

## Launceston General Hospital Clinical Services Plan Report



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## Contents

Acknowledgements .....	2
Glossary and abbreviations .....	6
1. Key Findings and Recommendations .....	7
Role of Launceston General Hospital.....	7
Population demographics.....	7
Managing current service pressures .....	7
Priorities for LGH facility improvement .....	10
Service improvement and reform .....	12
Opportunities and risks .....	13
2. Introduction .....	17
3. Population and demographics .....	20
4. LGH patients – usual place of residence.....	22
5. Health service self sufficiency .....	25
North and North East regions .....	25
North West and West Coast regions .....	28
6. Small rural hospitals – North and North East .....	31
7. Admitted patient intra-hospital flows .....	37
8. Clinical Unit Group – actual and expected length of stay .....	42
9. Emergency Department analysis .....	44
Consultation findings .....	44
Data analysis findings .....	44
Emergency Department capacity projection .....	54
Findings from consultation and data analysis .....	56
10. Medical services .....	58
Consultation findings .....	58
Data analysis findings .....	58
Medical services projections.....	64
Conclusions from consultation and data analysis .....	66
11. Renal Dialysis .....	69
12. Intensive Care Unit.....	71
Prioritised options and opportunities .....	73
13. Cancer services .....	74
Consultation findings .....	74
Data analysis findings .....	74

Prioritised options and opportunities .....	80
14.    Surgery services .....	81
Consultation findings .....	81
Data analysis findings .....	81
Prioritised options and opportunities .....	88
15.    Operating theatres, DPU and procedure rooms .....	89
Data analysis findings .....	89
Prioritised options and opportunities .....	95
16.    Oral Health .....	96
Consultation findings .....	96
Data analysis findings .....	96
Prioritised options and opportunities .....	97
17.    Women's and Children's services .....	98
WACS outpatient analysis and consultation findings .....	98
General Consultation findings .....	107
Data analysis findings .....	107
Prioritised options and opportunities .....	115
18.    Complex, chronic and community care services .....	117
Consultation findings .....	117
Data analysis – Rehabilitation .....	118
Data analysis - Palliative care .....	130
Prioritised options and opportunities .....	132
19.    Mental health services .....	133
Consultation findings .....	133
Data analysis findings .....	133
Priorities and opportunities .....	135
20.    Diagnostic services and support services .....	136
Medical Imaging .....	136
Pathology services .....	137
Pharmacy .....	137
21.    Allied Health .....	139
Consultation findings and future priorities .....	139
22.    Primary health .....	141
Consultation findings and future priorities .....	141
23.    Child Health and Parenting Service .....	143
Consultation findings and future priorities .....	143

24.	Teaching, training and research.....	144
	Consultation findings and future priorities .....	144
25.	Infrastructure and technology supports .....	145
	Consultation findings and future priorities .....	145
26.	Additional infrastructure.....	146
	Consultation findings .....	146

## Glossary and abbreviations

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Activity Based Funding	ABF
Admission Unit Group (CUG under which patient is admitted)	AUG
Average length of stay	ALOS
Clinical Unit Group (Cancer Services, Clinical Support, CCC Care, Medicine, Mental Health, Surgery, WACS)	CUG
Community Rapid Response Service	ComRRS
Complex, Chronic and Community Care	CCCC(are)
Diagnosis Related Group	DRG
Discharge Unit Group (CUG under which patient is discharged)	DUG
Emergency Department	ED
Expected length of stay	ELOS
Geriatric Evaluation and Management	GEM
Launceston General Hospital	LGH
Length of stay	LOS
Mersey Community Hospital	MCH
National Hospital Cost Data Collection	NHCDC
North West Regional Hospital	NWRH
Royal Hobart Hospital	RHH
Same Day	SD
Tasmanian Department of Treasury & Finance	TDT&F
Tasmanian Health Service	THS
Women's & Children's Services	WACS

## 1. Key Findings and Recommendations

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### Role of Launceston General Hospital

Launceston General Hospital provides a high level of self-sufficiency for its primary catchment in the greater Launceston region and the North East of Tasmania. It also provides a substantial of complex care unavailable locally to residents of the North West and Upper West Coast regions. Care provided at the Royal Hobart Hospital for patients from the North and North West is principally for specialties not available in those regions. The current role delineation levels for Launceston General Hospital appear consistent and appropriate for the caseload and patient flows.

### Population demographics

The Tasmanian Government projects small overall increases in population but substantial shifts in the age mix to much higher proportions of residents aged over 65 years. This demographic change will have the largest overall impact upon future service demand.

### Managing current service pressures

The data analysis has identified that with the exception of Surgery and to a lesser extent WACS Clinical Unit Groups, all other Groups (Cancer, Medicine, Rehabilitation and Mental Health) had overnight average inpatient lengths of stay that exceed by a large margin the benchmark expected lengths of stay. It is understood that there are a number of reasons contributing to this situation:

- lack of hospital diversion and replacement services in the community such as Hospital in the Home;
- lack of community services available to support more complex discharged patients;
- difficult to access community accommodation for patients from the North West; and
- delays in admission and transfer from the ED to inpatient wards.

It is also likely that inpatient models of care and patient management systems contribute to this position.

### ***Future activity and service capacity projections***

It is imperative that admitted patient lengths of stay are brought into line with state and national benchmarks. Achievement of this is likely predicated on a review of current inpatient patient flows and on the development of a comprehensive suite of community-based services and supports.

The following table shows the projected resource change if there is no change to current service models and the adjusted projections if changes are made. The priority to address Medicine length of stay is demonstrated by the change in the 2028 projection from requiring an additional 29 beds to having a reduced requirement of 16 beds.

	No change scenario		Change in service scenario	Change scenario	
Service	2028	2036		2028	2036
Emergency Department model 1	3 extra cubicles	5 extra cubicles	Reduce low urgency attendances by 50%	No extra cubicles required	1.5 extra cubicle required
Emergency Department model 2	3 extra cubicles	5 extra cubicles	Reduce LU and increase 4 hour admits to 40%	No extra cubicles required	No extra cubicles required
Medicine	29 extra beds	44 extra beds	Meet state expected length of stay benchmarks	16 less beds required	7 less beds required
Cancer	3 extra beds	4 extra beds	Meet state expected length of stay benchmarks	4 less beds required	4 less beds required
Surgery	8 extra beds	11 extra beds	No change scenario currently meets national benchmarks	8 extra beds	11 extra beds
Rehabilitation	11 extra beds	16 extra beds	Meet length of stay benchmarks	5 extra beds	10 extra beds
Palliative Care	1 extra bed	2 extra beds	No change scenario. Community service would change demand	1 extra bed	2 extra beds
Obstetrics	No extra beds	No extra beds	No change scenario. Medi hotel would reduce demand.	No extra beds	No extra beds
Gynaecology	No extra beds	No extra beds	No change scenario.	No extra beds	No extra beds
Paediatrics	No extra beds	No extra beds	No change scenario.	No extra beds	No extra beds
Neonatology	No extra beds	No extra beds	No change scenario.	No extra beds	No extra beds
Mental Health	New integrated models of care proposed		n/r	n/r	n/r

Main theatres and ICU appear to have sufficient capacity to meet future expected demand for the foreseeable future.

### ***Improve care for medical inpatients likely to experience long lengths of stay***

Medical inpatients with complex chronic diseases and mental health co-morbidities are management challenges, who do not currently have a fixed medical home in the hospital with the necessary infrastructure and specialist workforce to enable best practice care. These patients are at particular risk of extended hospital admissions, which can be associated with poorer clinical outcomes for them and reduced access to services for other patients.

It is recommended that:

- a secure older persons' unit is established to support the provision of safe and appropriate care for behaviourally-complex older medical patients;
- an integrated chronic disease management service is developed to provide multidisciplinary team-based support for elderly patients with complex chronic



care needs to avoid Emergency Department presentations, avoid hospitalisation, support early discharge and prevent unnecessary hospital readmissions; and

- the timely identification and transition of medical patients to sub-acute care is improved, with better patient flows from sub-acute care to home facilitated by a consolidated sub-acute service hub, enhanced role definition and patient streaming, and coordinated discharge support from a community-based, multidisciplinary integrated care team.

### ***Improve access and integration of mental health services***

There is a lack of timely access to appropriate community-based services for people experiencing mental health co-morbidities, which leads to delays in assessment and treatment, and contributes to increasing Emergency Department presentations. Patients with mental health needs require timely access to services in an appropriate and accessible care setting that has a substantial community-based presence.

It is recommended that:

- a new purpose-built, integrated mental health facility that provides inpatient acute care, community crisis care, and community mental health services is developed;
- service capacity is enhanced by expanding existing models of care that support extended-hour access to assessment, triage and treatment;
- new models of care are implemented to improve access to community-based and home-based detoxification and rehabilitation services;
- capability is developed to provide increased access to integrated, community-based care for paediatric patients with complex behavioural, mental health, and social issues; and
- service integration is supported by co-locating Mental Health Services, Alcohol and Other Drug Services and Forensic Services.

### ***Women's and children's precinct***

LGH has developed a WACS precinct through its 4K redevelopment. However, the outpatient space allocated to WACS in the current floorplan is insufficient to meet the clinical needs of women and children receiving outpatient services. WACS functions should be given priority to be located within the WACS precinct and non-WACS functions accommodated elsewhere.

### ***Managing Emergency Department service demand***

A number of factors contribute to patient management challenges in the Emergency Department, including the number and mix of presentations, the availability of hospital avoidance programs and the ability to transfer patients from the Department to other admitted and non-admitted care options in a timely way.

Of these the biggest issue is the difficulty in transferring patients from the ED to an inpatient ward. This issue can only be addressed by improving patient flow through the

hospital by reducing inpatient stays and improving community-based services to support patients at home.

Whilst low urgency presentations contribute to ED workload they are easily managed if they present. Ideally these patients would develop a therapeutic relationship with a local GP, but at current levels they do not contribute significantly to the demand pressures in the ED.

It is recommended that:

- inpatient LGH patient flow be analysed to identify mechanisms to free bed capacity;
- the use of rural hospital facilities and workforces be supported and optimised;
- existing general practices are supported to increase capacity to provide low urgency care, including basic imaging and point of care testing;
- the capacity of existing hospital avoidance programs such as the Community Rapid Response team be increased;
- alternative referral and triage pathways (including paramedic triage) for specific patient groups with low-urgency care needs such as patients with mental health or alcohol and other drug issues, elderly patients with chronic health conditions, residents of aged care facilities and palliative care patients, be developed.

## Priorities for LGH facility improvement

### **Modernisation**

Stakeholders agree that the current mental health inpatient facilities (Northside) and the medical ward facilities (D block) should be prioritised for a complete refurbishment to support contemporary models of care.

Refurbished wards should include:

- support for bedside models of care and line-of-sight monitoring;
- an increased number of single rooms and isolation rooms;
- improved air handling and segregation in line with contemporary infection control;
- flexible shared therapy spaces to support the provision of allied health services and emerging allied health-led models of care;
- sufficient storage for medical equipment, beds, linen and medications; and
- pneumatic tube delivery capacity.

Stakeholders also report that the Allambi building used for primary health requires significant maintenance in accordance with building assessment reports. Refurbishments required to support contemporary models of care include improved clinic and consulting spaces, reception areas, group therapy spaces, rehabilitation facilities and equipment, an observation area, flexible and configurable spaces, security cameras and parking availability.

## ***Expansion***

Stakeholder consultation has identified that medical imaging, procedural cardiology, the day procedure unit and pathology should be investigated for service footprint expansion as a priority.

The medical imaging service requires additional footprint to accommodate:

- a second CT scanner (with capacity to add a third within ten years);
- an expanded and improved ultrasound space, that includes a patient waiting bay, four procedural spaces (two large and two basic) that meet contemporary standards for infection prevention and support patient privacy;
- a patient waiting area equipped with wall oxygen/suction, emergency call bells, and disabled toilet facilities; and
- capacity to add a second MRI within five years.

The Cardiology Department requires increased space to accommodate additional ambulatory capacity for procedural cardiology services. A purpose-built cardiac angiography space that accommodates two suites, located in the Medical Imaging Department or within the surgical theatres complex, may be required to meet increasing demand.

The Day Procedure Unit requires an increased footprint to accommodate a designated admissions area, improve patient flow and expand the current intake and recovery spaces.

Pathology requires additional space for phlebotomy and consultant spaces. Blood and sample collection can occur away from the main pathology area in satellite sites located high-demand service areas such as the Holman Clinic. Changes in service profile may also affect the allocation of space to pathology. Introduction of local stem cell transplant preparation in the future may increase space requirements, and the centralisation of coronial autopsies to Hobart within the next five years will reduce LGH anatomical pathology and mortuary capacity requirements.

## ***Improved access***

Stakeholders agree that the LGH precinct requires improved patient and staff access.

Priority actions include:

- increased access to affordable parking close to care, particularly for patients with mobility constraints;
- improved wayfinding within the precinct, especially on the main campus; and
- increased access to green space particularly for sub-acute care, palliative care and patient/family waiting areas.

Stakeholders identified for LGH facility improvement including:

- complete refurbishment and modernisations of the current mental health inpatient facilities (Northside), the medical ward facilities (D block), and the Allambi building;
- footprint expansion for medical imaging, procedural cardiology, the day procedure unit and pathology; and
- improved wayfinding, car parking and green spaces within the precinct.

## Service improvement and reform

### ***Building capacity beyond the walls***

The LGH Master Plan provides an opportunity to support service improvement and reform in Northern Tasmania. Stakeholders identified the actions listed below.

#### *Recommended actions:*

- strengthen the role of the LGH role in leading and coordinating care provision in partnership with other healthcare providers in the North and North West of Tasmania, and key partner organisations;
- invest in facilities, infrastructure and models of care that support quality, patient-centred, integrated care, as close to home as possible.
- maintain the current inpatient capacity of the LGH, and build additional capacity through increased community-based services, home-based services, telehealth enabled care, and care-sharing arrangements with other providers.
- investigate opportunities through which a co-located private hospital could assist in building the local health workforce, sustainably broaden clinical service provision, and increase flexibility in response to local health needs.
- reduce congestion on the main campus site and improve patient access by relocating less time-critical services and functions from the main campus to the outer precinct.
- increase service capacity in sites located outside of the LGH precinct (i.e. Kings Meadows, Rocherlea and district hospital sites) using innovative models of care.
- co-locate services that share patient care groups, to facilitate improved service integration.

### ***Strengthening enablers of care***

Stakeholders recognise the importance of strengthening enablers of care to support service delivery and facilitate service improvement and reform.

#### *Recommended actions:*

- development of a statewide eHealth strategy to support the delivery of patient-centred, evidence-based, integrated care and to enable effective information sharing between patients and their care providers across the care continuum;

- ongoing investment in student education and training, clinical research and effective recruitment and retention strategies to develop and maintain and workforce that is fit for purpose;
- implement novel workforce initiatives and new models of care to overcome long standing workforce challenges in some service areas;
- identify leadership, change management and project support resources to facilitate transition from a hospital-centric model of care to an integrated health system approach; and
- strengthen partnership between the acute and primary care sectors, and foster collaboration between the Tasmanian Health Service executive, LGH clinical leads, partner organisation executives, and the community.

## Opportunities and risks

### *A lever for change*

Stakeholders recognise the LGH Master Plan, including the Clinical Services Plan as an important opportunity to enhance the capacity of the LGH to provide quality healthcare to the population of the North and North-West regions of Tasmania.

Stakeholders identified a whole-of-health system approach to healthcare planning is required. Stakeholders agree that the LGH has a role in leading and coordinating care provision in partnership with other healthcare providers in the North and North West of Tasmania, and key partner organisations including Primary Health Tasmania, the University of Tasmania and the Clifford Craig Foundation. Examples of opportunities to improve the capacity and quality of healthcare for people in the LGH catchment area include:

- improved integration of care between hospital and primary care health services;
- supporting community-based provision of care including home-based care and monitoring where feasible;
- patient-centric team-based care arrangements involving a coordinated multidisciplinary team;
- improved whole-of-system coordination of care through expanded scope for the Integrated Operations Centre;
- improved reach of specialist expertise with telehealth-enabled support for outpatients, district hospitals and mobile care teams;
- increased use of allied health, nursing and intensive care paramedic-led health teams; and
- service demand sharing arrangements with private providers.

In the main, stakeholders were not supportive of increasing physical inpatient bed capacity, arguing that increasing bed numbers may provide short-term 'bed-block' relief but will not provide a sustainable solution to the drivers of hospital care demand and barriers to patient flow.

Some warn that simply adding more inpatient beds will delay commitment to implementing the service changes required to develop more sustainable approaches to care provision at the LGH. Others cited examples of previous infrastructure projects that have failed to support improved care capacity due to insufficient staffing and a lack of recurrent funding required to maintain the service.

### ***Co-location of private services***

Stakeholders largely welcomed co-location of a private hospital within the LGH precinct, citing opportunities to share health service demand, recruit and retain additional specialist staff to the area, accommodate additional student placements, and broaden medical research options.

Stakeholders also cautioned that due to the modest population of the North and North West region, the LGH Masterplan process must be informed by the clinical service plans of any co-located private hospital. This will ensure that services provided across both sites are appropriate and viable for the population serviced.

Private hospital provision of services such as interventional cardiology, endoscopy, neurology, maternity and obstetrics, medical imaging, nuclear imaging, pathology and pharmacy were identified as priority areas to explore further with a potential co-located private service. Partnership arrangements between the LGH and a co-located private hospital could support a broadening of the local service offering, reduce duplicate acquisition and maintenance of expensive diagnostic equipment, and increase the robustness of the system such that it could flexibly respond to fluctuations in health service demand.

Stakeholders warned that sources of hospital revenue from the Medicare Benefits Schedule, Pharmaceutical Benefit Scheme and Activity Based Funding may be affected with the presence of a co-located private provider. The economic effect of co-located care should be considered carefully, including the effect of potential private/public service profile changes compared to current patterns.

### ***Service location***

Opportunities were identified to move services that are not required on the main LGH campus to the outer LGH precinct, or to sites beyond the LGH precinct, to reduce congestion on the main campus and improve physical access to care for patients.

Suggestions include:

- relocation and consolidation of less time-critical services and functions to the outer-precinct such as: a subacute service hub; an integrated mental health service facility, a teaching training and research hub, specialist outpatient clinic rooms and the infusion service;
- increased use of the Kings Meadows site or other sites outside of the precinct for services such as medical infusions and low-risk chemotherapy infusions, dialysis for chronic kidney disease, and the community dental service; and
- improved use of the district hospital sites for low-urgency presentations and sub-acute care.

Stakeholders agree that the district hospitals require support to facilitate increased care provision beyond current levels. Suggested supports include:

- employment of rural generalists, intensive care paramedics or allied health-led models to enhance local provision and coordination of care;
- remote care support from the main LGH campus using telehealth and biometric monitoring;
- access to extended-hours hospital avoidance services such as ComRRS in partnership with local community nursing, and
- proactive approaches to patient transfer facilitated by the Integrated Operations Centre.

### ***Enablers of care***

#### **eHealth strategy**

eHealth is identified by stakeholders as a key enabler of timely, patient-centred, evidence-based, integrated care. A connected eHealth system is essential for information sharing between patients and their care providers across the care continuum.

Priority eHealth needs identified by stakeholders include:

- an integrated real-time digital medical record and a closed loop medication management system;
- access to digital technology at the point of care;
- consistent access to wifi throughout facilities;
- increased capacity for automation, particularly messaging automation and predictive tools;
- expanded eReferral capacity;
- increased telehealth capacity; and
- telemonitoring to support remote care provision in district hospitals, RACFs, HITH programs and domiciliary monitoring programs.

A statewide eHealth strategy is required that addresses identified needs and supports contemporary models of care.

#### **Workforce**

Enhanced infrastructure and new models of care cannot improve patient outcomes without appropriate staffing levels and skill mix. Stakeholders emphasised the ongoing importance of:

- providing student education and clinical placements in Northern Tasmania to grow the future workforce;
- participating in clinical research to attract and retain staff with specialist skill and interests; and

- effective recruitment and retention strategies to maintain an appropriate workforce.

There was broad agreement that additional measures were required to strengthen and broaden the workforce in response to longstanding workforce challenges and specialist staffing gaps that are particular to the North and North West regions of Tasmania.

Stakeholders suggest a review of appropriate staffing levels in key areas such as allied health, district hospitals, mental health services, alcohol and other drugs services and acute-community liaison services. Expansion of approaches to care that use the existing workforce in novel ways were also identified including nursing-led, allied health-led and intensive care paramedic-led models, allied health-substitution models, virtual team-based approaches to care, and shared staffing arrangements with private providers.

### **Change management**

Effective change from a largely hospital-centric model of care to an integrated health system approach to care requires leadership, change management and project support.

Stakeholders agree that current partnerships between the acute and primary health sectors are not robust and have been impeded by a lack of openness and inclusiveness between parties. Frequently, the opinions and experiences of patients, carers and community have not been sufficiently sought or considered when planning and evaluating care. Improved integration and delivery of care will require shared leadership by the Tasmanian Health Service executive, LGH clinical leads, partner organisation executives, and the community.

Stakeholders agree that community-based healthcare providers require support to manage increasingly complex care. Integrated approaches to care must be collaboratively designed and implemented to support successful transition of care closer to home where possible. Consultative approaches to care design, implementation and evaluation are essential. Appropriately resourced change management programs are required to facilitate cultural change, and design and implement new models of care.



## 2. Introduction

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This Launceston General Hospital Clinical Services Plan has been informed by:

- An extensive stakeholder consultation process that was undertaken in collaboration with the Launceston General Hospital (LGH) Master Plan consultation process. Stakeholders included clinical staff, support staff and volunteers of the LGH, members of the public, community and consumer representatives, local healthcare providers, key partner organisations, and executive members of the Department of Health and Tasmanian Health Service. Our consultation methods included: review of public submissions for the LGH Master Plan; formal meetings, presentations and workshops with the Clinical Planning Taskforce and Northern Reference Group; an open staff forum; and targeted consultation workshops with clinical service staff and other key stakeholders.
- Analysis of data provide by the Tasmanian Health Service including admitted episodes, emergency department presentation, outpatient activity, theatre utilisation for the LGH for 2014-15 to 2018-19, admitted patient data for the rural hospitals, and admitted episodes, emergency department presentation and outpatient activity for the other three major Tasmanian hospitals.
- A literature review of models of care.
- An analysis of workforce priorities.
- An analysis of LGH priorities from an unsolicited bid for a co-located private hospital.
- Feedback from the Northern Reference group.
- Work with health service planners and architects.

### ***About the data analysis***

The key value of analysing hospital activity using administrative data sets are:

- to summarise current clinical unit activity especially in relation to the number of same day and overnight episodes;
- to make an estimate of the overnight beds generally used and needed by clinical specialties;
- to identify in-hospital and between hospital patient flows;
- to count the number of overnight bed days, average length of stay and expected length of stay, which provide the an indication as to whether current clinical activity is efficient and effective; and provide a baseline for future overnight bed projections clinical activity; and
- to assess Emergency Department services and demand.

The basis of hospital, administrative data sets relates primarily to hospital episodes of care (admissions and discharges). An admission is a process whereby the hospital accepts responsibility for the patient's care and/or treatment. Admission follows a clinical decision that a patient requires same-day or overnight (or multi-day) care or treatment.

An admission may be formal or statistical. A formal admission is the administrative process by which a hospital records the commencement of treatment and/or care and/or accommodation of a patient. A statistical admission is the administrative process by which a hospital records the commencement of a new episode of care, with a new care type, for a patient within the one hospital stay.

The data includes the actual length of stay (number of bed days) and the expected length of stay, which is the State and National Benchmark for that patient episode. This provides a point of comparison and a measure of efficiency, within and between clinical units and between hospitals. Overnight average length of stay (ALOS) is routinely used as a measure of resource use and efficiency and is matched with an expected length of stay (ELOS) for same patient mix of admission type, diagnosis and complexity.

Nationally, increasing sophistication of Activity Based Funding (ABF) methods has led to the development of new patient episode categories to allow the more accurate estimate and attribution of costs. Primarily this has involved carve outs of subacute from acute episodes of care, with subacute episodes being re-categorised using different case metrics leading to new more, meaningful case weights and expected lengths of stay. Effective use of the subacute method is also dependent on the collection and reporting of additional clinical data points during the admission, so requires a whole of system realignment and implementation.

The new subacute categorisation system was not available to be applied to the provided data set for this analysis, which largely precludes direct national comparisons for Complex, Chronic & Community Care (CCC Care) services, a similar issue also appears to apply to Mental Health services.

The decision to assign activity to particular clinical unit groups and their constituent specialties and sub-specialties is important because, although it does not affect the overall activity in the hospital, it does have a substantial effect upon:

- actual bed utilisation;
- assessing efficiency measures such as average length of stay for particular clinical specialties; and
- service planning and projected needs.

Determining bed use by each clinical unit and clinical unit groups is also complicated by the routine referral and transfer of patients from one unit to another, with the actual date of transfer not captured by current data submissions.

### ***Service capacity projections and scenarios***

As determined by the established requirements for this clinical services plan, the projections are principally based on:

- historical clinical service activity trends from 2014-15 to 2018-19;
- projected population changes for the primary catchment of Launceston and North East Tasmania at the SA4 level; and
- changes in service profiles.

The service projections are based on:

- per capita utilisation in 2018-19 and whether there is a discernible trend established in the previous years;
- evidence-based predictions of service demand, such as changes in cancer or chronic disease incidence and prevalence; and
- the expected change in population by age cohort.

The service plan is firstly informed by a high level analysis at the Admission Group level (Cancer, Complex & Chronic Care, Medicine, Surgery, Mental Health, Women's & Children's) and then by a more granular assessment at the clinical specialty and age cohort level. Comprehensive review of both service utilisation and population projection data at the 5 year age cohort level, indicates that a number of age groups can reasonably be aggregated to permit an accessible analysis. The age cohorts principally used are:

- 0-14 years, however with a separate neonatal and newborn analysis;
- 15-39 years, for late school and young working age adults;
- 40-64 years, for middle and older working age adults;
- 65-74 years; and
- 75+ years.

Smaller age group aggregations are used to help clarify emergent trends and inform service projections.

Over the five year period from 2014-15 a number of significant service initiatives at LGH have had a substantial impact upon service levels, which need to be recognised in future capacity projections. The main changes include:

- a statewide program to increase elective surgery throughput and reduce waiting times which ran through 2015-16, which naturally led to a spike in surgical throughput which has trended down since then;
- the opening in March 2016 of an Emergency Medical Unit, which permitted a marked increase in medical admissions, which in the most recent period appear to be levelling off, however to permit a meaningful analysis these admissions need to be considered separately; and
- the expansion of clinical services, usually as a result of the appointment of additional specialist medical staff.

### 3. Population and demographics

The estimated population of the primary catchment is projected to rise by 2.6% from 144,603 in 2018 to 148,402 in 2036<sup>1</sup>. This compares with a projected increase in the South and South East of 13.8%, and in the North West and West Coast of 0.6%, for an overall state-wide increase of 8.0%.

The median age for Launceston and the North East at the 2016 census <sup>2</sup> was 43 years with 51% of the population female and 3.3% First Nation peoples, compared with 44 years, 51.2% and 7.2% in the South and 40 years, 51.4% and 3.5% in the North West respectively.

Whilst the overall population growth in the primary and secondary catchments of the LGH is low, the change in the age mix is projected to have a significant impact on future demand for health services.

Figure 1 shows the projected change in the relative proportion of major age cohorts, with those aged over 60 years expected to increase from 27.4% of the population to 33.6% by 2036, with the other two age cohorts decreasing in absolute and relative terms.

*Figure 1: Projected change in age cohort populations, North and North East SA4*

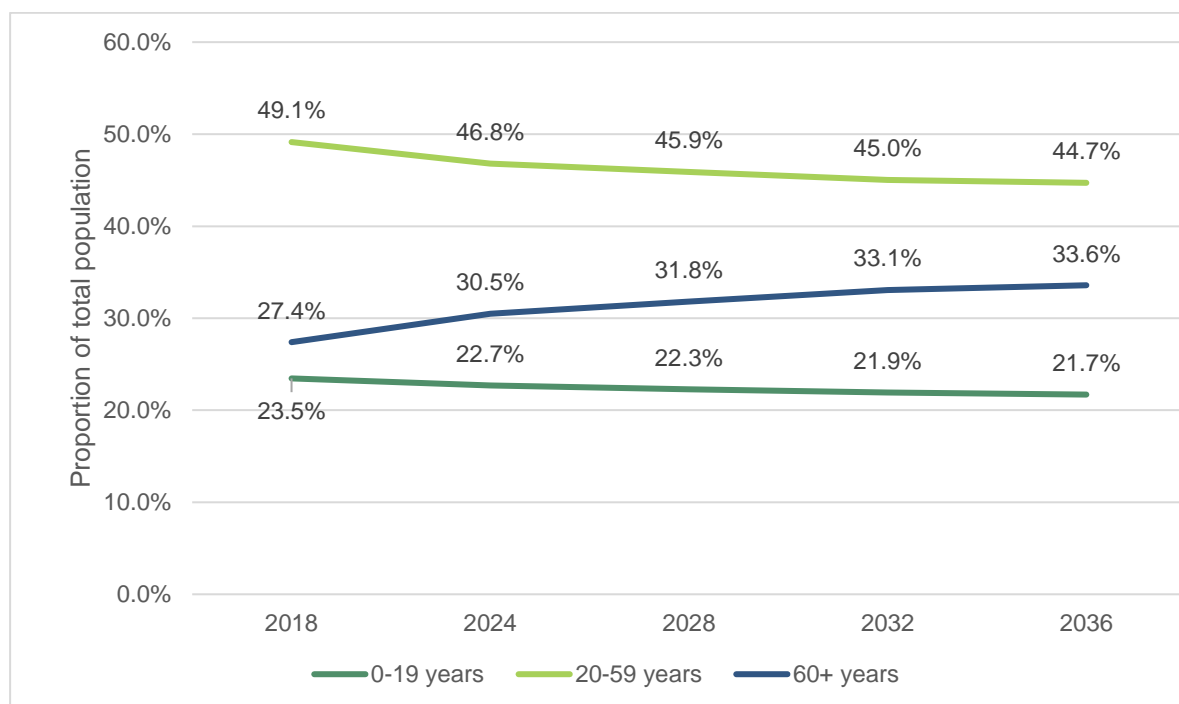
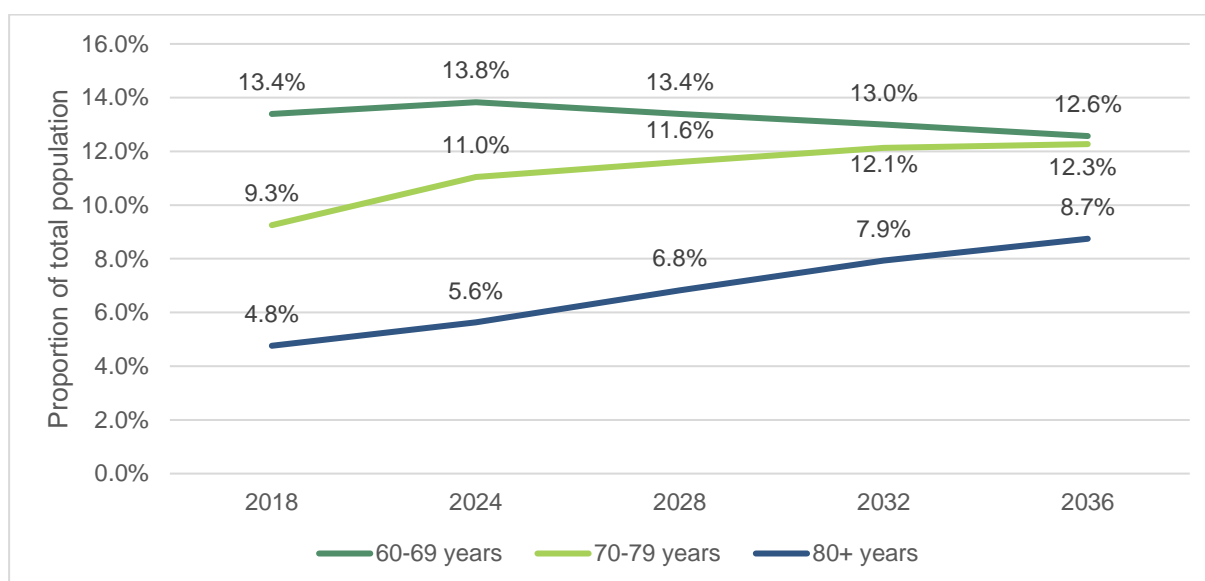


Figure 2 breaks down further the over 60 years age group, which highlights that the increases occur in the oldest age groups.

<sup>1</sup> Tasmanian Department of Treasury and Finance, Population projections for Tasmania, 2019

<sup>2</sup> ABS, 2016 Census of Population and Housing, Cat no 2001.0

Figure 2: Projected change in older age cohort populations, North and North East SA4



The number of people aged over 60 years is projected to have increased by 26% in 2036 compared with 2018, with those aged 70-79 years to increase in number by 36%, and those over 80 years by 89%. These changes will have an effect on health service demand, with Table 1 showing that although residents aged over 80 years constitute just 4.8% of the population, they represented 11.6% of admissions (overnight and same day) and 19.5% of bed days at LGH in 2018-19.

Table 1: LGH admissions and bed days, by age cohort, 2018-19

Age group	Proportion of population	Proportion of admissions	Proportion of bed days
0 -19 years	23.5%	13.3%	9.6%
20 - 59 years	49.1%	40.7%	32.1%
60 - 69 years	13.4%	17.4%	17.6%
70 - 79 years	9.3%	17.0%	21.3%
80+ years	4.8%	11.6%	19.5%

### Key findings – population and demography

The expected increase in the number and proportion of patients aged over 70 years of age in the next twenty years represents a major challenge for the health system in Northern Tasmania, as these age cohorts have much higher demand for health resources. Based on current experience these patients would use 60% of occupied bed days in 2036 compared with 40% now.

## 4. LGH patients – usual place of residence

Table 2 shows the usual place of residence for admissions to LGH in 2018-19, with 83% of admissions being for residents of the primary catchment, 14% from the North West and West Coast, with remainder from Southern Tasmania, interstate and overseas.

*Table 2: LGH admissions (overnight and same day), usual place of residence, 2018-19*

Region	North & North East region			North West & West Coast region			Other regions	
Service type	Launceston	Meander West Tamar	North East	Burnie Ulverstone	Devonport	West Coast	South & SE	Interstate Overseas
Cancer	46%	14%	22%	7%	6%	3%	0%	0%
Complex & Chronic	60%	14%	20%	1%	3%	1%	1%	1%
Medicine	52%	13%	19%	5%	6%	1%	1%	2%
Mental Health	61%	8%	19%	2%	3%	1%	5%	2%
Surgery	41%	12%	21%	9%	11%	2%	2%	2%
WACS	54%	13%	23%	2%	6%	1%	1%	1%
Total	50%	13%	20%	5%	7%	2%	1%	1%
<b>Regional Totals</b>	<b>83%</b>			<b>14%</b>			<b>3%</b>	

Overall the pattern of proportion of patients from North West Tasmania and the West Coast changes quite markedly from year to year, however with a general trend over the last five years of decreased proportion of total admissions for Cancer, Medicine and Mental Health, with an increase for Surgery and to a lesser extent Women's and Children's services (see Table 3).

*Table 3: Percentage of admissions, residents of North West and West Coast, 2014-15 to 2018-19*

Admission Group	2014/15	2015/16	2016/17	2017/18	2018/19
Cancer	24%	19%	16%	19%	17%
Complex, Chronic	5%	6%	5%	4%	4%
Medicine	14%	15%	13%	12%	12%
Mental Health	9%	6%	9%	6%	5%
Surgery	16%	18%	20%	21%	23%
WACS	6%	5%	10%	9%	8%
<b>Total</b>	<b>13%</b>	<b>14%</b>	<b>14%</b>	<b>14%</b>	<b>14%</b>

Table 4 gives the percentage of total LGH activity for overnight admissions with residents living in the North West and northern part of the West Coast. The specialty totals relate to the subspecialty activity reported in this table, which represents more than 98% of the overall total.

*Table 4: Admissions and bed days, North West & West Coast residents, region, proportion LGH total, 2014-15 to 2018-19*

	Admissions					Bed days				
	14/15	15/16	16/17	17/18	18/19	14/15	15/16	16/17	17/18	18/19
<b>Cancer total</b>	<b>24%</b>	<b>19%</b>	<b>16%</b>	<b>19%</b>	<b>17%</b>	<b>34%</b>	<b>34%</b>	<b>19%</b>	<b>24%</b>	<b>22%</b>
Cardiology	36%	38%	39%	41%	44%	35%	36%	39%	41%	42%
Emerg Med	7%	2%	3%	3%	3%	5%	2%	3%	3%	2%
Gastroent.	13%	13%	12%	13%	14%	15%	16%	16%	16%	17%

Admissions						Bed days				
Gen Med	4%	4%	6%	7%	6%	5%	6%	6%	6%	6%
Renal Med	26%	28%	21%	20%	24%	26%	39%	29%	28%	25%
Resp Med	16%	23%	11%	11%	17%	21%	31%	22%	17%	29%
Stroke	7%	9%	5%	6%	5%	7%	9%	4%	7%	2%
<b>Medicine total</b>	<b>14%</b>	<b>15%</b>	<b>13%</b>	<b>12%</b>	<b>12%</b>	<b>10%</b>	<b>12%</b>	<b>12%</b>	<b>10%</b>	<b>11%</b>
<b>Mental Health total</b>	<b>9%</b>	<b>6%</b>	<b>9%</b>	<b>6%</b>	<b>5%</b>	<b>6%</b>	<b>4%</b>	<b>5%</b>	<b>3%</b>	<b>3%</b>
ENT	20%	28%	31%	25%	23%	15%	24%	27%	26%	22%
General	11%	12%	13%	14%	16%	13%	15%	20%	17%	18%
Orthopaedics	5%	6%	7%	7%	8%	6%	6%	5%	9%	7%
P&RS	26%	26%	26%	26%	30%	27%	30%	37%	34%	31%
Urology	34%	35%	39%	37%	39%	43%	43%	45%	42%	42%
<b>Surgery total</b>	<b>16%</b>	<b>19%</b>	<b>21%</b>	<b>21%</b>	<b>23%</b>	<b>17%</b>	<b>19%</b>	<b>23%</b>	<b>22%</b>	<b>22%</b>
Gynaecology	7%	6%	10%	10%	7%	8%	7%	11%	10%	9%
Obstetrics	5%	4%	8%	8%	8%	6%	6%	10%	9%	9%
Obs/Gyn	12%	0%	7%	9%	9%	17%	0%	3%	9%	9%
Paed Med	5%	6%	10%	9%	9%	5%	5%	12%	8%	9%
<b>WACS total</b>	<b>6%</b>	<b>6%</b>	<b>10%</b>	<b>9%</b>	<b>8%</b>	<b>6%</b>	<b>5%</b>	<b>11%</b>	<b>8%</b>	<b>9%</b>

During the stakeholder consultation, clinicians from WACS and Cancer Services in particular observed that the lack of patient accommodation in the community required patients from the North West and West Coast to be admitted as an overnight inpatient, rather than be managed on a same day basis. The data in Table confirms these assertions with haematology / oncology patients having on average 1.1 extra inpatient days compared with primary catchment patients, with an extra 0.5 days and 2.7 days for Obstetrics and Oncology respectively, for a total of 310 for these specialties in 2018-19.

*Table 5: Estimate of excess bed days for North West / West Coast residents*

	Residents of North / North East				Residents of North West / West Coast				XS days for NW admits
	Admit	Days	Exp days	XS days / admit	Admit	Days	Exp days	XS days / admit	
Haem /Onc	232	1729	1358	1.6	119	924	607	2.7	127
Obstetrics	1660	4966	4563	0.2	153	541	429	0.7	75
Oncology	405	3321	2035	3.2	40	436	201	5.9	108
<b>Total</b>	<b>2297</b>	<b>10016</b>	<b>7956</b>	<b>0.9</b>	<b>312</b>	<b>1901</b>	<b>1237</b>	<b>2.1</b>	<b>310</b>

The average cost weight per day for this caseload is 0.36 units, which at \$5000 / unit, represents an annual excess cost of \$558,000.

### ***Key findings – usual place of residence***

LGH plays a crucial role in not only serving its immediate primary population catchment, but also about 14% of its total activity is used to deliver care to residents of the North West and northern West Coast regions.

Subspecialties which are largely unavailable in the coastal regions, including Oncology, Haematology, Cardiology, Renal, Respiratory, Plastic surgery and Urology are utilised at the highest rates.

Stakeholder consultation for this Plan identified that because of the lack of accessible and suitable accommodation, patients from the North West and West Coast were admitted as overnight cases rather than managed as a same day case (Cancer Services) or admitted earlier than warranted (Obstetrics). Models of care that minimise unnecessary hospitalisations for patients from the secondary catchment would free up hospital capacity and should be investigated.



