY

The past few years have been really challenging, as the Canterbury District Health Board has continued to meet the needs of its population despite damaged infrastructure, stretched capacity and a population that is more fragile and requires more support of the health system. It is complex to fix buildings while they are needed to deliver care and each day the DHB has struck a balance between the immediate harm of denying access to services for our population with the potential harm of occupying buildings that don't comply with previous and new building codes. This balance has been maintained through the application of a clear policy approved by the Board in the months after the 2011 earthquakes. That policy was written acknowledging the challenges faced by the Board and recognising the requirement to be both clinically and financially prudent. The confidence of the staff and the community has been maintained through an open and transparent process of full disclosure. This thorough process of communication has also mitigated the risks that the Board faced in relation to occupational health and Safety and the Patient's Code of Rights.

However the circumstances have changed with the full and final settlement of the Insurance Claim. The DHB has taken a strong negotiation stance and has been able to evidence the extent of the damage to the physical infrastructure so the final settlement is the maximum amount of insurance claim payable in any one year to District Health Boards. In recognition of the extent and complexity of the damage, which far exceeds the amount that the Insurance Companies have agreed to pay, the final amount of $320 million has been paid in full with no discounting and no tags. The delay in reaching agreement reflects the DHB's negotiating team's reluctance to accept anything less than the maximum amount as further engineering reports and analysis reveal more and more damage to the DHB's buildings.

Canterbury DHB now needs to move quickly to remediate its physical infrastructure to meet its obligations to patients and staff. The over-arching challenge is how to allocate the limited insurance proceeds across so much damage in a way that optimises the outcome. The DHB will have to manage several competing tensions;

- With in excess of 518 million dollars of damage identified there are not sufficient insurance proceeds to remediate all damage.
- Five hundred plus million is the cost of damage calculated to date, not the cost of bringing the buildings up to new code standards so choices will have to be made or there will not be sufficient resource to bring key buildings up to code.
- As repairs are undertaken new levels of damage are revealed forcing changes in the planned repairs and new choices.
- Urgency to repair is driven by
    - Occupational health and safety legislation creating a risk for the Board if action to remediate cannot be demonstrated
    - Patient Code of Rights creating risk for the Board when they have the means to correct the circumstances and action cannot be demonstrated
    - Capital charge being applied and reducing the money available to fund remediation
- Repairs to buildings create disruption and there is not sufficient capacity to move services , so complicated logistics and timing will have to be managed

Canterbury DHB proposes to continue to apply the policy framework and principles that has guided the DHB to this point, recognising that the DHB;

- Is obligated to move with urgency
- Is now working in an environment of more certainty with the capital expenditure to build new facilities already approved by the Government

This will enable Canterbury DHB to apply the limited insurance funds in a way that maximises the outcome of the capital expenditure. However timeliness of decision making and flexibility to remake decisions based on new information are key to achieving that outcome. This highlights a potential process risk with the application of the Capital Investment Committee (CIC) framework and the need to apply some form of business case process.

It should be recognised that the situation in Canterbury is unique and was not contemplated when the Capital Assessment Guidelines were developed based on Cabinet Guidelines for Capital Investment. The insurance monies to repair Canterbury's damaged infrastructure are not new Crown funding nor do they represent investment from DHB baseline funding. It is the expenditure of monies provided specifically to the Canterbury DHB by the Insurer for the purposes of returning damaged infrastructure to a safe and functional status. In a normal course of events, DHBs would be expecting to utilise insurance pay-outs to fix insured damage. Canterbury is different in that the amount paid out is not sufficient to remediate all of the damage and choices will have to be made. The Crown is fortunate that Canterbury DHB was able to negotiate a maximised insurance settlement with no discount and no tags as this enables Canterbury to make the best strategic use of the funding.

1.1 PROPOSED PROCESS

A process needs to be developed that will facilitate prompt and flexible decision making. One option would be to work with NHB to develop business cases for projects of a specified size. This would mean that each large project is fully scrutinised in terms of discipline around each bit of capital spend, but seriously undermines the interconnectedness of the programme, and exacerbates the risk of changing decisions down the track and introducing new inefficiencies after decisions which have already been made become less optimal when circumstances change . It is also acknowledged that this would be resource intensive for both the Canterbury DHB and NHB and could create unacceptable delays which have financial and organisation risks attached.

Our preferred approach is to deliver a programme business case, which sets out the overall rationale, based on the signed off strategic prioritisation framework. This would allow the Canterbury DHB as the accountable organisation both as an employer and a provider of health services the ability to make rapid decisions. This would therefore deliver flexibility and certainty to staff and patients.

Following the insurance settlement, we now have the financial certainty and the means to be able to move forward and develop the infrastructure needed to provide quality patient care. The longer the process is delayed, the less able we will be to rely on the impacts of the earthquake as a defence to allegations that we have breached the Code of Rights or not met the standard as a good employer. We have an obligation to achieve our fundamental purpose of providing quality healthcare to the people of Canterbury in a safe working environment for our staff. For these reasons among others, the timely redevelopment of Canterbury DHB's damaged infrastructure is imperative.

2.0 BACKGROUND

2.1 EARTHQUAKE IMPACT ON BUILDINGS

2.11 COSTS ESTIMATION

It is not possible to be definitive about the final repair costs for the DHB's buildings. Work undertaken to date has shown that when elements of the building's underlying structure (on all buildings) are exposed, damage is noted that has not been apparent, much of it substantial and costly to repair. . Our cost estimates are based

on a series of detailed reports, estimates to repair for the specific damage noted in the reports, based on sometimes complex solutions to challenging engineering problems , together with a further sum based on an anticipated cost across all of the building stock which has been developed based on experience to date . Based on this work and assumptions, including some provision for re-levelling for some of the buildings that have experienced differential settlement, the estimated costs exceed $518M. It should also be understood that these figures do not include costs for seismic upgrades or upgrades of current systems such as emergency lighting, fire compartmentation etc. Such costs will be incurred, as the required building consent applications for the works will allow the Council to insist that old systems be upgraded to current standards. Clearly this will mean that the cost of $518M figure noted above would be far exceeded, should all of the work be undertaken.

2.12 EARTHQUAKE DAMAGE INSPECTION AND MONITORING

The inspection process for our buildings and recording of damages has matured over the period since the earthquakes. Initially works were primarily directed at initial safety inspections that enabled the original red / yellow / green placards to be issued for Canterbury DHB buildings. This provided reassurance to staff and patients and allowed the DHB to focus its attention on the most damaged buildings. After the September earthquake, a series of room by room inspections were also undertaken, intended to be the basis of a scope of works to be used with prospective builders who would undertake the required repairs. Over 7,000 separate reports were produced at that time.
With the much more severe February earthquake and on-going aftershock sequence, engineering inspections quickly passed from emergency response inspections to the preparation of full Detailed Engineering Evaluation (DEE) reports and a parallel new room by room inspection process. The DEE reports identified areas to be opened up for more in-depth inspection. The DEE reports cannot be said to be 'final', until the original damage noted has been fully repaired. As further inspections or more detailed computer modelling are undertaken, the DEE reports continue to be refined, with most reports being revised at least twice, but some up to 6 or 7 revisions. This process also included geotechnical investigations, level / verticality survey reports, QS estimates, record photographs and so forth.

As an indication of the complexity of the process undertaken the current total since the February earthquake is 22,689 separate reports.

Canterbury DHB has also instigated an on-going review process for its buildings, intended to identify any further deterioration over time (if any) since the original inspections. This should provide essential planning information and provide a level of reassurance for staff and patients with continued occupation of damaged buildings.

2.2 IMPLICATIONS OF THE APPROVED BURWOOD AND CHRISTCHURCH REDEVELOPMENTS

Given the known timeframe for the proposed new facilities at both Burwood and Christchurch Hospital campuses, together with the disparity between estimated earthquake damage cost and the insurance monies, some decisions have been taken about not undertaking some works on buildings with a limited future. This has been a risk decision, balancing patient and staff safety against the continuation of the delivery of health services (from damaged buildings) and cost.

Conversely, for those buildings that are planned to be retained, works have already been set underway, where clinical service disruption has been manageable.
Any delay in the timetable for the delivery of the new buildings, will mean the time over which a perceived level of 'risk' is being taken is increases, which will then likely to result in a different decision about that risk being acceptable.
So the proposed earthquake remedial works programme of work, the acceptable level of clinical service disruption and the program for the new hospital buildings are all closely interlinked.

2.3 INSURANCE IMPLICATIONS

- The DHB has successfully reached an agreement with the Insurance Companies, settling at a final amount of $320 million which has been paid in full with no discounting and no tags. This includes the $25million that has already been paid, prior to the settlement, to cover repairs already undertaken.
- $320 million is the policy maximum
- Subject to capital charge
  Impact of Health and Safety Obligations

2.4 IMPLICATIONS FOR CANTERBURY DHB AS AN EMPLOYER

The Health and Safety in Employment Act 1992 prescribes health and safety obligations on Canterbury DHB. The obligations cannot be abdicated to another decision-making body. Canterbury DHB must have the flexibility to react to the immediate health and safety risks present in its facilities as a result of the extensive damage incurred by the Canterbury earthquakes.

Like every other employer, the Canterbury DHB must take all practicable steps to ensure the safety of employees while at work sand to ensure that no hazard that is or arises at a place of work harms people in the vicinity of the place or people who are lawfully at work in the place.

Those duties require Canterbury DHB to identify hazards and, once identified, to do whatever possible to ensure that no harm comes to a person to whom a duty is owed by taking "all practicable steps" to eliminate the hazard, or isolate the hazard where elimination is not possible; or minimise the hazard and protect employees where elimination and isolation are not possible.

In response to the Royal Commission's final report in respect of the Pike River tragedy released in April 2013, the Government commissioned an Independent Taskforce on Workplace Health and Safety which delivered a prescription for radical change in the regulation of health and safety in New Zealand.

16. In May 2013, the Ministry of Business Innovation and Employment and the Institute of Directions produced a set of good governance guidelines (https://www.iod.org.nz/Publications/Healthandsafety.aspx).

The guidelines outline four key elements to a board of directors' role in health and safety:

1. Policy planning: Directors need to determine the organisation's structure for leading health and safety and specify a statement of vision and targets so that implementation of the policy can be monitored.

2. Delivery of the policy: Directors need to outline their expectations for the health and safety policy and ensure that sufficient resources are in place to support the policy.

3. Monitoring the policy: the health and safety performance of the organisation must be monitored with information on health and safety incidents, progress with implementation of the policy and reports on audit of the policy being included in the agenda of board meetings.

4. Review of the policy: a review of the health and safety policy should be conducted on a periodic basis to determine whether the policy is still fit for purpose.

In order for Canterbury DHB's Board to fulfil its health and safety obligations and for Canterbury DHB as a Crown Entity to fulfil its health and safety obligations, Canterbury DHB has to be able to make and action policy decisions in relation to health and safety. In practice this means that CDHB needs to be able to continue to operate project control groups made up of people with the relevant skills and authority to make decisions in respect of the buildings. For example, representatives from the building services/mechanical and engineering group, health and safety, communications, human resources and legal. These people will work with the appointed external engineers to engage in sound decision-making. The Canterbury DHB Board must then be regularly updated on decisions made by the control group so that appropriate actions can be authorised.

Canterbury DHB must be in a position to enable meetings/telephone conferences to be convened at short notice to consider an engineering report and make decisions around occupation and/or use of the buildings, and future uses of the buildings having regard to the health and safety responsibilities under the Act. The status of each building as it is assessed and decisions around occupation must be on-going as more information and changing circumstances come to light. They also need to be made in respect of the overall status of Canterbury DHB's buildings in line with Canterbury DHB's decision-making matrix. Decisions cannot be made in isolation.

2.5 IMPLICATIONS FOR CANTERBURY DHB AS A PROVIDER OF PATIENT SERVICES.

Canterbury DHB's fundamental purpose and obligation is to provide quality healthcare to the people of Canterbury. In doing so, Canterbury DHB has a duty to uphold patients' rights under the Health and Disability Commissioner Code of Health and Disability Services Consumers' Rights (the *Code of Rights*). Among other rights and corresponding duties arising from the Code of Rights, Canterbury DHB must provide services to patients with reasonable care and skill, which comply with relevant standards, are consistent with their needs, and minimise the potential harm to the patient. Canterbury DHB also needs to co-operate to ensure quality and continuity of services (Right 4).

The earthquakes have inevitably led to compromises in the care that Canterbury DHB provides to its patients. Fractured infrastructure and dislocated services cannot deliver the same level of patient care we were able to provide to the people of Canterbury before the earthquakes. Despite our best efforts to remedy the deficiencies with temporary solutions, we are now at a greater risk than ever of breaching our patients' right to quality care under the Code of Rights. This risk will continue to grow the longer we delay our post-earthquake redevelopment.

Our obligation under the Code of Rights is to take "reasonable actions in the circumstances to give effect to the rights, and comply with the duties" in the Code. There is no question that the impacts of the earthquake are relevant circumstances which shape our duty of care to patients. Where relevant to a complaint, the Health and Disability Commissioner (*HDC*) will take into account the present challenges facing the DHB and any limitations on our temporary solutions when considering whether we have breached the patient's rights. But, our circumstances are changing.

Many of the temporary solutions we have implemented were intended to be short-term. As time passes, some of those solutions are outlived and no longer appropriate or "reasonable in the circumstances". Examples are:

- Substantial noise and vibrations in clinics, wards and theatres;
- the location of services in facilities that are not fit for purpose, such as the strokes ward in The Princess Margaret Hospital (Princess Margaret was designed as an assessment and rehabilitation

hospital and is not fit for purpose for acute services of this kind) and the concentration of services at Hillmorton due to outpatient clinics being out of service;

- The use of wards with old infrastructure and space constraints, (e.g. lack of storage leading to greater risk of falls). Lounge areas are being used to store goods, meaning there is less private space for communications with patients and families; and

- The use of theatres in private hospitals to carry out surgery which for patient safety should be performed in a tertiary public facility.

Following the insurance settlement, we now have the financial certainty and the means to be able to move forward and develop the infrastructure needed to provide quality patient care. The longer the process is delayed, the less able we will be to rely on the impacts of the earthquake as a defence to allegations that we have breached the Code of Rights. We have an obligation to achieve our fundamental purpose of providing quality healthcare to the people of Canterbury. For this reason among others, the timely redevelopment of our infrastructure is imperative.

3.0 PLANNING ISSUES AND WORKING PROCESSES

3.1 CURRENT PROCESSES AND CONSIDERATIONS

Canterbury DHB immediately recognised that it would be inappropriate to simply replace all the damaged facilities with like even if it had been affordable. Since June 2011, the Canterbury DHB Facilities Sub-committee of the Executive Management Team has over-seen all facilities requirements including earthquake repairs, seismic upgrades and new build developments to retain a total system-wide strategic view of facility requirements, enabling the on-going review of the competing requirements and appropriate prioritisation with the preparation of papers for Board debate and approval as required. This sub-committee covers a programme of over 168 projects extending to 2020/2021, which includes review of every building requirement on each Hospital campus, sector bases, IFHC and Health Hubs in the community where the DHB has an active role. The review and planning process has progressed building by building, campus by campus and year by year, to develop a an Affordable Facility Programme of Works that will deliver Canterbury DHB Facilities Infrastructure that can support the Canterbury Health System wide health services plan.

Decisions on each building are consistent with the Canterbury DHB Board approved Infrastructure Policy Decision-Making Framework which explicitly recognises the need for the Board to trade off potential future harm to patients and staff against actual immediate harm to patients if services are withdrawn . However the Policy is quite clear that the balance shifts over time and the longer those substandard buildings are occupied the more untenable the Board's position becomes, hence the limit in the Policy of five years the planning process has taken into account:

- The alignment with the Redevelopment timeline for the Projects with interdependencies with the Burwood and Christchurch Redevelopment projects. (These are mainly the enablers to the Redevelopment Projects, so timeline is critical.)
- The alignment with the Health Precinct Master Plan (e.g. location of St Asaph street public car park which is required to service the new Outpatient building.)
- For areas of facilities providing clinical service, any accessibility opportunity to do the repair and upgrade works, and the decanting requirements (this has to be balanced against the level of disruptions of continuing to provide the clinical service.)

- The lack of decanting spaces, especially for clinical services (e.g. Parkside repairs and upgrades are planned to be undertaken, after the new Acute Service Building is completed and surgical wards relocate to the new building as there are no other decanting spaces at present.)
- The impact on the adjacent buildings , thus the noise and potential service interruption implications for the services in the adjacent buildings
- The alignment of the repair strategy to the length of use and occupation of the facilities, to minimise "sunk" investment (e.g. buildings on TPMH campus)
- For buildings where the repair cost is significant, the opportunity for new build to minimise interruptions to service, enable improvement in co-location and operational efficiency (e.g. Diabetes service to new Outpatient building)

It is critical to note that this programme of works is still a work-in-progress and will continue to be shaped, as the details of status, upgrade design options; other compulsory council compliance upgrades (triggered by repair works) become clearer for each building, providing more definite costing and timeframe of works. In addition, especially for repair works on existing buildings, there is a high risk of unplanned requirements as coverings are stripped back, exposing damages that may not have been identified which will have additional financial and timeline impact, and ultimately requiring re-prioritisation of the programme of works.

3.2 FINANCIAL IMPLICATIONS

By applying the Facilities Strategy, the current Programme of works has been estimated as $317.8 million. As outlined in the table below, the shortfall in funds to complete the repair and recovery programme would be about $22.6 million.

	ESTIMATED TOTAL $M
Revised Basic Earthquake Repair Cost	144.0
Facilities Strategy - Modified Existing Projects to Reduce Repair Cost	116.5
Facilities Strategy - New Projects to Reduce Repair Cost	57.3
TOTAL ACCOMMODATION CAPITAL PROJECTS (excl FDP Chch& Burwood)	**317.8**
Net EQ Settlement Proceeds to Come	295.3
NET SHORTFALL	**22.6**

(Note: Net EQ Settlement of $295 million reflects the exclusion of the $25 million which has been received from the insurance company, prior to the settlement, for works that have been completed.)

3.3 RISKS OF DELAY

With the interrelationships between the Individual projects within the programme of works and the redevelopment projects, any delay or disconnection will have adverse flow on impacts on the services, the new hospital builds and the overall programme of works as reprioritisation is required to achieve an affordable plan, possibly having to defer or cancel some of the projects. In addition, decisions to date will need to be reviewed, as the repair strategy for some buildings which are based on the level of risk over a specific occupation period, to avoid "sunk" investment will no longer be valid. This will compromise the DHB's responsibilities to:

- Provide safe environment for both patients and staff
- Plan and provide services to the population
- Manage the capital and service resources in the most efficient way

This is particularly a risk if we have to seek approval for each project, rather than for the whole programme.

To demonstrate the flow on implications, the table below outline some examples of these individual projects, which decisions to date are linked to the other projects:

Building	**Decision**	**Delay Implications**
Parkside On Christchurch campus	To fix and seismic upgrade but these are to be timed after the new build, due to lack of clinical decanting space and ability to access the areas to do the work	• Any delay in the new Acute Service Building (ASB) will delay Parkside repair and upgrade. Interim repair options will be required. There will be significant interruptions to clinical services. • Delay in Parkside will mean delaying the Riverside demolition. The current strategy of "no repair" to Riverside which has critical structural weaknesses is no longer valid, and interim repair solutions will be required. There will be significant interruptions to clinical services. • There will be additional financial impact, requiring re-prioritisation of Programme of Works (potentially deferring or dropping some works)
Emergency Dept (extension area) On Christchurch campus	To fix but timed with Parkside (as part of Parkside). Can only fix, once ED relocate to new ASB.	• Delay in ASB will delay fix to ED extension area. Current ED extension area is EQ prone @ IL4. Interim solution may be required, if ED service is using this area for a longer period. There will be significant interruptions to emergency service. • There will be additional financial impact, requiring re-prioritisation of Programme of Works (potentially deferring or dropping some works)
Riverside On Christchurch campus	Not to repair (as Riverside is to be demolished, after ASB and Parkside refurbishment are completed.)	Refer “Parkside” above for delay implications to Riverside
Diabetes On St Asaph street campus	Not to repair (as Diabetes building is to be demolished, after the new Outpatient building	• Any delay in completion of the Outpatient building, will require interim relocation of the Diabetes service elsewhere, as building is EQ prone.

	is completed.)	• There will be additional financial impact, requiring re-prioritisation of Programme of Works (potentially deferring or dropping some works)
All buildings on TPMH campus	Limited repair strategy (as services are vacating this site by 2015, after new Burwood rebuild.)	• Any delay in the Burwood new build will require increase in repair for TPMH buildings, which will then require additional decanting requirements. • There will be additional financial impact, requiring re-prioritisation of Programme of Works (potentially deferring or dropping some works)
Relocating corporate services from PMH	Limited repair strategy (as services are vacating this site by 2015, after new Burwood rebuild.)	• Any delay in confirming new facility for corporate services, will require increase in repair to some of the buildings. • There will be additional financial impact, requiring re-prioritisation of Programme of Works (potentially deferring or dropping some works)

Canterbury District Health Board

Christchurch Hospital Redevelopment: Indicative Business Case and Site Review

31 October 2018

Private and Confidential

Building a better working world

Notice

This report was prepared at the request of the Ministry of Health (hereafter "MOH") solely for the purposes of the review of clinical and capacity modelling in the draft Christchurch Hospital redevelopment, and it is not appropriate for use for other purposes.

This report may be provided to Canterbury DHB (CDHB) for the purposes of the review. However, CDHB and any other party other than CDHB who access this report shall only do so for their general information only and this report should not be taken as providing specific advice to those parties on any issue, nor may this report be relied upon in any way by any party other than the MOH. A party other than the MOH accessing this report should exercise its own skill and care with respect to use of this report, and obtain independent advice on any specific issues concerning it.

In carrying out our work and preparing this report, Ernst & Young has worked solely on the instructions of a joint steering group including MOH and CDHB personnel, and has not taken into account the interests of any other party. The report has been constructed based on information current as of 10 October 2018 and which have been provided by CDHB and the MOH. Since this date, material events may have occurred since completion which is not reflected in the report.

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Dr Ashley Bloomfield
Director General of Health
Ministry of Health
Wellington

Review of clinical and capacity modelling in the draft Christchurch Hospital redevelopment.

31 October 2018

Private and Confidential

Dear Ashley

We, Ernst & Young ("EY"), have completed our engagement as part of the business case strategic review. The project was performed in accordance with our engagement agreement dated 7 Sept 2018, and our procedures were limited to those described in that agreement and outlined in the "Background and objectives" section of our report.

Results of our work
During the period 10 Sept 2018 to 31 Oct 2018, EY completed a review of clinical and capacity modelling in the draft Christchurch Hospital redevelopment. Our report resulting from our work is provided herein.

The report has been constructed based on information current as of 19 Oct 2018, and which have been collected through stakeholder engagement, site visits, demographic modelling, and a desktop analysis of documents provided by Canterbury DHB (CDHB) and the Ministry of Health (MOH). Since this date, material events may have occurred since completion which is not reflected in the report.

Scope of our work
Our work has been limited to a set scope and time and more detailed procedures may reveal issues that this engagement has not. The procedures summarised in our report do not constitute an audit, a review or other form of assurance in accordance with any generally accepted auditing, review or other assurance standards, and accordingly we do not express any form of assurance.

Any comments on, or opinions stated regarding the functional and technical capabilities of CDHB, whether or not expressed as being those of EY are based on the information provided by the MOH and CDHB to EY. While EY does not have reason to believe that this information is in any way inaccurate or incomplete, responsibility for its accuracy and completeness does not rest with EY.

Our business case strategic review is intended solely for the information and use of the management of the MOH and CDHB, and is not intended to be and should not be used by anyone other than these specified parties. EY and all other parties involved in the preparation and publication of this report expressly disclaim all liability for any costs, loss, damage, injury or other consequence which may arise directly or indirectly from use of, or reliance on, the report.

This report (or any part of it) may not be copied or otherwise reproduced except with the written consent of Ernst & Young.

We appreciate the cooperation and assistance provided to us during the course of our work. If you have any questions, please call Stephen on +64 21 222 1962.

Yours sincerely

Stephen McKernan
Partner, Advisory
Ernst & Young

Dr Gary Jackson
Executive Director
Ernst & Young

Professor Frank Daly
Oceania Medical Director
Ernst & Young

Acknowledgement

An EY team comprising Dr Gary Jackson and Dr Frank Daly was commissioned to undertake a review of the clinical and capacity modelling underpinning the draft Christchurch Hospital Redevelopment Indicative Business case (IBC).

It should be noted that the driver for this review was to provide confidence to the Ministry of Health and the Hospital Redevelopment Partnership Group (HRPG) that the assumptions and calculations underpinning the draft IBC are appropriate and robust, and to provide any further insights and experience, and is not a response to any concern around patient safety or quality of care, operational performance or financial sustainability at the Canterbury District Health Board (CDHB) .

On our visit to the Canterbury District Health Board and Christchurch Hospital during the first week of October 2018 our discussions were characterised by openness, transparency and a shared commitment to service improvement to the benefit of patients and the community.

We would like to convey our thanks to all of those with whom we spoke and those within the Ministry who supported this review. Without exception we found staff to be friendly and professional in responding to all our questions and requirements.

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Executive summary (1/3)

Background

- Planning to update and right-size the Christchurch Hospital precinct began in 2008, but was interrupted by the earthquakes in 2010 and 2011. Work derived from a business case ('DBC') agreed in 2012 is in progress, and the large Acute Services Building (ASB) with two ward towers due for completion in 2019 (plan view page 49)
- An additional parallel business case resulted in the just-completed Outpatient Building
- The next stages of development on the site have been rolled together into a draft Indicative Business Case (IBC). The IBC concentrates on the inpatient and theatre capacity of the site
- This report assesses whether clinical needs are being appropriately addressed by the draft IBC, and whether capacity needs are adequate in future years. Observations about wider system issues are also made.

Approach

- A desktop review of the IBC and documents supplied by CDHB and MoH was conducted. Drs Gary Jackson and Frank Daly (the 'Panel') visited CDHB and Christchurch Hospital, conducting stakeholder interviews and site tours to understand and validate the state of existing hospital and service infrastructure, models of care, clinical and operational issues, and risk management issues
- Further documentation was requested following the visit before synthesis and reporting of quantitative and qualitative findings.

Key findings

Demand modelling and capacity

- Population growth has not only recovered following the aftermath of the earthquakes, but is now running at a higher level than previously forecast. This appears to relate to the large increases in housing in Selwyn and others districts around Christchurch city immediately following the earthquake. As city residences are remediated an increased housing stock is available to fuel immigration
- The IBC is using the 2017 medium projections on which to base hospital capacity projections. This is a reasonable approach, but the Panel is concerned that most risk lies on the upside. An urgent update using 2018 Census results when they become available is recommended as part of the detailed planning process around the timing of the new builds
- Demand modelling for inpatient beds has been appropriately conducted. Based on medium population projections the need for medical-surgical inpatient beds grows at around 19 beds per annum. At the proposed IBC timings bed capacity is planned to be behind or just meeting demand. This leaves services vulnerable to increases in demand, and with little freeboard. Increased 'hospital full' days add risk to patient safety, outcomes and experience
- Modelling for theatres appears to have been appropriately conducted. Given the elective surgery assumptions the number of theatres and procedure rooms proposed in the IBC appear reasonable to allow for mainly insourced operating. The Panel was less concerned about theatre numbers than they were with bed numbers. With the ability to outsource and outplace theatre work, or to use the existing theatres for extended hours, more flexibility

Executive summary (2/3)

exists to manage demand and theatre numbers. We do expect that insourcing theatre work will be the most efficient operational mode and support that direction for the IBC.

Clinical Need

- The state of the existing wards and the timing of their closure is the main driver for the build. As new wards come on stream older ones close, creating apparently little net gain in bed numbers. Three key drivers exist – patient safety, outcomes and experience, staff safety, and building quality and longevity.

Patients

- The out-dated nature of the wards in the Riverside and Parkside buildings was noted in 2008. Ten years later the incongruence with contemporary standards and practice is even more apparent. Even without the earthquake damage these wards would have been being replaced
- Key issues include under-sized toilets and showers, lack of ensuite toilets, multi-bedded rooms (2 would be maximum expected in a new build), lack of single/isolation rooms, narrow corridors and small rooms, lack of storage, poor clinical workspaces and sightlines to ill patients, unhygienic kitchen facilities, lack of privacy, mixed gender rooms, ventilation, and a lack of clinical handover and teaching spaces
- Clinical risk, particularly cross-infection risk, was rated as high by the Panel. As a tertiary referral centre patients are likely to be on average more complex and to be more vulnerable to hospital-acquired infections
- While we are not in a position to rank the clinical risks against all New Zealand hospitals, we would rate it as Highly Desirable to replace these wards as soon as possible
- Even from 2025 on patients will still be placed in undesirable conditions in the Parkside Building with 112 beds remaining until at least 2031 on current modelling.

Staff

- Corridor clutter, tight toilet and shower spaces and narrow areas around beds provide increased health and safety risks to staff
- The additional work required to manage in the current settings was stated to be increasing staff stress, and this was consistent with deteriorating workforce survey scores and an increase in sick leave levels.

Buildings

- In terms of the buildings themselves, we noted the relatively short expected useful lifespan and the earthquake repair and strengthening costs for the Riverside and Parkside Buildings. From a clinical point of view a compounding issue is where the earthquake strengthening required reduces the utility of the building – for example adding in the required shear walls to Parkside is expected to reduce the ward size to 22 beds; less efficient for nursing staffing.
- The existing buildings appear to provide only short-term solutions; we are supportive of the overall master-planning documents showing the rapid re-purposing/replacement of these buildings as the site matures
- Careful attention to decanting plans and the final end state of the site is needed to avoid disruptive moves and unnecessary building repairs.

Executive summary (3/3)

Other observations

- We were presented with much detail about the engineering work required for each building on campus to meet the requisite IL2, IL3 or IL4 standard (See Appendix C). We have taken these recommendations at face value, and concentrate in this report on the consequences of this for clinical care
- Having a clear plan for each service in important. Many staff commented that the 'not knowing what is going to happen' was a constant drain on morale and prevented clinical service delivery planning and innovation
- Working in a building that is being refurbished is not desirable. To reaffix the Parkside exterior concrete panels from the inside and adding shear walls will require long periods of concrete drilling. Many staff have been working in these circumstances for many years, and will need to continue to do so for several more years
- The laboratory service, with its sub-standard building and current cramped working conditions represents a serious clinical and service risk for the hospital, and the wider South Island health system. While not part of this specific business case it needs to urgently follow
- The oncology building is ill-placed in the current site, and is reaching capacity. Extensive use of the private provider will be needed as necessary linear accelerator upgrades occur. The future site of the cancer centre, possibly across the road near the current laboratory building, needs to be included in any site planning. It is not as urgent as the current inpatient beds, mental health or laboratory issues.

Recommendations

Inpatient beds

1. The need to replace existing wards and add ward space is urgent. While the Panel is not able to directly compare or prioritise across all New Zealand hospitals, we would recommend Tower 3 and Tower 4 be commissioned sooner than the currently proposed 2023 and 2025 dates, subject to construction logistics
2. Ideally the residual 112 beds in Parkside should be included in the Tower 4/Podium build to have all inpatient spaces upgraded to a contemporary standard before 2025. If this is not possible then their priority should be tested in the national asset planning process, along with the laboratory, mental health, oncology, and car-parking issues
3. If possible more 'freeboard' should be allowed for in the matching of bed numbers to demand. There is significant upside risk of demand being higher, while the downside risk of having some spare capacity actually can allow more efficient hospital operation, with more patients on home wards getting more focused care, and reducing length of stay
4. The proposal to use Riverside East as workspaces/offices is strongly supported. This worked well in the Auckland Hospital rebuild, with precious clinical space preserved in the main blocks. Appropriate linking corridors will be required to the ASB.

Theatres

5. We are supportive of the proposed four theatres in the central podium before 2025. However their commissioning timeframe could be subject to a separate analysis as to whether more elective surgery could be more efficiently placed at Burwood rather than on the Christchurch Hospital site. While we expect that clinical workflows for DOSA and day surgery on the Christchurch Hospital site have been carefully considered, we have been impressed with the gains able to be made separating elective from acute operations in other settings, and the added efficiencies in moving from four theatres to an eight theatre sizing.

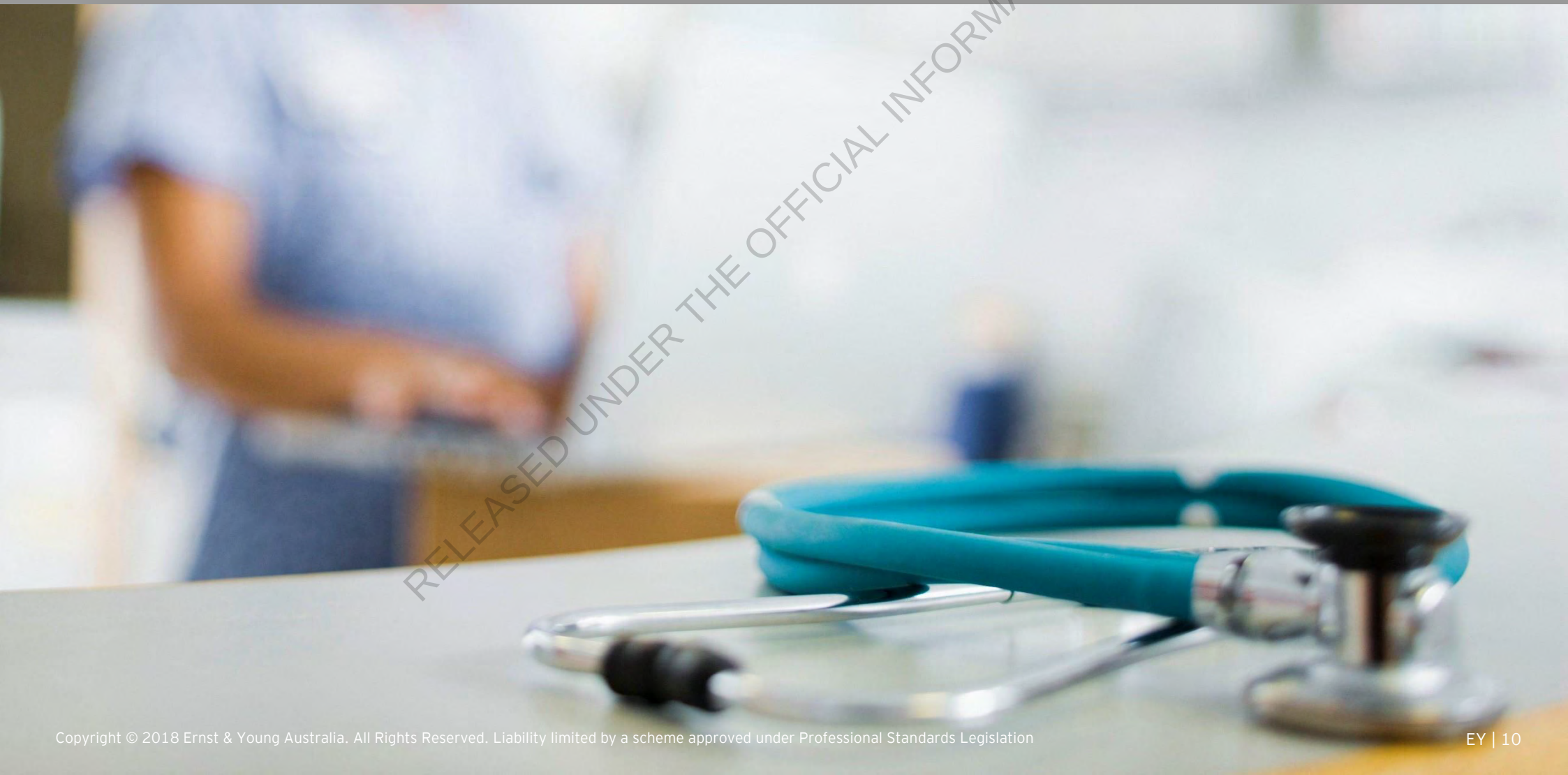
Demand Modelling

6. The 2018 Census results, and new projections based on these, will be available in the next 12 months during the detailed planning period. The new figures should be used to update the demand model, and timings adjusted as a result
7. The IBC might more clearly show 'hospital full' days and detail the impact this has on hospital safety and efficiency. This gives a clearer view of the risks of being overfull than is possible with averaged 85% occupancy estimates.

Process from here

We considered whether it would be possible to disaggregate the IBC and deal with each part separately. However, given the inter-dependencies between the buildings, and the careful decanting and staging required, we feel the IBC needs to retain its scope. It may be possible to increase the speed of the process by running a separate case for Tower 3 in parallel with the larger piece of work. A broader PBC frame would be useful to assist the scheduling and planning around the other site needs – laboratory, carparking, oncology.

