

Health Service Plan

Background Paper

Health Service Plan Background Paper

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1. Introduction

Carramar Consulting has been engaged to provide health service planning services for the Townsville Hospital and Health Service (THHS).

The purpose of the engagement is to support the Chief Executive and Board to make decisions regarding the development of services across the THHS, by exploring the implications of a number of alternative service options for The Townsville Hospital (TTH), in terms of health service activity and capacity requirements.

The purpose of the Health Service Plan Background Paper (this Paper) is to ‘set the scene’ for future planning stages, or more specifically, to arm THHS decision-makers with the knowledge required to instruct the development of four planning scenario’s (additional to a ‘no change’ or ‘status quo’ planning scenario). Consequently, strategic questions posed within this Paper have been deliberately geared towards eliciting information at a level that will instruct inputs to these scenarios.

Importantly, information presented within this Paper has been informed by key planning considerations identified through an extensive clinician engagement process, and documented within the THHS Clinical Services Review July - November 2016 (the Review).

Those planning considerations of a strategic nature that are prevalent within the services review are:

1. Interest from clinicians to pursue opportunities for new models of care
2. Concern regarding issues affecting the regional role of THHS as a tertiary centre (for example, ‘fly overs’)
3. Concern regarding ability to meet projected demand for services from HHS residents (Intra-HHS patient flow patterns)

Additionally, from the 2017 THHS Strategic Plan 2014 - 2018 (2017 Update), this Paper acknowledges the role of THHS as northern Queensland’s specialist tertiary referral hospital

provider. For this reason, detailed analysis of inter-HHS flow patterns has been undertaken to inform opportunities for collaborative service planning with surrounding HHSs, improve the sustainability and quality of health services, and cooperatively enhance the role of THHS services throughout the north.

Notes:

A glossary of key words is provided at Appendix A.

For the purposes of providing a broad overall understanding of the future use of health services by residents of THHS, projections based on Acute Inpatient Modelling (AiM) have been used for all Service Related Groups (SRG) in this Paper.

Renal dialysis has been specifically excluded due to the distorting impact that the very large volume of these separations has on the overall analysis. Projections for renal dialysis have therefore been provided separately.

This Paper assumes reader knowledge of the full suite of services offered at THHS as detailed within the Review and the THHS Organisational Chart at Appendix C.

It should also be noted that there are alternative Queensland Department of Health endorsed projection methodologies (other than AiM) for mental health, interventional cardiology, cancer, qualified neonates and endoscopy. For interventional cardiology, cancer and endoscopy services the endorsed methodologies adjust for the additional volumes of non-admitted activity that are not included in AiM. Population based methodologies are used for qualified neonates and mental health. These endorsed methodologies will be used to develop specialty specific projections during the next phase of the planning process.

Percentages shown throughout the report are for information, these percentages are rounded and so may not total 100% in all occasions.

2. Catchment Analysis

2.1 The Townsville Hospital and Health Service

The THHS covers an area of approximately 149,500 square kilometres. It includes 34 SA2s within seven local planning regions including Burdekin, Charters Towers, Hinchinbrook, Northern Highlands, Townsville City, Townsville North and Townsville South. Refer Figure 1 and Table 1.

The THHS comprises 18 hospitals and community health campuses and two residential aged care facilities in the area north to Cardwell and Ingham, west to Charters Towers, Hughenden and Richmond, south to Ayr and Home Hill and east to Magnetic Island and Palm Islands.

Figure 1: THHS Planning Regions and Inpatient Facilities



Table 1: THHS Defined Planning Regions (SA3 and SA2 Codes)

Local Planning Region	SA3 Code	SA3 Name	SA2 Code	SA2 Name
Burdekin	31801	Charters Towers - Ayr - Ingham	1460	Ayr
			1461	Burdekin
Charters Towers	31801	Charters Towers - Ayr - Ingham	1462	Charters Towers
			1463	Dalrymple

Local Planning Region	SA3 Code	SA3 Name	SA2 Code	SA2 Name
Hinchinbrook	30603	Innisfail - Cassowary Coast	1161	Tully
	31801	Charters Towers - Ayr - Ingham	1464	Ingham
			1465	Ingham Region
			1466	Palm Island
Northern Highlands	31502	Outback -North	1407	Northern Highlands
Townsville City	31802	Townsville	1467	Aitkenvale
			1472	Cranbrook
			1475	Garbutt - West End
			1476	Gulliver - Currajong - Vincent
			1477	Heatley
			1478	Hermit Park - Rosslea
			1479	Hyde Park - Pimlico
			1481	Kirwan East
			1483	Magnetic Island
			1485	Mundingburra
			1488	South Townsville - Railway Estate
Townsville North	31802	Townsville	1469	Belgian Gardens - Pallarenda
			1470	Bohle Plains
			1473	Deeragun
			1482	Kirwan - West
			1484	Mount Louisa
			1486	Northern Beaches
			1490	Townsville City - North Ward
Townsville South	31802	Townsville	1468	Annandale
			1471	Condon - Rasmussen
			1474	Douglas
			1480	Kelso
			1487	Oonoonba
			1489	Townsville - South
			1491	Wulguru - Roseneath

Source: Information supplied by QLD Department of Health, March 2017

2.2. Facility catchments defined

While planning regions align with HHS catchments, there are a range of factors that influence how and where people access services. These factors include the availability of health services in local areas relative to the nature of local needs (for example, people may travel large distances to access a culturally relevant service), the centralisation of services offered at tertiary (or quaternary) level (such as medical specialities), and public transport and road networks.

The following tables within this Section reflect 2014/15 activity from THHS facilities by place of residence (local planning region or other HHS). This is undertaken to define facility catchments in terms of local planning region and beyond.

As a major tertiary referral hospital, the TTH has three levels of catchment: local, HHS-wide and an extended catchment of the whole of North Queensland. The local catchment for TTH is a combination of the Townsville City, Townsville North, and Townsville South local planning regions, and accounted for 74% (33,450) of separations at TTH in 2014/15.

Residents of the HHS-wide catchment accounted for 11% (4,638) of separations at TTH in 2014/15. As a major tertiary referral hospital in North Queensland, 15% (6,612) of total activity came from residents of other HHSs / interstate (i.e. the extended catchment). Refer Table 2 and Figure 2.

A service description for TTH, including CSCF levels, is provided in Section 4 of this Paper.

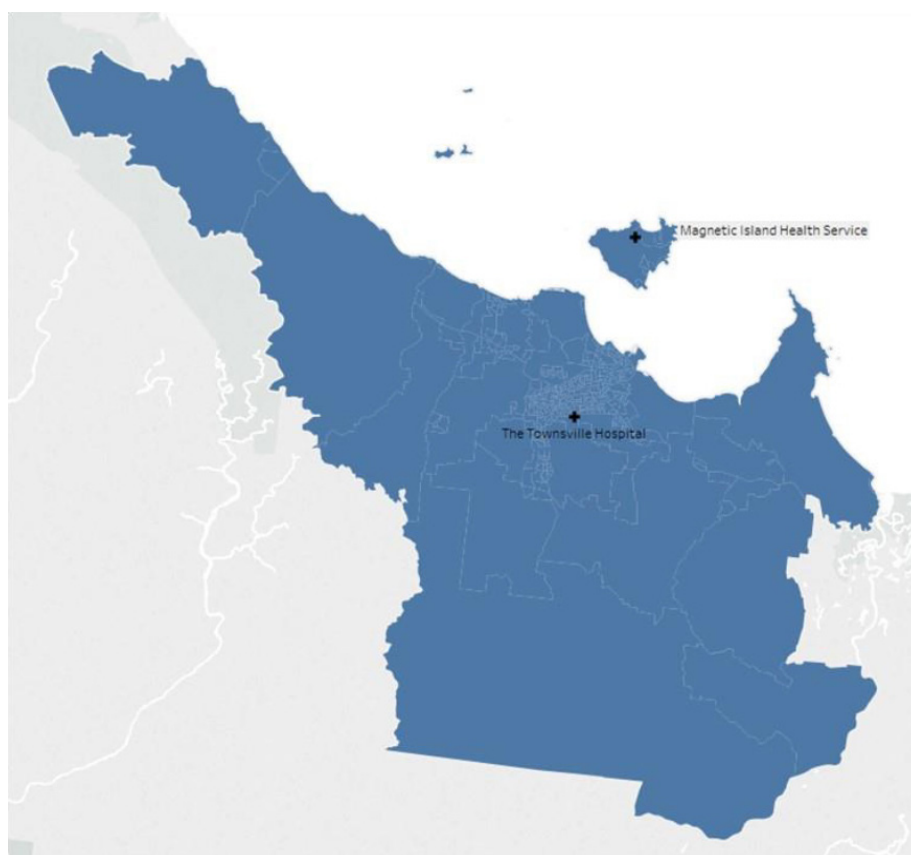
Table 2: Total separations The Townsville Hospital, by place of residence, 2014/15

HHS of Residence	Place of Residence	Separations	% of Total Separations
Townsville	Burdekin	1,255	3%
	Charters Towers	1,298	3%
	Hinchinbrook	1,813	4%
	Northern Highlands	281	1%
	Townsville City	12,977	29%
	Townsville North	11,373	25%
	Townsville South	9,100	20%
Other HHS/Interstate	All	6,612	15%
TOTAL		44,709	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

Figure 2: Local catchment for Townsville Hospital



The local catchment for Ayr Health Service and Home Hill Health Service is the Burdekin local planning region. In 2014/15, 94% (1,893) of separations at Ayr Health Service, and 96% of separations at Home Hill Health Service were for residents of the local planning region Burdekin. Refer Table 3 and Table 4, and Figure 3.

A service description for these facilities, including CSCF level, is provided in Section 5 of this Paper.

Table 3: Total separations Ayr Health Service, by place of residence, 2014/15

HHS of Residence	Place of Residence	Separations	% of Total Separations
Townsville	Burdekin	1,893	94%
	Charters Towers	5	0%
	Townsville City	9	0%
	Townsville North	9	0%
	Townsville South	6	0%
Other HHS/Interstate	All	91	5%
TOTAL		2,013	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

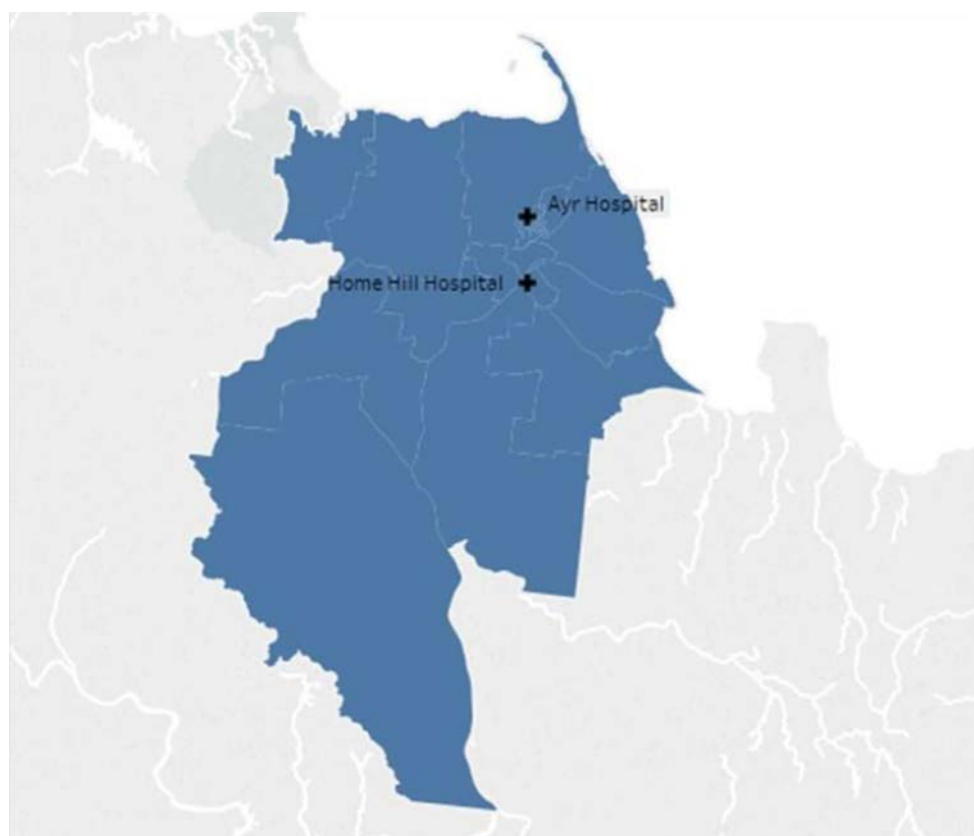
Table 4: Total separations Home Hill Health Service, by place of residence, 2014/15

HHS of Residence	Place of Residence	Separations	% of Total Separations
Townsville	Burdekin	133	96%
	Hinchinbrook	2	1%
	Townsville North	3	2%
TOTAL		138	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

Figure 3: Local catchment for Ayr and Home Hill Health Services



The local catchment for Charters Towers Health Service is the Charters Towers local planning region. In 2014/15, 91% (1,359) of separations at Charters Towers Health Service were for residents of the local planning region Charters Towers. Refer Table 5 and Figure 4.

A service description for Charters Towers Health Service, including CSCF level, is provided in Section 5 of this Paper.