## 5. Health service self sufficiency

### North and North East regions

Table 6 shows the number and proportion of admissions from the primary LGH catchment to the four major public hospitals, with 93% of public hospital admissions from the catchment being at the LGH, with 5% at RHH and the remainder to the two North West hospitals

*Table 6: Admissions from LGH primary catchment, 2018-19*

CUG	LGH	RHH	NWRH	MCH	Total
Cancer Services	772	78	0	0	850
Complex, Chronic Care	716	73	0	0	789
Medicine	15542	313	57	165	16077
Mental Health	642	50	13	0	705
Surgery	7484	891	63	225	8663
WACS	5904	226	37	6	6173
<b>Total</b>	<b>31063</b>	<b>1636</b>	<b>170</b>	<b>396</b>	<b>33265</b>

The highest levels of self-sufficiency are found for Medicine (97%) and WACS (96%), with still very high proportions for treatment for surgery, cancer services and complex care (see Table 7). A small proportion of primary catchment patients are treated at NWRH and MCH, the latter for mainly scheduled day surgery and the former for emergency mental health services.

*Table 7: Admission and bed day proportion of LGH primary catchment, 2018-19*

AUG	LGH admit	LGH days	RHH admit	RHH days	NWRH admit	NWRH days	MCH admit	MCH days
Cancer Services	91%	95%	9%	5%	0%	0%	0%	0%
Complex, Chronic Care	91%	98%	9%	2%	0%	0%	0%	0%
Medicine	97%	98%	2%	1%	0%	0%	1%	0%
Mental Health	91%	92%	7%	5%	2%	3%	0%	0%
Surgery	86%	80%	10%	18%	1%	1%	3%	1%
WACS	96%	91%	4%	9%	1%	0%	0%	0%
<b>Total</b>	<b>93%</b>	<b>93%</b>	<b>5%</b>	<b>6%</b>	<b>1%</b>	<b>1%</b>	<b>1%</b>	<b>0%</b>

Table 8 provides a more detailed breakdown of admissions to RHH by clinical specialty. Specialties with the largest number of admissions and greatest number of bed days, are for complex surgical services including cardiothoracic surgery, neurosurgery, vascular and endovascular, general and plastic surgery. There were also a substantial number of admissions for obstetrics, neonatal ICU and neonatology.

*Table 8: RHH Admissions and bed days of LGH primary catchment, specialty, 2018-19*

	Overnight	Same day	Overnight bed days	All admits	All bed days
<b>Cancer Services</b>	<b>18</b>	<b>60</b>	<b>126</b>	<b>78</b>	<b>186</b>
Clinical Haematology	10	30	92	40	122
Haem/Oncology	0	17	0	17	17
Oncology	8	13	34	21	47

	Overnight	Same day	Overnight bed days	All admits	All bed days
<b>Clinical Support</b>	<b>3</b>	<b>2</b>	<b>7</b>	<b>5</b>	<b>9</b>
Medical Imaging	3	2	7	5	9
<b>Complex Chronic Care</b>	<b>11</b>	<b>62</b>	<b>204</b>	<b>73</b>	<b>266</b>
Pain Medicine	0	23	0	23	23
Rehabilitation	11	39	204	50	243
<b>Medicine</b>	<b>131</b>	<b>182</b>	<b>588</b>	<b>313</b>	<b>770</b>
Cardiology	26	13	98	39	111
Emergency Medicine	32	32	51	64	83
Endocrinology	1	2	1	3	3
Gastroenterology	8	17	29	25	46
General Medicine	24	3	159	27	162
Immunology	1	34	1	35	35
Infectious Diseases	2	0	19	2	19
Neurology	7	31	43	38	74
Renal Medicine	3	10	26	13	36
Respiratory Medicine	7	2	42	9	44
Rheumatology	6	38	44	44	82
Stroke	14	0	75	14	75
Mental Health	<b>24</b>	<b>26</b>	<b>286</b>	<b>50</b>	<b>312</b>
Psychiatry	24	26	286	50	312
<b>Surgery</b>	<b>616</b>	<b>275</b>	<b>4340</b>	<b>891</b>	<b>4615</b>
Anaesthetics	0	7	0	7	7
Burns	1	5	45	6	50
Cardiothoracic Surgery	109	7	972	116	979
Ear Nose & Throat	11	8	14	19	22
General Surgery	40	11	340	51	351
Hyperbaric	0	99	0	99	99
Neurosurgery	273	29	1967	302	1996
Ophthalmology	1	6	1	7	7
OMF Surgery	27	5	99	32	104
Orthopaedic Surgery	10	9	23	19	32
Paediatric Surgery	35	39	85	74	124
Plastic & reconstructive	28	16	211	44	227
Urology	2	6	6	8	12
Vascular, Endovascular	79	28	577	107	605
<b>WACS</b>	<b>184</b>	<b>42</b>	<b>1444</b>	<b>226</b>	<b>1486</b>
Gynae Oncology	33	8	110	41	118
Gynaecology	2	6	3	8	9
Neonatal ICU	20	0	333	20	333
Neonatology	37	1	628	38	629
Obstetrics	62	6	259	68	265
Paediatric Medicine	30	21	111	51	132
<b>Total</b>	<b>987</b>	<b>649</b>	<b>6995</b>	<b>1636</b>	<b>7644</b>

Table 9 shows that the complexity as measured by average cost weight is substantially higher for LGH primary catchment patients admitted overnight at RHH compared with all patients admitted to LGH or RHH primary catchment patients admitted there.

*Table 9: Comparison of admission complexity (average cost weight), hospital, 2018-19*

Admission Unit Group	LGH all overnight admissions	RHH (South and South East SA4) overnight admissions	RHH (Launceston and North east SA4) overnight admissions
Cancer Services	2.00	2.14	3.35
Medicine	1.66	1.47	2.39

Admission Unit Group	LGH all overnight admissions	RHH (South and South East SA4) overnight admissions	RHH (Launceston and North east SA4) overnight admissions
Surgery	2.16	2.33	4.72
WACS	1.17	1.31	3.54
<b>Total</b>	<b>1.69</b>	<b>1.67</b>	<b>4.06</b>

This finding is as expected, with patients with more complex disorders, and including therapies not performed at LGH, being more complex than the average of other admissions.

Tables 10 and 11 show data for admissions from the primary catchment at MCH and NWRH. Admissions to MCH are principally same day elective surgical and gastroenterology, and emergency medicine through the Emergency Department. The elective surgery reflects a planned waiting list strategy.

*Table 10: Admissions from LGH primary catchment to Mersey Community Hospital, 2018-19*

	Admits		Bed days	Total admits	Total bed days
	Overnight	Same day	Overnight		
<b>Medicine</b>	<b>73</b>	<b>92</b>	<b>165</b>	<b>165</b>	<b>257</b>
Emergency Med	31	55	35	86	90
Gastroenterology	0	35	0	35	35
General	30	2	118	32	120
Respiratory	12	0	12	12	12
<b>Surgery</b>	<b>9</b>	<b>216</b>	<b>9</b>	<b>225</b>	<b>225</b>
Dental	2	165	2	167	167
ENT	2	7	2	9	9
General	5	23	5	28	28
Ophthalmology	0	9	0	9	9
Urology	0	12	0	12	12
<b>WACS</b>	<b>1</b>	<b>5</b>	<b>1</b>	<b>6</b>	<b>6</b>
Gynaecology	0	4	0	4	4
Paediatric Medicine	1	1	1	2	2
<b>Total</b>	<b>83</b>	<b>313</b>	<b>175</b>	<b>396</b>	<b>488</b>

A different mix of diagnoses is evident at NWRH, with a greater proportion of emergency admissions both overnight and same day.

*Table 11: Admissions from LGH primary catchment to North West Regional Hospital, 2018-19*

	Admits		Bed days	Total admits	Total bed days
	Overnight	Same day	Overnight		
<b>Medicine</b>	<b>36</b>	<b>21</b>	<b>111</b>	<b>57</b>	<b>132</b>
Emergency Med	20	19	32	39	51
Gastroenterology	0	1	0	1	1
General Medicine	12	1	52	13	53
Intensive Care Med	4	0	27	4	27
<b>Mental Health</b>	<b>13</b>	<b>0</b>	<b>198</b>	<b>13</b>	<b>198</b>
Psychiatry	13	0	198	13	198
<b>Surgery</b>	<b>50</b>	<b>13</b>	<b>205</b>	<b>63</b>	<b>218</b>
ENT	7	2	10	9	12
General Surgery	24	4	72	28	76
Orthopaedic Surgery	19	7	123	26	130
<b>WACS</b>	<b>31</b>	<b>6</b>	<b>74</b>	<b>37</b>	<b>80</b>

	Admits		Bed days Overnight	Total admits	Total bed days
	Overnight	Same day			
Gynaecology	2	1	4	3	5
Obstetrics	1	2	2	3	4
Obs/Gynaecology	6	0	15	6	15
Paediatric Medicine	22	3	53	25	56
<b>Total</b>	<b>130</b>	<b>40</b>	<b>588</b>	<b>170</b>	<b>628</b>

## North West and West Coast regions

Also relevant to the self-sufficiency considerations for the LGH, is the broader issue of where residents of the secondary catchment in the North West and West Coast regions, receive hospital care. The previous section provided information on the proportion of LGH caseload from these regions but did not account for where this sits in relation to total service demand from these residents.

Table 12 shows the distribution of admissions for the four major hospitals. About three quarters of admissions and bed days are to the two North West hospitals, whereas the rate of admission to LGH compared to the RHH is three times as much for number of admissions and twice the level for bed days.

*Table 12: Residents NW and West Coast, hospital admissions, 2018-19*

	Same day admits	Overnight admits	Total admits	Same day admits	Overnight admits	Total admits	Total bed days
MCH	5601	3591	9192	45%	20%	30%	22%
NWRH	3838	10135	13973	31%	57%	46%	52%
RHH	546	1125	1671	4%	6%	6%	9%
LGH	2515	2805	5320	20%	16%	18%	17%

Tables 13-16 provide more detail about where patients receive care. Cancer services, with the exception of a small number of same day cases at NWRH, were substantially provided at LGH, but with a large proportion of day cases at RHH, this may in part reflect that same day chemotherapy is not included in the LGH dataset provided for this Report.

*Table 13: Residents NW and West Coast, Cancer Unit Group admissions, 2018-19*

Hospital	Same day admits	Overnight admits	Total admits	Total Bed days
MCH	0%	0%	0%	0%
NWRH	10%	0%	4%	1%
RHH	74%	7%	31%	10%
LGH	16%	93%	65%	89%

Admissions for Medicine are largely sourced at NWRH and MCH, but with a substantial proportion also at LGH, with 15-16% of admissions and bed days. Only 2-3% of patients received care at RHH.

*Table 14: Residents NW and West Coast, Medicine Unit Group admissions, 2018-19*

Hospital	Same day admits	Overnight admits	Total admits	Total Bed days
MCH	52%	42%	46%	39%
NWRH	24%	44%	36%	43%
RHH	2%	2%	2%	3%
LGH	22%	12%	16%	15%

About two thirds of surgical admissions and bed days were to local hospitals, but with substantial volumes at both LGH and RHH.

*Table 15: Residents NW and West Coast, Surgery Unit Group admissions, 2018-19*

Hospital	Same day admits	Overnight admits	Total admits	Total Bed days
MCH	46%	4%	26%	10%
NWRH	28%	57%	42%	52%
RHH	5%	14%	9%	17%
LGH	21%	25%	23%	22%

Table 16 shows the number of admissions and bed days for residents of the North West and West Coast for each of the major clinical specialties and the proportion of out of catchment provided at LGH. In the medical subspecialties, with the main exceptions of Neurology and Rheumatology, and to a lesser extent Stroke, a substantial majority of patients receive care at LGH. There is a similar pattern for surgery, where with the exception of specialist care not provided at LGH (Cardiothoracic surgery, Neurosurgery, OMF, Paediatrics and Vascular surgeries), at least two thirds of care is provided at LGH.

*Table 16: Residents NW and West Coast, clinical specialty admissions, LGH and RHH, 2018-19*

	RHH				LGH				% LGH	
	Admits				Admits				Admits	
	SD	ON	All	Days	SD	ON	All	Days	SD	ON
<b>Cancer Services</b>	<b>64</b>	<b>11</b>	<b>75</b>	<b>136</b>	<b>14</b>	<b>144</b>	<b>158</b>	<b>1148</b>	<b>18%</b>	<b>93%</b>
Cardiology	23	49	72	330	565	417	982	2349	96%	89%
Gastroenterology	24	11	35	75	382	83	465	693	94%	88%
General Medicine	1	22	23	167	71	259	330	1894	99%	92%
Neurology	15	19	34	152	5	3	8	28	25%	14%
Renal Medicine	6	7	13	66	21	48	69	344	78%	87%
Respiratory Med	5	15	20	142	162	41	203	549	97%	73%
Rheumatology	8	10	18	85	0	0	0	0	0%	0%
Stroke	0	6	6	27	1	7	8	36	100	54%
<b>Medicine total</b>	<b>117</b>	<b>187</b>	<b>304</b>	<b>1234</b>	<b>1330</b>	<b>945</b>	<b>2275</b>	<b>6266</b>	<b>92%</b>	<b>83%</b>
Cardiothoracic	6	135	141	1308	0	0	0	0	0%	0%
ENT	7	13	20	58	30	92	122	160	81%	88%
General Surgery	16	65	81	573	105	341	446	2031	87%	84%
Neurosurgery	30	261	291	1511	1	0	1	1	3%	0%
Ophthalmology	11	2	13	15	198	15	213	241	95%	88%
OMF Surgery	3	21	24	69	0	0	0	0	0%	0%
Orthopaedics	6	27	33	122	26	87	113	368	81%	76%
Paediatric Surg	50	42	92	228	0	0	0	0	0%	0%
P&R Surgery	11	21	32	115	241	269	510	1079	96%	93%
Urology	3	1	4	9	432	390	822	1767	99%	100%
Vascular Surgery	21	65	86	397	24	9	33	37	53%	12%
<b>Surgery total</b>	<b>242</b>	<b>655</b>	<b>897</b>	<b>4501</b>	<b>1058</b>	<b>1206</b>	<b>2264</b>	<b>5722</b>	<b>81%</b>	<b>65%</b>
Gynae Oncology	9	33	42	137	0	0	0	0	0%	0%
Gynaecology	10	7	17	31	38	37	75	129	79%	84%
Neonate / NICU	1	78	79	1234	0	0	0	0	0%	0%

	RHH				LGH				% LGH	
	Admits				Admits				Admits	
Obstetrics	6	73	79	339	8	160	168	569	57%	69%
Paediatrics	36	37	73	278	59	249	308	969	62%	87%
<b>WACS total</b>	<b>62</b>	<b>231</b>	<b>293</b>	<b>2027</b>	<b>105</b>	<b>446</b>	<b>551</b>	<b>1667</b>	<b>63%</b>	<b>66%</b>

Patients are treated at RHH for Gynae-Oncology and Neonatology, but otherwise Gynaecology, Obstetrics and Paediatrics is provided at LGH rather than at RHH>

Extending the analysis in Table 9, Table 17 shows the relative complexity of admitted episodes of patients from each Tasmanian region. This shows that:

- at LGH (with the exception of Cancer services which treats in effect the same primary case mix for all of North and North West Tasmania as the sole and majority provider), cases from the North West are more complex than local Launceston admissions for Medicine, Surgery and WACS, with the less complex cases managed at NWRH and MCH;
- North West and West Coast patients managed at RHH have a similar average complexity as patients from the North and North East.

These consolidated findings strongly support the proposition that LGH functions effectively as the major referral hub for the North West, with a similar mix of patients being treated in Hobart from the rest of the State.

*Table 17: Comparison of admission complexity (average cost weight), hospital, 2018-19*

Admission Unit Group	LGH all overnight admissions	LGH (NW & West Coast SA4) overnight admissions	NWRH / MCH (NW & West Coast SA4) overnight admissions	RHH (South and South East SA4) overnight admissions	RHH (NW & West Coast SA4) overnight admissions	RHH (Launceston and North east SA4) overnight admissions
Cancer	2.00	1.95	n/a	2.14	2.63	3.35
Medicine	1.66	2.13	1.32	1.47	2.72	2.39
Surgery	2.16	2.23	1.91	2.33	4.56	4.72
WACS	1.17	1.21	0.94	1.31	3.42	3.54
<b>Total</b>	<b>1.69</b>	<b>2.01</b>	<b>1.35</b>	<b>1.67</b>	<b>3.98</b>	<b>4.06</b>

### **Key findings – Self-sufficiency**

LGH functions at a very high level of self-sufficiency with only a small proportion of patients from its primary and secondary catchments being treated at RHH. The complexity and mix of patients treated at RHH appears to be similar from the North and North East, as it is for those from the North West and West Coast. The most significant patient flows are for specialties not available in Launceston, in particular Cardiothoracic surgery, Neurosurgery, Oro-Maxillo-Facial surgery, Paediatric surgery and Vascular and Endovascular surgery.

The current role delineation levels for LGH set out in the Tasmanian Role Delineation Framework are appropriate and consistent with the complexity of services provided.

## 6. Small rural hospitals – North and North East

Eight Northern and North East Tasmanian communities benefit from having a local hospital, which between them have 131 beds available for direct local admissions and inter-hospital transfers for both acute and subacute care. The hospitals range in size from eight beds for the two north east coast hospitals at St Mary's and St Helen's, through to 20 beds at Deloraine, 22 at Beaconsfield and 26 at Campbell Town.

Table 18 summarises activity and efficiency data for these hospitals for the three years, from 2016-17. Overall there are almost 19,000 occupied bed days at these hospitals, however the level of bed occupancy (measured at 85% of occupied bed days) has fallen from 72% overall in 2016-17 to 54% in 2018-19, which has been largely driven by a reduction in average length of stay of 27.5% to 7.4 days. The number of admissions at each of the hospitals have, with some inter-year variability been steady, but significantly reduced average LOS over the three years have been achieved at Beaconsfield (53%), Campbell Town (65%) and Flinders Island (36%), which in turn has led to a reduction in occupancy to 29%, 35% and 22% respectively. St Mary's (41%) and St Helen's (20%) have also seen reductions in average LOS but have maintained occupancy at above 50%. The other three hospitals (Deloraine, George Town and Scottsdale) have largely maintained stable, with overall shorter lengths of stay across the review period and occupancy in the 70-90% range.

*Table 18: Small rural hospitals, admissions, length of stay and occupancy (85%), 2016-17 to 2018-19*

Hospital	Beds		Admits		Average LOS			Bed occupancy		
	2019	16/17	17/18	18/19	16/17	17/18	18/19	16/17	17/18	18/19
Beaconsfield	22	85	63	87	41.2	20.6	19.3	60%	22%	29%
Campbell T	26	167	207	199	34.6	15.0	12.2	85%	46%	35%
Deloraine	20	356	298	304	12.7	15.6	15.0	86%	88%	86%
Flinders Is	14	131	149	193	6.7	4.9	4.3	24%	20%	22%
George T	15	522	482	525	7.7	7.7	7.0	101%	94%	93%
Scottsdale	18	568	584	552	5.4	5.7	6.0	65%	71%	69%
St Helen's	8	342	372	354	4.1	3.6	3.3	67%	64%	54%
St Mary's	8	273	290	343	6.1	3.8	3.6	79%	52%	59%
<b>Total</b>	<b>131</b>	<b>2444</b>	<b>2445</b>	<b>2557</b>	<b>10.2</b>	<b>7.9</b>	<b>7.4</b>	<b>72%</b>	<b>55%</b>	<b>54%</b>

Admissions to these hospitals may come from a number of sources, but three are the most important in establishing the role it plays locally and in the wider health system. These are admissions:

- from the local hospital emergency department (28%), in particular at Flinders Is, Scottsdale, St Mary's and St Helen's hospitals;
- through referrals from local GP and specialist rooms (44%), notably at Campbell Town and George Town hospitals; and
- transfers from other hospitals (17% admissions, 37% of bed days) with LGH being the source in 88% of cases, 4.3% from other major public hospitals and 4.5% from private hospitals.

Almost all admissions were for adults (37% for 15-64 years) and 62% for patients aged over 65 years; with the latter cohort making up 80% of bed days (see Table 19).



Table 19: Aggregate small rural hospitals, source of admission, age cohort, 2018-19

Admission source	Admissions				Bed days			
	< 15 years	15-64 years	65+ years	% total	< 15 years	15-64 years	65+ years	% total
Aged Care Facility	0	0	5	0%	0	0	6	0%
Community Health Service	0	15	3	1%	0	39	9	0%
Correctional Services	0	1	0	0%	0	1	0	0%
Dept Emergency Medicine	10	304	397	28%	10	783	1755	14%
Newborn	1	0	0	0%	7	0	0	0%
No Referral	0	3	2	0%	0	7	18	0%
Not Specified	1	41	88	5%	1	123	848	5%
Other	0	3	3	0%	0	10	31	0%
Other Health Care Site	0	1	3	0%	0	1	22	0%
Outpatients Department	0	10	15	1%	0	21	35	0%
Private Practice / Rooms	5	470	650	44%	9	1260	5022	33%
Refer another Hospital	0	11	35	2%	0	56	376	2%
Statistical Admission	0	2	38	2%	0	75	1362	8%
Transfer another Hospital	0	82	358	17%	0	1474	5478	37%
<b>Total</b>	<b>16</b>	<b>943</b>	<b>1598</b>	<b>100%</b>	<b>20</b>	<b>3850</b>	<b>14969</b>	<b>100%</b>

Table 20 shows the average length of stay, previous inpatient bed days and final disposition. Transfers from other hospitals and statistical admissions have both on average had extended previous inpatient episodes and also extended stays for the index admission, compared to other admission sources.

Table 20: Aggregate small rural hospitals, source of admission, length of stay, 2018-19

Admission source	Admits	Average LOS days	Average previous IP days	Died during admission
Aged Care Facility	5	1.2	0.0	1
Community Health Service	18	2.7	0.0	0
Correctional Services	1	1.0	0.0	0
Dept Emergency Medicine	711	3.6	0.3	20
Newborn	1	7.0	0.0	0
No Referral	5	5.0	0.0	0
Not Specified	130	7.5	3.4	5
Other	6	6.8	0.0	0
Other Health Care Establishment	4	5.8	0.3	0
Outpatients Department	25	2.2	0.4	0
Private Practice / Rooms	1125	5.6	0.4	31
Refer from another Hospital	46	9.4	6.9	6
Statistical Admission	40	35.9	48.8	2
Transfer from another Hospital	440	15.8	12.4	39
<b>Total</b>	<b>2557</b>	<b>7.4</b>	<b>3.5</b>	<b>104</b>



The DRG coding of acute admissions from the hospital emergency department and private rooms at these hospitals is likely to be broadly in line with the large Tasmanian hospitals. Table 21 shows that in aggregate the average length of stay is about twice the expected benchmark, though this varies from just 10% more at St Helen's to more than three times at Campbell Town and Deloraine, and up to seven fold at Beaconsfield.

*Table 21: Admissions from private rooms and ED, admits & bed days, 2018-19*

Hospital	Admits	Actual bed days	Expected bed days	Actual: expected ratio
Beaconsfield	17	306	42	7.3
Campbell Town	112	846	219	3.9
Deloraine	114	1286	403	3.2
Flinders Island	172	747	348	2.1
George Town	408	2222	1163	1.9
Scottsdale	460	1950	1025	1.9
St Helen's	276	659	605	1.1
St Mary's	277	823	556	1.5
<b>Total</b>	<b>1836</b>	<b>8839</b>	<b>4360</b>	<b>2.0</b>

Table 22 shows that 82% of inter-hospital transfers from the LGH are for local residents of the relevant rural hospital, but with 18% for people from other areas in the primary catchment, with only an occasional patient from outside Launceston and the North East transferred.

*Table 22: Transfers from LGH, usual place of residence, length of stay, 2018-19*

	Local			Other N&NE			Total		
	Admits	Days	Pre IP days	Admits	Days	Pre IP days	Admits	Days	Pre IP days
Beaconsfield	22	464	395	7	141	109	29	605	504
Campbell Town	18	263	269	3	47	64	21	310	333
Deloraine	119	1648	1524	24	460	443	143	2108	1967
Flinders Island	3	26	6	0	0	0	3	26	6
George Town	54	843	649	18	251	324	72	1094	973
Scottsdale	58	870	498	12	230	174	70	1100	672
St Helens	32	331	381	4	17	18	36	348	399
St Marys	10	144	109	3	36	33	13	147	142
<b>Total</b>	<b>316</b>	<b>4589</b>	<b>3831</b>	<b>71</b>	<b>1182</b>	<b>1165</b>	<b>387</b>	<b>5738</b>	<b>4996</b>
<b>% of total</b>	<b>82%</b>	<b>80%</b>	<b>77%</b>	<b>18%</b>	<b>21%</b>	<b>23%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Review of transfers out from the LGH dataset, whilst not a direct map of the above data, provides additional information on the mix of patients. Table 23 shows that almost half of transfers are from General Medicine, with significant case numbers from Emergency Medicine, General Surgery, Orthopaedics and Rehabilitation. In aggregate the average LOS in LGH for these patients is about 50% longer than the expected LOS, which holds for the key specialties listed except Orthopaedics.

Table 23: Transfers from LGH to rural hospitals, discharge specialty, length of stay, 2018-19

Discharge specialty	Admits	Bed days	Expected bed days	Previous IP Days linked to admission
Cardiology	10	29	38	23
Colorectal Surgery	1	39	23	0
Ear Nose & Throat	1	28	12	0
Emergency Medicine	36	190	135	167
Gastroenterology	3	8	12	0
General Medicine	180	1821	1200	615
General Surgery	37	410	277	103
Gynaecology	1	3	2	0
Intensive Care Medicine	2	21	33	0
Oncology	17	213	76	45
Ophthalmology	1	6	1	5
Orthopaedic Surgery	32	234	239	38
Paediatric Medicine	1	30	5	0
Palliative Care	1	6	8	3
P&R Surgery	4	38	42	32
Psychiatry	1	6	12	0
Rehabilitation	23	424	147	609
Renal Medicine	2	46	22	30
Stroke	4	77	17	2
Urology	3	13	14	0
Vascular Surgery	1	1	2	0
<b>Total</b>	<b>361</b>	<b>3643</b>	<b>2318</b>	<b>1672</b>

Table 24 shows which rural hospitals accepted transfers and for what discharge specialty type.

Table 24: Transfers from LGH to rural hospitals, 2018-19

	Beacon- sfield	Campbell Town	Deloraine	Flinders Is	George Town	Scotts- dale	St Helen's	St Mary's
Cancer	2	2	7	0	7	1	0	3
Rehab	1	4	10	1	3	2	1	1
Gen Med	18	4	62	1	39	29	21	11
Other Med	1	5	11	2	7	9	8	2
Orthopaedics	2	1	10	0	5	3	8	1
Other Surgery	8	9	15	0	5	13	3	1
Palliative Care	0	0	0	0	0	1	0	0
Mental Health	0	0	0	0	0	1	0	0
<b>Total</b>	<b>32</b>	<b>25</b>	<b>115</b>	<b>4</b>	<b>66</b>	<b>59</b>	<b>41</b>	<b>19</b>

With a view to establishing a general picture of the potential number of patients who may be suitable for transfer and recuperation at local hospitals, the following tables present

data for Orthopaedics (Table 25) and General Medicine (Table 26). The tables show the number of transfers from LGH for patients aged over 50 years, key DRGs, and usual place of residence and the total number of these LGH episodes.

*Table 25: Selected Orthopaedic transfers\* and LGH caseload, 2018-19*

Usual places of residence SA3	Transfers	Bed Days	Expected days	Total episodes	Bed days	Expected bed day	% transfer
Launceston	3	14	24	158	1079	1054	2%
Meander Valley West Tamar	4	41	43	46	249	281	9%
North East	10	80	88	91	614	642	11%
Total	18	138	159	325	2092	2135	6%
*LGH patients aged over 50 years, DRGs I03 (hip replacement), I04 (knee replacement), I08 fractures of femur, I13 (Fractures upper limb, lower leg)							

*Table 26: Selected General Medicine transfers\* and LGH caseload, 2018-19*

Usual places of residence SA3	Transfers	Bed Days	Expected days	Total episodes	Bed days	Expected bed day	% transfer
Launceston	11	164	71	759	6000	4196	1%
Meander Valley West Tamar	37	305	218	197	1423	1102	19%
North East	39	296	225	264	2111	1522	15%
Total	91	814	535	1297	10036	7285	7%
*LGH patients aged over 50 years, DRGs B63 (dementia), B64 (delirium), B70 (stroke), B81 (other nervous system disorders), E41 (resp dis w non-invasive ventilation), E61 (pulmonary embolism), E62 (resp infections), E65 (COPD), E75 (other resp dis) F62 (heart failure) I68 (non-surgical spinal) J64 (cellulitis)							

This analysis of select DRGs highlights the potential for rural hospitals, when appropriately resourced, to accept more inter hospital transfers from the LGH.

### ***Key findings – small rural hospitals***

Small rural hospitals provide a valuable resource for the health sector in northern Tasmania as a whole, as they hosted almost 15,000 admitted bed days, however effective utilisation varies considerably from hospital to hospital, which if managed could significantly improve patient flow at LGH. Necessarily for this to be achieved requires the support of local general practitioners and the appropriate number and mix of nursing and allied health staff.

Specific findings include:

- few admissions and low occupancy at two mainland hospitals (Beaconsfield (4 admissions per bed, occupancy 29% and Campbell Town 7.7 per bed, 35%), compared with 27.4 admissions per bed and 65% occupancy for the other six hospitals;
- Beaconsfield (7.3 times) and Campbell Town (3.9 times) also have extended lengths of stay for local admissions versus expected LOS, compared to 1.9 times for the other hospitals;
- Beaconsfield, Campbell Town, Deloraine and George Town have relatively few admissions through their own ED, although these findings may disguise that emergency admissions are made directly through general practices;
- the hospitals with very active EDs are presumably diverting considerable patient flows from the ED at LGH;
- the number of transfers from the LGH varies substantially between hospitals with Deloraine, George Town and Scottsdale accepting proportionately more than the other hospitals;
- transferred patients have often had an extended inpatient admission at LGH;
- about 80% of transferred patients are local residents, with the rest from other areas in the North and North East;
- however the proportion of greater Launceston residents admitted to LGH and transferred is about 1-2% compared with 10-20% for local residents.

There would appear to be considerable potential, recognising the caveats on access to skilled workforce, safe models of care and appropriate infrastructure, to improve utilisation of the rural hospitals, including through more early, assertive identification of LGH patients suitable for transfer, whether they are local residents or not.

## 7. Admitted patient intra-hospital flows

To help understand current patient activity and hospital demands an overview of overnight admission and discharge arrangements provides useful context. Table 27 shows a matrix of admitting specialty group in the first column and the discharging group across the other columns. The within admission-discharge rate ranges from 94-100%. The final column provides data on the proportion of bed days for this same arrangement, with proportions ranging from 94-100%.

Table 27: Admission Unit Group - Discharge Unit Group percentage outcomes, episodes, 2018-19

Admit Unit Group	Discharge Unit Group						
	D/C Cancer Services	D/C CCC	D/C Med	D/C Surgery	D/C Mental Health	D/C WACS	D/C Same as admit bed days
Cancer	98%	0%	1%	<0.5%	0%	0%	96%
CCC	0%	99%	<0.5%	<0.5%	0%	0%	100%
Medicine	1.5%	<0.1%	94%	3.5%	0.1%	1%	94%
Surgery	0%	0%	1%	99%	0%	0%	94%
Mental	0%	0%	0%	0%	99%	1%	100%
WACS	0%	0%	0%	0%	0%	100%	100%

Further analysis shows that a small percentage shift from a high-volume Unit Group (Medicine) will translate to a large percentage shift in a relatively low volume Unit Group (Cancer) (see Tables 28) leading in this instance to an increase in Cancer Services discharges of 17% and bed days of 33% (see Table 29).

Table 28: Admission Unit Group - Discharge Unit Group episode count, 2018-19

AUG	Discharge Unit Group						Total
	Cancer	CCC Care	Medicine	Mental Health	Surgery	WACS	
Cancer	670	0	11	0	4	0	685
CCC Care	0	756	3	0	1	0	760
Medicine	123	3	7823	9	300	63	8312
MH	0	0	0	525	0	8	533
Surgery	7	1	75	1	5393	3	5480
WACS	3	0	4	0	9	5015	5031
<b>Total</b>	<b>803</b>	<b>760</b>	<b>7916</b>	<b>535</b>	<b>5707</b>	<b>5089</b>	<b>20810</b>

Table 29: Admission-discharge outcomes, separations and bed days, 2018-19

Unit Group	Admit UG	Admit UG bed days	Discharge UG	Discharge UG Bed days	% change seps	% change days
Cancer Services	685	4853	803	6458	+17%	+33%
CCC	760	16046	760	16036	nc	nc
Medicine	8322	48328	7916	46297	-5%	-4%

Unit Group	Admit UG	Admit UG bed days	Discharge UG	Discharge UG Bed days	% change seps	% change days
Mental Health	533	6646	535	6701	nc	+1%
Surgery	5480	21902	5707	22238	+4%	+2%
WACS	5031	16312	5089	16357	+1%	nc
<b>Total</b>	<b>20811</b>	<b>114087</b>	<b>20811</b>	<b>114087</b>	<b>nc</b>	<b>nc</b>

The shifts into and out of Medicine and Surgery, otherwise largely leave average length of stay and excess bed days unchanged. There are only a few patient transfers and referrals for CCC Care, Mental Health and WACS.

Subsequent analysis of throughput and occupancy can therefore be safely undertaken within Admission Unit Groups except for Cancer Services where Discharge Unit Group has been used, to provide an indicative basis for future service projections. Same day admissions are almost invariably admitted and discharged under the same unit.

With respect to within AUG analysis, more than a third of patients initially admitted under Emergency Medicine, are subsequently transferred to the care of other Units, notably General Medicine (15%) and Cardiology (4%) and Surgery AUG (10%). In Surgery AUG a substantial proportion of patients admitted and discharged by the same subspecialty.

### Ward and bed use

Table 30 and 31 show the number of episodes and bed days assigned to each ward at discharge and an estimate of ward occupancy. The available dataset allocates all the bed days for each episode of care at either admission or discharge, which can lead to distortions, for instance an ICU length of stay will be assigned to the discharging ward or an initial admission to the EMU would also be logged to the discharge ward and Unit, which likely explains occupancy in excess of 100% for the Medical Ward.

In Table 30 the wards are grouped by the controlling specialty, so Medical Wards, Surgical Wards and so forth. The number of separations with therefore include bed days for other specialties, for instance Cancer patients managed on Ward 5D.

Table 30: Discharge ward, episodes, bed days, occupancy, 2018-19

Wards	Same day	Overnight	O/N days	Total days	Available Beds	Occupied Beds	Occupancy
<b>Medical Wards</b>							
LGHAMU	16	1203	7047	7063	22	19.4	88%
LGHEMU	2558	1567	1725	4283	8	11.7	147%
LGHW4D	3	1016	10310	10313	27	28.3	105%
LGHW5D	15	1482	12913	12928	32	35.4	111%
LGHW6D	4	1218	13100	13104	32	35.9	112%
<b>Complex, chronic and community care Wards</b>							
LGHW3R	7	638	8836	8843	26	24.2	93%
LGHJLG	1	225	7282	7283	20	20.0	100%
<b>Surgery Wards</b>							
LGHSSSU	3434	1877	3353	6787	8	18.6	232%

LGHW5A	42	1673	9763	9805	32	26.9	84%
LGHW5B	76	2115	9984	10060	32	27.6	86%
<b>WACS Wards</b>							
LGHW4K	705	2052	5135	5840	18	16.0	89%
LGHW4N	16	210	2768	2784	10	7.6	76%
LGHW4O	95	1863	5788	5883	27	16.1	60%
<b>Mental Health Wards</b>							
LGHWNS	7	512	6638	6645	20	18.2	91%
<b>Private Hospital Wards</b>							
LGHPRCLV	0	10	143	143	0.4	nr	nr
LGHPRSL	1	194	1513	1514	4.1	nr	nr
LGHPRSV	0	7	81	81	0.2	nr	nr
Total	1	211	1737	1738	4.8	nr	nr

Issues of interest in Table 30 include:

- the occupancy above 100% at the EMU is likely largely due to the churn of same day episodes;
- the occupancy of the CCC Care wards is also extremely high, especially John L Grove, with a 100% occupancy rate, which given the mix of patients is likely to be a true figure;
- the Short Stay Surgery Unit has very high utilisation also due to the number of same day episodes;
- the main surgical wards 5A and 5B appear to operate at a more optimal rate around 85% ;
- the paediatrics ward 4K has high higher levels of occupancy than the Neonatal Ward (4N) or the Obstetrics Ward (4O).
- Northside has over 90% occupancy; and
- there are about 5 occupied beds used in the private sector.

Table 31 provides a different perspective of the same data and shows discharge wards after overnight admissions. Key issues are:

- Cancer services utilise exactly half of Ward 5D, and use about 18 beds in total;
- Medicine apart from utilising Medical Wards, also occupies 4.2 Surgery beds and 4.7 Rehabilitation beds;
- Complex, Chronic and Community Care use the expected range of Rehabilitation beds and palliative care in the private sector;
- Mental Health, Surgery and WACS predominantly occupy the assigned beds;
- Gynaecology patients are predominantly managed on Ward 5B and the Surgical Short Stay Unit.

Table 31: Discharge specialty, discharge ward, overnight bed days, indicative bed use

Discharge Unit Group / Discharge Ward	Overnight episodes	Overnight bed days	Indicative bed use
Cancer Services total	803	6458	17.7
LGHW5D	685	5825	16.0
LGHW4D	26	166	0.5
LGHICU	10	179	0.5
LGHAMU	5	26	0.1
LGHW5A	3	18	0.0
LGHW5B	6	68	0.2
Other	68	176	0.5
Medicine total	7916	46297	126.8
LGHAMU	1192	7008	19.2
LGHW4D	984	10113	27.7
LGHW5D	788	7033	19.3
LGHW6D	1200	13015	35.7
LGHEMU	1548	1699	4.7
LGHICU	142	774	2.1
LGHNCCU	524	1411	3.9
LGHW5A	125	612	1.7
LGHW5B	142	777	2.1
LGHSSSU	85	161	0.4
LGHJLG	14	186	0.5
LGHW3R	210	1538	4.2
LGHW4K	165	346	0.9
LGHW4N	37	316	0.9
LGHW4O	59	150	0.4
LGHWTRA	16	316	0.9
Other	685	842	2.3
Complex, Chronic & Community Care total	760	16036	43.9
LGHW3R	417	7227	19.8
LGHJLG	210	7091	19.4
LGHPRCLV	4	137	0.4
LGHPRSL	117	1436	3.9
LGHPRSV	7	81	0.2
Other	5	64	0.2
Mental Health total	535	6701	18.4
LGHWNS	512	6638	18.2
Other	23	63	0.2
Surgery total	5707	22238	60.9
LGHSSSU	1640	2952	8.1
LGHW5A	1531	9092	24.9
LGHW5B	1740	8590	23.5
LGHW4K	586	996	2.7
LGHICU	37	209	0.6
Other	173	399	1.1
WACS total	5089	16357	44.8



Discharge Unit Group / Discharge Ward	Overnight episodes	Overnight bed days	Indicative bed use
LGHW4K	1292	3748	10.3
LGHW4N	173	2452	6.7
LGHW4O	1799	5623	15.4
LGHW4ON	1320	3562	9.8
LGHW5A	14	41	0.1
LGHW5B	227	549	1.5
LGHSSSU	150	230	0.6
LGHW4B	95	117	0.3
Other	19	35	0.1

### ***Key findings – patient flow and ward use***

The most significant intra-hospital flows, with referrals and transfers between Clinical Unit Groups are from Medicine to Surgery (number), Cancer (percentage of receiving Unit activity) and WACS (primary Emergency Medicine to Paediatrics).

There is a high level of referrals and transfers from Emergency Medicine to other medical and non-medical specialties, which can influence length of stay analyses.

There are few transfers between surgical specialties.

There are few transfers from WACS, Mental Health and CCC Care to other Clinical Unit Groups.

To account for these patient flows discharge activity will be used for Cancer Services and admission activity for the other CUGs.

Bed occupancy is extremely high for the Medical, Rehabilitation and Psychiatry Wards, exceeding 90%.

Medical patients occupy surgical (4.2) and rehabilitation (4.7) ward beds.

About 4 palliative care beds are used at Calvary St Luke's.

## 8. Clinical Unit Group – actual and expected length of stay

Establishing activity and bed capacity projections for this Clinical Services Plan is based upon:

- recent year trends;
- change in population demographics, most particularly the ageing population; and
- any other identifiable and likely change in demand.

With respect to recent year trends, the two major influences on LGH activity have been an elective surgery surge in 2015-16, at which time overall surgical activity peaked and has declined since then. The second structural change was the opening of the Emergency Medical Unit (EMU) which led to a large increase in relatively short stay admissions, patients who in the past would not have been admitted and would have been managed in other ways. The EMU led to a significant distortion in inpatient activity, though at level in 2018-19 that appears to be stabilising.