Background and context



Background and introduction

Christchurch Hospital Development

- Master-planning for Canterbury DHB (CDHB) hospital facilities began in 2008, with a strong focus on the Christchurch Hospital precinct
- Build sequencing was interrupted by the two major earthquakes in 2010 and 2011, leading to a new process and an agreed Detailed Business Case (DBC) in 2012
- Following the earthquakes over 40 CDHB buildings have been demolished. The current state of key at-risk buildings on the Christchurch Hospital site are shown in Appendix 3

- The DBC provided an overall concept for the Christchurch Hospital site, and initiated the building of the just completed Outpatient Building, and the large Acute Services Building (ASB) with two ward towers. Originally envisaged to be finished in 2016, various delays have pushed this date out, with it now due for completion in 2019 (no formal hand-over date is currently specified)
- The new ASB building includes 317 medical/surgical beds, a new ED and ICU, 12 theatres and assorted other clinical spaces. It has room on its podium for a third tower of 160 beds
- The next stages of development on the site have been rolled together into a draft indicative business care (IBC). The IBC concentrates on the inpatient and theatre capacity of the site. It does not for example include laboratory services, the cancer centre or car-parking
- The IBC has been in development for over two years; the process is in danger of not keeping up with service demands.

Background and introduction: Focus of this review

From the agreed CSO the following is within scope:

1. The review is focused on the clinical and capacity modelling that underpins the IBC
2. The review should cover the clinical need for beds, theatres and other clinical spaces from 2018 through to 2031
3. The assessment of clinical need should take account of population growth, changing models of care, opportunities from the new ASB to deliver services in a different manner, future efficiencies and reasonable use of private elective capacity
4. The assessment of clinical need should include consideration of how other DHBs are managing demand. A distinction should be made between how capacity and demand can be managed in the short term versus capacity modelling for new investments for the longer term
5. The review should cover clinical capacity (beds, short stay spaces, theatres, procedure rooms and other ambulatory, etc.) already available on the site. This should cover pre ASB opening and post ASB opening
6. The review of capacity available should include all available clinical spaces and then identify where these are being decommissioned or repurposed. Where areas are being decommissioned or repurposed the review should clarify whether this is essential, desirable or ideal
7. While the review is primarily focused on the Christchurch site, the review should comment on all appropriate Canterbury DHB sites.

The following is out of scope:

1. The financial, commercial and management cases within the IBC, as this will be completed in the next business case and be informed by this review
2. The IBC has one preferred option for the site redevelopment, with no staging. The end point site plan is not considered within scope, however the review may identify opportunities for changing some of the intermediate steps and details.

Approach and method

Review of the Christchurch Hospital Redevelopment IBC: Approach and method

Drs Gary Jackson and Frank Daly made up the Review Panel, with Stephen McKernan QSO providing oversight and strategic review.

Our approach to conduct the review consisted of the following steps:

1. A desktop review of the IBC and documents supplied by CDHB and MoH was conducted for background purposes
2. Dr Gary Jackson met with representatives of CDHB and reviewed population and epidemiological demand modelling during the week commencing 24 September 2018 (Appendix A)
3. Drs Gary Jackson and Frank Daly visited CDHB and Christchurch Hospital during the week commencing 1 October 2018 and conducted stakeholder interviews (Appendix A) and site tours to witness, better understand and validate the state of existing hospital and service infrastructure, models of care, clinical and operational issues, and risk management issues. Other stakeholder interviews were also conducted
4. Further documentation was requested following the visit before synthesis and reporting of our quantitative and qualitative findings

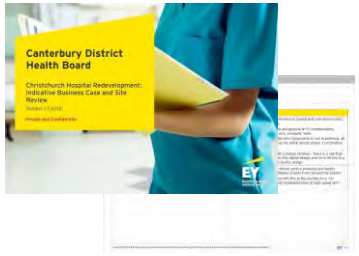
1 Preliminary analysis and desktop review

2 Review of population and epidemiology demand modelling

3 Stakeholder interviews and site tours

4 Synthesis and Report

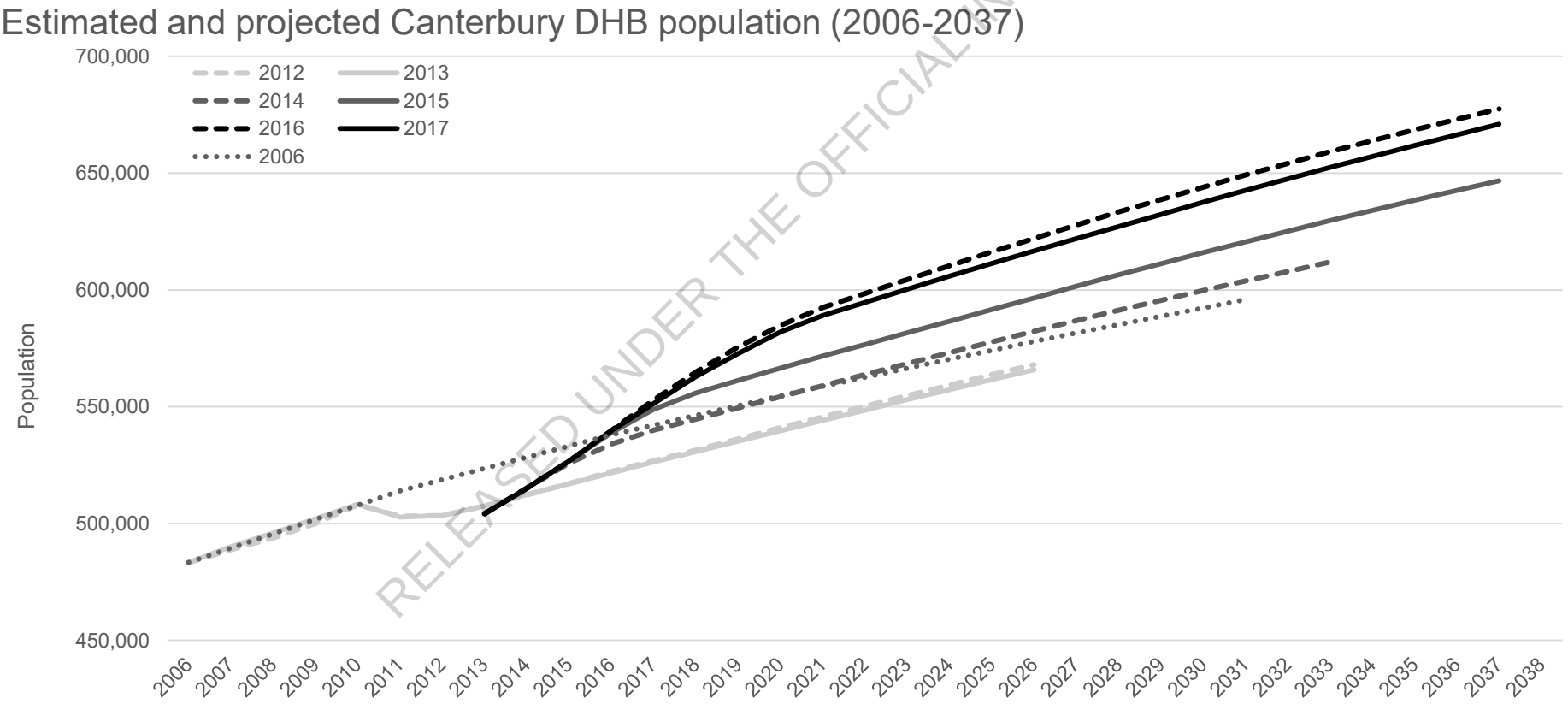
Strategic assessment of IBC clinical need and capacity



Overview of demand modelling and capacity planning

Counting the Canterbury population

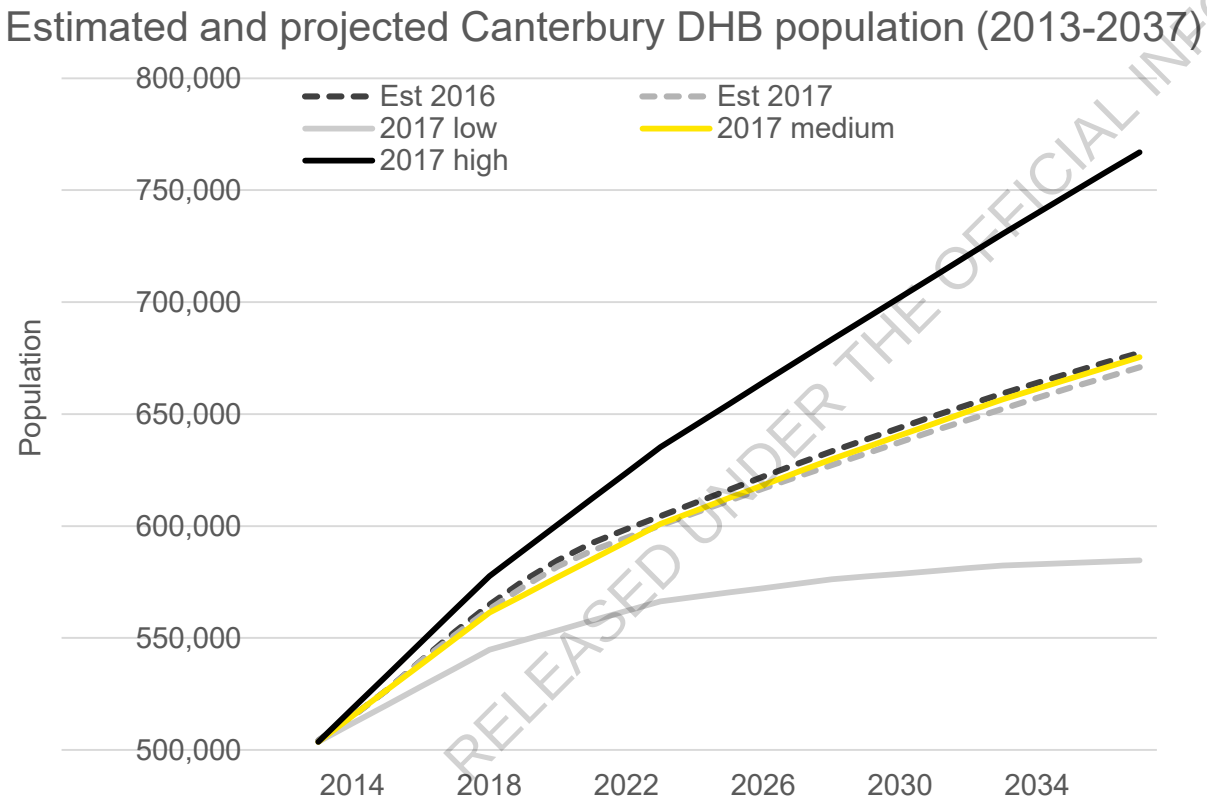
- We examined Statistics NZ population estimates and different projection series from 2006 to 2017
- A decline in population can be seen in 2011 in line with the earthquake. The decline was not sustained and estimates from 2012 onwards show steadily rising increases
- The population estimate from 2014 appears to be in line with pre-earthquake estimates, while the 2015, and more so 2016 and 2017 estimates are significantly above that. For the period 2015-2020 growth is projected at 2.02% pa, compared with the national average 1.76% growth
- This appears in part to be related to the large increases in housing in Selwyn and others districts around Christchurch city immediately following the earthquake. As city residences are remediated and temporary construction workers move on there is more housing stock available to fuel immigration



Source: Statistics NZ projections for MoH,

Counting the Canterbury population 2

- Comparing more recent estimates, both the 2016 and 2017 estimates lie above previous projection medium series
- The 2017 medium projection is slightly below the 2016 projection, but that variance is small compared with the low to high range. Using the latest population projections would appear the most prudent for hospital planning purposes

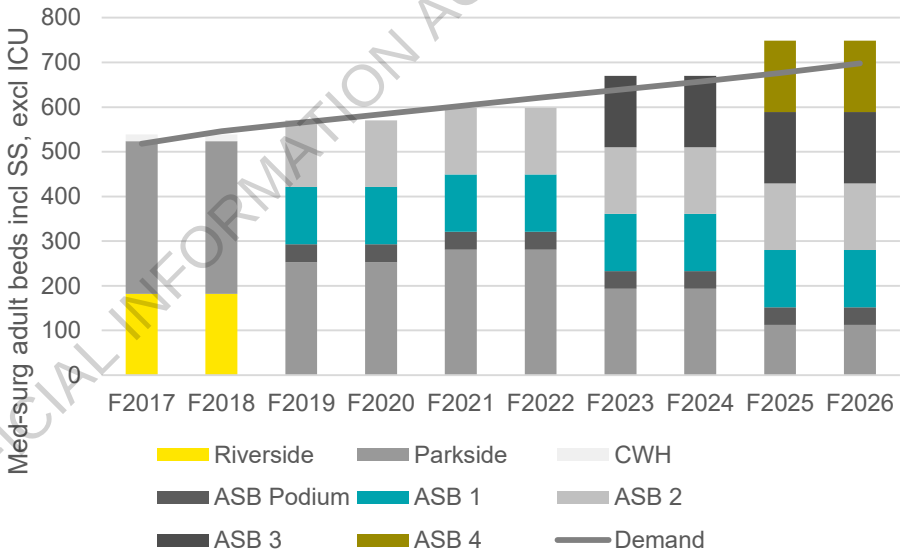


Source: Statistics NZ projections for MoH. "2017 medium" is based on **the** CAU-level projections from Statistics NZ

- Statistics New Zealand modelling suggests the current higher rates of growth will reduce towards the long term average by 2020. Per annum growth from 2020 to 2037 is projected to be 0.84%, compared with 0.76% for NZ overall
- For 2018, the projection suggests an added 11,500 people in Canterbury DHB, about 13% of the NZ growth expected (~90,000)
- From examining the estimate to projection values over the past 4 years there appears to be more risk on the upside. Results from the 2018 Census will be important in validating or otherwise the recent projections
- Of particular importance for bed modelling is the ageing population. At present the 65+ make up 15.7% of the Canterbury population, similar to the NZ average 15.3%. By 2037 that rises to 23.0% vs 22.4%
- The 65+ population is projected to grow at 174% over the next 20 years (2018 to 2037), again following the NZ average curve
- As around half of medical-surgical hospital beds days are occupied by those aged 65+ it is this large growth in the elderly population that is particularly driving the bed growth seen (see next page)

Demand modelling – medical-surgical adult beds

- Demand modelling has been carried out by Canterbury DHB, and reviewed by the MoH. A formal external review was carried out by Sapere (draft report by Dr Tom Love, 8 Sep 2017 sighted). The modelling methodology and calculations have not been additionally vetted in detail by the Panel
- The methodology projects bed days based on current age related occupancy, turning this into an expected bed need through the 85% occupancy metric
- No added efficiencies (e.g. reducing ALOS) have been applied – see discussion p 22



The graph and table show projected demand and the provided/proposed capacity for adult medical and surgical beds by major building (more detail through to 2031 is shown in Appendix B). It includes short stay beds (e.g. AMAU), but does not include ED space, day surgery places, the medical day ward, or ICU beds. Demand for beds is expected to increase by ~19 beds per year over the next 10 years. The next page steps through the changes in detail

	F2017	F2018	F2019	F2020	F2021	F2022	F2023	F2024	F2025	F2026
Riverside	182	182								
Parkside	342	342	253	253	281	281	193	193	112	112
CWH	15	15								
ASB Podium			40	40	40	40	40	40	40	40
ASB 1			128	128	128	128	128	128	128	128
ASB 2			149	149	149	149	149	149	149	149
ASB 3							160	160	160	160
ASB 4									160	160
Total	**539**	**539**	**570**	**570**	**598**	**598**	**670**	**670**	**749**	**749**
Demand	518	546	565	584	602	621	639	657	676	698
Demand increase y-o-y		28	19	19	19	19	18	18	19	22
bed difference	**21**	**-7**	**5**	**-14**	**-4**	**-23**	**31**	**13**	**73**	**51**

Source: Project X bed capacity spreadsheet v7 + IBC tables 4 & 5

Demand modelling – medical-surgical adult beds detail

As summarised in the table on the previous page, there are planned a series of bed closures in association with new facilities being opened, netting off much of the gains from the new builds.

2019

- Upon opening of the new ASB building **317** new beds become available, inclusive of the 40 short stay beds forming the new AMAU. [ASB costs are included in a previous business case]
- Both Riverside West and Riverside East are closed for inpatients. As noted in Appendix C for the Riverside Building the cost of returning the building to an IL4 state adequate to house inpatients coupled with the inadequate nature of wards themselves, even if refurbished, do not warrant their retention. This is a loss of **182** beds
- Inpatient space in the Parkside Building drops to 253 from 342 beds. The opportunity is taken to change the Parkside wards to remove most 6-bedded rooms (reducing them to 4 beds). Some 6 bed rooms remain (Wards 10,11,12,14). Ex-AMAU and ICU space is refurbished (so unavailable 2019-2020. PS-B 10 bed unit is re-purposed to non-inpatient activity
- Urology moves back from Christchurch Woman's Hospital– 15 beds returned to Women's Health
- The equivalent of about 3 beds-worth of outsourced surgery is expected to return.

2020

- Demand projected to exceed supply by 14 beds.

2021

- Ex-AMAU and ICU space in Parkside refurbished and available as a 28 bed ward, moving Parkside to 281 beds.

2022

- Demand projected to exceed supply by 23 beds.

2023

- Proposed completion date of 3rd tower for ASB for **160** added beds (5 wards x 32 beds)
- Inpatient space in the Parkside Building drops to 193 from 281 with the decommissioning of the Parkside East wards and introduction of earthquake strengthening shear walls for IL4 compliance reducing ward sizes.

2025

- Proposed completion date of 4th ward tower with its own podium, for **160** added beds (5 wards x 32 beds)
- Parkside wards further reduced to 112 beds.

Further into the future (not part of the current IBC) a 5th tower on the new central podium will allow the next tranche of 160 beds to be built, finalising the move from Parkside.

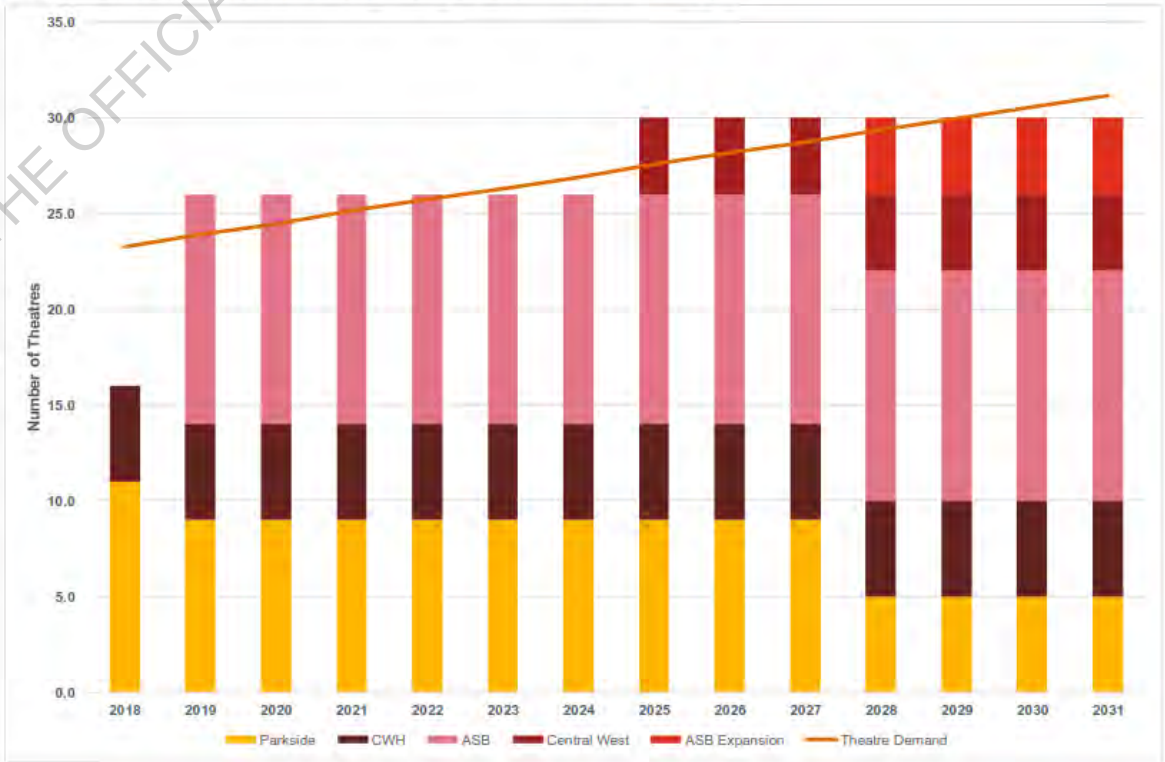
As currently laid out the beds available will closely track or fall behind the predicted demand line. This gives little freeboard for operational planning or delays in construction. On the positive side this may continue to drive efficiencies; on the negative side risks compromising patient care and staff welfare at times of surges in demand. The gap between ASB Towers 1 and 2 opening and the commissioning of the proposed Tower is particularly problematic, with 74 'full' days modelled in 2022 (Simon Berry, internal document March 2018). We also note the operational efficiency advantages of having enough 'spare' capacity that services can run within their home ward footprint, with consequent time savings, improved clinical safety, and reduced length of stay.

Demand modelling - theatres

Theatre numbers are shown in detail in Appendix B.

- Currently there are 12 surgical theatres in Parkside. The small footprint of many of these limits their utility
- An estimated equivalent of 7 theatres were carrying out extended hours surgery (e.g. weekends) in existing theatres, or were outsourced or outplaced surgery in 2017
- There is assumed no change in the use of the four theatres at Burwood (but see page 34)
- No change is assumed in the use of the 7 CWH theatres (5 + 2 maternity) from the point of view of adult medicine and surgery
- 12 theatres are added in 2019 with the opening of ASB. These are larger theatres more suited to contemporary models of surgical delivery. This allows return of much of the extended hours, outsourced and outplaced work initially
- Once the 12 new theatres are open it is proposed to turn the smaller Parkside theatres into procedure rooms, reducing theatre numbers by three – net 19 adult surgical theatres
- Following this, and to meet the expected further growth, a further four theatres are proposed for the Central podium under Tower 4 in the current IBC. The IBC anticipates a return to extended hours, outsourcing and outplacing from 2022 until the anticipated new theatres in 2025
- The spreadsheet calculations for the theatre demand modelling, theatre efficiency, minutes per theatre etc were not examined in detail by the Panel; figures appeared consistent with surgery volume growth
- The anticipated growth in elective surgery appears consistent with government policy; overall the growth appeared consistent with the bed modelling
- Opportunities for efficiencies in day and elective surgery are discussed on page 34.

Figure 25 Forecast theatre capacity demand and supply



From the IBC (Apr 2018), page 38

Demand modelling and capacity – other areas

The discussion above focusses on inpatient beds and theatre numbers. Other areas are noted here.

- Emergency Department capacity and flow is already set through the ASB planning process, and has not been specifically examined by the Panel. Operational factors are noted on pages 27-29
- Short stay acute care, and specifically AMAU at 40 beds, and surgical short stay, have again been sized through the ASM planning process and not been examined further here. From the documents seen the sizing and proposed models of care appear reasonable and able to support the inpatient stock – see page 27
- Day surgery, day of surgery space and recovery rooms again are part of the previous business case and have not been specifically reviewed. Discussion of elective surgery master-planning is on page 34
- Allocations of procedure rooms are not yet finalised in the new ASB podium. No specific issues were noted to us regarding capacity of procedure rooms, apart from a shortage of gastroenterology endoscopy rooms, particularly with respect to colonoscopy volumes once bowel screening begins in Canterbury in 2020
- Women's and Children's are based in the relatively new CWH block and are largely out of scope for this review. We note the transfer of 15 urology beds from their temporary location in CWH, said space needed for growth for their services. We also note the stated lack of capacity for any of the theatres in CWH to undertake any additional surgical load
- Cancer services have a dedicated building in the centre of the site. While not in scope for the current IBC, their disposition will need to be covered in subsequent facility business cases – see discussion on page 32
- ICU sizing was carried out for the previous business case and has not been revisited by the Panel
- Laboratory and radiology services were not specifically in scope. Radiology is largely planned through the previous business case, and no specific issues were raised with us. We did visit the laboratory service as part of the site visit and comment on this on page 31
- Outpatient services were about to move to their new building. It was conveyed to us that a number of services would not be able to fit in that building, and would need places elsewhere. No specific issues were raised with us about this. We note the likely lower efficiencies of such arrangements compared with the purpose-built and run outpatient facility
- Mental health is based at Hillmorton site and is out of scope
- Older people, rehabilitation and spinal care are based at Burwood and are not in scope. Also at Burwood are elective orthopaedic and plastic services with four theatres. We comment on this on page 34
- Inter-district flows (IDFs) were stated to have grown 10% over the past 5 years (WIES) through increasing volume and increasing complexity. No allowance for further increases have been factored into the modelling; any such increase would require efficiency gains to accommodate (see page 22)
- Repatriated surgery following the opening of the new ASB theatres in 2019 are expected to require the equivalent of 3.2 inpatient beds (Sapere 2017 report p14). Although small, it is not specifically included in the demand model
- South Island regional volume modelling was not available. We understand this is a piece of work yet to be conducted.

Benchmarking efficiency to support capacity modelling

- Considerable care and attention has been taken to compare the Canterbury health system to other like systems – either with New Zealand averages or with other tertiary hospitals in New Zealand
- This includes length of stay (LOS), admission rates, DOSA rates, day surgery rates, readmission rates, Emergency Department (ED) attendance rates, elective surgery rates and wait time analyses among others viewed by the Review Panel
- Canterbury generally scores well, often sitting at or near the top of rankings
- We have concentrated here on process efficiency as it relates to capacity planning, and not cost efficiency. We note the ongoing operational deficit for the DHB, but have not attempted to relate expenditure (e.g. FTE growth) with process efficiency
- In discussions with CDHB and MOH personnel three underlying foundations for this relative high performance were noted:

1. A strong, well-functioning PHO alliance. CDHB has a good relationship with this its PHOs and has been able to use this strong foundation to develop the Canterbury Community Health Pathways work. Pegasus, the largest PHO, has a long-standing capacity to analyse data and change processes to improve care

2. The restrictions in bed capacity directly following the earthquake forced the system to manage with fewer beds, with the consequent system changes becoming the new standard way of working

3. Clear communications and consistent working across the health system and with the general population has got people used to a health system that avoids the hospital where possible.

Admission rates

- One caveat in the benchmarking work relates to the method by which CDHB records its ED attendances. Where patients are treated for longer than 3 hours, even if they remain in ED, the NZ standard is that it be counted as an admission. This occurs to a lower extent at CDHB than other DHBs. This distorts acute day case comparisons and overall discharge rate comparisons (making CDHB look low), but does not affect overnight inpatient discharge rate calculations or inpatient peak occupancy.

Average length of stay

- A further consequence of the ED recording differences is the non-inclusion of the ED time in the overall LOS. This differs from the NZ standard, leading to a slightly lower recorded LOS at CDHB than other DHBs. Taking non-day-case adult medical and surgical patients we estimate this effect to be of the order of 0.1 to 0.2 days per patient with an overnight stay. CDHB still has a low LOS compared to other tertiary/large DHBs even with this adjustment, but by not as large a margin as otherwise is shown.

Consequences for demand modelling

- Based on the data seen the Panel would not anticipate adjusting the bed demand curve for potential additional bed day savings through admission avoidance or length of stay reductions
- This is not to say that we do not expect the organisation to continue making improvements and efficiency gains; they have demonstrated their effectiveness at doing this. Rather we would anticipate these potential gains offsetting the likely increased complexity of patients expected over the next ten years as medical technology advances, and increased referrals come from feeder DHBs.

Commentary on demand modelling

Demand modelling and capacity

- The key to the inpatient bed capacity is the rate at which old beds are closed. While 317 new beds are opening in 2019 many are proposed to close such that only 31 net beds are gained. The current state of the Riverside and Parkside wards are discussed on page 30, while the earthquake remedial work needed is shown in Appendix C. There is clear risk in maintaining those beds in their current configuration, to which one is offsetting the cost of the new builds
- The demand modelling appears reasonable – with ~10,000 new people arriving in Canterbury each year, and associated ageing, growing at 1.5 beds /1000 population is of the order expected
- While EY tends to more directly model variation over the year in its modelling, we are comfortable with the methodology used and its ability to fairly project likely bed requirements based on current operating parameters given the size of the units involved
- The modelled 'hospital full' days (for adult medical and surgical services) give a clearer view of being overfull than is possible with averaged 85% occupancy estimates. For example the peak shortage of 23 beds in 2021/22 in the current IBU translates to 74 'hospital full' days – or most of winter. Significant risks to patients occur, and inefficiencies in operation once a hospital is overfull.
- Population projections have been volatile in the past, but appear to have stabilised over the past three years. The 2018 Census will be an important stake in the ground in confirming or otherwise the current estimates. Its results, and the new projections based on these, will be available in the next 12 months during the detailed planning period. The new figures should be used to update the demand model, and timings adjusted as a result
- In general we would prefer the hospital to be able to operate with more 'freeboard', rather than consistently running just at or behind the suggested demand total. There is significant upside risk of demand being higher, either through population shifts, influenza or other infectious disease outbreaks, or other unforeseen circumstances. Each 'hospital-full' day creates downstream operational chaotic effects, and can be deleterious to patient care
- The downside risk of having some spare capacity appears low. There is an argument about having 'wasted' money on unused capacity. However in our experience it can actually allow more efficient hospital operation, with more patients on home wards getting more focused care. This is generally safer for the patient, being under the care of nurses more experienced in the conditions their patients have. Also it often means a reduced length of stay – in our experience around a quarter of a day is added to the stay of a patient not on a home ward of the doctor they are under. Minimising these outliers can have a powerful effect on hospital efficiency, patient safety, and staff and patient satisfaction.

Patient management practices and clinical assessment of the site

Integrated care

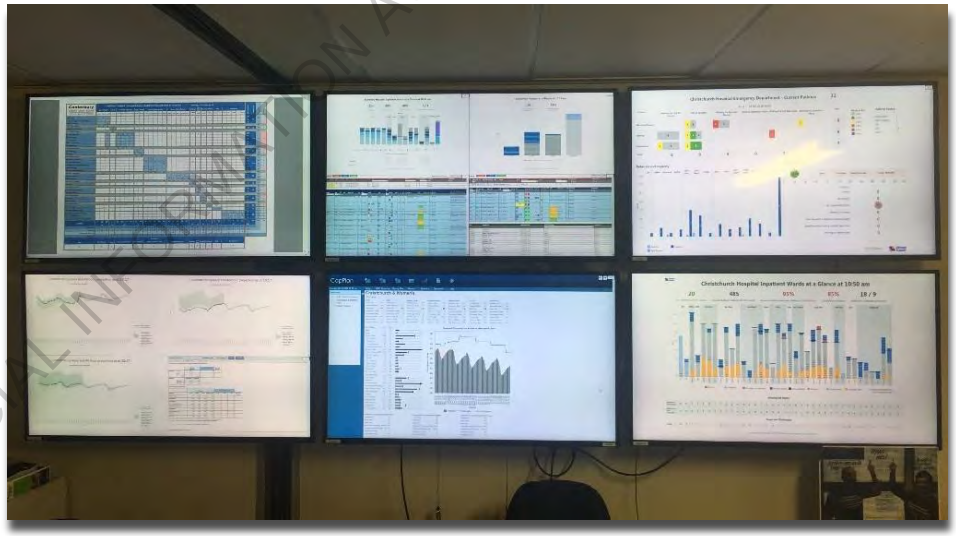
- CDHB's efforts to improve health outcomes through a whole-of-system approach are well described elsewhere (https://www.cdhb.health.nz/What-We-Do/Pages/default.aspx; Timmins N & Ham C. King's Fund 2013)
- They arose, in part, from the realisation as early as 2006 that the health services plan was unsustainable with projected increases in population, admissions, hospital bed requirements and waiting times
- This occurred in the setting of well organised general practice in the district with simultaneous education programs and service development
- A collaborative approach, engaging many staff, was used to define the strategic goals of the health services of the region, and were illustrated in the pictogram shown. This has since been widely published and is visible across the CDHB facilities
- Programs and events such as 'Xceler8', 'Showcase', 'Particip8' and 'Copllabor8' engaged thousands of staff in service improvement, leadership and system integration
- Strategic goals of the Canterbury Clinical Network are:
  - People take greater responsibility for their own health
  - People stay well in their homes and communities
  - People receive timely and appropriate complex care
  - One health system, one budget
  - It's about people
  - Focus on leadership
  - Whole of system approach
- Key messages were that there was one system and one budget, and that across Canterbury patients should receive the right care, in the right place, at the right time by the right person
- The Earthquakes of 2010-2011 provided additional impetus for change
- The 'transformation' program over the last 12 years has led to:
  - HealthPathways (450 evidence-based pathways for care of specific conditions)
  - HealthInfo (public information source)
  - The Acute Demand Management System
  - Community Rehabilitation Enablement and Support Team (CREST)
  - Falls management
  - Medication management
  - 24-hour community urgent care centre
  - Electronic request management system for GPs
  - Electronic shared care record (eSCRV)

Unplanned patient flow, models of care and operations management

- Christchurch Hospital is second largest tertiary hospital in NZ, the largest trauma referral centre in NZ and receives inter-district transfers from throughout the South Island
- The ED at Christchurch Hospital receives approximately 101,000 presentations each year, comprising both adults and children, with an admission rate of 43%
- It was stated that the rate of ED presentations per 1,000 population is the lowest in NZ. This is attributed to the integrated care pathways that CDHB facilities with providers in the community. Upwards of 450 care pathways help treat patients in the community and prevent ED presentations and hospital admissions
- There are approximately 120 acute unplanned admissions via the ED during each 24 hour period, of which 30 (25% of admissions) are admitted to the 10 bed Emergency Department Observation Ward. This is a common model of care in Australasia and is a safe and efficient way of managing patients requiring short periods of admission for treatment or observation (e.g. minor closed head injury; self-poisoning; mobilisation of frail patients; migraineurs etc.)
- Approximately 40-60 patients are admitted to the 36-bed Acute Medical Assessment Unit (AMAU) each 24 hours. The majority are seen and assessed in the ED prior to referral to the AMAU, but up to 20% of patients admitted to the AMAU are referred directly from the community
- The AMAU has dedicated medical and nursing staff. Senior Medical Officers are present during the day and in the evenings as required. Approximately half the AMAU patient cohort is discharged home, while the other half are referred to other inpatient units for ongoing care at the point when it is clear that inpatient length of stay is likely to be greater than 48 hours
- There is a 12-bed Surgical Assessment Review Area (SARA) that receives acute unplanned surgical patients from the ED and the community
- The ICU comprises 21 beds but can accommodate 23 ventilated patients during times of increased demand. It was stated that the ICU is frequently near or at capacity, creating access block for patients requiring ICU admission from other hospitals, the ED or other hospital wards
- It was stated that the ICU has failed to meet demand once in the prior 6 months, with two ventilated patients needing to be transferred by air to Dunedin Hospital due to lack of capacity at Christchurch Hospital
- It was also stated that ICU and ward capacity constraints during recent increases in patient demand for inpatient services have led to the cancellation of urgent elective surgery
- There is an Acute Paediatric Assessment Unit
- The ED, AMAU, ASU and ICU will all move to purpose built areas in the ASB

Unplanned patient flow, models of care and operations management cont.