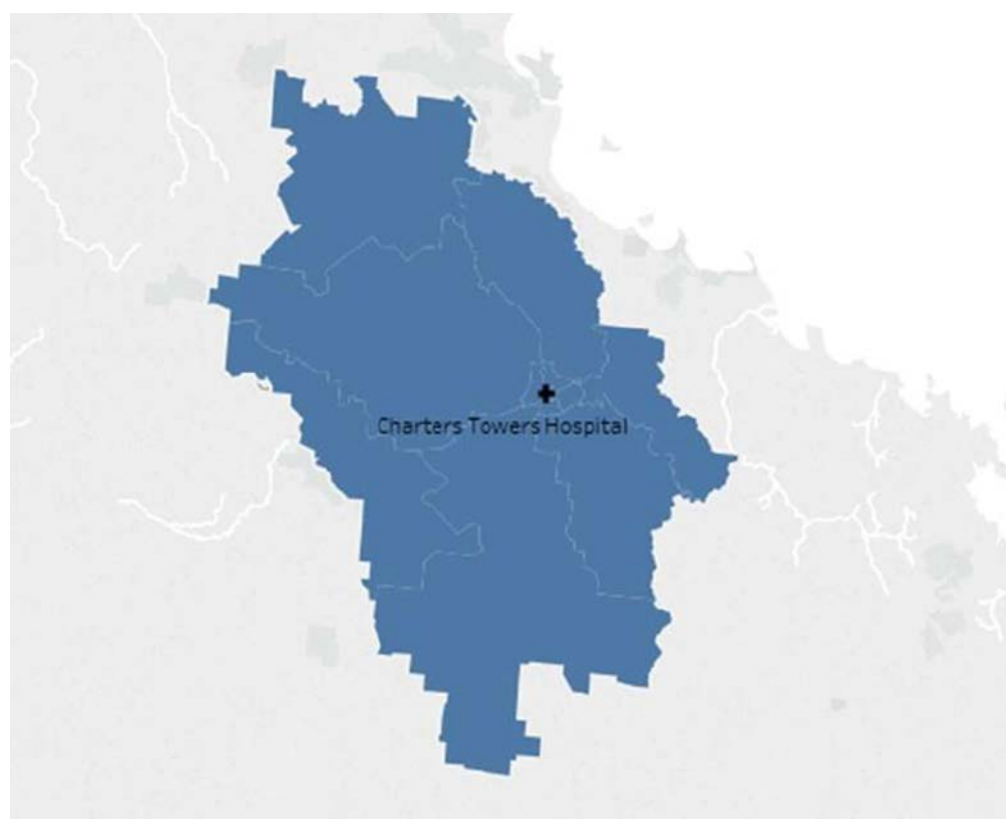
Table 5: Total separations Charters Towers Health Service, by place of residence, 2014/15

HHS of Residence	Place of Residence	Separations	% of Total Separations
Townsville	Burdekin	2	0%
	Charters Towers	1,359	91%
	Hinchinbrook	16	1%
	Northern Highlands	8	1%
	Townsville City	9	1%
	Townsville North	11	1%
	Townsville South	1	0%
Other HHS/Interstate	All	81	5%
TOTAL		1,487	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

Figure 4: Local catchment for Charters Towers Health Service



The local catchment for Hughenden MPHS and Richmond Health Service is the Northern Highlands local planning region. In 2014/15, 90% (266) of separations at Hughenden MPHS and 85% (148) of separations at Richmond Health Service were for residents of the local planning region Northern Highlands. Refer Table 6, Table 7 and Figure 5.

A service description for these facilities, including CSCF level, is provided in Section 5 of this Paper.

Table 6: Total separations Hughenden MPHS, by place of residence, 2014/15

HHS of Residence	Place of Residence	Separations	% of Total Separations
Townsville	Charters Towers	1	0%
	Northern Highlands	266	90%
	Townsville North	5	2%
	Townsville South	1	0%
Other HHS/Interstate	All	22	7%
TOTAL		295	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

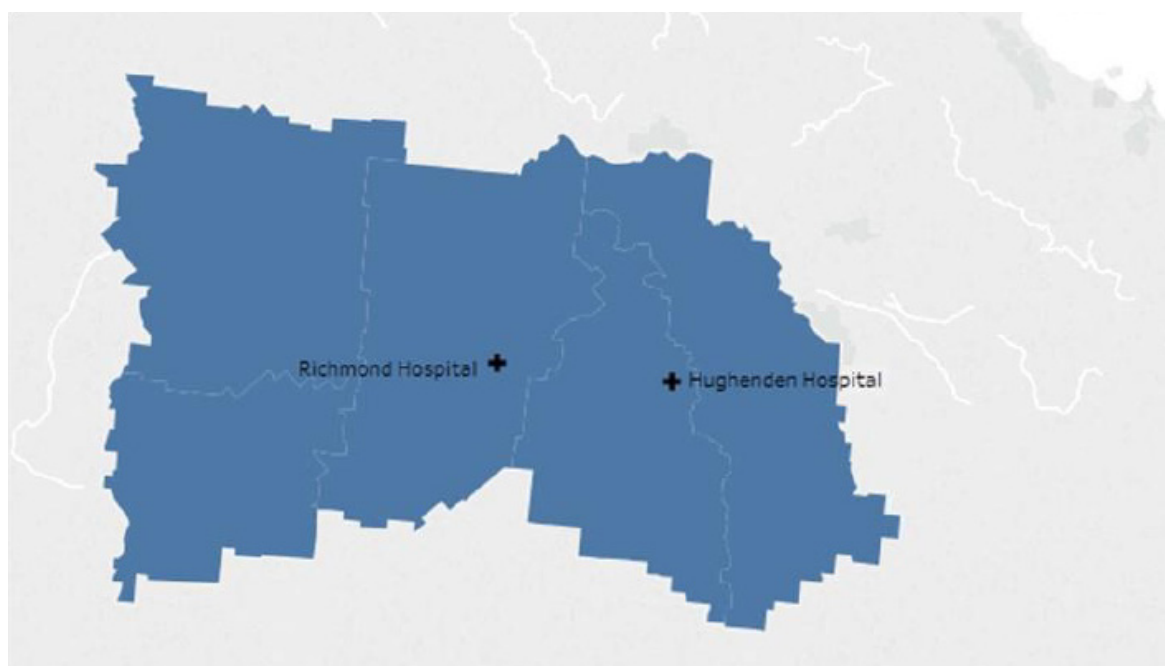
Table 7: Total separations Richmond Health Service, by place of residence, 2014/15

HHS of Residence	Place of Residence	Separations	% of Total Separations
Townsville	Burdekin	3	2%
	Charters Towers	1	1%
	Northern Highlands	148	85%
	Townsville North	5	3%
	Townsville South	3	2%
Other HHS/Interstate	All	15	9%
TOTAL		175	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

Figure 5: Local catchment for Hughenden MPHS and Richmond Health Service



The local catchment for Ingham Health Service and Joyce Palmer Health Service is the Hinchinbrook local planning region. In 2014/15, 90% (1,747) of separations at Ingham Health Service and 98% (870) of separations at Joyce Palmer Health Service were for residents of the local planning region Hinchinbrook. Refer Table 8 and Table 9.

A service description for these facilities, including CSCF level, is provided in Section 5 of this Paper.

Table 8: Total separations Ingham Health Service by place of residence, 2014/15

HHS of Residence	Place of Residence	Separations	% of Total Separations
Townsville	Burdekin	3	0%
	Hinchinbrook	1,747	90%
	Northern Highlands	2	0%
	Townsville City	33	2%
	Townsville North	50	3%
	Townsville South	20	1%
Other HHS/Interstate	All	91	5%
TOTAL		1,946	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

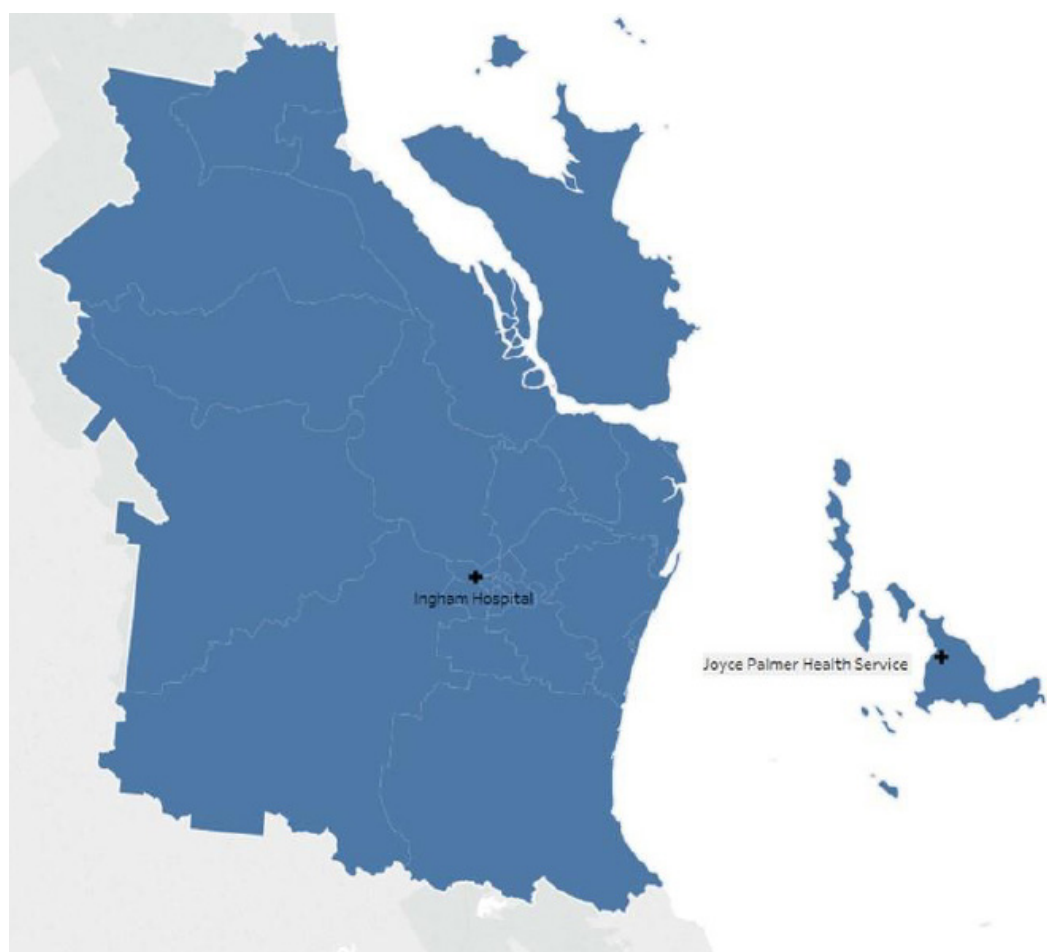
Table 9: Total separations Joyce Palmer Health Service, by place of residence, 2014/15

HHS of Residence	Place of Residence	Separations	% of Total Separations
Townsville	Hinchinbrook	870	98%
	Townsville City	8	1%
	Townsville North	1	0%
	Townsville South	7	1%
Other HHS/Interstate	All	2	0%
TOTAL		888	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

Figure 6: Local catchment for Ingham and Joyce Palmer Health Services



2.3 THHS population profile

The 2014 Australian Census estimated resident population (adjusted) of the THHS Catchment as 241,318 people.

Population split by Local Planning Region shows that Townsville North Local Planning Region accounts for around 30% (72,382) per cent of the total catchment population, followed by Townsville City at 26% (62,733). While at total population level the female / male split is even, within the Northern Highlands Local Planning Region (which accounts for only 1% of total catchment population) 44% (1,178) of the population are female and 56% (1,482) are male. Refer Table 10.

Table 10: THHS catchment - Population by local planning region

Local Planning Region	Female	%Female	Male	%Male	Total	% of Total Seps
Townsville North	36,205	50%	36,177	50%	72,382	30%
Townsville City	31,374	50%	31,359	50%	62,733	26%
Townsville South	28,380	50%	28,534	50%	56,914	24%
Burdekin	8,821	49%	9,019	51%	17,840	7%
Hinchinbrook	7,777	48%	8,501	52%	16,278	7%
Charters Towers	6,243	50%	6,268	50%	12,511	5%
Northern Highlands	1,178	44%	1,482	56%	2,660	1%
TOTAL	119,978	50%	121,340	50%	241,318	100%

Source: Estimated Resident Population of Queensland as at June 2012 to 2015 (File supplied by QLD Department of Health, April 2017)

Of the 241,318 persons in the THHS catchment, 50% (119,978) are female and 50% (121,340) are male. 43% (104,461) of the population are aged between 15 - 44 years, and 8% (19,459) of the total catchment population are aged over 70, and of these 54% (10,451) are female. Refer Table 11.

Table 11: THHS catchment - Population age profile, 2014

Age	Female	%Female	Male	%Male	Total	%Total
0-14	24,371	49%	25,429	51%	49,800	21%
15-44	51,940	50%	52,521	50%	104,461	43%
45-70	33,216	49%	34,382	51%	67,598	28%
70+	10,451	54%	9,008	46%	19,459	8%
TOTAL	119,978	50%	121,340	50%	241,318	100%

Source: Estimated Resident Population of Queensland as at June 2012 to 2015 (File supplied by QLD Department of Health, April 2017)

2.4 Aboriginal and Torres Strait Islander population

The following table represents the percentage of the population of each THHS Local Planning Region who are Aboriginal and Torres Strait Islander people. At 21%, the Local Planning Area with the greatest percentage of Aboriginal and Torres Strait Islander people is Hinchinbrook. At 11%, the age group with the greatest percentage of Aboriginal and Torres Strait Islander people (across the THHS Catchment) is the 0-14 year age group. Refer Table 12.