Other clinical specialties that have had a fairly consistent upward trend in episodes of care are Cardiology, Plastic and Reconstructive Surgery and Rehabilitation, though only Cardiology has a marked increase in overnight bed days. Indeed the reduction in average length of stay for rehabilitation has allowed the increase in throughput.

Table 32 shows actual bed days and expected bed days using state and national length of stay benchmarks. As discussed the Tasmanian data does not yet utilise Subacute ABF codes. Mental Health lengths of stays are unfeasibly long compared to expected length of stay and may reflect either issues with coding or structural issues with the model of care, in particular substitution of inpatient care when supported, community-based care would be preferred. Irrespective of the reason it is not appropriate for this Plan to assess in the same way as the other clinical specialties.

A key issue for activity projections for the Clinical Services Plan, excess bed days (that is overnight inpatient stays longer than State and National benchmarks), are identified in this table as being significant for Cancer Services, Medicine and WACS, but not Surgery.

*Table 32: CUG, overnight discharge episodes, excess bed days, 2018-19*

Clinical Unit Group	Discharge Episodes	Actual bed days	Expected bed days	Excess bed days	Average excess days / episode
Cancer Services	803	6458	4230	2228	2.78
Medicine	7916	46297	33068	13229	1.67
Surgery	5707	22238	22188	50	0.01
WACS	5089	16357	14008	2349	0.46
<b>Sub Total</b>	<b>19515</b>	<b>91350</b>	<b>73493</b>	<b>17857</b>	<b>0.92</b>
CCC Care	760	16036	4540	11496	15.13
Mental Health	535	6701	2687	4014	7.50

Table 33 provides a breakdown of this data into age cohorts, which again is important in understanding the impact of extended LOS and an ageing population on projections. The different age groups for WACS data represent different specialties, with progressively moving from Neonatology and Paediatrics, to Obstetrics, and then to Gynaecology. The data shows that there are excess bed days for each age group, which increase with age.

*Table 33: Select CUG, age cohort, discharge episodes, excess bed days, 2018-19*

Age Cohort Clinical Unit Group	Discharge Episodes	Actual bed days	Expected bed days	Excess bed days	Average excess days / episode
0-14 years	2887	8937	8144	793	0.3
Medicine	51	72	87	-15	-0.3
Surgery	427	638	830	-192	-0.4
WACS	2409	8227	7227	1000	0.4
15-39 years	4487	13624	12132	1492	0.3
Cancer Services	37	150	175	-25	-0.7
Medicine	905	2953	2312	641	0.7
Surgery	1185	3312	3572	-260	-0.2
WACS	2360	7209	6073	1136	0.5
40-64 years	4774	22096	18544	3552	0.7
Cancer Services	314	2243	1513	730	2.3
Medicine	2257	11466	8897	2569	1.1
Surgery	1939	7632	7559	73	0.0
WACS	264	755	575	180	0.7
65-74 years	3211	18644	14808	3836	1.2
Cancer Services	291	2412	1573	839	2.9
Medicine	1807	11073	8259	2814	1.6
Surgery	1075	5048	4889	159	0.1
WACS	38	111	87	24	0.6
75+ years	4156	28049	19865	8184	2.0
Cancer Services	161	1653	969	684	4.3
Medicine	2896	20733	13512	7221	2.5
Surgery	1081	5608	5338	270	0.2
WACS	18	55	46	9	0.5
<b>Total</b>	<b>19515</b>	<b>91350</b>	<b>73493</b>	<b>17857</b>	<b>0.9</b>

The total of 17857 bed days is equivalent to 100% occupancy of 49 beds.

## 9. Emergency Department analysis

### Consultation findings

Staff interviewed identified the following issues:

- the Emergency Department (ED) is often overcrowded, which appears to be due to poor patient flow through the hospital and a lack of community-based capacity to manage patients;
- overcrowding is exacerbated by:
  - elderly patients with complex conditions and other patients with mental health co-morbidities taking an extended time to either be admitted to an inpatient ward or discharged from hospital; and
  - the number of low urgency presentations, who however are largely managed efficiently through fast track arrangements;
- no after-hours support for palliative care patients;
- variable capacity of district hospitals to manage local presentations; and
- the emergence of the COVID infectious disease pandemic has challenged the configuration of the ED and the resources needed to manage these patients;

Ambulance Tasmania paramedics estimated that in addition to the low urgency presentations, who by definition are not brought in my ambulance, 30-50% of ambulance presentations are also for low-urgency care, who might be better managed elsewhere.

### Data analysis findings

#### General

The Emergency Department (ED) at LGH (at start of 2020) is equipped with three resuscitation bays and thirty-one cubicles, with a further eight beds co-located in the acute inpatient Emergency Medicine Unit (EMU).

The ED has run at high levels of activity and occupancy over an extended period. Table 34 shows activity over the five-year reference period. Whilst number of attendances has increased annually by 0.9% over that time, the proportion admitted from the ED has increased by an annual rate of 11.8%, which is linked to the establishment of the EMU, that opened in March 2017.

*Table 34: Emergency Department presentations and admissions, 2014-15 to 2018-19*

Year	Admitted patients	Non - admitted patients	All patients	Per cent admitted	Annual change - admitted	Annual change – non admitted	Annual change – all patients
2014/15	10438	33772	44210	24%	-	-	-
2015/16	10659	33170	43829	24%	2%	-2%	-1%
2016/17	11938	32515	44453	27%	12%	-2%	1%
2017/18	15038	30392	45430	33%	26%	-7%	2%
2018/19	16313	29600	45913	36%	8%	-3%	1%

Table 35 shows the number of presentations in the older age groups has increased substantially but declined slightly in the youngest age cohorts. Overall, there had been an increase in presentations of 3.9% in five years.

*Table 35: ED presentations, age cohort, 2014-15 to 2018-19*

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19	% change
0-14 years	7662	7567	7477	7671	7539	-1.6%
15-39 years	15142	14455	14412	14306	14507	-4.2%
40-64 years	11818	11828	12074	12232	12381	+4.8%
65-74 years	4232	4317	4820	5111	5231	+23.6%
75+ years	5356	5662	5670	6110	6255	+16.8%
<b>Total</b>	<b>44210</b>	<b>43829</b>	<b>44453</b>	<b>45430</b>	<b>45913</b>	<b>+3.9%</b>

Just over 90% of all presentations to the ED are from the immediate catchment of the hospital, with 4.8% from the North West Coast and West Coast, with this increasing to 8.5% of admitted patients (see Table 36). A similar pattern is also evident for residents of the Meander Valley & West Tamar and the North East SA3 regions, where they are more likely to be admitted from the ED than residents of Launceston itself, which may reflect a different use profile of the ED by local residents.

*Table 36: Emergency Department presentations, patient usual place of residence, 2018-19*

Place of usual residence	Admitted patients	Non-admitted patients	All patients
North - Launceston SA3	53.4%	64.2%	60.4%
North - Meander Valley & West Tamar SA3	13.7%	12.0%	12.6%
North - North East SA3	20.8%	16.0%	17.7%
North West & West Coast SA4	8.5%	2.8%	4.8%
South SA4	1.0%	1.5%	1.3%
South East SA4	0.4%	0.2%	0.3%
Interstate	1.9%	3.0%	2.6%
Overseas	0.2%	0.4%	0.3%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Table 37 shows the proportion of admissions for each age group, with older patients much more likely to be admitted than younger patients, with a peak of 67% of people aged over 75 years presenting to the ED being admitted in 2018-19. Rate of admission has increased across all age groups after the EMU became available to accept patients.

*Table 37: Emergency Department presentations and admissions, age group, 2014-15 to 2018-19*

	Proportion of total by age group 2018-19		Proportion of each age group admitted				
	Presentations	Admitted	2014/15	2015/16	2016/17	2017/18	2018/19
0-14 years	16%	8%	14%	14%	14%	16%	18%
15-39 years	32%	19%	13%	14%	15%	20%	22%
40-64 years	27%	29%	24%	25%	27%	35%	38%
65-74 years	11%	18%	40%	40%	46%	53%	56%
75+ years	14%	25%	52%	51%	57%	66%	67%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>24%</b>	<b>24%</b>	<b>27%</b>	<b>33%</b>	<b>36%</b>

## Mental health presentations

Patients with mental health and psychiatric conditions can present a major management challenge in the ED because of the complexity of their primary disease and associated co-morbidities. The busy environment in emergency departments is often not conducive to providing the preferred models or conditions of care.

Patients with psychiatric issues may also present with other primary conditions, which are however often closely tied to their mental health problems, which means the full extent of the mental health caseload is likely to be understated. To provide an indicative estimate the following charts include all patients who were given a principal ICD code for mental and behavioural disorders (F00-F99), suicidal ideation (R45.81), self-harm (Z03.8) and T codes related to medication overdoses of paracetamol, benzodiazepines, sedative-hypnotics, antidepressants, antipsychotics and other drugs that affect the nervous system.

Table 38 shows the number of patients who were admitted or not admitted, the average time to be seen and the average treatment time for all patients across the five years. After an upward trend of an increase of 32% in admissions and 10% in non-admitted patients in the four years to 2017-18, there was a reduction by 13% in admissions and a 16% increase in non-admitted patient presentations in 2018-19.

*Table 38: Mental health presentations, all patients, average treatment time, average wait to be seen, 2014-15 to 2018-19*

Year	Admitted patients			Non-admitted patients		
	Number presentations	Average total treatment time (hours)	Average wait to be seen (mins)	Number of presentations	Average total treatment time (hours)	Average wait to be seen (mins)
2014/15	671	11.1	30	1200	4.3	39
2015/16	779	10.9	32	1261	4.4	38
2016/17	826	11.5	39	1323	4.8	48
2017/18	883	13.1	41	1315	4.7	53
2018/19	765	12.1	44	1531	5.1	56

For admitted patients the average total treatment time in the ED, which includes the time waiting to be admitted to an inpatient bed exceeds 12 hours, whilst the average treatment time for non-admitted patients is 5.1 hours. In addition patients wait three quarters to an hour before they are first seen for definitive treatment.

A similar picture exists for children, adolescents and young adults (see Table 39), although on average waiting and treatment times are less.

*Table 39: Mental health presentations, patients aged 0-24 years, average treatment time, average wait to be seen, 2014-15 to 2018-19*

Year	Admitted patients			Non-admitted patients		
	Number presentations	Average total treatment time (hours)	Average wait to be seen (mins)	Number of presentations	Average total treatment time (hours)	Average wait to be seen (mins)
2014/15	138	7.3	34	395	3.9	40
2015/16	186	9.0	34	410	3.7	38

Year	Admitted patients			Non-admitted patients		
	Number presentations	Average total treatment time (hours)	Average wait to be seen (mins)	Number of presentations	Average total treatment time (hours)	Average wait to be seen (mins)
2016/17	211	8.8	39	465	4.5	49
2017/18	214	9.8	44	477	4.4	55
2018/19	163	10.1	38	636	4.9	55

In 2018-19 (see Table 40) shows that a smaller proportion of the youngest age cohort are admitted (20%), compared with 37% for the middle age cohort and 65% for those aged over 65 years. The average total treatment time in the ED exceeds 21 hours for this latter group.

*Table 40: Mental health presentations, age cohort, average treatment time, average wait to be seen, 2018-19*

Age	Admitted patients			Non-admitted patients		
	Number presentations	Average total treatment time (hours)	Average wait to be seen (mins)	Number of presentations	Average total treatment time (hours)	Average wait to be seen (mins)
0-24 yrs	163	10.1	38	636	4.9	55
25-64 yrs	479	10.4	44	829	5.2	57
65+ yrs	123	21.3	54	66	5.0	44
<b>All</b>	<b>765</b>	<b>12.1</b>	<b>44</b>	<b>1531</b>	<b>5.1</b>	<b>56</b>

Patients with a mental health diagnosis occupy 1.94 cubicle years (1.06 admitted, 0.88 non-admitted) or about 6.5% of general ED cubicle space.

### Older patient cohorts

Older patients, especially those requiring admission are recognised as a significant factor in patient flows from the ED into the inpatient wards. The oldest patients are much more likely to be admitted to hospital, and also on average likely to wait much longer to be admitted to an inpatient ward (see Table 41).

*Table 41: Presentations, age cohort, average treatment time, admitted and non-admitted patients, 2018-19*

Age cohort	Admitted patients		Non-admitted patients	
	Number of patients	Average treatment time (hours)	Number of patients	Average treatment time (hours)
0-14 years	1340	4.0	6199	1.6
15-39 years	3130	6.8	11377	2.2
40-64 years	4754	10.4	7627	2.5
65-74 years	2932	13.9	2299	3.0
75+ years	4157	15.6	2071	3.6
<b>Total</b>	<b>16313</b>	<b>11.1</b>	<b>29573</b>	<b>2.3</b>

Table 42 shows the average total ED treatment time by clinical specialty for patients aged over 65 years, with patients admitted to medical specialties waiting longer than surgical specialties, but with an average overall treatment time of 15 hours.

*Table 42: ED patients, aged 65+ years, admitting specialty, average treatment time, 2018-19*

Admitting specialty	Number of admissions	Average total ED treatment time (hours)
<b>Medical specialties</b>		
General medicine	2705	23.8
Emergency medicine	2003	5.3
Cardiology	596	16.1
Medical oncology	184	22.9
Stroke	108	21.1
Gastroenterology	72	8.5
Haematology oncology	61	21.4
Renal medicine	61	18.3
Respiratory medicine	23	14.1
<b>Surgical specialties</b>		
General surgery	525	9.7
Orthopaedic surgery	238	8.9
Urology	164	8.8
Plastic & reconstructive surgery	80	5.3
ENT surgery	17	7.5
Gynaecology	6	11.1
<b>All admissions</b>	<b>7089</b>	<b>15.0</b>

### *Low urgency presentations*

A persistent issue for many Australian public hospital EDs, is the number of people presenting who are categorised as low urgency. Lower urgency ED presentations are defined by the AIHW as presentations at formal public hospital EDs where the person:

- had a type of visit to the ED of *emergency presentation*;
- was assessed as needing semi-urgent (triage category 4) or non-urgent care (category 5);
- did not arrive by ambulance, or police or correctional vehicle;
- was not admitted to the hospital, was not referred to another hospital, and did not die<sup>3</sup>.

These presentations are used as a proxy measure of access to primary health care. Higher presentation rates may suggest a lack of access to GPs or other primary health services, which may have been better placed to manage a person's health condition, although not all lower urgency ED presentations can be treated in a primary health care setting.

Table 43 shows the low urgency profile at LGH in 2018-19, with 38% of all presentations fitting the definitional criteria, and representing 59% of all presentations, when the patient was not admitted.

<sup>3</sup> <https://www.aihw.gov.au/reports/primary-health-care/use-of-ed-for-lower-urgency-care-2018-19/contents/lower-urgency-care/summary>



The proportion of low urgency presentations decreases with increasing age, with the highest rate of 57% recorded for the 0-14 years age group.

*Table 43: Low Urgency Emergency Department presentations, age group, 2018-19*

Age cohort	Admissions	Presentations not admitted, not low urgency	Presentations not admitted, low urgency	All presentations	Percentage low urgency of all (not admitted)
0-14 years	1340	1916	4283	7539	57% (69%)
15-39 years	3130	4190	7187	14507	50% (63%)
40-64 years	4754	3322	4305	12381	35% (56%)
65-74 years	2931	1187	1112	5230	21% (48%)
75+ years	4157	1366	705	6228	11% (34%)
<b>Total</b>	<b>16313</b>	<b>12008</b>	<b>17592</b>	<b>45913</b>	<b>38% (59%)</b>

Figure 3 shows the distribution of time of presentation for admitted, non-admitted and low urgency types, with the four hours from noon being the peak time for presentations, followed by the next four hours and then the morning time block. 70% of patients present in this twelve-hour period.

*Figure 3: Time of presentation, admitted and non-admitted types, 2018-19*

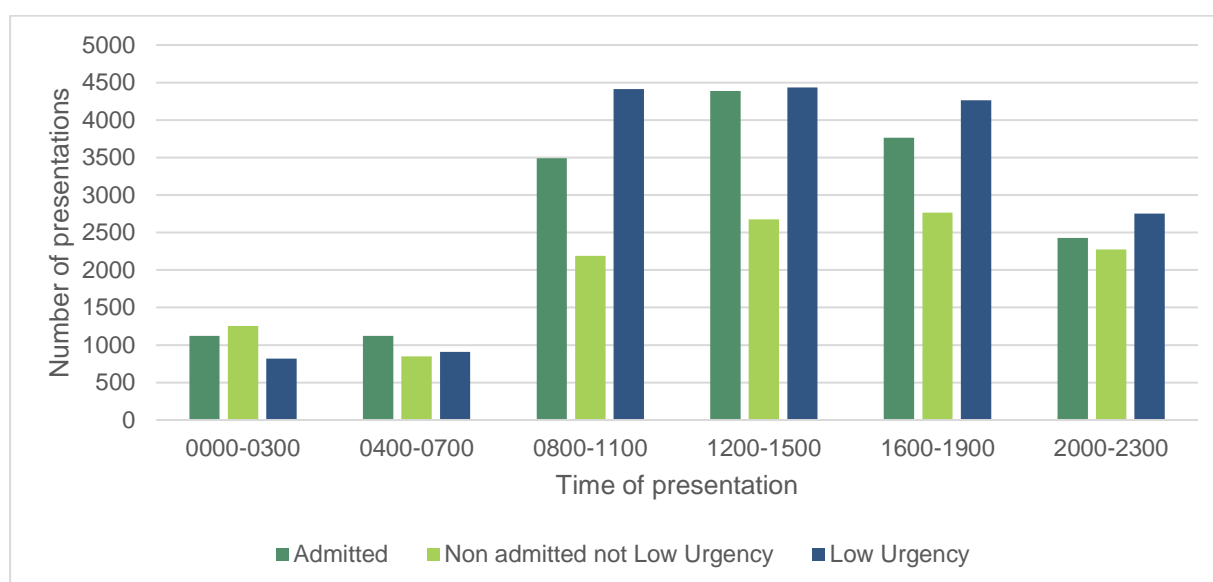


Table 44 shows the distribution of presentation by category type.

*Table 44: Time of presentation, proportion of total by type, 2018-19*

Four hour time block	Admitted	Non admitted, not Low Urgency	Low Urgency	Total presentations	Low Urgency percentage of total
0000-0300	7%	10%	5%	3195	26%
0400-0700	7%	7%	5%	2882	32%
0800-1100	21%	18%	25%	10090	44%
1200-1500	27%	22%	25%	11499	39%
1600-1900	23%	23%	24%	10791	40%
2000-2300	15%	19%	16%	7456	37%
<b>All</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>45913</b>	<b>38%</b>

The pattern is quite similar for admitted and low urgency patients, but a flatter distribution for non-admitted, not low urgency presentations, with lower in-hours peaks and greater number of out-of-hours presentations. Low urgency patients represent 44% of all presentations in the morning block but represent about a quarter of the total from midnight. Table 45 shows low urgency patients for the extended after hours period from 8 pm to 8am, which across the twelve hour period averages about one patient per hour.

*Table 45: After hours low urgency presentations*

Time period	Number of presentations	Average presentations per day
2000-2100	1014	2.8
2100-2200	757	2.1
2200-2300	582	1.6
2300-0000	399	1.1
2000-2300	2752	7.5
0000-0300	820	2.2
0400-0700	910	2.5
<b>Total</b>	<b>4482</b>	<b>12.2</b>

Table 46 provides regional rates by age group high rank use by residents of Launceston suburbs. The highest rates are found for the youngest children, with another peak for older adolescents and young adults.

*Table 46: Low Urgency ED presentations, per 1000 population by age group and region, 2018-19*

Age cohort	Launceston SA3	Meander West Tamar SA3	North East SA3	Launceston SA2 Rank 1 (rate/1000)	Launceston SA2 Rank 2 (rate/1000)	Launceston SA2 Rank 3 (rate/1000)
0-4 years	254	178	135	Ravenswood (377)	Newnham Mayfield (345)	Young Town Relbia (337)
5-9 years	151	109	88	Mowbray (218)	Ravenswood (216)	Summer Hill Prospect (207)
10-14 years	177	119	76	Ravenswood (314)	Waverley St Leonard's (303)	Newnham Mayfield (271)
15-19 years	198	151	141	Ravenswood (346)	Summer Hill Prospect (320)	Kings Meadows Punch Bowl (299)
20-24 years	184	157	137	Ravenswood (323)	Summer Hill Prospect (293)	Invermay (255)
25-39 years	161	117	105	Ravenswood (282)	Launceston (221)	Invermay (209)
40-64 years	102	66	54	Summer Hill Prospect (165)	Launceston (147)	Newnham Mayfield (143)
65-74 years	70	52	36	Invermay (124)	Mowbray (122)	Summer Hill Prospect (98)
75+ years	69	35	25	Summer Hill Prospect (193)	Launceston (117)	Invermay (103)
All	136	89	74	Ravenswood (211)	Summer Hill Prospect (202)	Invermay (183)

Analysis at the suburb (SA2) level consistently finds Ravenswood, located north east of the hospital, as having the highest rates for residents aged up to 39 years of age, with Summer Hill Prospect, south west of the hospital, and Mowbray, Invermay and Newnham Mayfield north of the CBD also consistently having a high rank. Launceston, in which the hospital is located, rises to prominence for the older age groups. Overall, Ravenswood, Summer Hill Prospect and Invermay have the highest rates of low urgency attendances at the ED out of a total of seventeen SA2 regions.

The analysis also showed high rates across all age groups for Scottsdale Bridport in the North East and for residents of Westbury in the Meander Valley for patients aged up to 39 years.

### **Low complexity, not low urgency patients**

The low urgency definition explicitly excludes patients brought to the ED by ambulance. Ambulance Tasmania officers consulted for this plan expressed a professional view that 30-50% of transported patients probably did not require treatment at the hospital and might reasonably been managed in primary care. Table 47 shows data about patients brought to the ED by road ambulance, for an emergency presentation, and discharged home or to the usual residence, with the proportion ranging from 33% for triage category 3 patients to 49% and 64% for categories 4 and 5 respectively.

*Table 47: ED presentations (initial triage cats 3-5), transported by Ambulance Tasmania, urgency category, 2018-19*

Triage Category	ED presentations			% not admitted		
	3	4	5	3	4	5
0-14 years	344	173	4	58%	79%	50%
15-39 years	1178	766	38	55%	68%	79%
40-64 years	1793	890	39	34%	50%	72%
65-74 years	1283	532	19	22%	36%	47%
75+ years	2192	1027	26	21%	34%	46%
<b>Total presentations</b>	<b>6790</b>	<b>3388</b>	<b>126</b>	<b>33%</b>	<b>49%</b>	<b>64%</b>

Table 48 provides a comparison of the time of presentation for patients (cat 3-5) brought in by road ambulance and low urgency patients, with the distribution having lower day peaks and a higher proportion during the evening and night.

*Table 48: ED presentations, road ambulance and low urgency, 2018-19*

	Road ambulance admitted	AT admitted % of total	Road ambulance not admitted	AT not admitted % of total	Low urgency	Low urgency % of total
0000-0300	584	10%	613	14%	820	5%
0400-0700	421	7%	370	9%	910	5%
0800-1100	1173	19%	735	17%	4411	25%
1200-1500	1484	24%	849	20%	4436	25%
1600-1900	1352	22%	882	21%	4263	24%
2000-2300	1084	18%	807	19%	2752	16%
<b>Total</b>	<b>6098</b>	<b>100%</b>	<b>4256</b>	<b>100%</b>	<b>17592</b>	<b>100%</b>

## Resource implications

Table 49 quantifies annual cubicle use for three categories of patient, based on a 'cubicle year' of 525,600 minutes over 365 days.

Table 49: ED presentations, average and total treatment time, 2018-19

	Average total treatment time (mins)			Total treatment time (days)		
	Admitted	Not admitted, not low urgency	Not admitted, low urgency	Admitted	Not admitted, not low urgency	Not admitted, low urgency
0-14 years	243	137	75	226	182	223
15-39 years	407	187	96	885	544	479
40-64 years	624	212	105	2059	489	313
65-74 years	834	244	116	1698	201	89
75+ years	937	263	132	2705	250	65
Total	668	200	96	7573	1666	1168
<b>Estimated ED cubicle use, 100% annual occupancy</b>				<b>20.7</b>	<b>4.6</b>	<b>3.2</b>

This data shows that the average total treatment time for patients who are admitted to the hospital exceeds 11 hours (668 minutes), which to a substantial degree is due to unavailability of inpatient beds. Of the other two categories, not admitted, low urgency patients occupy just over 10% of the 31 cubicle spaces. Road ambulance presentations discharged home for the urgency categories (3-5) represent an indicative 1.74 cubicles of the 4.6 cubicle years of the 'not low urgency, not admitted' category.

Under national activity based funding arrangements the Independent Hospital Pricing Authority (IHPA) determines a national efficient price (NEP) for admitted and non-admitted ED patients based on initial triage category. Table 50 shows the level of IHPA payments for each presentation and the total indicative revenue for each type of ED presentation.

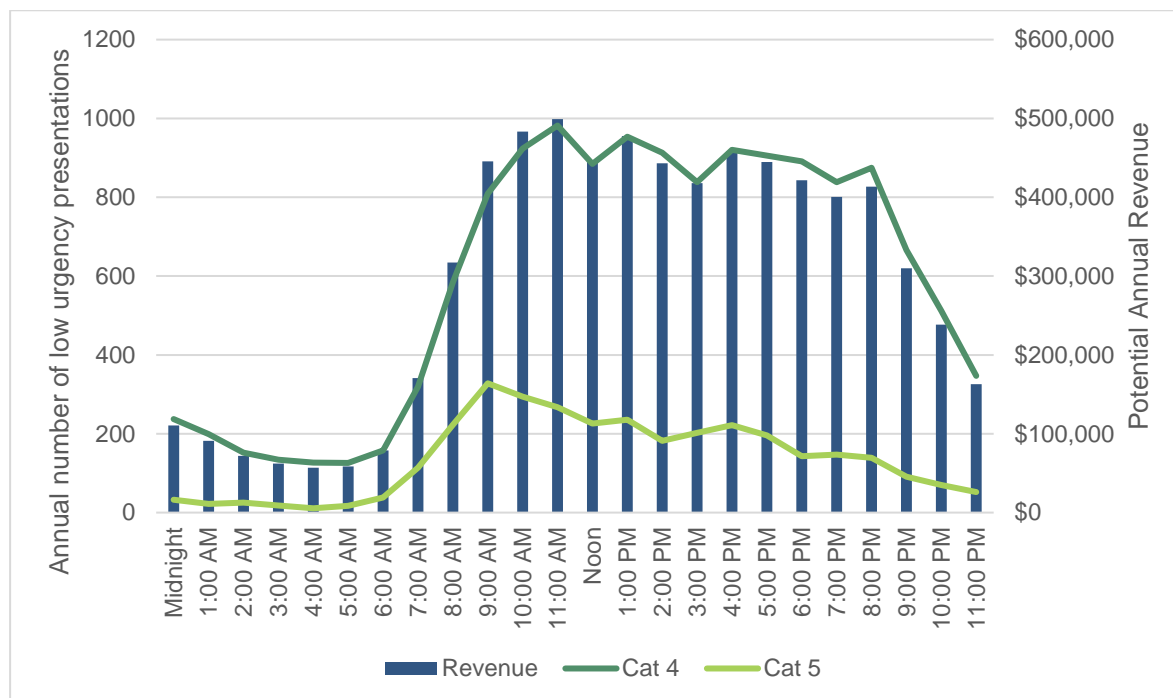
Table 50: Estimated revenue, ED presentation type, 2018-19

Initial Triage Category	Admitted IHPA payment	Not admitted IHPA payment	Admitted revenue	Not admitted not low urgency revenue	Low urgency revenue
1	\$1,698	\$1,540	\$549,990	\$60,060	\$0
2	\$1,114	\$851	\$3,746,382	\$1,315,724	\$0
3	\$889	\$598	\$7,348,474	\$4,573,504	\$0
4	\$705	\$422	\$2,853,225	\$881,558	\$6,032,912
5	\$518	\$318	\$127,946	\$128,588	\$1,046,480
Total			\$14,626,017	\$6,959,433	\$7,079,392
Average revenue / cubicle day			\$1,931	\$4,177	\$6,061

The total ED revenue is approximately 50% for admitted patients and 25% for non-admitted, not low urgency and 25% for low urgency presentations. When cubicle use is taken into account, potential revenue per cubicle per day is highest for low urgency patients.

Figure 4 shows the hour of the day low urgency patients present for care according to initial triage category. Category 5 low urgency presentations peak at 9 am and category 4 presentations also build strongly from 9 am and remain above 800 per annum for each hour until 8 pm. The total potential annual revenue remains above \$400,000 per hour for that twelve hour period.

Figure 4: Annual low urgency presentations, revenue, hour of the day, 2018-19



Peak number of presentations is 1249 at 10 am, spread across the whole year this is an average of 3.4 a day at that time.

#### Four-hour Emergency Department admission performance

National performance targets have previously established a four-hour target for total ED treatment time, whilst somewhat arbitrary it does provide a useful benchmark for analysis. Table 51 shows that whilst the least complex patients are treated and discharged relatively quickly, overall performance is now under 60%, with only 27% of admitted patients transferred to the inpatient wards within four hours, although this rate has improved with access to the EMU beds.

Table 51: ED presentations, compliance with four-hour target, 2014-15 to 2018-19

	Not admitted, low urgency	Not admitted, not low urgency	Admitted	All presentations	All presentations excluding low urgency
2014/15	85%	62%	21%	62%	45%
2015/16	85%	62%	19%	61%	45%
2016/17	85%	62%	21%	60%	44%
2017/18	85%	64%	27%	60%	44%
2018/19	84%	60%	27%	57%	41%

Table 52 shows the four hour admission rates by clinical specialty and admission group in 2018-19. Rates are highest for obstetrics, emergency medicine, plastic surgery and paediatrics and are lowest for stroke, general medicine, oncology and respiratory medicine none of which exceed 7%. The average treatment time for patients not admitted within four hours is 875 minutes or more than 14 hours.

*Table 52: Admitted with 4 hours, total ED treatment time, admitting specialty, 2018-19*

	Admitted within 4 hours			Admitted patients, average treatment time in ED		
	Yes	No	% yes	Within 4 hours (mins)	Not within 4 hours (mins)	All (mins)
Cardiology	286	701	29%	103	1202	887
Emergency	2663	2609	51%	124	427	274
ENT	26	78	25%	153	448	374
Gastroenterology	52	111	32%	133	680	510
General Med	150	3814	4%	135	1413	1368
General Surgery	197	1476	12%	156	551	505
Haematology / Oncol	14	85	14%	92	1358	1213
Medical Oncology	21	310	6%	138	1375	1296
Orthopaedics	124	434	22%	156	500	425
Plastic surgery	236	313	43%	128	376	271
Renal medicine	23	128	15%	119	1198	1038
Respiratory medicine	3	41	7%	94	837	786
Stroke	4	137	3%	161	1248	1217
Urology	89	234	28%	122	563	443
Vascular surgery	0	2	0%	0	411	411
Gynaecology	22	127	15%	135	470	424
Obs / Gynae	12	64	16%	150	414	375
Obstetrics	12	6	67%	72	294	151
Paediatric Medicine	332	486	41%	150	342	264
Cancer AUG	35	395	8%	122	1371	1278
Medicine AUG	3425	7868	30%	123	1005	740
Mental health AUG	45	411	10%	149	710	655
Surgery AUG	679	2546	21%	142	518	440
<b>Total</b>	<b>4464</b>	<b>11849</b>	<b>27%</b>	<b>128</b>	<b>875</b>	<b>673</b>

## Emergency Department capacity projection

As noted, the increasing proportion of older residents will be a major driver of hospital demand. To establish a baseline for future projections, Table 54 provides data on the number of ED presentations per 1000 population for five age cohorts. Over the last two years there has been an increase in the rate of presentations for people aged 15-64 years and a decrease for the other age groups, which inverts the picture over the last five years. Overall there has been a 0.5-0.6% per annum increase across the whole population.

Table 54: ED presentations per 1000 population, by age cohort, 2014-15 to 2018-19

Age cohort	2014	2015	2016	2017	2018	Annual change - 5 years	Annual change - 2 years
0-14 years	297	297	296	305	300	0.2%	-1.8%
15-39 years	362	348	346	341	344	-1.3%	0.9%
40-64 years	241	244	251	256	260	1.9%	1.7%
65-74 years	279	274	295	303	301	1.9%	-0.7%
75+ years	484	499	488	512	510	1.3%	-0.5%
All	310	307	311	316	318	0.6%	0.5%

Table 55 shows projections using a 2018 baseline for population, current age group ED use, number of attendances and average treatment time adjusted for:

- change in population age demographics; and
- three scenarios of no additional annual growth in attendances, and 0.5% and 1.0% annual growth.

Table 55: Projection ED presentations, cubicle use and indicative cubicle demand, 2020-2036

Parameter	Annual increase	2018	2020	2022	2024	2028	2032	2036
Annual number of attendances	0.0% pa	45913	46566	47207	47742	48482	48796	49103
	0.5% pa	45913	47033	48158	49192	50961	52324	53715
	1.0% pa	45913	47502	49124	50682	53557	56092	58738
Total number of treatment minutes (average 326 mins)	0.0% pa	14.98m	15.20m	15.40m	15.58m	15.82m	15.92m	16.03m
	0.5% pa	14.98m	15.35m	15.72m	16.06m	16.63m	17.08m	17.52m
	1.0% pa	14.98m	15.50m	16.03m	16.54m	17.48m	18.31m	19.17m
Indicative number of 100% occupancy cubicles	0.0% pa	28.5	28.9	29.3	29.6	30.1	30.3	30.5
	0.5% pa	28.5	29.2	29.9	30.5	31.6	32.5	33.4
	1.0% pa	28.5	29.5	30.5	31.5	33.3	34.8	36.5

In a no change except projected demographic mix, the cubicle year demand would increase from the current 28.5 to 30.5; at 0.5% and 1.0% annual increase this would be 33.4 and 36.5 cubicles respectively.

As identified above low urgency patients occupy an estimated 4.6 cubicle years and possibly another 1.76 cubicle years are occupied by other non-admitted primary care type patients.

Patients awaiting admission also occupy a substantial number of available cubicles, which clearly reduces the capacity of the ED to perform its required task. Table 56 provides an estimate of the number of ED cubicle years if an increasing proportion of patients are admitted within 4 hours.



Table 56: Estimated effect of improved timeliness of admission on occupied ED cubicles

Percentage of admitted patients meeting 4 hour target	Number of 100% occupied ED cubicles	Percentage change
27%	20.8	0%
35%	19.8	5%
40%	19.2	8%
45%	18.6	12%
50%	18.0	15%

Table 57 provides a summary of projections and scenarios from a 2018 baseline, which confirms changes in ED demand and in-hospital bed management could forestall the need for a substantial increase in the size of the ED.

Table 57: ED capacity projections, 2018-2036

Parameter	2018	2020	2022	2024	2028	2032	2036
0.5% pa increase and population change	28.5	29.2	29.9	30.5	31.6	32.5	33.4
50% reduction in lower urgency, non-admitted patients (3.2 cubicles)	25.3	26.0	26.7	27.3	28.4	29.3	30.2
Increase admitted within 4 hours to 40% (1.6 cubicles)	23.7	24.4	25.1	26.7	26.8	27.7	28.6

## Findings from consultation and data analysis

More ED capacity of up to 5 additional cubicles will be needed by 2036 unless action is taken to improve patient flow from the ED into inpatient beds, to support discharge of ED patients back into the community, and introduction of hospital diversion programs to increase accessibility and use of community based primary care.

It is however notable that ED staff who have implemented fast track management of low urgency patients do not believe they are a major problem, as the data confirms they are seen, treated and discharged relatively quickly. Interestingly the rapid throughput of these patients does improve 4 hour performance overall and potentially and efficiently drives revenue.

Over the year 75% of low urgency patients present between 8am and 8pm, which is equivalent to about 36 patients each day. In the 12 hour overnight period an average of 12 patients are seen. The highest rate of attendees is concentrated in a few suburbs, though these are not adjacent to each other.

Based on this analysis it is difficult to envisage how a new community located practice or urgent care centre could generate sufficient revenue from these patients alone to be viable. Ideally these patients would find a primary care home in established general practices.

Consultation and analysis support the following:

- new models of care rather than increased ED capacity are likely to bring sustainable solutions and should be prioritised first, including:



- extend availability of ComRRS service to improve ED avoidance and support in-place management of people in residential care, including the appointment of a GP to staff and allow AT paramedics to refer directly to the service;
- direct admission of known patients to the ward;
- new model of care to manage medically cleared mental health patients at services other than the ED;
- management of children and adolescents with complex mental health and social issues at specialist community service rather than the ED for instance by developing a co-located and integrated paediatric and CAMHS service for paediatric patients with complex behavioural, mental health and social issues;
- support for local general practices to increase capacity to provide low-urgency care and to have on-site access to point-of-care testing and basic imaging;
- investigate options for Ambulance Tasmania Paramedics to use alternative referral pathways other than the ED for: patients with acute mental health issues, patients with alcohol and other drug issues, and elderly patients with chronic health conditions;
- increase support for district hospitals to manage low-urgency presentations through the use of extended care paramedics or virtual care support options;
- improve community-based after-hours support for palliative care patients, including an on-call phone-based support from a medical practitioner and palliative care specialist.

The following structural limitations in ED design also require rectification to improve patient care:

- a paediatric and adolescent patient waiting area;
- an isolation waiting area, fast-track assessment and isolation bed in the ED for immunocompromised patients;
- dedicated paediatric treatment bays;
- refurbishment of the two ED mental health seclusion rooms;
- access to additional private interview rooms;
- separate triage reception for patients brought in by Ambulance Tasmania;
- the physical patient transfer pathway from the ED to the wards currently requires the movement of patients through public areas; and
- ambulance parking.
- An ED configuration which allows the isolation of a significant number of patients in response to new infectious disease pandemics such as COVID, also must now be addressed.

## 10. Medical services

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### Consultation findings

Staff interviewed identified the following issues:

- there is a significant cohort of older medical inpatients who are aggressive, confused, or delirious who require a purpose designed ward to safely care for them;
- other complex medical patients have long lengths of stay due to low availability of community-based services to support their discharge;
- a new treatment space is required for non-cancer infusions;
- the Intensive Care Unit is not used to full capacity, therefore there should be consideration to re-purposing some space;
- the endoscopy service is unable to meet demand due to insufficient access to infrastructure and workforce;
- cardiology has experienced increased activity and cannot manage demand in the current available space;
- sub-specialist outpatient and clinic rooms have sub-specialist needs, which need to be taken into account in room configuration.

### Data analysis findings

In 2020 the bed capacity for the Department of Medicine, was as follows:

- General wards
  - Ward 4D – 24-27 funded beds, with unfunded capacity of a further 2 beds (total 29);
  - Wards 5D and 6D – 32 beds each;
  - Acute Medical Unit – 22 beds;
- Specialist units
  - Northern Coronary Care – 6 beds;
  - Intensive Care Unit – 11 beds, with unfunded capacity of additional 7 beds;
  - Emergency Medical Unit – 8 beds;
- Rehabilitation and subacute services
  - Ward 3R (Rehabilitation) – 26 beds;
  - John L Grove Centre – 20 beds.

The Medical Admission Group covers all medical specialties, but does not include Rehabilitation, Palliative Care, General Practice and Geriatric Medicine, which comprise the Complex, Chronic and Community AUG and will be separately analysed.

Table 58 shows the summary activity for the Medicine Admission Unit Group. As identified above, with the exception of Emergency Medicine the overwhelming number of overnight admissions and bed days also lead to discharges under the same subspecialty, so attribution of control over the patient flow is largely within the remit of those specialists. Overnight admissions and bed days have increased at a rate of 52% and 30% respectively over the five years. Forward projections based on this trend would have very significant future resource implications. As discussed below these increases are to a large extent due to the development of the Emergency Medical Unit and the Emergency Medicine subspecialty, however General Medicine also contributes significantly to these changes as well.

Although total Medicine DUG separations are fewer than AUG, the gap between average length of stay and total bed days and expected length of stay and bed days remains very similar.