- Daily clinical, administrative and facilities management operations management is coordinated from the Office of Nursing Services
- A daily huddle is conducted at 0830 am and attended by service nursing leaders, administration coordinators and the head of facilities. It was reported that medical leaders (e.g. ED Senior Medical Officers and the Chief of Surgery) attend during times of high demand
- Real-time data is shown on dashboards showing ED demand and status, current bed capacity status and predicted discharges, predictive analytics of near future bed demand and current ward outliers for each speciality
- The hospital endeavours to manage inpatients in speciality-specific home wards. On the day of review there was a low rate of outlying patients compared to comparator hospitals
- Management of bed capacity is undertaken by nurse leaders, but it was favourably reported that medical staff are increasingly engaged to manage patient care such that bed capacity is created for predicted future demand
- As depicted in the figure to the right, the hospital manages demand, capacity and resources to a capacity of 85% bed occupancy, with resourced capacity to 92% for periods of peak occupancy. This is consistent with the peer-review literature [1, 2]



24/7 Inpatient Bed Capacity and Resource Demand – High Level

Number of Beds	Percentage Physical Space	Terminology	Capacity Type	Nursing Resource	Contingency Type
10	2%	No Utility	Space down for clinical or building reasons	Not resourced	In-house • Resource • Load spread • Risk sharing • Alternate path • Rehab push Outsource • Electives • Acute demand • Other sector Transfer-Out • IDF return • Other tertiary Defer/Decline • Wait list • Risk manage • Hold IDF
20	6%	Available Flex	Tertiary Response	Optimal	
50	7%	Peak	Accepted for admission	Rostered 'Buffer'	
460	85%	Occupied	Staying	Staffed to Occupancy	
			Discharging Today		

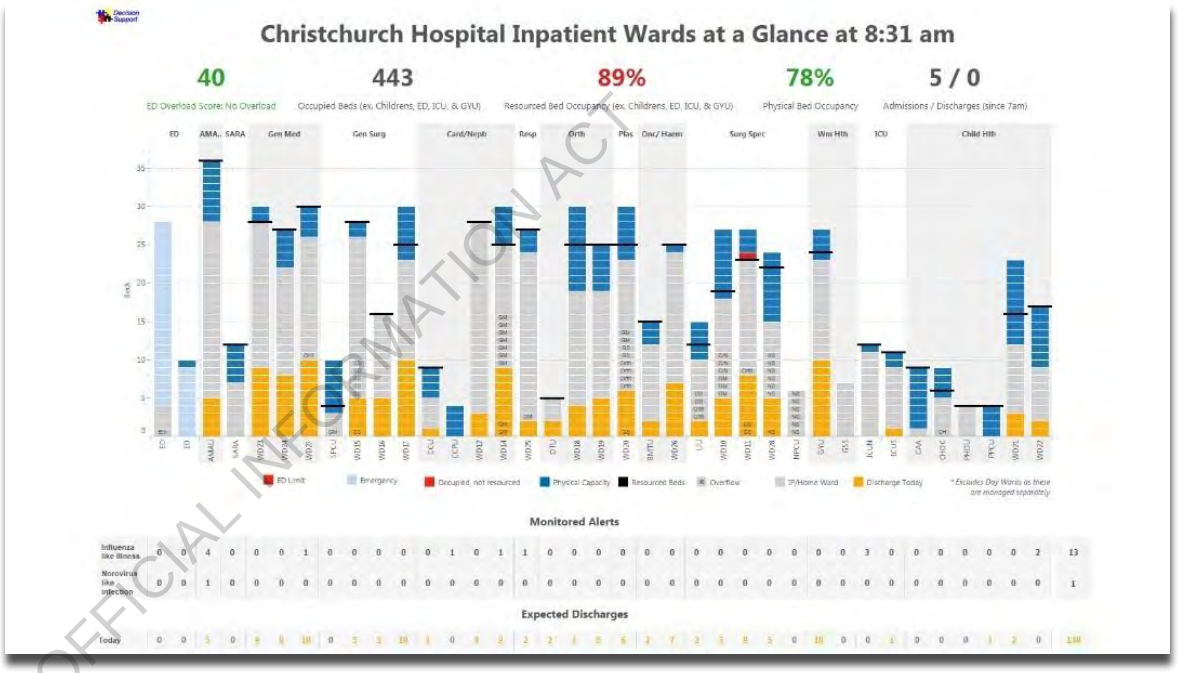
1. Bain CA, Taylor PG, McDonnell G et al Med J Aust 2010; 192
2. Boyle J, Zeitz K, Hoffman R et al. IEE J of Biomed H and Infromatics 2014; 18

Operations management cont.

- ED and nursing staff stated that patients in the ED do not experience access block (inappropriate waiting time to access an inpatient bed), with the exception of ICU
- In 2016/2017 94% of patients that presented to Christchurch Hospital ED were admitted, discharged or transferred within 6 hours, and 80% within 4 hours

- The hospital has a dedicated senior nurse-led team (Clinical Team Coordinators; CTC) – see article on right) that coordinate the house surgeon (junior) medical staff, patient safety and clinical workload in the afternoons, evenings, nights and weekends
- A specific track is kept of resistant infections, influenza and gastroenteritis infections

The Panel viewed the bed management functionality demonstrated to us as among the best we had seen. No major improvement opportunities that might affect future bed capacity were identified.



own stories

Decade milestone for Clinical Team Coordinator role

On a typical shift John Crozier and the other 11 Clinical Team Coordinators at Christchurch Hospital can easily clock up 9km, or as much as 14km, on their pedometers.

The amount of walking these experienced senior nurses do reflects their role – circulating the wards and other clinical areas, in the afternoon, nights and on weekends interacting with patients and staff. Two Clinical Team Coordinators (CTCs) work each shift, one covering medical, and the other surgical.

It's been just over 10 years since CTCs were permanently introduced in early 2008 to improve patient safety after hours. Their presence aims to ensure effective teamwork in the after-hours period, a time when hospitals have the least number of staff working and the most number of in-patients.

The work CTCs do enable staff, particularly junior resident medical officers (RMOs), to work in an environment where they are supported, have manageable workloads and their activity is prioritised so they can be with the right patient at the right time, enabling good clinical decision-making and high-quality patient care.

The role supports effective patient flow ensuring that patients are well enough to return home safely as soon as possible. This contributes to the relatively shorter length of hospital inpatient stay experienced in Canterbury.

No other DHB in New Zealand has a role with the same broad range of clinical and logistical scope.

John, who has 23 years of nursing experience, including as a Duty Nurse Manager and a background in Emergency Department nursing, says it's all about getting the medical staff to the patient at the right time, when the patient needs an assessment or intervention.

"We do a very good job at mitigating clinical risk and at identifying pinch points, predicting and anticipating areas of high demand in the hospital."

CTCs hold the pager numbers for the house officers and can contact them directly. This minimises the number of calls the house officers have to make.

"We are a floating triage system for the house officers, allowing them to do what they do best – being diagnosticians and planners of care," John says.

The busy CTC role includes facilitating daily handover meetings between the afternoon and night RMO shifts that provide a valuable overview of patient activity and acuity, as well as medical workloads across the whole hospital; coordinating duty house officer workloads; problem-solving clinical and logistical issues; and performing some clinical procedures traditionally provided by doctors.

In a recent survey, respondents were asked what they found of most value from the role. Overwhelmingly both nurses and RMOs felt that being able to ask advice and having the support of a senior nurse in the after-hours was most valuable.

Clinical Team Coordinator John Crozier

Facilities

- The Christchurch Hospital, Christchurch Women's Hospital and Laboratories were visited as detailed in Appendix A
- Key aspects of the critical structural weaknesses resulting from earthquakes in Riverside, Parkside, Clinical Services Block and Laboratories were highlighted. Summary details are given in Appendix C
- In general, the move of services around the campus as a response to earthquake damage has led to an anfractuous site with many departments appearing to be distant and dislocated from related services or departments
- A comparison to the quality, modernity and acceptability of other New Zealand public hospitals is beyond the scope of this review. However, in isolation the following features of the clinical and support infrastructure is noted:
  - Link and ward corridors are narrow with poor signage and natural light in many areas
  - Ward corridors are cluttered with equipment due to a general lack of storage on all wards. Items seen included spare hospital beds, trolleys, wheelchairs, commodes, drip stands, computer laptops on trolleys, and diagnostic equipment. Corridor clutter limited free staff and patient movement and may represent a clinical safety (emergency access) and occupational health and safety hazard
  - With the exception of the two wards recently refurbished in Parkside West (10 and 11), materials such as linoleum flooring, carpets, walls, paint and doors are in poor condition
  - Ward central nursing and clinical staff stations are small, crowded and do not have line of sight along corridors or clinical areas
  - Patient rooms throughout the hospital are small and do not meet current accepted hospital standards. Inadequate space between beds limits clinical access in some cases and compromises patient privacy and dignity. Nursing staff stated they had also experienced difficulties with bariatric patients
  - There is a paucity of single rooms, with only 20% of beds across the campus in single rooms. Many rooms have six beds. Few rooms, either single or multiple, have ensuite bathrooms. There are competing demands for single rooms for infection control, management of the critically ill and palliative care
  - There is a shortage of patient bathrooms and showers. Many wards have shared rooms with up to six beds; most do not have an adjoining bathroom or shower. It was stated that as demand to place patients into inpatient beds in a timely manner has increased, gender mixing in multi-bed rooms has become commonplace
  - Bathrooms were observed in the Parkside building that have inappropriate dimensions, non-standard doors and are located too close to food areas. The small size of toilets creates issues with access, assistance, mobility and falls and appear to be a significant cross-infection risk
  - There is a lack of meeting rooms for clinical handover, multidisciplinary meetings, teaching and training
  - While the new ASB building wards have negative pressure rooms, infectious medical and respiratory patients in Parkside will not have access to negative pressure rooms, exacerbating the lack of single rooms and further compromising infection control measure on the old wards.

Facilities 2

Laboratories

While the laboratory building is out of scope for the IBC the Panel still wanted to see the laboratory services as this had been noted as a critical clinical risk to us.

- The Canterbury Health Laboratories form a critical part of clinical service delivery and are a tertiary reference laboratory facility for the South Island, and across New Zealand for some tests
- Laboratory services are excluded from the IBC. It was stated that there is no planning at this stage for future development to allow the laboratories to achieve design standards or expand with growing clinical demand
- With the exception of anatomical pathology, laboratory services are housed opposite the hospital on the corner of Hagley Avenue and Tuam Street, connected by a pneumatic tube system
- The haematology, biochemistry and microbiology laboratories are by necessity housed in separate areas within the building, such that staff moving from one area to the other have to de-gown and re-gown as they traverse open public and areas in between (e.g. Ophthalmology Outpatients Clinic)
- All the laboratories visited appear severely space constrained, such that laboratory workflows appear limited and intersecting
- There was visible evidence of earthquake damage and remediation work within the building, including machines tied back to the walls with cargo tie-downs
- It was stated that IANZ accreditation has been barely maintained over the past few years, with a large list of remedial actions being requested
- The Anatomical Pathology laboratories occupy space in the University of Otago School of Medicine building. Again, space constraints with a narrow and winding plan appear to severely limit the workflow required to receive, log, process and analyse the specimens that are received from the hospital at the rear of the department
- There is inadequate work space for pathologists to do their microscopic diagnostic work
- Given the tight confines of all the laboratories, the workflows required and the specimens and techniques involved, a number of occupational health and safety risks were evident
- Likewise, maintaining accreditation for specimen handling and identity maintenance is difficult
- It was stated that staff recruitment and retention to positions in the department, including medical specialists, is becoming increasingly difficult, especially given the lack of clarity and direction for the future state of the service.

Laboratories are a key part of the infrastructure on any hospital, but even more so for a tertiary referral centre. The risk of a critical system failure in laboratory appears high, and the planning for a replacement of the laboratory building a matter of urgency following the current IBC.

Facilities 3

Oncology

- The Oncology building is also excluded from the IBC. It comprises outpatient clinics, chemotherapy day treatment chairs and radiation oncology
- The building is separate from Parkside West and the Christchurch Women's Hospital and remote from the rest of the hospital in the event of a medical emergency
- There are four linear accelerators for radiation oncology that are in high demand and operate near capacity. A private provider has a further two 'linacs'. The need to have one accelerator off line for servicing at intervals makes clinical service continuity a challenge with the remaining three
- Oncology and radiation oncology are endeavouring to minimise inpatient care and keep patients out of hospital as much as possible
- Thus the outpatient facilities are experiencing increasing patient demand, exacerbated by the recent introduction of a number of novel therapies
- Space constraints in the building due to increasing clinical demand means there is a lack of office, administration, multidisciplinary meeting and education spaces required for modern cancer care
- Although there is an outpatient-orientated model of care, the delivery of chemotherapy in the home has yet to be introduced

Other specialist facilities

- It was stated that services such as neurophysiology (EMG; EEG), respiratory and sleep laboratories, echocardiography, endocrine services and audiology are all situated in the Riverside building in facilities that are not fit for purpose. While there is space allocated for these services in the future the exact accommodation and decanting approach is not finalised at present
- Hyperbaric oxygen services, one of only two such services in the country, are based in the Parkside Building, and are not planned to move

The oncology building occupies a prime position in the newly re-jigged site, and had become 'land-locked'. It is reaching capacity and there is no room to expand, for example for a fifth bunker. All the linear accelerators are coming up for renewal, and will likely require outsourcing to the private provider. The future site of the cancer centre, possibly across the road near the current laboratory building, needs to be included in any site planning. It is however not as urgent as the current inpatient beds, mental health or laboratory issues.

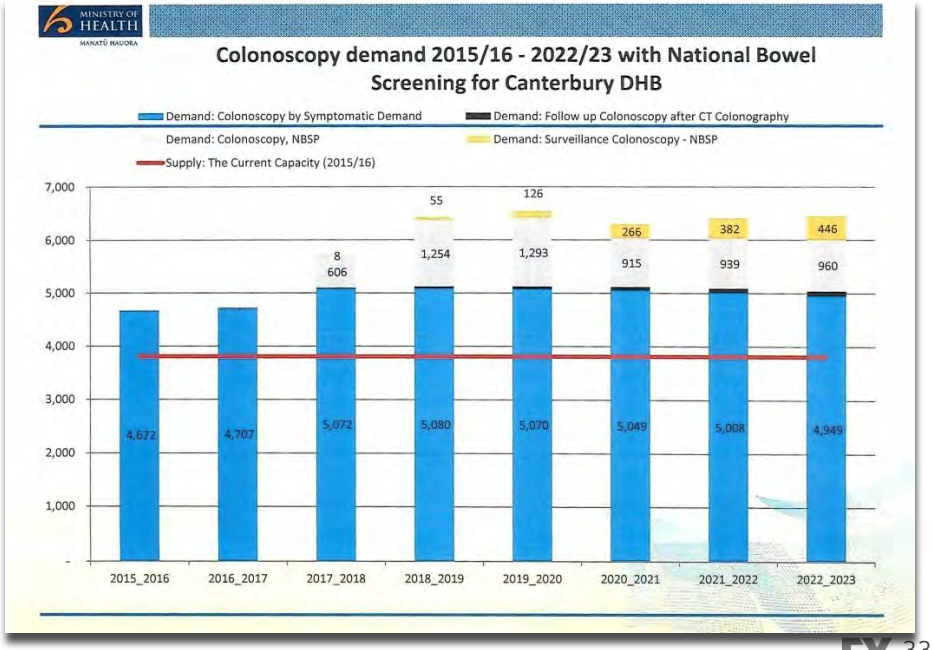
Models of care and operational challenges

Medical Cluster

- Medical admissions at Christchurch Hospital are weighted towards general medicine, rather than a number of sub-specialities
- The AMAU receives almost half of the unplanned admissions to the hospital each day, some of which are admitted directly from the community after referral by a GP rather than via the ED
- The AMAU id designed for inpatient length of stay up to 48 hours. Approximately 50% of patients are discharged home directly from the AMAU and 50% are transferred to other inpatient wards (either under general medicine or another medical specialty) as soon as it is identified that longer inpatient length of stay is required
- Many medical specialities consult to the AMAU but do not necessarily take over care, thus optimising continuity of care and a generalist approach
- The AMAU and medical cluster of specialities are experiencing increased inpatient demand associated with ageing of the population and increase in chronic disease (e.g. obesity)
- Clinicians highlight that the integration of care with clinical networks, HealthPathways, shared information and 24 hour clinics has given greater opportunity for the hospital to focus on complex care. However, they expressed concern that capacity in the community and primary care sectors to mange increasing demand may be limited in the near future
- It was also stated that the management of more patients in the community sector meant that inpatient patient cohorts were becoming more complex

Gastroenterology

- Since the earthquakes and the move of patients from wards in the Riverside building, Gastroenterology inpatients are managed on the same inpatient ward as General Surgery. The latter is moving to the new ASB upon commissioning, but it is unclear where the Gastroenterology ward will be. It was stated that it is likely to be remote from the outpatients clinic and from the day procedure area where endoscopies and colonoscopies are performed
- Gastroenterology is unable to keep up with demand for screening colonoscopy, and the introduction of the National Bowel Screening Program will exacerbate the problem, even after the implementation of CT colonography in lower risk groups and the outsourcing of much of the work to the private sector



Models of care and operational challenges

Gastroenterology Continued

- Gastroenterology is experiencing increasing inpatient demand due to a NZ-wide increase in the incidence of hepatocellular carcinoma, and changes in the models of care with inflammatory bowel disease

Surgical services

- CDHB and the Christchurch Hospital are the tertiary surgical site for the South Island of NZ and are the largest trauma centre in NZ. In addition, Christchurch Hospital performs renal transplants, but does not perform cardiac, lung or liver transplants
- As such, CDHB surgical services receive a large number of inter-district transfers
- It was stated that the surgical specialities have developed a number of innovative models of care
- Elective orthopaedic surgery (e.g. large joint replacements) and cold plastic trauma surgery (e.g. hand injuries) are performed at the Burwood Hospital Campus, along with the spinal unit, orthopaedic rehabilitation and neurological rehabilitation
- All other elective surgery (e.g. general surgery, urology) is performed at the Christchurch Hospital or is outsourced or outplaced to private providers. In the latter case, surgery may be totally outsourced (i.e. activity is purchased from a private provider), or outplace such that surgery may be performed in a private facility by CDHB staff
- It was stated that other surgical specialities did not favour separating emergency and elective surgery by moving surgery to the Burwood Hospital Campus because it would split the workforce to the point were it was inefficient and unsustainable (see box below)
- Capacity constraints in the public system has meant that up to 7 theatres-worth of elective surgery is outplaced, outsourced or done in extended hours sessions (e.g. Saturday mornings). While CDHB has been quite successful in managing the costs of the outsourcing models, they tend to be more expensive than insourcing, particularly the effective loss of the capital component of the price
- All hospitals utilise after hours and weekend theatre capacity for short-term catch-up. It is also likely that outsourcing is used – for example in periods of staff shortage. We would expect CDHB to be no different. Therefore, exactly matching theatre numbers to demand is not critical. In general though we would expect a largely insourced service to be more financially sustainable and more likely to recruit and retain staff than one reliant on outsourcing.

The Panel would urge CDHB surgical services to look again at the question of utilising Burwood for a wider range of operating. If the next four theatres were commissioned there rather than as planned in the podium to Tower 4, we could see very efficient day surgery and inpatient surgery flows being developed, free from the constraints of a congested site and acute procedure interruptions. We would suggest re-engaging with lead clinicians from Auckland and Counties Manukau who will be able to outline the benefits of the 'protected' elective surgery area. We note that for both those services the cautious start in choices of cases to be done on the elective site, which rapidly grew to the complex casemix now seen at both facilities. It took around five years for that casemix to mature and hit a critical mass such that care became cheaper per case than on the main site.

Other observations

General Observations

- It was stated that there is concern the new ASB is considered the solution to all the Christchurch Hospital site requires to modernise its facilities, remediate the damage associated with the earthquakes of 2010-2011, and accommodate future demand. The reviewers were reminded that the ASB was the first part of the DBC and conceived and designed prior to the earthquakes and was intended to be in place by 2016. In the intervening period the population has grown faster than expected, with projections for that to continue (pages 16-17)
- There is ongoing concern among staff involved in medical, surgical, oncology and laboratory services that the ASB will not accommodate future demands and patient expectations for all services, and that the site will remain unfit for purpose and inefficient
- Concerns were expressed about the delays in progressing the current IBC, stretching the time staff and patients were spending in at-risk non-remediated buildings
- It is clear that CDHB has high levels of clinical engagement and that there has been considerable commitment, good will and discretionary effort by staff in designing and implementing new models of care and mitigating the shortcomings created by the earthquake damage
- It was stated consistently in a number of meetings that staff having to persist in work in difficult facilities while there is a lack of clarity in future infrastructure plans beyond the opening of the ASB is causing burn-out and undermining staff confidence, morale and engagement (see page 38)
- It was stated that patients experiencing stress from the general public experience of the earthquakes through to the difficulties in getting to the hospital, wayfinding, and cramped facilities added to the staff load as they bore the load of community anger and frustration
- Staff stated that even if future infrastructure was upgraded or built in a staged manner, transparency as to the future plan would aid future clinical and workforce planning and ease some anxiety
- The lack of car parking on site, and the apparently long time until such parking would again be available was noted
- Other aspects of essential acute hospital infrastructure have not been specifically covered in the review but will need to be clearly dealt with in the final plans. This includes the kitchen (T4 Podium), patient thoroughfares, vehicle access, clean and dirty docks and service corridors to them, CSSD, gas, power, IT, etc
- In recent years there has been considerable complexity and uncertainty attempting to link interdependent earthquake repair strategies, service decant plans and masterplan options. Careful attention to decanting plans and the final end state of the site will be needed to avoid disruptive moves and unnecessary building repairs
- It was stated that it would be useful if a definitive and agreed site masterplan for CDHB was in the context of a National NZ health infrastructure plan, so that there was transparency around the decision-making process for infrastructure upgrades across the country.

Impacts on patients and staff

Patient impacts

- Clinical staff noted repeatedly concerns regarding the impact of the inadequate wards on patients as noted in the previous section. Concerns around the compromises in care required to operate in the current settings were expressed, including spaces with a lack of natural light, disorienting elderly patients etc.
- The risks to infection control were very evident. We could not fault the clinical approach to infection control across the wards visited, but were advised of the additional workload this entailed
- We looked for evidence that rates of infection were increasing, or were higher than peers. The Health Round Table Hospital-Acquired Complications Report (Jul 17-Jul 18) showed 3.1% of admitted episodes had a hospital acquired complication – similar to the peer average. This an increase from 2% in 2014, and has seen CDHB rise from the 25th percentile to the 50th over that time. From the point of view of CDHB clinicians they expect to be in top quartile, not 'average'.
- Looking specifically at healthcare associated infections, CDHB again is around the peer average at 147/10,000 episodes of care. However taking the gastrointestinal subset CDHB is around twice the peer average, running significantly higher in 7 of the 8 past quarters (see figure below)

3 - Healthcare associated infection details by diagnosis

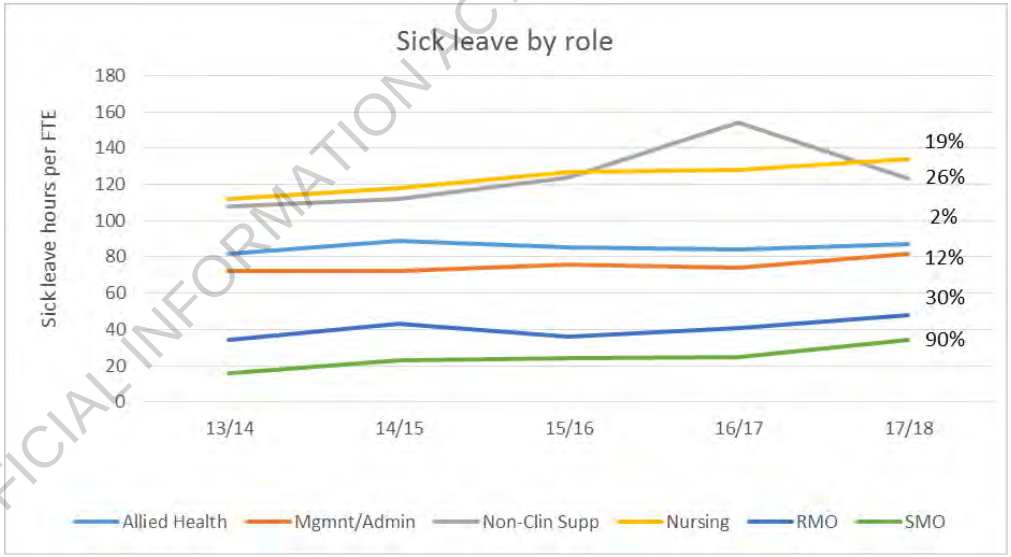
Trends at CanterburyNZ (2017 Jul - 2018 Jun)

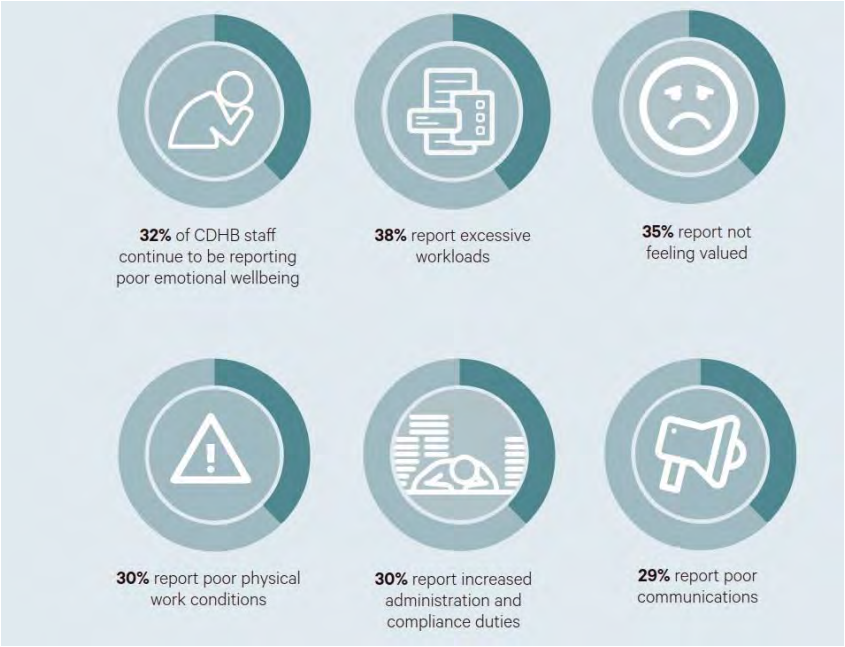
Diagnosis	2017 Jul - 2018 Jun *	Peer Group Median	Quarterly Trend *	Latest Quarter
3.1 - Urinary tract infection per 10,000 episodes	48.7	38.9	51.8 38.0 44.8 52.1 44.5 52.4 49.0 48.9	48.9
3.2 - Surgical site infection per 10,000 episodes	11.4	12.3	11.0 11.3 10.8 13.6 11.3 12.7 10.2 11.1	11.1
3.3 - Pneumonia per 10,000 episodes	59.3	46.1	52.5 52.4 38.5 51.8 74.5 58.7 51.9 51.9	51.9
3.4 - Blood stream infection per 10,000 episodes	19.2	34.6	21.1 21.2 18.1 18.6 18.5 18.0 19.0 22.2	22.2
3.5 - Multi-resistant organism per 10,000 episodes	8.1	7.9	10.7 9.3 4.9 8.3 8.4 10.0 8.8 5.1	5.1
3.6 - Infection associated with prosthetic/implantable devices per 10,000 episodes	13.2	7.4	16.7 16.2 20.5 15.6 13.0 11.7 9.9 16.2	16.2
3.7 - Gastrointestinal infections per 10,000 episodes	8.4	6.9	5.8 6.6 6.2 13.6 14.3 6.3 5.4 7.1	7.1
3.8 - Central line and peripheral line associated bloodstream infection per 10,000 episodes	5.6	7.8	6.7 5.5 4.9 8.8 7.3 5.6 6.1 4.0	4.0

2016 Jul - Sep 2016 Oct - Dec 2017 Jan - Mar 2017 Apr - Jun 2017 Jul - Sep 2017 Oct - Dec 2018 Jan - Mar 2018 Apr - Jun

Staff impacts

- As noted above, a persistent theme through clinical staff engagements was staff having to carry out additional work to manage in sub-standard facilities. This, plus the added stress of working in damaged buildings with unresolved earthquake risks, combined with a lack of clarity in future infrastructure plans beyond the opening of the ASB, is causing burnout and undermining staff confidence, morale and engagement
- Increasing rates of sick leave (see Figure to the right) are apparent across the various staff roles. The highest sick leave takers are nurses and non-clinical staff at over 120 hours per person per year (~15 days). This was noted to equate to the equivalent of 110 nursing FTE. The largest proportional increases were seen in senior medical staff, albeit off a smaller base. CDHB had the second highest sick leave rate of all DHBs in 2017/18
- Difficulties with recruitment and retention of staff were noted by the CE. He felt that the greater workforce frustration with ongoing uncertainty was partly due to people feeling their extraordinary discretionary effort in adverse circumstances had not been reciprocated with certainty about the future
- A specific issue related to working in construction zones. Much of the strengthening work requires concrete drilling; loud and unpleasant. Times of 'down tools' are required each hour to allow clinical staff to talk with patients, listen through stethoscopes etc.
- The staff survey carried out in 2016 (CDHB Staff Wellbeing: Research Report, April 2017) noted a reduction in staff morale since the prior surveys in 2012 and 2014. Around a third of staff reported excessive workloads, poor physical work conditions and poor emotional wellbeing (see Figure on right)
- 19% of staff (~2000) were still dealing with earthquake-related damage and insurance/EQC claims in their personal lives; a major additional stressor





Risks, opportunities and next steps identified

Risks and next steps

Risks

Significant risks relating to facilities remain on the Christchurch Hospital site.

Risks to patients and staff have been detailed in this report. The governance risk lies with DHB management and ultimately the Board. The Board has a duty of care to provide safe buildings for patients and staff, and if buildings are not safe to remedy them as quickly as is feasible. Seven years after the earthquakes there are still earthquake prone risks across the campus (e.g. as noted in Appendix C).

The Minister of Health through the Ministry of Health is responsible for ensuring that DHBs carry out their duties. The risk carried by the Canterbury DHB Board is equally carried by the Minister and MOH.

The Board cannot demand a faster solution to the problem than is possible physically to do. However, looking at the 2025 finish of the current IBC it does seem a long way from 2011.

Opportunities and next steps identified

The IBC is a strong step towards ameliorating many of the risks identified. We believe that progress on additional ward space – Tower 3 and Tower 4- should proceed as soon as possible. We would prefer them to be commissioned sooner than the currently proposed 2023 and 2025 dates, subject to construction logistics.

We considered whether it would be possible to speed the process by disaggregating the IBC and dealing with each part separately. This would be possible with Tower 3, as it has its own space defined and has few dependencies. Otherwise, given the inter-dependencies between the buildings, and the careful decanting and staging required, we did not see an easy way to further separate the components. Maybe this is not a problem if the IBC is able to be swiftly expedited from hereon.

In an ideal world the Panel would like to see the residual 112 beds in Parkside included in the Tower 4/Podium build, to have all inpatient spaces upgraded to a contemporary standard by at the latest 2025. If this is not possible then their priority should be tested in the national asset planning process, along with the laboratory, mental health, oncology, and car-parking issues. These latter issues would benefit from clearer staging / prioritisation /timeframes through perhaps a Programme Business Case framework.

Appendix A
Stakeholder consultation and site visit

List of stakeholders interviewed

Interviewee list			
Name	Position title		Date consulted
Mhairi McHugh	Ministry of Health		24 September 2018
Tony Lloyd	Ministry of Health		1 October 2018
Annabel Frazier	Destravis Group Regional Director NZ – Health planner		1 October 2018
Bruce Wattie	PWC – Business Case Director		4 October 2018
Bryan Spinks	Director Proj-X - Project Manager		9 October 2018
Canterbury DHB			
David Meates	CEO		26 September 2018
Carolyn Gullery	Manager Planning and Funding		26 September 2018
Dr Greg Hamilton	Planning and Funding		26 September 2018
Simon Berry	Health analyst		27 September 2018
Site Visit			2 - 4 October 2018
Sue Nightingale	Chief Medical Officer	Angela Mills	FDP Programme Manager
Mary Gordon	Chief Nurse	Andy Savin	FDP Project Manager
Pauline Clark	GM CHCH Campus	Brad Cabell	Director of Property & Construction
Heather Gray	Director of Nursing CHCH Campus		
Nicky Topp	Nursing Director Patient Flow	Keith Wright	Programme Director Surgical Alliance
Helen Little	Interim Exec Director of Allied Health	Dr Greg Robertson	Chief of Surgery
Dr David Richards	Clinical Director Emergency	Nicky Graham	Nursing Director Surgical Services

List of stakeholders interviewed

Interviewee list			
Site Visit cont			2 - 4 October 2018
Anne Esson	Nurse Manager Emergency	Kirsten Beynon	General Manager Canterbury Health Laboratories
Dr Alan Pithie	Acting Chief of Medicine	Dr Michael Burt	Interim Clinical Director of Gastroenterology
Mark Crawford	Nursing Director Medical Services	Rob Hallinan	Service Manager Gastroenterology
Dr David Gibbs	Clinical Director Oncology		
Debbie Hamilton	Nursing Director Oncology Services		

Site visits Christchurch Hospital

Tuesday October 2 2018	Wednesday October 3 2018	Thursday October 4 2018 (Dr Frank Daly)
▶ Parkside Lower ground level	▶ Oncology Building	▶ Parkside Lower ground level hospital operations huddle Emergency Department
▶ Link bridges	▶ Canterbury Health Laboratories Hagley Avenue	
▶ Clinical Services Block	▶ Blood Test Centre	
▶ Riverside All levels Detailed review Ward 28 (Neurosurgery)	▶ Anatomical Pathology University of Otago School of Medicine Building	
▶ Parkside East All levels Detailed review ward 10		
▶ Parkside West All levels		
▶ Christchurch Women's Hospital Ground level		

Appendix B – bed and theatre numbers

Bed numbers proposed

(based on Proj-X v 7 20 Apr 2018, tables 4 and 5 of IBC)

ADULT BED CAPACITY TOTAL ON & SS DEMAND		F2017	F2018	F2019	F2020	F2021	F2022	F2023	F2024	F2025	F2026	F2027	F2028	F2029	F2030	F2031
RS-W	Inpatient	80	80	Vacate	Refurb	Workspace										
RS-E	Inpatient	102	102	Vacate	Refurb	Workspace										
Riverside		182	182	0	0	0	0	0	0	0	0	0	0	0	0	0
CSB-W		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CSB-E		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CSB		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PS EAST (PS-A-N)	Inpatient	57	57	44	44	44	44	Close								
PS EAST (PS-A-S)	Inpatient	60	60	44	44	44	44	Close								
PS AMAU / Ex-ICU	Short Stay	36	36	Vacate	Refurb	28	28	28	28	0	0	0	0	0	0	0
PS EAST (PS-B)	Inpatient	10	10		-	-	-	-	-	-	-	-	-	-	-	-
PS WEST (PS-C-N)	Inpatient	58	58	44	44	44	44	44	44	0	0	0	0	0	0	0
PS WEST (PS-C-S)	Inpatient	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
PS WEST (PS-D-N)	Inpatient	9	9	9	9	9	9	9	9	T4						
PS WEST (PS-D-S)	Inpatient	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
Parkside		342	342	253	253	281	281	193	193	112	112	112	112	112	112	112
Podium - AMAU	Short Stay			40	40	40	40	40	40	40	40	40	40	40	40	40
Tower 1	Inpatient	-	-	128	128	128	128	128	128	128	128	128	128	128	128	128
Tower 2	Inpatient	-	-	149	149	149	149	149	149	149	149	149	149	149	149	149
Tower 3	Inpatient	-	-	-	-			160	160	160	160	160	160	160	160	160
ASB		0	0	317	317	317	317	477	477	477	477	477	477	477	477	477
Central podium		-	-	-	-	-	-	-		Consider short stay capacity						
Central T4	Inpatient	-	-	-	-	-	-	-		160	160	160	160	160	160	160
PodiumExpansion		-	-	-	-	-	-	-	-	-		-				
Central T5	Inpatient	-	-	-												
Central		0	0	0	0	0	0	0	0	160	160	160	160	160	160	160
CWH		15	15													
CWH		15	15	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL CAPACITY		539	539	570	570	598	598	670	670	749	749	749	749	749	749	749
TOTAL ON & SS DEMAND		518	546	565	584	602	621	639	657	676	698	720	743	763	785	807
Difference		21	-7	5	-14	-4	-23	31	13	73	51	29	6	-14	-36	-58

Theatre numbers proposed

(Proj-X v 7 20 Apr 2018)

ChCH Theatre CAPACITY TOTAL ON & SS DEMAND		F2017	F2018	F2019	F2020	F2021	F2022	F2023	F2024	F2025	F2026	F2027	F2028	F2029	F2030	F2031
RS-E	ocedure Rooms	NA	NA	Vacate	Refurb	Workspace										
Riverside		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CSB-E	ocedure Rooms	4	4	4	4	4	4	4	4	Vacate						
CSB		4	4	4	4	4	4	4	4	0	0	0	0	0	0	0
PS WEST (PS-C)	Operating The	11	11	9	9	9	9	9	9	5	5	5	5	5	5	5
PS WEST (PS-C)	Procedure Rooms			2	2	2	2	2	2	8	8	8	8	8	8	8
PS WEST (PS-D)	Cath Labs	2	2	2	2	2	2	2	2							
Parkside		13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
Podium	Operating The	-	-	12	12	12	12	12	12	12	12	12	12	12	12	12
ASB Podium Expansion	Operating Theatres												4	4	4	4
ASB		0	0	12	12	12	12	12	12	12	12	12	12	12	12	12
Central Podium	Operating The	-	-	-	-	-	-	-		4	4	4	4	4	4	4
Central Podium	Cath Labs									3	3	3	3	3	3	3
Central Podium	Procedure Roo	-	-	-	-	-	-	-		0	0	0	0	0	0	0
Central Podium Expansion	Operating Theatres															
Podium Expansion	Cath Labs															
Podium Expansion	Procedure Roo	-	-	-	-	-	-	-	-	-		-				
Central		0	0	0	0	0	0	0	0	7	7	7	7	7	7	7
CWH	Operating The	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Obstetric OR Excluded															
CWH	Procedure Rooms															
CWH		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

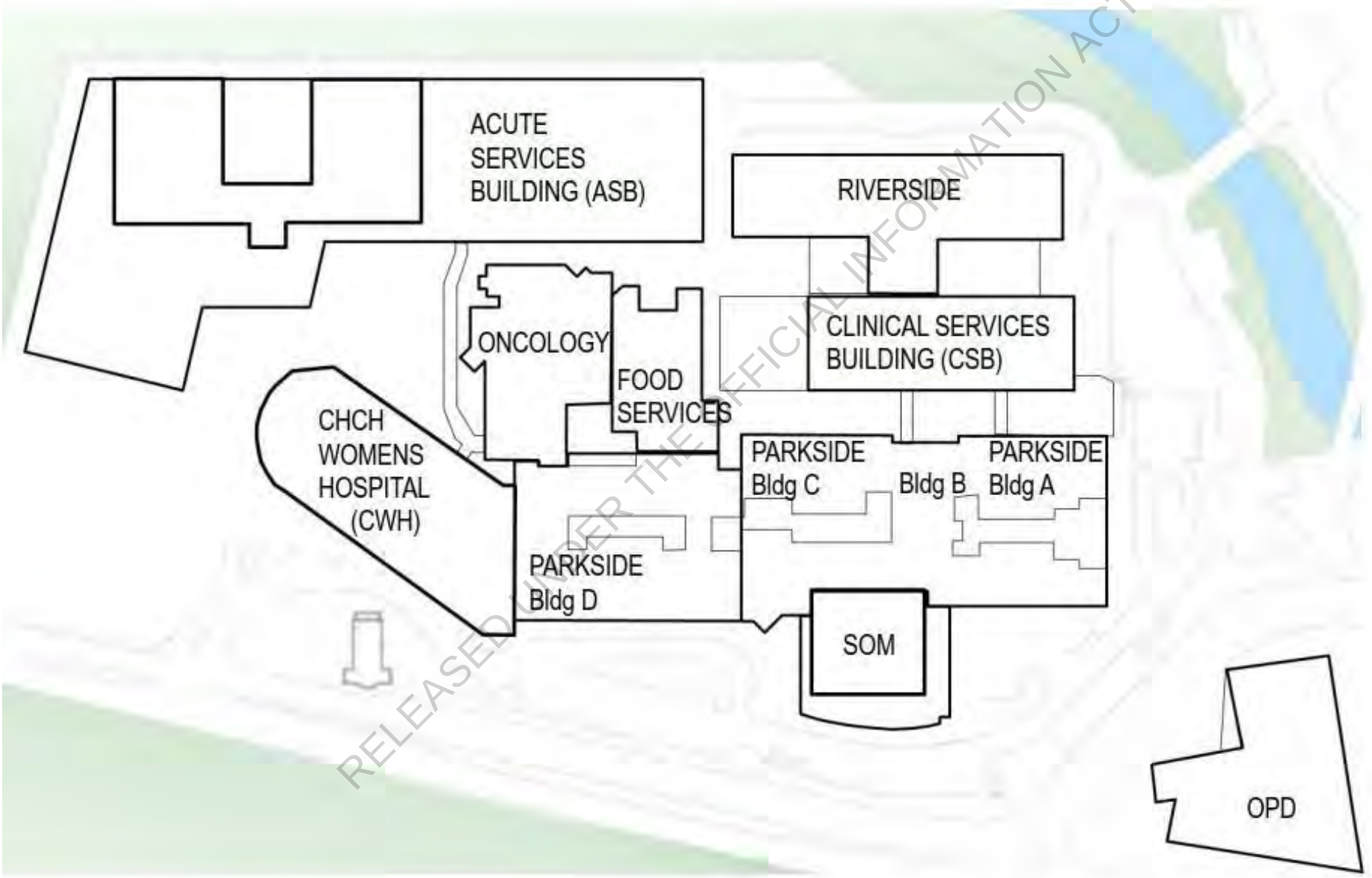
TOTAL CAPACITY	OR	16	16	26	26	26	26	26	26	26	26	26	30	30	30	30
TOTAL ON & SS DEMAND		23	23	24	24	25	26	26	27	28	28	29	29	30	31	31
Difference		-7	-7	2	2	1	0	0	-1	-2	-2	-3	1	0	-1	-1

Appendix C – Building status

Canterbury DHB. Building status and requirements. Internal document, 18 July 2018

Current site layout

(180510 HRPG.pdf presentation)



Parkside building status as at 18 July 2018

Current building status

- EQ Prone notice for Panels, Links and ED extension.