Table 12: THHS Catchment - % Aboriginal and Torres Strait Islander Peoples within Population, by Local Planning Region, by Age, 2014/15

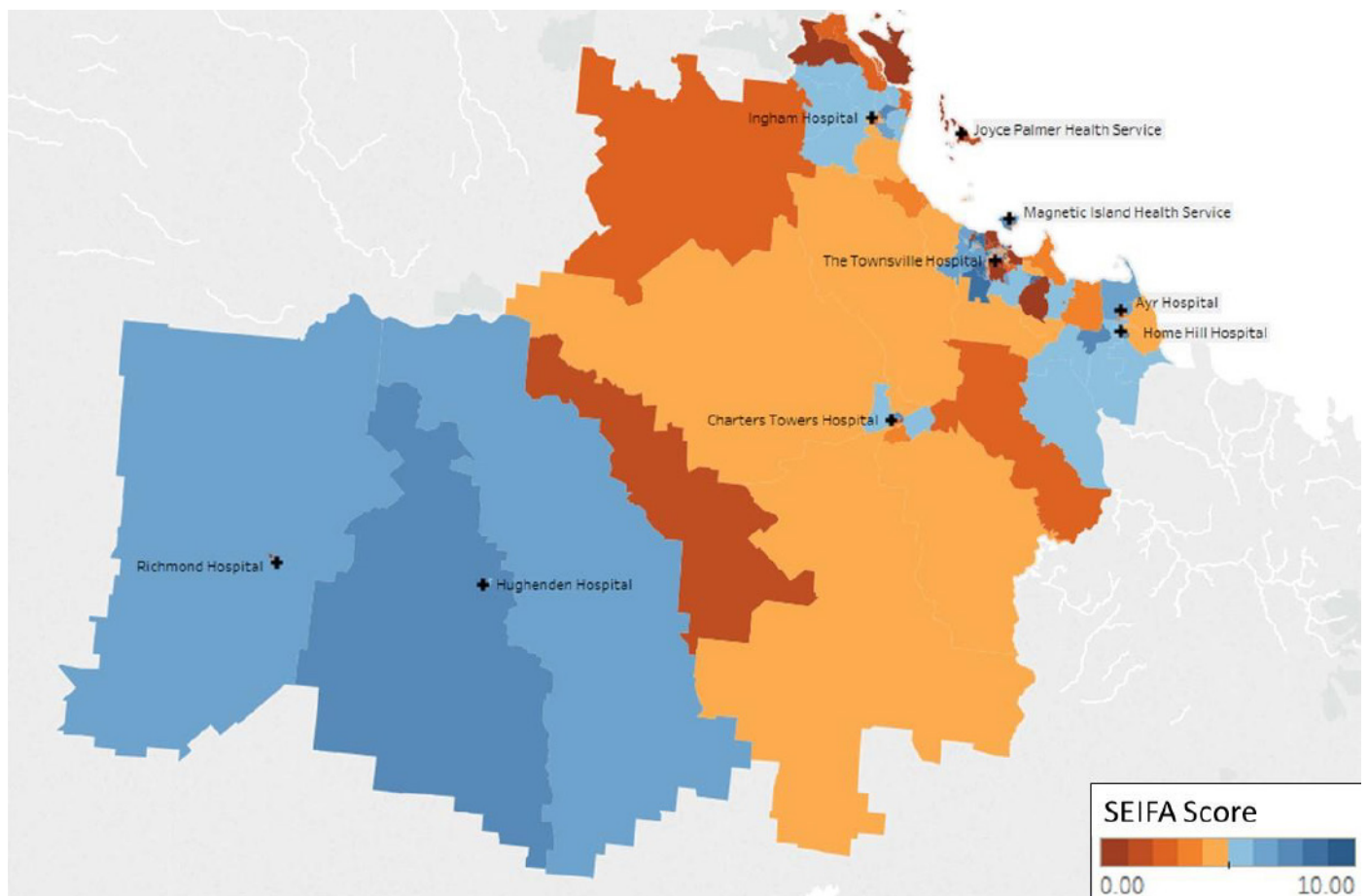
Local Planning Region	0-14	15-44	45-69	70+	Total
Townsville City	12%	10%	5%	2%	9%
Townsville North	8%	5%	3%	1%	6%
Townsville South	11%	9%	4%	1%	9%
Burdekin	9%	6%	3%	1%	6%
Charters Towers	10%	12%	5%	2%	9%
Hinchinbrook	16%	29%	14%	4%	21%
Northern Highlands	8%	5%	5%	2%	6%
TOTAL	11%	9%	5%	2%	8%

Source: Australian Bureau of Statistics Catalogue No. 3235.0 - Population by Age and Sex, Regions of Australia; Hospital and Health Service data derived by Statistical Analysis Linkage Team, Health Statistics Unit, Department of Health, Queensland.
Prepared by: Statistical Reporting and Coordination Unit,
Statistical Services Branch, Department of Health (December 2016)

2.5 Relative disadvantage

Socio-Economic Indexes for Areas (SEIFA) are a summary measure of the social and economic conditions of geographic areas across Australia measured at each census year. The indexes rank areas based on residents' socio-economic indicators, and the scores are standardised to a distribution. The following figure represents SIEFA decile scores by SA1 across the THHS. Refer Figure 7.

Figure 7: THHS SEIFA Decile Score by SA1



Source: ABS - Statistical Area Level 1, Indexes, SEIFA 2011

NOTES:

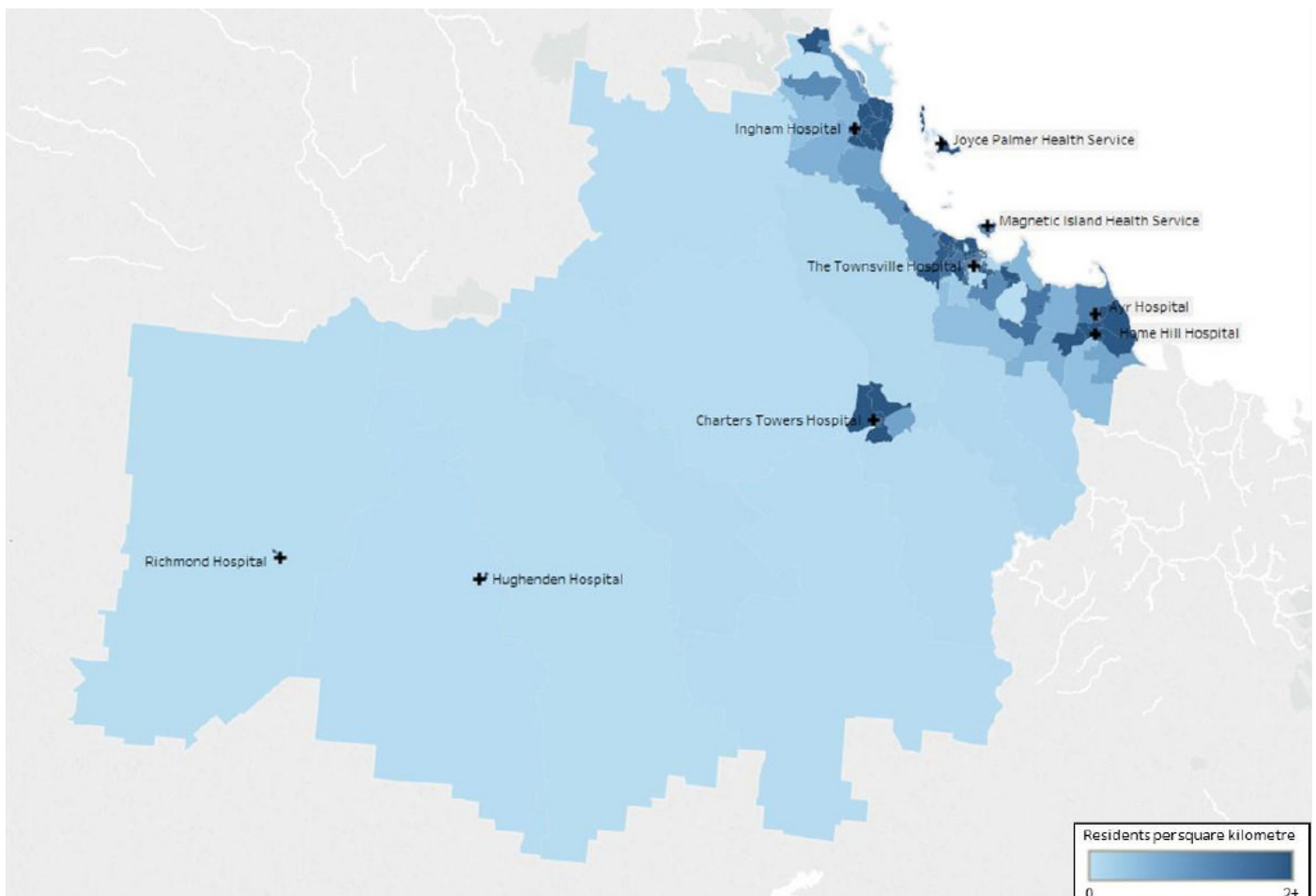
Scores: a lower score indicates that an area is relatively disadvantaged compared to an area with a higher score. Scores should only be used in distributive analysis. To enable easy recognition of high and low scores, the SA1 index scores have been standardised to have a mean of 1000 and a standard deviation of 100 across all SA1s in Australia. However, this is not the case for the larger geographies which were constructed from the SA1 scores, such as LGA.

Deciles: all areas are ordered from lowest to highest score, the lowest 10% of areas are given a decile number of 1 and so on, up to the highest 10% of areas which are given a decile number of 10. This means that areas are divided up into ten groups, depending on their score. Decile 1 is the most disadvantaged relative to the other deciles. Note that deciles have equal number of areas, not people.

2.6 Population density

To show population density, the following figure represents residents per square kilometre by SA1 across the THHS. The least populated locations within the HHS, within which facilities are located, are Richmond and Hughenden. These facilities are located within areas classified according to the Australian Standard Geographical Classification (ASGC) as Remoteness Area (RA) 5 (very remote). Refer Figure 8

Figure 8: Residents per square kilometre by SA1, THHS, 2015



Source: ABS - Estimated Resident Population by Statistical Area Level 1 (SA1), Reference period: 30 June 2011 to 2015

2.7 Population projections

The population of the HHS-wide catchment is projected to increase at a rate of 1.52% each year to 348,311 by 2036. Over this time period, the population of two Local Planning Regions will decline - Hinchinbrook Local Planning Region by 4% (-1,092) and Northern Highlands Local Planning Region by 9% (-322). The area of greatest population growth will be in the Townsville North Local Planning Region, which will grow annually at a rate of 2.75% over the time period. Refer Table 13.

Table 13: HHS-wide catchment - Population projections by THHS local planning region, 2011 - 2036

Local Planning Region	2011	2016	2021	2026	2031	2036	Change (No.)	Change (%)	AGR ^
Townsville North	64,389	77,611	88,410	99,972	112,904	125,570	61,181	95%	2.71%
Townsville South	54,299	58,822	66,799	75,219	83,218	92,007	37,708	69%	2.13%
Townsville City	61,498	62,995	64,504	66,752	68,963	71,087	9,589	16%	0.58%
Hinchinbrook	24,939	24,800	24,531	24,254	24,041	23,847	-1,092	-4%	-0.18%
Burdekin	17,703	17,937	18,219	18,581	18,898	19,153	1,450	8%	0.32%
Charters Towers	12,434	12,551	12,711	12,857	13,031	13,198	764	6%	0.24%
Northern Highlands	3,772	3,730	3,643	3,572	3,507	3,450	-322	-9%	-0.36%
TOTAL	239,034	258,446	278,817	301,206	324,562	348,311	109,277	46%	1.52%

Source: Queensland Government population projections, 2015 edition; Australian Bureau of Statistics, Population by age and sex, regions of Australia, 2014 (Cat no. 3235.o).

^Annual Growth Rate

The population of persons aged over 70 is projected to increase at the greatest rate (4.14% per year, 31,824 persons) to 49,967. Refer Table 14 and Figure 9.

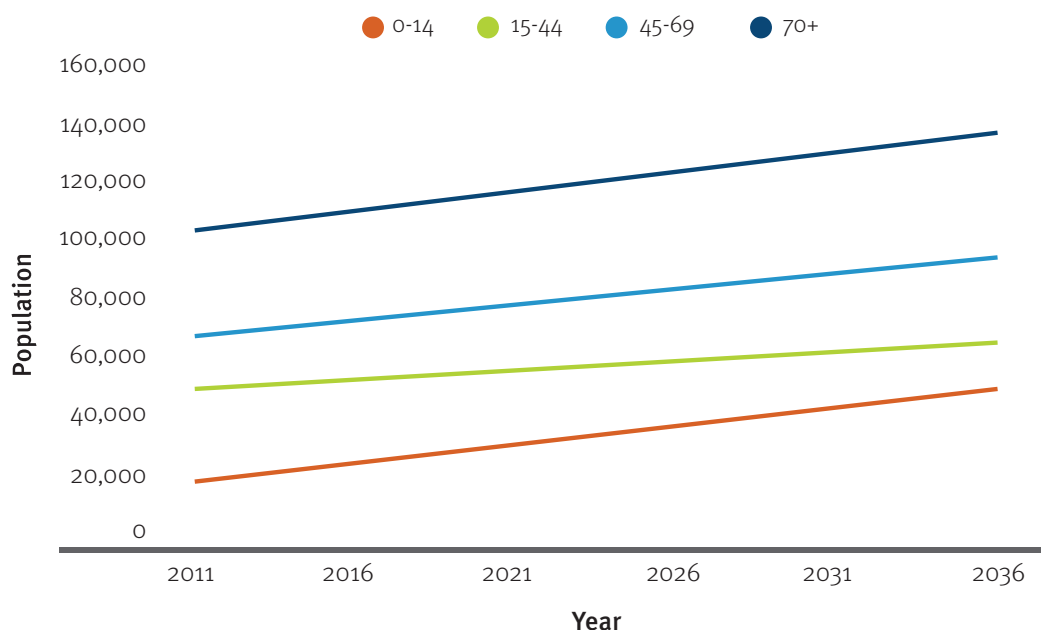
Table 14: HHS-wide catchment - Population projections by age, 2011 - 2036

Year	0-14	15-44	45-69	70+	Total
2011	49,554	103,955	67,382	18,143	239,034
2016	52,569	108,965	74,578	22,332	258,446
2021	55,980	114,735	79,678	28,423	278,817
2026	59,166	123,037	83,944	35,058	301,206
2031	62,504	130,289	89,050	42,719	324,562
2036	66,044	137,405	94,895	49,967	348,311
Change 2011 - 2036	16,490	33,450	27,513	31,824	109,277
% Change 2011 - 2036	33%	32%	41%	175%	46%
AGR^ 2011 - 2036	1.16%	1.12%	1.38%	4.14%	1.52%

Source: Queensland Government population projections, 2015 edition; Australian Bureau of Statistics, Population by age and sex, regions of Australia, 2014 (Cat no. 3235.o).