*Table 58: Medicine AUG and DUG summary activity, 2014-15 to 2018-19*

Category	2014/15	2015/16	2016/17	2017/18	2018/19	% change 14/15-18/19
<b>Admission Unit Group</b>						
<b>Overnight admits</b>						
Stat readmission	168	187	156	127	100	-40%
Elective	302	308	363	353	336	11%
Emergency	4815	4858	5905	6978	7458	55%
Not assigned	198	203	451	430	424	114%
Other	2	2	3	3	4	100%
<b>All O/N admits</b>	<b>5485</b>	<b>5558</b>	<b>6878</b>	<b>7891</b>	<b>8322</b>	<b>52%</b>
All O/N bed days	37323	37184	41214	48963	48328	30%
Expected days	25174	25783	31234	34188	34491	37%
<b>ALOS</b>	<b>6.80</b>	<b>6.69</b>	<b>5.99</b>	<b>6.20</b>	<b>5.81</b>	<b>-15%</b>
<b>Expected ALOS</b>	<b>4.59</b>	<b>4.64</b>	<b>4.54</b>	<b>4.33</b>	<b>4.15</b>	<b>-10%</b>
<b>Same day admits</b>						
Stat readmission	6	7	5	6	6	0%
Elective	5363	5714	6564	6632	6409	20%
Emergency	235	234	632	2963	3380	1338%
Not assigned	974	1100	1190	534	254	-74%
Other	0	2	3	1	1	ns
<b>All SD admits</b>	<b>6578</b>	<b>7057</b>	<b>8394</b>	<b>10136</b>	<b>10050</b>	<b>53%</b>
Total admits	12063	12615	15272	18027	18372	52%
Total bed days	43901	44241	49608	59099	58378	33%
Total NWAU	14122	14887	18226	20482	20070	42%
Bed days / NWAU	3.11	2.97	2.72	2.89	2.91	-6%
<b>Discharge Unit Group</b>						
All O/N discharges	5466	5538	6794	7546	7916	45%
All O/N bed days	37147	36972	40251	46925	46297	26%
Expected bed days	25043	25746	30616	32770	33068	32%
<b>ALOS</b>	<b>6.80</b>	<b>6.68</b>	<b>5.92</b>	<b>6.22</b>	<b>5.85</b>	<b>-14%</b>
<b>Expected ALOS</b>	<b>4.58</b>	<b>4.65</b>	<b>4.51</b>	<b>4.34</b>	<b>4.18</b>	<b>-9%</b>

The establishment of the Emergency Medicine Unit (EMU) in March 2017 had a marked impact on patient management and flows and the number of admissions, with the number of Emergency Admissions increasing from about 50 per year to 4431 in 2017/18 and 5272 in 2018/19. Otherwise of the major specialties the biggest numerical increases have

been for General Medicine and Cardiology. The other specialties have also increased, with the exception of Gastroenterology, although with relatively smaller caseloads.

*Table 59: Overnight admissions, subspecialty, 2014-15 to 2019 to 2018-19*

Specialty	2014/15	2015/16	2016/17	2017/18	2018/19	% change
Cardiology	936	870	1010	958	1129	21%
Emergency Medicine	19	11	348	1305	1538	nr
Gastroenterology	369	422	329	287	320	-13%
General Medicine	3491	3542	4382	4237	4186	20%
Renal Medicine	208	214	215	234	217	4%
Respiratory Medicine	198	211	227	239	228	15%
Stroke	217	242	247	252	244	12%
<b>Total (of this Table)</b>	<b>5438</b>	<b>5512</b>	<b>6758</b>	<b>7512</b>	<b>7862</b>	<b>45%</b>

Projections developed for this Clinical Services Plan use current activity as a baseline, which if the current LOS is embedded in these future projections without rectifying the underlying reasons, would lead to an unfeasibly large inpatient bed numbers and a mis-allocation of resources. Table 60 provides more detail on the ALOS and expected LOS for each major specialty and major age cohort. The ALOS exceeds the expected LOS overall for all, except the youngest, aged groups, and is particularly pronounced in the older age groups for General Medicine, Renal Medicine, Respiratory Medicine and Stroke Medicine (shaded light green)

*Table 60: Average and expected LOS, medical subspecialty, age cohorts, 2018-19*

	0-14 years		15-39 years		40-64 years		65-74 years		75+ years	
Specialty	ALOS	ELOS	ALOS	ELOS	ALOS	ELOS	ALOS	ELOS	ALOS	ELOS
Cardiology	0.0	0.0	2.7	3.7	3.3	3.3	4.4	3.7	5.1	4.2
Emergency	1.3	2.0	1.5	1.9	2.4	2.5	2.6	2.6	3.3	2.9
Gastroenterology	2.7	2.6	4.6	3.7	3.5	3.5	3.6	3.8	3.4	3.5
General	1.7	1.8	5.2	3.1	7.8	5.3	8.3	5.7	8.9	5.4
Renal Medicine	0.0	0.0	4.7	3.9	6.7	5.0	8.7	6.0	8.8	4.5
Respiratory	0.0	0.0	1.9	2.0	4.6	3.0	5.3	3.8	7.5	4.7
Stroke	0.0	0.0	1.5	2.6	5.8	3.6	12.1	5.4	11.3	5.4
<b>Total</b>	<b>1.5</b>	<b>2.0</b>	<b>3.3</b>	<b>2.6</b>	<b>5.1</b>	<b>3.9</b>	<b>6.2</b>	<b>4.5</b>	<b>7.0</b>	<b>4.6</b>
Difference ALOS and ELOS	-33%		+27%		+31%		+38%		+52%	

Table 61 shows the effect of the LOS appears on occupied bed days, which are equivalent to 36.5 beds.

*Table 61: Major medical subspecialties, overnight admissions, total and expected days, 2018-19*

Specialty	Overnight admissions	Total bed days	Expected bed days	Excess bed days
Cardiology	1031	4340	3831	+509
Emergency	2329	5809	5878	-69
Gastroenterology	303	1095	1079	+16
General Medicine	4098	33035	21205	+11830
Renal Medicine	172	1251	867	+384
Respiratory Med	188	922	632	+290
Stroke	141	1446	703	+743

Table 62 shows excess bed days for patients aged over 65 years, which represent 75% of the total

*Table 62: Major medical subspecialties, overnight admissions, total and expected days, 65-74 and 75+ age cohorts, 2018-19*

Specialty	65-74 years					75+ years				
	Admits	ALOS	ELOS	Diff %	XS days	Admits	ALOS	ELOS	Diff %	XS days
Cardiology	291	4.4	3.7	17%	188	351	5.1	4.2	22%	328
Emergency	410	2.6	2.6	0%	5	689	3.3	2.9	12%	240
Gastroent	84	3.6	3.8	-5%	-15	70	3.4	3.5	-1%	-2
General	937	8.3	5.7	46%	2431	1729	8.9	5.4	64%	5975
Renal	41	8.7	6.0	47%	114	27	8.8	4.5	95%	116
Respiratory	60	5.3	3.8	39%	88	25	7.5	4.7	60%	70
Stroke	46	12.1	5.4	123%	307	63	11.3	5.4	110%	375
<b>Total</b>	<b>1869</b>	<b>6.2</b>	<b>4.5</b>	<b>37%</b>	<b>3117</b>	<b>2954</b>	<b>7.0</b>	<b>4.6</b>	<b>52%</b>	<b>7102</b>

As noted in the consultation Cardiology has experienced a significant increase in admitted patient activity over the review period. This is confirmed by the data presented in Table 63 which shows an annual increase of 1.8% per annum, but with a much more substantial increase in bed days of 8.9%, which has led to an excess of 509 bed days compared with expected LOS.

*Table 63: Cardiology admissions and bed days per 1000 population, annual change 2014-15 to 2018-19*

Age group	Annual change same day admits / 1000 population	Annual change overnight admits / 1000 population	Annual change overnight bed days / 1000 population
0-14 years	n / a	n / a	n / a
15-39 years	-3.3%	-12.0%	-5.7%
40-64 years	0.0%	3.2%	9.0%
65-74 years	0.2%	-1.8%	8.0%
75+ years	-0.5%	2.1%	6.5%
<b>Total</b>	<b>0.9%</b>	<b>1.8%</b>	<b>8.9%</b>

## Discharge outcomes

The ability to discharge patients from hospital often is due to waiting times for further institutional care. Tables 64 and 65 show the average waiting times for each specialty and discharge destination. A statistical separation reflects a change of care type within LGH. Key findings are:

- Cardiology has extended LOS for discharges to RACFs, private and rural hospitals;
- Emergency Medicine, Respiratory Medicine and Stroke have extended LOS for discharges to RACFs and rural hospitals;
- Gastroenterology has extended LOS for discharges to RACFs; and
- General and Renal Medicine has extended LOS to all destinations.

Table 64: Average length of stay by discharge specialty and selected discharge destinations, 2018-19

Specialty	Admissions	Average LOS	Average expected LOS
Discharge destination code			
<b>Cardiology</b>	<b>901</b>	<b>3.8</b>	<b>3.5</b>
Aged care residential facility	5	32.6	6.0
Private Hospital	9	5.3	2.8
Rural Hospital	6	7.8	4.6
Statistical Separation	18	19.0	10.9
Usual residence/accommodation	863	3.3	3.4
<b>Emergency Medicine</b>	<b>2249</b>	<b>2.4</b>	<b>2.5</b>
Aged care residential facility	17	11.7	4.4
Private Hospital	28	3.4	4.5
Rural Hospital	18	7.6	4.1
Statistical Separation	53	11.8	5.6
Usual residence/accommodation	2133	2.1	2.3
<b>Gastroenterology</b>	<b>287</b>	<b>3.6</b>	<b>3.5</b>
Aged care residential facility	1	39.0	5.3
Rural Hospital	4	2.8	4.5
Statistical Separation	3	16.7	8.8
Usual residence/accommodation	279	3.4	3.4
<b>General Medicine</b>	<b>3685</b>	<b>7.8</b>	<b>4.9</b>
Aged care residential facility	153	19.3	5.7
Private Hospital	123	7.5	5.4
Rural Hospital	110	9.3	6.2
Statistical Separation	336	15.0	7.2
Usual residence/accommodation	2963	6.3	4.5
<b>Renal Medicine</b>	<b>157</b>	<b>7.1</b>	<b>4.9</b>
Aged care residential facility	3	10.0	5.8
Private Hospital	6	10.2	4.0
Rural Hospital	4	13.3	8.1
Statistical Separation	8	27.1	8.9
Usual residence/accommodation	136	5.5	4.5
<b>Respiratory Medicine</b>	<b>177</b>	<b>3.9</b>	<b>3.1</b>
Aged care residential facility	1	7.0	14.8
Rural Hospital	1	7.0	6.2
Statistical Separation	2	8.5	4.6
Usual residence/accommodation	173	3.8	3.0
<b>Stroke</b>	<b>130</b>	<b>10.7</b>	<b>4.9</b>
Aged care residential facility	5	30.0	6.0
Private Hospital	2	7.5	7.6
Rural Hospital	3	22.0	3.4
Statistical Separation	42	20.2	8.0
<b>Total</b>	<b>7586</b>	<b>5.5</b>	<b>3.9</b>

The aggregate ALOS exceeds the expected LOS for each major discharge destination.

Table 65: Average length of stay for selected discharge destinations, 2018-19

Selected discharge destinations	Number admits	Average LOS	Expected LOS
Aged care residential facility	185	19.1	5.7
Private Hospital	168	6.8	5.1
Rural Hospital	146	9.2	5.8
Statistical Separation	462	15.5	7.3
Usual residence/accommodation	6625	4.3	3.6
<b>Total</b>	<b>7586</b>	<b>5.5</b>	<b>3.9</b>

General medicine in particular appears to face hurdles discharging patients, no matter the age cohort or destination (see Tables 66 and 67).

*Table 66: General Medicine, age cohort, LOS, selected discharge destinations, 2018-19*

Age cohort Discharge destination	Admissions	Actual bed days	Expected bed days	Excess bed days
<b>0-14 years</b>	<b>12</b>	<b>21</b>	<b>21</b>	<b>0</b>
Usual residence	12	21	21	0
<b>15-39 years</b>	<b>409</b>	<b>1713</b>	<b>1145</b>	<b>568</b>
Private Hospital	1	1	1	0
Statistical Separation	17	151	95	56
Usual residence	391	1561	1048	513
<b>40-64 years</b>	<b>882</b>	<b>6090</b>	<b>4142</b>	<b>1948</b>
Aged care residential facility	6	116	24	92
Private Hospital	12	66	40	26
Rural Hospital	12	106	62	44
Statistical Separation	48	921	343	578
Usual residence	804	4881	3672	1209
<b>65-74 years</b>	<b>815</b>	<b>6309</b>	<b>4186</b>	<b>2123</b>
Aged care residential facility	23	648	151	497
Private Hospital	22	149	97	52
Rural Hospital	21	210	133	77
Statistical Separation	81	1192	637	555
Usual residence	668	4110	3168	942
<b>75+ years</b>	<b>1609</b>	<b>13884</b>	<b>8158</b>	<b>5726</b>
Aged care residential facility	139	2488	763	1725
Private Hospital	88	622	463	159
Rural Hospital	79	755	494	261
Statistical Separation	176	2359	1124	1235
Usual residence	1127	7660	5313	2347
<b>Total</b>	<b>3727</b>	<b>28017</b>	<b>17651</b>	<b>10366</b>

*Table 67: General Medicine, age cohort, LOS, discharge to usual residence, 2018-19*

Age cohort	Admissions	ALOS	Expected LOS	Excess bed days
0-14 years	12	1.75	1.75	0
15-39 years	391	3.99	2.68	513
40-64 years	804	6.07	4.57	1209
65-74 years	668	6.15	4.74	942
75+ years	1127	6.80	4.71	2347
<b>Total</b>	<b>3002</b>	<b>6.07</b>	<b>4.40</b>	<b>5011</b>

Clearly existing clinical practices and the availability of discharge options are having an impact on overall patient throughput and hospital efficiency and if factored into demand projections without consideration of what should be appropriate expectations now, will have very significant planning consequences.



## Medical services projections

### Using current average length of stay

Tables 68 and 69 show the number of admissions and bed days per 1000 population by age cohort. Taking into account that there are two full years of EMU admissions recorded here for 2017-18 and 2018-19 there appear to be stabilising trends with respect to admissions and bed days and because of uncertainty about the ongoing impact of the identified extended length of stay, the following projections have no additional increment beyond change in population demographics.

*Table 68: Medicine AUG overnight admission count per 1000 population, by age cohort, 2014-15 to 2018-19*

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19
0-14 years	0.7	0.5	0.9	2.0	3.1
15-39 years	11	11	18	22	24
40-64 years	31	32	40	47	50
65-74 years	81	77	98	105	108
75+ years	204	206	223	244	242
<b>Total</b>	<b>38</b>	<b>39</b>	<b>48</b>	<b>55</b>	<b>58</b>

*Table 69: Medicine AUG overnight bed day count per 1000 population, by age cohort, 2014-15 to 2018-19*

Age Cohort	2014/15	2015/16	2016/17	2017/18	2018/19
0-14 years	1.2	1.2	2.1	4.4	4.6
15-39 years	43	54	71	70	80
40-64 years	176	167	202	251	260
65-74 years	503	496	610	657	673
75+ years	1742	1680	1617	1923	1702
<b>Total</b>	<b>261</b>	<b>261</b>	<b>288</b>	<b>341</b>	<b>334</b>

Table 70 and 71 show the admissions and bed day projections using an unchanged 2018 baseline and changes in resident population, with an overall increase in admissions of 27% and 33% of bed days by 2036, with no other service changes.

*Table 70: Medicine AUG projections overnight admissions, age cohort, 2018-2036*

Specialty	2018	2020	2022	2024	2028	2032	2036	% change
Cardiology	1031	1067	1108	1145	1212	1260	1298	26%
Emergency Med	2329	2395	2473	2542	2661	2744	2815	21%
Gastroenterology	303	311	319	327	340	348	354	17%
General Med	4098	4264	4466	4650	4979	5218	5422	32%
Renal	172	175	178	181	185	187	188	9%
Respiratory	188	192	195	198	202	204	205	9%
Stroke	141	147	155	162	175	184	192	36%
Other	47	48	48	49	50	50	50	6%
<b>Total</b>	<b>8309</b>	<b>8598</b>	<b>8943</b>	<b>9254</b>	<b>9803</b>	<b>10195</b>	<b>10524</b>	<b>27%</b>

*Table 71: Medicine AUG projections overnight bed days, age cohort, 2018-2036*

Specialty	2018	2020	2022	2024	2028	2032	2036	% change
Cardiology	4340	4520	4735	4931	5286	5541	5753	33%



Specialty	2018	2020	2022	2024	2028	2032	2036	% change
Emergency Med	5809	6016	6268	6496	6903	7208	7468	29%
Gastroenterology	1095	1123	1153	1179	1223	1249	1269	16%
General Med	33035	34483	36270	37895	40839	43030	44888	36%
Renal	1251	1279	1307	1332	1373	1398	1415	13%
Respiratory	922	945	969	991	1027	1048	1062	15%
Stroke	1446	1522	1613	1697	1849	1953	2040	41%
Other	214	219	224	228	235	238	241	13%
<b>Total</b>	<b>48112</b>	<b>50107</b>	<b>52539</b>	<b>54749</b>	<b>58735</b>	<b>61664</b>	<b>64136</b>	<b>33%</b>

If these projections held unchanged then by 2024 an additional 18 beds would be required and 44 beds by 2036.

Tables 72 and 73 show the projections for the 75+ years age cohorts only. It shows that the proportion of 75+ years admissions increases from 36% of the total to 50%; and from 43% of bed days to 58%.

*Table 72: Medicine AUG projections overnight admissions, 75+ years cohort, 2018-2036*

Specialty	2018	2020	2022	2024	2028	2032	2036	% of 2018 total	% of 2036 total
Cardiology	351	379	417	452	518	574	623	34%	48%
Emergency Med	689	744	819	887	1017	1127	1223	30%	43%
Gastroenterology	70	76	83	90	103	115	124	23%	35%
General Med	1729	1866	2054	2227	2553	2828	3069	42%	57%
Renal	27	29	32	35	40	44	48	16%	26%
Respiratory	25	27	30	32	37	41	44	13%	21%
Stroke	63	68	75	81	93	103	112	45%	58%
Other	6	6	7	8	9	10	11	13%	22%
<b>Total</b>	<b>2960</b>	<b>3195</b>	<b>3517</b>	<b>3812</b>	<b>4371</b>	<b>4842</b>	<b>5254</b>	<b>36%</b>	<b>50%</b>

*Table 73: Medicine AUG projections overnight bed days, 75+ years cohort, 2018-2036*

Specialty	2018	2020	2022	2024	2028	2032	2036	% of 2018 total	% of 2036 total
Cardiology	1803	1946	2142	2322	2662	2950	3200	42%	56%
Emergency Med	2247	2426	2670	2894	3318	3676	3988	39%	53%
Gastroenterology	240	259	285	309	354	393	426	22%	34%
General Med	15323	16541	18207	19736	22625	25067	27195	46%	61%
Renal	237	256	282	305	350	388	421	19%	30%
Respiratory	187	202	222	241	276	306	332	20%	31%
Stroke	714	771	848	920	1054	1168	1267	49%	62%
Other	39	42	46	50	58	64	69	18%	29%
<b>Total</b>	<b>20790</b>	<b>24462</b>	<b>26725</b>	<b>28801</b>	<b>32726</b>	<b>36042</b>	<b>36898</b>	<b>43%</b>	<b>58%</b>

### **Using current expected average length of stay**

Tables 74 and 75 show projections if the 2018 average length of stay were brought into line with the expected length of stay, which would not require any additional beds beyond current utilisation and indeed would reduce them by about seven which approximates the number of medical patients currently occupy surgical and rehabilitation ward beds.

Table 74: Adjusted Medicine AUG projections overnight bed days, 2018-2036

Specialty	2018 current	2018 expected	2024	2028	2032	2036
Cardiology	4340	3831	4353	4666	4891	5078
Emergency Med	5809	5878	6573	6985	7294	7557
Gastroenterology	1095	1079	1162	1205	1231	1250
General Med	33035	21205	24325	26214	27621	28813
Renal	1251	867	923	952	969	981
Respiratory	922	632	679	704	718	728
Stroke	1446	703	825	899	949	992
Other	214	35	37	38	39	39
<b>Total</b>	<b>48112</b>	<b>34230</b>	<b>38877</b>	<b>41663</b>	<b>43712</b>	<b>45439</b>

Table 75: Adjusted Medicine AUG projections overnight bed days, 75+ years cohort, 2018-2036

Specialty	2018 current	2018 expected	2024	2028	2032	2036
Cardiology	1803	1475	1900	2178	2414	2618
Emergency Med	2247	2007	2585	2963	3283	3562
Gastroenterology	240	242	311	357	396	429
General Med	15323	9348	12040	13802	15292	16590
Renal	237	121	156	179	199	216
Respiratory	187	117	151	172	191	207
Stroke	714	339	437	501	555	602
Other	39	41	53	61	67	73
<b>Total</b>	<b>20790</b>	<b>13690</b>	<b>17632</b>	<b>20213</b>	<b>22396</b>	<b>24297</b>

## Conclusions from consultation and data analysis

Based on the above analysis if no other action was taken to address the current issue of extended lengths of inpatient stays the number of Medicine beds would need to increase by 33% or 44 beds to accommodate the additional 16000 bed days. However if the average length of stay can be brought into line with state and national benchmarks then the current available bed stock should be sufficient to allow the safe management of the expected increase in demand driven largely by the changing population demographics.

Two issues identified in the consultation have an effect on the current inpatient lengths of stay.

### Behaviourally complex older medical patients

Behaviourally complex older medical patients (such as those with delirium, dementia, disordered thinking and aggressive behaviours) are currently managed via the use of one-to-one sitters, in the absence of a secure and appropriate environment for older persons with mental health co-morbidities.

A secure older persons' unit is required to care for behaviourally complex older medical patients in an environment that is safe for patients and staff. Stakeholders suggest the

unit could be nurse-led or allied health–led with joint psychiatrist and medical team support. The unit environment should accommodate safe wandering, diversional activities, the ability to adjust environmental stimuli (such as sound and light), safe furnishings, and shared therapy spaces.

### **Medically complex older patients**

Medically complex older persons often experience long lengths of stay in the medical ward. This is due to insufficient chronic disease management capacity and coordination outside of the hospital setting, and a lack of timely access to rehabilitation services.

Complex elderly medical patients are increasingly frequent attenders of the Emergency Department, where they experience long wait times.

Multi-morbid medical inpatients are often too complex for discharge to general practice but are well enough to be cared for outside of the hospital with support.

A coordinated chronic disease management service is required to:

- improve the integration of acute and primary care for patients with chronic disease through community and hospital partnership;
- provide in-reach and outreach models of care that enable home-based care, community-based care and residential aged care, to help avoid unnecessary hospitalisation;
- coordinate access to rehabilitation services including ambulatory rehabilitation, community-based rehabilitation and telehealth supported rehabilitation in the home (RITH) to support early discharge from hospital; and
- provide after-hours support for complex medical patients to reduce Emergency Department presentations and avoidable readmissions.

The service could be staffed using a team-based care model, where the team determines the goals of care and provide care planning and coordination. Stakeholders recommend core team members would include community nursing, allied health, community pharmacy, a general practitioner with access to a general physician for consulting advice, staff, palliative care, and mental health services. The team would also have close links with the Aged Care Assessment Team (ACAT) and National Disability Insurance Scheme (NDIS) support staff.

Stakeholders identify that the purpose-built Northern Integrated Care Service (NICS) building, not currently used for integrated care, could provide a hub for a coordinated multidisciplinary integrated care service, bringing together a range of relevant services such as Hospital in the Home (HITH), RITH, Community Rapid Response Service (ComRRS), and community nursing. The NICS building, with some relatively minor modifications, could also receive non-admitted patients for post-discharge chronic disease management services, rehabilitation and re-enablement services using shared therapy and consultation spaces.

The following specific infrastructure considerations have been identified:

- Provide a secure and appropriate environment for older persons with mental health co-morbidities (delirium, depression, disordered thinking).
- Provide a secure area that includes: an area for wandering, diversional activities, safe furnishings, adjustable lighting, and shared therapy spaces.
- Use the NICS building for chronic care management:
  - widen NICS lifts to accommodate a hospital stretcher;
  - add a centralised reception area;
  - remove access and wayfinding barriers; and
  - include shared therapy areas and consultation areas.
- Consider off-campus options for non-cancer infusions such as Newstead, Mowbray, or Rocherlea (see below).
- Consider moving the Day Procedure Unit to increase the cardiology footprint.
- Increase ambulatory capacity within the cardiology space.
- Investigate shared cardiology services and facilities with a co-located private hospital (see below).
- Consider converting some Intensive Care Unit capacity to a high-dependency unit (see below).
- Investigate some out-sourcing of endoscopy service demand to a co-located private hospital.
- Consider grouping specialist clinic rooms according to sub-specialty needs.
- Do not put all clinics in one area but instead place them where they naturally fit and where sub-specialty areas will take ownership of them.

## 11. Renal Dialysis

Renal dialysis is provided by LGH at:

- LGH itself (6 chairs);
- Kings Meadows (15 chairs); and
- Burnie (15 chairs).

Table 76 shows an increase in the number of dialysis patient episodes of 2.5% over the five years, with a slight reduction at both the community satellite sites and a recent increase in the on-site LGH unit.

*Table 76: Dialysis episodes, site, 2014-15 to 2018-19*

Site	2014/15	2015/16	2016/17	2017/18	2018/19
LGHRSU	56%	53%	53%	55%	53%
	7685	7301	7124	7634	7476
LGH Renal ward	2%	2%	3%	2%	6%
	209	246	445	246	907
LGHRNW	43%	45%	44%	43%	41%
	5942	6178	5948	5946	5788
LGH other	0%	0%	0%	0%	0%
	1	4	8	9	8
	<b>13837</b>	<b>13729</b>	<b>13525</b>	<b>13835</b>	<b>14179</b>

Table 77 presents data on the age and usual place of residence of dialysis patients, with most aged 40-64 years and living in Launceston and Burnie-Ulverstone

*Table 77: All renal dialysis patients (Kings Meadows and Burnie), age cohort, region, 2018-19*

Usual place of residence (SA3)	15-24 years	25-39 years	40-64 years	65-74 years	75-90 years	Total
Burnie Ulverstone	0	1	19	10	7	37
Devonport	0	1	5	7	5	18
Launceston	1	1	25	14	9	50
Meander	0	1	3	3	4	11
North East	0	2	7	4	2	15
NW West Coast	0	0	0	1	0	1
<b>Total</b>	<b>1</b>	<b>6</b>	<b>59</b>	<b>39</b>	<b>27</b>	<b>132</b>

A little under two thirds of patients in Burnie appear to dialyse on Monday, Wednesday, Friday (schedule A) and the rest on Tuesday, Thursday and Saturday (schedule B), though with a shift to the latter arrangement in recent years.

*Table 78: Proportion of dialysis patient episodes (Burnie), day of the week, 2014-15 to 2018-19*

	2014/15	2015/16	2016/17	2017/18	2018/19
Sunday	0%	0%	0%	0%	0%
Monday	23%	23%	22%	20%	21%

Tuesday	11%	10%	12%	13%	12%
Wednesday	23%	23%	21%	21%	21%
Thursday	10%	10%	12%	13%	12%
Friday	23%	23%	22%	20%	21%
Saturday	11%	10%	12%	13%	12%

At Kings Meadows there is a much more even split in episodes for the two schedules.

*Table 78: Proportion of dialysis patient episodes (Kings Meadows), day of the week, 2014-15 to 2018-19*

LGHR SU	2014/15	2015/16	2016/17	2017/18	2018/19
Sunday	1%	0%	0%	0%	0%
Monday	19%	19%	20%	18%	18%
Tuesday	15%	15%	14%	15%	16%
Wednesday	19%	19%	19%	19%	17%
Thursday	14%	15%	14%	15%	16%
Friday	18%	19%	20%	18%	17%
Saturday	14%	14%	13%	15%	16%

Table 79 shows the total number of patient dialysis sessions in 2018-19. A theoretical maximum for each 15 chair unit is 780.

*Table 79: Dialysis sessions, satellite site, time and day of the week.*

	Kings Meadows		Burnie	
	Morning	Afternoon	Morning	Afternoon
Monday	679	632	698	525
Tuesday	674	500	656	35
Wednesday	672	604	702	526
Thursday	679	500	659	39
Friday	686	612	701	526
Saturday	702	498	666	33
Sunday	22	15	21	0

It appears that at Kings Meadows in the morning there are about 13 patients dialysing on schedule A and B. In the afternoon there are on average 12 on Schedule A and 10 Schedule B. If we assume that in practical terms 13 patients can be feasibly dialysed then there is sufficient current capacity in the afternoon sessions by 4 patients.

In Burnie in the morning there are about 13 patients dialysing on schedule A and B. In the afternoon there are 10 in schedule A and one in schedule B.

## 12. Intensive Care Unit

LGH has 11 funded beds in the ICU, with a complement of eight ventilated critical care beds and three high dependency unit (HDU) beds. There is also allocated space and capital equipment to increase this capacity if required. The dataset does not provide data about mechanical ventilation, consequently it is not possible to make a more granular analysis of its use.

### Admission specialty mix

Table 80 shows that there were 918 admissions to ICU in 2018-19, with 57% admitted under medical specialties and 36% surgical specialties, with the remainder split between Cancer Services and WACS. The monthly average was, with the exception of September, in the range of 70 to 88.

Table 80: Number of ICU admissions, Admission Unit Group, month, 2018-19

Month	Cancer Services	Medicine	Surgery	WACS	Total
January	2	48	25	2	77
February	2	38	33	1	74
March	3	35	40	2	80
April	3	50	20	3	76
May	6	36	31	1	74
June	2	56	23	2	83
July	1	38	27	4	70
August	3	43	34	5	85
September	3	44	12	2	61
October	8	48	30	2	88
November	3	43	29	2	77
December	2	43	24	4	73
<b>Total</b>	<b>38</b>	<b>522</b>	<b>328</b>	<b>30</b>	<b>918</b>

Emergency admissions comprised 73.5% of all admissions, with elective admissions representing the bulk of the remainder with 23.3% of admissions (see Table 81).

Table 81: Number of ICU admissions, Admission Unit Group and Admission Type, 2018-19

Admission type	Cancer	Medicine	Surgery	WACS	Total
Elective	5	34	168	7	214
Emergency	29	472	156	18	675
Not assigned	3	10	4	5	22
Statistical Readmit	1	6	0	0	7
<b>Total</b>	<b>38</b>	<b>522</b>	<b>328</b>	<b>30</b>	<b>918</b>

Table 82 provides a more detailed breakdown showing that 65.9% of Medicine AUG and 37.5% of all admissions were under General Medicine; 78.5% of elective admissions were for surgical specialties, with general surgery and urology featuring prominently.

Table 82: Number of ICU admissions, Admission Specialty and Admission Type, 2018-19

Admission specialty	Statistical Readmit	Elective	Emergency	Not assigned	Total
<b>Cancer Services</b>	<b>1</b>	<b>5</b>	<b>29</b>	<b>3</b>	<b>38</b>
Haematology/Oncology	0	4	8	2	14
Oncology	1	1	21	1	24
<b>Medicine</b>	<b>6</b>	<b>34</b>	<b>472</b>	<b>10</b>	<b>522</b>
Cardiology	0	3	64	1	68
Emergency Medicine	0	0	18	0	18

Admission specialty	Statistical Readmit	Elective	Emergency	Not assigned	Total
Endocrinology	0	1	0	0	1
Gastroenterology	0	6	8	1	15
General Medicine	5	10	325	4	344
Intensive Care Med	0	4	31	4	39
Neurology	0	0	1	0	1
Renal Medicine	1	3	13	0	17
Respiratory Medicine	0	7	4	0	11
Stroke	0	0	8	0	8
<b>Surgery</b>	<b>0</b>	<b>168</b>	<b>156</b>	<b>4</b>	<b>328</b>
Anaesthetics	0	0	1	0	1
Colorectal Surgery	0	1	1	0	2
Ear Nose & Throat	0	5	7	0	12
General Surgery	0	89	113	3	205
OMF Surgery	0	1	0	0	1
Orthopaedic Surgery	0	15	16	1	32
P&R Surgery	0	16	3	0	19
Urology	0	37	15	0	52
Vascular Surgery	0	4	0	0	4
<b>WACS</b>	<b>0</b>	<b>7</b>	<b>18</b>	<b>5</b>	<b>30</b>
Gynaecology	0	7	3	1	11
Obstetrics	0	0	0	4	4
Obstetrics/Gynaecology	0	0	3	0	3
Paediatric Medicine	0	0	12	0	12
<b>Total</b>	<b>7</b>	<b>214</b>	<b>675</b>	<b>22</b>	<b>918</b>

### Utilisation and occupancy

The inpatient dataset provides information about ICU length of stay in minutes, which has been converted to hours to calculate average length of stay and days to determine overall occupancy levels. The average length of admission for Cancer Services and WACS was substantially influenced by the small number of admissions, compared with Medicine and Surgery which show less variation. For all patients the average length of stay was just over three days, at 76 hours.

Table 83: Average length of ICU admission (hours), AUG, month, 2018-19

Month	Cancer Services	Medicine	Surgery	WACS	All
January	1	66	76	43	67
February	132	111	47	18	82
March	40	91	73	32	79
April	29	70	108	27	77
May	77	81	101	8	88
June	46	74	63	53	70
July	46	90	49	31	70
August	89	80	95	34	84
September	92	79	55	19	73
October	72	69	94	38	77
November	253	85	60	75	82
December	61	78	55	13	66
<b>All</b>	<b>81</b>	<b>80</b>	<b>74</b>	<b>32</b>	<b>76</b>



Table 84 shows the conversion of ICU length of stay into complete bed days (60 minutes, 24 hours), with total days closely reflecting the number of admissions by specialty and in total.

*Table 84: Total bed days, ICU admissions, AUG, month, 2018-19*

Month	Cancer Services	Medicine	Surgery	WACS	Total
January	0.1	132.2	79.1	3.6	215.0
February	11.0	175.1	64.7	0.7	251.5
March	5.0	133.4	121.5	2.7	262.6
April	3.7	146.3	89.8	3.3	243.1
May	19.2	121.9	130.5	0.3	271.9
June	3.8	172.2	60.3	4.4	240.8
July	1.9	143.0	54.9	5.1	205.0
August	11.1	143.4	134.1	7.1	295.8
September	11.5	144.8	27.5	1.5	185.5
October	24.1	138.4	117.5	3.2	283.1
November	31.6	151.9	72.2	6.2	261.9
December	5.1	140.2	54.7	2.2	202.3
<b>Total</b>	<b>128.1</b>	<b>1742.8</b>	<b>1006.9</b>	<b>40.5</b>	<b>2918.3</b>

An estimate of whole time (24 / 7 / 365) occupied beds is made in Table 85, which shows across the year, on average eight of the available 11 beds are fully occupied, which represents a 73% occupancy rate, which should allow for the safe and efficient management of patients.

*Table 85: Occupied ICU beds, AUG, month, 2018-19*

Occupied beds	Cancer Services	Medicine	Surgery	WACS	Total
January	0.0	4.3	2.6	0.1	6.9
February	0.4	6.3	2.3	0.0	9.0
March	0.2	4.3	3.9	0.1	8.5
April	0.1	4.9	3.0	0.1	8.1
May	0.6	3.9	4.2	0.0	8.8
June	0.1	5.7	2.0	0.1	8.0
July	0.1	4.6	1.8	0.2	6.6
August	0.4	4.6	4.3	0.2	9.5
September	0.4	4.8	0.9	0.1	6.2
October	0.8	4.5	3.8	0.1	9.1
November	1.1	5.1	2.4	0.2	8.7
December	0.2	4.5	1.8	0.1	6.5
<b>Total</b>	<b>0.4</b>	<b>4.8</b>	<b>2.8</b>	<b>0.1</b>	<b>8.0</b>

Occupancy however did fluctuate between a low of 6.5 beds (59%) in December to a high of 86% in August.

## Prioritised options and opportunities

Some Stakeholders suggested converting some Intensive Care Unit capacity to a high-dependency unit. Data on mechanical ventilation would need to be analysed to inform such a decision.

## 13. Cancer services

### Consultation findings

Staff interviewed identified the following issues:

- chemotherapy facilities are now at capacity with outpatient chemotherapy growth of 8% per year;
- the current footprint will be insufficient in the medium-to-long term as more space is required for consulting rooms, clinical trials, pharmacy, and administration;
- there is no capacity to provide care beyond acute treatment (i.e. a lack of survivorship programs, exercise programs);
- insufficient single rooms available on ward 5D for isolating immunocompromised patients;
- patients from the North West coast receiving chemotherapy or radiotherapy are accommodated as inpatients, as there is inadequate alternative accommodation options and support.

### Data analysis findings

The Cancer Service at LGH maintains its own comprehensive database and patient records, the contents of which are not fully captured in the data sets provided for this analysis, in particular the count of chemotherapy and radiotherapy procedures are not available.

Cancer services are divided into two broad clinical specialties, haematology (described in administrative datasets as haematology/oncology) and oncology.

As identified in the patient flow section of this report, Cancer Services accept a substantial number of referrals and transfers from other clinical specialties, which results significantly more discharges and discharge-linked bed days than admissions (see Table 86). The average LOS especially for Oncology patients is significantly longer than the expected length of stay.

*Table 86: Cancer services admissions and discharges, length of stay, 2018-19*

Specialty	Admits	Bed days	Expected bed days	Excess Bed days	ALOS	Expected LOS
Haem /Oncology	283	1829	1469	360	6.46	5.19
Oncology	402	3024	1985	1039	7.52	4.94
<b>Total</b>	<b>685</b>	<b>4853</b>	<b>3454</b>	<b>1399</b>	<b>7.08</b>	<b>5.04</b>
	<b>Discharges</b>					
Haem /Oncology	353	2659	1969	690	7.53	5.58
Oncology	450	3799	2261	1538	8.44	5.02
<b>Total</b>	<b>803</b>	<b>6458</b>	<b>4230</b>	<b>2228</b>	<b>8.04</b>	<b>5.27</b>

LGH is the principal provider of Cancer Services to not only Launceston and the North Eats, but also the North West region. Table 87 summarises discharge data for residents of both regions. In relation to Haematology/Oncology the average LOS is 28% higher than expected for residents of the North and 52% from the North West. In addition the ratio of same day admits is substantially higher for local residents, which taken together does suggest overnight episodes substituting for same day admissions.

*Table 87: Cancer services, usual place of residence, overnight and same day discharges, length of stay*

Haematology / Oncology					Oncology			
	O/N number	ALOS	ELOS	S/D number	O/N number	ALOS	ELOS	S/D number
North	232	7.45	5.85	142	405	8.20	5.02	96
North West	119	7.76	5.10	6	40	10.90	5.03	8
Ratio N : NW	1.9	1.0	1.1	23.7	10.1	0.8	1.0	12.0

With respect to Oncology the average LOS is 2.2 times the expected LOS for the North West compared with 60% more for the North, the ratio of same day admissions also strongly favours the North.

These data certainly support the contention made during the consultation that because of a lack of suitable accommodation patients from the North West are admitted to hospital.

### Haematology / Oncology subspecialty

The sub-specialty level activity over the last five years is set out in the following tables. Reflecting overall Cancer AUG activity, number of overnight discharges peaked in 2018-19, which with a shorter average LOS, led to a reduction in overnight bed days in that year compared a peak in 2016-17. Average LOS was 34% more than expected LOS in 2018-19.

*Table 88: Haematology / oncology summary activity, 2014-15 to 2018-19*

	2014/15	2015/16	2016/17	2017/18	2018/19
<b>Overnight Admissions</b>					
<b>Total overnight admits</b>	<b>261</b>	<b>294</b>	<b>259</b>	<b>233</b>	<b>283</b>
Overnight bed days	1836	2368	2099	1604	1829
Overnight ALOS	7.03	8.05	8.10	6.88	6.46
Expected ALOS	5.31	5.52	6.66	6.30	5.19
Same day admits					
Total same day admits	100	149	122	110	147
Total admits	361	443	381	343	430
Total bed days	1936	2517	2221	1714	1976
Total NWAU	609	740	774	676	699
Bed days / NWAU	3.18	3.40	2.87	2.54	2.83
<b>Overnight Discharges</b>	<b>256</b>	<b>299</b>	<b>305</b>	<b>306</b>	<b>353</b>
Overnight bed days	1922	2568	2817	2577	2659
Expected bed days	1412	1765	2132	1985	1969
Overnight ALOS	7.51	8.59	9.24	8.42	7.53
Expected ALOS	5.52	5.90	6.99	6.49	5.58

Average LOS is often a marker for changes in clinical practice and the development of new models of care. Table 89 shows changes in average LOS by age cohort at LGH over the last five years, and also the expected average LOS for this mix of patients. There have been generally downward trends over the last few years for the younger age groups, but with an upward trend for the over 75 years age group. Interestingly the average LOS is longer than expected for all but the younger age groups. In 2018-19 this represents 360 excess bed days.

*Table 89: Haematology / oncology overnight discharge, ALOS, age cohort, 2014-15 to 2018-19*

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19	2018/19 expected ALOS
0-14 years	0	0	0	0	0	0
15-39 years	14.82	9.98	6.79	6.55	4.29	5.01
40-64 years	7.29	6.33	8.32	10.32	7.26	5.17
65-74 years	6.72	11.31	11.13	7.38	7.84	5.79
75+ years	5.98	8.00	7.69	8.18	8.98	6.48
All	<b>7.51</b>	<b>8.59</b>	<b>9.24</b>	<b>8.42</b>	<b>7.53</b>	<b>5.58</b>

There is no particular epidemiological, pathological or environmental cause present in the LGH catchment to drive an increase in haematological cancers. Data for the years under review shows no consistent trend, but rather inter-year variability in each age cohort (Table 90), but with an overall increase in rates in 2018-19.