Repair and upgrade work to date:

- Heavy ceiling tiles removal completed in wards and clinical areas
- Seismic gaps replaced
- Staircase upgrades largely complete (remedial works underway)
- Crack injection to key areas around shear walls and floors
- Roof bolt repairs completed (construction defect identified during inspections)
- Basement slab repaired.

Further earthquake repairs planned but yet to be completed include:

- Replacement of slab to lower ground floor outside Blood Bank.

Key building issues for consideration:

- ED Extension – currently assessed at 30% IL4 and therefore considered Earthquake Prone. Requires installation of additional beams to the roof, additional bracing and enhanced connections and strengthening to existing structural elements
- Links - are currently assessed at 33% of IL4 and therefore considered Earthquake Prone. No strengthening work has been completed on these structures. Initial concept design has been prepared for strengthening the links to 100% IL3, which requires de-cladding and forming a steel exo-frame around the existing structure that is founded on new screw piles
- External precast concrete panel connections are <34% IL4. An upgrade scheme has been developed for improving the panel connections or replacing panels where connections cannot be improved sufficiently. All panels are considered EQ Prone at both IL4 and IL3, so downgrading the building if usage changed would not remove the compliance issue
- Reduction of interstorey drifts at level 2 and above is necessary to enable stairs to achieve 100% IL3, to reduce pounding with the School of Medicine, to enable precast panels to achieve 100% IL3 and for the building to meet Serviceability Limit State 2 levels of performance. The concept scheme developed to add additional shear walls involves the introduction of new structural walls that cut across approximately eight existing ward corridors, and affect to a lesser extent approximately another five clinical areas. Achieving the desired level of seismic performance may therefore impact on the functionality of a large number of ward environments.

Upgrade and strengthening recommendations

HCG was asked in June 2014 to provide a priority order of remaining works based on the effect each element has on the entire building performance. This most recent prioritisation order, dated January 2015 is set out below:

Position	Element	%DBE (IL4)	Reason
1	ED Extension	30%	Low capacity (EQ Prone) and presence of CSWs
2	Link Bridges	33%	Low capacity (EQ Prone) and no redundancy in system. Failure of a critical element could lead to failure of the bridge
3	Reduce Interstorey Drifts above Level 2	-	Reducing drifts in upper levels reduces demand on concrete columns. The performance of the upgraded stairs and panels to 100% IL3, and achieving SLS2, is dependent on the reduction in interstorey drifts
4	Precast Panels over access ways	<33%	Not enough movement capacity in connections. Failing connections could lead to panels falling out of the building
5	External canopies	36-37%	Low structural capacity, and potential failure of glazing is a life safety risk
6	Restraint at Ground Floor	-	The modelling of Parkside assumes movement is available. If the ground floor is restrained by exterior surfaces then performance of the building could alter from that analysed
7	Retaining Walls at Entry	60% IL2	Slumping behind rotated walls could affect access to building
8	Clamping Concrete Core Walls	78%	Clamping the walls improves the wall rotation limits thereby increasing the margin between Ultimate Limit State and Collapse Limit State to a minimum of 1.5[1]
9	Pounding with School of Medicine	55%	Pounding damage is likely to be localised but will increase floor accelerations
10	Strengthen Remaining Retaining Walls	60% IL2	Slumping behind rotated walls affect exterior surfaces and retaining wall would require replacement

Riverside building status as at 18 July 2018

Current building status

- EQ Prone notice for level 7 water tanks and external lift shaft wall above level 5. The proximity of Riverside West to IL4 ASB requires it to be demolished.

Repairs and Upgrade Work to Date

- Heavy ceiling tiles have been progressively removed
- CSW -2 short columns on 5th floor upgraded on Riverside Central
- Cracks in Terrazzo panels repaired on Central & East only
- Wall to LGF permanently propped
- Cracks epoxy injected to shear wall West block LGF
- Seismic joint installed in CSB lower ground floor plant room.

Key Building Issues for Consideration:

- The spandrel beams and supporting structure of the north east wall in the Level 7 Plant Room are EQ Prone. Draining the tanks will improve the capacity to >33% IL3
- The external concrete wall to the services shaft to the east of the lifts in Riverside Central are also EQ Prone. These walls need to be tied back to the primary structure to prevent collapse. These walls are still EQ prone at IL2
- Terrazzo panel durability. The building is approximately 45 years old. On an assumed 50 year design life and given the depth of concrete cover it can be expected the mesh reinforcement is nearing or potentially in the corrosion propagation phase. Destructive testing of a sample of panels has shown that the propagation phase has not been reached in the panels that were tested. Assuming that the propagation phase was to occur now, spalling could be expected to occur in 5-10 years. Testing every 5 years is required to ensure any corrosion is identified and suitable repair or management strategies are implemented
- Terrazzo panel delamination. Some panels on Riverside West have been found to have delaminated from the in-situ cast wall and it is expected that Riverside Central and East may also have similarly delaminated panels. The delaminated panels are held on by galvanised "top hat" fixings. These fixings have been assessed at 100% of IL3 so the delamination is not in itself a seismic risk. However the potential for moisture and air to now reach the fixings means there is an increased corrosion risk. Structurally significant corrosion would not be expected for 10-15 years
- Basement cracks corrosion risk: No investigation has been done to date but based on age and similarity between the buildings it is likely to be similar to the CSB. This issue is discussed in the CSB section of this report
- Pounding with CSB: This is discussed in more detail under the CSB section of this report
- Pounding between East/Central/West has been resolved by Non Linear Time History Analysis (NLTHA). The analysis concluded that the structures would move in phase with each other, and that pounding would not start to occur until after the buildings had reached their Ultimate Limit State. The pounding would likely accelerate the degrading of the structures but would not cause it
- Lost strength - strain hardening has reduced future ability of reinforcing to resist load cycles. See the CSB section for this report for a more detailed discussion
- Riverside West CSWs remain – shear walls and column failure
- Riverside East CSWs remain – shear walls and column failure
- Riverside East LG Floor walls (Bone Marrow) not assessed for EQ damage due to infection control concerns, however Holmes Consulting Group has recommended these are inspected and epoxy injected to reinstate stiffness as soon as reasonably possible.

The key dependencies and links for the Riverside building are:

- CSB cannot achieve 100% IL3 while Central remains in place (pounding / collapse risk)
- Central provides stair and lift access to CSB; Central cannot be demolished until alternative vertical circulation for CSB is constructed. The Parkside links upgrade is seen as a potential solution to this by providing additional lift capacity. There is also a possibility that Riverside West cannot be demolished without also closing Riverside Central, which would mean closing the entire Riverside building and 2nd floor of CSB during that initial demolition stage. A Parkside link lift option would not assist with this scenario
- ASB extension is dependent on demolition of West
- Upgrade of Parkside is dependent on use of Riverside as decanting space

Upgrade and Strengthening Recommendations

- Minimal repairs, no structural upgrades planned prior to demolition, unless the building is to be kept for longer than 7.5 years in which case the EQ Prone elements must be upgraded. Note: downgrading the building to IL2 will not remove this upgrade requirement as the lift shaft external wall will still be <34% IL2
- Ongoing monitoring and investigation of risks and issues.

Clinical Services Building status as at 18 July 2018

Current building status

- No EQ Prone notice, but 3rd floor plant room columns are <33% IL3
- The seismic capacity of the CSB is currently assessed at 35% IL3. One CSW has been identified in the columns beneath the 3rd floor plant room.

Repairs and Upgrade Work to Date

- Relocation of CHOC to lower ground floor, which included localised structural upgrades in line with the 100% IL3 upgrade strategy
- Heavy ceiling tile replacement completed. Seismic gap replacement works ongoing
- Installation of a seismic gap between CSB and the LGF plant room of Riverside
- Crack repairs to terrazzo façade panels
- Minimal crack injections to concrete walls and floors in the basement area pending further engineering advice .

Key building issues for consideration:

- Plant room support columns <34% IL3: Currently this governs the capacity of the building. A strengthening scheme has been developed that extends the plant room floor to the southern wall of the building, and extending the north-south shear wall up to the underside of the plant room. The first stage of these works will occur in conjunction with the upgrade of the new Spect CT and associated layout changes in the Nuclear Medicine area later in 2018. This full solution to the CSW relies on the extension of the central transverse shear wall being extended up through the building
- Pounding with Riverside Central: Pounding between CSB and Riverside Central is expected to commence at approximately 40-50% IL3. At current levels of seismic performance this pounding would not occur until after the buildings had reached their Ultimate Limit State, and therefore pounding does not govern their current performance. The pounding, however, will increase the rate at which the capacity of the structures degrade. Proposed strengthening of CSB does not reduce the drifts sufficiently to avoid pounding with Riverside, therefore pounding will impact on the ability of the CSB to achieve 100% IL3

The proposed demolition of Riverside would resolve the pounding issue, however should a 100% IL3 level of performance be required prior to the demolition of Riverside Central it would require solutions such as:

- Tying the two structures together
- Cutting back CSB to increase the seismic gap
- Cutting back Riverside Central to increase the seismic gap
- Additional strengthening to both structures to reduce drifts
- Partial demolition of upper floors of Riverside Central to the same level as CSB to reduce drifts

The feasibility (technical and economic) of these options need further exploration if a decision is taken to retain Riverside Central longer than indicated in the facilities redevelopment business case.

- Strain hardening: Based on testing of reinforcing bars in Riverside it is likely that strain hardening has occurred in the following locations:
  - The central north-south shear wall
  - The floor diaphragm adjacent the north-south shear wall
  - The columns below the third floor plant room
  - The north and south piers above the second floor
  - Basement tunnel walls
- As is the case with Riverside, fracturing of the bars would lead to a loss of strength to the building therefore reinstatement of this capacity is required. The proposed 100% IL3 scheme addresses this issue above the basement level through the introduction of new structural elements into the building or increasing the size of existing elements. Similar to the work done in CHOC, this work is invasive, disruptive and noisy. It will place some limits on the future functionality of the building, particularly where new wall elements are required or walls are increased in thickness.

Clinical Services Building status as at 18 July 2018 cont.

- Terrazzo panel durability: The building is over 40 years into a 50 year design life and even without damage to panels, it can be expected the mesh reinforcement to be nearing or potentially in the corrosion propagation phase. Destructive testing or a sample of panels on Riverside, which has the same cladding system, has shown that the propagation phase has not been reached. Assuming that propagation phase was to occur now spalling could be expected to occur in 5-10 years. Based on the recommendations for Riverside testing every 5 years is required to ensure any corrosion is identified and suitable repair or management strategies are implemented
- Basement cracks and corrosion risk: there are numerous cracks in various elements throughout the general basement area. The potential for ingress of water and air presents a risk of increased corrosion. On-site testing has shown that the level of concrete cover in the most favourable locations for corrosion is greater than specified in the original designs, meaning there is a moderate risk of carbonation induced corrosion. This means there is potential risk of reinforcement corrosion in 5 to 10 years and potentially sooner if any areas are in significantly worse condition than the test site. Should carbonation induced corrosion occur the expected rate of corrosion would be sufficiently low that significant loss of strength would not occur for at least 10 – 20 years. Chloride induced corrosion is significantly more rapid and would require earlier intervention, however no evidence has been identified that chloride induced corrosion would occur before carbonation induced corrosion

Upgrade and Strengthening Recommendations

- A 100% IL3 upgrade scheme has been developed for CSB. This largely involves:
- Shear wall modifications and extensions, most notably the requirement to extend the central transverse shear wall up through the building (note: some of this work has already been undertaken as part of the CHOC redevelopment)
- Wrapping of columns
- Extending plant room floor and improving 3rd floor roof bracing
- Crack repairs.

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Canterbury
District Health Board
Te Poari Hauora ō Waitaha

14th September 2020

Dear Peter,

As per the accepted CDHB facilities redevelopment process, CLG has reviewed the Tower 3 Business Case, DBC Addendum (MOH-T3 case) and Christchurch Campus Compliance Work Business Case.

It should be noted the review is not exhaustive given the very short time-frames.

We acknowledge the urgent need to secure the next redevelopment steps for the Christchurch Campus and associated funding for at least $154M plus $80M for compliance work [previously lodged with CIC by the Board].

The MOH-T3 Case

We are greatly concerned that the MOH-T3 Case describes a new option (1C) proposed without CDHB consultation. This option is described as CDHB 'preferred' – this is entirely inappropriate both in that the CDHB's views have not been sought, and more importantly could in no way be described as preferred by this organisation.

We note this Addendum document was developed by Destravis as agents of the Ministry of Health and as such it should not be seen as a CDHB document. The associated labelling should therefore indicate the Ministry of Health's commissioning and ownership.

The option in more detail includes

1. Full continuation of Parkside facility as the key strategy -
    a. With beds and theatres remaining completely clinically unaltered for at least 10-15 years and beds fully occupied [>300 patients]. This is completely unacceptable for the patient cohort involved.
    b. It inappropriately proposes housing 6 rather than 4 *medical* patients in ward rooms barely suitable the current surgical group– the lack of mobilisation and care space will almost certainly drive an increased length of stay (LOS).
    c. Proposes housing higher acuity patients in the newer Hagley facilities to mitigate this space issue – quite aside from the operational implausibility of this notion, it suggests the author has misunderstood both how specialty patients are managed and that the space issues are not about high acuity per se – they are about the avoidance of issues like sarcopenia ['pyjama paralysis' etc] in virtually all this medical patient group.
    d. Provides just 7% basic bathroom ensuite room capacity [ie toilet/shower] – this is completely inadequate especially with this patient group and more pertinent in the context of our current pandemic. It should be noted that MoH were deeply concerned that we reduced single rooms with ensuites in Hagley from 100% to 50%. Effectively this means that 11 patients share each shower and there are 7 patients per shared toilet in Parkside for 10-15 years [noting 4 patients per room would assist these ratios].

2. That theatre capacity constraints will be addressed by resuming outsourcing activity – a concerning strategy in the face of pressure to reduce our operational deficit. In addition, it imposes significant logistic limitations on case-mix and efficient use of staff. Outsourcing of the case-mix envisaged should be a temporary response to inadequate amenity or resource; not a strategy for a redevelopment proposal.
3. The Critical Success Factor Analysis used to justify the option – again without CDHB input – seems arbitrary and the explanatory notes suggest the tool to be poorly informed 'guesstimates' at best.
   By way of example when comparing option 1B with 1C -
   a. Weighting of Patient experience and quality of care 26% to 15% - how is this possibly justified?
   b. Population outcomes 21% to 35% - based on a capacity metric that has no clear science
   c. Compliance is adjusted to 0% - presumably this is based on the statutory work being in a separate business case. In reality there is no net change in overall CDHB capital.
   d. So, item 'c' above ultimately re-adjusts the matrix (below) to an incredible **50%** fiscal weighting
   e. Affordability, is also now heavily weighted with a five-fold increase in capital over operational weighting. In the context of deficit reduction this is a perplexing approach.

Critical Success Factors	Former Weight	New Weight	Subcategory	Former Weight	New Weight	Option 1b (scores as per DBC*)	Option 1c
CSF1: Compliance and Safety	23%	0%	Statutory Compliance	18%	0%	0	0
			Other Compliance	5%	0%	0	0
CSF 2: Patient experience and quality of care	26%	15%	Patient / Staff experience	7.5%	2.5%	2	1
			Quality of Care	7.5%	2.5%	3	2
			Minimised Disruption	10%	10%	2	2.5
CSF3: Population outcomes	21%	35%	Capacity	11%	24%	2	3
			Resilience	11%	11%	2	1.5
CSF4: Value for Money	15%	15%	Economy	5%	5%	3	2
			Effectiveness	5%	5%	3	2
			Efficiency	5%	5%	3	2
CSF5: Affordability	15%	35%	Capital	5%	25%	1	3
			OPEX	10%	10%	2	1
				Total - Unweighted		23	20
				Total - Weighted		1.93	2.36

The Christchurch Campus (statutory) Compliance Work Business case

The Compliance Work funds for this appear very tight, but noting the national capital constraints and, based on advice from experts, we believe this is a pragmatic approach to a challenging series of issues.

We note comments around degrading aspects of the Parkside facility from IL4 to IL3 – while this may have been a consideration for Building 'A' based on the original masterplan – the proposal to use Parkside *in toto* for inpatient care for a more extended period would preclude this. It should be emphasised that CDHB decisions on other facilities [such as Burwood, West Coast etc] were limited to IL3 construction based on the Main Christchurch Campus being the core IL4 post-disaster facility.

It should further be noted that this is statutory compliance work only. Any *clinical* compliance work entertained for Parkside etc would be operationally prohibitive unless staged simultaneously due to decant and disruption challenges. Given that this case contains no allocation for clinical

improvements [as per Board direction], it would appear this is another opportunity missed which cannot be pragmatically recaptured at a later date.

The Ministry, and we understand CIC, was very clear that a full DBC following the initial case was not required, but latterly indicated that more than a simple Addendum was necessary with 1-2 weeks' notice. The Ministry's attempts to commission this on behalf of the CDHB have resulted in a document that completely fails to understand the challenges of the campus, the amenity and the appropriate delivery of care.

The CDHB Board has taken the position that they needed to accept the circa $150M option to urgently secure the first part of Tower 3. There was however, no directive from the Capital Investment Committee (CIC) that this was contingent on the CDHB proposing a case that imposed further limitations on redevelopment.
We would be surprised if the Board would support such a further concession and would be grateful if you could clarify their position as a matter of urgency.

Further, we ask that CIC is made aware of the deficiencies of the MOH T3 case and that we do not support assumptions underpinning option 1C when they consider the urgent funding request for Tower 3 and compliance works. We need to ensure that this does not prejudice the CDHB's position in future requests for capital in the timely redevelopment of the masterplan

Yours sincerely,

p.p. The CDHB Clinical Leaders Group

CC: Sir John Hansen, Chair, CDHB Board

Dr Sue Nightingale, CMO, CDHB

Mary Gordon, EDON and Executive Director, CDHB Facilities

+64 27 245 9595

From: Karalyn van Deursen
Sent: Friday, 20 November 2020 12:16 p.m.
To: Rob Ojala <Rob.Ojala@cdhb.health.nz>; Mark Newsome <Mark.Newsome@cdhb.health.nz>; Susan Fitzmaurice <Susan.Fitzmaurice@cdhb.health.nz>
Cc: Andrew Brant <Andrew.Brant@cdhb.health.nz>
Subject: PLEASE REVIEW BEFORE 5 today: Minister's visit - draft answers to questions from MoH facilities comms person
Importance: High

Hi all – can you please have a read through my draft answers. The areas in red need particular attention as I'm a bit vague on the detail.
Note – Kirsty was keen to get this by midday, but if we can get it to her by the end of today that would be great and allow them time to get a briefing across to the Minister's office.
kvd

Hiya

It's looking like the Minister might confirm approval of T3 to tie in with his visit next week, but the Health Report is still being finalised here & with Treasury so who knows if it will get Ministerial approval in time!

I've still got to prep some comms however for the office, can you help with the Q&A pls. Keen to ensure we're aligned & can find middle ground (hopefully!).

Can you give me a few lines on the following pls & anything else you think we should cover:

1. **How has the opening at Waipapa gone? Have all services now moved in?**

The first services moved in on Monday 16 November and all patients have been moved safely. Feedback from patients and staff on the new facility has been overwhelmingly positive. The outstanding views, abundant natural light and spacious feel have impressed everyone who has been in the building. The new helipad went live yesterday, and we are yet to receive our first patient via the helipad.

The final services are due to move in on Tuesday 24 November.

The full move schedule is here: https://www.cdhb.health.nz/wp-content/uploads/c432adac-waipapa-move-schedule.pdf

A couple of releases featuring patients who have moved to Waipapa this week are here.

https://www.cdhb.health.nz/media-release/chrildrens-day-out-at-waipapa/

https://www.cdhb.health.nz/media-release/good-deed-leads-to-new-ed/

General information about the Waipapa moves is available here: https://www.cdhb.health.nz/about-us/key-projects-and-initiatives/facilities-development-project/christchurch-hospital-waipapa/

There have been some minor teething problems with the building including air-conditioning, a lift sensor which resulted in one patient and security team member being in the lift for 50 minutes. There are no major issues, and all defects are being logged and prioritised.

2. **When will you be opening the young adults' cancer unit, services to improve emergency & children's acute care (is there a third?) Why couldn't they open now?**
All of these services are still being provided, although not from their new purpose-designed spaces. The impact of providing care for children in areas designed for adults is being constantly reviewed, with a formal post-move review scheduled to take place in six months. They can't open now as, with our deficit, we cannot afford additional staff for these areas.

   Some of the new areas – for example the dedicated children's area in ED are located away from the main ED areas and are out of the line of sight of staff in the adult areas, which is why additional staff are needed. The new ED is double the size of the old one (and has two more beds that the old ED) The additional space allows for bigger care bays and affords more privacy for patients.

3. **The DHB says it needs the funding for the fourth tower now, how serious are the risks given funding is just for T3?**

   Despite the 12 new theatres in Waipapa, our modelling indicates that by March 2021 we will once again exceed capacity and need to look at outsourcing and outplacing some surgery.

   Christchurch Hospital's Parkside theatres are rated the worst in the country: 'very poor' according to the Ministry of Health's National Asset Management Programme for DHBs. Refer to Appendix 1.

   The Parkside inpatient wards, which still have some six-bedded rooms and inadequate bathroom facilities shared by six people require urgent work to:
   - Remedy earthquake damage and strengthen the building to ensure compliance with the building code as the inpatient wards are now going to have to be used for at least another ten years and significantly, the use of Parkside is required in a post-disaster situation and has to meet IL4 requirements.
   - Clinical upgrades to ensure we can meet infection control and safe patient care standards are required.
   - Once these areas have been repaired, strengthened and remodelled to ensure they are fit for purpose, a modest refresh in terms of new paint, vinyl and curtains etc will also be required.

4. **When do you think T3 will open? (I've been told there's not a proper answer on this yet so we should fudge it?).**

   It's anticipated that the Design Phase would take two years, with around three years for Construction. If approval was granted now, it's anticipated that T3 could be ready for use in 2026 (????)

5. **Parkside has had a lot of negative media coverage, how much do current conditions impact on patient care?**

   We are acutely aware of current state of the Parkside wards. Following the move to Waipapa we are planning to move a different group of patients to this area – who will be more challenging than the existing patients, as they will be medical patients with more complex needs.

   We are looking at some modest upgrades to improve the situation (as outlined in Q3 answer above) As soon as the current cohort of patients move out, work will start on compliance works, strengthening and a clinical upgrade which will see some of the six-bedded rooms

remodelled to four-bedders with new ensuite bathrooms located where the current bed spaces 5 & 6 are located.

6. **Can a staged approach be taken to the Parkside compliance works?**

The compliance works are most urgent and at present we expect this work will start xx ?at the beginning of December 2020. Strengthening works include installing Fluid Viscous Dampers internally and externally, as well as strengthening the link corridors. This work will be staged to tie in with the essential passive fire compliance work required and the ?removal/strengthening/re-affixing? Of the pre-cast concrete panels.
Once vacated, the internal work to remodel the six bedded wards to meet modern clinical standards could also be started ??once plans are approved/and consents granted???)

At this point it's anticipated that to complete all of the works required to all blocks in Parkside could take approximately x to x months, with the most urgent works carried out first.

It's worth noting that these works will cause disruption to the other services remaining at Christchurch Hospital including xxxxxxxxx (insert list of sensitive services here)

9(2)(a)

Appendix 1 – Excerpt from The National Asset Management Programme for district health boards: Report 1: The current state assessment.

https://www.health.govt.nz/publication/national-asset-management-programme-district-health-boards-report-1-current-state-assessment

Operating theatre suites

Nearly half (15) of operating theatre suites nationwide were assessed at 11 of the 20 DHBs. These included units in Northland, Auckland, Counties Manukau, Tairāwhiti, Waikato, Lakes, Hawke's Bay, MidCentral, Capital & Coast, Nelson Marlborough and Canterbury DHBs. Canterbury DHB's Burwood was selected as the control unit due to being in a newer building.

These units perform planned and acute surgeries, except for the elective surgery centre at the Manukau SuperClinic. Over half (60 percent) of theatres reported that demand exceeds capacity. All theatres operate 8 am to 5 pm, five or six days per week, and after-hours for urgent cases. There is limited ability to increase volumes of cases within existing facilities.

Mean scores for nine design principles

For operating theatre suites, the key principles involved in poorer scores include:

- infection control issues related to suboptimal separation of patients, separation of clean and dirty workflows and the quality of surface finishes
- lack of privacy for people receiving surgery
- poorly sized and shaped spaces, especially operating rooms.

Figure 15: lists the older operating suites assessed and the control operating suite. It shows the mean overall scores on the nine design principles ranged from good to very poor, with four good, six average, four poor and one very poor. The control suite at Burwood was among those with a good score.

Figure 15: Mean scores on nine design principles for operating theatre suites

<image001.png>

<info for Kirsty 19 11 2020.docx>

Dee Mccarthy

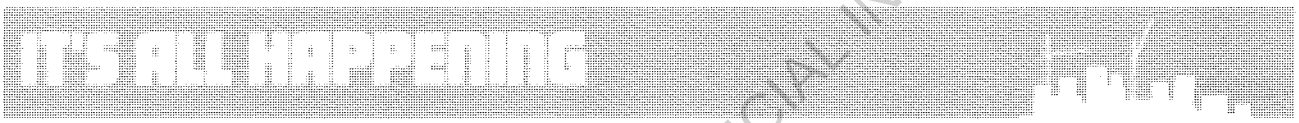
From: Rob Ojala
Sent: Thursday, 26 November 2020 12:45 PM
To: Karalyn van Deursen; Angela Mills
Subject: Re: most pics have T4 in it
Attachments: image006.png; image007.png; image008.png; image009.png; image001.png

If you send me the pdf I can do a lossless cut

From: Angela Mills <Angela.Mills@cdhb.health.nz>
Sent: Thursday, November 26, 2020 12:23:00 PM
To: Karalyn van Deursen <Karalyn.Vandeursen@cdhb.health.nz>; Rob Ojala <Rob.Ojala@cdhb.health.nz>
Subject: RE: most pics have T4 in it

Problem is I had to edit and copy from a pdf – I don't have originals, still hunting to see if can find one with only T3

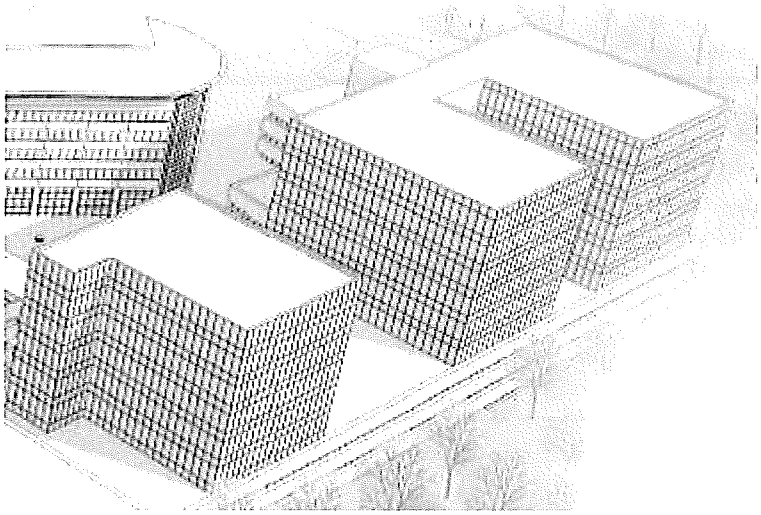
Angela Mills
Programme Manager Facilities Development Project
PH 9(2)(a) [redacted]



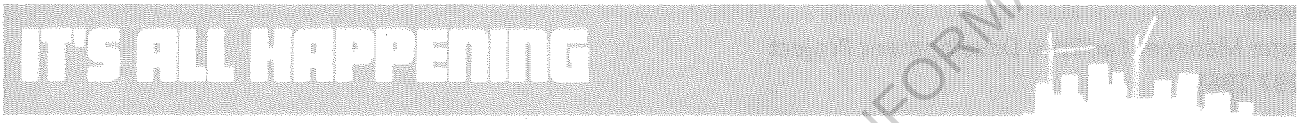
From: Karalyn van Deursen
Sent: Thursday, 26 November 2020 12:11 PM
To: Angela Mills <Angela.Mills@cdhb.health.nz>; Rob Ojala <Rob.Ojala@cdhb.health.nz>
Subject: RE: most pics have T4 in it

Thanks – can you pls send the highest res version you have of the 2nd artist's impression below, and will see if med ills can enhance it, so we have something to provide media.

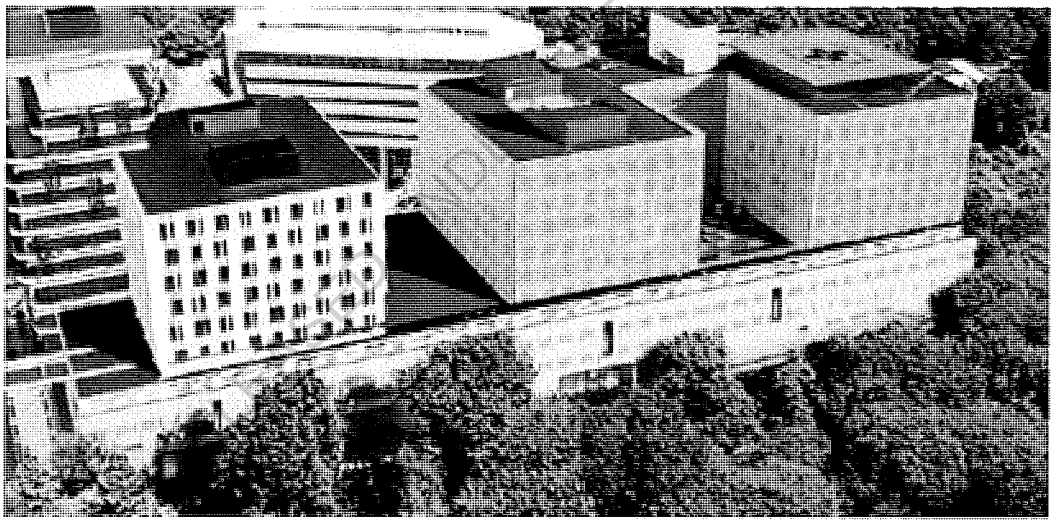
From: Angela Mills
Sent: Thursday, 26 November 2020 12:10 PM
To: Rob Ojala <Rob.Ojala@cdhb.health.nz>
Cc: Karalyn van Deursen <Karalyn.Vandeursen@cdhb.health.nz>
Subject: RE: most pics have T4 in it



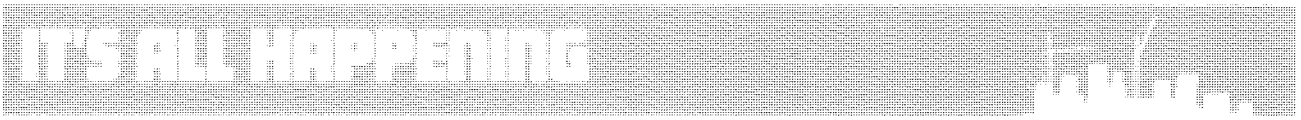
Angela Mills
Programme Manager Facilities Development Project
9(2)(a)

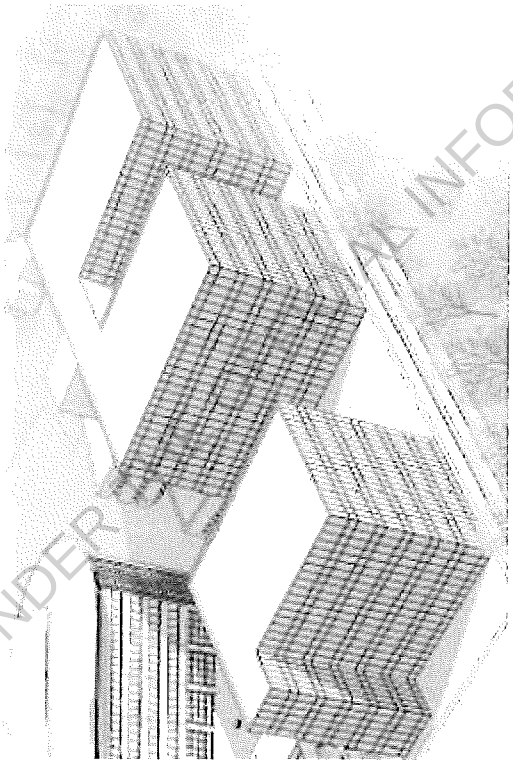


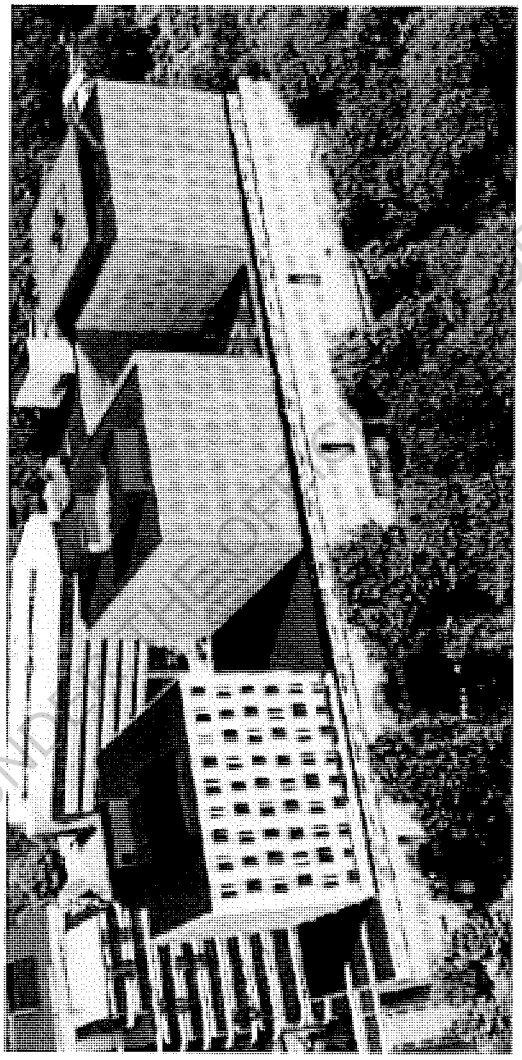
From: Angela Mills
Sent: Thursday, 26 November 2020 12:07 PM
To: Rob Ojala (Rob.Ojala@cdhb.health.nz) <Rob.Ojala@cdhb.health.nz>
Subject: most pics have T4 in it



Angela Mills
Programme Manager Facilities Development Project
9(2)(a)







[redacted]

From: Karalyn van Deursen <Karalyn.Vandeursen@cdhb.health.nz>
Date: Thursday, 26 November 2020 at 2:33 PM
To: Andrew Brant <Andrew.Brant@cdhb.health.nz>
Cc: Rob Ojala <Rob.Ojala@cdhb.health.nz>
Subject: FOR YOUR REVIEW PLS: Canterbury DHB welcomes funding for additional hospital building.docx

Here you go – final draft for review.