^Annual Growth Rate

Figure 9: HHS-wide catchment - Population projections by age, 2011 - 2036



Source: Queensland Government population projections, 2015 edition; Australian Bureau of Statistics, Population by age and sex, regions of Australia, 2014 (Cat no. 3235.0).

The population of the THHS extended catchment is projected to increase at a rate of 1.33% each year to 182,252 by 2036. Over this time period, the population of Cairns and Hinterland HHS will have the greatest growth in terms of volume (92,917 or 39%), and the Mackay HHS will have the greatest growth in terms of percentage change (78,334 or 46%). Refer Table 15.

Table 15: Extended catchment - Population projections by HHS, 2011 - 2036

HHS	2011	2016	2021	2026	2031	2036	Change (No.)	Change (%)	AGR ^
Cairns and Hinterland	237,617	252,964	269,741	289,477	310,037	330,534	92,917	39%	1.33%
Mackay	171,564	186,499	199,604	215,309	232,236	249,898	78,334	46%	1.52%
North West	31,863	32,826	33,899	35,050	36,178	37,276	5,413	17%	0.63%
Torres and Cape	24,671	26,077	27,099	28,136	29,219	30,259	5,588	23%	0.82%
TOTAL	465,715	498,365	530,343	567,972	607,671	647,967	182,252	39%	1.33%

Source: Queensland Government population projections, 2015 edition; Australian Bureau of Statistics, Population by age and sex, regions of Australia, 2014 (Cat no. 3235.0).

^Annual Growth Rate

3. The use of hospital services by THHS residents

Key findings



- Public hospitals within THHS provided just over half (53%) of all inpatient separations for residents of THHS in 2014/15.
- Private hospitals provided 63% of total same day services (excluding renal dialysis) to residents of THHS, but only 26% of overnight separations.
- TTH provided 85% of the total public inpatient separations for THHS residents treated within THHS facilities.
- THHS was highly self-sufficient, with over 95% public self-sufficiency. The largest volumes of these outflows were to Children's Health Queensland and to Metro North HHS hospitals.
- Local public self-sufficiency for the planning regions outside of Townsville City ranged from 51% for residents of Charters Towers to 62% for residents of Burdekin. Both Hinchinbrook and Northern Highlands planning regions are 59% self-sufficient. Local self-sufficiency for overnight stays was higher than levels for same day services.
- Residents of THHS used total public and private inpatient hospital services at a rate slightly lower than the average for Queensland with a Relative Utilisation (RU) of 86. Private hospital RU was 83, while public hospital RU was 89. However, it is noted that overnight RU for adult public patients is 111. This indicates that total RU may be distorted by admission practices of same day patients.
- Utilisation of public hospital same day services (excluding renal dialysis) was significantly lower than the average for Queensland for both adults (67) and children (57).

Strategic questions



- What is the current relationship between the public and private hospital sectors in Townsville?
- What is the likelihood of the private hospital sector in Townsville expanding in future?
- What will be the future relationship between public and private sectors, for example, higher degrees of integration or collaboration? Joint planning for particular specialty services?
- The relative utilisation of admitted same day services (excluding renal dialysis) is lower than expected. What are the underlying reasons for that?
- At a HHS level, self-sufficiency is currently at an optimal level. Are there known major risks to THHS's ability to maintain this high level of self-sufficiency? Are there particular specialties that are more vulnerable due to issues of critical mass?
- What are the current priorities for increasing local self-sufficiency for the outlying areas of THHS? Are there HHS-wide barriers to further increasing local self-sufficiency or are the barriers location specific?

3.1. Use of public and private Hospitals by THHS residents in 2014/15

In 2014/15, there were 85,153 total separations for residents of THHS from hospitals in Queensland. Public facilities within the THHS provided 53% (44,737) of total separations. There were minimal outflows (2% of total separations) to public hospitals in other HHS's, with only 950 separations from hospitals in the Brisbane metropolitan area and 1,201 separations from hospitals in all other HHS's.

Of the total separations for THHS residents in 2014/15, 45% (38,265) were from private hospitals. By planning region within THHS, the highest percentage use of private hospitals was for residents of the Burdekin accounting for 52% (3,716) of total Burdekin resident separations. Residents of Townsville North and Townsville South also had high percentage use of private hospitals with 50% (11,943) and 47% (8,463) of total separations respectively. The lowest use of private hospitals was for residents of Hinchinbrook (36%, 2,689), Northern Highlands (36%, 427) and Charters Towers (37%, 1,655) planning regions. Refer Table 16 and Table 17.

Table 16: Total separations (No.) THHS residents (by THHS planning region), by place of treatment, 2014/15

Place of Residence	Place of Treatment				
	THHS Facilities	Metro HHS Facilities*	Other HHS Facilities	Private Facilities	Total
Burdekin	3,289	75	62	3,716	7,142
Charters Towers	2,664	69	101	1,655	4,489
Hinchinbrook	4,448	59	270	2,689	7,466
Northern Highlands	705	9	46	427	1,187
Townsville City	13,036	223	180	9,372	22,811
Townsville North	11,457	272	367	11,943	24,039
Townsville South	9,138	243	175	8,463	18,019
TOTAL	44,737	950	1,201	38,265	85,153

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis.

*Metro HHS Facilities includes Mater Public Hospitals, CHQ, Metro North Facilities and Metro South HHS Facilities

Table 17: Total separations (%) THHS residents (by THHS planning region), by place of treatment, 2014/15

Place of Residence	Place of Treatment				
	THHS Facilities	Metro HHS Facilities*	Other HHS Facilities	Private Facilities	Total
Burdekin	46%	1%	1%	52%	100%
Charters Towers	59%	2%	2%	37%	100%
Hinchinbrook	60%	1%	4%	36%	100%
Northern Highlands	59%	1%	4%	36%	100%
Townsville City	57%	1%	1%	41%	100%
Townsville North	48%	1%	2%	50%	100%
Townsville South	51%	1%	1%	47%	100%
TOTAL	53%	1%	1%	45%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis.

*Metro HHS Facilities includes Mater Public Hospitals, CHQ, Metro North Facilities and Metro South HHS Facilities

Of the total separations for THHS residents in 2014/15, 43,440 (51%) were for same day services (excluding renal dialysis). Private hospitals provided 63% (27,325) of the same day separations compared to THHS facilities which provided only 35% (15,212). 2% (903) of same day separations were provided by hospitals in other HHS's. By planning region, the highest percentage of private hospital same day separations was for residents of Burdekin (74%, 2,741) followed by Townsville North (65%, 8,429) and Townsville South (63%, 5,921).

Provision of same day services by facilities within THHS ranged between 24% (901) of total same day services for residents of Burdekin to 42% (845) for residents of Charters Towers planning region. Refer Table 18 and Table 19.

Table 18: Total same day separations THHS residents (by THHS planning region), by place of treatment, 2014/15

SD Separations	Place of Treatment			
Place of Residence	THHS Facilities	Other HHS Facilities	Private Hospitals	Total
Burdekin	901	63	2,741	3,705
Charters Towers	845	73	1,082	2,000
Hinchinbrook	1,395	121	1,888	3,404
Northern Highlands	212	21	286	519
Townsville City	4,410	160	6,978	11,548
Townsville North	4,225	269	8,429	12,923
Townsville South	3,224	196	5,921	9,341
TOTAL	15,212	903	27,325	43,440

Table 19: Total same day separation (%) THHS residents (by THHS planning region), by place of treatment, 2014/15

SD Separations	Place of Treatment			
Place of Residence	THHS Facilities	Other HHS Facilities	Private Hospitals	Total
Burdekin	24%	2%	74%	100%
Charters Towers	42%	4%	54%	100%
Hinchinbrook	41%	4%	55%	100%
Northern Highlands	41%	4%	55%	100%
Townsville City	38%	1%	60%	100%
Townsville North	33%	2%	65%	100%
Townsville South	35%	2%	63%	100%
TOTAL	35%	2%	63%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis.

The majority of overnight separations for THHS residents in 2014/15 were from facilities within THHS, accounting for 71% (29,525) of the total overnight separations. Only 26% (10,940) of THHS resident overnight separations were from private hospitals. 3% (1,248) of total overnight separations were from facilities in other HHS's. The highest percentage of overnight separations from private hospitals was for residents of Townsville North (32%, 3,514 separations) and the lowest percentage was for residents of Hinchinbrook (20%, 801 separations). Refer Table 20 and Table 21.

Table 20: Total Overnight Separations THHS Residents (by THHS Planning Region), by Place of Treatment, 2014/15

ON Separations	Place of Treatment			
Place of Residence	THHS Facilities	Other HHS Facilities	Private Hospitals	Total
Burdekin	2,388	74	975	3,437
Charters Towers	1,819	97	573	2,489
Hinchinbrook	3,053	208	801	4,062
Northern Highlands	493	34	141	668
Townsville City	8,626	243	2,394	11,263
Townsville North	7,232	370	3,514	11,116
Townsville South	5,914	222	2,542	8,678
TOTAL	29,525	1,248	10,940	41,713

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis.

Table 21: Total overnight separations (%) THHS residents (by THHS planning region), by place of treatment, 2014/15

ON Separations	Place of Treatment			
Place of Residence	THHS Facilities	Other HHS Facilities	Private Hospitals	Total
Burdekin	69%	2%	28%	100%
Charters Towers	73%	4%	23%	100%
Hinchinbrook	75%	5%	20%	100%
Northern Highlands	74%	5%	21%	100%
Townsville City	77%	2%	21%	100%
Townsville North	65%	3%	32%	100%
Townsville South	68%	3%	29%	100%
TOTAL	71%	3%	26%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis.

As previously discussed, THHS was highly self-sufficient in 2014/15. This level of self-sufficiency is one that has continued since 2010/11, for both overnight and same day separations. Refer Table 22.

Table 22: THHS self-sufficiency, public hospitals only, 2010/11 - 2014/15

Stay Type	2010/11	2011/12	2012/13	2013/14	2014/15
Overnight	95.5%	95.5%	95.5%	95.9%	95.9%
Same Day	94.5%	94.4%	94.3%	94.3%	94.4%
TOTAL	95.1%	95.1%	95.1%	95.4%	95.4%

Source: Cross Sectional - Inpatient Projections, Base Year 2014/15 (File supplied by QLD Department of Health, 2016)

Note: Excludes unqualified neonates and renal dialysis

3.2 Analysis of THHS resident flows to facilities within THHS in 2014/15

TTH provided 85% (38,097) of the total THHS resident separations, there was significant variation in market share by planning region. However, the TTH percentage share of total separations from each planning region varies significantly. For Burdekin residents, TTH provided only 38% (1,255) of total separations, with Ayr and Home Hill Health Services providing 58% (1,893) and 4% (133) respectively. The Charters Towers Health Service provided 51% (1,359) of total separations for residents of Charters Towers with TTH providing the remaining 49% (1,298). Hughenden MPHS provided 38% (266) of total separations and Richmond 21% (148) for residents of the Northern Highlands with 1% (8) provided by Charters Towers Health Service. TTH provided only 41% (1,813) of total separations for residents of Hinchinbrook with the majority of the remainder provided by Ingham Health Service and Joyce Palmer Health Centre. Refer Table 23 and 24.