*Table 90: Haematology / oncology overnight discharge count per 1000 population, by age cohort, 2014-15 to 2018-19*

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19
0-14 years	0.0	0.0	0.0	0.0	0.0
15-39 years	0.5	1.1	0.3	0.7	0.6
40-64 years	2.3	2.2	2.4	2.1	3.2
65-74 years	4.5	5.1	7.3	6.5	6.9
75+ years	4.9	5.6	4.8	5.5	4.7
<b>Total</b>	<b>1.8</b>	<b>2.1</b>	<b>2.1</b>	<b>2.1</b>	<b>2.4</b>

The bed day count also shows inter-year variability, but with the total in 2018-19 off previous year highs.

*Table 91: Haematology / oncology overnight bed day count per 1000 population, by age cohort, 2014-15 to 2018-19*

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19
0-14 years	0.0	0.0	0.0	0.0	0.0
15-39 years	7.8	11.3	2.3	4.8	2.4
40-64 years	16.7	14.2	20.2	21.4	23.3
65-74 years	30.1	57.4	81.0	48.2	53.7
75+ years	29.2	44.6	36.9	45.4	41.9
<b>Total</b>	<b>13.5</b>	<b>18.0</b>	<b>19.7</b>	<b>17.9</b>	<b>18.4</b>

The baseline scenario for same day and overnight admissions and bed days, starting with 2018-19 activity, with no adjustment other than projected change in age cohort population, is set out in the next three Tables 92 - 94.

*Table 92: Haematology / oncology overnight admit projections, age cohort, 2018-2036 (Baseline Scenario)*

Age cohort	2018	2020	2022	2024	2028	2032	2036
0-14	0	0	0	0	0	0	0
15-39	24	24	24	24	24	23	23
40-64	153	152	149	147	143	141	139
65-74	119	123	127	130	135	133	131
75+	57	62	68	73	84	93	101
<b>Total</b>	<b>353</b>	<b>361</b>	<b>368</b>	<b>375</b>	<b>386</b>	<b>391</b>	<b>394</b>

Projections based on historical activity and change in age demographics show an expected increase of 12% in episodes and 15% in bed days over the extended time period, though as expected an increase in the number and proportion of older patients, with those aged over 75 years making up 22% of admissions in 2036 compared with 14% in 2018, and 26% of bed days compared with 16%.

*Table 93: Haematology / oncology overnight bed day projections, age cohort, 2018-2036*

Age cohort	2018	2020	2022	2024	2028	2032	2036
0-14	0	0	0	0	0	0	0
15-39	103	104	104	104	103	100	98
40-64	1111	1101	1084	1067	1035	1025	1009
65-74	933	968	995	1021	1058	1044	1029
75+	512	553	608	659	756	838	909
<b>Total</b>	<b>2659</b>	<b>2725</b>	<b>2791</b>	<b>2851</b>	<b>2952</b>	<b>3006</b>	<b>3044</b>

The number of same day admissions appears relatively low and relates primarily to procedures or the administration of non-chemotherapy infusions. No chemotherapy or radiotherapy activity is being captured here which in turn is not reflected in forward estimates.

*Table 94: Haematology / oncology same day projections, age cohort, 2018-2036*

Age cohort	2018	2020	2022	2024	2028	2032	2036
0-14	0	0	0	0	0	0	0
15-39	19	19	19	19	19	18	18
40-64	52	52	51	50	48	48	47
65-74	69	72	74	75	78	77	76
75+	7	8	8	9	10	11	12
<b>Total</b>	<b>147</b>	<b>150</b>	<b>152</b>	<b>154</b>	<b>156</b>	<b>155</b>	<b>154</b>

### Oncology subspecialty

Tables 95 and 96 summarise oncology subspecialty activity, which shows a stable number of overnight episodes, but with an increasing trend in same day admissions. The average length of overnight stay presents no obvious trend although the ratio of actual to

expected LOS, having fallen for two years, rose again in 2018-19. The ratio increases steadily with increased patient age.

*Table 95: Oncology summary activity, 2014-15 to 2018-19*

Admission Type	2014/15	2015/16	2016/17	2017/18	2018/19
<b>Overnight</b>					
Total overnight admits	403	389	421	386	402
Overnight Bed days	3130	3093	2698	2724	3024
Overnight ALOS	7.77	7.95	6.41	7.06	7.52
Expected LOS	4.83	5.02	4.70	5.20	4.94
Total same day admits	87	132	78	72	104
Total admits	490	521	499	458	506
Total bed days	3217	3225	2776	2796	3128
Total NWAU	765	772	790	815	868
Bed days / NWAU	4.2	4.2	3.5	3.4	3.6
<b>Discharges</b>	<b>450</b>	<b>450</b>	<b>455</b>	<b>448</b>	<b>450</b>
Bed days	3801	4297	3219	3552	3799
Expected bed days	2211	2429	2240	2395	2261
Average LOS	8.45	9.55	7.07	7.93	8.44
Expected LOS	4.91	5.40	4.92	5.35	5.02
Ratio ALOS : ELOS	1.72	1.77	1.44	1.48	1.68

*Table 96: Oncology overnight discharge, ALOS, age cohort, 2014-15 to 2018-19*

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19	2018/19 expected ALOS	Ratio ALOS: ELOS 2018/19
0-14 years	0	0	0	0	0	0	0
15-39 years	3.57	10.04	2.46	3.22	3.62	4.19	0.86
40-64 years	6.94	8.49	5.71	6.65	7.03	4.49	1.57
65-74 years	9.15	9.56	6.82	7.08	8.60	5.14	1.67
75+ years	12.03	11.18	9.94	12.90	10.97	5.76	1.91
<b>Total</b>	<b>8.45</b>	<b>9.55</b>	<b>7.07</b>	<b>7.93</b>	<b>8.44</b>	<b>5.02</b>	<b>1.68</b>

It is expected that cancer diagnoses and oncology cases increase with age of individual patients and consequently total caseload increases with an ageing population, which as identified is the future for the LGH catchment.

However, Tables 97 and 98 show that this trend is not yet fully embedded with the total per capita rate of oncology admissions steady over the last five years, but with greater variability in evidence in the older age groups.

*Table 97: Oncology overnight admissions per 1000 population, by age cohort, 2014-15 to 2018-19*

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19
0-14 years	0.0	0.0	0.0	0.0	0.0
15-39 years	0.7	0.6	0.3	0.2	0.3
40-64 years	3.7	3.6	3.4	3.6	3.4

65-74 years	10.2	9.2	10.0	10.8	9.9
75+ years	7.8	9.4	10.0	7.1	8.5
<b>Total</b>	<b>3.2</b>	<b>3.2</b>	<b>3.2</b>	<b>3.1</b>	<b>3.1</b>

Table 98: Oncology overnight bed days per 1000 population, by age cohort, 2014-15 to 2018-19

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19
0-14 years	0.0	0.0	0.0	0.0	0.0
15-39 years	2.6	5.6	0.8	0.7	1.1
40-64 years	25.5	30.8	19.6	24.0	23.8
65-74 years	92.9	87.9	68.0	76.5	85.2
75+ years	93.6	104.8	99.0	91.2	93.4
<b>Total</b>	<b>26.6</b>	<b>30.1</b>	<b>22.5</b>	<b>24.7</b>	<b>26.3</b>

Tables 99 to 101 show the projections for Oncology, using 2018 as the baseline, which had mid-range rates for the five years for all age groups. The 2018 average LOS was also mid-range, but lengthy compared to the expected LOS (68% above expected), which will have a substantial impact on baseline projections, especially with the expected increase in the ageing population caseload.

Table 99: Oncology overnight admit projections, age cohort, 2018-2036

Age cohort (years)	2018	2020	2022	2024	2028	2032	2036
0-14	0	0	0	0	0	0	0
15-39	13	13	13	13	13	13	12
40-64	161	160	157	155	150	148	146
65-74	172	178	183	188	195	192	190
75+	104	112	124	134	154	170	185
<b>Total</b>	<b>450</b>	<b>463</b>	<b>477</b>	<b>490</b>	<b>512</b>	<b>524</b>	<b>533</b>

The projections for overnight admissions show that the 75+ years age cohort proportion will increase from 22% to 33% of cases and 28% to 40% of bed days. Currently the average LOS for this age group is 77% greater than the expected LOS.

Table 100: Oncology overnight bed day projections, age cohort, 2018-2036

Age cohort (years)	2018	2020	2022	2024	2028	2032	2036
0-14	0	0	0	0	0	0	0
15-39	47	47	48	48	47	46	45
40-64	1132	1122	1104	1087	1055	1044	1028
65-74	1479	1534	1578	1618	1677	1655	1631
75+	1141	1232	1356	1470	1685	1867	2025
<b>Total</b>	<b>3799</b>	<b>3935</b>	<b>4085</b>	<b>4222</b>	<b>4463</b>	<b>4611</b>	<b>4728</b>

Table 101: Oncology same day projections, age cohort, 2018-2036

Age cohort (years)	2018	2020	2022	2024	2028	2032	2036
0-14	0	0	0	0	0	0	0
15-39	2	2	2	2	2	2	2
40-64	40	40	39	38	37	37	36
65-74	38	39	41	42	43	43	42
75+	24	26	29	31	35	39	43
<b>Total</b>	<b>104</b>	<b>107</b>	<b>110</b>	<b>113</b>	<b>118</b>	<b>121</b>	<b>123</b>

## Projection scenarios

Table 102 shows the consolidated projected bed days for al Cancer Service Unit Group. It shows an increase in required beds from 17.7 (at 100% occupancy) to 21.3 an increase of 20%

*Table 102: Consolidated Cancer Services AUG, overnight bed days age cohort, 2018-2036*

Age cohort (years)	2018	2020	2022	2024	2028	2032	2036
0-14	0	0	0	0	0	0	0
15-39	150	151	152	152	150	145	143
40-64	2243	2222	2188	2154	2090	2068	2037
65-74	2412	2502	2573	2639	2734	2699	2659
75+	1653	1784	1964	2129	2441	2704	2934
<b>Total</b>	<b>6458</b>	<b>6660</b>	<b>6876</b>	<b>7073</b>	<b>7415</b>	<b>7617</b>	<b>7773</b>

If baseline was expected rather than actual length of stay, then the bed day projections are as set out in Table 103, which then would not require additional beds.

*Table 103: Adjusted projected Cancer Services AUG, overnight bed days age cohort, 2018-2036*

Age cohort (years)	Actual 2018	Expected 2018	New 2022	2024	2028	2032	2036
0-14	0	0	0	0	0	0	0
15-39	150	175	177	177	174	169	167
40-64	2243	1513	1476	1453	1410	1395	1374
65-74	2412	1573	1678	1721	1783	1760	1734
75+	1653	969	1151	1248	1430	1585	1719
<b>Total</b>	<b>6458</b>	<b>4230</b>	<b>4481</b>	<b>4598</b>	<b>4798</b>	<b>4910</b>	<b>4994</b>

## Prioritised options and opportunities

Staff advised the following priorities:

- require an increase in the number of single rooms available in 5D for immunocompromised patients;
- need reception, waiting and treatment options in the ED to manage immunocompromised patients;
- require additional space for outpatient chemotherapy, with a preference to extending the existing footprint, however national guidelines and models of care preference availability of off-site chemotherapy in community hubs;
- need increased physical capacity for community-based care programs and allied health-led re-enablement support for NCS patients;
- community accommodation for patients from the North West, so that chemotherapy can be provided on an outpatient, rather than admitted overnight basis.



## 14. Surgery services

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The Department of Surgery comprises: two principal wards, 5A and 5B each with 32 beds; a Short Stay Surgical Unit of 8 beds. There is an operating suite and a Day Procedure Unit.

### Consultation findings

Staff interviewed identified the following issues:

- the main operating theatres have recently been refurbished and are in good proximity to the Emergency Department and Intensive Care Unit;
- the surgical wards have an insufficient number of single rooms (8 out of 32) which are needed for infection prevention and control purposes;
- non-surgical patients often occupy surgery ward beds;
- there is a need for space to allow allied health staff to provide therapy for surgical patients on the ward.

### Data analysis findings

#### ***Surgical ward use by Medical specialties***

Analysis of the available data indicates that Medicine CUG discharged 347 patients with an estimated 1550 total bed days from surgical wards 5A, 5B and the SSSU in 2018-19, which at the surgical average LOS of 3.95 days represents a potential displacement of 392 surgical patients.

#### ***Subspecialty surgical activity***

There are five principal sub-specialty surgeries undertaken in LGH operating theatres: Ear, Nose and Throat Surgery; General Surgery; Orthopaedic Surgery; Plastic and Reconstructive Surgery; and Urology. A substantial Ophthalmology service is provided under contract by the private Launceston Eye Hospital, principally this is day surgery but there are a small number of overnight admissions for the management of more complex conditions. In addition, a variable but small number of cases annually, are allocated to other specialties, including breast surgery, neurosurgery and colorectal surgery. Until recently with a resident vascular surgery, there was a substantial vascular and endovascular caseload, however with the surgeon's re-location interstate, this has dropped off. Conversely the recruitment of an additional plastic surgeon has resulted in an increase in the surgical throughput, both elective and emergency for that specialty.

Admissions are categorised as: elective, emergency, not assigned, not specified, organ procurement and statistical. In 2018-19, 99% of Surgery AUG admissions were either elective or emergency which therefore command most attention. This compares with 88% of admissions in 2014-15, with about 12% categorised in that year as '*urgency not assigned*' the reason for which will be discussed below. Overall, there was a reduction in activity by admission type in 2018-19 compared with the 2015-16 peak, with overnight

admissions more reduced than same day admissions. Same day emergency admissions have increased offsetting the reduction in overnight emergency admissions, leading to an overall 6% reduction in emergency admissions. Weighted throughput measured by NWAU has fallen in line with the number of admissions, but with a more pronounced reduction in bed days, reflecting what appears to be a concerted effort to improve inpatient length of stay.

Table 104: Surgery AUG admission activity, 2014-14 to 2018-19

Category	2014/15	2015/16	2016/17	2017/18	2018/19	% change 15/16- 18/19
<b>Overnight admits</b>	<b>5753</b>	<b>6391</b>	<b>5943</b>	<b>5408</b>	<b>5480</b>	<b>-14%</b>
Elective	1887	2514	2499	2415	2159	-14%
Emergency	3544	3584	3339	2931	3207	-11%
Not Assigned	306	265	84	42	78	-71%
Overnight bed days	24314	28136	24519	23031	21902	-22%
Average LOS	4.23	4.40	4.13	4.26	4.00	-9%
Expected LOS	3.82	3.89	3.97	3.90	3.95	
<b>Same day</b>	<b>4315</b>	<b>5065</b>	<b>4875</b>	<b>4612</b>	<b>4571</b>	<b>-10%</b>
Elective	3074	4209	4223	4120	4043	-4%
Total admits	10069	11456	10821	10026	10060	-12%
Total bed days	28630	33201	29397	27649	26482	-20%
Total NWAU	14328	16882	16020	14882	14946	-11%
Bed days/NWAU	2.00	1.97	1.84	1.86	1.77	-11%
<b>Discharges</b>	<b>5727</b>	<b>6351</b>	<b>5947</b>	<b>5566</b>	<b>5707</b>	<b>-10%</b>
Bed days	23412	26934	24238	23062	22238	-17.4%
Expected bed days	21770	24338	23570	21531	22188	
Average LOS	4.09	4.24	4.08	4.14	3.90	-8%
Expected LOS	3.80	3.83	3.96	3.87	3.89	+2%

With respect to the *urgency not assigned* categorisation, Table 105 shows that in the early years under review these represented a significant number, of which about 90% of overnight admissions and almost all same day admissions were for DRGs Z63AB (other follow-up after medical or surgical care) and Z64AB (other factors influencing health status). Overwhelmingly these were orthopaedic or general surgery admissions for loading a drug delivery system or the actual intravenous administration of anti-infective, or other pharmaceutical agents. It is assumed that these procedures are now performed on a non-admitted basis. The change in categorisation therefore contributes to the marked reduction, especially in same day cases for these two sub-specialties.

Table 105: Urgency not assigned admissions, 2014-15 to 2018-19

Admission type	2014/15	2015/16	2016/17	2017/18	2018/19
Overnight	306	265	84	42	78
Same Day	856	486	373	75	17
<b>Total</b>	<b>1162</b>	<b>751</b>	<b>457</b>	<b>117</b>	<b>95</b>

Inpatient ALOS both as a trend and compared with expected Tasmanian length of stay has a critical impact on infrastructure projections. Table 106 shows this data for the Surgery AUG, with a reduction at LGH of elective and emergency admission ALOS over the last four years, whereas the expected Tasmanian average LOS has changed little for

these admission types. The LGH average LOS for elective surgical admissions has reduced by 8.1%, to be 11.1% less than the expected LOS. The emergency LOS has reduced by 13.1% but remains 7.1% above the expected stay. Overall, the ALOS in 2014-15 was 10.5% higher the expected LOS, compared with 0.5% in 2018-19.

*Table 106: Inpatient overnight average length of stay, admission type, 2015-16 to 2018-19*

Admission Type	Average length of stay				Expected average length of stay			
	2015/16	2016/17	2017/18	2018/19	2015/16	2016/17	2017/18	2018/19
Elective	3.58	3.24	3.26	3.29	3.68	3.77	3.57	3.70
Emergency	5.03	4.73	4.97	4.37	4.11	4.07	4.14	4.08
Not Assigned	2.71	4.57	5.74	5.45	2.45	4.67	4.71	4.06
<b>Total</b>	<b>4.36</b>	<b>4.10</b>	<b>4.21</b>	<b>3.95</b>	<b>3.87</b>	<b>3.95</b>	<b>3.89</b>	<b>3.93</b>

The change in categorisation of admissions as *urgency not assigned*, has substantially altered the mix of diagnoses, which precludes meaningful analysis of this category for length of stay purposes.

Table 107 shows average LOS trends by age cohort, of particular relevance for future projections is the significant reductions for patients aged over 65 years, however the actual average LOS of 5.23 days remains 7% about expected LOS of 4.88 days.

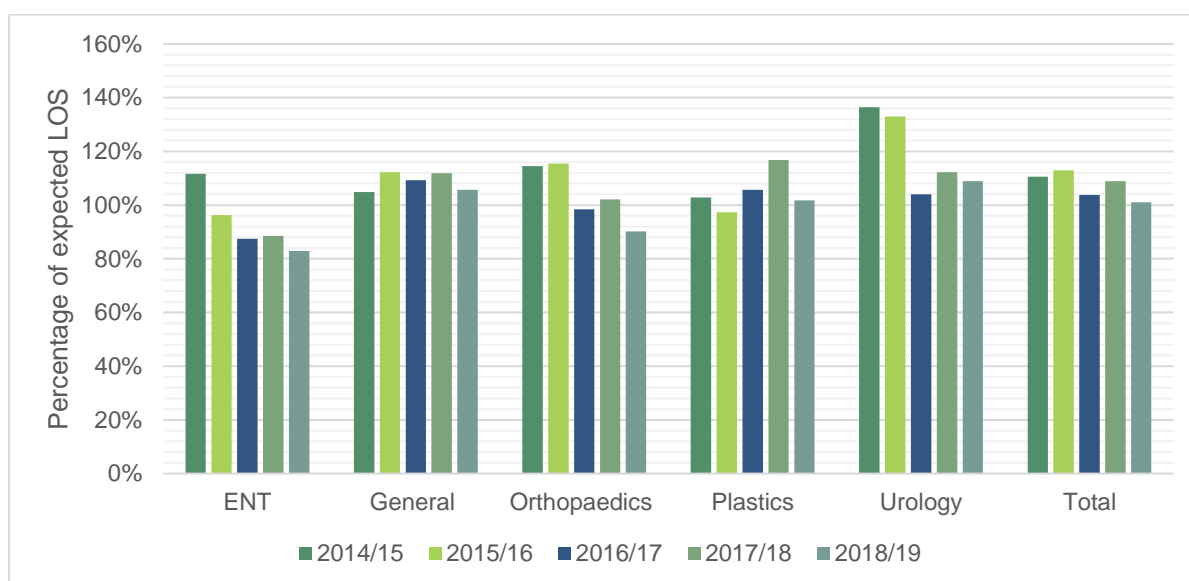
*Table 107: Inpatient overnight average length of stay, age cohort, 2015-16 to 2018-19*

Age cohort	Surgery AUG Average length of stay					Expected LOS
	2014/15	2015/16	2016/17	2017/18	2018/19	2018/19
0-14 years	1.69	1.66	1.83	1.80	1.49	1.91
15-39 years	2.41	2.63	2.39	2.65	2.69	3.01
40-64 years	3.95	4.42	4.05	4.20	3.86	3.89
65-74 years	5.84	5.64	5.03	4.88	4.75	4.61
75+ years	6.71	6.43	6.25	6.16	5.70	5.15
<b>All overnight</b>	<b>4.19</b>	<b>4.36</b>	<b>4.10</b>	<b>4.21</b>	<b>3.95</b>	<b>3.93</b>

Figure 5 shows changes in overnight average LOS for each of the major surgical specialties compared with the expected LOS. All specialties with the exceptions of General Surgery (105% vs 106%) and Plastic & Reconstructive Surgery (102 vs 103%) have demonstrated a substantial reduction in average LOS relative to the expected LOS for that patient casemix. ENT surgery has achieved a reduction for inpatient episodes from 112% to 83%; orthopaedics from 115% to 90%; and urology from 136% to 109%.

Table 108 shows the total and expected total bed days for admissions under key surgical specialties and the discharge specialty. The data confirms and clarifies the information in Figure 5, with length of stay for ENT surgery and Orthopaedic surgery below the expected number; and where an intra-hospital specialty transfer has occurred during the admission, length of stay on average is slightly lengthened.

Figure 5: Surgery AUG specialty inpatient overnight ALOS & expected LOS, 2014-15 to 2018-19



The data also confirms the high proportion of patients admitted and discharged under the same specialty, with rates of 99% achieved for ENT, P&R Surgery and Urology. Transfers of patients from General Surgery and Orthopaedics to Medicine CUG are a small, but important component of activity, with these 60 patients having an average LOS of 16 days compared with an expected LOS of 9.8 days.

Table 108: Surgical admission and discharge Specialty, admissions and total bed days, 2018-19

Admission Unit Discharge Unit	Admissions	Total bed days	Expected bed days
<b>Ear Nose &amp; Throat Surgery</b>	<b>383</b>	<b>568</b>	<b>685</b>
Ear Nose & Throat	382	565	683
Medicine AUG	1	3	3
<b>General Surgery</b>	<b>2320</b>	<b>10594</b>	<b>10020</b>
General Surgery	2162	8793	8699
Breast Surgery	1	5	2
Colorectal Surgery	56	796	560
Orthopaedic Surgery	31	286	308
P&R surgery	21	186	125
Urology	6	23	26
Vascular Surgery	4	21	24
Hepatobiliary	1	11	8
Cancer DUG	6	93	31
Medicine DUG	29	368	226
Mental Health DUG	1	3	7
WACS AUG	2	9	5
<b>Orthopaedic Surgery</b>	<b>1063</b>	<b>4749</b>	<b>5263</b>
Orthopaedic Surgery	1020	4096	4848
General Surgery	3	6	13
P&R Surgery	7	39	34
Medicine DUG	31	599	361
WACS DUG	1	5	6
Rehabilitation	1	4	2
<b>P&amp;R Surgery</b>	<b>786</b>	<b>2564</b>	<b>2519</b>
P&R Surgery	776	2487	2458
General Surgery	2	9	5
Orthopaedic Surgery	3	4	4

Admission Unit Discharge Unit	Admissions	Total bed days	Expected bed days
Medicine DUG	5	64	51
<b>Urology</b>	<b>858</b>	<b>2995</b>	<b>2752</b>
Urology	847	2671	2550
Colorectal Surgery	1	2	1
General Surgery	2	57	20
Orthopaedic Surgery	1	14	9
P&R Surgery	1	63	57
Cancer DUG	1	29	6
Medicine DUG	5	159	109
<b>Other surgery</b>	<b>70</b>	<b>432</b>	<b>382</b>
Other surgery	66	283	281
Orthopaedics	1	16	9
Medicine DUG	3	133	91
<b>Total</b>	<b>5480</b>	<b>21902</b>	<b>21621</b>

### Age cohort surgery activity

Tables 109-111 present cases per 1000 population on the number admissions (overnight, same day) and overnight bed days for Surgery AUG as a whole. For each activity metric there is a downward trend in per capita utilisation since 2015-16, though stabilising across 2017-18 and 2018-19 for each age cohort.

*Table 109: Surgery AUG overnight admissions per 1000 population, by age cohort, 2014-15 to 2018-19*

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19
0-14 years	19	20	21	17	17
15-39 years	33	35	30	25	27
40-64 years	39	44	40	39	39
65-74 years	64	72	68	61	60
75+ years	92	100	97	88	86
<b>Total</b>	<b>40</b>	<b>45</b>	<b>42</b>	<b>38</b>	<b>38</b>

*Table 110: Surgery AUG overnight bed days per 1000 population, by age cohort, 2014-15 to 2018-19*

Age Cohort	2014/15	2015/16	2016/17	2017/18	2018/19
0-14 years	31	33	38	30	25
15-39 years	80	93	71	67	72
40-64 years	154	198	164	163	152
65-74 years	375	411	345	298	287
75+ years	626	652	618	558	492
<b>Total</b>	<b>170</b>	<b>197</b>	<b>172</b>	<b>160</b>	<b>151</b>

*Table 111: Surgery AUG same day admissions per 1000 population, age cohort, 2014-15 to 2018-19*

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19
0-14 years	9	11	12	13	12
15-39 years	17	19	15	15	16
40-64 years	33	35	34	30	30
65-74 years	67	83	74	70	64
75+ years	64	88	98	88	84
<b>Total</b>	<b>30</b>	<b>35</b>	<b>34</b>	<b>32</b>	<b>32</b>

Table 112 shows the overall trend in surgical admissions and bed days from 2014-15 to 2018-19 and presents the average annual change per year for five years. If the increased activity in 2015-16 is smoothed out, there has been an overall downward trend from 2014-15 with an average annual reduction of 1% per capita for overnight admissions and 3% in bed days. However, whilst there have been reductions for ENT, general surgery and orthopaedics, there have been increases for plastic surgery and urology.

*Table 112: Surgical admissions and bed days (5 specialties) per 1000 population, average annual change 2014-15 to 2018-19*

Age cohort	5 major specialties			Overnight admits				
	O/n admits	O/n bed days	Same day admits	General	ENT	Ortho	Plastics	Urology
0-14 years	-2%	-5%	7%	-9%	-1%	-2%	6%	-2%
15-39 years	-6%	-3%	-3%	-6%	-12%	-6%	-1%	-2%
40-64 years	0%	-1%	-5%	-2%	-6%	0%	13%	5%
65-74 years	-1%	-7%	-4%	-3%	-4%	-1%	1%	5%
75+ years	-2%	-6%	6%	-6%	-3%	-2%	12%	3%
<b>Total</b>	<b>-1%</b>	<b>-3%</b>	<b>-2%</b>	<b>-4%</b>	<b>-6%</b>	<b>-1%</b>	<b>7%</b>	<b>5%</b>

## Key Findings – Surgical services

The key findings from the analysis are:

- inpatient bed projections are largely dictated by overnight admissions, which are considered separately from same day admissions;
- there is a downward, but stabilising trend in per capita admissions and bed days for each age cohort over the review period;
- the key drivers for future activity will be changes in population demographics, especially a substantial increase in the older age groups;
- any funded elective surgery strategy, however would only have a short term impact on service use and could be managed by using a number of strategies including extended hours services and contracting with private facilities;
- there are significant benefits from the continuation and universal uptake of local efficiency initiatives which have been effective in the progressive reduction in average length of stay;
- changes in clinical practice (yet to be determined) could increase use of day only surgery or reduce demand for surgery itself.

## Major surgical sub-specialties activity projections

Consistent with the data presented above for all surgical activity, data for the five major sub-specialties represent 99% of total overnight admissions and bed days.

Ophthalmology same day cases which are managed off-site at a private facility, are not included below, but represent 28% of total same day cases.

Table 113: Five major sub-specialties, summary activity, 2014-15 to 2018-19

Admission Type	2014/15	2015/16	2016/17	2017/18	2018/19
<b>Overnight</b>					
Elective	1830	2449	2422	2394	2126
Emergency	3505	3556	3300	2898	3175
Not assigned	303	261	80	41	76
Total overnight admits	5638	6266	5802	5333	5377
Overnight Bed days	23769	27273	23900	22560	21177
Overnight ALOS	4.22	4.35	4.12	4.23	3.94
<b>Same day</b>					
Elective	2221	2873	2619	2791	2751
Emergency	313	316	249	393	447
Not assigned	856	486	369	67	16
<b>Total same day admits</b>	<b>3390</b>	<b>3675</b>	<b>3237</b>	<b>3251</b>	<b>3214</b>
Total admits	9028	9941	9039	8584	8591
Total bed days	27159	30948	27137	25811	24391
Total NWAU	13365	15522	14514	13751	13705
Bed days / NWAU	2.03	1.99	1.87	1.88	1.78

The five main specialties had peak admissions and bed days in 2015-16, with a total of 27,273 overnight bed days, compared with just 21,177 in 2018-19 driven down by decreased throughput and a 10% reduction in average LOS.

Table 114 shows the change in ALOS by age cohort. This shows a generally downward trend for all age groups except for 15-39 years, which when compared with the expected length of stay is already in a favourable position. There remains room for further reductions in ALOS for the older age groups, which will be important to achieve with the expected increase in absolute and relative terms of admissions for these patients.

Table 114 Surgery (5 major specialties), overnight admission, ALOS, age cohort, 2014-15 to 2018-19

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19	2018/19 expected ALOS
0-14 years	1.69	1.66	1.83	1.80	1.49	1.91
15-39 years	2.42	2.64	2.39	2.65	2.69	3.01
40-64 years	3.96	4.41	4.07	4.21	3.86	3.86
65-74 years	5.92	5.66	5.10	4.91	4.71	4.60
75+ years	6.85	6.42	6.33	6.22	5.68	5.14
Total	<b>4.22</b>	<b>4.35</b>	<b>4.12</b>	<b>4.23</b>	<b>3.94</b>	<b>3.92</b>

Table 115-118 show the projected changes in overnight and same day admissions and overnight bed days by age group and surgical subspecialty out to 2036. The total overnight bed days is projected to increase by 19%, but still falls short of peak activity in 2015-16, which should allow incremental organisational and infrastructure changes to manage the evolving and increasing demand.



Table 115: Surgery (5 major specialties), overnight admit projections, age cohort, 2018-2036

Age cohort (years)	2018	2020	2022	2024	2028	2032	2036
0-14	421	422	418	415	411	407	402
15-39	1106	1112	1118	1119	1103	1071	1055
40-64	1819	1802	1774	1747	1695	1677	1652
65-74	1022	1060	1090	1118	1159	1144	1127
75+	1009	1089	1199	1300	1490	1651	1791
<b>Total</b>	<b>5377</b>	<b>5486</b>	<b>5599</b>	<b>5698</b>	<b>5857</b>	<b>5950</b>	<b>6026</b>

Table 116: Surgery (5 major specialties), overnight bed day projections, age cohort, 2018-2036

Age cohort (years)	2018	2020	2022	2024	2028	2032	2036
0-14	629	631	625	620	614	608	601
15-39	2975	2992	3007	3011	2967	2881	2837
40-64	7025	6961	6852	6745	6546	6478	6379
65-74	4818	4998	5140	5271	5462	5392	5312
75+	5730	6185	6809	7380	8461	9374	10169
<b>Total</b>	<b>21177</b>	<b>21766</b>	<b>22432</b>	<b>23027</b>	<b>24049</b>	<b>24733</b>	<b>25299</b>

Table 117: Surgery (5 major specialties), overnight bed day projections, 2018-2036

Specialty	2018	2020	2022	2024	2028	2032	2036
ENT	567	576	584	591	602	608	614
General	10591	10840	11108	11344	11733	11965	12149
Orthopaedics	4585	4760	4970	5160	5501	5748	5957
Plastics	2474	2524	2579	2628	2708	2768	2819
Urology	2960	3066	3191	3304	3505	3644	3759
<b>Total</b>	<b>21177</b>	<b>21766</b>	<b>22432</b>	<b>23027</b>	<b>24049</b>	<b>24733</b>	<b>25298</b>

Table 118: Surgery (5 major specialties), same day projections, age cohort, 2018-2036

Age cohort (years)	2018	2020	2022	2024	2028	2032	2036
0-14	264	265	262	260	258	255	252
15-39	619	623	626	627	617	600	590
40-64	1130	1120	1102	1085	1053	1042	1026
65-74	678	703	723	742	769	759	748
75+	523	565	621	674	772	856	928
<b>Total</b>	<b>3214</b>	<b>3275</b>	<b>3335</b>	<b>3387</b>	<b>3469</b>	<b>3511</b>	<b>3544</b>

## Prioritised options and opportunities

In the absence of any projected future need for additional surgical inpatient beds, the priorities are focussed on improving existing ward infrastructure to manage current and emerging challenges. These are:

- increasing the number of single rooms on the surgical ward;
- ensuring there are sufficient negative pressure rooms;
- developing a co-located therapy space for allied health; and
- minimising non-surgical use of surgical ward beds.



## 15. Operating theatres, DPU and procedure rooms

### Data analysis findings

#### Main theatre block

The main operating theatre block notionally has nine theatres, though some are small and not well-configured to accommodate all the equipment required for complex surgery.

Table 119 shows the number of cases for each day of the week over the last five years and the mix of cases (elective / emergency) in Table 120. In 2018-19 there were 53 Sundays and 52 other days of the week,

There has been an increase in the number of cases performed from 2016-17 onwards. Analysis of DPU (see following) throughput shows that subspecialty day surgery has been moved to main theatres with admissions to the Short Stay Unit if required.

Table 119: Number of main theatre cases, day of week, 2014-15 to 2018-19

Day	2014/15	2015/16	2016/17	2017/18	2018/19	Change since 15/16	% 18/19 total
Monday	1192	1401	1471	1467	1450	3%	16%
Tuesday	1460	1672	1721	1740	1719	3%	19%
Wednesday	1429	1696	1704	1583	1544	-9%	17%
Thursday	1462	1585	1631	1671	1648	4%	19%
Friday	1206	1510	1687	1701	1590	5%	18%
Saturday	407	527	436	414	487	-8%	5%
Sunday	418	445	397	431	458	3%	5%
<b>Total</b>	<b>7574</b>	<b>8836</b>	<b>9047</b>	<b>9007</b>	<b>8896</b>	<b>1%</b>	<b>100%</b>
DPU surgery	3422	2372	118	86	118	-	-
<b>Aggregate</b>	<b>10996</b>	<b>11208</b>	<b>9165</b>	<b>9093</b>	<b>9014</b>	<b>-20%</b>	<b>-</b>

The mix of elective and emergency has shifted back to the same proportions before the 2015-16 elective surgery surge, with about 37% emergency cases in 2018-19.

Table 120: Cases by admission type, 2014-15 to 2018-19

Admission type	2014/15	2015/16	2016/17	2017/18	2018/19
Elective	4788	5895	6196	6069	5588
Elective % of total	63%	67%	68%	67%	63%
Emergency	2727	2835	2695	2880	3267
Emergency % of total	36%	32%	30%	32%	37%
Other	59	106	156	58	41
<b>Total</b>	<b>7574</b>	<b>8836</b>	<b>9047</b>	<b>9007</b>	<b>8896</b>

There are usually five elective theatres operating Monday to Friday, with two emergency theatres at all other times. Table 121 shows the number of scheduled elective cases and Table 122 the number of emergency cases by day of the week, by theatre number for 2018-19. Theatres 4, 5, 7 and 9 have the highest number of elective cases, with Theatre 8 used preferentially for emergency, along with but to a lesser extent Theatres 6 on Monday and Tuesday and Theatre 7 from Thursday to Sunday. Theatres 1 and 2 are

used much less than the other theatres, with the exception of Urology lists on Fridays in Theatre 1.

*Table 121: Theatre schedule, elective surgery cases, day of the week, 2018-19*

Day	OR1	OR2	OR3	OR4	OR5	OR6	OR7	OR8	OR9
Mon	6	2	148	174	198	12	145	103	206
Tue	9	1	162	228	244	12	229	118	225
Wed	15	11	104	179	191	150	173	149	106
Thu	57	3	127	167	272	95	147	69	202
Fri	270	1	38	91	101	46	144	107	244
Sat	22	0	1	2	5	3	6	4	1
Sun	0	1	3	4	16	2	5	28	4
<b>Total</b>	<b>379</b>	<b>19</b>	<b>583</b>	<b>845</b>	<b>1027</b>	<b>320</b>	<b>849</b>	<b>578</b>	<b>988</b>

*Table 122: Theatre schedule, emergency surgery cases, day of the week, 2018-19*

Day	OR1	OR2	OR3	OR4	OR5	OR6	OR7	OR8	OR9
Mon	2	3	27	35	19	138	63	87	63
Tue	0	4	25	36	30	129	69	111	81
Wed	1	5	44	44	43	47	62	147	74
Thu	0	5	40	63	29	70	99	146	53
Fri	1	2	24	42	45	65	170	148	47
Sat	0	0	8	3	26	33	152	184	37
Sun	0	1	9	10	20	70	115	114	49
<b>Total</b>	<b>4</b>	<b>20</b>	<b>177</b>	<b>233</b>	<b>212</b>	<b>552</b>	<b>730</b>	<b>937</b>	<b>404</b>

Table 123 consolidates the elective and emergency case data into one table, with Theatres 7 and 8 heavily utilised on all seven days, with the other major theatres 3, 4, 5 and 9 used less on weekends.

*Table 123: Theatre schedule, all surgery cases, 2018-19*

Day	OR1	OR2	OR3	OR4	OR5	OR6	OR7	OR8	OR9
Mon	6	5	175	210	217	150	225	193	269
Tue	10	5	191	264	274	142	298	229	306
Wed	15	16	148	223	234	197	235	296	180
Thu	58	8	167	230	302	165	246	217	255
Fri	270	3	62	133	146	112	315	258	291
Sat	22	0	9	5	31	36	158	188	38
Sun	0	3	12	14	36	72	126	142	53
<b>Total</b>	<b>381</b>	<b>40</b>	<b>764</b>	<b>1079</b>	<b>1240</b>	<b>874</b>	<b>1603</b>	<b>1523</b>	<b>1392</b>

Table 124 shows total theatre time in hours being the sum of each individual case theatre time, noting that total there were 1248 hours on each of Monday to Saturday in 2018-19 and 1272 hours on Sundays. Table 125 applies the total available hours to the total theatre time.

The total theatre time calculation does not account for necessary down time between cases for cleaning, theatre set-up and shift handovers.

The highest rate of utilisation on Wednesdays for Theatre 8 at 77% and Fridays for Theatre 7 at 75%. It is likely that this is near the maximum, safe use of these theatres.

Table 124: Total theatre time, hours, 2018-19

Day	OR1	OR2	OR3	OR4	OR5	OR6	OR7	OR8	OR9
Mon	1	28	474	685	545	515	847	740	725
Tue	3	3	576	692	684	541	870	827	837
Wed	6	61	452	630	717	611	810	967	737
Thu	25	20	527	554	800	404	825	825	792
Fri	324	15	280	532	538	494	937	809	854
Sat	30	0	15	5	67	45	704	595	115
Sun	0	0	0	0	69	23	508	533	91
<b>Total</b>	<b>390</b>	<b>128</b>	<b>2324</b>	<b>3097</b>	<b>3420</b>	<b>2634</b>	<b>5501</b>	<b>5296</b>	<b>4151</b>

Theatre utilisation of the other frequently used theatres varies on weekdays between 22-68%, with an average of between 41-63%. Use of theatres other 7 and 8 is very low on weekends.

Table 125: Total theatre utilisation, percentage of total availability, 2018-19

Day	OR1	OR2	OR3	OR4	OR5	OR6	OR7	OR8	OR9
Mon	0%	2%	38%	55%	44%	41%	68%	59%	58%
Tue	0%	0%	46%	55%	55%	43%	70%	66%	67%
Wed	1%	5%	36%	50%	57%	49%	65%	77%	59%
Thu	2%	2%	42%	44%	64%	32%	66%	66%	63%
Fri	26%	1%	22%	43%	43%	40%	75%	65%	68%
Sat	2%	0%	1%	0%	5%	4%	56%	48%	9%
Sun	0%	0%	0%	0%	5%	2%	40%	42%	7%
<b>Total</b>	<b>4%</b>	<b>1%</b>	<b>27%</b>	<b>35%</b>	<b>39%</b>	<b>30%</b>	<b>63%</b>	<b>60%</b>	<b>47%</b>

On the basis of this data there is enough unused theatre time either on weekdays or weekends, to accommodate increased throughput. There may however requirements to reconfigure theatres to accommodate new equipment or procedure types.