Just need clarification on the bed number comment

27 November 2020

Canterbury DHB welcomes funding for additional hospital building

Canterbury DHB's Acting Chief Executive, Andrew Brant, today welcomed the announcement from the Minister of Health of $154 million to fund the construction of an additional tower that will sit alongside the existing two towers that make up Waipapa, the new acute services building on the Christchurch Hospital Campus.

"We have now moved most of our acute services into Waipapa over the past couple of weeks into fabulous new facilities.

"With the older wards and other areas in Parkside having been vacated it is now possible for us to begin to address compliance work in these spaces. We will be preparing these spaces for patients moving from other parts of the campus and outsourced facilities.

"As our population grows and ages we will be doing more surgery in-house and that means we have an increasing need for more beds," Dr Brant said.

Dr Brant said it's envisaged that design work will start on Tower 3 early in the new year, and the DHB expects to have the first patients in the new building in late 2025. The new tower will have capacity for an additional 3 wards containing 32 beds each, allowing for expansion to meet projected demand. - 3 wards of 32 beds - 96 - how do we get to 160?

"It's also pleasing to have the government's in principle endorsement of the business case which covers a range of planned works that will allow us to first proceed with urgent compliance works in some of the older areas of Parkside. This work will include improvements to passive fire safety and earthquake strengthening in some wards, the old Emergency Department and Intensive Care Unit.

"Now that some staff and services have moved across to Waipapa, this work can start in Parkside over the coming weeks and while it will be noisy and disruptive at times, it's good news for staff, patients and their whānau to know that essential improvements will soon be underway.

"We expect we will need to use these buildings for at least another 10 years, and after the seismic compliance works the next phase of the Parkside redevelopment will see improvements made to the clinical environment on the wards such as changing six bedded rooms to four bedders and creating more ensuites," Dr Brant said. "This work is included in a revised business case being worked on at present," he said.

ENDS

BACK POCKET Qs and As

When will Tower 3 open?

Pending approvals, it's hoped that Tower 3 could be open in 2025.

What does a partial fit out look like?

Initially we'd open with around 60 beds and as funds allow we would fit out the remaining floors so we'd gain another hundred beds. Once complete we expect Tower 3 to house 160 beds.

What exactly are compliance works?

They are essential repairs and strengthening needed to ensure the building meets an Importance Level (IL) 4 standard under the current Building Code. The Parkside building is required to be up and running after a major seismic event.

The work planned includes: Repairs to concrete panels on the outside of the building, strengthening the building by adding something called viscous dampers to both the interior and exterior of the building – these are often X shaped and you see these structures on many buildings in Christchurch. Improvements will also be made to improve the passive fire compliance of some areas in Parkside.

Passive fire issues can occur when tradespeople are retrofitting pipes and cabling through ceiling areas and leave gaps which would allow fire to spread. Passive fire remediation identifies and seals these open cavities/areas.

Which areas will be worked on first?

Parkside is made up of 4 buildings and the first areas to be worked on are in Building A and B. These buildings house inpatient wards, the former emergency department and intensive care unit.

When will the improvements to the 6 bedded wards happen?

This work has to be phased in a logical order and we need to do the repairs and strengthening first before we can start remodelling the interiors. This work is also subject to the business case process, so at the earliest may be some time ?next year?.

Which services are still located in Parkside? & Riverside?

Remaining in ***Parkside***

Ward 10 (Surgical)

Ward 11 (Surgical)

Ward 12 (Medical)

Ward 14 (Medical)

Ward 20 (Plastics)

CCU (Coronary Care Unit)

Plastic Outpatients- (Part of Ward 20)

Parkside operating theatre and PACU (Post Anaesthesia Care Unit)

DOSA (Day of Surgery Admission)

Nine Operating Theatres

Riverside

Ward 23 (Medical)

Ward 24 (Medical)

Ward 25 (Medical)

Ward 27 (Medical)

Some radiology

Orthopaedic Outpatients (Bone Shop)

ENT Outpatients (Ear Nose & Throat)

Children's Outpatients

Children's Day Stay

From: Rob Ojala
Sent: Thursday, 26 November 2020 2:11 p.m.
To: Karalyn van Deursen <Karalyn.Vandeursen@cdhb.health.nz>; Andrew Brant <Andrew.Brant@cdhb.health.nz>; Mark Newsome <Mark.Newsome@cdhb.health.nz>
Cc: Alex Taylor (Communications) <Alex.Taylor2@cdhb.health.nz>
Subject: Re: Canterbury DHB welcomes funding for additional hospital building.docx

From: Karalyn van Deursen <Karalyn.Vandeursen@cdhb.health.nz>
Date: Thursday, 26 November 2020 at 1:15 PM
To: Andrew Brant <Andrew.Brant@cdhb.health.nz>, Rob Ojala <Rob.Ojala@cdhb.health.nz>, Mark Newsome <Mark.Newsome@cdhb.health.nz>
Cc: "Alex Taylor (Communications)" <Alex.Taylor2@cdhb.health.nz>
Subject: Canterbury DHB welcomes funding for additional hospital building.docx

Hi all – draft below (& attached for review and comment please)

Can you pls get back to me before the end of today so I can share with the Mins office and Ministry.

Many thanks

kvd

###

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"WITH THE OLDER WARDS AND OTHER AREAS IN PARKSIDE HAVING BEEN VACATED IT IS NOW POSSIBLE TO START TO ADDRESS COMPLIANCE WORK IN THESE SPACES. WE WILL BE PREPARING THEM FOR PATIENTS MOVING FROM OTHER PARTS OF THE CAMPUS AND OUTSOURCED FACILITIES

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Dr Brant said it's envisaged that design work will start on Tower 3 early in the new year, and the DHB expects to have the first patients in the new building in LATE IN 2025. THE TOWER HAS CAPACITY FOR AN ADDITIONAL 3 WARDS OF 32 BEDS EACH ALLOWING FOR EXPANSION TO MEET DEMAND AS OUR PROJECTIONS INDICATE THE NEED

"It's also pleasing to have the government's endorsement in principle of the business case which covers a range of planned works which will allow us to first proceed with urgent compliance works in some of the older areas of Parkside. This work will include improvements to passive fire safety and earthquake strengthening in some of the ward areas, the old Emergency Department and Intensive Care Unit.

"Now that some staff and services have moved across to Waipapa, this work can start in Parkside over the coming weeks [YES FOR PANELS]and while it will be noisy and disruptive at times, it's good

news for staff, patients and their whānau to know that the essential improvements to these buildings will soon be underway," Andrew Brant said.

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Which services are still located in Parkside? & Riverside - am asking Nicky T/Lynne & George S

Parkside

Medical services including inpatient wards

Day of Surgery admission

The Bone Shop

Some radiology

Hon Andrew Little
Minister of Health
Minister Responsible for the GCSB
Minister Responsible for the NZSIS
Minister for Treaty of Waitangi Negotiations
Minister Responsible for Pike River Re-entry

Sir John Hansen
Chair
Canterbury DHB
john.hansen@cdhb.health.nz

Dear John

Canterbury DHB Tower Three and Compliance Works

The Minister of Finance and I have considered your request for approval of your Tower Three and Compliance Works business cases. I am pleased to advise that we have approved the Tower Three project with a maximum Crown equity contribution of $154 million and endorsed the Compliance Works project approach in principle.

The standard approval conditions that apply to the Tower Three project are detailed in Appendix One.

I request that you continue to work with Ministry of Health officials on refining the scope and budget for the Compliance Works project, and on the overall governance structure for both projects. When you have refined the Compliance Works scope and budget you are required to resubmit a revised business case to the Capital Investment Committee, and then to the Minister of Finance and myself. I do not intend this process to hold up the most immediate compliance works and agree that you should begin progressing the most urgent works with your DHB's initial contribution of funding. Please work with Ministry officials to determine appropriate phasing for compliance works to enable these to be self-funded as the Health Capital Envelope is under significant pressure and there is no Crown capital available for this project.

I would like to acknowledge the efforts of you and your staff on these projects to date. I look forward to the completion of Tower Three and to receiving a final Compliance Works business case.

Congratulations on securing approval. Please pass on my thanks to your team for their work.

Yours sincerely

Hon Andrew Little
Minister of Health

cc: Andrew Brant, Interim Chief Executive, Canterbury DHB

Private Bag 18041, Parliament Buildings, Wellington 6160, New Zealand
+64 4 817 8707 | a.little@ministers.govt.nz | beehive.govt.nz

Appendix One: Approval Conditions for Canterbury DHB Tower Three

The conditions of this approval are:

1. Funding

a. The Tower Three (10007) project budget is not to exceed $154 million (excluding GST).

b. The Crown will provide up to $154 million to the Tower Three (10007) project from the Health Capital Envelope.

c. A cash profile for the draw-down of equity is to be submitted and agreed to by the Ministry of Health. The DHB will be expected to manage expenditure within the agreed cash profile.

d. All equity injection draw-down requests are to be sent to the capital.assurance@health.govt.nz inbox. These are to be provided along with the assurance report on a quarterly basis as per Table One. *(The process and required documentation for the equity draw-down process is attached in Appendix Two.)*

e. The final draw-down of equity or debt will be made no later than 12 months following the completion of construction/post-implementation review. Failure to do so will see any remaining funds forfeited to the Crown.

f. Any surplus capital funds remaining from the Tower Three (10007) project are to be returned to the Crown.

2. Reporting

a. The DHB will submit quarterly project assurance reports for the Tower Three (10007) project. These are to be submitted to the Ministry of Health on the 20th of the month following the end of the specified reporting period, for work completed and cost incurred for the previous reporting period as per table one.

b. The first assurance report is due on 20 April 2021 for the period January – March 2021.

c. The assurance report is to be submitted to capital.assurance@health.govt.nz. *(A copy of the assurance report template is attached in Appendix Three.)*

d. Key dates for the Tower Three (10007) project submission are shown below in Table One.

Table One:

Quarter	Time period for activity	Date submission due
Q1	July – September	20 October
Q2	October – December	20 January
Q3	January – March	20 April
Q4	April – June	20 July

e. The assurance reports will include:

- progress against project milestones
- confirmation of projects costs against the approved budget, including a project cash flow
- details of any requested scope changes
- any other information as requested by the Ministry of Health.

f. A reporting template will be supplied by the Ministry of Health with all relevant fields of information required. Should a DHB already possess reporting software which can provide the same information, then this is acceptable given that it captures the relevant information. If the assurance report is submitted and is missing any relevant fields, this will be sent back to the DHB and will not be processed until the report has been re-submitted with all relevant fields filled-out to the satisfaction of the Ministry of Health.

g. Regardless of the progress made or quantity of work conducted, an assurance report will be required on the dates stipulated above.

h. Failure to submit an assurance report in a timely manner will result in cessation of access to Crown capital funding.

3. Post Completion

a. Following the completion of this project the DHB is to provide:

(1.) A Post Implementation Review (PIR) within four months of the completion of the project and commissioning of the unit unless otherwise agreed with the Ministry of Health.

(2.) A Post Occupancy Evaluation (POE) and benefits realisation report within 18 months (default) following the completion of the project and commissioning of the unit. This date of submission is to be agreed upon practical completion with the Ministry of Health.

PIR and POE templates are attached in Appendix Four.

4. Variations

a. Variations to the scope can be proposed however the DHB is to provide timely notification and justifiable reasoning for any variations required. All significant proposed variations will require the approval of Joint Ministers.

b. These variation requests must be submitted to capital.assurance@health.govt.nz along with a formal letter of request. This letter must be from a member of the executive leadership team such as the CFO or delegate with relevant authority.

APPENDIX TWO – Equity injection draw-down process

The process for an ***equity drawdown request*** (also referred to as an ***equity injection funding request***) is highlighted below.

- An email is to be sent to the capital.assurance@health.govt.nz inbox with a request for equity injection (this can be done monthly, however most DHBs submit their equity requests quarterly along with the assurance report.)
- An official letter outlining the equity injection drawdown request and the amount required must be attached to the email above. This letter must be from a member of the executive leadership team such as the CFO or delegate with relevant authority.
- An assurance report which covers the period of work completed to date must also be attached with evidential photos of the work completed.
- A Quantity Surveyor report (minimum) along with additional invoices (optional) will also be required as evidence of spend.

This process can be repeated either monthly or quarterly depending on the need for equity injection however it is the preference of the Ministry that we receive them quarterly. It is in the interest of all stakeholders that the Ministry of Health receive the equity draw-down request in line with the quarterly assurance report as this will cover the work completed and cost incurred for the reporting period.

If the equity injection drawdown request is submitted and any of the above documentation has not been supplied, the request will not be processed until all relevant documentation has been provided.

Appendix 2

MINISTRY OF HEALTH
MANATŪ HAUORA

133 Molesworth Street
PO Box 5013
Wellington 6140
New Zealand
T+64 4 496 2000

Sir John Hansen
Chair
Canterbury DHB
john.hansen@cdhb.health.nz

Kia ora Sir John

Christchurch Hospital Tower 3 and Campus Compliance Works projects

Thank you for the discussion at the workshop of 17 June 2020 and for providing draft papers for the above two projects. On behalf of the Health Infrastructure Unit, please accept my apologies for the delay in providing a formal response to you regarding your draft papers.

We recognise the extensive analysis undertaken on these projects over an extended period, and the significant number of reports and information you have provided.

In order to support submission of your requests to the Capital Investment Committee, we ask that you also provide for each project a short (no more than ten pages) covering document reflecting the Better Business Case framework, supplemented by appendices that are extracts or documents that provide the further detail that is relevant to the analysis. The document should summarise:

- investment objectives and case for change (Strategic Case)
- identify a preferred option which represents the best value for money (Economic Case)
- financial costing and affordability (capital and operating, including whole of life), including DHB contribution (Financial Case)
- proposed procurement and risk sharing approach (Commercial Case)
- project management strategy and planning arrangements including governance, benefits management and post project evaluation (Management Case).

Please note that for the Campus Compliance Works project, we require the options analysis undertaken as part of the Economic Case summary to specifically address the following points:

1. The scope of the proposed option for the Compliance Works project should reflect the discussion of the meeting of 17 June 20, being immediate legislative non-compliance only. We note that this will not address clinical non-compliance or inconsistencies with current clinical best-practice.
2. The DHB Board should provide an assessment of its obligations for seismic repairs relating to insurance (as identified in the draft paper).
3. The options should explore whether alternate post-disaster approaches might alter the requirement for Parkside blocks C & D to be strengthened to maintain an Importance Level 4 (IL4) status (as outlined in the draft paper). This work would be costly and disruptive. During the June workshop, alternative approaches to addressing post-disaster response and recovery were discussed, including use of alternative facilities,

such as Hagley, Burwood, and private facilities. Your covering document should further explore these options in order to support the DHB's disaster response plan.

Next Steps

The papers and supporting documentation you provide will be assessed by the Ministry of Health, The Treasury, and the Capital Investment Committee to support advice to Joint Ministers.

The table below shows the schedule of upcoming CIC dates and the cut-off for submission. We look forward to receiving your submission shortly.

CIC Meeting Date	Submission Required By
15 September 2020	24 August 2020
18 October 2020	27 September 2020

Joint Ministers will need to consider competing priorities in making their decision on any allocation of Crown funding for these projects.

Should you require any further clarification on this, please contact Karl Wilkinson.

Ngā mihi

MA Arrowsmith

Michelle Arrowsmith
Deputy Director-General
DHB Performance, Support and Infrastructure

cc: David Meates, Chief Executive, Canterbury DHB

Kay Jenkins

From: John Hansen
Sent: Wednesday, 19 August 2020 7:21 p.m.
To: Karl Wilkinson
Subject: Fwd: Tower 3 / Compliance

Karl I understand you are now fully responsible for this? Can you confirm and respond to David urgently.
Thanks
John Hansen

Sent from my iPhone

Begin forwarded message:

> **From:** David Meates <David.Meates@cdhb.health.nz>
> **Date:** 19 August 2020 at 18:29:26 NZST
> **To:** Michelle Arrowsmith <Michelle.Arrowsmith@health.govt.nz>, John Hansen <John.Hansen@cdhb.health.nz>
> **Cc:** Karl Wilkinson <Karl.Wilkinson@health.govt.nz>
> **Subject: RE: Tower 3 / Compliance**
>
> Kia ora Michelle
>
> Just following up regarding the email below. It would be useful to get this clarified as soon as possible. I am conscious of the very tight timelines / timeframes that we are working to.
>
> Ngā mihi
>
> David Meates, MNZM
> Chief Executive | Canterbury District Health Board and West Coast District Health Board
> **T: 03 364 4110 (ext 62110) | E: david.meates@cdhb.health.nz**
> **P O Box 1600, Christchurch 8140**
> www.cdhb.health.nz | www.westcoastdhb.org.nz
>
> make it better
>
> **Values** – Ā Mātou Uara
> Care and respect for others - Manaaki me te whakaute i te tangata | Integrity in all we do - Hāpai i ā mātou mahi katoa i runga i te pono | Responsibility for outcomes - Te Takohanga i ngā hua
>
> **From:** David Meates
> **Sent:** Thursday, 13 August 2020 2:34 PM
> **To:** Michelle Arrowsmith <Michelle.Arrowsmith@health.govt.nz>; John Hansen <John.Hansen@cdhb.health.nz>
> **Cc:** Karl Wilkinson <Karl.Wilkinson@health.govt.nz>
> **Subject:** RE: Tower 3 / Compliance
>
> Kia ora Michelle
>
> Thank you for your letter.

It would be helpful to clarify a number of points so that the request that you have sent through can be expedited:

I am assuming that what you are requesting is a summary document that reflects all of the work that has been undertaken to date and previously provided?
I am assuming that the:

- Investment objectives and case for change (Strategic Case)
- Preferred option (Economic Case)
- Financial costing and affordability (Financial Case)
- Proposed procurement and risk sharing approach (Commercial Case)
- Project management strategy (Management Case)

relate to referencing these sections that were part of the MOH / DHB Detailed Programme Business Case and First Tranche Business case?

The clear direction from the MOH was that Tower 3 needed to be consistent with the approved masterplan and that the revised Tower option that was approved by the Board included 5 options and was based purely on affordability. I am therefore assuming that this is what you are seeking to have included in the summary document?

Re the Campus Compliance Works project – are you requiring a separate paper?

Again the details that you have requested are contained in the previous information provided and I am assuming that this will be re-packaged in the revised document?

Regarding alternative post disaster approaches there are several points to note:

- The minimum compliance is based on Parkside Blocks C&D remaining designated as IL4. However there has never been any intent on trying to strengthen that up to 100% of IL4 rather just doing the minimum compliance including dampers (to deal with shear towers / stairs), panels and passive fire. This facility remains designated as IL 4 gived that critical functiosn such as three / four cath labs are in this facility along with 8 /9 operating theatres – Parkside operating thetreas / cath labs still remains a significant part of the total DHB operating capacity.
- The minimum compliance is based on Parkside a&B being designated as IL3 (inspite of critical IL4 infrastructure running through these facilities). Again the minimum dampers, panels and passive fire remediation.
- None of these options deals with the poor and not fit for purpose clinical space including toilets / showers which does mean that there is also very limited options for managing infectious diseases etc.
- It is important to note that both Burwood and other facilities in Canterbury and Te Nikau on the West Coast have been significantly downgraded from post disaster IL 4 capability on the basis that Christchurch Hospital was the regional and one of the key national post disaster enabled facilities. This was done to limit the total cost of unnecessary health infrastructure investment elsewhere.
- Private facilities don't play a major part of post disaster enabled facilities. They do however play an important part in the management of responses such as covid-19.

If you have a template for a "no more than 10 page" document it would be great to get so that what we provide matches expectations.

I am assuming that what is required should not involve the need for external consultants to re-write and undertake an additional significant piece of work – rather what you are requesting is anchored back into the previous DBC.

Ngā mihi

David Meates, MNZM
Chief Executive | Canterbury District Health Board and West Coast District Health Board
T: 03 364 4110 (ext 62110) | E: david.meates@cdhb.health.nz
P O Box 1600, Christchurch 8140
www.cdhb.health.nz | www.westcoastdhb.org.nz

make it better

Values – Ā Mātou Uara
Care and respect for others - Manaaki me te whakaute i te tangata | Integrity in all we do - Hāpai i ā mātou mahi katoa i runga i te pono | Responsibility for outcomes - Te Takohanga i ngā hua

From: Michelle Arrowsmith <Michelle.Arrowsmith@health.govt.nz>
Sent: Monday, 10 August 2020 12:59 PM
To: John Hansen <John.Hansen@cdhb.health.nz>
Cc: David Meates <David.Meates@cdhb.health.nz>; Karl Wilkinson <Karl.Wilkinson@health.govt.nz>
Subject: Tower 3 / Compliance

Kia ora Sir John

Please see attached letter regarding Christchurch Hospital Tower 3 and Campus Compliance Works projects.

Ngā mihi
Michelle

Michelle Arrowsmith
Deputy Director General I DHB Performance, Support and Infrastructure I Ministry of Health
E: michelle.arrowsmith@health.govt.nz I M: 9(2)(a) I
http://www.health.govt.nz

Faye Tiffin

From: Kay Jenkins on behalf of John Hansen
Sent: Monday, 21 December 2020 11:05 AM
To: Faye Tiffin
Subject: FW: CDHB Business Cases - Tower 3 and Compliance Works
Attachments: CDHB Compliance Works Business Case.docx; Canterbury DHB Campus Master Plan Compliance Works June 2020.pptx; CDHB Compliance Work Paper for MOH September 2020 Appendices.docx; 200907_Canterbury DHB Business Case Tower 3_0.2.docx

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From: Michelle Arrowsmith [mailto:Michelle.Arrowsmith@health.govt.nz]
Sent: Monday, 7 September 2020 4:21 p.m.
To: John Hansen <John.Hansen@cdhb.health.nz>; 'John Hansen' 9(2)(a) >; Peter Bramley <Peter.Bramley@cdhb.health.nz>; Andrew Brant (WDHB) <Andrew.Brant@waitematadhb.govt.nz>; Lester Levy 9(2)(a) >; Barry Bragg 9(2)(a) >
Cc: Karl Wilkinson <Karl.Wilkinson@health.govt.nz>; John Hazeldine <john.hazeldine@health.govt.nz>
Subject: FW: CDHB Business Cases - Tower 3 and Compliance Works

Dear Sir John et al

Please find attached the CDHB papers for CIC on Tower 3 and compliance provided on behalf of the DHB by HIU.

I would appreciate a read through and approval by you all that these papers represent the DHBs view before we send them to CIC.

It would be helpful if we could gain your feedback, comments and approval by return tomorrow COB so that we can send on to CIC ahead of the meeting next week. If you require any longer to review could you let me know so I can manage with CIC.

As always happy to discuss or Karl will also be able to assist in this regard.

Look forward to hearing back from you.

Ngā mihi
Michelle

Michelle Arrowsmith
Deputy Director General | DHB Performance, Support and Infrastructure | Ministry of Health
E: michelle.arrowsmith@health.govt.nz | M: 9(2)(a) |
http://www.health.govt.nz

From: Katie Van Dinther <Katie.VanDinther@health.govt.nz>
Sent: Monday, 7 September 2020 3:51 pm
To: Michelle Arrowsmith <Michelle.Arrowsmith@health.govt.nz>; John Hazeldine <john.hazeldine@health.govt.nz>
Cc: Karl Wilkinson <Karl.Wilkinson@health.govt.nz>
Subject: CDHB Business Cases - Tower 3 and Compliance Works

Hi John and Michelle,

Please find attached the two word documents of the CDHB Business Cases. John, as requested I have moved the 'Recommendation' to before 'Next Steps' in the Tower 3 document.

I've also attached the Appendices and the Campus Master Plan documents in case you need these as well.

Thanks,
Katie

Kind regards,
Katie van Dinther

Executive Assistant to Karl Wilkinson - Director Health Infrastructure
DHB Performance, Support & Infrastructure |
Katie.vanDinther@health.govt.nz | 9(2)(a)

MINISTRY OF HEALTH
MANATŪ HAUORA

http://www.health.govt.nz

Appendices

Following are 3 appendices that provide further background and detail to the Single Stage Light Business Case for Christchurch Hospital Main Campus Compliance.

Appendix 1 describes the current thinking around seismic compliance issues along with estimates of the associated costs. This information is in part repeated in the other 2 appendices but appendix 1 reflects the most current information and advice received; the other 2 papers were prepared in June and May respectively and ongoing design and investigations have updated some of that information.

Appendix 1

The information below itemises the seismic repair works included by building and by category and explains at a high level why the work is necessary and the implications of not completing the items:

Clinical Services Building strengthening of shear walls / roof - 9(2)(b)(ii)

The plantroom level of CSB is earthquake prone (30% New Building Standard (NBS) at IL3) and needs repairs following earthquake damage. The rest of the building is NOT earthquake prone and as such the Engineers do not deem this to make the whole building earthquake prone as the plantroom is generally a non-occupied space and the mode of failure in this space, should an event occur, would not put other occupants at risk. Engineers advise that there is precedence with CCC accepting a non-occupied Earthquake Prone Building space and this does not then automatically make the remainder of the building EPB. This topic has not been addressed with CCC but could be if the decision to look at not doing this work was advised.

In Masterplan terms this building would need to be demolished to make way for podium and tower 5 (following central podium and tower 4) – so it has at least a medium term future.

If the decision is to not undertake remedial work and CCC accept this, then if there is a future seismic event that impacts upon the building and causes further damage the claim resolution process could be troublesome and liability matters will be raised.

Parkside shear tower strengthening - 9(2)(b)(ii)

Parkside is seismically separated into 4 blocks A,B,C and D. Currently it houses ED, theatres, ICU and as such is rated as an IL4 structure, both the exterior panels and some of the internal stairs score under 33% NBS at IL4. When Hagley opens the DHBs critical emergency response regarding ED, theatres and ICU moves to that building however blocks C and D of Parkside still house 11 operating theatres and cath labs and would be part of any post seismic earthquake response and should remain IL4.

Additional stiffness of the building is delivered by strengthening the shear towers; following this work and the repairs to panels, the building overall will be above 33% NBS (not EPB) at IL4. Simply put the panel remedial work is based on the building being less flexible.

After Hagley opens, Parkside Blocks A and B will serve essentially as ambulatory care and wards – justifying a downgrade of these 2 blocks to IL3 from a disaster planning point of view however Council have recently indicated this potential change may be in breach if fire egress / evacuation requirements – CDHB continue to review this item.

It permitted, blocks A and B at IL3 would still require external panels to be repaired as they remain under 33% NBS but these panels do not need the additional stiffness from the shear towers to get over the 34% threshold at IL3, similarly the stairs' score rises slightly at IL3 with the worst ones being 35% (just above EPB). At this point engineers advise that we don't have to strengthen the shear towers in these 2 block under the NZ Building Code – potentially saving circa $4m of the $10.325m. It should be noted that there are some structural computer models being generated on block B at the moment and the current direction is assumed and will require confirmation once the assessment is completed.

Choosing to NOT strengthen blocks A and B means under a significant seismic event some of the stairs in blocks A and B could be damaged making egress more challenging and panels could spall / fall off (occurring in a lesser magnitude event than would occur in the adjacent IL4 – blocks C and D). Legal opinion has been sought regarding the health and safety aspect of this situation from Work Safe and Chapman Tripp - WorkSafe advise that if you own or occupy an earthquake-prone building and you're meeting the earthquake performance requirements of the Building Act 2004, then they are not going to enforce to a higher standard under HSWA.

In addition, it should be noted that services infrastructure passes through Parkside basement to Women's and Hagley (IL4 emergency buildings). If Parkside blocks A and B become IL3 this won't physically alter the basement or the protection provided to the infrastructure. Engineers have advised in their opinion that not strengthening the shear towers will not increase risk of damage to these basement services. Women's and Hagley both have 'inboard' generation of power / steam to service their needs immediately post an event.

Clinical Services Building strengthening to level 3 columns - 9(2)(b)(ii)

The level 3 columns are not earthquake prone; they score 35% NBS at IL3 so just scrape above the threshold, however this item was included in this list due to the relatively low value of the repair, the likely medium term (15 years plus) use of the building coupled with related insurance risks if the work is not carried out.

Riverside Central / Parkside water storage - 9(2)(b)(ii)

Riverside has some large water storage tanks housed at the top of the central block which compromise that building's seismic capacity and need to be removed. In addition to providing backup supply to the Riverside block, these tanks are also connected to Parkside and in part make up the emergency water supply for this IL4 building. As Parkside C and D blocks are to remain IL4, this package of works is to provide water storage solution in Parkside to retain its IL4 status.

Parkside / Riverside and Clinical Service Building seismic compliance strengthening - 9(2)(b)(ii)

This budget was allocated by RLB in the business case across the three main buildings requiring seismic repair. It represents a nominal allowance across the 3 structures to cover unanticipated issues that arise when the scheduled works are undertaken. The need for this sum is based on previous actual findings over the past 10 years of seismic repairs where construction teams have discovered further unseen damage when work faces are properly opened up for repair.

Riverside Central Block Concrete wall repairs - 9(2)(b)(ii)

Riverside Central structural modelling revealed an earthquake prone weakness in the concrete wall behind the lift shaft resulting in shear failure – this element scores 25% NBS at IL3 and even if the building was downgraded to IL2 sometime in the future as masterplan moves this building to workspace / docks the wall would score 25% NBS at IL2 and the building would still be noted as earthquake prone.

Parkside / Food Services Building / Oncology Precast Concrete Panel fixing repairs - 9(2)(b)(ii)

Panels currently present a health and safety risk due to inadequate fixing back to the primary structure.

Riverside West removal - 9(2)(b)(ii)

Riverside West removal is required to enable the construction of tower 3 and it also presents a fall risk in a significant seismic event due to its proximity to the new Hagley structure.

Women's seismic repairs - 9(2)(b)(ii)

Women's is not classed as an earthquake prone building. This estimate covers outstanding seismic repairs required to one stairwell and grouting of some cracked floors to bring the building back up to earthquake seismic compliance for an IL4 structure. This building forms part of the site's emergency response housing 7 theatres and 'inboard' services generation which allow it operate as an island post event and given the age of the facility it has a long term future on campus so repairs are recommended for these reasons and to mitigate any ongoing insurance issue.

Women's canopy repair - 9(2)(b)(ii)

Original DBC contained allowance to reinstate glass to the front canopy, providing weather protection to drop off. Not completing this work means there is no rain screen for people arriving at the front door and the building design was wind modelled with the canopy to reduce swirling winds into the lobby/reception area during winter months; this has been noted by users of this space as an ongoing issue.

Appendix 2

Final version of the June 2020 Campus Master Plan Compliance Works PowerPoint

Appendix 3

CHRISTCHURCH HOSPITAL CAMPUS PASSIVE FIRE AND SEISMIC COMPLIANCE WORKS

Canterbury District Health Board
Te Poari Hauora ō Waitaha

TO: **Chair and Members, Canterbury District Health Board**

ACCOUNTABILITY: **David Meates, Chief Executive Officer**

DATE: **29 June 2020**

Report Status – For:	Decision	☑	Noting	☐	Information	☐

1. ORIGIN OF THE REPORT

The Christchurch Hospital Campus Master Plan was co-commissioned by the Ministry of Health (*MoH*) and the Canterbury District Health Board (*CDHB*) to inform both the Programme Business Case (*PBC*) and the Detailed Business Case (*DBC*) Tranche 1 scope for this campus.

The Master Plan includes population demand for tertiary hospital services through to 2031.

The PBC covers the facilities demand and location of services from 2020 through to 2031.

The resulting DBC covered the first tranche of facilities development outlining the options considered, identifying the preferred option (Option 1b) and outlining the economic, financial, strategic, commercial and management cases. The DBC preferred Option 1b required $387m of Crown funds and $51m of CDHB funds – totalling $438m.

The MoH (via the Capital Investment Committee (*CIC*)) advised the CDHB that there was insufficient capital available nationally to support the preferred Option 1b and requested that a reduced cost Option, excluding Passive Fire and Seismic Compliance Works, was presented requiring a maximum of $154m of Crown funds. The reduced cost Option currently sits with CIC for consideration.

This paper covers the necessary Passive Fire and Seismic Compliance works that are required to existing buildings on the Campus to allow ongoing legal occupation along with a recommendation.

2. RECOMMENDATION

That the Board:

i. notes that the CDHB DBC preferred Option 1 for Campus Masterplan Implementation requiring $777m of Crown funds and $51m of CDHB funds – totalling $828m was not adopted due to national health capital constraints;
ii. notes that the joint MoH/CDHB DBC Option 1b for Campus Masterplan Tranche 1 Implementation requiring $387m of Crown funds and $51m of CDHB funds – totalling $438m

previously approved by the Board and Clinical Leaders Group (*CLG*) has been declined due to national health capital funding constraints;

iii. notes the Campus Masterplan $154m Reduced Cost Option (excluding Passive Fire and Seismic Compliance works) has been endorsed by the Board and sits with the CIC for consideration;

iv. notes that CDHB Design Consultants have recommended that Passive Fire and Compliance works totalling $134m is implemented and that this has been critically reviewed and reassessed down to $79.037m by CDHB Management and Client Advisors;

v. notes that the CDHB Management endorse the $79.037m Passive Fire and Compliance works Option requiring Crown funding of $58.037m after the CDHB contribution of $21m is accounted for;

vi. approves the new proposal Passive Fire and Compliance works Option requiring **$58.037m of Crown funds**;

vii. approves the submission of the Passive Fire and Compliance works Option to the MoH / CIC.

3. BACKGROUND

The 2012 Government approved, CDHB Facilities Redevelopment (Hagley) DBC stated further future projects were required on the campus and that they needed to be delivered by 2022 to keep pace with growing demand. The current DBC programme sees T3 completion in 2025, some three years later than required, incurring additional cost escalation and capacity concerns. It is also worth noting that the population projection in 2012 for 2020 has in reality been exceeded by 60,000 (a population expansion that places the region currently at levels not anticipated until 2024).

During the drafting of the jointly sponsored (MoH and CDHB) 2019 DBC/PBC document; the agreed goal was to complete a series of enabling works to the existing campus to facilitate the construction of T3 and Central Building and Tower 4 *(CT4)*; with both design and construction to be considered under one funding package; a process that would allow the removal of possible roadblocks to unlock the campus and assist the CDHB in delivering the necessary bed and theatre capacity as demand increases. The developed Option 1 achieved all of these criteria and was costed at $828m.

MoH indicated at the time that in order to align with the national capital funding envelope it would not be possible to undertake all these elements of work under a single tranche and the DBC was updated to deliver several separately funded tranches within a wider Programme Business Case.

In addition, the CDHB entered into a process with the MoH consultant team to significantly reduce the quantum of heavy / moderate refurbishments within the existing facilities following the philosophy that with limited capital available, as much of that capital as possible should be directed toward the new facilities rather than investing too much in existing facilities with limited future working life.

