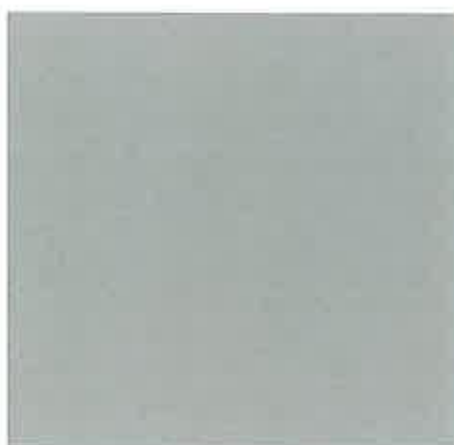


Buller Health services plan working paper: Model of care description, capacity estimation and options analysis

Martin Hefford and Tom Love
10 May 2011

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About Sapere Research Group Limited

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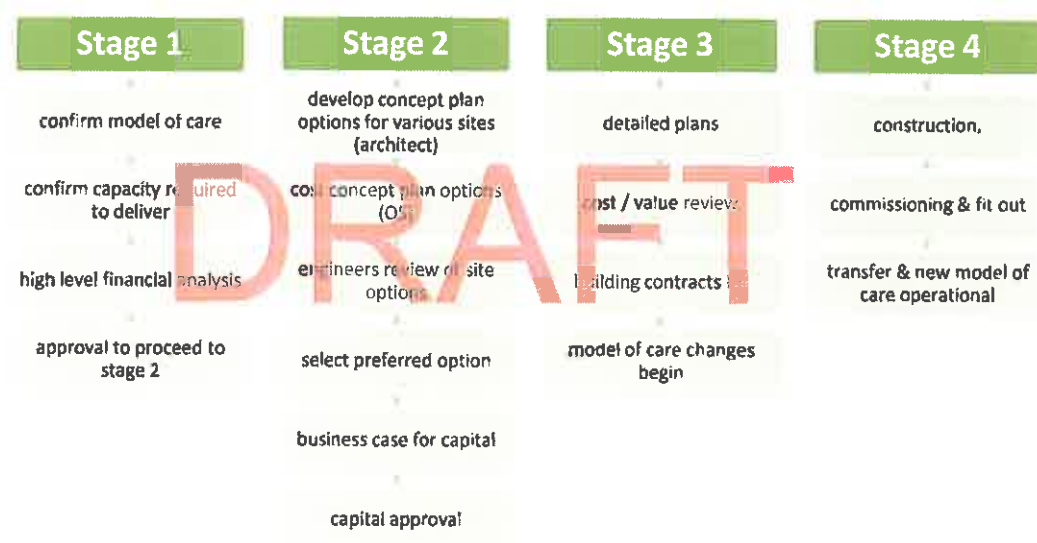
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Executive Summary

This document is intended to inform service planning by the Buller Joint Action Group by providing a high level estimation of the capacity required to address current and future demand, and the capital and operating costs of the proposed capacity. It is a working paper capturing assumptions at a point in time – actual parameters will change as further information becomes available.

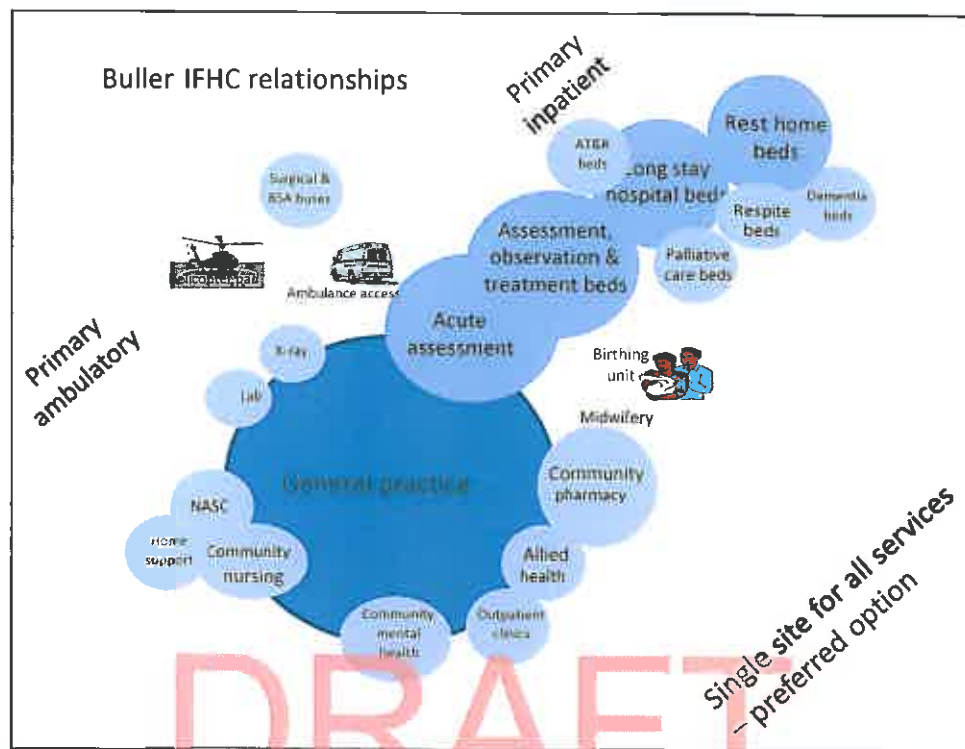
The process of developing and implementation a new model of care and facility in Westport will occur over the following stages. This document partially fulfils the requirements of stage 1.



The preferred model of care is for a single integrated set of services, with an optimally designed facility where GPs, nurses, allied health staff and caregivers work as a single integrated workforce aiming to keep people well and to treat ill-health. Within the overall service there are a number of components which will operate interchangeably around the need of individual patients.

The Buller population overall is expected to remain static, or decline, but the population aged over 65 increases by 70% in the next 20 years leading to increased demand for age related services.

The preferred scope of services for the IFHC is set out schematically below.



The facility development options to support the IFHC model of care are set out below.

Option	Key assumptions
Option 1: single site, new facility, integrated model of care	<ul style="list-style-type: none"> • All IFHC services are provided at a single greenfields/redeveloped site • Use of local medical beds optimized • Integrated model of care resulting in some efficiency/effectiveness gains
Option 2: split site, new facility, integrated ambulatory care	<ul style="list-style-type: none"> • Site 1: greenfields build covering IFHC ambulatory services, GP observation and treatment beds and maternity LDRP beds; • Site 2: all aged residential care, dementia, long stay hospital services and respite.
Option 3: status quo projected forward	<ul style="list-style-type: none"> • No significant redevelopment of Buller Health Centre • O'Connor Trust proceed with expansion at their site – reducing DHB occupancy levels • Other service costs and revenue remain unchanged

A preliminary analysis of the staffing and capital implications of the three options is that the split site is considerably more expensive than a single site, because of the loss of economies of scale.