### Other theatres (LGH ORR1, SSTU, CCR1, DPR1-3, DPSR1, DPUR1)

The analysed dataset identified seven other theatre locations of which five are most heavily used. The data presented in the following set of tables (126-129) is from the Theatre dataset which covers procedures requiring the attendance of an anaesthetist and includes theatre time for each procedure, but does not include other procedures which include administration of therapeutic agents. This caseload will be reviewed from Table 130.

Table 126 shows the annual case load of 1700 cardiology cases in the Cardiac Catheter Lab and a further 356 in the DPU1, which it appears to largely share with ECT procedures with Psychiatry. Otherwise Gastroenterology activity dominates the other DPU rooms, with also significant Respiratory Medicine activity.

Table 126: Procedures, clinical specialty, theatre location, 2018-19

Specialty	ORR1	CCR1	DPR1	DPR2	DPR3	DPSR1	DPUR1	Total
Cardiology	0	1700	356	0	0	0	0	2056

Gastroenterology	0	0	6	1265	1466	323	2	3062
Psychiatry	0	0	324	0	0	3	0	327
Respiratory Med	0	0	1	185	232	0	1	419
Other	16	40	1	3	0	1	13	74
<b>Total</b>	16	1740	688	1453	1698	327	16	5938

Table 127 shows the same data for day of the week, which indicates that these theatres and procedure rooms are operational on a Monday to Friday basis, with occasional weekend cases.

*Table 127: Procedures, clinical specialty, day of the week, 2018-19*

Specialty	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total
Cardiology	22	457	397	433	344	379	24	2056
Gastroenterology	12	196	769	680	881	509	15	3062
Psychiatry	0	93	0	113	0	121	0	327
Respiratory Med	0	0	232	3	1	183	0	419
Other	15	13	7	7	6	14	12	74
<b>Total</b>	49	759	1405	1236	1232	1206	51	5938

Table 128 presents the utilisation data using the same method as Table 125. As the procedures in these theatres is on average much shorter than in main theatres, the turnover of cases decreases possible utilisation time. Therefore it is likely that the utilisation of 63-64% in CCR1 is about the maximum achievable. The utilisation there is much lower on Tuesdays and Thursdays, and the facility is not used on weekends. The

*Table 128: Theatre and procedure room utilisation, percentage of total availability, 2018-19*

Day	ORR1	CCR1	DPR1	DPR2	DPR3	DPSR1	DPUR1
Mon	0.2%	63%	0.0%	1.3%	0.6%	2.1%	0.0%
Tue	0.5%	36%	17.1%	1.1%	0.8%	1.7%	0.0%
Wed	0.4%	64%	0.1%	1.4%	0.7%	0.1%	0.0%
Thu	0.1%	27%	17.1%	2.6%	1.1%	0.1%	0.0%
Fri	0.3%	58%	1.1%	0.5%	1.3%	1.1%	0.2%
Sat	0.1%	0%	0.1%	0.4%	0.0%	0.2%	0.0%
Sun	0.3%	0%	0.0%	0.1%	0.0%	0.6%	0.0%
<b>Total</b>	0.3%	35%	5.0%	1.1%	0.6%	0.8%	0.0%

Table 129 compares Cardiology activity in CCR1 over the five years of review, which on this measure does not show much change except for Friday being preferred in recent years to Tuesday.

*Table 129: CCR1 utilisation, percentage of total availability, 2014-15 to 2018-19*

Day	2014/15	2015/16	2016/17	2017/18	2018/19
Mon	64%	59%	54%	60%	63%
Tue	51%	47%	43%	45%	36%
Wed	65%	62%	64%	70%	64%
Thu	28%	26%	25%	28%	27%
Fri	39%	37%	54%	59%	58%

Day	2014/15	2015/16	2016/17	2017/18	2018/19
Sat	0%	0%	0%	0%	0%
Sun	0%	1%	0%	0%	0%
Total	35%	33%	34%	38%	35%

The need for an additional catheter room was raised during consultation based on the above analysis, it appears on three days a week there is very high utilisation, but almost no activity on weekends. A more detailed analysis of scheduling would be warranted before any decision about another lab is required.

Table 130 provides a detailed breakdown of the procedures performed in the DPU using the Admitted Patient Dataset rather than the Theatre dataset. In 2018-19 the DPU largely serves medical subspecialties, with relatively small case volumes for Cancer Services and Mental Health, which however have increased significantly over the five years with a 75% increase in Cancer Services and 2.5 times increase in ECT. Surgical and gynaecological services have largely been shifted to other operating theatres in the hospital.

*Table 130: DPU procedure type, specialty, 2014-15 to 2018-19*

Specialty	14/15	15/16	16/17	17/18	18/19
Procedure type					
<b>Cancer Services (Total)</b>	<b>122</b>	<b>130</b>	<b>167</b>	<b>163</b>	<b>214</b>
Administration of gamma globulin	69	57	63	52	68
Biopsy (various forms / sites)	16	20	53	41	44
IV administration of pharmacological agent, other	14	33	3	15	31
Other	20	17	44	50	53
<b>Mental Health (Total)</b>	<b>67</b>	<b>143</b>	<b>123</b>	<b>130</b>	<b>174</b>
Electroconvulsive therapy [ECT]	66	141	122	127	167
<b>Medicine</b>	<b>5475</b>	<b>5831</b>	<b>6197</b>	<b>6734</b>	<b>6547</b>
<b>Cardiology</b>	<b>1093</b>	<b>1125</b>	<b>1249</b>	<b>1162</b>	<b>1160</b>
2D real time T/O ultrasound of heart	182	152	174	175	171
Cardioversion	55	70	90	102	88
Coronary angiography	571	586	590	562	608
Insertion of cardiac pacemaker generator	13	17	31	25	31
Insertion of SC implanted monitoring device	9	9	30	41	28
Percutaneous insertion of transluminal stent(s)	71	80	105	88	61
Replacement of cardiac pacemaker generator	26	38	34	10	11
Spiral coronary angiography by CT	89	94	88	66	84
Other	17	17	19	19	26
<b>Gastroenterology</b>	<b>3224</b>	<b>3263</b>	<b>3392</b>	<b>3622</b>	<b>3163</b>
Biopsy (various forms / sites)	22	46	44	23	42
Endoscopic balloon dilation of oesophagus	12	10	19	10	28
Endoscopic banding of oesophageal varices	13	19	25	33	17
Endoscopic therapeutic procedure (stents, prostheses, ERCP, sphincterectomy)	292	251	234	206	214
Endoscopic ultrasound	57	50	58	65	57
Fibreoptic colonoscopy	1490	1506	1557	1704	1334

Specialty Procedure type	14/15	15/16	16/17	17/18	18/19
IV admin pharmacological agent, other	265	372	487	519	555
Other endoscopic dilation of oesophagus	90	105	83	90	85
Panendoscopy	833	745	737	786	646
Other	150	159	148	186	185
<b>General Medicine</b>	<b>443</b>	<b>497</b>	<b>524</b>	<b>1087</b>	<b>954</b>
Administration of gamma globulin	91	120	148	208	196
IV admin of pharmacological agent, other	212	282	287	440	464
IV admin of pharmacological agent, steroid	16	23	31	33	23
SC admin of pharmacological agent, other	95	41	24	327	205
Other	29	33	34	79	66
<b>Neurology</b>	<b>180</b>	<b>292</b>	<b>238</b>	<b>15</b>	<b>109</b>
Administration of gamma globulin	44	148	117	4	50
IV admin of pharmacological agent, other	64	78	74	0	23
IV admin of pharmacological agent, steroid	2	28	15	0	5
Lumbar puncture	41	29	31	10	25
Other	29	11	1	1	6
<b>Renal Medicine</b>	<b>83</b>	<b>104</b>	<b>129</b>	<b>90</b>	<b>105</b>
Administration of gamma globulin	10	14	20	24	33
Closed biopsy of kidney	39	48	43	34	34
IV admin of pharmacological agent, other	23	28	40	20	23
Other	11	14	26	12	15
<b>Respiratory Medicine</b>	<b>386</b>	<b>496</b>	<b>640</b>	<b>725</b>	<b>1016</b>
Biopsy	4	37	33	23	16
Bronchoscopy	7	14	20	12	9
Endoscopic procedures (biopsy, destruction, removal)	16	180	220	366	473
Fibreoptic bronchoscopy	265	0	0	0	0
Insertion of intercostal catheter for drainage	5	4	18	3	13
IV admin of pharmacological agent, other	24	7	23	19	42
SC admin of pharmacological agent, other	45	122	258	355	552
<b>Surgery</b>	<b>3422</b>	<b>2372</b>	<b>118</b>	<b>86</b>	<b>118</b>
Ear Nose & Throat	161	130	2	2	2
General Surgery	921	636	30	26	28
Orthopaedic Surgery	553	375	9	10	6
Plastic and Reconstructive Surgery	691	391	3	3	10
Urology	915	724	44	35	60
Vascular & Endovascular Surgery	159	86	16	1	1
Gynaecology	756	448	12	7	1
<b>Total</b>	<b>9852</b>	<b>8927</b>	<b>6614</b>	<b>7120</b>	<b>7051</b>

Cardiology services have remained fairly stable in number and mix. Gastroenterology endoscopic procedures have decreased in number but have had an increase in infusions. There has been an increase in the number of bronchoscopies performed and infusions have also increased in the other medical subspecialties. Table 131 provides a summary of infusion type.

Table 131: DPU infusions, type, number, 2014-15 to 2018-19

Procedure type	2014/15	2015/16	2016/17	2017/18	2018/19
Administration of gamma globulin	214	343	369	304	356
IV admin of pharmacol agent, other & unspec	658	874	960	1049	1169
IV administration of pharmacol agent, steroid	18	55	54	41	31
Other intravenous	2	2	5	14	9
SC administration of pharmacol agent, other	145	168	286	661	761
Other SC admin of pharmacological agent	24	10	4	34	9
<b>Total</b>	<b>1061</b>	<b>1452</b>	<b>1678</b>	<b>2103</b>	<b>2335</b>

## Prioritised options and opportunities

Staff interviewed identified the following issues that warrant rectification:

- the design, configuration and increasing workload for DPU does not allow for the efficient flow of patients;
- there is currently no designated admissions and intake area which if necessary could be located near to but not in the DPU;
- recovery needs more space;
- consulting rooms are needed to have confidential examinations and consultations with patients;
- the infusion service has more than doubled in service volume in five years, and will continue to grow with the medical subspecialties increasingly using these therapies. The infusion service does not need to be located in the DPU or even on the main LGH campus. Relocation would free up space and assist reconfiguration.

## 16. Oral Health

### Consultation findings

The Special Care Dental Unit (SCDU) is located in the LGH (other services are provided in the community). Oral Health Services has limited access to LGH theatres and largely use the Mersey Community Hospital (MCH) instead.

Children's dental services are currently provided using mobile vans, however there is a preference to have some fixed clinics in Mowbray and Exeter.

The majority of the SCDU work are referrals from oncology.

Staff interviewed identified the following issues:

- the Unit has structural issues related to its access doors, deficient air conditioning and lack of natural light; and
- capacity to provide student placements is limited by space at the community dental service at Howick Street. Currently able to place 6 students, but would like to increase this to 12 students.

### Data analysis findings

Table 132 shows dental procedures undertaken in the LGH theatres over the last five years, these are infrequent in the recent years.

*Table 132: Dental and Oral surgery procedures performed in LGH theatres, 2014-15 to 2018-19*

Procedure description	2014/15	2015/16	2016/17	2017/18	2018/19
Adhesive restoration of tooth, 1-3 surfaces,	2	5	2	0	0
Allied health intervention, pharmacy	0	1	0	0	0
Excision of lesion of bone, not elsewhere classified	0	1	0	0	0
Full dental clearance	0	1	0	0	0
Incision and drainage of abscess / lesion	1	1	0	1	1
Osteotomy of mandible with internal fixation	0	1	0	0	0
Periodic oral examination	3	2	0	0	0
Removal of teeth or part(s) thereof	18	12	1	1	1
Removal of calculus from surfaces of teeth	0	1	0	0	0
Removal of teeth incl bone and tooth division	0	0	1	1	1
<b>Total</b>	<b>24</b>	<b>25</b>	<b>4</b>	<b>3</b>	<b>3</b>

Table 133 summarises dental surgery activity at MCH with 167 cases from the North and North East treated there, which represents about 45% of its total caseload, with the rest of the patients being residents of the North West and West Coast regions



Table 133: Dental and Oral surgery procedures performed in MCH theatres, 2014-15 to 2018-19

Usual place of residence	Episodes	Cost weight total
North - Launceston	93	69
North - Meander Valley West Tamar	30	23
North - North East	44	33
West and North West	224	165
<b>Total</b>	<b>391</b>	<b>290</b>

On a per capita basis public access to oral surgery for public patients in the North and North East is about half of that for residents of the North West.

Table 134 shows the procedures performed on patients of the LGH primary catchment, with the majority involving tooth removal with or without associated bone.

Table 134: Type of dental surgery procedures, MCH, residents North and North East, 2018-19

Row Labels	Count of MRN
Adhesive restoration of anterior teeth	10
Alveolectomy, per segment	1
Comprehensive oral examination	2
Dental histopathological examination of tissue	1
Excision / marsupialisation of cyst / lesion of mouth	3
Fissure and/or surface sealing, per tooth	4
Dental clearances	6
Full upper dental clearance	1
Intraoral periapical or bitewing radiography, per exposure	1
Periodic oral examination	8
Removal of teeth or part(s) thereof	65
Surgical exposure of unerupted tooth	2
Surgical removal of teeth not requiring removal of bone or tooth division	4
Surgical removal of teeth requiring both removal of bone and / or tooth division	60
<b>Total</b>	<b>167</b>

## Prioritised options and opportunities

The Oral Health staff identified the following priorities:

- improve access to operating theatres in Launceston and at MCH;
- fix doors to the SCDU and install cooling to the entire wing;
- consider capacity for child dental units in paediatrics/CHAPS community service locations or health hubs;
- consider capacity to provide teaching at Kings Meadows site.

## 17. Women's and Children's services

In addition to the hospital-wide consultation undertaken in March 2020, KP Health was commissioned to undertake a specific analysis about clinical space allocations for Women's and Children's services in the new 4K construction. The full report is provided as an Attachment to this report, with summary findings presented at the start of this section.

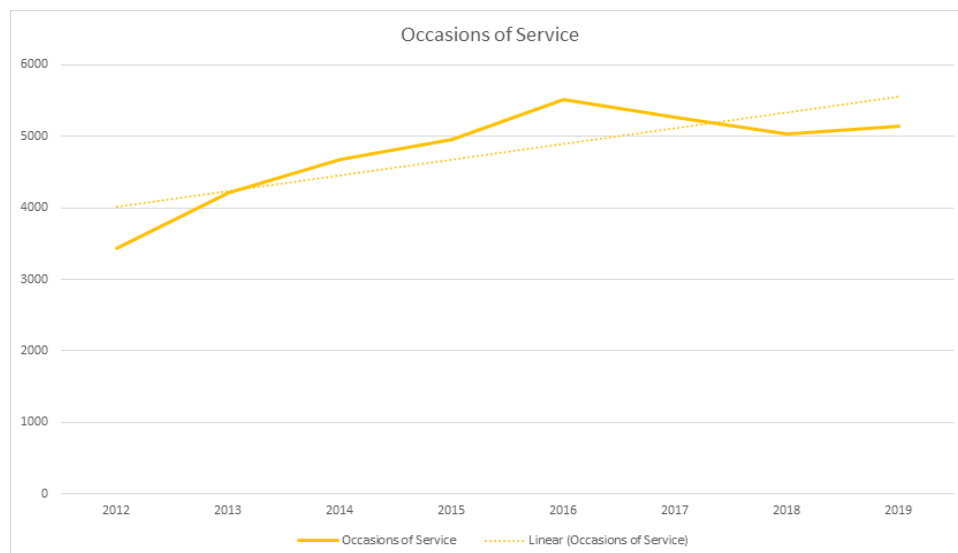
Women's and Children's Services broadly comprise: gynaecology and gynae-oncology the latter making up a small proportion of outpatient and inpatient caseload (one same day admission); obstetrics; obstetrics / gynaecology which typically includes non-birth event related obstetric care, which again represent a relatively small number of cases; newborn babies and neonatology, which is care up to 28 days of age; and paediatrics.

### WACS outpatient analysis and consultation findings

#### ***Paediatric outpatient service delivery***

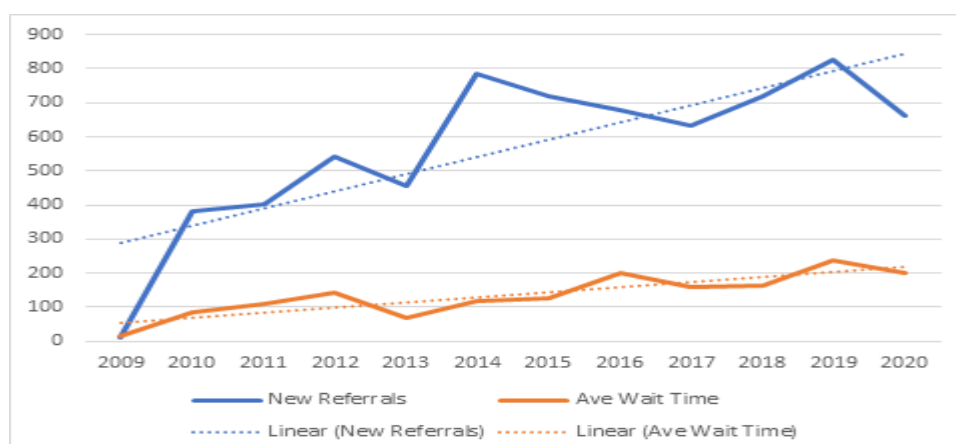
Paediatric outpatient clinic activity at LGH is increasing over time. In paediatric clinics, outpatient occasions of service have increased between 2012 and 2019. This reflects the growing disease burden experienced by paediatric patients.

*Figure 6: Outpatient occasions of service, paediatrics, LGH, 2012 to 2019*



New referrals to paediatric outpatients continue to increase over time. Waiting times have also increased, although the average waiting time has not risen as sharply as new referral numbers due to the recruitment of additional paediatricians.

Figure 7: Average wait times and new referrals, paediatrics, LGH, 2009 to 2020



In 2019, the waiting time between when a referral was made to see a paediatric clinician and when the appointment occurred ranged between six days (paediatric nurse clinic) and 378 days (Dr Atherton specialist clinic).

Table 135. Time from referral to review, new patients, paediatric outpatients, LGH, 2019

Clinic	New patient Attendances	Days between referral and appointment
Paediatric Clinic – (Dr Hamilton)	67	122
Paediatric Clinic (Dr Atherton)	46	378
Paediatric Clinic (Dr Bailey)	64	241
Paediatric Clinic (Dr Corp)	32	297
Paediatric Clinic (Dr Els)	96	301
Paediatric Clinic (Dr Strong)	68	117
Paediatric Nurse Clinic	2	6
Paediatric Nutrition and Dietetics	32	103
Paediatric Nutrition and Dietetics Clinic	51	133
Physiotherapy – Paediatric	185	30
Speech Pathology - Paediatric	74	71
My Feed Outpatient Clinic	21	17
Developmental Clinic	6	100

Visiting specialists also provide paediatric outpatient services. Specialist clinics include: cystic fibrosis; cardiology; endocrinology; rheumatology; child psychiatry; oncology; neurology; sleep medicine; paediatric surgery; and plastic surgery.

Clinics are scheduled three to six times a year depending on the discipline. Scheduled LGH paediatric outpatient clinics are usually cancelled to accommodate the visiting specialist teams as there is insufficient space in the current paediatric outpatient department.

There is currently a waiting time of up to two years for Category 3 wait listed paediatric patients. Consultant paediatricians need more outpatient consulting rooms so they can see patients waiting to access services. The LGH has the available workforce to deliver the following additional clinical services should outpatient infrastructure be made available to accommodate service delivery:

- additional general paediatric clinics;
- group programs for childhood obesity, family therapy, parentcraft, behavioural management;
- nurse clinics for continence (including enuresis / constipation), behaviour, obesity;
- case conferencing for complex cases;
- ambulatory care and day therapies for suitable patient groups.

There are five outpatient rooms that are available currently. Peak demand for rooms occurs when behavioural, developmental, My Feeds and Out of Home Care clinics occur (Monday to Thursday). Ten consultation rooms are required to accommodate these clinics with a full multidisciplinary complement of staff. In addition, physical therapy facilities specific to paediatric patients and group therapy spaces are required for the delivery of treatment to groups of patients for common conditions (e.g. family therapy, lifestyle management, continence management). These are currently not available for the delivery of outpatient assessment or patient management. Meaningful interdisciplinary interaction is required to maximise the use of the skills and expertise of the paediatric outpatient team.

Doctors, nurses and allied health professionals need to discuss patients, jointly plan management and, in some cases, jointly deliver therapy in order to achieve positive outcomes. This requires spaces within outpatients where case discussions can occur between professionals. The outpatient clinic cannot currently accommodate case conferences.

The paediatric allied health workforce comprises social work, dietetics, speech pathology, physiotherapy, occupational therapy, audiology, diversional therapy and audiometry. There is currently not enough space for allied health professionals to assess patients or deliver therapy to outpatients. A small four room area adjacent to paediatric inpatients is the designated paediatric allied health clinical space. There are too few rooms in the clinical space to accommodate the paediatric allied health professionals currently employed by LGH. Further, available rooms are insufficient in size to accommodate disciplines that commonly work together to assess and manage patients in the same consultation (e.g. paediatric occupational therapy and speech therapy). There is no physical therapy space. Equipment (treadmill, exercise bicycle) is located in a high traffic corridor in the paediatric allied health clinic.

In larger centres, paediatric outpatient clinics are conducted offsite from the main hospital campus. This is problematic for the LGH as the paediatric allied health workforce works across inpatient and outpatient areas and there are too few paediatric allied health professionals employed in each discipline to retain a separate inpatient and outpatient allied health workforce. As a result, paediatric allied health clinics are located onsite at LGH.

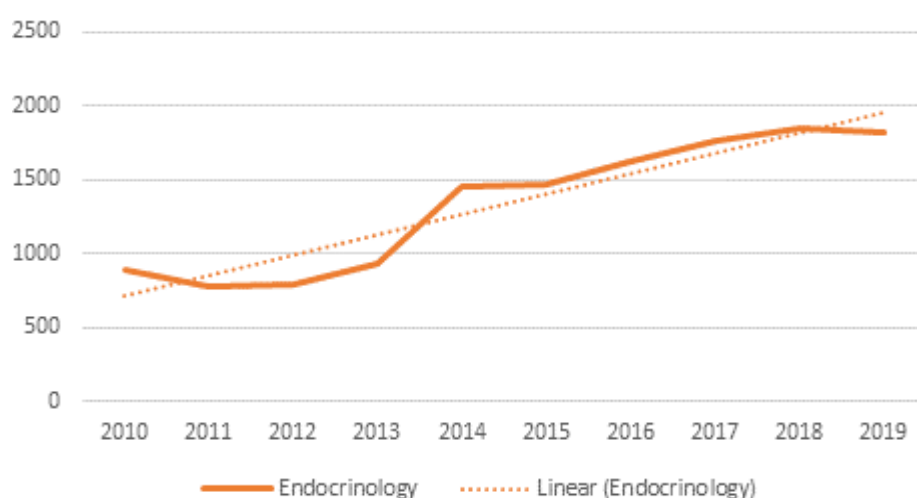
A paediatric physical therapy area is a priority. This area should be shared between inpatients and outpatients. Some children access the adult physical therapy area at present. This is undesirable as equipment is not suitable for paediatric patients and there are risks to children. For example, a child who recently attended the adult physical therapy area was handling an adult dumbbell and dropped it on their foot, sustaining a fracture which required orthopaedic treatment.

Clinicians report the waiting room is not health promoting. There are no signs, pamphlets or television shows about health and wellbeing. This is viewed as a missed opportunity to promote healthy messages and health promotion services and programs of relevance to patients.

### **Maternity outpatient service delivery**

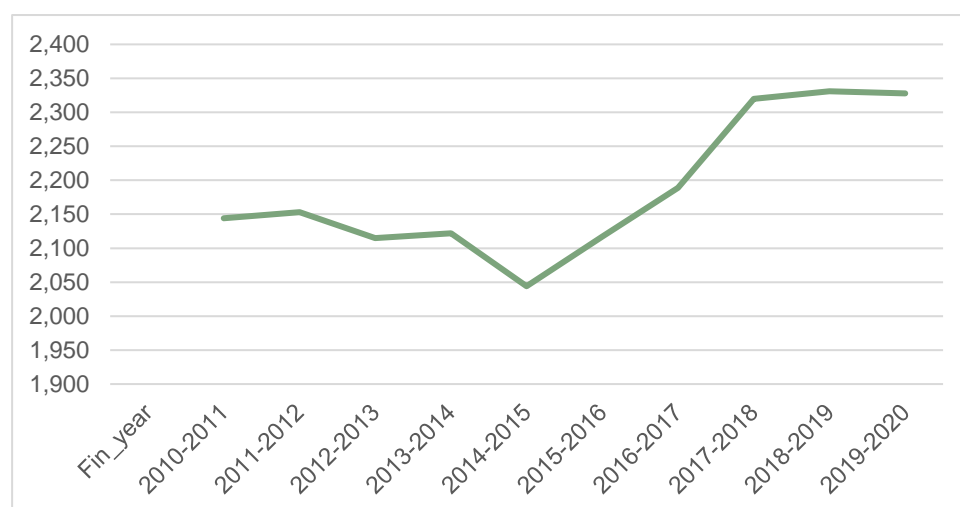
There are over 12,000 outpatient occasions of service for antenatal clinics at LGH each year. Although the number of occasions of service has remained relatively stable since 2010, the complexity of service needs has increased. Women with endocrine care needs represent a growing proportion of all occasions of service to antenatal outpatients.

*Figure 8. Antenatal endocrine clinic occasions of service, LGH, 2010 to 2019*



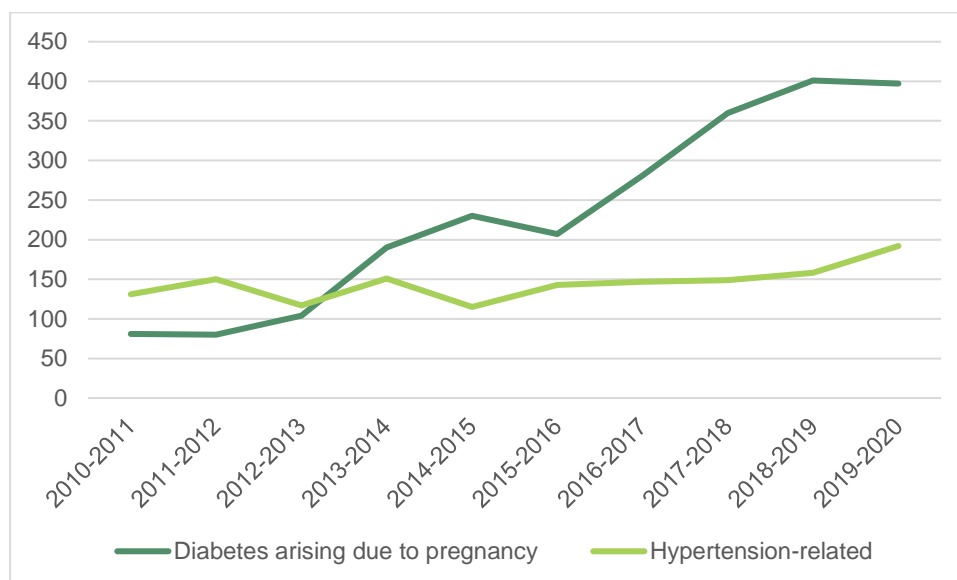
Admissions to LGH for pregnancy, childbirth and the puerperium have increased over time. The percentage of women admitted to LGH for pregnancy who reside in North West Tasmania has increased from 3% of all admissions in 2010/11 to 10% in 2019/20.

*Figure 9. Hospital admissions for pregnancy, childbirth and the puerperium, LGH, 2010/11 to 2019/20*



The number of hospital admissions for diabetes and hypertension-related (including pre-eclampsia and eclampsia) is increasing over time. The rate of increase in hospital admissions for diabetes in pregnancy is greater than for hypertension.

*Figure 10. Hospital admissions for diabetes and high blood pressure in pregnancy, LGH, 2010/11 to 2019/20*



The clinic schedule for antenatal outpatients currently comprises clinics every day. Antenatal clinics are not wait listed.

There are seven rooms in WACS outpatients that are available for antenatal clinics. These rooms are also used for gynaecology clinics. There are insufficient rooms available to enable antenatal clinics to operate efficiently or effectively.

Peak demand for rooms occurs on Thursday mornings when the antenatal endocrine clinic is scheduled. Ten rooms are required to accommodate the core members of the multidisciplinary team for this clinic. Due to a lack of available rooms, core team members overflow into paediatric clinic rooms, adjacent offices used by administrative and clerical staff (which are not clinical areas) and reception areas. Clinic overflow displaces paediatric clinicians who try to find spaces elsewhere in the hospital to deliver outpatient care.

Additional antenatal team members are unable to be accommodated at peak times due to lack of space. Caseload midwives, social worker, a lactation consultant, physiotherapist and mental health professional are therefore unable to be accommodated. This limits their participation in the delivery of multidisciplinary antenatal care.

Resident Medical Officers (RMOs) do not participate in antenatal clinics due to a lack of available consulting space, which is very problematic as RMOs need to acquire clinical skills in antenatal care as part of their residency.

There are no spaces for team members to discuss complex patients and plan for their care. These conversations often happen in corridors or public areas with limited privacy.

Women with complex postnatal care needs attend the same clinic area as antenatal clinic attendees. Women may return for consultation if they have experienced a bad outcome in labour, significant trauma (physical or psychological) or complications that require ongoing specialist medical support.

Scheduled outpatient clinics for lactation support, postnatal mental health care and continence could be provided if sufficient space were available to accommodate team members.

Consulting rooms are too small to adequately accommodate the patient and more than one member of their clinical care team. Rooms need to accommodate prams, seating for a support person and ideally at least one other member of the care team. This may include a consultant obstetrician who may be required to review women with registrars, midwives and ideally RMOs; a social worker, physiotherapist, diabetes educator or lactation consultant should the consulting doctor or midwife require this; or the person's known midwife together with antenatal clinic staff for patients accessing continuity midwifery models.

Rooms are not equipped with transvaginal ultrasonography, which should be routinely used for assessment of early pregnancy, cervical morphology, ectopic pregnancy assessment, recording the location and size of the fetus, determining the number of fetuses and detecting heartbeat in early pregnancy. Competency with this imaging modality is required for the five obstetric registrars at LGH however lack of availability leads to women being referred to radiology for the investigation.

Contemporary models of antenatal care include delivery of group education to women and families. At present there is no outpatient area for delivering group education.

A 'soft space' (attractive, user-friendly area with a quiet, relaxed atmosphere and homelike environment) should be available within outpatients that can accommodate the woman, her partner and other children for difficult and / or distressing consultations (for example, counselling a woman after fetal demise).

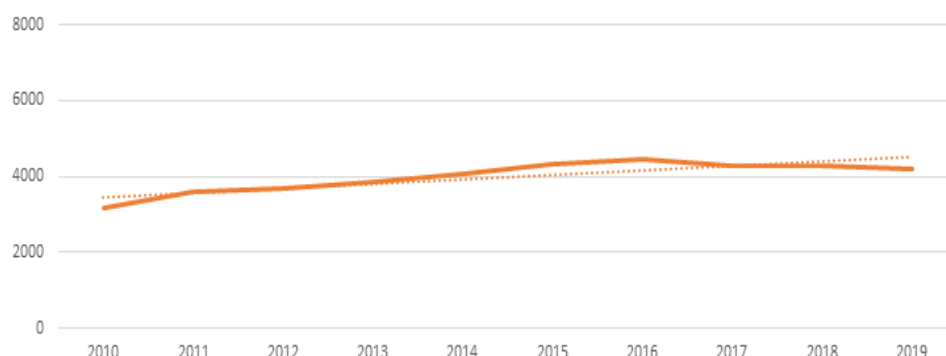
The Pregnancy Assessment Clinic (PAC) is co-located with women's outpatients. This clinical area provides assessment of women in later stages of pregnancy. Some patients accessing PAC have time critical care needs. PAC clinicians therefore require imminent access to birthing suites and operating theatres. PAC functions are more appropriately located in close proximity to birthing suites rather than in an outpatient area.

The Early Pregnancy Assessment Clinic (EPAC) assesses women in early pregnancy with complications e.g. hyperemesis gravidarum, vaginal bleeding, pelvic pain, suspected ectopic pregnancy and miscarriage. Early pregnancy assessment clinical functions are usually separated from antenatal clinic functions for reasons of privacy and dignity but are nearby to allow patients with unexpected problems on scanning to be referred easily.

### ***Gynaecology outpatient service delivery***

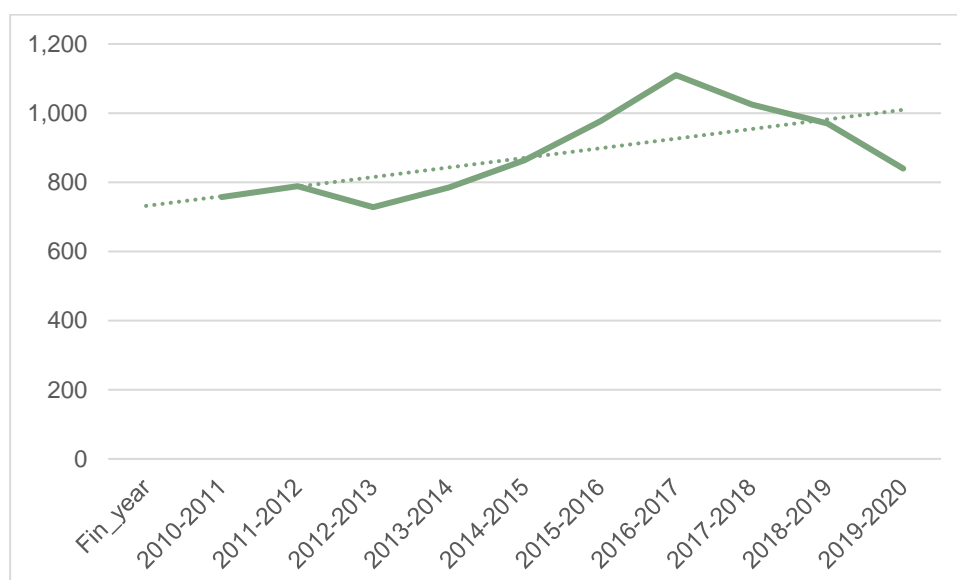
There has been a gradual increase in gynaecology outpatient service activity over time at LGH.

Figure 10. Gynaecology outpatient occasions of service, LGH, 2010 to 2019



Hospital admissions to LGH for gynaecological conditions are also increasing over time.

Figure 11. Hospital admissions for gynaecological conditions, LGH, 2010/11 to 2019/20



Women are admitted to LGH with a broad range of gynaecological care needs, including heavy menstrual bleeding, infections of the female reproductive tract, prolapse, endometriosis, pelvic pain and malignancy.

There are changes in the relative gynaecological disease burden that are anticipated over the next ten to twenty years. Smaller family sizes, together with improved maternity service delivery, may contribute to reduce continence and prolapse disease burden. An ageing population will contribute to increased gynaecological malignancy disease burden.

In 2019, the average waiting time between when a referral was made to see a gynaecologist and when the appointment occurred ranged between 57 days (Dr Clezy) and 140 days (Dr Dennis).



Table 136. Time from referral to review, new patients, gynaecology outpatients, LGH, 2019

	New attendances	Days between referral and appointment
Colposcopy Clinic	316	87
Gynaecology Clinic - Dr Clezy	85	57
Gynaecology Clinic - Dr Esdale	94	102
Gynaecology Clinic - Dr Dennis	48	140
Gynaecology Clinic - Dr Nones	80	93

The clinic schedule for gynaecology outpatients currently comprises medical clinics most days. Specialist nursing and allied health, including continence nursing, physiotherapy and clinical psychology do not participate in multidisciplinary gynaecology outpatient clinics.

Specialist nursing and allied health are core members of the gynaecology team. Current national care pathways for the management of prolapse and incontinence recommend all women are referred for management by continence nursing and / or physiotherapy prior to surgery<sup>4</sup>. International Consultation on Incontinence (ICI) recommendations are for pelvic floor muscle training for symptomatic pelvic organ prolapse ahead of surgical and other conservative therapies, and for women of all ages with urinary incontinence. Pelvic pain syndromes as experienced by women with endometriosis often has associated pelvic floor hypertonicity. An interdisciplinary approach including pelvic physiotherapy and clinical psychology is required.

A review of patients on the waiting list for anterior and / or posterior prolapse repair (AP repair) surgery or bladder surgery identified that 72% of patients awaiting AP repair have not been referred to pelvic health physiotherapists and 41% have not been referred prior to bladder suspension surgery.

There are currently 462 women in total on the gynaecology surgical waiting list at LGH. Review of the waiting lists for AP repair and bladder suspension surgery indicate 46% of women wait longer than 12 months for AP repair surgery and 58% wait longer than 12 months for bladder suspension surgery. Stakeholders report women generally are not referred for nursing or allied health intervention whilst on the waiting list.

Ideally, women are reviewed by continence nursing and / or physiotherapy prior to gynaecology review. However, waiting list data indicate even if women were reviewed after gynaecology review, there is ample time for delivery of nursing and allied health therapies prior to surgical intervention for many women.

A newly redeveloped gynaecology clinic requires treatment spaces for colposcopy and office-based hysteroscopy. Similar to antenatal clinics, clinicians require bedside transvaginal ultrasound to efficiently assess and manage patients attending gynaecology clinics.

<sup>4</sup> <https://www.safetyandquality.gov.au/our-work/health-conditions-and-treatments>

Women attending gynaecology outpatients experience issues related to continence, prolapse and pelvic pain. Nursing and physiotherapy models of care are important for comprehensive assessment and management of patients.

### ***WACS outpatients summary findings***

LGH has developed a WACS precinct through its 4K redevelopment. However, the outpatient space allocated to WACS in the current floorplan is insufficient to meet the clinical needs of women and children receiving outpatient services. Non-WACS functions are also planned for location within the WACS precinct. As LGH has developed a WACS precinct, WACS functions should be given priority to be located within the WACS precinct and non-WACS functions accommodated elsewhere.

Trying to fit all paediatric, maternity and gynaecology outpatient services into the space currently allocated for the redeveloped outpatients will prevent efficient, evidence-based, multidisciplinary service delivery. This is already evident in how the present WACS outpatient area functions. Patient flow is poor. Waiting areas lack adequate privacy or amenity. Clinicians cannot deliver comprehensive, interdisciplinary care. Delivery of procedural aspects of care (patient assessment and management) is impeded as there is a lack of availability of sufficient properly equipped rooms. Clinics are cancelled due to lack of space and additional clinics cannot be scheduled even though clinicians have capacity to provide additional outpatient services. Outpatient service demand is increasing. These problems will worsen as WACS outpatient service demand increases.

Allied health and nursing models of care in both paediatric and women's disciplines need to be implemented. Sufficient, properly configured outpatient space is needed for these models of care to function properly. In some areas LGH already employs a workforce with the necessary skills and sufficient capacity to deliver specialist nursing and allied health outpatient services. However, there are allied health workforce gaps and limited capacity that need to be addressed in some areas.

Contemporary paediatric, maternity and gynaecology outpatient care is highly multidisciplinary. Multidisciplinary models of care require group discussions between team members. The outpatient area needs spaces where team members can interact as a team and discuss patients.

Group therapy spaces are essential for delivery of outpatient paediatric and maternity services. Group education is an important component of paediatric and antenatal service delivery. Appropriately configured space is needed to deliver this.

Paediatric physical therapy space with equipment appropriate to paediatric patients is essential for physical therapy, especially as NDIS-ineligible patients are unable to access therapies from alternative providers.

In larger centres, paediatric outpatient clinics are conducted offsite from the main hospital campus. This is problematic for the LGH as the paediatric allied health workforce works across inpatient and outpatient areas and there are too few paediatric allied health professionals employed in each discipline to retain a separate inpatient and outpatient allied health workforce.

'Soft' spaces are important outpatient areas for counselling patients and families, having difficult clinical conversations and breaking bad news. Some aspects of care are better delivered in these more homelike spaces. Women's and children's outpatient areas need to include these spaces.

Waiting areas are important. They provide a therapeutic space (for health promotion) and influence patient experience of service and the clinician's ability to have a meaningful consultation (particularly for children with behavioural problems). Waiting areas need to be properly configured for patient amenity and health promotion.

We concluded the proposed design and configuration of the new WACS outpatient areas at LGH are not fit for purpose. The outpatient area needs to be redesigned to ensure the final outpatient area supports the delivery of comprehensive, multidisciplinary care to patients according to contemporary service models.