The result was the creation of DBC preferred Option 1b delivering a reduced existing facilities enabling work package, T3 design and construction and full design of CT4 (Tranche 1) and required $387m of Crown funds and $51m of CDHB funds – totalling $438m.

From CDHB's perspective, the compromises were contingent on agreement for a fast track programme to achieve CT4 (the construction of which had been moved to Tranche 2 although design was retained in Tranche 1 to keep the programme moving forward). Clinical leaders involved in this process had agreed, for example, in a reduction in scope for the then proposed Parkside works and redevelopment alone from circa $150m down to $77m on the basis that the limited capital available should be focussed more prudently on new facilities.

The demand forecasting (both beds and theatres) has been through five separate external reviews between MoH/CDHB and expert consultants and is now agreed as per the DBC.

The MoH response to the submission of the jointly sponsored DBC has required the DHB to examine what might be achieved with a further reduced option. This process has significantly increased operational compromises as compared to DBC Option 1b as well as raising potential hurdles for future Campus development over and above what the CDHB had previously anticipated.

The Campus Masterplan $154m Reduced Cost Option (excluding Passive Fire and Seismic Compliance works) has now been endorsed by the Board and sits with the CIC for consideration. This proposal retained critical elements that were essential to 'unlock' the site and were consistent with the overall agreed campus masterplan objectives, however, a number of these changes are making the implementation of the masterplan more difficult and expensive for the future.

At the recent Reset & Refresh workshop, management were asked to come up with a list of essential Passive Fire, Seismic and Compliance works that were deemed essential for legal and Health and Safety requirements especially given the new expectation that Parkside would be housing patients for a substantially longer time than anticipated in the DBC.

The result of this exercise was the critical review of the previously prepared design consultant's recommended actions in relation to these items that were costed at $134m, down to what is considered a minimal essential scope which is summarised in the attached document, with the minimum level of works deemed essential by management is $79.037m

The programme of works for this compliance package was originally required to fit around the Tower 3 programme and enabling packages in general terms, however, this is currently being pressured by the delay in the occupation of the Hagley building.

The $154m Reduced Cost Option sees the bulk of the existing facilities in Parkside retained, as a minimum, for the next 10 to 15 years without any upgrades. This includes a large portion of the hospital's theatre capacity (deemed to be the poorest facility in the country by the recently released MOH Clinical Fit for Purpose review) and these are generally the original theatres now in excess of 35 years old not having had any significant upgrades in their life.

Please also note that given the current COVID-19 pandemic that none of the compliance work as outlined provides for a facility able to manage and cohort infected patients – this is an issue that the Board will need to provide some guidance on as to deal with this would take us back down the path of an accelerated CT4.

The scope and budgets in this document capture capital costs associated with complaint occupation of the main campus buildings and do **NOT** include compliance with Health Facility Guidelines, MOH accreditation requirements or the like. Further there are no improvements to facilities from an operational point of view e.g. no additional toilet or isolation facilities etc. are included.

It must be emphasised that for each scale back in project capital cost over the development of the various Options there is a diminished return to the CDHB in terms of bed capacity and future gains (achieving the Master Plan outcomes) as well as further compliance complications with CCC/FENZ.

4. Categorisation of the Compliance Works and Associated Implications

The following Table itemises the works included by building and by category and explains at a high level why the work is necessary and the implications of not completing the items:

Building	Work description	Clarifications
Women's	Canopy repair - 9(2)(b)(ii)	Original DBC contained allowance to reinstate glass to the front canopy, providing weather protection to drop off. Not completing this work means there is no rain screen for people arriving at the front door and the building design was wind modelled with the canopy to reduce swirling winds into the lobby/reception area during winter months; this has been noted by users of this space as an ongoing issue.
Clinical Services Building	Strengthen shear walls / roof - 9(2)(b)(ii)	The plantroom level of CSB is earthquake prone (30% New Building Standard (NBS) at IL3) and needs repairs following earthquake damage. The rest of the building is NOT earthquake prone and as such the Engineers do not deem this to make the whole building earthquake prone as the plantroom is generally a non-occupied space and the mode of failure in this space, should an event occur, would not put other occupants at risk. Engineers advise that there is precedence with CCC accepting a non occupied Earthquake Prone Building space and this does not then automatically make the remainder of the building EPB. This topic has not been addressed with CCC but could be if the decision to look at not doing this work was advised. In Masterplan terms this building would need to be demolished to make way for podium and tower 5 (following central podium and tower 4) – so it has at least a medium term future. If the decision is to not undertake remedial work and CCC accept this, then if there is a future seismic event that impacts upon the building and causes further damage the claim resolution process could be troublesome and liability matters will be raised.
Parkside	Shear tower strengthening - 9(2)(b)(ii)	Parkside is seismically separated into 4 blocks A,B,C and D. Currently it houses ED, theatres, ICU and as such is rated as an IL4 structure, both the exterior panels and some of the internal stairs score under 33% NBS at IL4. When Hagley opens the DHBs critical emergency response regarding ED, theatres and ICU moves to that building however blocks C and D of Parkside still house 11 operating theatres and cath labs and would be part of any post seismic earthquake response and should remain IL4. Additional stiffness of the building is delivered by strengthening the shear towers; following this work and the repairs to panels, the building overall will be above 33% NBS (not EPB) at IL4. Simply put the panel remedial work is based on the building being less flexible. After Hagley opens, Blocks A and B will serve essentially as ambulatory care and wards – justifying a downgrade of these 2 blocks to IL3. At IL3 blocks A and B still require external panels to be repaired as they remain under 33% NBS but these panels do not need the additional stiffness from the shear towers to get over the 34% threshold at IL3, similarly the stairs' score rises slightly at IL3 with the worst ones being 35% (just above EPB). At this point engineers advise that we don't have to strengthen the shear towers in these 2 block under the NZ Building Code – potentially saving circa $4m of the $10.325m. It should be noted that there are some structural computer models being generated on block B at the moment and the current direction is assumed and will require confirmation once the assessment is completed. Choosing to NOT strengthen blocks A and B means under a significant seismic event some of the stairs in blocks A and B could be damaged making egress more challenging and panels could spall / fall off (occurring in a lesser magnitude event than would occur in the adjacent IL4 – blocks C and D). Legal opinion has been sought regarding the health and safety aspect of this situation from Work Safe and Chapman Tripp - WorkSafe advise that if you own or occupy an earthquake-prone building and you're meeting the earthquake performance requirements of the Building Act 2004, then they are not going to enforce to a higher standard under HSWA. In addition, it should be noted that services infrastructure passes through Parkside basement to Women's and Hagley (IL4 emergency buildings). If Parkside blocks A and B become IL3 this won't physically alter the basement or the protection provided to the infrastructure. Engineers have advised in their opinion that not strengthening the shear towers will not increase risk of damage to these basement services. Women's and Hagley both have 'inboard' generation of power / steam to service their needs immediately post an event.
Clinical Services Building	Strengthen to level 3 columns - 9(2)(b)(ii)	The level 3 columns are not earthquake prone; they score 35% NBS at IL3 so just scrape above the threshold, however this item was included in this list due to the relatively low value of the repair, the likely medium term (15 years plus) use of the building coupled with related insurance risks if the work is not carried out.
Riverside Central / Parkside	Water storage - 9(2)(b)(ii)	Riverside has some large water storage tanks housed at the top of the central block which compromise that building's seismic capacity and need to be removed. In addition to providing backup supply to the Riverside block, these tanks are also connected to Parkside and in part make up the emergency water supply for this IL4 building. As Parkside C and D blocks are to remain IL4, this package of works is to provide water storage solution in Parkside to retain its IL4 status.
Parkside / Riverside and Clinical Service Building	Seismic Compliance Strengthening - 9(2)(b)(ii)	This budget was allocated by RLB in the business case across the three main buildings requiring seismic repair. It represents a nominal allowance across the 3 structures to cover unanticipated issues that arise when the scheduled works are undertaken. The need for this sum is based on previous actual findings over the past 10 years of seismic repairs where construction teams have discovered further unseen damage when work faces are properly opened up for repair.

Riverside Central Block	Concrete wall repairs - 9(2)(b)(ii)	Riverside Central structural modelling revealed an earthquake prone weakness in the concrete wall behind the lift shaft resulting in shear failure – this element scores 25% NBS at IL3 and even if the building was downgraded to IL2 sometime in the future as masterplan moves this building to workspace / docks the wall would score 25% NBS at IL2 and the building would still be noted as earthquake prone.
Parkside / Food Services Building / Oncology	Precast Concrete Panel fixing repairs - $9(2)(b)(ii)	Panels currently present a health and safety risk due to inadequate fixing back to the primary structure.
Riverside West	Removal - 9(2)(b)(ii)	Riverside West removal is required to enable the construction of tower 3 and it also presents a fall risk in a significant seismic event due to its proximity to the new Hagley structure.
Women's	Seismic repairs - 9(2)(b)(ii)	Women's is not classed as an earthquake prone building. This estimate covers outstanding seismic repairs required to one stairwell and grouting of some cracked floors to bring the building back up to earthquake seismic compliance for an IL4 structure. This building forms part of the site's emergency response housing 7 theatres and 'inboard' services generation which allow it operate as an island post event and given the age of the facility it has a long term future on campus so repairs are recommended for these reasons and to mitigate any ongoing insurance issue.
All existing Campus buildings (bar Hagley)	Passive Fire - 9(2)(b)(ii)	Following investigations across the campus it is clearly documented that all the building have non compliances under the NZ Building Code and CDHB has negotiated additional operational responses and limited repairs to reduce the risks and obtain building warrants of fitness from Council over the last 2 years. Ongoing dialogue with Council and Fire and Emergency NZ has made it clear this response is a temporary measure as the DHB plans more permanent passive fire repairs. Remedial works will need to be reviewed and agreed between CDHB/CCC and FENZ on an ongoing basis

5. FINANCIAL

The Table on page five of the appendices itemises the individual items of compliance works with the least critical items at the top of the list flowing down to the most important items at the bottom.

The Table in Item 4 above groups together like items of works while the appendices Table places the individual items in order of priority.

The only item that management see is discretionary is the replacement of the glass to the Christchurch Women's Hospital entry canopy and the implications of this omission are noted.

It is the view of the Management that Compliance works should be undertaken to the value of $79.037m with the CDHB contributing the agreed $21.000m of uncommitted funds remaining from the earthquake programme of works leaving an amount of $58.037m requiring Crown funding.

6. APPENDICES

Appendix 1: Canterbury DHB Campus Master Plan Compliance Works

Canterbury District Health Board
Te Poari Hauora ō Waitaha

Canterbury District Health Board

Christchurch Hospital Compliance Works Business Case

Prepared by:	Proj-X Solutions Ltd
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Role	Name	Sign-off Date
Project Manager		
Senior Responsible Owner/ Project Executive		

Purpose

Describe the investment proposal at the beginning in two or three sentences. State what decision-makers are being asked to consider or decide.

Christchurch Hospital Main Campus is made up of a series of buildings developed over the last 60 years. During that time, seismic and passive fire requirements for hospital facilities under the New Zealand Building Code have become more stringent and ongoing refurbishments plus wear and tear to the buildings over time has seen a growing gap between new build requirements and those achieved by the current facilities.

This paper considers the necessary passive fire and seismic compliance works that are required to be undertaken in the existing buildings on the Campus to allow ongoing legal occupation.

This business justification case seeks formal approval to invest up to $80million in the years 2020 to 2025.

This business case follows the Treasury Better Business Cases guidance and is organised around the five case model.

Strategic Case

Describe and explain the problem

CDHB as a building owner, is required to obtain a yearly Building Warrant of Fitness (BWOF) for its facilities in order to continue to operate on the site. Christchurch Hospital Main Campus contains multiple buildings constructed at different times, under different iterations of the NZ Building Code (NZBC).

The NZBC has evolved over time; in particular there have been significant changes to the structural standards following the 2010/2011 earthquakes; and events such as the Grenfell Towers fire has also focussed a spotlight on passive fire compliance.

The buildings that will that will be covered by this passive fire and seismic rectification work include:

- Parkside Building Blocks A, B, C & D
- Clinical Services Building
- Riverside
- Food services Building
- Oncology Building
- Women's Hospital Building

Works on the St Asaph Street site are not included (including Labs)

Passive Fire Overview

As part of the detailed engineering analyses undertaken by structural engineers post the Canterbury earthquakes, to ascertain levels of damage to the facilities and their safety status for continued occupation, it was noted that there were many deficiencies associated with the passive fire systems within the buildings. These deficiencies ranged from damage caused by the earthquakes to incomplete works associated with the facilities' original construction and alterations / additions undertaken to the facilities, where specific passive fire requirements have not been implemented.

Passive fire compliance has been highlighted as an ongoing concern by the Christchurch City Council (CCC) and Fire Emergency NZ (FENZ); and obtaining BWOFs in June 2019 for a number of buildings on site required additional operational responses to satisfy the Council (and FENZ) that the buildings will achieve the minimum allowable threshold for a caveated BWOF compliance, as well as relying on commitments that once the Hagley facility opens, it is the DHB's intention to start addressing the numerous areas of non-compliance.

The process of establishing the true extent of passive fire non-compliances within buildings such as these is complex; requiring negotiation between CDHB, CCC and FENZ based on a method of benchmarking all parties agree to and a remedial action plan that allows the building to at least exceed its benchmark score as compared to code requirements at the time it was constructed.

Seismic Overview

Following the 2010/11 earthquakes; there was significant widespread damage to CDHB facilities across the region. The DHB has been following an earthquake programme of works for a number of years across the region and this process describes Christchurch Hospital Main Campus remaining work required for the continued legal occupation of those facilities.

Attached in Appendix 1 is a more detailed breakdown of the various buildings and individual packages of work associated with each, in order to exceed the 34% of equivalent New Building Standard (NBS); the threshold required for a building to not be classed as earthquake prone (EPB).

In addition to the legal requirement to repair buildings to above 34% of NBS for their main structure, there is also the need undertake repairs to some of the buildings' cladding systems that pose a potential failure risk in an event 9(2)(h) [redacted]

The third consideration associated with seismic repair relates to insurance. Where the detailed seismic engineering evaluations have identified earthquake damage and CDHB has been paid by the insurer to repair, there is an expectation from parties providing ongoing insurance cover that that repair work has been completed. If the decision is not to repair a specific section of damage for reasons of access / cost / future life of the building or the like; legal feedback indicates that insurers would not cover unrepaired works and likely that if further damage occurred because previously identified work wasn't done then insurers wouldn't cover any associated consequential loss.

The opening of the new Hagley Importance Level 4 (IL4) facility opens up the potential from a disaster planning perspective to consider downgrading Parkside blocks A and B from IL4 to IL3 as they would contain essentially ward / ambulatory care functions. This possible reduction

in importance level would reduce the scope of seismic work required under the NZ Building Code, however Council have recently indicated that this partial building Importance Level reduction would contradict current fire egress standards and if CDHB wanted to pursue this issue, they would have to request a determination from MBIE.

The additional factor across both passive fire and seismic compliance works is that there are significant areas of the buildings that have not been assessed in detail; some because of access issues and others just due to scale. Scoping these types of remedial works within existing facilities is notoriously difficult due to the unknowns and careful consideration needs to be applied when assessing contingencies at this stage of the process.

What benefits will be achieved from the investment i.e. investment objectives and case for change.

The benefit from the proposed investment would be to allow CDHB to legally occupy the facilities for the foreseeable future in order to continue to provide a variety of critical healthcare services.

Without this investment the DHB would require markedly more significant investment into new replacement facilities across the site to meet service demand.

Economic Case

Identify options that were considered and assessment criteria used.

Due to the legal compliance nature of the proposed works package, it leaves a very limited number of options for consideration and assessment was based on ongoing ability to provide services to the community.

Do nothing: this option would leave the CDHB as the facility operator in breach of earthquake prone building legislation and would be served notice under the Act by early 2025; Council can follow Dangerous and Insanitary Buildings Policy 2018 and invoke sections of the Building Act to stop the use of the facility.

Following a number of discussions with FENZ and CCC around passive fire requirements and the annual BWOF certificate, it is clear that without commitment to an ongoing passive fire programme of works, it is unlikely future certificates would be issued by Council and the buildings would then have their legal right for public occupation removed.

New build: this option looked at replacing the buildings that contain ongoing compliance issues with new facilities. This option very clearly becomes untenable due to cost and logistics of how to roll out such a significant package of work in the timeframes available on a constrained site; the overarching Campus Programme Masterplan has a very specific sequence of decant/ demolish/build activities allowing physical space to develop new buildings over an extended duration and trying to replace non-compliant facilities all at once does not fit this logic.

Consultant recommended level of work: this option looked at the various consultant reports obtained over the last few years looking to rectify non-compliances; this work added up to $134m. These individual packages have been reviewed, re-scoped, rationalised to provide in part the basis for the preferred $80m solution presented here.

Preferred option: this option evolved from a critical review by the CDHB's Client Advisors of the consultant recommended option. This reduced cost option focused on the minimum legal level of remediation for seismic and a carefully managed scope for the passive fire works as well as the synergies of undertaking these works concurrently and in unoccupied areas where possible.

Identify a preferred option which represents the best value for money.

Preferred option: from the perspective of passive fire and seismic compliance, the preferred option is to systematically repair defects to bring the facilities in line with minimum legislative requirements.

The nature of the proposed scope is in some areas very disruptive to the ongoing operational requirements of the CDHB; the proposal therefore looks to programme works as far as possible to be undertaken in areas of the hospital that have been temporarily vacated as part of the move to the Hagley building and to undertake both tranches of work (passive fire and seismic repairs) concurrently.

In order to deliver best value for money, from the seismic perspective it is proposed to continue detailed engineering reviews of non-compliances; identifying construction solutions that are safe to undertake, economic and can be tailored to individual situations.

For the passive fire, the process of engagement with council and FENZ is well underway; there is general agreement on the measurement tool to be used around benchmarking and scoring the individual buildings in terms of their levels of non-compliance. This process involves not only the physical state of the building's passive fire elements but also evacuation procedures, staffing rates and patient status. Fire engineers then develop options to improve the building's non-compliance scores; these options are then debated with CCC and FENZ until remedial actions are agreed and individual fire zone scopes of work are documented for pricing / construction.

Financial Case

How much will this cost? Is the DHB contributing to the project cost (and if so, please specify)?

The CDHB are requesting $79.972m to complete the works; $21m of which would come from the remaining earthquake insurance fund – leaving **$58.972m** of funding required from the Crown.

Assess the whole of life costs. Be clear on assumptions.

Whole of life costings are not applicable in this situation as once the work is completed the buildings will be at an acceptable level to legally occupy. Alternatively if the works are not completed the CDHB may face fines and ultimately not be able to occupy the facilities; the costs associated with this have not been calculated to date as they are avoidable with this proposed investment.

What allowance has been made for contingency?

Contingency allowance is variable over the different packages of work.

Items encompassing seismic repair of columns, shear towers and the like are based on quantity surveyors estimates and contain a contingency of 10% or 15% depending on the nature of the work

As the scope of the passive fire work is under development the plan is to cost plan the work installed to the budget allowed.

Precast panel repair work is currently being tendered as a package by the CDHB and the RLB 10% contingency allowed is currently deemed sufficient. The CDHB has advanced the panel work due to Health and Safety risks associated with it and it is being costed to the $21m remaining earthquake proceeds.

What types of cost are involved, and over what period? Over how long?

The CDHB are requesting $79.972m to complete the works; $21m of which would come from the remaining earthquake insurance fund – leaving **$58.972m** of funding required from the Crown.

The costs are made up of investigations, modelling, benchmarking, design, consent, management and contractors.

The detailed delivery programme is still under development and is contingent upon funding approvals and the occupation of the Hagley building. It is anticipated that the overall duration will be in the order of five years and we expect the majority of the work to be completed in the first three years.

Operational costs have not been included as they are near impossible to quantify however there will no doubt be some costs incurred when physical works are being undertaken in occupied areas. These cost would be very difficult to identify and need to be absorbed by the CDHB.

It is noted that decanting costs are included within the allowed estimates.

If it's multiple year and multiple revenue stream, fill in the table below. Be clear on any capital requirement from the Crown.

	2020/21	**2021/22**	**2022/23**	**2023/24**	**2023/24**	**Total**
Capital expenditure	$20m	$20m	$20m	$10m	$10m	$80m
Operating expenditure	Excl	Excl	Excl	Excl	Excl	Excl
Total expenditure	$20m	$20m	$20m	$10m	$10m	$80m
Revenue	Nil	Nil	Nil	Nil	Nil	
Crown Capital required	**$15m**	**$15m**	**$15m**	**$7m**	**$7m**	**$59m**
CDHB Earthquake funds	**$5m**	**$5m**	**$5m**	**$3m**	**$3m**	**$21m**
Total Funds		$20m	$20m	$10m	$10m	$80m

Commercial Case

What things are needed to be purchased/procured?

As noted previously the compliance works are made up primarily of passive fire remediation, seismic repair works and building demolition. To enable the works to proceed design and project management consultants would need to be procured initially. Once the investigation, assessment, benchmarking and design phases are completed; contractors would need to be sought to undertake the works.

How will this be purchased/procured?

The CDHB has progressed the precast panel repair programme as part of the seismic repair works as there are ongoing Health & Safety issues and statutory timeframes that must be complied with. This portion of the works has a budget of $20m and the first tranche of which, in relation to Parkside Blocks A & B, has been designed, tendered and is ready to award to a contractor once funding is secured. It is proposed that the balance of the panel repair works would also follow this procurement methodology.

The Passive Fire remediation works has an estimated budget of $30.3m and the design work has started at a high level with negotiations between the CDHB, Consultant fire engineers, CCC, FENZ and Consultant peer reviewers already well underway. This will be followed by detailed design by fire engineers, architects and service engineers all led by project managers. Following agreement on scope with the CCC, the works will be tendered with the CDHB's pre-approved passive fire installers noting that the CDHB will procure all passive fire materials

under their existing supply agreement. Building contractors will be tendered from the CDHB's existing panel of contractors.

The demolition works will be scoped out by project managers and design consultants and then put out to the market for demolition contractors to competitively price.

The balance of the works is primarily seismic repairs and rectification and these will be designed, managed and tendered in the usual manner.

What commercial (not project) risks are there? How will those risks be dealt with?

Most of the items noted bellow are linked to the physical works as they have potential to impact upon scope and timing:

Programme – the ability to time specific elements of work to suit vacant spaces that are available once the Hagley building move is completed. Equally there will be a sequence of rolling seismic and passive fire works that must be completed before the CDHB bed growth takes up currently vacant wards. This will be mitigated by close control of the programme by the project managers. It is assumed that the $154m will be proceeding in parallel with the compliance works and if this occurs the enabling portions of the $154m package will need to be interwoven with the compliance activities to minimise disruption and cost.

CCC/FENZ interpretation of scope for Passive Fire – the scope of works required will be based on a risk framework that is being agreed between the CCC/FENZ & CDHB. As the first pilot project has not passed design and negotiation with respect to scope, this will remain a risk. CDHB have a Passive Fire Steering Group and they are responsible for managing this interface with CCC/FENZ; they will be monitoring this aspect and advising if requested scope is exceeding budget expectations. Further there is a commercial risk associated with 'evolving' scope of works. As areas are opened up, scope of works will be further quantified with associated cost and time. Proposed Commercial / contractual model and mechanisms to manage this is that contractors involved will have a pre-agreed schedule of rates that can be applied to any new activities.

Reinstatement of buildings to pre-earthquake levels to satisfy insurers – as the CDHB has received a global earthquake settlement that was less than the agreed value to rectify all incurred damage, the scope of seismic repair needs to be carefully identified. The proposed programme targets will be to repair any structural damage that has potential to impact upon any future event claims in preference to cosmetic damage.

Operational hospital environment – all of this work will be taking place in or adjacent to a fully operational tertiary hospital. This aspect would require lessons learnt from numerous post-earthquake repairs and projects carried out on the CDHB campus to be implemented. Also this risk will be mitigated, where possible, through staging / decanting to align with migration to Hagley and projected future demand

COVID lockdown – obviously any increase in Levels above the current Level 2 would impact upon project progress. Should a Level increase happen it is suggested that these works be catagorised as a priority project to minimise delay.

Perception – as recorded in the MOH National Asset Management Plan the Parkside building has the lowest scoring operating theatres nationally and the wards rate amongst the lowest scoring as well. The commissioning of the new Hagley building provides additional Operating Theatres and Wards of a clinical best-practice standard, nevertheless projected demand

growth over coming years means that the existing Parkside facilities are required to support clinical services on the Christchurch Hospital campus. This work will not deliver any improvements to these facilities from a clinical non-compliance or inconsistencies with current clinical best-practice.

Management Case

How complex will the delivery be?

The delivery will be quite complex in that works must be undertaken in an operational hospital environment with a tight programme necessitated by short term availability of bed and operating theatre capacity.

The initial stages of the passive fire and panel repair will be the most challenging as methodologies and implementation strategies are developed. The mitigation strategy is that the first tranche of work will be carried out in a mostly vacated Parkside Building blocks A and B. After this the balance of the works would largely be undertaken in an operational setting. It should be noted that while Parkside blocks A & B will be mostly empty for the duration of the proposed works, they are still attached to the existing occupied buildings.

It is assumed that the $154m will be proceeding in parallel with the compliance works and if this occurs the enabling portions of the $154m package will need to be interwoven with the compliance activities to minimise disruption and cost.

Who is ultimately responsible for this project? What mechanisms are there to keep them and stakeholders appraised of problems?

The CDHB should be responsible for this project because of the complex delivery process noted above. This places them in the best position to manage the day to day risks and operational impacts that inevitably and historically occur on these types of projects.

It would present a major risk if the MOH were to undertake delivery and accept this operational responsibility.

The CDHB has policies and procedures for projects of this type that will see a typical reporting structure put in place incorporating reporting lines for risk management and the like. The SRO is proposed to be the CDHB's Executive Director of Facilities and will be a member of the Executive Leadership Team.

How will this project achieve the benefits, and how will benefits be managed and evaluated?

The main benefits to completing this project are the retention of the legal right for the CDHB to occupy the buildings involved and also the reinstated insurance value of currently at risk buildings.

The benefits will be progressively achieved as the various tranches of the projects are completed and signed-off from a compliance perspective.

What risks are there? What's the mechanism for monitoring and seeking resolution?

In addition to the risks noted in the Commercial case section above the standard budget, time and quality aspects will need to be managed by the project teams.

Given that the passive fire scope is relatively untested at this time with the consenting authority, the overall quantum of work is unconfirmed although the budget allocations are restrained but pragmatic.

From a seismic perspective it should be noted that on previous projects of this nature on the campus there has typically been additional items of work discovered when linings are stripped back. The budget allowances include for some of this 'discovery' but if an unexpected major item is exposed, this will be a risk to the budget.

Summarise the project management, benefits and risk management and post project evaluation arrangements.

As noted previously, given the complex nature of the proposed scope and the fact that most work will be undertaken in an operational environment, the work is best delivered by the CDHB. The Site Redevelopment department is experienced in delivering post-earthquake repairs within operational areas of the hospital and limited passive fire remediation projects. This scope, whilst larger than work undertaken to date, is within their capability. External project managers and design teams would be engaged in the usual manner.

The CDHB has policies and procedures for projects of this type that will see a typical reporting structure put in place that will have reporting lines for risk management and the like.

Benefits realisation is simply the implementation of the designed scopes. There will be a need for staged post occupancy evaluations as this will be a rolling programme of work and lessons from the early stages must be implemented in the following tranches.

Next Steps

Please provide an update of procurement / construction timelines and other key milestones.

The CDHB is progressing passive fire strategy and design with the CCC and FENZ currently and this work is being costed to the $21m CDHB earthquake funds. It was vital that this work progress otherwise Parkside Blocks A & B could be vacant following the Hagley go-live without an agreed scope of work for the passive fire remediation.

Façade panel replacement and seismic repair for Parkside Blocks A & B is also being progressed by the CDHB. Tenders have been received for the north/east corner and are ready to be awarded upon funding approval while tenders are currently being obtained for the south/east corner.

A detailed programme is currently being prepared and this will be available in the near future. It is assumed that all passive fire and seismic repairs along with any approved enabling works to Parkside Blocks A & B will be implemented next year.

Canterbury DHB
Tower Three Business Case
(DBC Addendum)

Prepared by:	Destravis
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Purpose

This business case for the Canterbury District Health Board (CDHB) Tower Three (DBC Addendum) seeks formal approval to invest in the preferred option 1c, being the creation of the Christchurch Hospital Tower Three (T3). T3 will be eight storeys high and will incorporate five new levels of 32 bed Inpatient Units (IPU's) above the existing podium. Two of the levels will be fitted out, providing 64 new beds, while three levels will be created as shell space capable of being fitted out in future years as bed demand grows. The project will have reduced D space compared to previous options, suitable to meet the needs of T3.

The preferred option 1c will cost approximately $154,000,000 with commissioning expected in the 2024/25 financial year.

This Business Case will outline the strategic case for undertaking the preferred option, building on the work undertaken to develop the November 2019 DBC for the Christchurch Hospital Redevelopment. This Business Case will identify the bed need at Christchurch Hospital and bed strategy to meet those needs. It will compare the previous preferred option (November 2019 DBC – option 1b) to the current preferred option 1c, making the case that option 1c is able to deliver on the bed needs of Christchurch Hospital for a lower capital spend while enabling future bed needs to be met. Financial, Commercial and Management considerations will be detailed, demonstrating T3 is able to be delivered mid-2025.

Strategic Case

Background

In November 2019, the CDHB submitted a DBC for the Christchurch Hospital Redevelopment (The DBC). The DBC articulated a case to deliver the preferred option 1b, a $437,800,000 ($387,000,000 sought from the crown) project that would deliver the following:

- enabling works, including decanting and demolition of Riverside West
- enabling works for Tower 4 including kitchen relocation, demolition of Food Services Building, demolition of lower ground extension of CSB, loading docks, plant relocation and ground improvement
- construct Tower 3 (9 floors, inclusive of D-space and Riverside link)
- construct in ground services for Tower 4
- full design for all tranche 2 activity, including Central Podium and Tower 4
- clinical refurbishment within remaining buildings for ambulatory clinics and office space
- compliance work to address earthquake damage and some passive fire rectification.

These works are considered part of 'tranche 1' works, delivering on short and medium term clinical and building safety (fire and earthquake) needs. The DBC also sought to design tranche 2 capital works (T4 and podium) given these were required to increase theatre capacity and meet additional bed needs from the decommissioning of bed spaces within the Parkside building. The construction funding for these works was to be subject to a future capital request.

In late 2019 the DBC was assessed by the Capital Investment Committee. Due to potential capital constraints, the Committee asked CDHB to provide an alternate option that would be able to deliver on bed needs with a lower capital cost, separating out building safety works to a separate business case and funding pool (Canterbury DHB Campus Master Plan Compliance Works).

From January to September 2020 CDHB re-analysed project need and scenarios to deliver an alternate preferred option that will meet the identified investment needs, the subject of this business case.

Problem Statements and Investment Objectives

The former DBC identified three key problem statements CDHB was seeking to address.

Problem Statement 1 – Building compliance and Safety

This problem largely relates to the need to bring existing hospital buildings up to earthquake safety standards. This problem remains and remediation works are proposed to go ahead in line with the DBC proposal. These works are subject to a separate case for the Canterbury DHB Campus Master Plan Compliance Works, allowing the problem to be resolved. Given this, this problem is no longer relevant to this business case.

Problem Statement 2 – Growing Demand for Hospital Services

The DBC made a clear case for the growth in service need that that CDHB is experiencing. This problem can be broken down into projected inpatient bed demands and projected theatre capacity, discussed below.

Projected Bed Demand

As stated within the DBC, CDHB's population continues to grow at a rate faster than projected, with an aging population and existing health needs placing pressure on clinical infrastructure, in particular on medical inpatient beds and theatre capacity. This is combined with areas within Christchurch Hospital that are aged, compromising patient and staff safety and wellbeing, and creating operational inefficiencies.

These strategic drivers have not changed, and the agreed bed projections as noted in the DBC have been used within this Business Case.

The base projected bed demand and demand deficits based on current bed numbers are noted in Table 1 and Figure 1.

Table 1 – Projected Bed Demand – Base Case

ADULT BED CAPACITY TOTAL ON & SS DEMAND	FY16/17	FY17/18	FY18/19	FY19/20	FY20/21	FY21/22	FY22/23	FY23/24	FY24/25	FY25/26	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31
TOTAL CAPACITY	539	539	539	635	635	635	635	635	635	635	635	635	635	635	635
TOTAL ON AND SS DEMAND	513	506	559	577	595	613	630	648	667	687	709	730	750	771	793
INFRASTRUCTURE GAP	26	33	-20	58	40	22	5	-13	-32	-52	-74	-95	-115	-136	-158

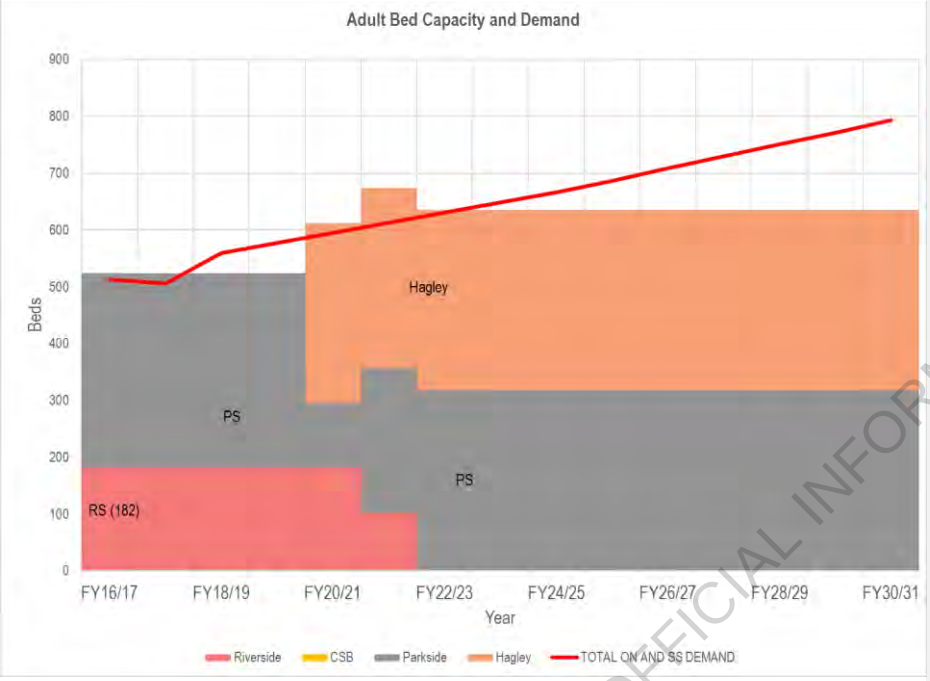


Figure 1 – Projected Bed Demand – Base Case

The information above demonstrates increasing bed need growing from 513 beds in 2016/17 to 793 beds in 2030/31.

Current infrastructure bed capacity is 539 spaces, growing to 635 based on the recent commissioning of the Hagley Building, Tower 1 and Tower 2. A bed deficit of 13 beds is experienced in the 2023/24 financial year, growing to 158 beds by 2031.

It is noted that bed capacity has been adjusted to take account for building safety compliance (earthquake remediation) works within these figures. These works will result in a reduction of current bed capacity of 24 beds within Parkside by 2024/25. These figures have been included in the projections above, meaning the bed deficit is ***13 beds in the 2023/24 financial year, growing to 158 beds by 2031.***

The DBC's previous preferred option 1b sought to address clinical functionality concerns by decommissioning existing 6-bed room layout wards within the Parkside, converting these to 4-bedroom ward layouts. This would have resulted in the decommissioning of an additional 64 beds, increasing the deficit in spaces to 77 in 2023/24, growing to 222 by 2031. The DBC also envisioned the sequential closing of Parkside in the 2023/24, 225/26 and 2030/31 financial years, further reducing beds by 254 spaces over the time period. These significant additional deficits were the primary driver behind opening additional wards within the DBC's preferred option 1b.

CDHB has reanalysed these needs and has determined that, while not clinically preferred, it will to continue operating the 6-bed ward layouts within Parkside until 2031, by which time

additional IPU capacity beyond the scope of this project is expected to be required if current population trend and models of care continue as per current assumptions.

The protected bed demand is therefore in line with Table 1, with a requirement to deliver 13 beds by 2023/24, growing to 158 beds by 2031.

Projected theatre infrastructure

The DBC also identified that theatre capacity would be constrained by 2024/25 where a deficit of one theatre is expected. This deficit grows to two theatres in 2026/27, three in 2028/29 and four in 2029/30, in line with Figure 2 below.