Service component	Option 1 Greenfields, single site IFHC	Option 2 split site, both greenfields,	Option 3 Status quo
FTEs	107	114	125
Bed days	29,889	29,889	27,094
Beds	90	91	91
GFA - M2	5,314	5,574	tba
Building & FFE cost	\$ 22,157,157	\$ 23,182,612	na
Expenses			
- Personnel	\$ 7,205,231	\$ 7,660,831	\$ 9,021,222
- Direct costs	\$ 1,857,834	\$ 1,954,990	\$ 2,617,452
- Cost of capital @ 11.5%	\$ 2,548,073	\$ 2,666,000	\$ -
Total annual expenses	\$ 11,611,138	\$ 12,281,821	\$ 11,638,674
Average cost per FTE	\$ 67,634	\$ 67,122	\$ 72,320

These costs now require validation with input from architects and a quantity surveyor. Brownfields options can also be examined in the next phase and compared to the Greenfields approach.

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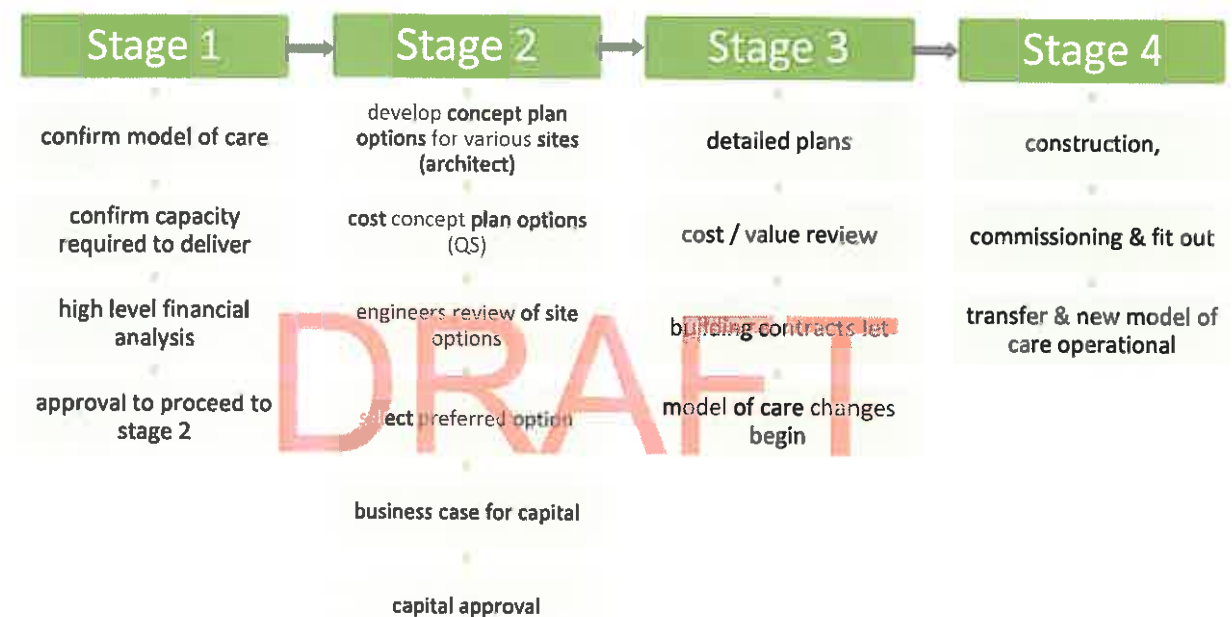
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1 Introduction

1.1 Purpose

This document is intended to inform service planning by the Buller Joint Action Group by providing a high level estimation of the capacity required to address current and future demand, and the capital and operating costs of the proposed capacity.

The process of developing and implementation a new model of care and facility in Westport will occur over the following stages.



1.2 Services in scope

Services in scope for this report are shown below.

Table 1: Services in scope

Service area	Detail
Primary ambulatory care	<ul style="list-style-type: none"> General practice, including urgent ambulatory care Allied health Domciliary, public health & rural nursing Visiting outpatients NASC Adult mental health and addictions Dental services

Service area	Detail
Primary inpatient/residential services	• Pharmacy
	• Radiology
	• Laboratory
	• GP beds
	• Surgical bus
	• Maternity
	• Aged care (rest home, dementia, , hospital, respite)
	• ATR
	• Palliative care
Corporate services	• Management
	• Non-clinical support (reception, admin, corporate services)
	• Patient transport (emergency and non-emergency)

1.3 Population context and health need

The Buller district population is more deprived, older and more rural than the NZ population. The estimated population based on the NZ statistics medium projection from the 2006 census gives the following population figures for the relevant census areas.

The census areas can be grouped into four sub areas according to the usual natural population flow: Westport, Ngakawau, Karamea and Reefton. These groupings will not be exact, but are used as a proxy for health demand and hence capacity required. It is generally assumed that Westport provides services to the Buller district except for the Reefton area – which we have assumed generally flows through to Greymouth. Hence we are planning for the Ngakawau, Karamea and Westport areas.

Key statistics for the Karamea, Ngakawau and Westport portions of the Buller district are shown in table 3. Births, and the overall population are predicted to decline, while the number aged over 65 is forecast to increase significantly.

Table 2: Buller district census area populations and groupings

Buller district / Census area	Population 2011	Population 2021	Population 2031
Karamea total	650	650	630
584402 Karamea	440	440	420
584407 Little Wanganui	210	210	210
Ngakawau total	630	570	590
584403 Hector-Ngakawau	230	210	210
584404 Granity	220	190	200
584408 Mokihinui	180	170	180
Reefton total	1980	1860	1700
584412 Inangahua Junction	170	160	140
584600 Reefton	930	870	780
584701 Inangahua Valley	320	310	290

584702 Mawheraiti	370	340	310
584703 Maruia	190	180	180
Westport total	6670	6480	6050
584405 Orowaiti	630	610	560
584409 Buller Coalfields	500	480	450
584410 Westport Rural	1260	1270	1240
584411 Charleston	300	300	300
584500 Westport Urban	3980	3820	3500
Grand Total	9930	9560	8970

Source: NZ Statistics 2006 census medium forecasts

Table 3: Buller District excluding Reefton key demographic statistics

Buller excluding Reefton	2011	2021	2031	% Change
Births	96	91	77	-19%
Population 65+	1480	1990	2500	69%
Total population	7950	7700	7270	-9%

Source: NZ Statistics 2006 census medium forecasts

1.4 Options description

The following facility options are considered in this report.