Table 23: Total separations THHS residents by place of treatment within THHS by place of residence, 2014/15

Place of Treatment	Burdekin	Charters Towers	Hinchinbrook	Northern Highlands	Townsville City	Townsville North	Townsville South	Total
Ayr Health Service	1,893	5	0	0	9	9	6	1,922
Charters Towers Health Service	2	1,359	16	8	9	11	1	1,406
Home Hill Health Service	133	0	2	0	0	3	0	138
Hughenden MPHS	0	1	0	266	0	5	1	273
Ingham Health Service	3	0	1,747	2	33	50	20	1,855
Joyce Palmer Health Service	0	0	870	0	8	1	7	886
Richmond Health Service	3	1	0	148	0	5	3	160
Townsville Hospital	1,255	1,298	1,813	281	12,977	11,373	9,100	38,097
TOTAL	3,289	2,664	4,448	705	13,036	11,457	9,138	44,737

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis

Table 24: Total separations (%) THHS residents by place of treatment within THHS facility by place of residence, 2014/15

Place of Treatment	Burdekin	Charters Towers	Hinchinbrook	Northern Highlands	Townsville City	Townsville North	Townsville South	Total
Ayr Health Service	58%	0%	0%	0%	0%	0%	0%	4%
Charters Towers Health Service	0%	51%	0%	1%	0%	0%	0%	3%
Home Hill Health Service	4%	0%	0%	0%	0%	0%	0%	0%
Hughenden MPHS	0%	0%	0%	38%	0%	0%	0%	1%
Ingham Health Service	0%	0%	39%	0%	0%	0%	0%	4%
Joyce Palmer Health Service	0%	0%	20%	0%	0%	0%	0%	2%
Richmond Health Service	0%	0%	0%	21%	0%	0%	0%	0%
Townsville Hospital	38%	49%	41%	40%	100%	99%	100%	85%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis

TTH provides just under half of the total same day separations (excluding renal dialysis) for residents of Burdekin (44%, 394), Charters Towers (47%, 401), Hinchinbrook (44%, 610) and Northern Highlands (43%, 92). Refer Table 25 and Table 26.

Table 25: Total same day separations THHS residents (by planning region), by THHS public hospital of treatment, 2014/15

Place of Residence	Ayr Health Service	Charters Towers Health Service	Home Hill Health Service	Hughenden MPHS	Ingham Health Service	Joyce Palmer Health Service	Richmond Health Service	TTH	Total
Burdekin	473	0	32	0	1	0	1	394	901
Charters Towers	1	443	0	0	0	0	0	401	845
Hinchinbrook	0	6	0	0	526	253	0	610	1,395
Northern Highlands	0	3	0	67	2	0	48	92	212
Townsville City	2	2	0	0	15	0	0	4,391	4,410
Townsville North	4	6	0	1	22	0	0	4,192	4,225
Townsville South	0	0	0	0	12	0	0	3,212	3,224
TOTAL	480	460	32	68	578	253	49	13,292	15,212

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis

Table 26: Total same day separations (%) THHS residents (by planning region), by THHS public hospital of treatment, 2014/15

Place of Residence	Ayr Health Service	Charters Towers Health Service	Home Hill Health Service	Hughenden MPHS	Ingham Health Service	Joyce Palmer Health Service	Richmond Health Service	TTH	Total
Burdekin	52%	0%	4%	0%	0%	0%	0%	44%	100%
Charters Towers	0%	52%	0%	0%	0%	0%	0%	47%	100%
Hinchinbrook	0%	0%	0%	0%	38%	18%	0%	44%	100%
Northern Highlands	0%	1%	0%	32%	1%	0%	23%	43%	100%
Townsville City	0%	0%	0%	0%	0%	0%	0%	100%	100%
Townsville North	0%	0%	0%	0%	1%	0%	0%	99%	100%
Townsville South	0%	0%	0%	0%	0%	0%	0%	100%	100%
TOTAL	3%	3%	0%	0%	4%	2%	0%	87%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis

For overnight separations, TTH provides only 36% (861) for Burdekin residents, 39% (1,203) for Hinchinbrook residents and 38% (189) for residents of Northern Highlands. Almost half (49%, 897) of all overnight separations for Charters Towers residents were provided by TTH in 2014/15. Refer Table 27 and Table 28.

Table 27: Total Overnight Separations THHS Residents (by Planning Region), by THHS Public Hospital of Treatment, 2014/15

Place of Residence	Ayr Health Service	Charters Towers Health Service	Home Hill Health Service	Hughenden MPHS	Ingham Health Service	Joyce Palmer Health Service	Richmond Health Service	TTH	Total
Burdekin	1,420	2	101	0	2	0	2	861	2,388
Charters Towers	4	916	0	1	0	0	1	897	1,819
Hinchinbrook	0	10	2	0	1,221	617	0	1,203	3,053
Northern Highlands	0	5	0	199	0	0	100	189	493
Townsville City	7	7	0	0	18	8	0	8,586	8,626
Townsville North	5	5	3	4	28	1	5	7,181	7,232
Townsville South	6	1	0	1	8	7	3	5,888	5,914
TOTAL	1,442	946	106	205	1,277	633	111	24,805	29,525

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis

Table 28: Total Overnight Separations (%) THHS Residents (by Planning Region), by THHS Public Hospital of Treatment, 2014/15

Place of Residence	Ayr Health Service	Charters Towers Health Service	Home Hill Health Service	Hughenden MPHS	Ingham Health Service	Joyce Palmer Health Service	Richmond Health Service	TTH	Total
Burdekin	59%	0%	4%	0%	0%	0%	0%	36%	100%
Charters Towers	0%	50%	0%	0%	0%	0%	0%	49%	100%
Hinchinbrook	0%	0%	0%	0%	40%	20%	0%	39%	100%
Northern Highlands	0%	1%	0%	40%	0%	0%	20%	38%	100%
Townsville City	0%	0%	0%	0%	0%	0%	0%	100%	100%
Townsville North	0%	0%	0%	0%	0%	0%	0%	99%	100%
Townsville South	0%	0%	0%	0%	0%	0%	0%	100%	100%
TOTAL	5%	3%	0%	1%	4%	2%	0%	84%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis

3.3 Analysis of THHS resident flows to Brisbane metropolitan hospitals

In 2014/15, there were 950 total separations for residents of THHS provided from hospitals located in the Brisbane metropolitan area. Of these, 369 (39%) were same day separations. The greatest volume of same day separations were from the Children's Health Services (158). Of the 581 overnight separations, the greatest volume (291) were from Metro North HHS hospitals followed by Children's Health Services (153). Refer to Tables 29 and 30.

Table 29: Total Same Day Separations THHS Residents (by THHS Planning Region), by Place of Treatment (Brisbane Metropolitan facilities), 2014/15

Place of Residence	Place of Treatment				
	Children's Health Services	Mater Public Hospitals	Metro North Hospitals	Metro South Hospitals	Total
Burdekin	19	3	7	3	32
Charters Towers	22	2	4	1	29
Hinchinbrook	3	0	5	6	14
Northern Highlands	1	0	2	1	4
Townsville City	45	8	13	17	83
Townsville North	32	14	19	30	95
Townsville South	36	11	30	35	112
TOTAL	158	38	80	93	369

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis

Table 30: Total Overnight Separations THHS Residents (by THHS Planning Region), by Place of Treatment (Brisbane Metropolitan facilities), 2014/15

Place of Residence	Place of Treatment				
	Children's Health Services	Mater Public Hospitals	Metro North Hospitals	Metro South Hospitals	Total
Burdekin	20	4	16	3	43
Charters Towers	15	8	10	7	40
Hinchinbrook	6	1	27	11	45
Northern Highlands	0	1	4	0	5
Townsville City	41	9	71	19	140
Townsville North	46	21	86	24	177
Townsville South	25	9	77	20	131
TOTAL	153	53	291	84	581

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis

3.4 Relative utilisation of services

Relative Utilisation (RU) is the ratio of the number of admissions for residents of a particular region (regardless of where they were admitted) to the expected number of admissions. Noting that the expected number of admissions is calculated based on a State average, RU is used within the report to indicate areas of potential over- or underuse of services within the THHS region.

In 2014/15, residents of THHS used total public and private inpatient hospital services at a rate slightly lower than the average for Queensland with a total RU of 86. Private hospital RU is 83, while public hospital RU is 89. However, it is noted that overnight RU for adult public patients is 111. This indicates that total RU may be distorted by admission practices of same day patients.

Of the top 15 SRG's by total volume of separations, only SRG Interventional Cardiology has a total RU greater than 100 with both private and public RU considerably higher (145 and 155 respectively). Relative utilisation of public hospitals is also above average for SRG Immunology and Infections (115) and SRG Ophthalmology (123). For private hospitals, RU is also above average for SRG Urology (108).

Other significant variations in RU between public and private hospitals are for SRG Non Subspecialty Surgery (private RU 82, public RU 102), SRG Cardiology (private RU 65, public RU 95), and SRG Neurology (private RU 45, public RU 93). The significant variations between public and private hospital RU for SRG Diagnostic GI Endoscopy and SRG Chemotherapy should be interpreted with caution as are likely to be a result of differing admission and counting practices rather than levels of service provision. Refer Table 31.

Table 31: Public/private relative utilisation THHS residents - Top 15 SRG's by total separations, 2014/15

SRG	Private Hospitals		Public Hospitals		All Hospitals	
	Separations	RU	Separations	RU	Separations	RU
Diagnostic GI Endoscopy	7,993	111	612	29	8,605	92
Orthopaedics	3,988	98	4,286	103	8,274	100
Non Subspecialty Surgery	1,271	82	5,138	102	6,409	97
Obstetrics	991	91	3,641	88	4,632	88
Respiratory Medicine	1,288	88	3,049	93	4,337	91
Ophthalmology	2,733	89	1,242	123	3,975	98
Non Subspecialty Medicine	1,536	83	2,434	78	3,970	80
Gynaecology	2,430	95	1,451	91	3,881	94
Chemotherapy	3,653	93	218	11	3,871	66
Cardiology	497	65	3,367	95	3,864	89
Neurology	364	45	2,556	93	2,920	82
Urology	1,546	108	1,357	83	2,903	95
Interventional Cardiology	1,234	145	1,001	155	2,235	149
Immunology & Infections	387	50	1,821	115	2,208	94
Ear, Nose & Throat	1,054	94	1,154	82	2,208	87
All other SRG's	7,300	-	13,561	-	20,861	-
TOTAL	38,265	83	46,888	89	85,153	86

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis

The following tables show total RU for THHS residents who are adults aged 15 years and over (Table 32) and children aged 0 -14 years (Table 33). Total RU for THHS adults is 87 with public hospital RU of 90 and private hospital RU of 83.

Table 32: Public/private relative utilisation THHS residents aged 15 years and over - Top 15 SRG's by total separations, 2014/15

SRG	Private Hospitals		Public Hospitals		All Hospitals	
	Separations	RU	Separations	RU	Separations	RU
Diagnostic GI Endoscopy	7,945	111	599	29	8,544	92
Orthopaedics	3,946	100	3,860	105	7,806	102
Non Subspecialty Surgery	1,149	79	4,626	105	5,775	98
Obstetrics	991	91	3,636	88	4,627	88
Gynaecology	2,423	95	1,439	91	3,862	94
Ophthalmology	2,694	89	1,168	124	3,862	97
Cardiology	495	65	3,344	95	3,839	89
Chemotherapy	3,653	93	120	7	3,773	66
Non Subspecialty Medicine	1,497	84	2,183	82	3,680	83
Respiratory Medicine	1,246	88	2,400	104	3,646	98
Urology	1,509	109	1,256	82	2,765	94
Neurology	342	43	2,407	94	2,749	82
Interventional Cardiology	1,234	145	992	156	2,226	150
Immunology & Infections	374	49	1,624	119	1,998	94
Haematology	1,285	104	474	55	1,759	84
All other SRG's	6,249	-	12,328	-	18,577	-
TOTAL	37,032	83	42,456	90	79,488	87

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis

Total RU for THHS children aged 0-14 years is 75 with public hospital RU of only 74 and a private hospital RU of 82. SRG's with total RU notably lower than the Queensland average include SRG Ear, Nose and Throat (76), SRG Respiratory Medicine (67), SRG Orthopaedics (76), SRG Non Subspecialty Medicine (57), SRG Gastroenterology (73) and SRG Neurosurgery (53).

Table 33: Public/private relative utilisation THHS residents aged 0-14 years - Top 15 SRG's by separations, 2014/15

SRG	Private Hospitals		Public Hospitals		All Hospitals	
	Separations	RU	Separations	RU	Separations	RU
Ear, Nose & Throat	360	77	416	74	776	76
Qualified Neonate	121	84	604	83	725	83
Respiratory Medicine	42	74	649	67	691	67
Non Subspecialty Surgery	122	124	512	82	634	88
Orthopaedics	42	34	426	86	468	76
Dentistry	199	91	163	91	362	91
Non Subspecialty Medicine	39	64	251	55	290	57
Immunology & Infections	13	118	197	90	210	91
Gastroenterology	19	97	165	71	184	73
Neurology	22	159	149	74	171	80
Urology	37	99	101	112	138	108
Neurosurgery	2	33	114	54	116	53
Ophthalmology	39	125	74	117	113	120
Chemotherapy	0	0	98	69	98	69
Plastic & Reconstructive Surgery	34	102	56	117	90	111
All other SRG's	142	-	457	-	599	-
TOTAL	1,233	82	4,432	74	5,665	75

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis

The public hospital RU of same day services (excluding renal dialysis) is significantly lower than the average for Queensland for both adults (67) and children (57). Refer Table 34.

Table 34: Public/private total relative utilisation THHS residents by same day and overnight - Adults and children, 2014/15

	Private Hospitals		Public Hospitals		All Hospitals	
	Separations	RU	Separations	RU	Separations	RU
Same Day - Adults aged 15 years and over	26,653	87	14,562	67	41,215	79
Same Day - Children aged 0-14 years	672	78	1,553	57	2,225	62
Overnight - Adults aged 15 years and over	10,379	74	27,894	111	38,273	98
Overnight - Children aged 0-14 years	561	87	2,879	88	3,440	87
Total Same Day and Overnight - All Ages	38,265	83	46,888	89	85,153	86

Note: Excludes Unqualified Neonates and Renal Dialysis

A more detailed analysis of the relative utilisation of same day hospital services by THHS adult residents aged 15 years and over is shown in Table 35 below. SRG's with a private hospital same day RU above the Queensland average include SRG Orthopaedics (110), SRG Cardiology (113), SRG Urology (135), SRG Haematology (114), SRG Dentistry (131) and Gastroenterology (127).