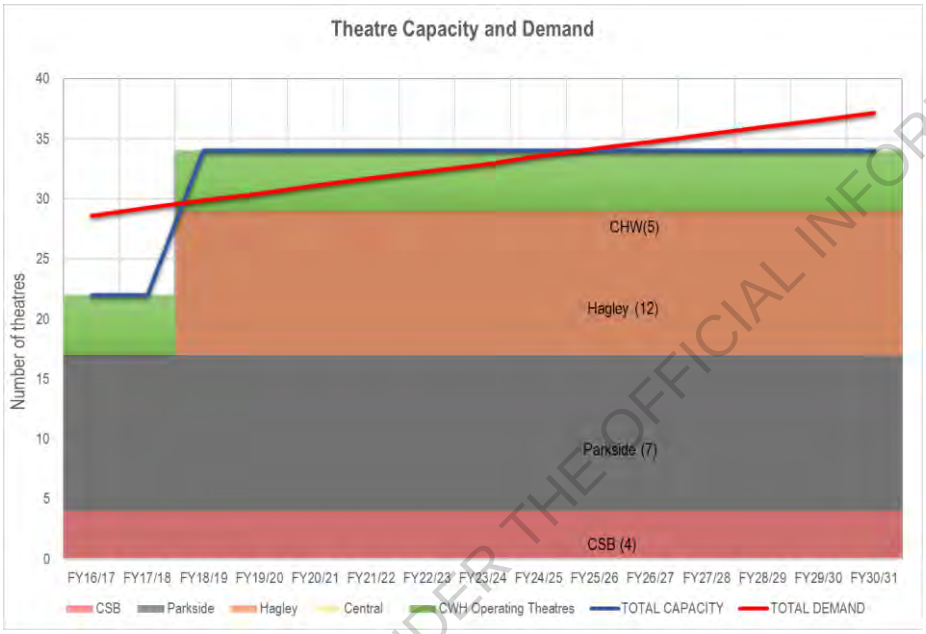


Figure 2 – Projected Theatre Capacity – Base Case

The former DBC identified that additional theatres would be accommodated within a new podium and tower (T4), with anticipated commissioning in the late 2020's. While the DBC did not include a request for construction funding for these works, it was proposed that a full design would be undertaken with all early enabling works (demolition and relocation of services) and in ground services constructed to enable T4 to be constructed when funding allowed.

Theatre demand has not been modified within this Business Case. However, this Business Case does not seek capital funding to construct additional theatre capacity. The existing strategy of outsourcing additional growth in theatre demand is proposed until such time as additional IPU capacity is expected to be required (2031), where a combined theatre and IPU build will be considered. Alternate strategies and models of care to manage or reduce theatre demand across CDHB facilities will also be explored prior to theatre capacity thresholds being met.

Problem Statement 3 – Diminishing quality of care and operational efficiency

The DBC outlined the existing functional deficiencies of a number of the Christchurch Hospital's buildings with respect to meeting AusHFG recommendations on configuration and spatial allowances. The key issues are:

- insufficient space in patient rooms due to the age of facilities
- shortage of key spaces, in particular a lack of single rooms, patient bathrooms and showers, and treatment rooms.
- infection risks, in particular a lack of negative pressure rooms and insufficient patient bathrooms and showers
- poor ward configuration, in particular poor line of sight, open layouts, shortage of storage leading to crowded corridors and bathroom sizes that do not cater for patient assistance needs.
- poor departmental connectivity due to services being spread out post earthquake
- low staff wellbeing with a high absenteeism rate.

These issues lead to a desire by CDHB to improve clinical layouts, patient bedrooms and amenities and deliver contemporary models of care.

Improvements to address these issues largely relate to providing new infrastructure that will support contemporary facility benchmarks, allowing the decanting of old ward layouts.

While this is the case, in a constrained capital environment, CDHB is focused on delivering new infrastructure to meet growing service needs. This will allow some improvement to patient care as higher acuity patients will be able to be facilities within new facilities, with lower acuity patients managed within older ward layouts.

While not clinically preferable, existing layouts can continue to be used while new infrastructure is built to manage additional demand. When future demand grows to the point where additional investment is required, improving or decanting existing facilities can be addressed.

Given the above information, Problem Statement 2: Growing Demand for Hospital Services, is the key problem seeking to be addressed through this Business Case, with Problem Statement 3 taking a lower priority within the Business Case.

Economic Case

Scenarios to deliver the alternate preferred option

CDHB considered five additional scenarios to deliver growing bed demands. All scenarios used the DBC's preferred option 1b as a base given this option aligned with the strategy of opening up T3 to meet increased IPU demand, integrating into the existing Hagley Building as had been planned at previous stages.

CDHB also sought to reduce the amount of D space required from approximately 5,000sqm to 1,800sqm within this option. While additional D space is preferable, reduction in these spaces does not compromise key clinical areas (e.g. ward layout and beds), ensuring the core components of the project are able to be catered for.

All scenarios continue to allow for some improvements to departmental location and relocation of areas impacted by demolition works associated with earthquake compliance (demolition of Riverside West), with all scenarios continuing to include the following in scope:

- relocation of Respiratory Lab
- move Medical Physics from Riverside West
- move Clinical Engineering from Riverside
- move Blood Bank closer to Hagley
- fit out new DOSA and recovery
- build new docks
- move ENT/Audiology from Riverside West
- convert theatre into Cath Lab
- compliance works for Gastroenterology
- relocate sleep unit
- create holding area in lower ground floor or Hagley.

Table 2 over page identifies the scope, cost, risk/disadvantages and benefits of each.

Table 2 – Alternate preferred option - scenarios

	Scenario A	Scenario B	Scenario C	Scenario D	Scenario E
Scope	T3 @ eight storeys: • five new ward floors – 160 beds • 2 floors fitted out (64 beds) • 3 shell floors (96 bed future fit out)	T3 @ eight storeys: • five new ward floors – 160 beds • 4 floors fitted out (128 beds) • 1 shell floor (32 beds future fit out)	T3 @ nine storeys: • six new ward floors – 192 beds • 2 floors fitted out (64 beds) • 4 shell floors (128 beds future fit out)	T3 @ nine storeys: • six new ward floors – 192 beds • 4 floors fitted out (128 beds) • 2 shell floors (64beds future fit out)	T3 @ nine storeys: • six new ward floors – 192 beds • all floors fitted out (192 beds)
Cost	$154,000,000	$178,000,000	$178,000,000	$198,000,000	$214,000,000
Risks / Disadvantages	Does not optimise all clinical functionality improvements.	Does not optimise all clinical functionality improvements. Higher capital cost.	Does not optimise all clinical functionality improvements. Higher capital cost. Increase structural works to Hagley podium to account for additional level- operational impact.	Does not optimise all clinical functionality improvements. Higher capital cost. Increase structural works to Hagley podium to account for additional level- operational impact.	Does not optimise all clinical functionality improvements. Highest capital cost. Increase structural works to Hagley podium to account for additional level- operational impact.
Benefits	Meets immediate bed need to 2025/26 with shell space capable of meeting all bed needs to 2030/31. No operational impacts due to strengthening works in Hagley Podium In alignment with capital cost expectations	Meets bed needs to 2028/29 with shell space capable of meeting all bed needs to 2030/31. No operational impacts due to strengthening works in Hagley Podium	Meets immediate bed need to 2025/26 with shell space exceeding 2030/31 needs.	Meets bed needs to 2028/29 with shell space exceeding 2030/31 needs.	Exceeds 2030/31 bed needs.

In addition to the above it is noted that this scenario carries the risk that theatre activity continues to need to be outsourced, increasing operational funding requirements.

Given CDHB requires only 32 beds by the estimated completion date of the project (2024/25), with a second ward needed by 2026/27, and due to the lowest capital cost, scenario 1 was chosen, becoming the preferred Option 1c.

The preferred Option 1c and its comparison to the DBC preferred Option 1b is detailed in the below.

Preferred Option Comparisons

A comparison of the former preferred Option 1b and the new preferred Option 1c is undertaken in below.

Table 3 – Option 1b and 1c comparison

	Option 1b	Option 1c
Scope*	• Construct Tower 3 - 192 beds (6 ward floors all fitted out, inclusive of more expansive "D" space) • Full design of new Central Building and Tower 4 • In ground Services for new Central building and Tower 4 • Infrastructure for new Central building and Tower 4 • Respiratory Lab relocation • Move Medical Physics from Riverside West • Move Kitchen into Women's Building • Build offices in Hagley LGF for Anaesthetics, Radiology and Surgical staff • Move Clinical Engineering from Riverside • Move Blood Bank closer to Hagley • Relocate Apheresis • Move staff and public café to Hagley • Demolish old Food Services Building • Fit out new DOSA and Recovery • Move Terminations to Women's • Move Child Protection Team • Build new Docks • Move ENT/Audiology from Riverside West • Convert theatre into Cath Lab • Gastro compliance works • Relocate Sleep unit • Passive fire remediation – existing facilities (Tranche 1)* • Create holding area in LGF Hagley	• Construct Tower 3, 5 ward floors; fit out 2 floors (64 beds and shell 3 floors, inclusive of reduced "D" space) • Respiratory Lab relocation • Move Medical Physics from Riverside West • Move Clinical Engineering from Riverside • Move Blood Bank closer to Hagley • Fit out new DOSA and Recovery • Build new Docks • Move ENT/Audiology from Riverside West • Convert theatre into Cath Lab • Gastro compliance works • Relocate Sleep unit • Create holding area in LGF Hagley

	Option 1b	Option 1c
Cost	$386,600,000*	$154,000,000
Risks / Disadvantages	Relies on capital funding in excess of that sought to meet clinical functionality (decommissioning of Parkside) and theatre demand projections (T4) – i.e. capital funding sought did not address the service need or full clinical functionality improves. High capital cost Service disruptions during building compliance rectification will further disrupt bed capacity during works (1-2 years of sequential disruptions) Disruption to operations in Hagley podium for structural improvements (enabling T3 9th storey)	Does not optimise clinical functionality within the existing Parkside building and within support functions Relies on an alternate strategy (e.g. activity in other CDHB facilities or outsourcing) to deliver growth in theatre activity beyond the 2024/25 financial year Service disruptions during building compliance rectification will further disrupt bed capacity during works (1-2 years of sequential disruptions) Potential ongoing operational inefficiencies due to poor clinical functionality in units occupying Parkside.
Benefits	Exceeds new bed demand projections Meets desired clinical functionality (noting the final solution (T4) was not included in the capital funding request) Ensures theatre growth is able to be accommodated on campus (centralised approach – note this was not included in the capital funding request) Aligned with Master Plan strategy	Optimal capital cost No disruptions to Hagley podium operations Aligned with new bed demand projections with immediate bed fit out meeting needs to 2025/26 and shell space capable of meeting bed needs to 2030/31. Does not impede Master Plan strategy

* Note both options do not include building compliance works as these are subject to a separate business case.

The key differences between the two options revolve around what occurs within the Parkside building. As the former preferred option 1b sought to improve clinical functionality (reduce 6 bed wards to 4 beds) and to decommission Parkside between the 2023/24 and 2030/31 years, the former preferred option 1b required additional bed capacity to be installed up front, and required additional spend to design and enable T4. The former preferred option 1b also sought to meet theatre demand, which it has been noted is not a priority for this Business Case and it is noted that capital funding was not sought for the construction of T4 that would enable this demand to be met. Option 1b would result in additional disruptions to operational services with significant decanting and refurbishment required, along with significant additional structural works to enable the 9th storey of T3. This would create operational impacts to the new Hagley building podium.

While option 1b does enable improvements to clinical functionality and theatre capacity, it is significantly stymied by a higher up front capital cost (more than $230,000,000 higher than option 1c) and did not seek funding for the construction of T4 which would have resulted in

significantly more capital funds being required in the mid-term to meet the actual service needs it identified it was resolving.

The new preferred option 1c does not deliver optimal clinical functionalities, with existing deficiencies in Parkside remaining until an alternate strategy to manage Parkside is enabled. option 1c also requires an offsite solution to meet future deficits in theatre demand (4 theatres) and will likely result in some operational inefficiencies due to older and less functional clinical layouts in the Parkside building.

While this is the case, option 1c delivers benefits included an optimal capital cost, fewer service disruptions than option 1b, in particular option 1b will include no service disruptions to the podium of the Hagley building. option 1c does not impede the Master Plan, with all future building locations preserved and clinical areas aligned with preferred or suitable interim locations. Option 1c also delivers on the new bed projections, meeting capacity to 2031/32, ensuring critical be needs are met.

A comparison of how the options meet projected bed demand is provided is provided in Table 4 below.

Table 4 – Option 1b and 1c projected bed capacity comparison

FY	Option 1B			Option 1C		
	Demand Projection	Capacity	Gap	Demand Projection	Capacity	Gap
2019/20	594	577	17	524	577	-53
2020/21	610	595	15	612	595	17
2021/22	571	613	-42	674	613	61
2022/23	571	630	-59	635	630	5
2023/24	686	648	38	635	648	-13
2024/25	686	667	19	699	667	32
2025/26	799	687	112	699	687	12
2026/27	799	709	90	763	709	54
2027/28	799	730	69	763	730	33
2028/29	799	750	49	763	750	13
2029/30	799	771	28	795	771	24
2030/31	745	793	-48	795	793	2

As can be seen form the table above, both options met the bed needs, with an additional shortage in bed needs experienced under the former preferred option 1b given it included significant reductions in existing bed capacity within the Parkside building. This strategy of faster decommissioning of Parkside, and of refurbishment to make Parkside more clinically functional also resulted in a greater deficiency in the 2021-2023 financial years during construction works. option 1b exacerbated bed shortages.

The new preferred option 1c results in no bed deficiencies in future years, with only a small gap in beds experienced in 2023/24 while earthquake and fire compliance safety works are undertaken.

The information above demonstrates that the preferred option 1c meets the required bed demands into the future.

Bed projections are noted graphically for each option in Figure 3 and Figure 4 below.

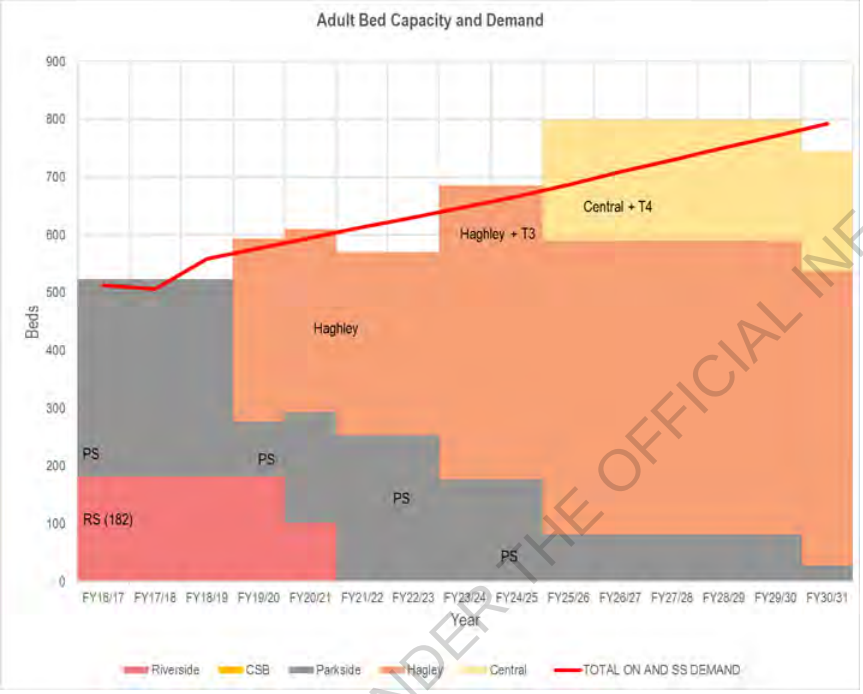


Figure 3 – Option 1b Bed Projection Graph

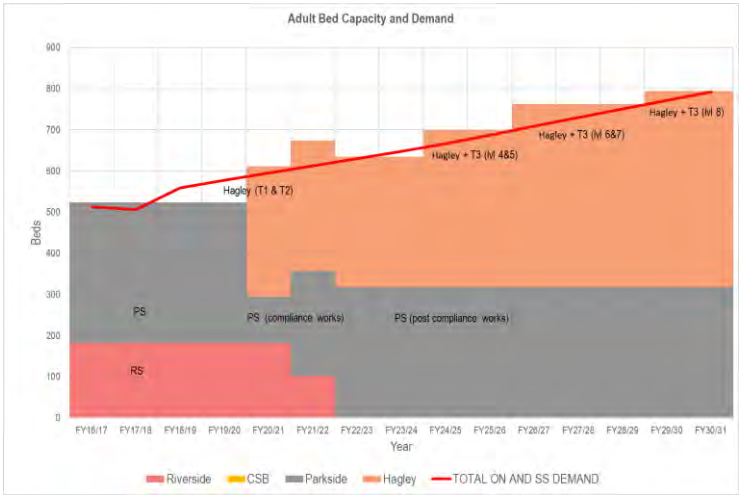


Figure 4 – Option 1c Bed Projection Graph

A comparison of the typical floor layouts of option 1b and option 1c is provided in Figure 5 below. This allows comparison of the modified D-space between the two options.

Figure 5 – Option 1b (left) and Option 1c (right) floor layout comparison

The right image above shows the preferred option 1c. This image shows the former option 1b D-space in green outline. As can be seen from these images, option 1 c has realigned the D Space to be over the existing Hagley podium entirely, requiring no new build out or additional structural works. The layout of the IPU has been changed, with no reduction in bed numbers. Additional lift core and link work to the T4 building (below / South) are also not undertaken, with half the lift core built and the fire safety stairs in an alternate location to ensure fire safety is able to be achieved regardless of T4's construction date. This does result in a small reduction in areas. However, it is noted that critical rooms including meeting rooms, treatment rooms, gym, staff room and space for Whanau are included in both options.

This demonstrates that the D-space and ward layout of option 1c remains functional and is still able to link to T4 in the future, ensuring future functionality in line with the Master Plan.

Additional plan details are provided in Appendix A.

Critical Success Factor Comparison

Critical success factors that aligned with the investment objectives of the DBC were developed with the former preferred option 1b analysed against these.

These factors have necessarily changed as a result of meeting growing service demand being the key priority of this Business Case, with building compliance dealt with via a separate process, and improving clinical functionality taking a secondary focus.

For this reason, Critical Success Factor (CSF) 1 (Compliance and Safety) has been removed, with CSF 2 (patient experience and quality of care) reduced in focus slightly. Table 5 identifies the changes in CSCF weighting and scoring for the options.

Table 5 – Critical Success Factor analysis – Option 1b vs Option 1c

Critical Success Factors	Former Weight	New Weight	Subcategory	Former Weight	New Weight	Option 1b (scores as per DBC*)	Option 1c
CSF1: Compliance and Safety	23%	0%	Statutory Compliance	18%	0%	0	0
			Other Compliance	5%	0%	0	0
CSF 2: Patient experience and quality of care	26%	15%	Patient / Staff experience	7.5%	2.5%	2	1
			Quality of Care	7.5%	2.5%	3	2
			Minimised Disruption	10%	10%	2	2.5
CSF3: Population outcomes	21%	35%	Capacity	11%	24%	2	3
			Resilience	11%	11%	2	1.5
CSF4: Value for Money	15%	15%	Economy	5%	5%	3	2
			Effectiveness	5%	5%	3	2
			Efficiency	5%	5%	3	2
CSF5: Affordability	15%	35%	Capital	5%	25%	1	3
			OPEX	10%	10%	2	1
				Total - Unweighted		23	20
				Total - Weighted		1.93	2.36

* Note – Scores for Option 1b are as per the DBC, with the exception of scores for CSF1 – these scores have been reduced from 2 to 0 as they are no longer part of the case. The weighted total is different as weightings have changed.

As can be seen from the table above, CSF1 has its weighting reduced from 23% to 0%, with CSF 2 reducing its weighting from 26% to 15%, with the sub categories of patient / staff experience and quality of care reduced from 7.5% to 2.5% each.

CSF 3 has had weighting increased from 21% to 35%, with all increases going into the capacity subcategory.

CSF5 has had weighting increase from 15% to 35%, with all increases going into the Capital subcategory.

This results in the score for option 1b being reduced from its DBC score of 2.2, to 1.93.

Option 1c scores at 2.36, higher than option 1b, confirming its status as the preferred option via a CSF analysis.

The main driver behind option 1c scoring higher is its significantly lower capital cost, allowing a high score to be obtained in this category. Its capacity score is also increased as the bed strategy adopted ensures a higher volume of beds is available over the duration of the bed projections.

Option 1c does score lower than option 1b in the patient / staff experience and quality of care sub categories, as is expected given option 1c maintains Parkside wards to 2030/31. Option 1c is also less resilient overall, with a lower but moderate score for all CSF4: Value for Money categories.

Overall, option 1c scores higher than option 1b. Option 1c is able to meet bed demands, provides an acceptable level of patient and staff amenity, does not stymie the ability of the Master Plan to be furthered int the future (subject to additional capital) and does so at a significantly reduced capital cost.

Financial Case

The estimated cost of this project is $154 million, as per the Table 6 below These costs are based on CDHB and Quantity surveyor (RLB) amendments of the original DBC cost plan of option 1B and a value engineering approach. This includes the original allowances for escalations.

Given the time constrains, no operational costing and revenue modelling has been undertaken. It is expected that this would be of a very similar nature (benchmark assumptions) as DBC option 1B for the Tower 3 component only. Updated operational and revenue modelling will be undertaken upon approval of the DBC.

The full amount has been requested as Crown funding.

Table 6 – Estimated project cost summery

In Millions $	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	Total
Capital expenditure	8,178	13,592	29,843	40,421	37,666	21,326	2,400	574	154,000
Operating expenditure	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC
Total expenditure	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC
Revenue	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC
Capital required	8,178	13,592	29,843	40,421	37,666	21,326	2,400	574	154,000
Operating required	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC

A detailed overview of capital cost estimates for option 1C is attached in appendix F.

Commercial Case

Due to the vast similarities in the scope concerning Tower 3 in both option 1B with 1C, this commercial case has been based on a review and comparison of the commercial arguments in the DBC for option 1B and in particular the items applicable to tower 3 . This approach resulted in a similar outcome and conclusion without the need to undertake procurement analysis, workshops, evaluation criteria, assessment, etc. The key considerations have been highlighted in this section to reflect the nature and scope of option 1C and the reduced scope when compared with option 1B. It is designed to deliver capacity in line with forecast demand pressures facing CDHB. The programme and estimated capital costs for the recommended option is based on a traditional, design then construct model which attempts to weigh up and recognise a range of prevailing circumstances including the experience of similar projects and the capacity and capability of the local market. In this regard, the assessment result and criteria undertaken during the DBC for option 1B remain applicable: undertake a completed design that is fully scheduled and costed before the point of tender.

It should be noted that a detailed procurement plan will be developed following the approval of this Business Case and endorsement of the recommended option.

The project and market context and circumstances that have led to the conclusion is described as follows:

- Current concerns exist based on other health projects around design risk and the failure to provide fully documented design and drawings at point of tender.
- There are current gaps in capability in the local industry for more complex procurement methods. Quite simply, the local market does not have the maturity and appetite for more complex procurement methods. It is critical however that the learnings from past traditional procurement approaches are observed and acted upon. The Ministry of Health is taking the lead on providing learnings from the procurement and construction of Hagley. As noted above, completing fully documented design and drawings is a key learning from previous projects and this must be applied in the procurement approach for this project
- The recommended option has co-location of the proposed new facilities with existing CDHB facilities on the Christchurch Hospital site. This means there is limited opportunity for substantial whole-of-life risk transfer; consequently, more complex procurement approaches are unlikely to mitigate potential risks.

Table 7 – Preferred procurement method: traditional procurement

Traditional procurement model	
Description	• The Ministry of Health enters into contracts for construction based on separately procured design (either concurrently or consecutively) • No ongoing obligations for asset maintenance and operations by Contractor as separate in-house or separate externally procured operations, maintenance and lifecycle arrangements would be put in place • Funded by public sector
Rationale / advantages for choosing this approach	• Greatest level of cost certainty prior to engagement with the construction market • Timeframes and scope are agreed upfront • Similar time to market relative to alternative procurement approaches (dependent on adherence to respective methodology) with a complete design

Traditional procurement model	
Risks to the Ministry of Health and / or CDHB	• Similar or lower tendering cost relative to alternative procurement approaches dependent on adherence to respective methodology • High level of design and implementation control • Most competitive and attractive to the market • Least risk for contractors • Tailored bundling in order to meet timeframes • Majority of risks retained by public sector, though cost and design risk is transferred to the contractor especially with complete design being undertaken • Contractor only models may increase interface risks between designers and contractors • A separate competitive tender process for design and then construction contractor may put the targeted 2025 operational commencement at risk • Positive outcomes and risk management for the public sector dependent on high internal capability and capacity • Better management of design risk is paramount – further discussion on these matters is set out below but with a particular focus on ensuring design is complete and fully documented at the point of tender i.e. so that the delivery of a robust traditional construct model is achieved

The characteristics of the project remain aligned with the DBC and are described in Table 8.

Table 8 – Characteristics of the recommended option that impact procurement

Characteristics	Description	Implication for procurement
Site location	Tower 3 will be located on the Hagley podium in the location of the Christchurch Hospital site. The Hagley podium was developed with future expansion with the third tower to be built on the existing podium footprint. It is consistent with the Master Plan's long-term vision and site wide connectivity	Co-location of the proposed new facilities with existing CDHB facilities on the Christchurch Hospital site means there is limited opportunity for substantial whole of life risk transfer and consequently more complex procurement approaches are unlikely to be appropriate
Scope	The key components of the project will be: • Enabling works, design and construction of new Tower 3 and fitout of two floors delivering 64 beds. (160 IPU final bed capacity) • Minimum refurb works across the site, with focus on enabling decant of Riverside West	• The scope of projects and their complexity will impact the procurement approach. • Various packages of the project can be procured as separate packages. • In addition to the build component, maintenance and lifecycle services for varying durations and standard defect liability periods could be included within contracts for the components detailed
Scale	It is anticipated that the project will require $154 funded works. This cost is largely comprised of:	• The scale of projects (capital value and on-going services cost) directly impacts the procurement decision-making criteria for project delivery

	• $13m for design package of Tower 3 • $116m for construction Tower 3 that consists of 8 floors and 64 beds fitted out beds • $2.5m for design package of Minimum refurb works, • $22.5m for Minimum refurb works,	• The larger a project is the greater ability it will likely have to absorb the transaction costs associated with more complex procurement models • The procurement advisors observed that for smaller scale packages there is sufficient market capacity and competition to drive better value for money outcomes
Timing	Early completion of the facility is both desirable and necessary in light of the risks associated with the continued provision of health services for the CDHB region. The need to provide more inpatient beds to the region means the facility should be in service as quickly as possible to meet the projected demand. • The current assumption is that the new Tower 3 facility will be in service by mid-2025. • Tower 3 approvals process (expedited) (by 30/10/20) • Tower 3 early works contractor procurement (by 30/07/22). • Tower 3 contractor procurement (by 30/03/23)	• Procurement timescales (and cost) will normally increase with the complexity of the procurement option applied • The expedited programme is facilitated by several early works packages e.g. early • structural steel, works/migration to enable riverside west demo, Tower 3 shell, core and structure design • If timescales and programming are significant constraints, design then construct procurement methods are more appropriate • Design then construct procurement methods are likely more appropriate due to similar time to market with a more thorough brief relative to alternative procurement approaches and the ability to provide surety around time and cost deliverables
Services	As CDHB will be the owner of the facility, asset management services will be provided by CDHB upon completion of construction Operations/clinical services will be provided by CDHB. Operated and maintained by CDHB.	The existence of facilities maintenance and infrastructure contracts covering the co-located CDHB facilities presents opportunities for economies of scale through extension of those contracts to the contractors for the new facility
Live operating environment	The work will be happening in a live hospital operational environment	The requirements associated with working in an operational environment will influence cost, time requirements and may influence market interest
Delivery Agency	Current assumption is that Ministry of Health will deliver Tower 3 design and construction. Meanwhile CDHB will deliver: • Minimal refurbishment works on existing buildings (Parkside, Riverside, Clinical services building) • Remaining compliance on existing buildings (covered in a separate business case)	Delivery agency should not impact on the assessment of the preferred procurement method for each package of works. However, there may be an opportunity to integrate some of these works with Ministry of Health delivered works to streamline operational impact of construction works and mitigate dependency risk

In addition to the asset and service requirements of the project, a set of potential risks related to the procurement of the project were identified for consideration in the evaluation of the procurement options. These risks are not presented with mitigations as they were intended to inform the overall discussion on the suitability of procurement models. Some mitigations therefore form part of the overall assessment. The impact of risks becoming issues was considered in the Quantitative Risk Assessment (QRA) of the DBC with the full findings set out in Appendix M. Table 9 presents the summary of risks for the procurement of the project.

Table 9 – Summary of key risks for the procurement of the project

Risk	Impact
Timetable (drivers include approval / decision making delays)	• Time delays (impacting works programme or in-service dates) results in increased operating and capital cost, along with increased safety, wellbeing, and clinical risks due to: • Cost escalation • Continued pressure to manage increasing demand within existing capacity • Longer time spent in suboptimal facilities
Incomplete and/or inaccurate information and assumptions underlying the Business Case, procurement and/or design processes	• Material changes to the Project scope, scale and/or cost because of incomplete and/or inaccurate information and assumptions underlying the Business Case and/or the procurement process • Project becomes unaffordable and/or does not represent the best value for money resulting in poor decision making and/or time delay
COVID19	• To the extent possible, the impact of COVID19 and the risk of interruptions and delay claims will need to be managed in the contract conditions for design and construction. Further legal advice from the MOH is to be sought in this regard.
Site conditions	• Whilst Tower 3 is to be constructed on a future proofed podium, it appears that there is significant upgrade works to be undertaken to facilitate the additional tower to the existing podium and in particular to the level 3 plantroom services and structure. Further detailed investigation will be undertaken as part of the subsequent design process
Design	• Disagreements between designer and contactor may result in delays or the assumption of additional risk by the Ministry of Health and CDHB • Unique features and complexity of project results in costs overruns • Design targets capital cost, without sufficient regard to operating costs resulting in higher than expected operating costs
Construction	• Design is not buildable or results in material additional cost • Sequencing of construction is not met due to unexpected complexity of the project or events such as delays in scheduling of materials, trades, and design or buildability issues • The site requires more remediation work than initially anticipated resulting in significant cost overruns
Operating Risks	• Higher than expected operating costs • High than anticipated utilisation of the facility results in capacity constraints • Lower than expected utilisation of facility results in an overbuilt and OPEX heavy building

Risk	Impact
	• Higher than expected disruption of day-to-day operations in the hospital during the redevelopment
Asset	• The built facility is not fit-for-purpose • The design does not adequately meet the current needs of clinicians and patient realities • Scope and scale of the facility is not sufficiently flexible to cater to future growth / clinical mix: • Facility is not able to cater to changing patient demand • Treatment outcomes and benefit targets are not met • Exposure to future cost escalation and costly alterations to the facility at a later stage
Political	• A change in priority of this project relative to wider national health projects causes delay in timeline • Political pressures to accelerate timelines may result in rushed decision making, robust processes not being properly followed

Management Case

Project Delivery

The project delivery might appear straight forward since the original design was future proofed to facilitate the addition of tower 3. However, due to limitations in the detailed design prior to appointment of the Contractor and value management outcomes, the future proofing readiness has been compromised.

As such, it will be paramount that the design is given adequate investigation, documentation and verification/peer review time to identify the detailed scope of amendments and integration requirements of tower 3 with the existing building and in particular since the podium building is not a clinical operational acute hospital facility catering sensitive imaging and operating theatre equipment.

The commencement of the construction of Tower 3 is dependent on the Demolition of Riverside West, which in turn is dependent on the current occupant being decanted into other locations, which in turn require minimal refurbishment works.

The tight site conditions and working space adds to the construction complications, however the demolition of riverside west should significantly improve this situation. However, option 1C D-space footprint is no longer clashing with Riverside West, and as such construction of Tower 3 might be able to commence without Riverside West early demolition required. This would need to be investigated and developed as a contingency plan during dearly works design in collaboration with the demolition contractors' input.

To deliver Tower 3 to this tight timeframe and early works package is required to facilitate the procurement of long lead items such as the structural steel and the glazed façade. A review period should be applied to ensure that the structural package fully accommodated the functional requirements, whilst the later will not be document yet.

The project oversight will be a partnership arrangement between the MOH and CDHB. The MOH will be responsible to deliver Tower 3, whilst the CDHB will be responsible to deliver the minimal refurbishment works. The partnership arrangement will facilitate the operational input from the CDHB into the project to ensure that operational risks can be management and mitigated.

Benefit Management

Benefits management will be undertaken in line with the CDHB's benefits management framework, detailed in the DBC (pages 128-130).

Should capital funding be allocated, the following key documents will be created to support benefits realisation following project completion:

- Benefits realisation plan: Showing a view of benefits and when they are expected to be realised.
- Benefit profile(s): Showing details of each benefit.
- Benefits register: Showing consolidated benefit information.

These documents will be monitored by the Project Sponsor and Business Owner, who will report via internal committees to the Executive Management Team and Board, who will then provide information to the Ministry of Health as required.

Risk Management

The detailed risks and mitigation strategy of the preferred option 1c are identified in Table 10.

Table 10 – Risk & Mitigation Strategy – Preferred Option

No.	Risk	Mitigation Strategy
1	Recommended option does not meet the capacity requirements of the CDHB health system upon completion and/or beyond completion	• Retention of Parkside ensures additional bed availability • Ongoing testing and modelling, including monitoring of population projections, current and future health trends will be undertaken • Advancements in models of care to alleviate in-hospital demand • Contingency planning
2	Exposure to material time delays through the planning and approvals stage further reduces access to healthcare for the Canterbury population; reduces resilience and staff wellbeing; increases clinical risks and capital cost	• Proactive and ongoing communication between CDHB, Treasury and Ministry of Health • Contingency planning
3	Material changes to project scope, scale and/or cost as a result of incomplete and/or inaccurate information and assumptions underlying the Master Plan and/or DBC results in the project: becoming unaffordable; representing poor value for money; and/or being exposed to time delays due to scope change	• Project contingencies to manage design and scope risks • Ongoing and timely testing of key assumptions
4	The facility design cannot respond flexibly to changing requirements (model of care and demand) now and in the future resulting in diminished health outcomes, reduced operational efficiency and value for money – drivers include existing constraints on physical site	• Adequate engagement with clinicians, consumers, community and research partners • Drawing on lessons learned from recent developments • Design principles, such as “long life, loose fit” • Peer review
5	Unanticipated events onsite or in Canterbury cause significantly delay in construction e.g. unanticipated ground conditions, weather,	• Contingency plans • Communication plans • Project governance structure and decision-making forums • Utilise available contractual mechanism

No.	Risk	Mitigation Strategy
	seismic events, labour/resource shortages	
6	Construction timeline cannot be achieved	• Peer review • Continually reflect on recent lessons learned
7	Risk of defects/issues during commissioning and post occupation	• Development of robust commissioning plans, led by commissioning managers • Contracting mechanisms to manage defects • Expertise of Programme Director • Contingency plan
8	Capital funding constraints do not deliver a fit-for-purpose facility, adequate capacity and/or value for money Note current exclusions: specialist equipment, changes in digital technology and emerging political appetite for environmentally sustainable design	• Preferred Option delivers critical components at low capital cost – risk mitigated. • Preferred Option does not impede future development in line with Master Plan • Future requirements can be addressed via future capital funding allocations in the mid-term.
9	Operating efficiency savings do not eventuate, meaning operating costs are unaffordable	• Test robustness of assumptions in financial model • Benefits realisation strategy development and implementation
10	Capital costs exceed budget	• Test robustness of assumptions of capital costs, including peer review • Clear understanding and agreement of project scope and funding sources • Manage interface between business as usual investment and project scope to ensure consistency and understanding of assumptions • Leverage contractual mechanisms
11	Assumed funding models/assumptions do not materialise	• Continual communication with Ministry of Health • Sensitivity analysis of key assumptions • Develop financial accountability framework
12	Resources are insufficient to cover the level of engagement, planning and operating cost necessitated by a continual construction programme and the successful delivery of the project	• Leverage CDHB's extensive planning and change management experience, including lessons learned • Develop and ring fence budget for necessary activities
13	Procurement of design and/or construction resources and/or consenting process is overly	• Ensure project team have appropriate procurement experience, including lessons learned

No.	Risk	Mitigation Strategy
	complex and time-consuming and causes significant delays	• Ongoing and timely market engagement and communication with Treasury • Realistic programming • Contracting mechanisms to allocate risk
14	Constraints in the local construction market limit availability and/or quality of suppliers and contractors	• Early engagement with the market and Treasury's ICU team • Robust programming reflecting latest information on market constraints • Contractual mechanisms to mitigate quality risk
15	Disruption to day-to-day CDHB operations during the redevelopment	• Development of detailed transition plan, with substantial clinical and other stakeholder input • Contingency planning and mitigation steps
16	Clinical and operating risk is not adequately managed through staging and transition from existing to new (and refurbished) facilities	• Development of detailed operating plans to manage both patient safety and impact of capacity constraints through project delivery • Contingency planning • Detailed operational input into programme
17	Clinical functionality deficiencies lead to decreased patient and staff satisfaction, and ongoing operational inefficiencies	• Develop plan to ensure higher acuity and higher need patient cohorts are prioritised for new and clinically functional infrastructure • Lobby for future capital funding to address clinical functionality improvements in the mid-term. • Focus continual yearly improvement in operational efficiency
18	Theatre activity demand are not able to be met in the medium term	• Identify alternate pathways t deliver projected theatre activity (e.g. new models of care or lower acuity procedures, alternate site infrastructure strategies, outsourcing of select elective surgery activity). • Identify health prevention measures that align with reducing surgical procedure demands.