Table 4: Options reviewed

Option	Key assumptions
Option 1: single site, new facility, integrated model of care	<ul style="list-style-type: none"> All IFHC services are provided at a single greenfields/redeveloped site Use of local medical beds optimized Integrated model of care resulting in some efficiency/effectiveness gains
Option 2: split site, new facility, integrated ambulatory care	<ul style="list-style-type: none"> Site 1: greenfields build covering IFHC ambulatory services, GP observation and treatment beds and maternity LDRP beds; Site 2: all aged residential care, dementia, long stay hospital services and respite.
Option 3: status quo projected forward	<ul style="list-style-type: none"> No significant redevelopment of Buller Health Centre O'Connor Trust proceed with expansion at their site – reducing DHB occupancy levels Other service costs and revenue remain unchanged

The IFHC model of care is described for the single site model (option 1), and the split site option is described as a variant of this model.

Various greenfields and brownfields option exist for delivering the services under options 1 & 2, including:

- Current Buller hospital site
- Current O'Connor site

- A new site or sites.

This report includes some brief notes on the possible capital implications of these sites, but a full review of site options should be undertaken in stage two once the model of care and capacity have been confirmed.

Various variants of the split site option can be modelled, including:

- Site 1 (IFHC) ambulatory care only – all inpatient and residential services at site 2.
- Site 1 (IFHC) has all (or some) hospital level beds – site 2 is entirely (or mainly) rest home and dementia care.

These options have not yet been analysed.

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2 Key IFHC model of care assumptions

This section sets out the key model of care, facility design, demand and workforce assumptions impacting on the financial analysis.

2.1 Integrated Family Health Centre model of care principles

1. should be 'person focused' - two key parts to this:
 - patients - (design of) services should focus on patients, provide certainty for the community, and value the patient's time
 - staff - appropriate mix of professions; well supported (e.g., with appropriate technology) and trained people working as a team
2. care should be provided as close to home as possible, with:
 - people encouraged to maintain their own health, with
 - safety (for patients & staff) guiding which services are provided within Buller, and which outside Buller
3. needs to take a whole of system approach (no silos); integrating services rather than overlapping them, with
 - primary care as the major focus of service delivery, with
 - specialist support (from Greymouth/Christchurch) to back-up and support primary care
 - supported by partnerships with the community and social services
4. needs to be future proofed/flexible
5. needs to be both clinically and financially sustainable.

[Source: JAG meeting February 2011]

2.2 Preferred model of care

Patient pathways

All patients enter through a single reception area where they are streamed into planned care and urgent care pathways.

Planned care patients will have an appointment with a health professional (GP, nurse, mental health worker, physio, outpatients, dentist, etc) and will be taken to the consult area from the single waiting room. Planned care is available usual office hours. Information technology (email consults, teleconsults) are used to reduce the number of physical presentations to the centre.

Urgent care patients are those requiring to be seen on the day, who do not have an appointment at the time of presentation. Other than emergencies, they will be seen on a first in first out basis (no routine triage) by an expert nurse¹. The nurse will provide full assessment and treatment if

¹ Queuing theory indicates that first-in-first-out (FIFO) approaches are the most efficient and lead to the shortest average wait times for treatment. Applying a generic triage leads to rework, as patients are assessed by a nurse given a priority for treatment and then re-assessed at the substantive appointment.

possible, and will involve other health professionals in the urgent care sub-team (e.g. GP, see below) as required. Patients may be admitted to nursed primary inpatient beds, which are adjacent to the urgent ambulatory care zone and the urgent care team provides assessment and treatment for ambulatory day and over-night patients, with support from residential / hospital care staff.

When a person's care needs exceed the ability of local staff to provide a safe service, the person will be transferred to the appropriate facility in a timely and safe manner.

Standard charges will apply to all patients, except:

- those requiring emergency care, who are either:
 - admitted to primary inpatient/residential care,
 - transferred acutely to Greymouth or another hospital
- those who receive services previously provided free by the DHB (eg district nursing)
- allied health patients who meet criteria for public funding – e.g. physiotherapy post surgical intervention.

IFHC team

GPs, nurses, allied health staff and caregivers work as a single integrated workforce aiming to keep people well and to treat ill-health. Within the overall service there are a number of components which will operate interchangeably around the need of individual patients.

Most staff will work across the different components of the service, (e.g. GPs, allied health, nurses, and administration), while others will contribute to specific elements (eg midwives). The elements of service are:

Primary ambulatory care

- The **urgent care component** which manages 'on the day' unplanned assessment and treatment presentations, (including both current primary care urgent presentations and current ED urgent presentations), oversight of patients in medical beds, and transfers to other facilities (ambulance staff are part of the urgent care sub-team).
- the **general practice & long term conditions component**, dealing with routine planned primary care appointments, supporting visiting outpatient appointments, and supporting proactive management of conditions such as diabetes, CHF, COPD, etc , to avoid the necessity for urgent presentations.
- the **community care component**, which includes assessment, care coordination and delivery of care to non ambulatory patients to keep them in their own home;
- the **mental health & addictions component**.

However, a system is needed to ensure that patients requiring an emergency response (eg chest pain, bleeding, very short of breath) are identified at reception.

- the maternity component

Primary inpatient/residential care team components

- care services (nursing, allied health, medical staff, aides)
- support services (kitchen, laundry, cleaning)

The IFHC relationships are shown schematically in figure one below. There is an integrated model of care which will seamlessly cover the range from ambulatory to inpatient, allowing flexibility in the way that individuals are treated with the available staff and facilities.