SRG's with a public hospital same day RU significantly lower than the Queensland average include SRG Non-subspecialty medicine (48), SRG Haematology (28), SRG Obstetrics (49) and SRG Gastroenterology (62). As noted previously, low public same day RU for SRG Diagnostic GI Endoscopy and SRG Chemotherapy is likely to be the result of differing admission practices.

Table 35: Public/private relative utilisation THHS residents aged 15 years and over - Top 15 SRG's by same day separations, 2014/15

SRG	Private Hospitals		Public Hospitals		All Hospitals	
	Separations	RU	Separations	RU	Separations	RU
Diagnostic GI Endoscopy	7,763	114	355	21	8,118	95
Chemotherapy	3,653	93	120	7	3,773	66
Ophthalmology	2,670	90	1,038	127	3,708	98
Orthopaedics	1,998	110	1,652	96	3,650	104
Gynaecology	2,069	102	891	92	2,960	99
Non Subspecialty Surgery	298	85	1,789	91	2,087	90
Non Subspecialty Medicine	1,296	96	641	48	1,937	72
Cardiology	200	113	1,435	88	1,635	91
Urology	1,030	135	599	75	1,629	104
Haematology	1,211	114	171	28	1,382	83
Dentistry	1,099	131	196	106	1,295	126
Plastic & Reconstructive Surgery	746	57	480	79	1,226	64
Neurology	195	47	897	73	1,092	66
Obstetrics	65	80	621	49	686	50
Gastroenterology	146	127	354	62	500	73
All other SRG's	2,214	-	3,323	-	5,537	-
TOTAL	26,653	87	14,562	67	41,215	79

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis

4. The role of The Townsville Hospital

Key findings



- SRG Non-subspecialty surgery, SRG Orthopaedics and SRG Obstetrics accounted for more than one quarter of all separations for adults aged 15 years and over from TTH in 2014/15. SRG Mental Health, SRG Orthopaedics and SRG Rehabilitation accounted for more than a quarter of total adult beddays.
- Of all SRG's within the Top 10 (in terms of beddays used by adults in 2014/15), at least six were for services for which there may be opportunity for alternative models/settings of care: SRG Respiratory Medicine, SRG Immunology and Infections, SRG Rehabilitation, SRG Other non-acute, SRG Geriatric Management, SRG Mental Health.
- 14% of total separations from TTH in 2014/15 were for chargeable patients. The largest volumes were for SRG Ophthalmology and SRG Neurology. In terms of the largest percentages, approximately 30% of all patients for SRG Geriatric Management, SRG Renal Medicine and SRG Palliative Care were chargeable.
- In the five years 2010/11 to 2014/15, SRG Orthopaedics had the greatest growth in numbers of separations with a 34% increase. Over the same time period, separations declined slightly in volume for five SRG's: Dentistry, Renal Medicine, Vascular Surgery, Diagnostic GI Endoscopy and Qualified Neonates.
- 15% of total separations from TTH in 2014/15 were residents of other HHS's. Of these, 5% were residents of Mackay HHS, 4% were from Cairns and Hinterland HHS and 4% were from North West HHS. Residents of other HHS's accounted for 21% of total beddays.
- The SRG's provided by TTH to residents of other HHS's varied for each HHS. The Top 3 SRG's for residents of Mackay HHS were SRG Vascular Surgery, SRG Non-subspecialty Surgery and SRG Interventional Cardiology. Residents of Cairns and Hinterland HHS flowed primarily to TTH for SRG Non-Subspecialty Surgery, SRG Neurosurgery and SRG Obstetrics. The Top 3 SRG's for residents of North West HHS were SRG Orthopaedics, SRG Endocrinology and SRG Interventional Cardiology (noting this excluded renal dialysis).
- Just under 7,000 separations from hospitals in the Brisbane Metropolitan area were for residents of other areas of North Queensland (Cairns and Hinterland HHS, Mackay HHS, Cape York and Torres Strait HHS and North West HHS). Of these separations 64% were from private hospitals. The largest volume of flows to Brisbane were for residents of Mackay with SRG Orthopaedics (92) accounting for the largest number of adult separations from a public facility. For adult residents of Cairns and Hinterland HHS, the largest volume of public separations was from the Mater Hospitals for SRG Urology (278). For adult residents of North West HHS, SRG Non-Subspecialty Surgery accounted for the largest number of public separations (18).



- A key question is not only who will be an inpatient in the future but which groups of patients will not be inpatients in 10 years time.
- Are programs such as Hospital in the Home, Hospital in the Nursing Home, community based rehabilitation, primary care and prevention programs sufficiently resourced to make an impact at a whole of population level? What are the barriers to expanding their capacity to meet future demand?
- Do the SRG's with larger volumes and / or percentages of chargeable patients represent known service gaps in the private sector?
- The major reasons for inflow of residents from other HHS's to TTH varies between locations and does not appear to be solely for tertiary services. For which specialties are these inflows essential to sustain critical mass and service viability at TTH? Are any suitable for expanding outreach services?

4.1 Service profile



The Townsville Hospital

Location: TTH is a tertiary referral hospital located in the suburb of Douglas, Townsville.

Size: >500 bed capacity.

Capability: Clinical Services Capability Framework (CSCF) ratings are provided at Appendix B.

Services: TTH provides a range of services across the care continuum and across service settings. Some services include cardiac, obstetric, gynaecological, paediatric, palliative care, neurosurgical, orthopaedic, cancer, mental health, neonatal, allied health, anaesthetics and intensive care services. For a description of services please refer to the Clinical Services Review and the THHS Organisational chart at Appendix C.

4.2 Current service provision

4.2.1. Services for Adults (15+ years)

In 2014/15, there were 40,253 total adult separations from TTH, which accounted for a total of 167,202 total beddays. Of these, 34% (13,700) were same day separations and the Average Length of Stay (ALOS) across all adult patients was 4.0 days.

The SRG Non Subspecialty Surgery accounted for the greatest number of separations (10% of total separations, 4,132), followed by the SRG Orthopaedics (10% of total separations, 3,878) and the SRG Obstetrics (9% of total separations, 3,688). Refer Table 36.

Table 36: Top 10 SRGs by total adult separations (including beddays), Townsville Hospital, by SRG by stay type, 2014/15

SRG	Overnight	Same Day	Total Seps	% Same Day	Total Beddays	ALOS (days)	% of Total Seps	% of Total Beddays
Non Subspecialty Surgery	2,463	1,669	4,132	40%	10,315	2.5	10%	6%
Orthopaedics	2,218	1,660	3,878	43%	12,889	3.3	10%	8%
Obstetrics	3,106	582	3,688	16%	9,326	2.5	9%	6%
Cardiology	1,456	1,180	2,636	45%	5,763	2.2	7%	3%
Neurology	1,362	754	2,116	36%	8,259	3.9	5%	5%
Respiratory Medicine	1,554	320	1,874	17%	7,670	4.1	5%	5%
Non Subspecialty Medicine	1,100	675	1,775	38%	4,442	2.5	4%	3%
Gynaecology	562	902	1,464	62%	2,161	1.5	4%	1%
Mental Health	1,101	340	1,441	24%	15,373	8.9	4%	9%
Interventional Cardiology	1,291	57	1,348	4%	5,245	3.9	3%	3%
Other	10,340	5,561	15,901	35%	85,759	5.4	40%	51%
TOTAL	26,553	13,700	40,253	34%	167,202	4.0	100%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis

The SRG Mental Health accounted for the greatest number of beddays (9% of total beddays, 15,373), followed by the SRG Orthopaedics (8% of total beddays, 12,889) and the SRG Rehabilitation (non-acute) (7% of total beddays, 12,310).

Within the top 10 SRGs for Total Adult Beddays, three SRG have an ALOS in excess of 20 days. These are SRG Rehabilitation (non-acute) (ALOS 22.1 days), SRG Other Non-Acute (ALOS 29.7 days) and SRG Geriatric Management (nonacute) (ALOS 22.3 days). Refer Table 37.

Table 37: Top 10 SRGs by total adult beddays (including separations), Townsville Hospital, by SRG by stay type, 2014/15

SRG	Overnight	Same Day	Total Seps	% Same Day	Total Beddays	ALOS (days)	% of Total Seps	% of Total Beddays
Mental Health	1,101	340	1,441	24%	15,373	8.9	4%	9%
Orthopaedics	2,218	1,660	3,878	43%	12,889	3.3	10%	8%
Rehabilitation (non-acute)	526	0	526	0%	12,310	22.1	1%	7%
Non-Subspecialty Surgery	2,463	1,669	4,132	40%	10,315	2.5	10%	6%
Other Non-Acute	268	6	274	2%	9,660	29.7	1%	6%
Obstetrics	3,106	582	3,688	16%	9,326	2.5	9%	6%
Neurology	1,362	754	2,116	36%	8,259	3.9	5%	5%
Respiratory Medicine	1,554	320	1,874	17%	7,670	4.1	5%	5%
Geriatric Management (non-acute)	265	0	265	0%	6,127	22.3	1%	4%
Immunology & Infections	1,160	120	1,280	9%	5,768	4.5	3%	3%
Other	12,530	8,249	20,779	40%	69,505	3.3	52%	42%
TOTAL	26,553	13,700	40,253	34%	167,202	4.0	100%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis

In 2014/15, 34% (13,700) of all TTH adult separations were same day separations. The SRG Chemotherapy had the highest percentage of same day separations (100% same day, 107) followed by the SRG Ophthalmology (87% same day, 1,333) and the SRG Dermatology (69% same day, 268). Refer Table 38.

Table 38: Top 15 SRGs for % same day adult separations, Townsville Hospital, by stay type, 2014/15

SRG	Overnight	Same Day	Total Separations	% Same Day
Chemotherapy	0	107	107	100%
Ophthalmology	174	1,159	1,333	87%
Dermatology	82	186	268	69%
Dentistry	106	204	310	66%
Gynaecology	562	902	1,464	62%
Plastic & Reconstructive Surgery	249	385	634	61%
Breast Surgery	75	80	155	52%
Drug & Alcohol	378	393	771	51%
Urology	635	601	1,236	49%
Cardiology	1,456	1,180	2,636	45%
Endocrinology	561	453	1,014	45%
Renal Medicine	244	189	433	44%
Orthopaedics	2,218	1,660	3,878	43%
Vascular Surgery	498	346	844	41%
Non-Subspecialty Surgery	2,463	1,669	4,132	40%
Other	16,852	4,186	21,038	20%
TOTAL	26,553	13,700	40,253	34%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis

Of the total separations at TTH in 2014/15, 14% (5,772) were chargeable separations. The SRG Geriatric Management (nonacute) accounted for the greatest percentage of chargeable separations (32% of total SRG separations, 86), followed by the SRG Renal Medicine (30% of total SRG separations, 130) and the SRG Palliative (non-acute) (30% of total SRG separations, 137).

From the Top 10, the greatest volumes of chargeable patients were for SRG Neurology (401 separations accounting for 19% of total SRG separations), and SRG Ophthalmology (394 separations accounting for 30% of total SRG separations). Refer Table 39.

Table 39: Top 10 for SRGs adult separations, Townsville Hospital, by chargeable status, 2014/15

SRG	Chargeable	Non-Chargeable	Total	% Chargeable
Geriatric Management (non-acute)	86	179	265	32%
Renal Medicine	130	303	433	30%
Palliative (non-acute)	137	321	458	30%
Ophthalmology	394	939	1,333	30%
Endocrinology	271	743	1,014	27%
Haematology	101	303	404	25%
Other Non-Acute	68	206	274	25%
Rehabilitation (non-acute)	113	413	526	21%
Chemotherapy	22	85	107	21%
Neurology	401	1,715	2,116	19%
Other	3,999	29,324	33,323	12%
TOTAL	5,722	34,531	40,253	14%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis

4.2.2. Services for children (0-14 years)

In 2014/15, there were 4,456 total paediatric separations from TTH, which accounted for a total of 20,347 total beddays. Of these, 33% (1,473) were same day separations and the ALOS across all patients was 4.4 days.

The SRG Qualified Neonate accounted for the greatest number of separations (17% of total separations, 748), followed by the SRG Non Subspecialty Surgery (13% of total separations, 565) and the SRG Respiratory Medicine (12% of total separations, 547). Refer Table 40, which represents the Top 10 SRGs in terms of total separations at TTH in 2014/15.