Benefits

The DBC identified benefits relating to compliance and risk, increased efficiency of service and increased access of service. Benefits of compliance standards are not included in this Business Case as they are being undertaking via a separate process. Table 11 identifies the alignment of option 1 with the main project benefits.

Table 11 – Preferred Option 1c Benefits Alignment

Main Benefits	Benefit Details	Option 1 c alignment
Increased efficiency of service provision	• Decrease in cost per patient discharge • Decrease in average length of stay of patient • Reduction in accidents, incidents and near misses associated with use of facilities which are not fit-for-purpose e.g. infections and falls • Decrease in re-admission rates	Option 1c will provide a moderate alignment with this benefit through providing contemporary facilities that meet service growth needs. This will allow patients to be seen in appropriate time frames, with patient quality and care in this new environment contributing to improved patient outcomes. Achievement of this benefit is tempered by wards within Parkside not being upgraded.
Increased access of service provision	• Decrease in bed blockages • Increase in elective surgery rates • Improved levels of wellbeing and morale, through Christchurch Hospital facilities and services which are more effective at supporting the community	Option 1c enables achievement of this benefit through providing for the projected bed needed to 2030/31. This will result in reduced bed blockages and improved patient outcomes.

Recommendation

Option 1c is recommended for approval by the Capital Investment Committee.

Option 1c includes the construction of T3 to a total height of eight storeys and with a reduced, but still clinically functional total D space. Option 1c will include 5 storeys of 32 bed wards per storey, with two storeys (64 beds) to be fit out within the project budget. This will ensure bed needs are met to 2025/26, with smaller capital ward fit outs for floors above able to be undertaken every two years to meet projected demand to 2030/31. Option 1c also includes decanting and fit out works for clinical and support areas that are impacted by building compliance demolitions, ensuring clinical and support areas can continue to operate through the duration of capital works.

Option 1c can be phased to align with building compliance and rectification works enabled under a separate business case. Option 1c comes at a cost of $154,000,000 and can be delivered by the end of the 2024/25 financial year.

Risks can be managed, with the benefits of the project suitable to meet identified need.

The sections below will further detail the Financial, Commercial and Management case for the preferred option 1c.

Next Steps

Following approval of this addendum to the DBC, the following actions and their anticipated timeframes are indicated in the table below:

Table 12 – Timelines– Preferred option

No.	Action	Timing being complete
1	DBC approval	30/10/2020
2	Consultant engagement documents Tower 3	30/12/2020
3	Consultant engagement documents Minimal refurb works	30/12/2020
4	Consultant engagement T3	30/02/2021
5	Consultant engagement enabling works	30/02/2021
6	T3 concept approval	30/06/2021
7	Minimal refurb concept approval	30/04/2021
8	Documentation Minimal refurb	30/09/2021
9	Contractor procurement Minimal refurb	30/11/2021
10	Minimal refurb construction	30/02/2022
11	Documentation early works T3	30/06/2022
12	Contractor procurement early works T3	30/08/2022
13	Design and Documentation T3	30/11/2022
14	Steel and Façade/enabling works T3	30/04/2023
15	Contractor procurement T3	30/04/2023
16	Construction and fit-out T3	30/02/2025
17	Tower3 operational	30/06/2025

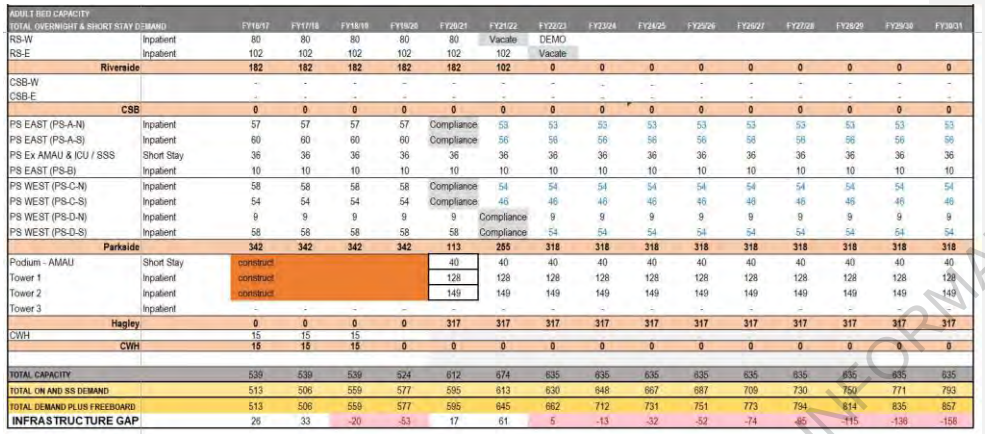
As indicated in the previous section, the construction of tower 3 is dependent on the completion of the minimal refreshment works in order to facilitate the demolition of Riverside West.

A program has been appended; however, the commencing date is already 3 months behind and hence times lines in this addendum have been updated to reflect updated dates.

Commented [A1]: Gunther to include implementation time frames – net project steps etc.

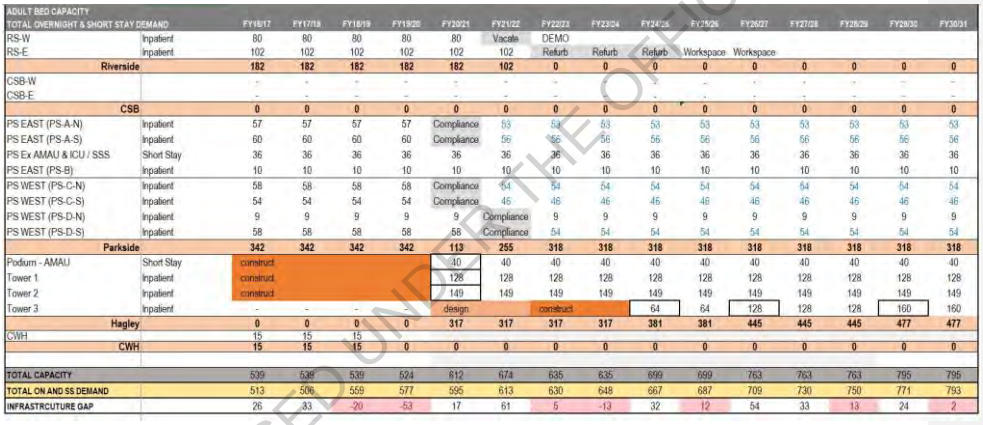
Appendix A- Adult Bed Capacity

Figure 6 – Base Case - Adult Bed Capacity



ADULT BED CAPACITY TOTAL OVERNIGHT & SHORT STAY DEMAND		FY16/17	FY17/18	FY18/19	FY19/20	FY20/21	FY21/22	FY22/23	FY23/24	FY24/25	FY25/26	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31
RS-W	Inpatient	80	80	80	80	80	Vacate	DEMO								
RS-E	Inpatient	102	102	102	102	102	102	Vacate								
Riverside		**182**	**182**	**182**	**182**	**182**	**102**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
CSB-W		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CSB-E		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CSB		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PS EAST (PS-A-N)	Inpatient	57	57	57	57	Compliance	53	53	53	53	53	53	53	53	53	53
PS EAST (PS-A-S)	Inpatient	60	60	60	60	Compliance	56	56	56	56	56	56	56	56	56	56
PS Ex AMAU & ICU / SSS	Short Stay	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
PS EAST (PS-B)	Inpatient	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
PS WEST (PS-C-N)	Inpatient	58	58	58	58	Compliance	54	54	54	54	54	54	54	54	54	54
PS WEST (PS-C-S)	Inpatient	54	54	54	54	Compliance	46	46	46	46	46	46	46	46	46	46
PS WEST (PS-D-N)	Inpatient	9	9	9	9	9	Compliance	9	9	9	9	9	9	9	9	9
PS WEST (PS-D-S)	Inpatient	58	58	58	58	58	Compliance	54	54	54	54	54	54	54	54	54
Parkside		**342**	**342**	**342**	**342**	**113**	**255**	**318**	**318**	**318**	**318**	**318**	**318**	**318**	**318**	**318**
Podium - AMAU	Short Stay	construct				40	40	40	40	40	40	40	40	40	40	40
Tower 1	Inpatient	construct				128	128	128	128	128	128	128	128	128	128	128
Tower 2	Inpatient	construct				149	149	149	149	149	149	149	149	149	149	149
Tower 3	Inpatient	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hagley		**0**	**0**	**0**	**0**	**317**	**317**	**317**	**317**	**317**	**317**	**317**	**317**	**317**	**317**	**317**
CWH		15	15	15												
CWH		**15**	**15**	**15**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
TOTAL CAPACITY		539	539	539	524	612	674	635	635	635	635	635	635	635	635	635
TOTAL ON AND SS DEMAND		513	506	559	577	595	613	630	648	667	687	709	730	750	771	793
TOTAL DEMAND PLUS FREEBOARD		513	506	559	577	595	645	662	712	731	751	773	794	814	835	857
INFRASTRUCTURE GAP		26	33	-20	-53	17	61	5	-13	-32	-52	-74	-95	-115	-136	-158

Figure 7 – Option 1C - Adult Bed Capacity



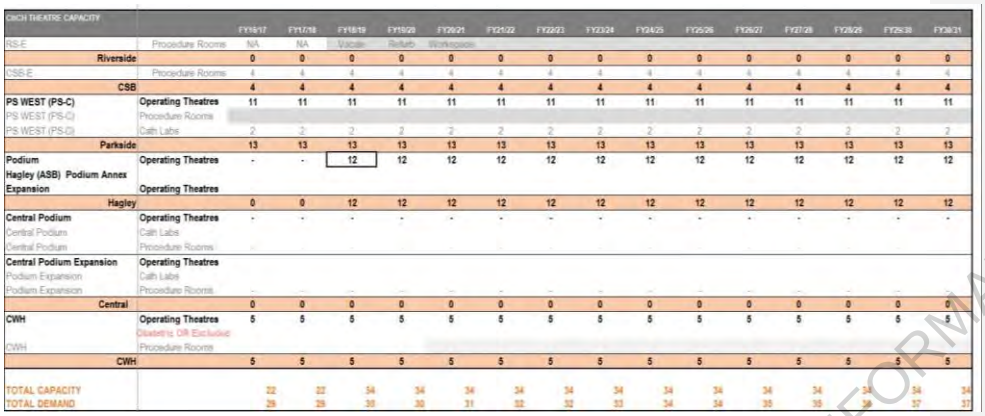
ADULT BED CAPACITY TOTAL OVERNIGHT & SHORT STAY DEMAND		FY16/17	FY17/18	FY18/19	FY19/20	FY20/21	FY21/22	FY22/23	FY23/24	FY24/25	FY25/26	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31
RS-W	Inpatient	80	80	80	80	80	Vacate	DEMO								
RS-E	Inpatient	102	102	102	102	102	102	Refurb	Refurb	Refurb	Workspace	Workspace				
Riverside		**182**	**182**	**182**	**182**	**182**	**102**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
CSB-W		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CSB-E		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CSB		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PS EAST (PS-A-N)	Inpatient	57	57	57	57	Compliance	53	53	53	53	53	53	53	53	53	53
PS EAST (PS-A-S)	Inpatient	60	60	60	60	Compliance	56	56	56	56	56	56	56	56	56	56
PS Ex AMAU & ICU / SSS	Short Stay	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
PS EAST (PS-B)	Inpatient	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
PS WEST (PS-C-N)	Inpatient	58	58	58	58	Compliance	54	54	54	54	54	54	54	54	54	54
PS WEST (PS-C-S)	Inpatient	54	54	54	54	Compliance	46	46	46	46	46	46	46	46	46	46
PS WEST (PS-D-N)	Inpatient	9	9	9	9	9	Compliance	9	9	9	9	9	9	9	9	9
PS WEST (PS-D-S)	Inpatient	58	58	58	58	58	Compliance	54	54	54	54	54	54	54	54	54
Parkside		**342**	**342**	**342**	**342**	**113**	**255**	**318**	**318**	**318**	**318**	**318**	**318**	**318**	**318**	**318**
Podium - AMAU	Short Stay	construct				40	40	40	40	40	40	40	40	40	40	40
Tower 1	Inpatient	construct				128	128	128	128	128	128	128	128	128	128	128
Tower 2	Inpatient	construct				149	149	149	149	149	149	149	149	149	149	149
Tower 3	Inpatient	-	-	-	-	design		construct		64	64	128	128	128	160	160
Hagley		**0**	**0**	**0**	**0**	**317**	**317**	**317**	**317**	**381**	**381**	**445**	**445**	**445**	**477**	**477**
CWH		15	15	15												
CWH		**15**	**15**	**15**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
TOTAL CAPACITY		539	539	539	524	612	674	635	635	699	699	763	763	763	795	795
TOTAL ON AND SS DEMAND		513	506	559	577	595	613	630	648	667	687	709	730	750	771	793
INFRASTRCUTURE GAP		26	33	-20	-53	17	61	5	-13	32	12	54	33	13	24	2

Figure 8 – Option 1B - Adult Bed Capacity

ADULT BED CAPACITY TOTAL ON & SS DEMAND		FY16/17	FY17/18	FY18/19	FY19/20	FY20/21	FY21/22	FY22/23	FY23/24	FY24/25	FY25/26	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31
RS-W	Inpatient	80	80	80	80	Vacate	DEMO									
RS-E	Inpatient	102	102	102	102	102	Refurb	Refurb	Refurb	Workspace	Workspace					
Riverside		**182**	**182**	**182**	**182**	**102**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
CSB-W		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CSB-E		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CSB		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PS EAST (PS-A-N)	Inpatient	57	57	57	Compl+Func	37	37	37	Close							
PS EAST (PS-A-S)	Inpatient	60	60	60	Compl+Func	40	40	40	Close							
PS Ex AMAU & ICU / SSS	Short Stay	36	36	36	28	28	28	28	28	28	28	28	28	28	28	28
PS EAST (PS-B)	Inpatient	10	10	10	-	-	-	-	-	-	-	-	-	-	-	-
PS WEST (PS-C-N)	Inpatient	58	58	58	Compl+Func	38	38	38	38	38	Close					
PS WEST (PS-C-S)	Inpatient	54	54	54	Compl+Func	48	48	48	48	48	Close					
PS WEST (PS-D-N)	Inpatient	9	9	9	9	Compl+Func	9	9	9	9	Close					
PS WEST (PS-D-S)	Inpatient	58	58	58	58	Compl+Func	54	54	54	54	54	54	54	54	54	Close
Parkside		**342**	**342**	**342**	**95**	**191**	**254**	**254**	**177**	**177**	**82**	**82**	**82**	**82**	**82**	**28**
Podium - AMAU	Short Stay				40	40	40	40	40	40	40	40	40	40	40	40
Tower 1	Inpatient	-	-	-	128	128	128	128	128	128	128	128	128	128	128	128
Tower 2	Inpatient	-	-	-	149	149	149	149	149	149	149	149	149	149	149	149
Tower 3	Inpatient	-	-	-	design		construct		192	192	192	192	192	192	192	192
Haghley		**0**	**0**	**0**	**317**	**317**	**317**	**317**	**509**	**509**	**509**	**509**	**509**	**509**	**509**	**509**
Central podium	Short Stay	-	-	-	-	design		construct			16	16	16	16	16	16
Central T4	Inpatient	-	-	-	-	design					192	192	192	192	192	192
PodiumExpansion		-	-	-	-	-	-	-	-	-	-	-	design			construct
Central T5	Inpatient	-	-	-	-	-	-	-	-	-	-	-	design			construct
Central		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**208**	**208**	**208**	**208**	**208**	**208**
PS Replacement podium (PS-ABC location)																
Tower 6						-	-	-	-	-	-	-	-	-	-	
Tower 7						-	-	-	-	-	-	-	-	-	-	
PS MKII		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
CWH		15	15	15												
CWH		**15**	**15**	**15**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
TOTAL CAPACITY		539	539	539	594	610	571	571	686	686	799	799	799	799	799	745
TOTAL ON AND SS DEMAND		513	506	559	577	595	613	630	648	667	687	709	730	750	771	793
INFRASTRUCTURE GAP		26	33	-20	17	15	-42	-59	38	19	112	90	69	49	28	-48

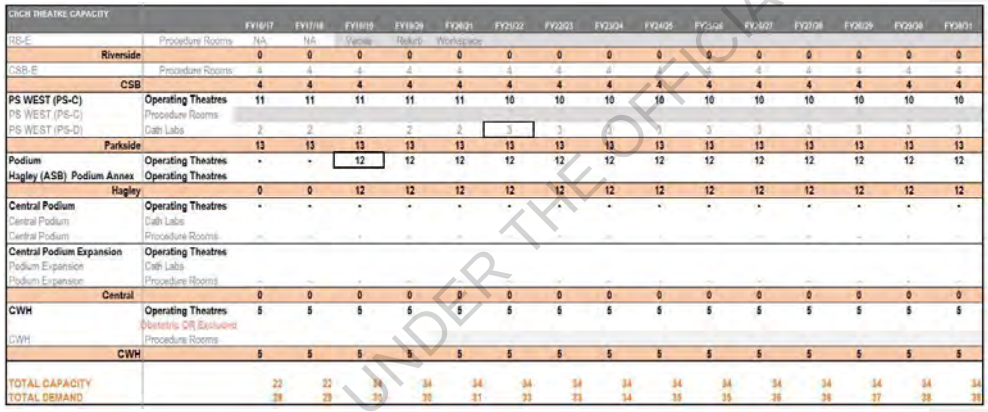
Appendix B - Theatre Capacity

Figure 9 – Base Case – Operating Theatre Capacity



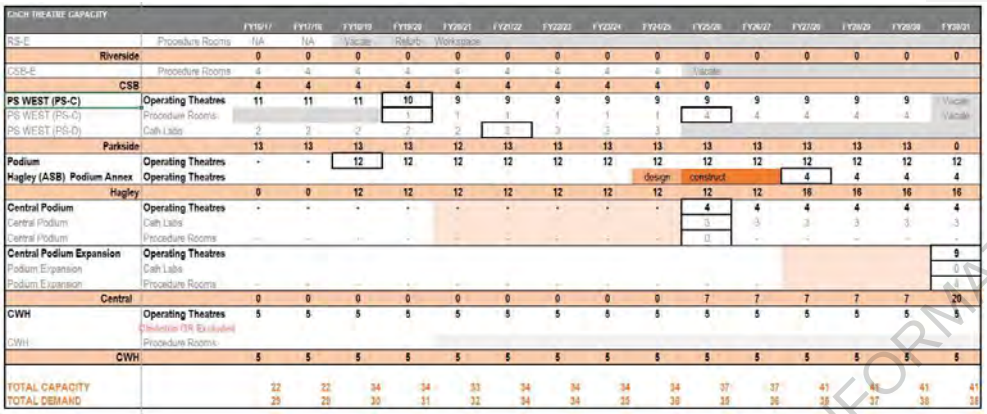
CHCH THEATRE CAPACITY		FY16/17	FY17/18	FY18/19	FY19/20	FY20/21	FY21/22	FY22/23	FY23/24	FY24/25	FY25/26	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31
RS-E	Procedure Rooms	NA	NA	Vacate	Refurb	Workspace										
Riverside		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CSB-E	Procedure Rooms	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
CSB		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
PS WEST (PS-C)	**Operating Theatres**	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
PS WEST (PS-C)	Procedure Rooms															
PS WEST (PS-D)	Cath Labs	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Parkside		13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
Podium	**Operating Theatres**	-	-	12	12	12	12	12	12	12	12	12	12	12	12	12
Hagley (ASB) Podium Annex Expansion	**Operating Theatres**															
Hagley		0	0	12	12	12	12	12	12	12	12	12	12	12	12	12
Central Podium	**Operating Theatres**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Central Podium	Cath Labs															
Central Podium	Procedure Rooms															
Central Podium Expansion	**Operating Theatres**															
Podium Expansion	Cath Labs															
Podium Expansion	Procedure Rooms															
Central		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CWH	**Operating Theatres**	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Obstetric OR Excluded															
CWH	Procedure Rooms															
CWH		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
TOTAL CAPACITY		22	22	34	34	34	34	34	34	34	34	34	34	34	34	34
TOTAL DEMAND		29	29	30	30	31	32	32	33	34	34	35	35	36	37	37

Figure 10 – Option 1C – Operating Theatre Capacity



CHCH THEATRE CAPACITY		FY16/17	FY17/18	FY18/19	FY19/20	FY20/21	FY21/22	FY22/23	FY23/24	FY24/25	FY25/26	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31
RS-E	Procedure Rooms	NA	NA	Vacate	Refurb	Workspace										
Riverside		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CSB-E	Procedure Rooms	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
CSB		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
PS WEST (PS-C)	**Operating Theatres**	11	11	11	11	11	10	10	10	10	10	10	10	10	10	10
PS WEST (PS-C)	Procedure Rooms															
PS WEST (PS-D)	Cath Labs	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3
Parkside		13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
Podium	**Operating Theatres**	-	-	12	12	12	12	12	12	12	12	12	12	12	12	12
Hagley (ASB) Podium Annex	**Operating Theatres**															
Hagley		0	0	12	12	12	12	12	12	12	12	12	12	12	12	12
Central Podium	**Operating Theatres**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Central Podium	Cath Labs															
Central Podium	Procedure Rooms															
Central Podium Expansion	**Operating Theatres**															
Podium Expansion	Cath Labs															
Podium Expansion	Procedure Rooms															
Central		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CWH	**Operating Theatres**	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Obstetric OR Excluded															
CWH	Procedure Rooms															
CWH		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
TOTAL CAPACITY		22	22	34	34	34	34	34	34	34	34	34	34	34	34	34
TOTAL DEMAND		29	29	30	30	31	33	33	34	35	35	36	36	37	38	38

Figure 11 – Option 1B – Operating Theatre Capacity



EACH THEATRE CAPACITY		FY16/17	FY17/18	FY18/19	FY19/20	FY20/21	FY21/22	FY22/23	FY23/24	FY24/25	FY25/26	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31
RS-E	Procedure Rooms	NA	NA	Vacate	Refurb	Workspace										
Riverside		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CSB-E	Procedure Rooms	4	4	4	4	4	4	4	4	4	Vacate					
CSB		4	4	4	4	4	4	4	4	4	0					
PS WEST (PS-C)	Operating Theatres	11	11	11	10	9	9	9	9	9	9	9	9	9	9	Vacate
PS WEST (PS-C)	Procedure Rooms				1	1	1	1	1	1	4	4	4	4	4	Vacate
PS WEST (PS-D)	Cath Labs	2	2	2	2	2	3	3	3	3						
Parkside		13	13	13	13	12	13	13	13	13	13	13	13	13	13	0
Podium	Operating Theatres	-	-	12	12	12	12	12	12	12	12	12	12	12	12	12
Hagley (ASB) Podium Annex	Operating Theatres									design	construct		4	4	4	4
Hagley		0	0	12	12	12	12	12	12	12	12	12	16	16	16	16
Central Podium	Operating Theatres	-	-	-	-	-	-	-	-	-	4	4	4	4	4	4
Central Podium	Cath Labs										3	3	3	3	3	3
Central Podium	Procedure Rooms	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-
Central Podium Expansion	Operating Theatres															9
Podium Expansion	Cath Labs															0
Podium Expansion	Procedure Rooms	-	-	-	-	-	-	-	-	-	-	-				
Central		0	0	0	0	0	0	0	0	0	7	7	7	7	7	20
CWH	Operating Theatres	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Endoscopy OR Excluded															
CWH	Procedure Rooms	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CWH		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
TOTAL CAPACITY		22	22	34	34	33	34	34	34	34	37	37	41	41	41	41
TOTAL DEMAND		29	29	30	31	32	34	34	35	36	35	36	35	37	38	38

Appendix C - Bed Numbers

Figure 12 – Bed Numbers - Current

level2		PS D		PS C		PS B		PS A	
	CCU	9	W15	28	SPCU	10	W16	27	north
	W12	28	W10	27			W17	30	south
level3		PS D		PS C		PS B		PS A	
	DYALISIS		W18	30			W19	30	north
	W14	30	W11	27			W20	30	south
TOTAL		PS D		PS C		PS B		PS A	
		9		58		10		57	north
		58		54				60	south

Figure 13 – Bed Numbers - Option 1C

Earthquake rectification = Base Case = Option 1C									
level2		PS D		PS C		PS B		PS A	
	CCU	9	W15	26	SPCU	10	W16	25	north
	W12	26	W10	23			W17	28	south
level3		PS D		PS C		PS B		PS A	
	DYALISIS		W18	28			W19	28	north
	W14	28	W11	23			W20	28	south
TOTAL		PS D		PS C		PS B		PS A	
		9		54		10		53	north
		54		46				56	south

Figure 14 – Bed Numbers - Option 1B

6>4 beds and Earthquake rectification = Option 1B									
level2		PS D		PS C		PS B		PS A	
	CCU	9	W15	18	SPCU	8	W16	17	north
	W12	18	W10	23			W17	20	south
level3		PS D		PS C		PS B		PS A	
	DYALISIS		W18	20			W19	20	north
	W14	20	W11	23			W20	20	south
TOTAL		PS D		PS C		PS B		PS A	
		9		38		8		37	north
		38		46				40	south

Appendix D - Drawings

Figure 15 – Drawings – Tower 3 - Option 1C

Figure 16 – Drawings – Tower 3 – Option 1B – Level 3

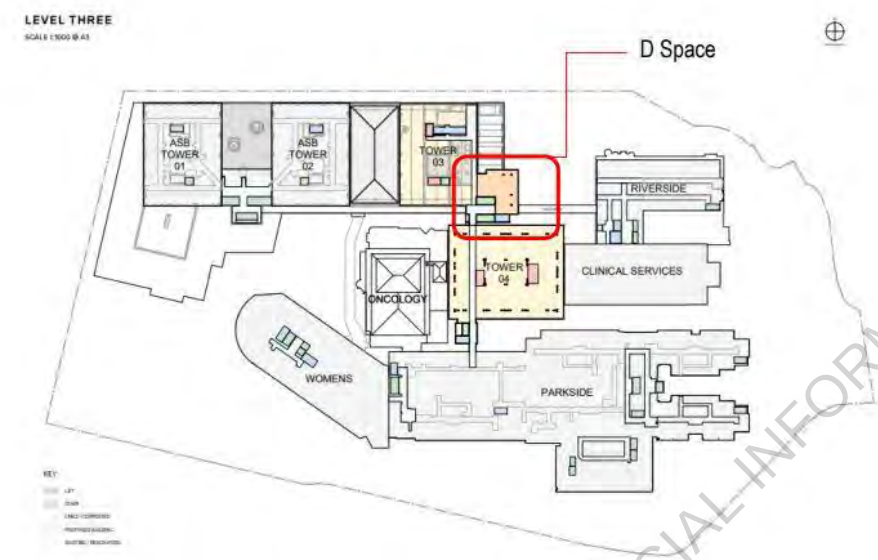
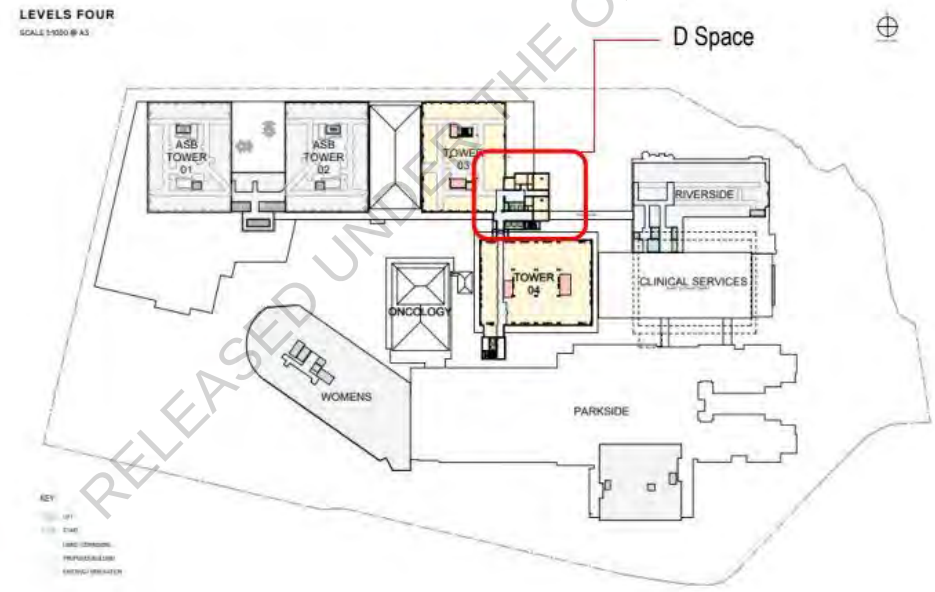
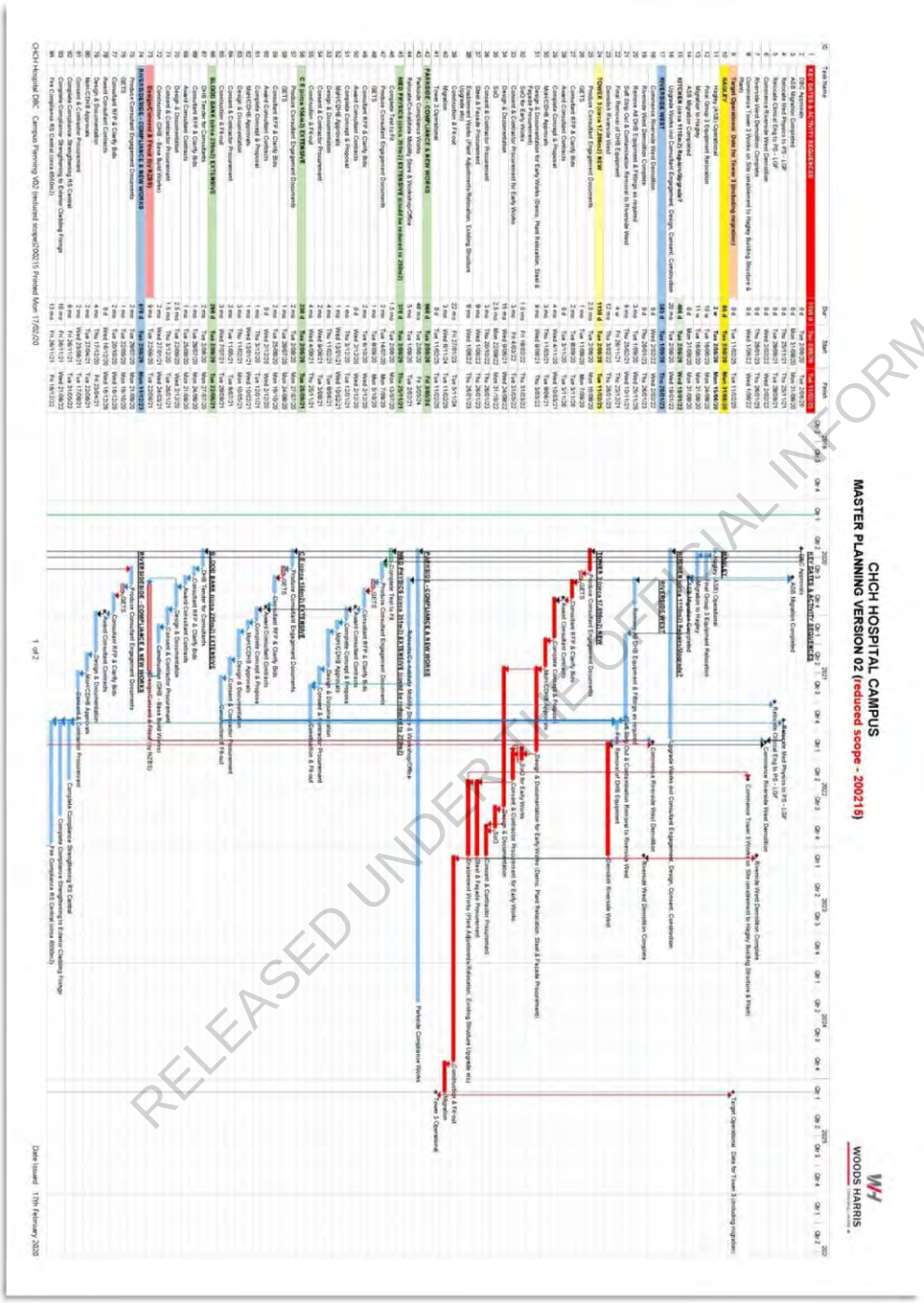
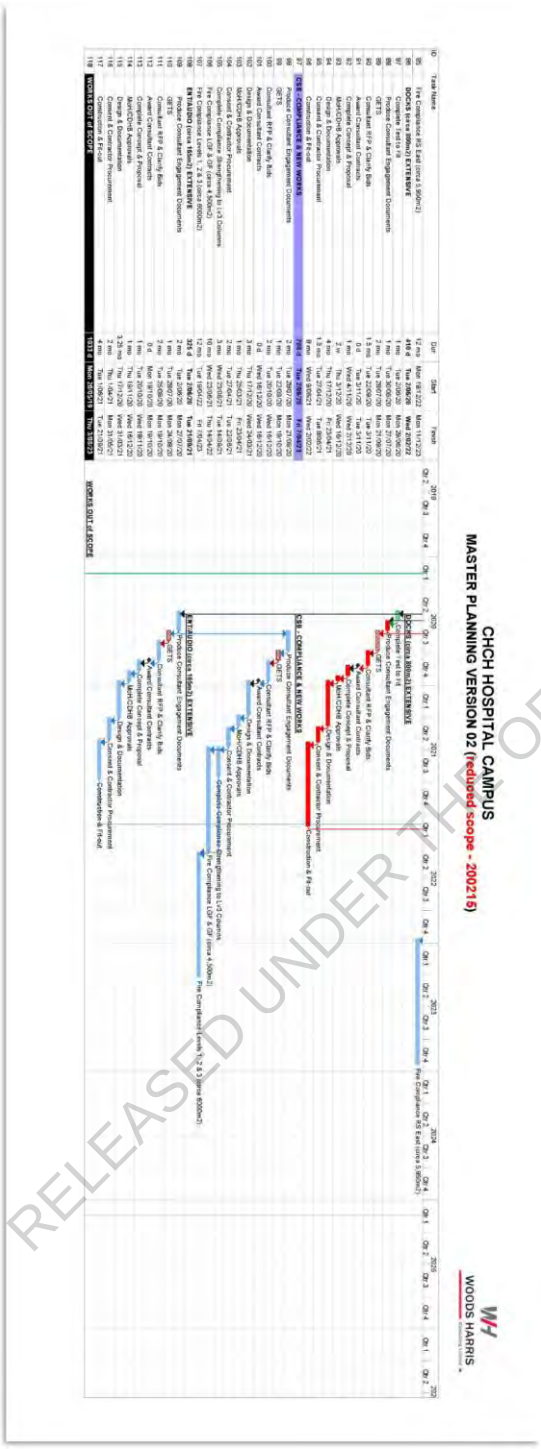


Figure 17 – Drawings – Tower 3 – Option 1B – Level 4



Appendix E - Program





Appendix F – Capital Cost estimates

Table 13 – Option 1C - Capital Cost estimate breakdown by building

Option A - $154m Reduced Cost Option - Tower 3 with 5 levels of wards with two fitted out and three shelled out for future fit-out without passive fire and seismic compliance costs										
	2020	2021	2022	2023	2024	2025	2026	2027	Total	
Scope of work									$000	Notes:
Passive Fire						-			$ -	See attached details for areas altered
Decanting/staging	793	640	395	247	200	26			$ 2,301	As per original allowances
Tower 4	-	-	-	-	-	-	-	-	$ -	Tower 4 design, infrastructure and ground improvement deleted
Riverside	850	2,278	2,159	1,402	878	-	-	-	$ 7,567	See attached details for areas altered
Parkside	1,800	2,049	2,024	1,145	1,250	1,500	2,400	574	$ 12,742	See attached details for areas altered
Clinical Services Building	435	925	765	545	138				$ 2,808	See attached details for areas altered
Food Services Building	-	-	-	-	-				$ -	See attached details for areas altered
Christchurch Women's Hospital	-	-	-	-	-				$ -	See attached details for areas altered
Hagley (incl new Tower3)	4,300	7,700	24,500	37,082	35,200	19,800			$ 128,582	See attached details for areas altered
Total Revised DBC Scope Crown Capital	8,178	13,592	29,843	40,421	37,666	21,326	2,400	574	$ 154,000	

Table 14 – Option 1C Capital Cost estimate detailed breakdown -