## General Consultation findings

Staff interviewed in the general consultation identified the following issues:

- a strong preference for locating paediatric allied health and / or pregnancy assessment on the 5<sup>th</sup> floor of the new 4K building;
- the benefit of more proximal location of labour rooms with theatres to ensure emergency caesarean sections are able to urgently access theatres;
- integrated care arrangements to better manage older pregnant women with complex care needs;
- models of care that support early discharge of mothers and babies;
- access to close-to-campus accommodation alternatives for women from the North West coast to limit unnecessary inpatient stays;
- access to an inpatient space for mothers experiencing post-partum psychosis;
- establish a separate waiting area for paediatric outpatients.

## Data analysis findings

### Gynaecology

Table 137 shows the number of gynaecology admissions over the review period, with downward trends for both overnight and same day admissions from a 2016-17 peak.

*Table 137: Gynaecology summary activity, 2014-15 to 2019-19*

Admission Type	2014/15	2015/16	2016/17	2017/18	2018/19
<b>Overnight</b>					
Total overnight admits	402	529	534	426	348
Overnight Bed days	896	1186	1123	1011	813
Overnight ALOS	2.23	2.24	2.10	2.37	2.34
<b>Same day</b>					
Total same day admits	633	661	830	701	699

Admission Type	2014/15	2015/16	2016/17	2017/18	2018/19
Total admits	1035	1190	1364	1127	1047
Total bed days	1931	2376	2487	2138	1860
Total NWAU	502	749	795	654	509
Bed days / NWAU	3.84	3.17	3.13	3.27	3.65

In 2018-19 the number of per capita gynaecology admissions (Table 138) has decreased by 35% and overnight bed days by 33% (Table 139) from the peak rate found in 2016-17.

*Table 138: Gynaecology overnight admits per 1000 population, by age cohort, 2014-15 to 2018-19*

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19
0-14 years	0.4	0.4	0.2	0.2	0.2
15-39 years	5.1	6.1	5.6	4.2	3.7
40-64 years	2.9	4.4	4.4	3.4	2.8
65-74 years	1.1	1.8	2.8	3.3	2.2
75+ years	1.9	2.2	3.5	1.9	1.4
<b>Total</b>	<b>2.8</b>	<b>3.7</b>	<b>3.7</b>	<b>3.0</b>	<b>2.4</b>

*Table 139: Gynaecology overnight bed days per 1000 population, by age cohort, 2014-15 to 2018-19*

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19
0-14 years	0.7	0.7	0.3	0.4	0.3
15-39 years	10.1	12.0	9.8	8.8	7.4
40-64 years	6.9	10.5	10.3	8.6	5.9
65-74 years	2.8	4.5	6.2	7.5	6.5
75+ years	6.4	7.7	9.4	7.8	8.2
<b>Total</b>	<b>6.3</b>	<b>8.3</b>	<b>7.9</b>	<b>7.0</b>	<b>5.6</b>

The rate of same day admissions has remained fairly stable over that time (Table 140)

*Table: Gynaecology same day admits per 1000 population, by age cohort, 2014-15 to 2018-19*

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19
0-14 years	0.2	0.1	0.1	0.0	0.3
15-39 years	7.8	7.7	11.1	9.4	9.1
40-64 years	5.3	6.0	6.4	5.6	5.5
65-74 years	1.9	1.6	2.0	1.2	1.9
75+ years	0.9	1.9	1.8	1.3	1.1
<b>Total</b>	<b>4.4</b>	<b>4.6</b>	<b>5.8</b>	<b>4.9</b>	<b>4.8</b>

Table 141 shows the average LOS for overnight gynaecology admissions has varied by a relatively small amount from year to year, but in 2018-19 it remained 60% above the expected LOS for that patient casemix.

*Table: Gynaecology overnight admission, ALOS, age cohort, 2014-15 to 2018-19*

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19	Expected 2018/19
0-14 years	1.90	1.70	2.00	2.25	2.00	0.79
15-39 years	1.99	1.98	1.77	2.07	1.99	1.17

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19	Expected 2018/19
40-64 years	2.41	2.40	2.33	2.51	2.11	1.68
65-74 years	2.47	2.54	2.22	2.25	2.97	1.72
75+ years	3.38	3.48	2.70	4.04	5.88	2.06
<b>Total</b>	<b>2.23</b>	<b>2.24</b>	<b>2.10</b>	<b>2.37</b>	<b>2.34</b>	<b>1.46</b>

Tables 142 to 144 project stable demand for gynaecological overnight and same day admissions and bed days out to 2036. The current extended LOS is factored into these projections, consequently improvements in average LOS will free up overnight bed resources to allow the admission of additional patients, if required.

*Table 142: Gynaecology overnight admit projections, age cohort, 2018-2036*

Age cohort (years)	2018	2020	2022	2024	2028	2032	2036
0-14	4	4	4	4	4	4	4
15-39	156	157	158	158	156	151	149
40-64	133	132	130	128	124	123	121
65-74	38	39	41	42	43	43	42
75+	17	18	20	22	25	28	30
<b>Total</b>	<b>348</b>	<b>350</b>	<b>352</b>	<b>353</b>	<b>352</b>	<b>348</b>	<b>345</b>

*Table 143: Gynaecology overnight bed day projections, age cohort, 2018-2036*

Age cohort (years)	2018	2020	2022	2024	2028	2032	2036
0-14	8	8	8	8	8	8	8
15-39	311	313	314	315	310	301	297
40-64	281	278	274	270	262	259	255
65-74	113	117	121	124	128	126	125
75+	100	108	119	129	148	164	177
<b>Total</b>	<b>813</b>	<b>824</b>	<b>836</b>	<b>845</b>	<b>856</b>	<b>858</b>	<b>861</b>

*Table 144: Gynaecology same day projections, age cohort, 2018-2036*

Age cohort (years)	2018	2020	2022	2024	2028	2032	2036
0-14	7	7	7	7	7	7	7
15-39	385	387	389	390	384	373	367
40-64	260	258	254	250	242	240	236
65-74	33	34	35	36	37	37	36
75+	14	15	17	18	21	23	25
<b>Total</b>	<b>699</b>	<b>701</b>	<b>701</b>	<b>700</b>	<b>691</b>	<b>679</b>	<b>671</b>

### **Obstetrics and obstetrics / gynaecology**

Table shows an increase in overnight admissions and bed days between 2015-16 and 2016-17, which has largely stabilised since then. The number of same day admissions has continued to increase to a peak in 2018-19, although the absolute number is small compared with overall obstetric activity.

Table 145: Obstetrics and obstetrics / gynaecology summary activity, 2014-15 to 2019-19

	2014/15	2015/16	2016/17	2017/18	2018/19
<b>Overnight</b>					
Total overnight admits	1796	1805	1882	1897	1912
Overnight Bed days	5132	5233	5709	5921	5743
Overnight ALOS	2.86	2.90	3.03	3.12	3.00
<b>Same day</b>					
Total same day admits	219	198	200	272	291
Total admits	2015	2003	2082	2169	2203
Total bed days	5351	5431	5909	6193	6034
Total NWAU	2520	2548	2671	2650	2783
Bed days / NWAU	2.12	2.13	2.21	2.34	2.17

Tables 146 to 148 show that the rates per 1000 population for overnight admissions have been very stable over the last three years, with a slight decline in the number of bed days.

Table 146: Obstetric and obs / gynae overnight admissions per 1000 population, by age cohort, 2014-15 to 2018-19

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19
0-14 years	0.9	0.6	0.4	0.4	0.4
15-39 years	40.8	41.3	43.0	42.9	43.4
40-64 years	1.4	1.4	1.6	1.8	1.4
65-74 years	0.0	0.0	0.1	0.1	0.1
75+ years	0.0	0.0	0.1	0.1	0.2
<b>Total</b>	<b>12.6</b>	<b>12.6</b>	<b>13.2</b>	<b>13.2</b>	<b>13.2</b>

Table 147: Obstetric and obs / gynae overnight bed days per 1000 population, by age cohort, 2014-15 to 2018-19

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19
0-14 years	1.7	1.7	1.0	0.8	1.2
15-39 years	115.6	118.5	130.3	132.4	129.7
40-64 years	5.3	5.4	5.3	6.9	4.9
65-74 years	0.0	0.0	0.1	0.4	0.1
75+ years	0.0	0.0	0.1	0.2	0.7
<b>Total</b>	<b>35.9</b>	<b>36.7</b>	<b>40.0</b>	<b>41.2</b>	<b>39.7</b>

Table 148: Obstetric and obs / gynae same day admissions per 1000 population, by age cohort, 2014-15 to 2018-19

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19
0-14 years	0.1	0.0	0.1	0.1	0.0
15-39 years	5.1	4.7	4.7	6.0	6.8
40-64 years	0.1	0.1	0.0	0.3	0.1
65-74 years	0.1	0.0	0.0	0.0	0.0
75+ years	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	<b>1.5</b>	<b>1.4</b>	<b>1.4</b>	<b>1.9</b>	<b>2.0</b>

The average LOS for overnight admissions has decreased slightly over the last two years, but still remains about 10% above the expected LOS.

Table 149: Obstetrics & obs / gynae overnight admission, ALOS, age cohort, 2014-15 to 2018-19

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19	Expected 2018/19
0-14 years	1.95	2.87	2.78	2.22	2.90	2.47
15-39 years	2.84	2.87	3.03	3.09	2.99	2.71
40-64 years	3.69	3.73	3.26	3.93	3.41	3.01
65-74 years	0.00	0.00	1.00	3.00	2.00	2.15
75+ years	0.00	0.00	1.00	2.00	2.67	3.94
<b>All</b>	<b>2.86</b>	<b>2.90</b>	<b>3.03</b>	<b>3.12</b>	<b>3.00</b>	<b>2.72</b>

Tables 150 to 152 project a slight decline in the number of overnight admissions and bed days and same day admissions over the coming years.

Table 150: Obstetrics & obstetrics / gynae overnight admit projections, age cohort, 2018-2036

Age cohort (years)	2018	2020	2022	2024	2028	2032	2036
0-14	10	10	10	10	10	10	10
15-39	1830	1840	1850	1852	1825	1772	1745
40-64	68	67	66	65	63	63	62
65-74	1	1	1	1	1	1	1
75+	3	3	4	4	4	5	5
<b>Total</b>	<b>1912</b>	<b>1922</b>	<b>1930</b>	<b>1932</b>	<b>1904</b>	<b>1851</b>	<b>1823</b>

Table 151: Obstetrics and obstetrics / gynae overnight bed day projections, age cohort, 2018-2036

Age cohort (years)	2018	2020	2022	2024	2028	2032	2036
0-14	29	29	29	29	28	28	28
15-39	5472	5503	5530	5539	5457	5300	5218
40-64	232	230	226	223	216	214	211
65-74	2	2	2	2	2	2	2
75+	8	9	10	10	12	13	14
<b>Total</b>	<b>5743</b>	<b>5773</b>	<b>5797</b>	<b>5803</b>	<b>5715</b>	<b>5557</b>	<b>5473</b>

Table 152: Obstetrics same day projections, age cohort, 2018-2036

Age cohort (years)	2018	2020	2022	2024	2028	2032	2036
0-14	0	0	0	0	0	0	0
15-39	285	287	288	288	284	276	272
40-64	6	6	6	6	6	6	5
65-74	0	0	0	0	0	0	0
75+	0	0	0	0	0	0	0
<b>Total</b>	<b>291</b>	<b>293</b>	<b>294</b>	<b>294</b>	<b>290</b>	<b>282</b>	<b>277</b>



## Paediatric services

Paediatric ward space is used not only by WACS paediatric services, but also general and emergency medicine, surgery specialties and mental health services. Table 153 shows admissions for paediatric patients (excluding neonatal) aged up to 17 years. The total number has remained stable over the review period, but with increasing paediatric medicine admissions and decreasing paediatric surgery admissions for all specialties. There has also consistently been an important caseload of specialist Mental Health admissions.

Table 153: Paediatric (0-17 years) overnight admissions, 2014-15 to 2019-19

Specialty	2014/15	2015/16	2016/17	2017/18	2018/19	Annual change
<b>WACS Total</b>	<b>920</b>	<b>909</b>	<b>885</b>	<b>840</b>	<b>951</b>	<b>1%</b>
Paediatric Medicine	874	876	837	817	923	1%
Medicine excl Em Med	36	24	30	25	33	-2%
Emergency Medicine	2	0	29	73	109	172%
<b>Surgery Total</b>	<b>645</b>	<b>688</b>	<b>685</b>	<b>534</b>	<b>543</b>	<b>-4%</b>
Ear Nose & Throat	191	196	237	156	165	-4%
General Surgery	216	222	202	151	147	-9%
Orthopaedic Surgery	143	151	145	153	131	-2%
P&R Surgery	72	95	75	60	85	4%
Urology	19	22	22	13	13	-9%
<b>Mental Health</b>	<b>18</b>	<b>31</b>	<b>43</b>	<b>36</b>	<b>24</b>	<b>7%</b>
<b>Total</b>	<b>1621</b>	<b>1652</b>	<b>1673</b>	<b>1508</b>	<b>1661</b>	<b>1%</b>

Overnight bed days have decreased for paediatric medicine and surgery (Table 154), but same day admissions have increased driven in the last two years by the advent of the Emergency Medicine Unit (Table 155).

Table 154: Paediatric overnight bed days, 2014-15 to 2019-19

Specialty	2014/15	2015/16	2016/17	2017/18	2018/19	Annual change
<b>WACS Total</b>	<b>3055</b>	<b>2965</b>	<b>2892</b>	<b>2964</b>	<b>2633</b>	<b>-4%</b>
Paediatric Medicine	2952	2888	2782	2900	2568	-3%
Medicine excl Em Med	98	68	117	85	113	4%
Emergency Medicine	2	0	50	133	154	196%
<b>Surgery Total</b>	<b>1130</b>	<b>1211</b>	<b>1272</b>	<b>985</b>	<b>883</b>	<b>-6%</b>
Ear Nose & Throat	230	231	285	172	186	-5%
General Surgery	429	471	476	356	337	-6%
Orthopaedic Surgery	311	322	358	359	221	-8%
P&R Surgery	116	151	119	81	111	-1%
Urology	37	34	30	16	16	-19%
<b>Mental Health</b>	<b>67</b>	<b>217</b>	<b>314</b>	<b>156</b>	<b>96</b>	<b>9%</b>
<b>Total</b>	<b>4352</b>	<b>4461</b>	<b>4646</b>	<b>4323</b>	<b>3882</b>	<b>-3%</b>

Table 155: Paediatric same day admissions, 2014-15 to 2019-19

Specialty	2014/15	2015/16	2016/17	2017/18	2018/19	Annual change
WACS	415	314	279	314	377	-2%
Medicine excl Em Med	82	105	78	70	83	0%
Emergency Med	1	4	64	242	273	306%
Mental Health	1	1	0	9	1	0%
Surgery	312	348	361	396	367	4%
<b>Total</b>	<b>811</b>	<b>772</b>	<b>774</b>	<b>1031</b>	<b>1101</b>	<b>8%</b>



Table 156 shows a decline in average LOS for all specialties, with length of stay at or below the expected LOS, except for Mental Health, leading to a saving of 161 bed days.

*Table 156: Paediatric overnight admission, ALOS, specialty type, 2014-15 to 2018-19*

Specialty	Length of stay					Bed days		
	2014/15	2015/16	2016/17	2017/18	2018/19	Expected 2018/19	2018/19	Expected 2018/19
WACS	3.32	3.26	3.27	3.53	2.77	2.75	2633	2614
Medicine	2.63	2.83	2.83	2.22	1.88	2.03	267	289
Mental Health	3.72	7.00	7.30	4.33	4.00	3.01	96	72
Surgery	1.75	1.76	1.86	1.84	1.63	1.96	883	1066
<b>Total</b>	<b>2.68</b>	<b>2.70</b>	<b>2.78</b>	<b>2.87</b>	<b>2.34</b>	<b>2.43</b>	<b>3882</b>	<b>4043</b>

Tables 157 and 158 show to which wards paediatric patients were admitted, with 97% of overnight and 68% of same day admissions to Ward 4K.

*Table 157: Paediatric overnight bed days, specialty type, main wards, 2018-19*

Specialty	LGHW4K	LGHEMU	LGHED	LGHDPU	LGHWNS	Total
WACS	2562	0	1	0	0	2633
Medicine	189	63	0	1	0	267
Mental Health	65	1	2	0	28	96
Surgery	876	0	1	0	0	883
<b>Total</b>	<b>3695</b>	<b>64</b>	<b>4</b>	<b>1</b>	<b>28</b>	<b>3792</b>

*Table 158: Paediatric same day admissions, specialty type, main wards, 2018-19*

Specialty	LGHW4K	LGHEMU	LGHED	LGHDPU	LGHWNS	Total
WACS	363	0	7	0	0	377
Medicine	22	242	32	58	0	356
Mental Health	0	0	1	0	0	1
Surgery	307	0	5	0	0	367
<b>Total</b>	<b>692</b>	<b>242</b>	<b>45</b>	<b>58</b>	<b>0</b>	<b>1101</b>

Table 159 shows the projections for all paediatric care. In aggregate a decrease from current levels of admissions and bed days is projected, so that current bed stock should be sufficient to manage expected demand.

*Table 159: Paediatric patient projections, all specialties, 2018 to 2036*

	2018	2020	2024	2028	2032	2036
Overnight Admits	1661	1649	1652	1634	1603	1584
Overnight Bed days	3882	3845	3871	3816	3736	3692
Same day Admits	1101	1088	1092	1078	1058	1046
<b>Total Bed days</b>	<b>4983</b>	<b>4933</b>	<b>4963</b>	<b>4894</b>	<b>4794</b>	<b>4738</b>

## Neonatology and newborns

The following tables include all episodes coded to Major Diagnostic Category Newborns and Other Neonates, which leads to a very small proportion being assigned to specialties other than Paediatric Medicine.

Table shows a steady increase in neonatology admissions over the review period, with a 2% per annum increase in overnight bed days (Tables 160 and 161).

Table 160: Neonatology, overnight admissions, 2014-15 to 2018-19

Specialty	2014/15	2015/16	2016/17	2017/18	2018/19
<b>WACS</b>	<b>1447</b>	<b>1491</b>	<b>1534</b>	<b>1528</b>	<b>1554</b>
Gynaecology	0	2	0	1	0
Obstetrics	20	12	8	7	6
Obstetrics / Gynaecology	2	0	0	0	1
Paediatric Medicine	1425	1477	1526	1520	1547
<b>Other</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>7</b>
<b>Total</b>	<b>1451</b>	<b>1493</b>	<b>1534</b>	<b>1529</b>	<b>1561</b>

Table 161: Neonatology, overnight bed days, 2014-15 to 2018-19

Specialty	2014/15	2015/16	2016/17	2017/18	2018/19
<b>WACS</b>	<b>5746</b>	<b>5674</b>	<b>6123</b>	<b>5937</b>	<b>6182</b>
Gynaecology	0	6	0	1	0
Obstetrics	40	31	23	18	23
Obstetrics/Gynaecology	3	0	0	0	1
Paediatric Medicine	5703	5637	6100	5918	6158
<b>Other</b>	<b>9</b>	<b>4</b>	<b>3</b>	<b>0</b>	<b>12</b>
<b>Total</b>	<b>5755</b>	<b>5678</b>	<b>6123</b>	<b>5940</b>	<b>6194</b>

Table shows the ward for the occupied bed days for overnight admissions. Ward 4N has 10 beds funded for use, which implies an occupancy of about 66%.

Table 162: Neonatology, overnight bed days, main wards, 2018-19

Specialty	LGHW4K	LGHW4N	LGHW4O	LGHW4ON	Total
Medicine	2	0	8	2	12
Emergency Medicine	0	0	0	0	0
General Medicine	2	0	8	2	12
Surgery	0	0	0	0	0
General Surgery	0	0	0	0	0
<b>WACS</b>	<b>102</b>	<b>2413</b>	<b>105</b>	<b>3562</b>	<b>6182</b>
Gynaecology	0	0	0	0	0
Obstetrics	0	9	0	14	23
Obstetrics/Gynaecology	0	0	0	1	1
Paediatric Medicine	102	2404	105	3547	6158
<b>Total</b>	<b>104</b>	<b>2413</b>	<b>113</b>	<b>3564</b>	<b>6194</b>

Table 163 shows a small number of same day episodes, with the majority admitted to Ward 4ON.

*Table 163: Neonatology, same day admissions, main wards, 2018-19*

Specialty	LGHW4K	LGHW4N	LGHW4ON	Total
Surgery	1	0	0	1
General Surgery	1	0	0	1
WACS	4	12	160	176
Paediatric Medicine	4	12	160	176
<b>Total</b>	<b>5</b>	<b>12</b>	<b>160</b>	<b>177</b>

The projections for Neonatology (Table 164) show a slight increase in activity peaking around 2024 and then declining thereafter.

*Table 164: Neonatal admission and bed day projections, 2018 to 2036*

	2018	2022	2024	2028	2032	2036
Overnight admits	1561	1574	1572	1556	1524	1502
Overnight bed days	6194	6244	6237	6175	6047	5962
Same day admits	176	177	177	175	172	169
All admits	1737	1751	1749	1732	1696	1672
All bed days	6370	6422	6414	6350	6219	6131

## Prioritised options and opportunities

Based on consultation and data analysis the following priorities have been identified:

### LGH main building infrastructure

- Retain paediatric allied health on the 5<sup>th</sup> floor of 4K as originally planned.
- Locate the pregnancy assessment clinic near the birthing suits.
- Consider options to reduce the distance and travel time between birthing and theatres.
- Paediatric outpatients will be transferred to 4K when construction is completed.
- Consider inclusion of a mother-and-baby flex space in the inpatient mental health area.
- Consider co-location of community paediatric services in the 4K building; for example, community paediatrics, consultation liaison, CAMHS, and allied health support.
- Increase capacity of the community paediatrics service and improve integration of acute and community services.
- Investigate capacity of co-located private hospital to provide a post-natal mental health service similar to the private Mother and Baby Unit in the South.

### **Alternate service models**

- Consider local accommodation options with appropriate parking and IT connectivity rather than inpatient beds.
- HITH or other home-based support that includes midwifery, lactation, and paediatric developmental support services.
- Consider future support for home birthing and extended midwifery-led services.
- Consider expansion of medical hotel models, and HITH-type models of care.
- Support integration of care through a hospital hub arrangement (preconception clinic, antenatal clinic, women's and children's outpatients) with community service spokes.
- Consider expansion of allied health substitution models such as continence and first contact physiotherapy models.

## 18. Complex, chronic and community care services

Chronic, complex and community services at LGH comprises four streams:

- General Practice / Primary Care;
- Geriatric Medicine;
- Palliative Care; and
- Rehabilitation.

The latter two represented 99.7% of the Clinical Unit Group's admissions in 2018-19 (see Table 164), consequently this analysis will be limited to detailed review of Rehabilitation and Palliative Care services.

*Table 164: CCC Services admissions and bed days, 2014-15 to 2018-19*

Specialty	Overnight Admissions					Overnight Bed days				
	14/15	15/16	16/17	17/18	18/19	14/15	15/16	16/17	17/18	18/19
GP / PC	3	2	1	1	1	33	14	2	14	5
Geriatric Medicine	8	5	6	2	1	56	44	36	12	2
Palliative Care	76	106	119	166	130	1255	1506	1293	1867	1664
Rehabilitation	465	560	633	589	628	13110	14070	15167	15270	14375
<b>Total</b>	<b>552</b>	<b>673</b>	<b>759</b>	<b>758</b>	<b>760</b>	<b>14454</b>	<b>15634</b>	<b>16498</b>	<b>17163</b>	<b>16046</b>

Subacute services are principally provided on two wards at LGH:

- Ward 3R in the main hospital block has 26 funded beds; and
- John L Grove Centre is located off the main site and has 20 funded beds.

### Consultation findings

Staff interviewed identified the following issues about Subacute services:

- rehabilitation services are required for two main patient cohorts, the younger / fit population and the elderly / frail population, whilst having different clinical needs, will share common resources;
- long-stay medical patients often include those who would benefit from earlier access to subacute services, however lack of access to rehabilitation leads to extended inpatient admissions;
- also problematic for effective patient flow are barriers to patient discharge from subacute services including:
  - a lack of interim accommodation for patients awaiting house modification;
  - long wait times for residential care facility placements; and
  - long wait times for NDIS plan approvals.
- LGH requires a comprehensive Geriatric Evaluation and Management (GEM) service to help manage the increasingly ageing population;

- demand for re-enablement services is increasing, particularly amongst cancer survivors;
- sub-acute services are also needed for paediatric patients.

The elderly frail in subacute care in particular require:

- services that provide a joyful normalised living environment; and
- activities of daily living (ADL) practice facilities to assist in rehabilitation and re-enablement.

With respect to Palliative Care

- community palliative care is not a 24-hour service, which creates issues for patients and carers who require support after-hours and results in patients presenting to the Emergency Department for help;
- currently there is access to palliative care beds at the Calvary Private Hospitals, but more beds in an off-campus location are required.

## Data analysis – Rehabilitation

As highlighted in the consultation findings, the steady and consistent flow of patients through the hospital from the community through emergency to acute setting, onto subacute care and back to the community is important to ensure patients receive the right care in the right setting at the right time.

The administrative systems available for this analysis do not allow precise mapping of patient flow, but rather provide point in time data at the start and end of an episode of care, including admission and discharge unit, ward, dates and discharge diagnosis.

In this analysis three key issues that need clarification are:

- utilisation of subacute inpatient facilities on wards 3R and John L Grove;
- acute bed occupancy by subacute patients; and
- overall demand for subacute services.

Unlike the Royal Hobart Hospital, more than 99% of subacute admissions are admitted and discharged under either Rehabilitation or Palliative Care respectively (see Table ), which makes calculation of length of stay and ward occupancy more straight forward, unfortunately the data systems do not utilise national subacute ABF coding systems, so national comparisons of efficiency for subacute episodes are not directly available, however an estimate has been made (see Table xx).

*Table 166: Rehabilitation admissions and discharges, number and bed days, 2014-15 to 2018-19*

Year	Rehabilitation Admissions	Admission Unit bed days	Rehabilitations Discharges	Discharge Unit bed days
2014/15	466	13111	469	13446
2015/16	560	14070	559	14059
2016/17	642	15176	642	15176
2017/18	590	15271	593	15334
2018/19	629	14376	631	14371

Table 167 shows Rehabilitation discharges, ward and length of stay. Three strong patterns emerge:

- average LOS stay has decreased substantially and in a consistent fashion for ward JLG and steadily with some inter-year variation for ward 3R;
- the decreased average LOS for JLG episodes has allowed a substantial increase in Rehabilitation patient turnover, though shorter LOS on ward 3R has led to an increase in admission and discharges for Medicine CUG patients (see Table 168), who appear to be a different casemix from the Rehabilitation patients;
- the average LOS for ward JLG is about twice as long as rehabilitation discharges for ward 3R.

*Table 167: Rehabilitation discharges, number and bed days, discharge ward, 2014-15 to 2018-19*

Ward	Number discharges			Number bed days			Average LOS		
	JLG	3R	Other	JLG	3R	Other	JLG	3R	Other
2014/15	99	368	2	5189	8246	11	52.4	22.4	5.5
2015/16	145	412	2	6160	7849	50	42.5	19.1	25.0
2016/17	185	450	7	7416	7700	45	40.1	17.1	6.4
2017/18	213	379	1	7648	7679	7	35.9	20.3	7.0
2018/19	211	417	3	7092	7227	52	33.6	17.3	17.3

The data in Table 168 represent admissions and discharges under Medicine CUG and discharges from ward 3R. There has been a 2.5 times increase in the number of discharges and 1.5 times increase in bed days since 2014-15.

*Table 168: Medicine CUG, discharges, number and bed days, ward 3R, 2014-15 to 2018-19*

Year	Number of discharges	Number of bed days	Average LOS
2014/15	85	986	11.6
2015/16	86	967	11.2
2016/17	150	1307	8.7
2017/18	180	1537	8.5
2018/19	213	1524	7.2

Estimating what number of acute bed days could be substituted with subacute care if facilities were available, is problematic with current data sources, as a consequence indirect proxies will be used to support these analyses. It is assumed that the overwhelming majority of admissions to the Subacute specialties are referrals from LGH acute specialties, and these are largely reflected in the dataset as 'statistical separation' from the acute unit and 'statistical admission' to subacute services. These episodes will provide a guide as to the number of substitutable acute bed days.

## Ward John L Grove

Table 169 shows that there of the 191 direct admissions to JLG, 177 were under Rehabilitation, with the remainder General Medicine, of which one was subsequently transferred to the Rehabilitation Unit. 97% of bed days were assigned to Rehabilitation.

*Table 169: Admissions and discharges from ward JLG, specialty and LOS, 2018-19*

Admit specialty	Discharge specialty				JLG	
	Gen Med episodes	Rehab episodes	Gen Med bed days	Rehab bed days	Episodes	Bed days
General Med	13	1	164	12	14	176
Rehabilitation	0	177	0	5555	177	5555
<b>Total</b>	<b>13</b>	<b>178</b>	<b>164</b>	<b>5567</b>	<b>191</b>	<b>5731</b>

Table 170 presents data on transfers to JLG after admission elsewhere, with 34 transfers from three specialties. 31 patients were transferred within Rehabilitation from ward 3R to JLG. These patients typically had long inpatient stays averaging 48.7 days.

*Table 170: Discharges from JLG after admission and transfer from another ward, specialty and LOS, 2018-19*

Admitting specialty	Discharge specialty					
	Gen Med episodes	Ortho Surg episodes	Rehab episodes	Gen Med bed days	Ortho Surg bed days	Rehab bed days
Gen Med	1	0	0	22	0	0
Ortho Surg	0	1	0	0	5	0
Rehab	0	0	31	0	0	1511
Stroke	0	0	1	0	0	13
<b>Total</b>	<b>1</b>	<b>1</b>	<b>32</b>	<b>22</b>	<b>5</b>	<b>1524</b>

Table 171 provides data on the 225 discharges from JLG in 2018-19, which includes:

- the discharge specialty;
- admission source;
- admission care type;
- JLG length of stay; and
- the number of previous inpatient days assigned to this episode of care.

Previous inpatient days provides an indication of bed use elsewhere in the hospital prior to JLG admission and is indicative of the unmet demand for early referral to subacute services. As identified in Table 30, JLG operates at an effective 100% occupancy and ward 3R at about 93%.

There were two acute episodes (one each for General Medicine and Orthopaedics) from the ED, which had no previous inpatient days. However the 13 General Medicine statistical admissions had an average of 68.7 (total of 893) previous inpatient days. The 210 rehabilitation patients had an average of 27.5 (total of 5775) previous inpatient days.

Whilst the Rehabilitation episodes are designated as rehabilitation, the 13 General Medicine episodes have a social, support and maintenance focus.



Table 171: Discharges from JLG, specialty, admission source & care type, 2018-19

Discharge Specialty Admission source Admission care type	Episodes	Bed days	Average LOS	Previous inpatient bed days
<b>General Medicine</b>	<b>14</b>	<b>186</b>	<b>13.3</b>	<b>893</b>
Department of Emergency Medicine	1	22	22.0	0
Acute incl Qual Newborn	1	22	22.0	0
Statistical Admission	13	164	12.6	893
Nursing Home Type	7	40	5.7	406
Other Maintenance	2	40	20.0	73
Social	4	84	21.0	414
<b>Orthopaedic Surgery</b>	<b>1</b>	<b>5</b>	<b>5.0</b>	<b>0</b>
Department of Emergency Medicine	1	5	5.0	0
Acute incl Qual Newborn	1	5	5.0	0
<b>Rehabilitation</b>	<b>210</b>	<b>7091</b>	<b>33.8</b>	<b>5775</b>
Community Health Service	1	19	19.0	0
Rehabilitation	1	19	19.0	0
Private Practice / Consultant Rooms	2	69	34.5	0
Rehabilitation	2	69	34.5	0
Statistical Admission	202	6824	33.8	5494
Rehabilitation	202	6824	33.8	5494
Transfer from another Hospital	5	179	35.8	281
Rehabilitation	5	179	35.8	281
<b>Total</b>	<b>225</b>	<b>7282</b>	<b>32.4</b>	<b>6668</b>

### Ward 3R

Direct Rehabilitation admissions to ward 3R represent 98% of that type and 99% of bed days (see Table 172)

Table 172: Admissions and discharges from ward 3R, specialty, 2018-19

Discharge specialty					
Admission specialty	Gastroent	General Med	Rehab	Resp Med	Total
Gastroenterology	1	0	0	0	1
General Medicine	0	7	0	0	44
Rehabilitation	0	0	414	0	7153
Resp Medicine	0	0	0	1	9
<b>Total</b>	<b>1</b>	<b>7</b>	<b>414</b>	<b>1</b>	<b>7207</b>

There are also a number of transfers to ward 3R (see Table 173) notably from Emergency Medicine, with 35 of 37 referred to General Medicine. There were 141 admissions under General Medicine of whom eight were referred to other specialties.

Table 173: Discharges from 3R after admission and transfer from another ward, specialty and LOS, 2018-19

Admission specialty	Discharge specialty							Total d/c	Total days
	Gen Med	Cardio	Gastro	Stroke	Resp Med	Rehab	Other		
Cardiology	0	9	0	0	0	0	0	9	54
Emerg Med	35	0	0	0	0	0	2	37	269
Gastroenterol	0	0	6	0	0	0	1	7	22
Gen Med	133	2	1	2	1	0	2	141	1044
Resp Med	0	0	0	0	3	0	0	3	36
Stroke	1	0	0	3	0	0	0	4	32
Rehabilitation	0	0	0	0	0	2	1	3	74
Other	1	0	0	0	0	1	9	11	98
<b>Total</b>	<b>170</b>	<b>11</b>	<b>7</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>15</b>	<b>215</b>	<b>1629</b>

Table 174 shows the consolidated data for ward 3R, with 99% (414 of 417) of Rehabilitation Unit episodes designated as rehabilitation, with these patients having an average of 18.3 previous inpatient days. Medicine CUG and General Medicine in particular have a significant presence in 3R of 1609 bed days, which represents about 4.4 occupied beds.

Table 174: Discharges from ward 3R, specialty, admission source & care type, 2018-19

Discharge Specialty Admission source Admission care type	Episodes	Bed days	Average LOS	Previous inpatient bed days
<b>Rehabilitation</b>	<b>417</b>	<b>7227</b>	<b>17.3</b>	<b>7714</b>
Department of Emergency Medicine	1	4	4.0	0
Acute incl Qual Newborn	1	4	4.0	0
Not Specified	1	49	49.0	112
Rehabilitation	1	49	49.0	112
Private Practice / Consultant Rooms	3	140	46.7	0
Rehabilitation	3	140	46.7	0
Statistical Admission	409	7013	17.1	7362
Nursing Home Type	2	14	7.0	128
Rehabilitation	407	6999	17.2	7234
Transfer from another Hospital	3	21	7.0	240
Rehabilitation	3	21	7.0	240
<b>General Medicine</b>	<b>177</b>	<b>1276</b>	<b>7.2</b>	<b>348</b>
Department of Emergency Medicine	160	1161	7.3	112
Acute incl Qual Newborn	160	1161	7.3	112
Other Health Care Establishment	1	2	2.0	5
Acute incl Qual Newborn	1	2	2.0	5
Private Practice / Consultant Rooms	1	1	1.0	0
Acute incl Qual Newborn	1	1	1.0	0
Statistical Admission	4	33	8.3	143
Acute incl Qual Newborn	3	32	10.7	110
Rehabilitation	1	1	1.0	33

Discharge Specialty Admission source Admission care type	Episodes	Bed days	Average LOS	Previous inpatient bed days
Transfer from another Hospital	11	79	7.2	88
Acute incl Qual Newborn	11	79	7.2	88
<b>Other</b>	<b>44</b>	<b>333</b>	<b>7.6</b>	<b>175</b>
Department of Emergency Medicine	24	229	9.5	2
Acute incl Qual Newborn	24	229	9.5	2
Not Specified	2	4	2.0	0
Acute incl Qual Newborn	2	4	2.0	0
Private Practice / Consultant Rooms	10	39	3.9	0
Acute incl Qual Newborn	10	39	3.9	0
Referred from another Hospital	4	20	5.0	0
Acute incl Qual Newborn	4	20	5.0	0
Statistical Admission	2	29	14.5	171
Acute incl Qual Newborn	1	9	9.0	18
Nursing Home Type	1	20	20.0	153
Transfer from another Hospital	2	12	6.0	2
Acute incl Qual Newborn	2	12	6.0	2
<b>Total</b>	<b>638</b>	<b>8836</b>	<b>13.8</b>	<b>8237</b>

The three main episode type on wards JLG and 3R are:

- Rehabilitation Unit episodes on each ward; and
- General Medicine episodes on 3R.

These are compared in Table 175, which shows the major diagnostic category and length of stay data.

*Table 175: Discharges from wards JLG and 3R, major diagnostic category, 2018-19*

MDC	Rehab JLG				Rehab 3R				Gen Med 3R			
	N	alos	Av age	Av IP day	N	alos	Av age	Av IP day	N	alos	Av age	Av IP day
Alcohol/drug use	0	0	0	0	0	0	0	0	1	2	34	0
Blood / immune	0	0	0	0	0	0	0	0	2	10	72	0
Circulatory	16	24	79	26	34	17	74	20	19	6	75	2
Digestive system	4	39	74	23	26	17	79	22	6	4	71	0
ENT	2	29	83	6	2	11	85	4	8	5	73	2
Eye	0	0	0	0	0	0	0	0	1	11	80	0
Female reprod	0	0	0	0	1	30	93	26	0	0	0	0
HepBil /pancreas	2	24	60	22	7	13	64	15	3	5	76	0
Kidney, UT	4	25	80	29	8	16	79	21	5	8	72	0
Male reproductive	0	0	0	0	4	300	79	410	1	7	84	0
Musculoskeletal	79	28	77	24	177	16	74	14	44	7	71	3
Nervous system	74	41	72	32	94	20	72	19	18	10	73	3
Respiratory	9	27	77	34	18	14	72	26	34	6	69	3
Skin and breast	6	19	76	22	6	20	76	54	18	8	68	1
Endocrine	3	68	79	24	7	15	74	21	4	4	60	0

MDC	Rehab JLG				Rehab 3R				Gen Med 3R			
	N	alos	Av age	Av IP day	N	alos	Av age	Av IP day	N	alos	Av age	Av IP day
Factors infl health	2	34	82	41	7	16	79	39	4	4	67	5
Inf Dis	2	11	75	22	7	15	71	24	2	28	78	0
Injuries, poisoning	3	37	80	16	8	15	80	18	5	9	73	0
Mental disorders	0	0	0	0	2	12	36	28	1	5	50	0
Multiple trauma	1	8	37	57	4	24	60	35	0	0	0	0
Neoplastic dis	1	40	82	84	3	12	64	21	1	21	68	0
<b>Total</b>	<b>210</b>	<b>34</b>	<b>75</b>	<b>28</b>	<b>417</b>	<b>17</b>	<b>74</b>	<b>19</b>	<b>177</b>	<b>7</b>	<b>71</b>	<b>2</b>

The four most common discharge MDCs from JLG account for 83% of admissions and 80% of bed days, specifically these are:

- musculoskeletal and connective tissue disorders – 37% of admits, 30% of bed days;
- nervous system disorders – 34% of admits, 40% of bed days;
- circulatory system disorders- 8% of admits, 6% of bed days;
- respiratory system disorders - 4% of admits, 4% of bed days.

There is a similar mix of high volume Ward 3R Rehabilitation Unit discharges, with three of the same MDCs as JLG, and the four below in aggregate account for 80% of admissions and 82% of bed days:

- musculoskeletal and connective tissue disorders – 42% of admits, 39% of bed days;
- nervous system disorders – 24% of admits, 30% of bed days;
- circulatory system disorders- 8% of admits, 7% of bed days;
- GIT system disorders - 6% of admits, 6% of bed days.

The major differences between the patient profiles of these JLG and ward 3R are the average LOS (31.4 vs 19.5 days) and the average number of previous inpatient days (28.7 vs 18.8 days)

The mix General Medicine patients discharged from Ward 3R has a broader profile, with:

- musculoskeletal and connective tissue disorder discharges of 25%;
- respiratory disorders – 19%;
- circulatory disorders – 11%
- nervous system and skin disorders both 10%.

The average length of stay is 7.2 days, with only an average of 2 previous inpatient days. Average age is 5-10% less than the rehabilitation patients. Overall, it reflects a typical general medicine profile, albeit managed on the Rehabilitation ward.

The average length of stay (7.2 days) is however substantially longer than the expected LOS of only 4.4 days.

### Activity Based Funding map of subacute activity

The Independent Hospital Pricing Authority (IHPA) has developed a coding and pricing scheme specific for subacute care, which is yet to be implemented in Tasmania. It consists of: 56 codes for Rehabilitation; 15 for Palliative Care; seven each for GEM and psychogeriatric care and six for Maintenance.