Table 40: Top 10 SRGs by Total Paediatric Separations (including Beddays), Townsville Hospital, by SRG by Stay Type, 2014/15

SRG	Overnight	Same Day	Total Seps	% Same Day	Total Beddays	ALOS (days)	% of Total Seps	% of Total Beddays
Qualified Neonate	730	18	748	2%	11,575	14.6	17%	57%
Non-Subspecialty Surgery	423	124	547	23%	1,379	2.5	12%	7%
Respiratory Medicine	308	257	565	45%	1,083	1.9	13%	5%
Orthopaedics	263	180	443	41%	938	2.1	10%	5%
Ear, Nose & Throat	247	146	393	37%	506	1.3	9%	2%
Non-Subspecialty Medical	31	12	43	28%	456	10.6	1%	2%
Urology	67	39	106	37%	411	3.9	2%	2%
Neurology	145	12	157	8%	399	2.5	4%	2%
Immunology & Infections	14	0	14	0%	379	27.1	0%	2%
Dentistry	81	78	159	49%	358	2.3	4%	2%
Other	674	607	1,281	47%	2,863	2.2	29%	14%
TOTAL	2,983	1,473	4,456	33%	20,347	4.4	100%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis

Table 41: Top 10 SRGs by total paediatric beddays (including separations), Townsville Hospital, by SRG by stay type, 2014/15

SRG	Overnight	Same Day	Total Seps	% Same Day	Total Beddays	ALOS (days)	% of Total Seps	% of Total Beddays
Qualified Neonate	730	18	748	2%	11,575	14.6	17%	57%
Respiratory Medicine	423	124	547	23%	1,379	2.5	12%	7%
Non-Subspecialty Surgery	308	257	565	45%	1,083	1.9	13%	5%
Orthopaedics	263	180	443	41%	938	2.1	10%	5%
Ear, Nose & Throat	247	146	393	37%	506	1.3	9%	2%
Mental Health	31	12	43	28%	456	10.6	1%	2%
Neurosurgery	67	39	106	37%	411	3.9	2%	2%
Immunology & Infections	145	12	157	8%	399	2.5	4%	2%
Prolonged Ventilation	14	0	14	0%	379	27.1	0%	2%
Neurology	81	78	159	49%	358	2.3	4%	2%
Other	674	607	1,281	47%	2,863	2.2	29%	14%
TOTAL	2,983	1,473	4,456	33%	20,347	4.4	100%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis

In 2014/15, 33% (1,473) of all TTH paediatric separations were same day separations. The SRG Chemotherapy accounted for the greatest percentage of same day separations (100% same day, 23), followed by the SRG Dentistry (92% same day, 143) and the SRG Medical Oncology (88% same day, 7).

From the Top 15, the greatest volumes of same day patients were for SRG Non-Subspecialty Surgery (257 same day separations accounting for 45% of total SRG separations), and SRG Dentistry (143 same day separations accounting for 92% of total SRG separations). Refer Table 42, which represents the Top 15 SRGs in terms of total percentage same day separations at TTH in 2014/15.

Table 42: Top 15 SRGs by % same day paediatric Separations, Townsville Hospital, by SRG by stay type, 2014/15

SRG	Overnight	Same Day	Total Separations	% Same Day
Chemotherapy	0	23	23	100%
Dentistry	12	143	155	92%
Medical Oncology	1	7	8	88%
Drug & Alcohol	18	41	59	69%
Ophthalmology	18	35	53	66%
Urology	70	119	189	63%
Dermatology	12	20	32	63%
Head & Neck Surgery	8	10	18	56%
Diagnostic GI Endoscopy	10	12	22	55%
Gynaecology	6	6	12	50%
Haematology	3	3	6	50%
Neurology	81	78	159	49%
Non-Subspecialty Surgery	308	257	565	45%
Plastic & Reconstructive Surgery	38	31	69	45%
Renal Medicine	9	7	16	44%
Other	2,389	681	3,070	22%
TOTAL	2,983	1,473	4,456	33%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes Unqualified Neonates and Renal Dialysis

4.3 Historical trends in service provision

The top 10 SRGs of greatest volume at TTH in 2014/15 were reviewed over the time period 2010/11 to 2014/15 (the 'base year').

Of these SRGs, the SRG with the greatest growth in terms of the total number of separations was the SRG Orthopaedics (1,090 separation increase, representing a 34% change). The SRG with the greatest growth as a percentage of total separations was the SRG Neurology (738 separation increase, representing a 48% change). Refer Table 43.

When this data is represented in figure form (rather than table form), a sharp increase in separations for SRG Non-Subspecialty Surgery and SRG Orthopaedics can be seen between the years 2013/14 and 2014/15. Refer Figure 10.

Table 43: Change in separations, top 10 SRG with greatest total volume of separations in 2014/15, Townsville Hospital, by SRG by year (2010/11 - 2014/15)

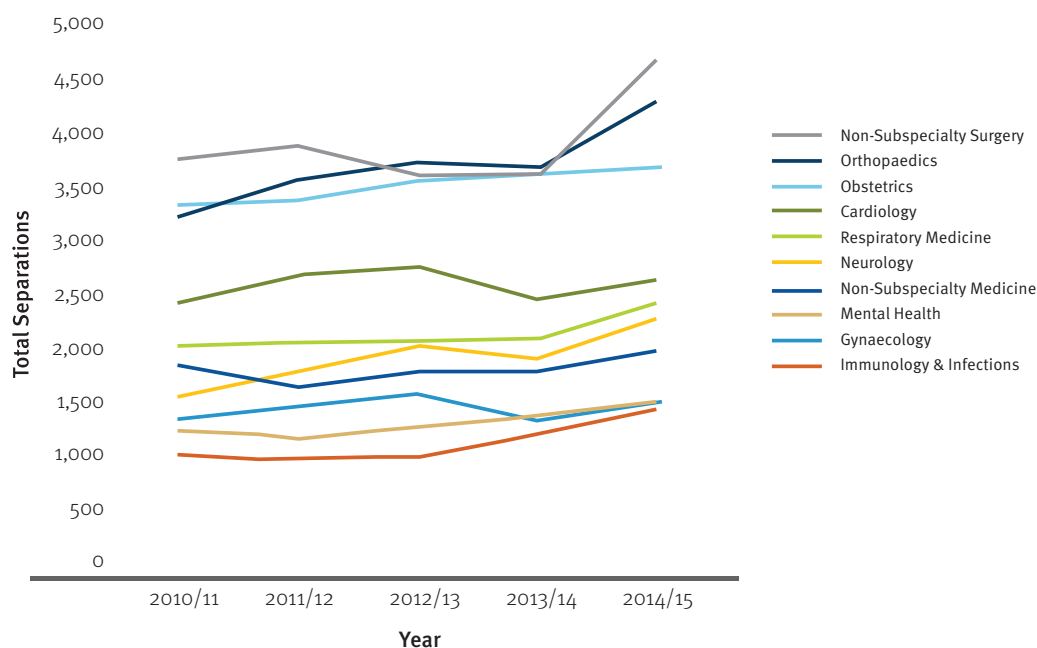
SRG	2010/11	2011/12	2012/13	2013/14	2014/15	Change (No.)	Change (%)	AGR ^
Non-Subspecialty Surgery	3,753	3,879	3,635	3,659	4,697	944	25%	4.59%
Orthopaedics	3,231	3,580	3,732	3,696	4,321	1,090	34%	5.99%
Obstetrics	3,331	3,393	3,590	3,657	3,693	362	11%	2.08%
Cardiology	2,437	2,679	2,749	2,465	2,657	220	9%	1.74%
Respiratory Medicine	1,988	2,062	2,045	2,109	2,421	433	22%	4.02%
Neurology	1,537	1,771	2,001	1,916	2,275	738	48%	8.16%
Non-Subspecialty Medicine	1,852	1,662	1,801	1,807	1,993	141	8%	1.48%
Mental Health	1,241	1,159	1,256	1,382	1,484	243	20%	3.64%
Gynaecology	1,380	1,498	1,560	1,312	1,476	96	7%	1.35%
Immunology & Infections	998	968	1,002	1,197	1,437	439	44%	7.56%
Other	21,748	22,651	23,371	23,200	26,454	4,706	22%	4.00%
TOTAL	36,950	38,828	39,910	39,477	44,709	7,759	21%	3.89%

Source: Cross Sectional - Inpatient Projections, Base Year 2014/15 (File supplied by QLD Department of Health, 2016)

Note: Excludes unqualified neonates and renal dialysis

^Annual Growth Rate

Figure 10: Change in separations, top 10 SRGs with greatest total volume of separations in 2014/15, Townsville Hospital, by SRG by year (2010/11 - 2014/15)



Source: Cross Sectional - Inpatient Projections, Base Year 2014/15 (File supplied by QLD Department of Health, 2016)
 Note: Excludes unqualified neonates and renal dialysis

4.3.1. SRG Non-Specialty Surgery

The following tables and figures take a closer look at SRG Non-Specialty Surgery and SRG Orthopaedics at the ESRG level (as requested by the Project Control Group).

SRG Non-Specialty Surgery is a grouping of eight separate ESRG. The ESRG with the greatest volume of separations in each year from 2008/09 to 2014/15 is ESRG Digestive System Diagnosis including GI Obstruction, followed by ESRG Injuries - Non-surgical. The ESRG with the lowest volume of separations in each year from 2008/09 to 2014/15 is ESRG Peritoneal Adhesiolysis. Refer Table 44 and Figure 11.

Figure 11 shows that over this time period, five of the eight ESRGs have increased in volume of separations, while the remaining three have remained steady. The ESRG with the greatest volume increase over the time period is ESRG Digestive System Diagnosis including GI Obstruction.

It should be noted that where the trendline has significant variation (e.g., is not consistently increasing), this relates predominantly to ESRGs that have been coded as “non-procedural”, e.g. ESRG Injuries - non-surgical.

Table 44: Change in separations SRG Non-Subspecialty Surgery, by ESRG by year (2008/09 - 2014/15)

ESRG	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Abdominal Pain	343	344	478	447	425	477	597
Appendectomy	133	194	245	188	206	219	221
Digestive System Diagnoses incl GI Obstruction	1,074	1,134	1,298	1,385	1,184	1,254	1,613
Hernia Procedures	259	287	255	223	219	177	237
Injuries - Non-surgical	735	763	990	1,079	1,027	905	1,109
Other Non-specialty Surgery	333	346	382	442	381	462	521
Peritoneal Adhesiolysis	60	69	59	80	72	56	64
Post-operative Infections and Sequelae of Treatment	317	277	455	445	454	426	553
TOTAL	3,254	3,414	4,162	4,289	3,968	3,976	4,915

Source: Cross Sectional - Inpatient Projections, Base Year 2014/15 (File supplied by QLD Department of Health, 2016)

Note: Excludes unqualified neonates and renal dialysis

Figure 11: Change in separations SRG Non-Subspecialty Surgery, by ESRG by year (2008/09 - 2014/15)

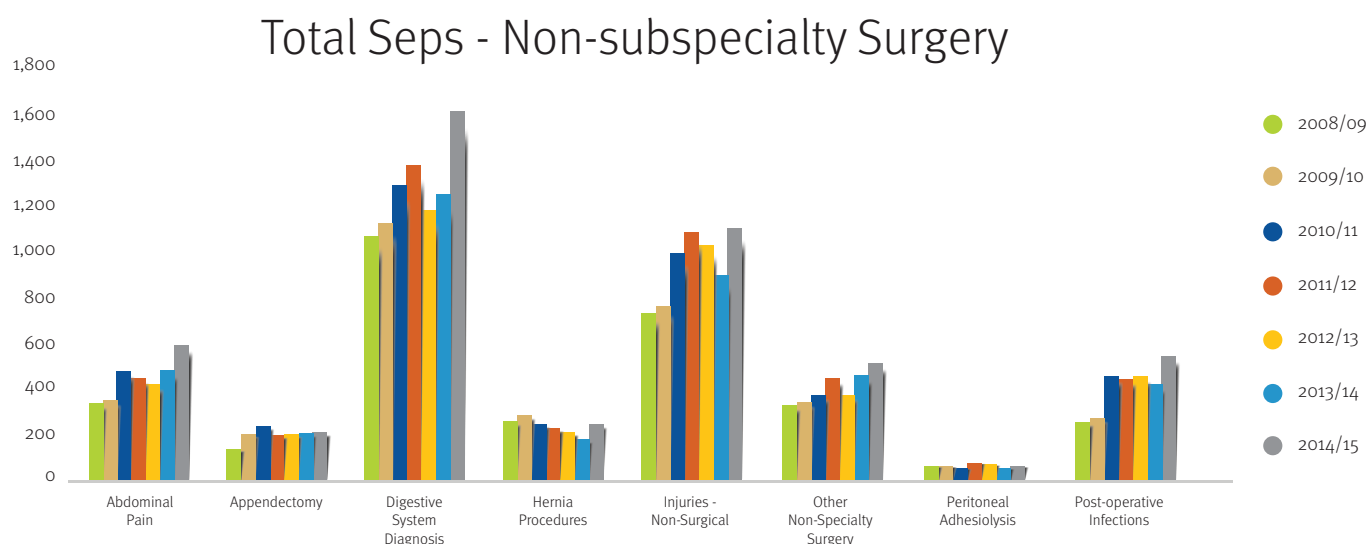


Table 45 and Table 46, and Figure 12 and Figure 13 show these total volumes split between same day separations and overnight separations.

For same day separations, a jump in the trendline for ESRG Digestive System Diagnosis including GI Obstruction can be seen, between the years 2013/14 and 2014/15. This might mean a number of different things (and could say more about the preceding two years than the 2014/15 year), and consequently requires discussion with local area staff prior to any conclusions being drawn. Refer Table 45 and Figure 12.