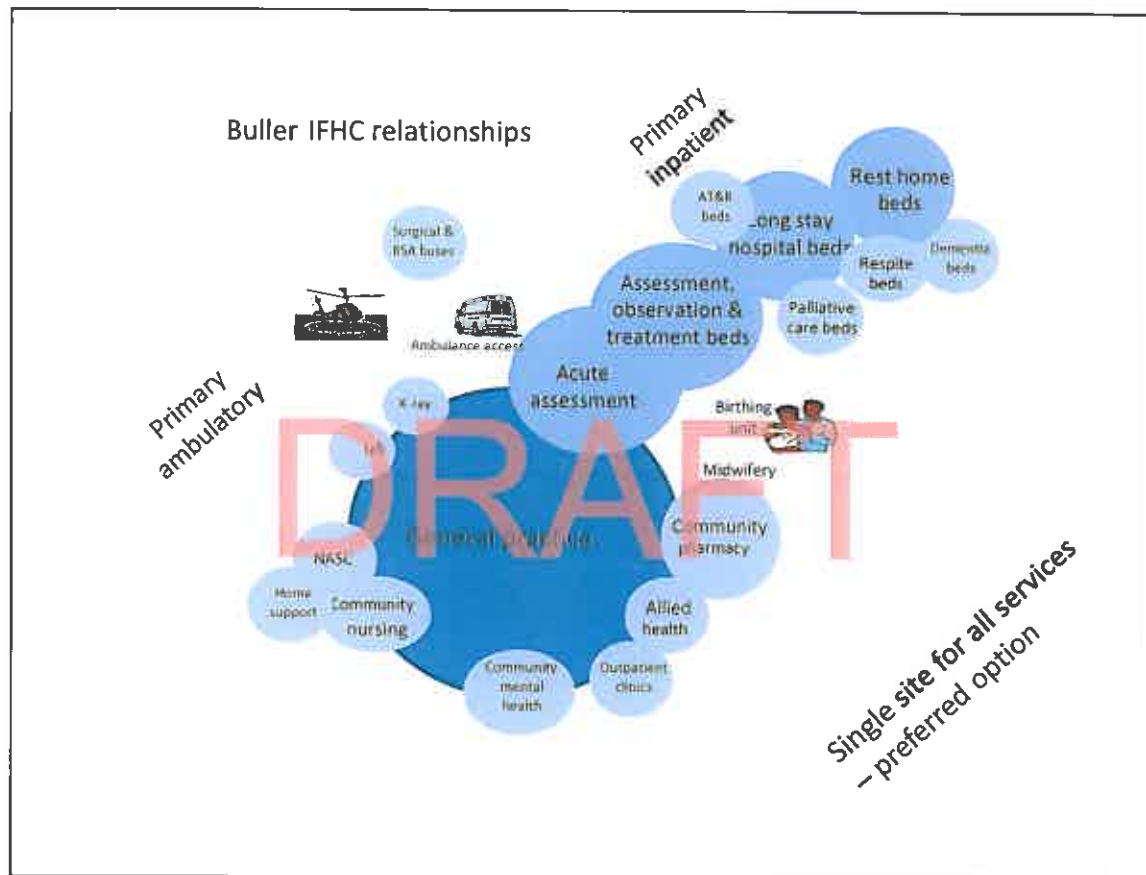


Figure 1: Key service components and overlapping relationships

Telehealth

Telehealth connections are used to supplement and support local clinical services, including the use of the Cisco enhanced videoconferencing facility and teleconferencing directly with the regional tertiary centre.

Assumptions on key workforce roles

Registered nurses

Registered nurses are onsite at the IFHC 24/7 and are first responders to urgent presentations. They call in the GP as required. Urgent care RNs back up care provided by hospital RNs. Nursing staff may be practice based, community based or inpatient based, or work across a number of

settings. Nurses and allied health staff work to the full extent of their safe scope of practice with GPs delegating clinical tasks to non-medical staff to the extent it is safe to do so. Many patient appointments will therefore be with the nurse, with GP provided back up, support and supervision. The practice nurse role is integrated with the acute nurse/ general district nursing / rural health nurse roles & potentially with aged care nursing cover roles. Nurse practitioner roles are created to recognise the level of assessment and treatment skills required in the Buller IFHC nursing workforce.

General Practitioners

GPs provide 24/7 acute cover – on site during office hours, on call other hours. GP(s) on acute duty also provides care for patients in GP beds and in ARC. GPs have a one in five on call roster. GPs work across all settings. All local GPs aim to complete the rural hospital specialist training programme.

Visiting specialist services are provided, sometimes by videoconference and sometimes in person.

Allied health

Allied health staff provide services to inpatients, ARC residents, and outpatients (incl home based care). Integrated reception, scheduling and electronic patient records are in place.

NASC staff are on site, and support coordination of care for people with long term conditions requiring home based or residential care.

Physiotherapy services are provided to both private payers and to public health patients, with clear eligibility rules developed to ensure patients and staff are clear about what services are charged for under what circumstances.

Community mental health

Mental health service provision and staff are fully integrated into this service, with integrated reception, scheduling and electronic patient records. PHO mental health staff and CMHT staff work in a single team and report through to the primary ambulatory services manager. Visiting mental health staff from Greymouth includes psychiatrist and Child and adolescent specialists. The Buller population does not support locally based child and adolescent mental health services.

Clinical support

- Laboratory – near patient testing is provided plus support from Grey Base – twice daily courier
- Pharmacy - a clinical pharmacist is available on site and works with nurses and with patients to manage longer term conditions and medication issues. The pharmacist provides both a dispensing service and clinical pharmacy services to both ambulatory patients and inpatients – office hours. Assumed to be half private (paid through Pharmacy, half public paid through DHB.
- Radiology is available 24/7, subject to workforce availability

Dental services

Two dental chairs are provided, staffed by one dentist and two dental technicians/therapists.

Assumptions re primary inpatient/residential care services

Nursed and supported beds are provided using a flexible approach, with numbers of specific bed types (hospitals, rest home, palliative care, Dementia, ATR) flexing as needs change from day to day and in line with demographic trends. Over time the use of rest home beds is expected to continue to abate as people are better supported to stay in their own homes, while facilities become more focussed upon hospital and psychogeriatric level care. Dedicated labour delivery recovery and post partum care bedrooms are provided, but staffing (other than midwifery) is integrated with the rest of the service.

Community hospital & ambulatory care also provide nursing and admin support for the surgical bus.

Assumptions on Corporate and Support services

Cleaning, Kitchen laundry and facilities management are integrated across the ambulatory and residential settings. A single onsite cafeteria is provided and the kitchen produces meals for inpatients and community based individuals (via meals on wheels).

Reception, administration, accounts payable/receivable and management support is provided once for the service as a whole.

A single patient management information system and electronic health record will be used across the ambulatory, inpatient and domiciliary services on site – with additional functionality to support specific services (eg radiology). IT systems allow patients to email for online health advice, repeat scripts, lab test results, etc.

All clinical and nonclinical quality/support services are integrated (eg policies, accreditation, infection control, quality management) between the primary ambulatory and primary inpatient services.

Staff working predominantly in a service located at the Buller integrated family health centre site will report through to a single Buller Health services Manager, or to a provider with a contract managed by the Buller Health manager.

3 IFHC capacity required

This section outlines the capacity required to deliver services to the local population, given the model of care described in the previous section. Capacity is expressed in beds and FTEs. The capacity required is estimated for the single site IFHC, and other options are shown as variants of that model.

3.1 Impact of demographic change on activity/demand

Population aging will increase demand because those in the older age groups have, on average, high health needs. However, the forecast reduction in total population will also affect aggregate demand. The impact of these two demographic trends on primary ambulatory care is finely balanced, as shown in the table below. At present the forecast is that the demand for primary ambulatory care services will increase by around 8% over the next 20 years. However, estimation is highly sensitive to fluctuations in consultation rates.

Table 5: Estimated impact of demographic change on primary ambulatory care workload

Primary & ambulatory consult workload changes over time					
Age group	Consults/ capita	Consults 2011	Consults 2021	Consults 2031	Change
0 - 14	1.9	2,800	2,664	2,255	-19%
15 - 39	2.7	5,250	4,334	3,602	-31%
40 - 64	4.9	15,243	11,210	11,247	-26%
65+	9.0	13,543	18,210	22,877	69%
Total consults		36,841	38,724	39,982	8.5%
Total consults / capita		4.6	5.0	5.5	

Source: based on BMC actual consults/per person by age group 2010, applied to the Stats NZ projected catchment population

The forecast impact on primary inpatient/residential services is even more marked, as the over 65 population is the main driver of demand. Relative to 2011, demand for aged care and hospital services is expected to increase, from 2011 baselines:

- by 36% to 2021; and
- by 72% to 2031.