The Rehabilitation codes are divided into major diagnostic categories: stroke, brain dysfunction, neurological, spinal cord dysfunction, amputation, orthopaedic fractures, orthopaedic joint and all other, cardiac, pain and respiratory, major trauma, all other impairments. These are modified by age and FIM motor and cognition scores. The LGH admitted patient data for Rehabilitation are assigned acute codes, without modifying information available.

The following analysis is an attempt to develop an indication of how the Rehabilitation Unit is performing compared to national benchmarks.

The 56 rehabilitation codes have been aggregated to a more practical 11 categories (see Table 176). The weighted average LOS has been calculated using public hospital National Hospital Cost Data Collection (round 22, 2017-18) discharges across the 56 codes and applying the number of each to the relevant IHPA average LOS to establish a weighted target LOS.

An episode by episode analysis was undertaken of rehabilitation episodes on both wards to allocate each to one of the subacute episodes. The allocation was straight forward for orthopaedics, cardiac and respiratory disorders and major trauma. Non-surgical back pain was included under pain syndromes. Spinal cord dysfunction required a DRG code of paraplegia or quadriplegia. Assignments to brain dysfunction included a diagnosis of dementia or delirium. Neurological conditions required a specific neurological diagnosis such as Parkinson's disease. All other diagnoses were bundled into other impairments, which includes cancer diagnoses except for neurological, respiratory and orthopaedic cancers, which were categorised to those organ specific codes. It is accepted that some of these may have been for reconditioning, however it was not possible to determine this from the available data. There is reasonable confidence that as the estimated weighted average LOS for reconditioning was 18 days, the same as 'all other impairments', that if a mis-categorisation has occurred it will have no net impact on the expected number of bed days.

Table 176: IHPA categorisation of Rehabilitation Unit activity, ward, LOS, 2018-19

	John L Grove				Ward 3R		
	Weighted ALOS	No.	Bed days	Exp bed days	No.	Bed days	Exp bed days
Orthopaedics, all other (including joint rpl)	13	11	268	143	87	1291	1131
Orthopaedic fractures	17	50	1495	850	65	1237	1105
Cardiac, pain syndromes, pulmonary	16	29	721	464	38	550	608
Stroke Age ≥ 68 years	29	44	1700	1276	42	812	1218
Stroke Age ≤ 67 years	39	2	114	78	11	177	429
Major Multiple Trauma	30	1	8	30	10	162	300

	John L Grove				Ward 3R		
	Weighted ALOS	No.	Bed days	Exp bed days	No.	Bed days	Exp bed days
Neurological conditions	20	24	1134	480	34	703	680
Brain dysfunction	20	3	77	60	3	91	60
Spinal cord dysfunction >50 years	39	3	60	117	3	50	117
Spinal cord dysfunction <49 years	39	1	2	39	1	58	39
All other impairments	18	45	1455	810	117	1909	2106
	-	<b>213</b>	<b>7034</b>	<b>4347</b>	<b>411</b>	<b>7040</b>	<b>7793</b>

Based on this analysis there is an excess of admitted bed days of 2687 for JLG, but LOS for 3R is 753 days less than expected. Taking the service in aggregate, which would smooth out questions about a more complex patient casemix being admitted to JLG, shows 1934 excess bed days or the equivalent of 5.3 occupied beds.

### *Discharge destination and statistical separations*

The average LOS varies according to the final discharge destination, with the most notable extended inpatient stay for patients discharged to residential aged care facilities / nursing home, with LOS for both wards 10 days longer than average. Otherwise transfers to rural hospitals, whilst shorter LOS than the average, are also substantial. The issue therefore arises whether a more aggressive approach to transfer policy may expedite these discharges. In addition only 51% of JLG and 75% of 3R patients immediately return home, though a significant proportion of inter-hospital transfers would also make it home.

*Table 177: Wards JLG and 3R, discharge destination, average length of stay, 2018-19*

	LGHJLG				LGHW3R			
Discharge destination	Episode	ALOS	Average age	Previous IP days	Episode	ALOS	Average age	Previous IP days
RACF	15	43.3	79.7	21.3	23	28.7	81.2	20.4
Died					4	9.0	85.0	13.0
D/c from Leave	1	46.0	84.0	31.0	0	0	0	0
Left against advice	13	28.9	80.2	21.1	7	11.1	62.4	13.6
Other Health Accom	13	53.0	78.7	18.8	1	11.0	71.0	21.0
Private Hospital	2	6.5	81.0	16.0	7	11.9	79.3	11.6
Public Hospital	9	33.6	70.3	35.6	10	18.5	73.1	24.5
Rural Hospital	0	0	0	0	17	16.4	78.6	17.0
Stat Separation	49	29.1	73.7	29.8	37	17.8	71.8	28.9
Usual residence	108	33.2	73.8	28.6	311	16.8	73.0	16.5
<b>Total</b>	<b>210</b>	<b>33.8</b>	<b>74.9</b>	<b>27.5</b>	<b>417</b>	<b>17.3</b>	<b>73.7</b>	<b>18.5</b>

In the section above the focus was on the statistical admission of the admission-separation continuum, here the data relates to the separation from acute services which in a large proportion of cases, but certainly not all, precedes the statistical admission to subacute services. The purpose is to provide a perspective on the number of actual and expected bed days. Table 178 shows that there were 709 statistical separations with an

average LOS of 14.6 days and a total of 4441 excess bed days. The surgical subspecialties largely managed to match average and expected LOS. General Medicine and Stroke had the greatest excess of bed days.

*Table 178: Statistical separations, all specialties, length of stay, 2018-19*

Specialty	Discharges	Bed days	Expected bed days	Average no. prev IP days
Cardiology	14	221	153	1.7
Colorectal Surgery	6	227	141	1.5
Emergency Medicine	8	8	16	0.1
Gastroenterology	1	16	10	0.0
General Medicine	338	5114	2489	8.2
General Surgery	41	586	493	1.7
Haem/Oncology	8	170	114	13.1
Neurology	1	35	1	0.0
Neurosurgery	1	7	3	20.0
Oncology	21	376	140	2.0
Orthopaedic Surgery	152	1217	1211	1.5
P&R Surgery	12	223	184	7.0
Renal Medicine	13	420	147	8.8
Respiratory Med	4	108	36	9.0
Stroke	81	1470	681	4.5
Urology	8	131	67	1.0
<b>Total</b>	<b>709</b>	<b>10329</b>	<b>5888</b>	<b>5.5</b>

The next two tables provide additional information on the discharge ward for General Medicine and Stroke (Tables 179 and 180) and General Surgery and Orthopaedics, as they represent the largest caseloads. As expected the main medical wards (4D, 5D and 6D) have the greatest number of excess days, however the subacute wards JLG, 3R and TRA have a high proportion, though lower actual numbers.

*Table 179: Statistical discharges, discharge ward, General Med & Stroke, length of stay, 2018-19*

Ward	Discharges		Total bed days		Total expected bed days		Total previous IP days	
	General Med	Stroke	General Med	Stroke	General Med	Stroke	General Med	Stroke
AMU	23	0	265	0	168	0	111	0
ED	2	0	2	0	3	0	81	0
EMU	2	0	6	0	8	0	10	0
ICU	5	0	21	0	25	0	25	0
JLG	2	0	45	0	20	0	22	0
SSSU	1	0	3	0	3	0	0	0
3R	26	1	191	16	122	6	106	1
4D	87	1	1484	6	627	13	498	0
5A	2	0	8	0	8	0	21	0
5B	8	0	88	0	83	0	5	0
5D	74	2	1075	13	615	13	620	48
6D	97	74	1642	1407	718	621	1251	308
TRA	11	3	286	28	93	28	20	9

Ward	Discharges		Total bed days		Total expected bed days		Total previous IP days	
	General Med	Stroke	General Med	Stroke	General Med	Stroke	General Med	Stroke
<b>Total</b>	<b>340</b>	<b>81</b>	<b>5116</b>	<b>1470</b>	<b>2493</b>	<b>681</b>	<b>2770</b>	<b>366</b>

For the surgical specialties, the highest volumes are from Ward 5A for general surgery and 5B for orthopaedics.

*Table 180: Statistical discharges, discharge ward, Gen Surg & Orthopaedics, length of stay, 2018-19*

	Discharges		Total bed days		Total expected bed days		Total previous IP days	
	Gen Surg	Ortho	Gen Surg	Ortho	Gen Surg	Ortho	Gen Surg	Ortho
AMU	1	0	1	0	1	0	27	0
ICU	0	1	0	5	0	9	0	0
JLG	0	1	0	5	0	7	0	0
SSSU	2	2	8	12	15	11	18	0
3R	0	1	0	10	0	17	0	0
4D	0	1	0	11	0	3	0	66
5A	26	14	465	135	392	117	23	7
5B	9	133	91	1040	72	1048	1	174
TRA	3	1	21	1	12	3	0	5
<b>Total</b>	<b>41</b>	<b>154</b>	<b>586</b>	<b>1219</b>	<b>493</b>	<b>1214</b>	<b>69</b>	<b>252</b>

### Rehabilitation activity projections

The following projections only take into account the change in population demographics, with the large increase in the number of older Tasmanians. Tables 181 to 184 show the trends in admissions, bed days and rates per 1000 population over the review period.

*Table 181: Rehabilitation admissions, age cohort, 2014-15 to 2018-19*

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19
0-14 years	0	0	0	0	0
15-39 years	6	16	18	4	13
40-64 years	77	95	116	103	108
65-74 years	105	128	151	137	164
75+ years	277	321	348	345	343
<b>Total</b>	<b>465</b>	<b>560</b>	<b>633</b>	<b>589</b>	<b>628</b>

*Table 182: Rehabilitation bed days, age cohort, 2014-15 to 2018-19*

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19
0-14 years	0	0	0	0	0
15-39 years	92	412	353	74	299
40-64 years	2093	2631	3279	2619	3021
65-74 years	2624	3671	3501	3953	3601
75+ years	8301	7356	8034	8624	7454
<b>Total</b>	<b>13110</b>	<b>14070</b>	<b>15167</b>	<b>15270</b>	<b>14375</b>



Table 183: Rehabilitation admissions per 1000 population, age cohort, 2014-15 to 2018-19

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19	Annual change
0-14 years	0	0	0	0	0	0%
15-39 years	0.1	0.4	0.4	0.1	0.3	21%
40-64 years	1.6	2.0	2.4	2.2	2.3	10%
65-74 years	6.9	8.1	9.2	8.1	9.4	8%
75+ years	25.0	28.4	30.4	29.0	28.1	3%
<b>Total</b>	<b>3.3</b>	<b>3.9</b>	<b>4.4</b>	<b>4.1</b>	<b>4.3</b>	<b>7%</b>

There was a per capita increase from 2014-15 to 2015-16 in admissions for patients aged over 40 years of age but which have with the exception of the 65-74 years group has largely stabilised. However, as noted above the average LOS has been substantially reduced with the consequent impact on the per capita number of bed days.

Table 184: Rehabilitation bed days per 1000 population, age cohort, 2014-15 to 2018-19

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19	Annual change
0-14 years	0.0	0.0	0.0	0.0	0.0	0%
15-39 years	2.2	9.9	8.5	1.8	7.1	34%
40-64 years	42.8	54.2	68.1	54.7	63.4	10%
65-74 years	173.0	232.8	214.1	234.7	207.4	5%
75+ years	750.5	650.5	701.8	725.2	610.0	-5%
<b>Total</b>	<b>91.8</b>	<b>98.6</b>	<b>106.2</b>	<b>106.2</b>	<b>99.4</b>	<b>2%</b>

Table 185 provides more granular information using 10 year age groups, which shows for all age groups over 60 years, the average LOS has fallen, which is obviously important when it is these age groups which will drive future demand.

Table 185: Rehabilitation average LOS, age cohort, 2014-15 to 2018-19

	2014/15	2015/16	2016/17	2017/18	2018/19	% annual change
10-29 years	4.0	43.8	18.0	0.0	18.4	n/r
30-39 years	17.6	19.8	19.3	18.5	25.9	10%
40-49 years	27.0	32.0	22.6	20.7	26.8	0%
50-59 years	24.6	26.2	29.5	30.4	31.8	7%
60-64 years	29.4	27.2	27.2	20.5	24.7	-4%
65-69 years	26.9	29.8	21.7	33.2	23.6	-3%
70-74 years	23.7	27.6	24.7	25.2	21.0	-3%
75-79 years	29.7	21.0	22.9	23.8	21.3	-8%
80-84 years	25.5	25.4	22.4	24.6	21.4	-4%
85+ years	33.0	22.7	23.3	25.9	22.2	-9%
<b>All</b>	<b>28.6</b>	<b>24.8</b>	<b>23.3</b>	<b>25.7</b>	<b>22.0</b>	<b>-6%</b>

Tables 186 and 187 provide projections using 2018-19 as the baseline for admissions and bed days. The key issue is the 78% increase in projected admissions for the oldest age group, which leads to a projected increase of 2368 bed days by 2024, which

represents an additional need for 6.5 beds and 5853 bed days by 2036, equivalent to 16 beds.

*Table 186: Rehabilitation overnight admit projections, age cohort, 2018-2036*

Age cohort	2018	2020	2022	2024	2028	2032	2036
0-14 years	0	0	0	0	0	0	0
15-39 years	13	13	13	13	13	13	12
40-64 years	108	107	105	104	101	100	98
65-74 years	164	170	175	179	186	184	181
75+ years	343	370	408	442	506	561	609
<b>Total</b>	<b>628</b>	<b>660</b>	<b>701</b>	<b>738</b>	<b>806</b>	<b>857</b>	<b>900</b>

*Table 187: Rehabilitation overnight bed day projections, age cohort, 2018-2036*

Age Cohort	2018	2020	2022	2024	2028	2032	2036
0-14 years	0	0	0	0	0	0	0
15-39 years	299	301	302	303	298	290	285
40-64 years	3021	2993	2947	2901	2815	2786	2743
65-74 years	3601	3735	3841	3939	4082	4030	3970
75+ years	7454	8046	8857	9601	11006	12194	13229
<b>Total</b>	<b>14375</b>	<b>15076</b>	<b>15947</b>	<b>16743</b>	<b>18201</b>	<b>19299</b>	<b>20228</b>

## Data analysis - Palliative care

Palliative care services are largely provided under contract by Calvary Health Care at the St Luke's site in Launceston, but admissions may occur at other sites or also through the Emergency Department at LGH.

Table 188 shows a breakdown of Palliative Care admissions and admitting specialty

*Table 188: Palliative care admissions, age cohort, admitting specialty, 2014-15 to 2018-19*

Age cohort Specialty	2014/15	2015/16	2016/17	2017/18	2018/19
<b>15-39 years</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>1</b>
Palliative Care	0	4	1	2	1
<b>40-64 years</b>	<b>24</b>	<b>28</b>	<b>50</b>	<b>57</b>	<b>40</b>
General Medicine	1	0	0	0	0
Palliative Care	23	28	50	56	40
Renal Medicine	0	0	0	1	0
<b>65-74 years</b>	<b>27</b>	<b>31</b>	<b>39</b>	<b>43</b>	<b>43</b>
General Medicine	0	0	0	0	2
Oncology	0	0	0	1	0
Palliative Care	27	31	39	42	41
<b>75+ years</b>	<b>29</b>	<b>48</b>	<b>39</b>	<b>71</b>	<b>47</b>
General Medicine	0	0	0	3	0
Palliative Care	29	48	39	68	47
<b>Total Admits</b>	<b>80</b>	<b>111</b>	<b>129</b>	<b>173</b>	<b>131</b>
<b>Total Bed days</b>	<b>1120</b>	<b>1510</b>	<b>1303</b>	<b>1820</b>	<b>1650</b>
<b>Average LOS</b>	<b>14.0</b>	<b>13.6</b>	<b>10.1</b>	<b>10.5</b>	<b>12.6</b>

Based on the data provided except in 2017-18 admission through the ED was an uncommon event for palliative care patients, however advice from the consultation

indicates it may be more frequent than recorded here. Most patients were admitted directly to the St Luke's facility.

*Table 189: Palliative Care, admission and discharge ward, 2014-15 to 2018-19*

Admission ward Discharge Ward	2014/15	2015/16	2016/17	2017/18	2018/19
<b>LGHED</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>7</b>	<b>2</b>
LGHAMU	0	0	2	0	0
LGHED	0	1	0	1	0
LGHEMU	0	0	1	0	0
LGHW4D	0	0	1	0	0
LGHW5D	2	0	0	2	1
LGHW6D	0	0	0	1	0
<b>LGHPRCLV</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>0</b>
LGHPRCLV	3	1	0	4	0
<b>LGHPRSL</b>	<b>77</b>	<b>106</b>	<b>126</b>	<b>165</b>	<b>118</b>
LGHPRSL	77	106	126	165	118
<b>LGHPRSV</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>7</b>
LGHPRSV	1	1	2	1	7
<b>Total</b>	<b>80</b>	<b>111</b>	<b>129</b>	<b>173</b>	<b>131</b>

Table 190 shows the average LOS for admissions, which appear to be stabilising at the main facility at about 11-12 days.

*Table 190: Palliative Care, average length of stay, admission ward, 2014-15 to 2018-19*

	2014/15	2015/16	2016/17	2017/18	2018/19
LGHED	8.0	1.0	0.0	3.7	5.0
LGHPRCLV	0.0	7.3	35.0	0.0	34.3
LGHPRSL	15.7	14.0	9.9	11.2	12.2
LGHPRSV	36.0	5.0	10.5	2.0	11.6
<b>Total</b>	<b>15.7</b>	<b>13.6</b>	<b>10.1</b>	<b>10.8</b>	<b>12.7</b>

The number of admissions and bed days are projected to increase by about 28% by 2036 (Tables 191, 192)

*Table 191: Palliative care, overnight admit projections, age cohort, 2018-2036*

Age cohort	2018	2020	2022	2024	2028	2032	2036
0-14 years	0	0	0	0	0	0	0
15-39 years	1	1	1	1	1	1	1
40-64 years	40	40	39	38	37	37	36
65-74 years	43	45	46	47	49	48	47
75+ years	46	50	55	59	68	75	82
<b>Total</b>	<b>130</b>	<b>135</b>	<b>141</b>	<b>146</b>	<b>155</b>	<b>161</b>	<b>166</b>

*Table 192: Palliative care, overnight bed day projections, age cohort, 2018-2036*

Age cohort	2018	2020	2022	2024	2028	2032	2036
0-14 years	0	0	0	0	0	0	0
15-39 years	3	3	3	3	3	3	3
40-64 years	576	571	562	553	537	531	523
65-74 years	473	491	505	517	536	529	522
75+ years	612	661	727	788	904	1001	1086
<b>Total</b>	<b>1664</b>	<b>1725</b>	<b>1797</b>	<b>1862</b>	<b>1980</b>	<b>2065</b>	<b>2134</b>

## Prioritised options and opportunities

### Rehabilitation

Currently sub-acute services are provided on the main LGH campus and off-campus at John L Grove rehabilitation unit. Stakeholders support consolidation of sub-acute services in a single site located off the main campus but within the immediate LGH precinct that allows flexible use of facilities to accommodate surge capacity.

Consider expansion of rehabilitation including: community-based rehabilitation models, ward-based rehabilitation (across different ward types, not confined to the rehabilitation ward), GEM, ambulatory rehabilitation, telehealth rehabilitation including app-based support for RITH, an accessible gymnasium.

Consider inclusion of ADL practice facilities and re-enablement services in the sub-acute hub or the NICS building.

Consider delivering an allied health-led paediatric sub-acute service from the allied health space planned for the 5<sup>th</sup> floor of the 4K building.

Include sufficient telehealth infrastructure to support a GEM in the home (GEMiTH) service. Consider GEMiTH to provide transitional care with medical officer support, and a pharmacist in the core team.

Opportunities exist to improve the role definition and patient streaming for sub-acute care to assist in the early identification of sub-acute patients and facilitate clear transition points from acute to sub-acute care. Improve identification of admitted patients ready to transition from acute to sub-acute care. Improve access to HITH and RITH for acute medical patients

Stakeholders identify that improved patient flows through sub-acute care requires models of care that facilitate early discharge such as rehabilitation in the home (RITH) and geriatric evaluation and management in the home (GEMiTH). A chronic disease management service can support patient flows from sub-acute care to home with coordinated support from a community-based multidisciplinary integrated care team.

Rural district hospitals, such as Deloraine have successfully transfers to continue the sub-acute care of patients

Consider interim housing options for patients awaiting house modification.

### Palliative Care

Consider support for community-based palliative care that is available 24 hours a day, every day. This will require rebuilding of the palliative care workforce.

Investigate opportunities to increase palliative care beds available through Calvary as demand increases.

## 19. Mental health services

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### Consultation findings

There were concerns which broadly cover the physical infrastructure and the models of care, which are the subject of detailed and separate planning process from the LGH Clinical Services Plan. The findings presented here are therefore included for completeness rather than with any intent to influence that review program.

There needs to be a community-based approach to mental health, with the aim of hospital avoidance and supporting patients in the community and with improved integration of acute, community and social care. The Crisis Assessment Team's role and responsibilities needs to be extended to adolescents and young people. There is insufficient support for people with personality disorders and perinatal services.

Children with behavioural issues in the community are experiencing long wait times for access to a community paediatric psychiatrist.

A small community forensics team manages only adult patients and do not provide a service to prospective adolescent patients at the Ashley Detention facility. This service should be co-located with the Mental Health Service and the Alcohol and Drugs Service.

Public services are limited due to inability to recruit sufficient psychiatrists and a lack of Allied Health support especially occupational therapy and speech pathology.

With respect to the current infrastructure:

- the existing inpatient facilities themselves are unsuitable for contemporary mental health care;
- there is a need for more high dependency unit capacity as this area regularly has insufficient space;
- there is currently no appropriate space for inpatient geriatric patients with behavioural issues;
- the Crisis Assessment Team has insufficient capacity to meet the needs of patients presenting to the Emergency Department and those in community;
- there is no appropriate space to manage acutely disturbed adolescents. The NDIS is not functioning well, leading to increased referrals to public services.
- the Alcohol and Other Drugs Service is a weekday service with no inpatient beds, no after-hours capacity, and no crisis response capability.

### Data analysis findings

There are 20 inpatient beds located in Northside Ward on the main LGH campus.

Table summarises Mental Health admissions in the review period. The most notable feature is the increase in average LOS coupled with a decrease in the number of admissions. The 6646 overnight bed days represents a 91% occupancy rate in 2018-19, down from 97% in 2016-17.

Same day admissions are almost all to the DPU for same day ECT.

*Table 193: Mental Health summary activity, 2014-15 to 2018-19*

Admission Type	2014/15	2015/16	2016/17	2017/18	2018/19
<b>Overnight</b>					
Statistical	0	21	50	56	32
Elective	0	3	2	0	3
Emergency	611	672	633	525	484
Not assigned	15	3	16	6	14
Total overnight admits	626	699	701	587	533
Overnight Bed days	5945	5778	7106	6757	6646
Overnight ALOS	9.50	8.27	10.14	11.51	12.47
<b>Same day</b>					
Statistical	0	1	3	1	1
Elective	66	140	122	130	172
Emergency	18	17	11	34	25
Total same day admits	84	158	136	165	198
Total admits	710	857	837	752	731
Total bed days	6029	5936	7242	6922	6844
Total NWAU	866	922	1122	959	855
Bed days / NWAU	6.96	6.44	6.45	7.21	8.01

Table 194 has the average LOS for each age cohort and the expected LOS. The LOS largely increases with increasing patient age, however in each age group the average LOS exceeds the expected LOS, which presumably reflects the lack of suitable resources to manage these patients outside an acute hospital setting.

*Table 914: Mental health overnight admission, ALOS, age cohort, 2014-15 to 2018-19*

Age cohort	2014/15	2015/16	2016/17	2017/18	2018/19	Expected 2018/19
0-14 years	4.00	8.38	5.18	2.20	1.78	2.21
15-39 years	8.48	7.12	9.25	10.67	11.36	4.73
40-64 years	10.10	8.77	11.02	12.40	13.54	5.27
65-74 years	16.25	13.70	13.23	15.22	18.70	6.38
75+ years	18.25	16.42	14.31	19.67	18.25	7.00
<b>All overnight</b>	<b>9.50</b>	<b>8.27</b>	<b>10.14</b>	<b>11.51</b>	<b>12.47</b>	<b>5.00</b>

Tables 195 to 197 show projections for overnight and same day admissions, but these are predicated on the current, unsatisfactory model of care.

*Table 195: Mental health overnight admit projections, age cohort, 2018-2036*

Age cohort	2018	2020	2022	2024	2028	2032	2036
0-14	9	9	9	9	9	9	9
15-39	302	304	305	306	301	292	288
40-64	184	182	179	177	171	170	167
65-74	30	31	32	33	34	34	33
75+	8	9	10	10	12	13	14
<b>Total</b>	<b>533</b>	<b>535</b>	<b>535</b>	<b>534</b>	<b>527</b>	<b>518</b>	<b>511</b>

Table 196: Mental health overnight bed day projections, age cohort, 2018-2036

Age cohort (years)	2018	2020	2022	2024	2028	2032	2036
0-14	16	16	16	16	16	15	15
15-39	3431	3451	3468	3473	3421	3323	3272
40-64	2492	2469	2431	2393	2322	2298	2263
65-74	561	582	598	614	636	628	619
75+	146	158	173	188	216	239	259
<b>Total</b>	<b>6646</b>	<b>6675</b>	<b>6686</b>	<b>6683</b>	<b>6611</b>	<b>6503</b>	<b>6428</b>

Table 197: Mental health same day projections, age cohort, 2018-2036

Age cohort (years)	2018	2020	2022	2024	2028	2032	2036
0-14	0	0	0	0	0	0	0
15-39	55	55	56	56	55	53	52
40-64	79	78	77	76	74	73	72
65-74	56	58	60	61	63	63	62
75+	8	9	10	10	12	13	14
<b>Total</b>	<b>198</b>	<b>200</b>	<b>202</b>	<b>203</b>	<b>204</b>	<b>202</b>	<b>200</b>

## Priorities and opportunities

There is a lack of timely access to appropriate community-based services for people experiencing mental health co-morbidities, which leads to delays in assessment and treatment, and contributes to increasing Emergency Department presentations. Patients with mental health needs require timely access to services in an appropriate and accessible care setting that has a substantial community-based presence.

It is recommended that:

- a new purpose-built, integrated mental health facility that provides inpatient acute care, community crisis care, and community mental health services is developed;
- service capacity is enhanced by expanding existing models of care that support extended-hour access to assessment, triage and treatment;
- new models of care are implemented to improve access to community-based and home-based detoxification and rehabilitation services;
- capability is developed to provide increased access to integrated, community-based care for paediatric patients with complex behavioural, mental health, and social issues; and
- service integration is supported by co-locating Mental Health Services, Alcohol and Other Drug Services and Forensic Services.

## 20. Diagnostic services and support services

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### Medical Imaging

#### ***Consultation findings***

Staff interviewed identified the following issues:

- The current Medical Imaging footprint is insufficient and requires expansion, however continued co-location with the Emergency Department is important.
- There is no separate area in the Department for patients waiting for x-ray, ultrasound and interventional radiology.
- The site requires wall oxygen/suction, call bells, and disabled toilet facilities for waiting patients and a phlebotomy service.
- Require additional space to comfortably house four radiologists and other specialists that use the medical imaging space including gastroenterologists, intensivists, respiratory specialists and renal specialists,
- CT scan activity has increased by 35% over 5 years, necessitating access to a second CT scanner to meet current and future demand.
- The ultrasound space is too small and the procedural space does not meet contemporary standards for infection prevention and control. There is no private area for discussion of ultrasound results.
- The cardiac angiography space is inadequate for requirements and a second angiography suite is required.
- Magnetic resonance imaging (MRI) services are at daytime capacity.
- Limited access to hybrid theatres limits the interventional radiology service, as does sole-person dependency.
- Lack of after-hours imaging and pathology leads to Emergency Department presentations.

#### ***Future priorities***

Guided by the consultation findings priorities appear to be:

- Maintain co-location with the Emergency Department.
- Upgrade wall oxygen and suction, call bell facilities and disabled toilet facilities.
- Develop a suitably sized waiting area for patients.
- An additional CT scanner to be located within or near the Emergency Department and with lift access to the Intensive Care Unit and surgical wards.
- Plan for an expected requirement for a third scanner in 5–10 years time.
- Expand ultrasound capability two large procedural ultrasound rooms and two basic ultrasound rooms, which allow patient privacy and consultation.
- Include a dedicated administration area, a store and disinfection area.



- Ensure sufficient space to accommodate medical imaging staff and visiting specialist staff.
- Further investigate the need for a new purpose-built cardiac angiography space that includes a second angiography suite, informed by private hospital and provider intentions. Noting however that currently the angiography suite is used predominantly on three days a week and rarely on the weekend.
- Examine the opportunity to re-locate Nuclear Medicine off the main LGH campus.

## Pathology services

### *Consultation findings*

There is a consistent increase in workload with reported 12% growth in tests performed.

Currently 200 coronial autopsies are performed per annum (50% of state caseload). This work will eventually be shifted to Hobart. Despite this, the LGH will still need to maintain the capacity to perform hospital post-mortems (approx. 6 per year).

Private co-location may provide opportunities to increase service provision and share workload.

Staff are supportive of a sample collection room in Holman Clinic due to the volume of work that is performed there.

Stem cell transplant tasks are not performed locally but in Hobart and could be performed locally in the future.

Opportunities for further service expansion include point-of-care testing in the community.

### *Future priorities*

- Consider expanding into the orthopaedic OPD space and biomedical workshop.
- The blood collection area could be located away from the main pathology area.
- Consider including a pathology sample collection room in Holman Clinic.
- Consider space and equipment for local stem cell transplant preparation.
- Consider long-term plan for anatomical pathology space and decreased mortuary capacity and demand.
- Extend pneumatic tube delivery capacity.

## Pharmacy

### *Consultation findings and future priorities*

There is insufficient pneumatic tube delivery service which decreases workflow efficiency as approximately 50% of workload originates from the Emergency Department but there is no pneumatic tube connection in D Block.

Pharmacy has a refurbishment plan for both existing sites (main pharmacy and oncology pharmacy) that is currently unfunded.

Off-site chemotherapy provision would only be appropriate for a sub-set of patients. In all cases Cycle 1, Day 1 chemotherapy should be administered at the LGH.

Pharmacy staff increasingly provide ward-based services (i.e. ward technician program, clinical pharmacist staff).

Consider sufficient storage for medications located on the ward including the capacity to implement electronic medication storage systems.

Opportunity to implement a robotic dispensing system into the future.

Improve pneumatic tube delivery service.

This service is provided by an on-site private provider. The service appears to be growing.

Consider potential for staff to work across diagnostic services to reduce skill shortages and increase capacity.

Imaging, pathology and pharmacy are reliant on revenue from Medicare Benefit Schedule (MBS) activity and Pharmaceutical Benefit Scheme (PBS) claims.

## 21. Allied Health

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### Consultation findings and future priorities

Staff interviewed identified the following issues:

Allied health staff numbers are growing and expect to grow further with the introduction of new allied health courses commencing at the University of Tasmania in 2022. Current space is insufficient for staffing and more clinic rooms are required.

With increasing growth in allied health assistant models of care, more space is required to facilitate additional student placements.

Allied health staff are eager to pursue workforce substitution models of care but are constrained by a lack of clinical service modelling and infrastructure that facilitates this. Require flexible collaborative spaces throughout key areas such as sub-acute care, paediatrics, cancer services that can be used by allied health providers to support allied health-led models of care.

The NDIS is affecting allied health services as workforce flow back to the private sector. Patients that cannot access services in the community are presenting to acute services. NDIS administration requirements are time-consuming.

Table 198 provides a summary of current year activity and multi-year trends for the major allied health specialties.

Table 198: Allied health outpatient activity, 2014-15 to 2018-19

Clinic	No. clinics 18/19	New Px 2019	All Px 2019	% annual change new patients last 3 years	% annual change new patients last 5 years	% annual change all patients last 3 years	% annual change all patients last 5 years	New as % of total 2015	New as % of total 2017	New as % of total 2019	Average wait 2019	% annual change wait new patients last 3 years	% annual change wait new patients last 5 years
Hands physio	256	514	1869	-1%	-13%	3%	-11%	31%	30%	28%	17	-3	0
Hydrotherapy	135	33	379	91%	n/r	145%	30%	0%	14%	9%	105	-27	105
Lymphedema	233	237	1499	8%	10%	4%	28%	29%	15%	16%	58	16	-43
M/S physio	457	1648	5342	15%	10%	12%	4%	25%	30%	31%	29	3	-2
Respiratory physio	156	258	614	2%	-4%	-2%	-6%	38%	39%	42%	44	-5	-34
Women's and Men's physio	126	334	790	17%	22%	-8%	1%	20%	26%	42%	106	35	-4
Community physio	202	527	1239	-22%	0%	-28%	4%	49%	36%	43%	38	-5	8
Diabetes dietitian	173	267	722	7%	9%	-8%	2%	28%	28%	37%	88	34	39
DNE	684	727	4894	14%	11%	28%	1%	10%	19%	15%	49	20	6
Diabetes psychologist	135	211	535	28%	33%	16%	18%	25%	32%	39%	82	11	26
Lung Boosters	287	423	2825	28%	9%	10%	4%	12%	11%	15%	67	-60	-38
Nutrition & Dietetics	99	52	542	-4%	-14%	2%	-6%	14%	11%	10%	73	-9	10
Orthotics & prosthetics	286	474	2227	12%	-2%	2%	-2%	21%	18%	21%	52	22	-3
Podiatry	328	414	2051	4%	21%	8%	9%	13%	22%	20%	68	-5	3
Refugee	129	27	340	-75%	-45%	-42%	-18%	39%	43%	8%	63	49	33
Smokers	195	341	1124	-1%	38%	1%	23%	19%	31%	30%	40	11	29
Speech	334	269	1006	-4%	-2%	-19%	-16%	14%	19%	27%	33	-7	-7
Stomal	226	135	716	33%	187%	19%	7%	0.4%	15%	19%	88	-83	87

## 22. Primary health

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### Consultation findings and future priorities

Staff interviewed identified the following issues:

Allambi has not received the maintenance that has been recommended in building assessment reports. It has been determined that it is not fit-for-purpose and requires:

- improved clinic and consulting spaces;
- reception areas;
- group therapy spaces;
- rehab facilities and equipment;
- an observation area;
- flexible and configurable spaces;
- security cameras; and
- improved parking availability.

Areas of acute and primary care interface are working independently due to a lack of integration.

There is a lack of integration between acute and primary health sites, which could be enabled through IT infrastructure.

District hospitals are underused. Workforce shortages, lack of robust IT infrastructure, and a reluctance to transfer patients to district hospitals are key contributors.

Create a hub facility to house those services that support transition between acute and primary care to facilitate improved integration of care. Include the following service types in the integration hub:

- palliative care;
- wound care;
- community rehabilitation;
- Community Rapid Response Service (ComRRS);
- Community Nursing Enhanced Connection Service (coNECS);
- Hospital in the Home (HITH);
- allied health;
- youth health;
- home care services;
- community dementia service;
- community continence services;
- care coordinators;
- TasEquip;
- OPALL/ persistent pain services;
- pre-habilitation; and

- ACAT and NDIS support.

Develop telehealth linkages with inpatient medicine, Kings Meadows, district hospitals, specialists, general practice, older persons' mental health, community health, allied health, and primary health providers.

Strengthen telehealth infrastructure and invest in home monitoring and biometrics to support remote care for rural and remote patients.

Develop a shared health record across Tasmania and ensure consistent wifi in district hospital sites. Consider adaptation of the New Norfolk model of care to enhance sub-acute capacity in other District hospitals.

Consider medical support in the Integrated Operation Centre to utilise rural site capacity.

Champion change in patient transfer culture and practice.

Ensure safe staffing levels in district hospitals that account for service activity, volume, scope and building size.

Expand the ComRRS model to improve out of hours capacity and include a hospital avoidance arm as well as a post-discharge function.

Improve integration of district hospitals with Ambulance Tasmania.

Leverage community nursing capacity in the region through the use of a liaison position, particularly in the areas of palliative care and HITH.

## 23. Child Health and Parenting Service

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### Consultation findings and future priorities

Staff interviewed identified the following issues:

- The 25 Wellington Street space requires three consulting rooms, four management offices, reception and administration space, a meeting room to house 50 people, videoconferencing capacity and space for nurses visiting from spoke sites.
- Hub should be community-based but near Women's and Children's Services to facilitate service interaction. Provide a community-based service as much as possible. Women's and Children's Services midwives to provide antenatal clinics from CHAPS to facilitate continuity of care.
- Paediatric team should visit CHAPS rather than locating CHAPS in the hospital.
- Space is required for developmental assessments, group parenting sessions, child observation, breastfeeding, and bathrooms that facilitate nappy changing.

Future planning towards a hub (collaborative space) and spoke (community sites) model, with the current site at 25 Wellington Street suitable for modification to provide the hub space.

Seek better integration with Women's and Children's Services and CAHMS. Ideally need a community-based consolidated child health collaborative space, possibly co-located with perinatal mental health and CAMHS.

Require more consulting room space in Kings Meadows, a space to provide residential support for parenting (i.e. day stays and overnight sleep and settling support), and a safe play space for children.

Require inpatient support for mothers experiencing acute psychosis. No facilities are available in Northern Tasmania and the Hobart-based St Helens Mother-Baby Unit is very difficult to access. Numbers are insufficient to require a dedicated mother-baby unit in the LGH.

## 24. Teaching, training and research

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### Consultation findings and future priorities

Staff interviewed identified the following issues:

There is no funded accommodation in Launceston for students, consider repurposing a building from within the LGH precinct to provide accommodation for students.

As part of the Northern Transformation Program, the University of Tasmania will be increasing its presence in Launceston. This includes providing teaching for third year medical students in Burnie and Launceston and providing allied health undergraduate teaching.

Clifford Craig is currently located in a clinical area of the hospital and needs to relocate in the near future. The current space is insufficient in size to accommodate growth and the layout is poorly configured. Clifford Craig are interested in bringing together all LGH research interests in under the one area. Clifford Craig require:

- a location that is easily accessible by clinicians, research participants, and donors.
- an active clinical trials area that can accommodate six clinical trials units.
- Anticipated staff growth from 2.4 FTE to 6 FTE.

If Clifford Craig were to move the new site must be commensurate with current accommodation finishes. Co-location of existing University of Tasmania offices and Clifford Craig office on or near the main campus. The University of Tasmania is currently considering a move toward a masters degree model which would increase student focus on research. It would be beneficial for the current university space at the LGH to be co-located with Clifford Craig and located on campus or across the road from the main campus.

Require increased teaching and training spaces for students on clinical placement. Consider a joint facility with a flexible training space to support training across disciplines.



## 25. Infrastructure and technology supports

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### Consultation findings and future priorities

Staff interviewed identified the following issues:

- There is no statewide eHealth strategy.
- There is insufficient staffing to support robust clinical services.
- There is difficulty in recruiting and retaining staff with specialist skill sets.
- Previous infrastructure-driven changes to models of care have not been successful due to a lack of leadership, change management and project support.

### Information technology

A statewide eHealth strategy that addresses the following needs, is urgently needed:

- an integrated real-time digital medical record and a closed-loop medication management system to support patient-centred care, care integration, evidence-based clinical decision making at the point of care, and information sharing between acute and community settings;
- access to digital technology at the point of care;
- consistent access to *wifi* throughout facilities;
- increased capacity for automation, particularly messaging automation and predictive tools;
- expanded eReferral capacity;
- increased telehealth capacity; and
- telemonitoring to support remote care provision in district hospitals, RACFs, HITH programs and domiciliary monitoring programs.

### Workforce

There needs to be a review of appropriate staffing levels, particularly in allied health, district hospitals and acute-community liaison services.

Look to implement innovative models of care that best utilise the existing workforce to support care across the continuum.

Investigate possible staff sharing arrangements with a co-located private hospital.

### Change management

Improve partnerships between acute and primary health; these partnerships are currently not robust.

Support community providers to handle increasing complexity in the community.

Use co-design approaches to support integration of care.

Change management to be driven by respected leaders that understand both the acute and primary health sectors.

## 26. Additional infrastructure

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### Consultation findings

#### Infrastructure issues for consideration

- Northside and D Block are old and poorly configured. A complete refurbishment is required to support contemporary models of care.
- All ward design needs to move away from staff stations and towards point-of-care models and line-of-sight monitoring.
- Ward design should include bariatric bed capacity and bariatric bathrooms.
- Additional single rooms and isolation rooms are required across all ward types.
- Improved air handling and segregation is required to meet contemporary standards.
- More shared therapy and clinical space is required, particularly in Wards 5A and 5B.
- Additional storage capacity for equipment, beds, pharmaceuticals, and linen is required, particularly on the medical wards.
- Extend pneumatic tube capacity throughout the main campus.
- Priority carparking is required for services that support patients with mobility issues.
- Improved wayfinding is required throughout the hospital.