The impact of this is shown in the capacity requirement forecasts in section three of this report.

Other non-demographic factors likely to impact on utilisation of services in the Buller area include:

- High prevalence of industries with a considerable accident rate (mining, forestry, adventure tourism) resulting in increased demand
- Requirement to staff acute transfers with local RNs
- Numbers of well paid workers in industries who are dislocated from usual family and with a tendency to hazardous alcohol or drug use

- Number of international and domestic visitors - visitor 'guest nights are estimated for the whole West Coast area at some 2.3 million per annum (refer www.tourismresearch.govt.nz).
- Changes in models of care over time – including, for instance greater use of online resources (email consults, online self help workbooks, increased use of restorative models of care for the elderly, greater use of nonmedical advanced practitioner roles.

3.2 Estimating ambulatory care capacity requirements

Factors to consider in estimating ambulatory care requirements include:

- the evolving model of care in BMC, which makes greater use of expert nurse roles to perform some clinical tasks done by GPs at other sites
- potential for physiotherapy and pharmacy support GP and nursing roles
- allocation of time needed for oversight of medical inpatients and trainees
- the high proportion of elderly consults, requiring longer consultations
- the need to have enough GPs to run an acceptable on call roster (one in five on call maximum)
- historical difficulties recruiting GPs, but not nurses.

With these factors in mind we suggest a lower ratio of GPs and higher ratio of nursing staff than is usual in NZ primary care centres. Other staff numbers are proposed to be similar to current levels.

Other points to note include:

- Proposed GP FTE includes time allocation for Reefton. Allocation includes leave cover.
- Urgent care nurse role is one RN per shift (5.5FTEs) in addition to hospital based nursing roles to support RNs and ENs and caregivers on site at the hospital.
- Nurse FTE for outreach clinics as per current.
- Dietetics role is visiting only.
- If the current private physios come on site they are assumed to be additional to the physio staff (one FTE plus one assistant) shown in the table.

3.3 Estimating capacity requirements

Relevant considerations in estimating the inpatient components of service include:

- Current utilization
- Impact of demographic change
- Potential for some services to be provided locally (e.g. ATR, Dementia services)
- Changes in future models of care
- NZ age standardized average utilization rates
- The trend toward lower utilisation of aged residential care services (per capita) over time

Table 6 below shows current bed use and compares it with NZ averages (age adjusted), for 2011 and for the projected 2031 population. The critical issue is estimating the aged residential care facility requirements. Currently beds are underutilized compared to industry norms, and there is

a relative undersupply of dementia services and an oversupply of rest home services. Of note, the sharp increase in demand predicted by 2031 – if current use of institutional care by the over 65s remains constant, then we will need some 70% more beds. How much of this demand can be addressed by better home based care is unknown, but it is likely to be a substantial proportion, given the significant drops in age adjusted per capita utilization of bed days over the past decade.

This is mainly a building / facility issue, since staffing will be based on actual utilization. The anticipated building strategy is to:

1. Build for current demand plus a margin
2. Design the facility such that additional wings can be added at a reasonable cost in future.
3. Design the facility such that beds can be reconfigured between different uses and levels of care in the future.

Table 6: Estimating inpatient bed requirements

Aged residential care	Current beds	Beds required, current bed days	Beds required, NZ average ARC utilisation (2011)	Beds required, NZ average utilisation - 2031 projection	Proposed for modelling (2011)
Resthome	51	51	34	34 - 60	44
Dementia	-	-	7	7 - 12	7
Hospital	27	27	29	29 - 48	29
Subtotal ARC	88	88	70	70 - 118	80
ATR (share of Grey vols)	-	-	2 (local vols)	3 (local vols)	2
Palliative	1	0.5	1 (local vols)	1 (local vols)	1
GP beds (90% occ)	8	5.7	6 (local vols)	6 - 10 (local vols)	6
Maternity (50% occ)	4	2.0	2 (local vols)	2 (local vols)	2
Subtotal primary inpatients	13	8.3	11	12 - 16	10
Total	91	81.7	82	83 - 134	90

Source: Buller JAG & WCDHB for current volumes, Thornton review for NZ averages)

Note: bed numbers may not exactly equate to totals due to rounding.

3.4 Option 1: single integrated site – capacity requirement

Table 6 provides estimates of capacity required – some estimates are population based, others reflect a minimum requirement to deliver a service. Good benchmarks are not available for some services (e.g. publicly funded community physiotherapy), in these cases estimates are based mainly on current capacity. The 2031 capacity is based on the 2011 estimate plus demographic change. These estimates are preliminary, and subject to further review.

Table 7: Capacity required to deliver services to the catchment population, 2011 and 2031

Subservice	Capacity / volume rationale	Capacity 2011	Capacity 2031
Primary ambulatory care			
General practice	1 FTE GP per 1,600 patients, plus 1.5 FTE to provide cover for hospital beds & teaching time, includes outreach clinics & leave cover	6.5	7.0
Practice nursing	1 FTE per 1000 patients, plus 0.5 FTE clinical nurse leader, plus 5.5 FTE urgent care roles, excludes outreach clinics (note NZ average 1:2500)	12.2	13.2
Community /rural nursing	1 FTE per 1500 population, includes public health nursing, excludes outreach clinics (national average is around 1 FTE: 3000 population)	4.4	4.8
NASC/coordinator	1.1 FTE minimum requirement to manage role.	1.1	1.2
Physiotherapy	1 FTE per 2500 population of which 50% is private = 1 per 5000 public (national average is around 1 FTE: 5200 population, including hospital physio)	1.8	2.0
Occ' Therapy	1 FTE per 4000 population (national average is around 1 FTE: 4500 population, including inpatient services)	1.8	2.0
Social work	1 FTE per 4000 population (national average is around 1 FTE: 4500 population, including inpatient services)	1.8	2.0
Radiology	As per current staffing – but note that 1 in 2 overnight roster is not sustainable.	1.2	1.2
Mental health	5 FTE (per Mental health Blueprint) includes A&D (1 per 1500, less 1 crisis FTE based in Greymouth)	5.0	5.0
Dentist	1.1 FTE (national average is around 1 FTE: 2500 population, but unlikely to attract 3 FTE – back up with therapists)	1.1	1.1
Dental therapist	2 FTE (national average is around 1 FTE: 8000 population, but assume expanded role in Westport)	2.0	2.0
Pharmacist	1.1 FTE (minimum to cover office hours) – half covered by private dispensing fees.	0.6	0.6
Midwifery	4 FTE – minimum to provide 24/7 cover unless GPs pick up partial role.	3.5	3.5
	Subtotal (FTE)	42.9	45.5
Primary inpatient/residential Services (note bed numbers will flex between categories in accordance with demand)			
Rest home beds	8.2 bed days per capita 65+, @93% occupancy (NZ average)	34	34-60
Dementia beds	1.6 bed days per capita 65+, @93% occupancy (NZ average)	7	7-12
Continuing care	6.6 bed days per capita 65+, @93% occupancy (NZ average)	29	29-48
ATR beds	Assume 20% of ATR for West coast occurs in Westport = 671 bed days @93% occupancy	2	3
Palliative care	Benchmark 5 beds per 100,000 – 0.5 beds – may be used flexibly	1	1
GP beds	1860 bed days – 6 beds at 85% occupancy	6	6-10
Maternity	2 LDRP rooms (aim for 60 births, 3 nights stay, at 50% occupancy)	2	2
	Subtotal (Beds)	80	80-137
Converting beds to FTEs	2011: RNs = 10.1, caregivers = 26.9, other staff = 9.5 FTE 2031: RNs = 17.4, caregivers = 46.2, other staff = 16.4 FTE	50.5	90
Corporate services			

Subservice	Capacity / volume rationale	Capacity 2011	Capacity 2031
Management	3 FTE – overall manager plus ambulatory care manager and residential/hospital manager, excludes team leader pt time roles	3	3
Reception & telephone & admin	based on 33 patients per hour @ 5 mins each, plus weekend shifts, plus admin, accounts, etc	8.2	8.9
Facility/orderly/security	One person onsite 8 hours, 7 shifts per week	1.5	1.5
Subtotal (FTE)		12.7	13.4
Grand total FTEs all components of IFHC service		107	145

FTE summary

The table below summarises current FTEs (based on budget FTEs rather than actuals) and the number estimated to be required in the new model of care/facility in 2011 and 2031.

Subservice	Current FTEs	Capacity 2011	Capacity 2031
Primary ambulatory care	40	43	45
Inpatient/residential	68	51	86
Corporate services	16	13	13
Total	124	107	145

3.5 Option 2: split site

Under this option we assume that that rest home services, continuing hospital care services and dementia services are provided at the aged care site, while the primary inpatient, birthing facilities, ATR and palliative care services are provided at the IFHC site together with all the primary ambulatory services described in the single site option. Table 7 shows the split of services between the two sites.

Table 8: Capacity required by site, under a split site option, 2011 and 2031

Subservice	Capacity / volume rationale	Capacity 2011	Capacity 2031
IFHC site			
IFHC primary & ambulatory care services (as per table 7 above) – clinical FTEs, plus 50% of corporate FTEs		48	51
IFHC Primary Inpatient services			
ATR beds	as per table 7 above	2	3
Palliative care	as per table 7 above	1	1
GP beds	as per table 7 above (plus one bed to allow for lack of flexibility)	7	7-11
Maternity	as per table 7 above	2	2

Subservice	Capacity / volume rationale	Capacity 2011	Capacity 2031
Subtotal IFHC Beds		11	12 - 17
Aged residential care site			
Rest home beds	8.2 bed days per capita 65+, @93% occupancy	36	36 - 60
Dementia beds	1.6 bed days per capita 65+, @93% occupancy	7	7 - 12
Continuing care	6.6 bed days per capita 65+, @93% occupancy	29	29 - 48
Subtotal ARC site beds		72	72 - 120

Table seven does not make any allowance for increased capacity requirements as a result of the split. These impacts are set out below, along with an estimate of their impact on service provided and capacity required.

Table 9: Impact of split site option

Component affected	Service Impact	Capacity impact
Reception & admin	Separate administration, management and reception required.	3 additional FTEs
Primary inpatient beds	Inpatient beds will require additional staffing over benchmark to achieve minimum 2 nurse & 1 caregiver FTE cover on all shifts. Additional staffing requirement reduces over time as demand for inpatient services increases.	2.5 nurse FTEs 2.4 caregiver FTE (reducing to 1.3 FTE extra in 2031)
ATR service unlikely	Lack of synergy between allied health and aged residential care makes ATR service unlikely to be feasible	Possible 2 ATR bed reduction
Duplication of some areas	Some duplication required in corporate and support areas (boilers, laundry, cleaning storage, reception)	Estimate additional 100 metres ² building required.
No Kitchen / cafeteria	Kitchen will be based at aged care site – no onsite kitchen at IFHC site	
GP & allied health travel time	GPs & allied health will spend more time travelling.	
Community convenience	Community loses 'one stop shop' opportunity – e.g. ability to visited aged before/after primary care appointment	
Divergent terms and conditions	Having separate sites facilitates the aged residential care component paying on different terms and conditions.	

The diseconomy cost impact falls on the IFHC provider; the aged residential care provider continues to have good economies of scale, and can continue to pay staff on current terms and conditions.

The IFHC site requires 11 beds in 2011, increasing to 17 in 2031. This could potentially be managed by retaining 6 long-stay hospital beds in the IFHC site, with these reducing to nil in 2031 as demand for GP beds increases. However, this would change the nature of the facility and might require additional onsite recreational, dining and other facilities.

3.6 Option 3: Status quo

Under the status quo, we assume that:

- O'Connor will proceed with building plans and will expand capacity to cover all rest home and continuing hospital care currently provided by the DHB.
- Over time the DHB provider loses income / funder pays current aged care revenue to O'Connor
- DHB saves a small amount (to be determined) on support staff contracts and on supplies.
- DHB saves
- DHB may face exit costs for support and clinical staff
- DHB loses Laundry business income in Westport
- The DHB continues to provide maternity services, palliative care and primary inpatient services
- No other changes occur to the corporate or clinical services or infrastructure.

DRAFT

4 Facility requirements

4.1 Single site global design assumptions

Zones

Facility consists of the following zones:

- Reception, administration, management and waiting zone (incl cafeteria if any)
- Comprehensive primary ambulatory care zone – including all clinical services that see people in consult rooms (i.e., incl. GP, allied health, mental health, offices for NASC and home support staff, dental facility) and clinical support areas – Xray, phlebotomy/pathology, pharmacy
- Primary inpatient and residential care - short & long stay beds
- Non-clinical support – cleaning, laundry, kitchen, bulk store, IS/IT
- External zone – carparks, ambulance bay, helicopter pad

Key assumptions

- Shared reception, electronic patients records, & staff communal areas.
- No dedicated mental health acute assessment room
- Ambulance – no inside space required, ambulance bay required
- Helicopter pad required (50m²)
- On site sterilization required for ambulatory care/minor surgery (autoclave)
- No on site mortuary
- 2 LDRP beds provided and LMC based maternity services provided
- Administration areas will be open plan other than for 3 managers
- Waiting areas for all services will be combined.
- General consultation / interview rooms will be used flexibly by allied health, visiting outpatients and community staff.
- Flexible use meeting rooms – not dedicated to staff areas
- A computer room will be required to house local servers
- Laundry will be transported from Greymouth
- Dedicated room/equipment required for physio & OT.
- Dietician can use general consult/interview rooms.
- Home care support staff do not require on site offices/facilities
- Flexible / future proof design.

5 Financial modelling

5.1 General notes & limitations

The financial results presented cover the revenue and expenses currently allocated to the following WCDHB cost centres:

Table 10:

Service group	WCDHB detail	ACCT
Corporate & admin	Country Hospital - Buller	22400
Corporate & admin	Buller Facility	61001
Primary inpatient/residential	Foote	23601
Primary inpatient/residential	Kawatiri Ward	31201
Primary inpatient/residential	Community Nursing Buller	32001
Primary inpatient/residential	Dunsford Ward - Continuing Care	23501
Primary inpatient/residential	Kynnersley - Rest Home	23701
Primary ambulatory	Outpatients - Buller	12301
Primary ambulatory	Radiology - Buller	13201
Primary ambulatory	Medical Records - Buller	13601
Primary ambulatory	Occupational Therapy - Buller	31801
Primary ambulatory	Physiotherapy - Buller	22001
Primary ambulatory	Public Health Nurse - Karamea	32200
Primary ambulatory	Ngakawau Primary Care	32700
Primary ambulatory	Buller Medical	55100
Primary ambulatory	CMH Buller	42601

O'Connor services have been treated as an additional cost centre.

Limitations of this draft

The financial analysis presented here is preliminary and requires validation. In particular:

- FTE estimates require consideration and sign off by service owners
- FTE costs require consideration and sign off by service owners & CFO
- Direct costs have been based on current actuals and may not reflect new models of care
- Capital costs should be considered indicative only until a concept drawing is developed and a quantity surveyor engaged to cost the intended concept
- The cost of capital requires review and sign off by the CFO
- Disposal and demolition issues have not been incorporated to date
- Land costs have not been incorporated to date.
- Costs and revenue for dental services and pharmacy have not yet been included.
- Focus is on expenses not revenue (given revenue allocation is somewhat arbitrary)
- Excludes corporate overheads.

5.2 FTE cost assumptions

Buller IFHC salary related costs – draft 1: 8 March 2011

FTE type	Average cost per FTE
GP, rural hospital specialist	
Primary care nurse - clinic based	
Primary care nurse - rural/community	
NASC coordinator	
Physiotherapy / assistant	
Occ' Therapy / assistant	
Social work	
x-ray technician	
mental health worker	
Dentist	
Dental therapist	
Pharmacist	
Midwife	
Inpatient / Residential FTE	
DHB RN - rostered 24/7	
Private ARC RN - rostered 24/7	
DHB HCA/EN rostered 24/7	
Private ARC EN/HCA - rostered 24/7	
Manager	
Reception/ administration/ telephonist	
Caretaker/security/orderly	

Costs include:

- Salary
- ACC
- Kiwisaver contribution
- Average of permanent and locum cover costs
- Training / CME allowances
- Recruitment
- Team leader allowances

5.3 Direct cost assumptions

Direct costs are assumed to be as per current status quo.

5.4 Building & cost of capital assumptions

Building and fit out costs

Building + FFE costs Greenfields estimates	\$/M2	Single site (option 1)			Split site (option 2)		
		Metres2	Cost	Subtotals	Metres2	Cost	Subtotals
Primary ambulatory & support services							
Primary inpatient & maternity							
Subtotal Primary care facilities							
Subtotal age residential care							
Subtotal building							
Site works							
FFE							
Professional fees							
Contingency							
escalation							
Escalation + contingency + fees + site							
Total				\$ 22,157,157			\$ 23,182,612
Global m2 cost (excl land)		\$ 4,170			\$ 4,159		

Based on 90 beds (80 Arc plus 10 primary inpatient) single site and 91 beds (80 ARC plus 11 primary inpatient) in the split site option. Note bed demand increases over time, thus this aspect/element of the facility sizing needs further consideration.

Cost of capital under various options

Site option summary	Annual cost of capital (interest, depreciation, equity)				
	Capital cost	10%	11%	12%	13%
1. Single site, greenfields IFHC					
IFHC ambulatory component total					
ARC/inpatient component total					
Total					
2 Split site, both greenfields					
IFHC inc primary inpatient total					
ARC total					
Total					
2.a Split site greenfields IFHC + O'Connor brownfields					
IFHC inc primary inpatient total					
ARC total					
Total					
1.a Single site O'Connor brownfields					
IFHC component total					
ARC/inpatient component total					
Total					
Plus land costs					

The cost of capital assumptions presented here are preliminary, and subject to review. In particular, the cost of replacing portions of current facilities in the brownfields options have not yet been included.

5.5 Summary costs

Indicative estimated annual operating costs for each option are shown below. Further work is required to reconcile the projected personnel cost with the status quo costs.

Summary - 2011	Option 1 Greenfields, single site IFHC		
Service component	Primary care services	Age residential care	Total
FTEs	56.6	49.9	106.5
Bed days	2,894	26,995	29,889
Beds	10	80	90
GFA - M2	1,796	3,519	5,314
Building & FFE cost	\$ 6,691,590	\$ 15,465,567	\$ 22,157,157
Expenses			
- Personnel	\$ 5,153,569	\$ 2,051,662	\$ 7,205,231
- Direct costs	\$ 874,401	\$ 983,433	\$ 1,857,834
- Cost of capital @ 11.5%	\$ 769,533	\$ 1,778,540	\$ 2,548,073
Total annual expenses	\$ 6,797,503	\$ 4,813,635	\$ 11,611,138
salary rate basis	public sector	private sector	

Summary - 2011	Option 2 split site, both greenfields,		
Service component	Primary care services	Age residential care	Total
FTEs	64.2	49.9	114.1
Bed days	2,894	26,995	29,889
Beds	1	80	91
GFA - M2	1,974	3,600	5,574
Building & FFE cost	\$ 7,358,812	\$ 15,823,800	\$ 23,182,612
Expenses			
- Personnel	\$ 5,609,169	\$ 2,051,662	\$ 7,660,831
- Direct costs	\$ 971,557	\$ 983,433	\$ 1,954,990
- Cost of capital @ 11.5%	\$ 846,263	\$ 1,819,737	\$ 2,666,000
Total annual expenses	\$ 7,426,989	\$ 4,854,832	\$ 12,281,821
salary rate basis	public sector	private sector	

Summary - 2011	Option 3 Status quo		
Service component	Primary care services	Age residential care	Total
FTEs	62.8	61.9	124.7
Bed days	2,223	24,871	27,094
Beds	13	78	91
GFA - M2	tba	tba	tba
Building & FFE cost	na	na	na
Expenses			
- Personnel	\$ 6,092,413	\$ 2,928,809	\$ 9,021,222
- Direct costs	\$ 971,557	\$ 1,645,895	\$ 2,617,452
- Cost of capital @ 11.5%	\$ -	\$ -	\$ -
Total annual expenses	\$ 7,063,970	\$ 4,574,704	\$ 11,638,674
salary rate basis	public sector	mixed public/private	

The options are summarised and compared below.

Note that the direct cost estimates have not yet been adjusted to incorporate the expected reduced cost of maintenance in a new facility.

Table 11: Greenfields options summary

Service component	Option 1 Greenfields, single site IFHC	Option 2 split site, both greenfields,	Option 3 Status quo
FTEs	107	114	125
Bed days	29,889	29,889	27,094
Beds	90	91	91
GFA - M2	5,314	5,574	tba
Building & FFE cost	\$ 22,157,157	\$ 23,182,612	na
Expenses			
- Personnel	\$ 7,205,231	\$ 7,660,831	\$ 9,021,222
- Direct costs	\$ 1,857,834	\$ 1,954,990	\$ 2,617,452
- Cost of capital @ 11.5%	\$ 2,548,073	\$ 2,666,000	\$ -
Total annual expenses	\$ 11,611,138	\$ 12,281,821	\$ 11,638,674
Average cost per FTE	\$ 67,634	\$ 67,122	\$ 72,320

Further investigation is required to assess whether the capital costs can be reduced by using brownfields options, without compromising optimal facility design.

Further discussions are also required on the range of salary and terms and conditions that apply to the different current providers, with a view to ensuring sustainable wage rates.

6 Appendices

Table 12: Hours per resident per week assumptions

Hours per resident per week	Nurse	Caregivers	Non-care	Total	Source
Rest home	2.6	11	5.5	19.1	Thorton
Dementia	4.1	16.1	4.4	24.6	Thorton
Hospital	7	18	5.1	30.1	Thorton
ATR	14	18	5.1	37.1	[Thorton RN figures doubled]
Palliative	14	18	5.1	37.1	[Thorton RN figures doubled]
GP beds	14	18	5.1	37.1	[Thorton RN figures doubled]
Maternity	14	18	5.1	37.1	[Thorton RN figures doubled]

Table 13: Bed to FTE conversion assumptions – benchmarks

Converting beds to FTEs...	Volumes	FTE Requirement 2011			
Bed days / year	Bed days	Nurse	Caregivers	Non-care	Total
Rest home	11,890	2.6	9.0	4.5	15.6
Dementia	2,338	4.1	2.6	0.7	4.0
Hospital	9,512	4.6	11.7	3.3	19.6
ATR	671	0.6	0.8	0.2	1.7
Palliative	183	0.2	0.2	0.1	0.5
GP beds	1,860	1.8	2.3	0.6	4.7
Maternity	180	0.2	0.2	0.1	0.5
Total	26,674	10.1	26.9	9.5	46.5

Excludes midwifery – figures to be reviewed by WCDHB & O'Connor Trust.

Estimating activity

Buller medical centre	Patient volumes					Clinic rooms required	
	Year	week	week day	per hour	time per pt	70%	
gp consults	22,896	440	88	11	20	5.2	
nurse consults	21,004	404	81	10	20	4.8	
misc other/both	8,013	154	31	4	20	1.8	
Physio	2,200	42	8	1.1	30	0.8	
Dentist/therapist	8,320	160	32	4	30	2.9	
Mental health	5,200	100	20	3	60	3.6	
Total	67,633	1,301	260	33		19.1	

Source: JAG and Buller

Table 14: Preliminary schedule of accommodation

Outline schedule of accommodation			Draft & preliminary to be checked by architect & clinical staff			
Services	Option 1 single site			Option 2 split site		
	#	M2 per room	Total M2	#	M2 per room	Total M2
1. Reception, administration, management and waiting zone						
Entry lobby	1	10	10	1	10	10
Waiting area, child play area, vending / telephone	1	60	60	1	60	60
Toilet - accessible	2	5	10	2	5	10
Toilet	5	3	15	5	3	15
Reception	1	20	20	1	20	20
Admin support photocopy, paper, files storage	1	20	20	1	20	20
Buller health manager	1	10	10	1	10	10
Buller health admin staff	3	6	18	3	6	18
Subtotal			163			163
Circulation		30%	49		30%	49
Subtotal gross			212			212
2. Primary & ambulatory care zone						
Consult / exam room	15	15	225	15	15	225
Consult exam / urgent care	2	22	44	2	22	44
Mental health consult rooms	5	15	75	5	15	75
Bay mobile equipment	1	4	4	1	4	4
Bay resuscitation trolley	1	2	2	1	2	2
staff base / clean utility	1	12	12	1	12	12
staff lockers/workstations	4	6	24	4	6	24
dirty utility / disposal	1	10	10	1	10	10
Toilet staff	2	3	6	2	3	6
Toilet patient	0	3	0	0	3	0
office write up / workstations / photocopy	4	5	20	4	5	20
staff meeting room / group clinic / gym large	1	40	40	1	40	40
meeting room small	1	14	14	1	14	14
store general / sterilising / wash up	2	9	18	2	9	18
physio treatment room	2	20	40	2	20	40
physio/ OT storage	2	10	20	2	10	20
Training, videoconference, library	1	30	30	1	30	30
kitchenette	2	8	16	2	8	16
staff room	1	20	20	1	20	20

Outline schedule of accommodation		Draft & preliminary to be checked by architect & clinical staff				
Sleepover room	1	12	12	1	12	12
CAHMS play assessment area	0	25	0	0	25	0
property bay	1	8	8	1	8	8
phlebotomy - specimen collection & storage	1	12	12	1	12	12
blood fridge	1	3	3	1	3	3
Dental chairs	2	30	60	2	30	60
Pharmacy area	1	75	75	1	75	75
Xray - room	1	30	30	1	30	30
X-ray sub waiting	1	6	6	1	6	6
change cubicle (radiology)	1	2	2	1	2	2
pacs / viewing / processing	1	8	8	1	8	8
subtotal			836			836
circulation		30%	251		30%	251
subtotal gross			1087			1087
3. Non- clinical support – (not these mainly included in ARC total floor space requirements)						
Cleaners store	0	12	0	1	12	12
Bulk store	0	30	0	1	30	30
Dirty linen store / laundry	0	15	0	1	15	15
Store flammables	0	4	0	1	4	4
Store medical gases	1	12	12	1	12	12
Waste store - general & recycle	0	10	0	1	10	10
Waste holding - contaminated/perishable	0	12	0	1	12	12
morgue	0	26	0	0	26	0
Kitchen	0	20	0	1	20	20
Cafeteria	1	24	24	1	24	24
St Johns ambulance base/training/etc	0	400	0	0	400	0
subtotal			36			139
circulation		30%	11		30%	42
subtotal gross			47			181
Primary inpatient & maternity beds	10	45	450	11	45	495
ARC beds (includes corporate facilities)	80	45	3600	80	45	3600
other facilities & circulation	0	29	0	0	0	0
Less facilities covered in zone 1			81.5			
subtotal gross	90		3969	91		3600