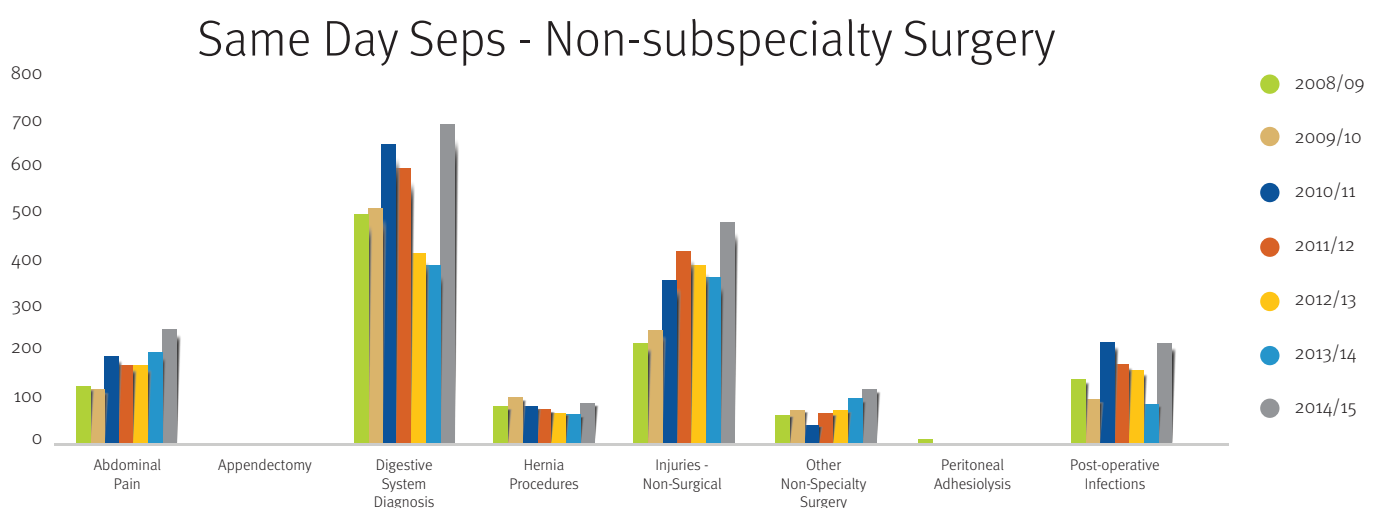
Table 45: Change in same day separations SRG Non-Subspecialty Surgery, by ESRG by year (2008/09 - 2014/15)

ESRG	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Abdominal Pain	134	121	197	176	175	206	256
Appendectomy	2	6	0	2	0	2	2
Digestive System Diagnoses incl GI Obstruction	506	515	657	600	418	395	699
Hernia Procedures	91	113	87	78	72	65	94
Injuries - Non-surgical	225	255	359	425	393	368	487
Other Non-specialty Surgery	67	77	46	71	77	107	124
Peritoneal Adhesiolysis	8	3	4	1	1	1	1
Post-operative Infections and Sequelae of Treatment	146	102	227	179	164	93	221
TOTAL	1,179	1,192	1,577	1,532	1,300	1,237	1,884

Source: Cross Sectional - Inpatient Projections, Base Year 2014/15 (File supplied by QLD Department of Health, 2016)

Note: Excludes unqualified neonates and renal dialysis

Figure 12: Change in same day separations SRG Non-Subspecialty Surgery, by ESRG by year (2008/09 - 2014/15)



For overnight separations, a relatively constant trendline (growth or decline) pattern across all ESRG can be seen. For ESRG Digestive System Diagnosis including GI Obstruction there has been greater growth (in terms of the volume of separations) in overnight separations than same day separations across the time period, and in 2014/15 total separations (1,613) consisted of 699 same day separations and 914 overnight separations. Refer Table 46 and Figure 13.

For ESRG Injuries - non-surgical, there has been a greater volume of growth in same day separations than overnight separations across the time period, and in 2014/15 total separations (1,019) consisted of 487 same day separations and 622 overnight separations.

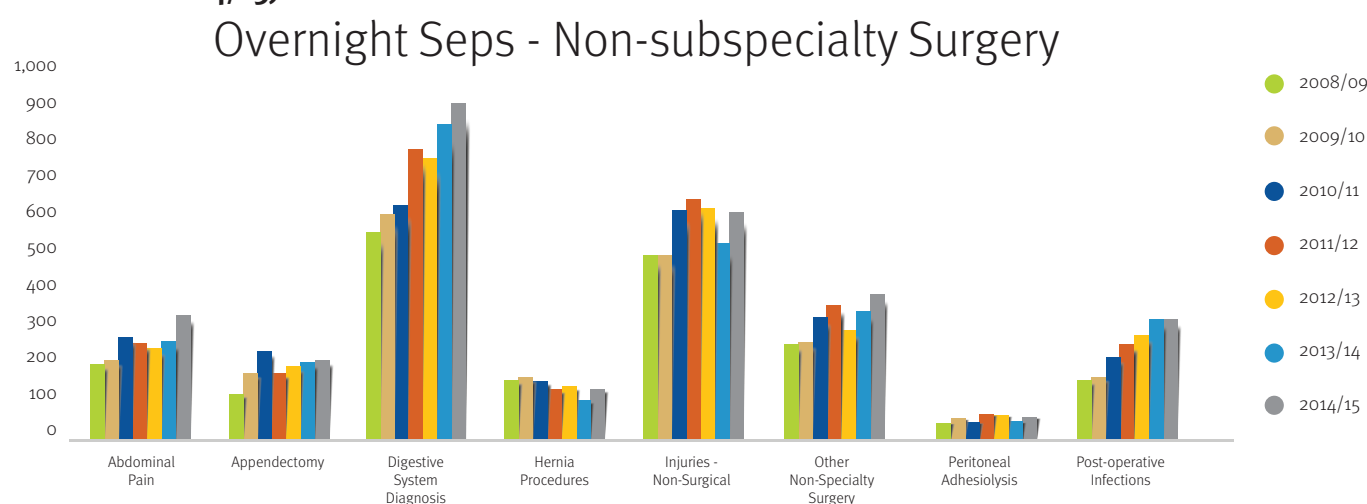
Table 46: Change in Overnight Separations SRG Non-Subspecialty Surgery, by ESRG by Year (2008/09 - 2014/15)

ESRG	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Abdominal Pain	209	223	281	271	250	271	341
Appendectomy	131	188	245	186	206	217	219
Digestive System Diagnoses incl GI Obstruction	568	619	641	785	766	859	914
Hernia Procedures	168	174	168	145	147	112	143
Injuries - Non-surgical	510	508	631	654	634	537	622
Other Non-specialty Surgery	266	269	336	371	304	355	397
Peritoneal Adhesiolysis	52	66	55	79	71	55	63
Post-operative Infections and Sequelae of Treatment	171	175	228	266	290	333	332
TOTAL	2,075	2,222	2,585	2,757	2,668	2,739	3,031

Source: Cross Sectional - Inpatient Projections, Base Year 2014/15 (File supplied by QLD Department of Health, 2016)

Note: Excludes unqualified neonates and renal dialysis

Figure 12: Change in same day separations SRG Non-Subspecialty Surgery, by ESRG by year (2008/09 - 2014/15)



4.3.2. SRG Orthopaedics

SRG Orthopaedics is a grouping of eight separate ESRGs. The ESRG with the greatest volume of separations in each year from 2008/09 to 2014/15 is ESRG Other Orthopaedics - non-surgical, followed by ESRG Other Orthopaedics - Surgical. The ESRG with the lowest volume of separations in each year from 2008/09 is ESRG Knee Procedures, then from 2009/10 to 2014/15 is ESRG Local Excision and Removal of Internal Fixation Device Excluding Hip and Femur. Refer Table 47 and Figure 14.

Figure 14 shows that over this time period, the ESRG with the greatest volume increase over the time period is ESRG Other Orthopaedics - Non-Surgical, with a relatively large jump in separations between 2013/14 and 2014/15 (growth from 1,436 total separations in 2013/14 to 1,843 separations in 2014/15).

Table 47 Change in Separations SRG Orthopaedics, by ESRG by Year (2008/09 - 2014/15)

ESRG	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Hip & Knee Replacement	149	237	247	301	339	275	249
Humerus, Tibia, Fibula and Ankle Procedures	170	174	183	172	170	199	205
Injuries to limbs - Medical	350	369	377	416	415	406	420
Knee Procedures	81	119	144	152	158	180	180
Local Excision & Removal of Internal Fixation Device Excl Hip & Femur	135	119	109	116	117	119	104
Other Orthopaedics - Non-Surgical	1,132	1,095	1,243	1,340	1,479	1,436	1,843
Other Orthopaedics - Surgical	545	636	668	735	674	754	805
Wrist and Hand Procedures incl Carpal Tunnel	345	366	337	361	379	333	399
TOTAL	2,907	3,115	3,308	3,593	3,731	3,702	4,205

Source: Cross Sectional - Inpatient Projections, Base Year 2014/15 (File supplied by QLD Department of Health, 2016)

Note: Excludes unqualified neonates and renal dialysis

Figure 14: Change in Separations SRG Orthopaedics, by ESRG by Year (2008/09 - 2014/15)

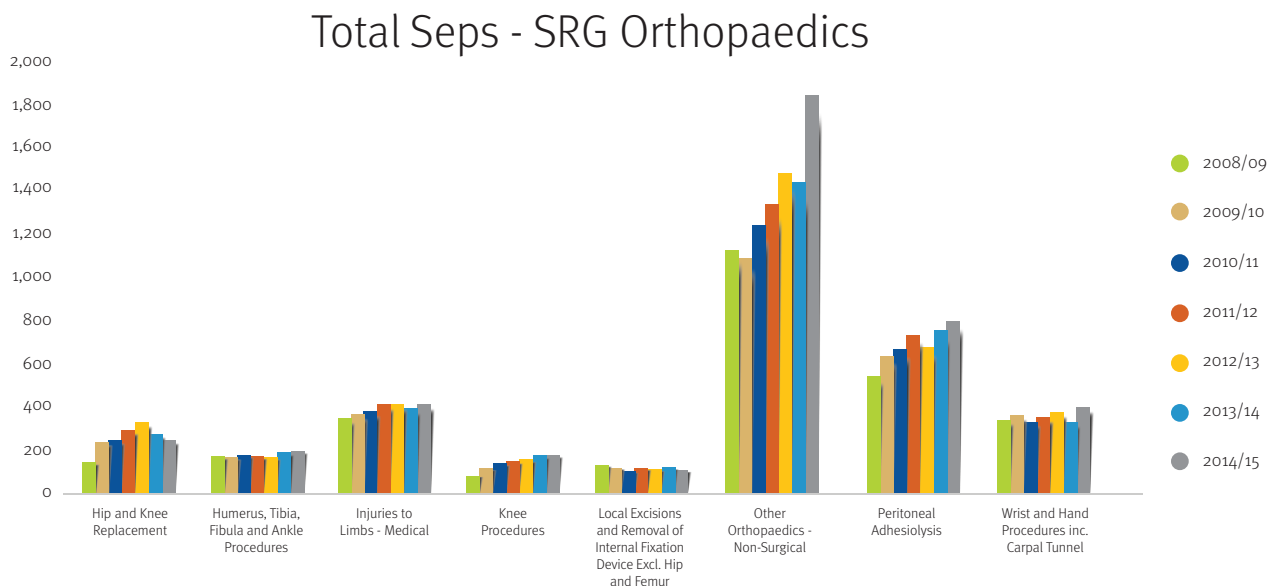


Table 48 and Table 49, and Figure 15 and Figure 16 show these total volumes split between same day separations and overnight separations. The only ESRG with significant volumes of same day separations is ESRG Other Orthopaedics - Non Surgical. Same day separations for this ESRG have been growing across the time period, with a jump of 344 separations between 2013/14 and 2014/15 (noting that same day separations only grew by 142 separations between 2008/09 and 2013/14). Refer Table 48 and Figure 15.

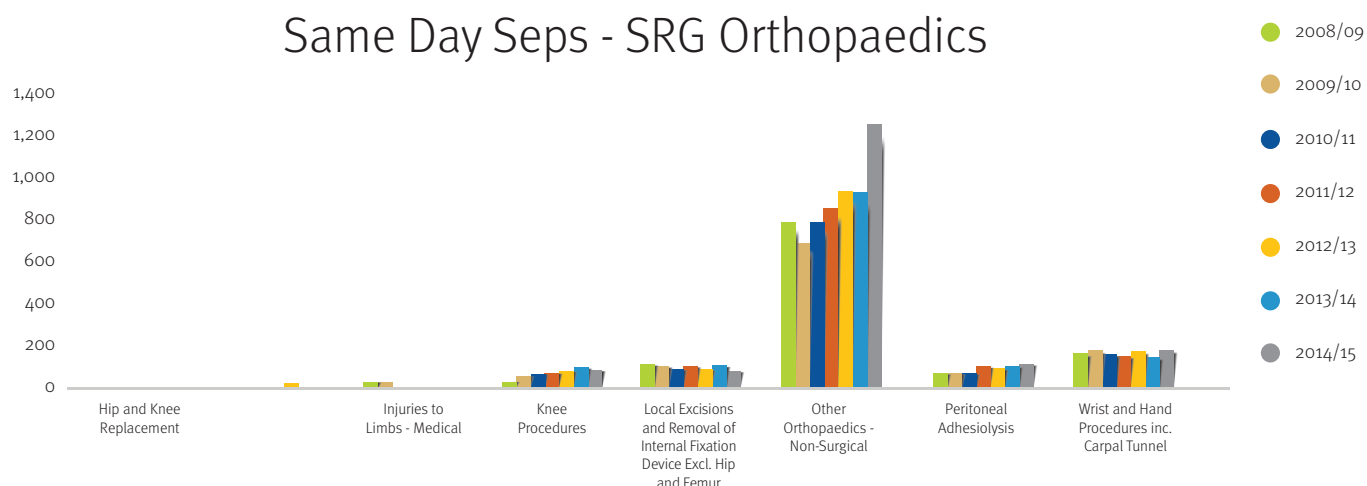
Table 48: Change in Same Day Separations SRG Orthopaedics, by ESRG by Year (2008/09 - 2014/15)

ESRG	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Hip & Knee Replacement	0	0	0	0	1	1	0
Humerus, Tibia, Fibula and Ankle Procedures	6	4	9	9	15	14	13
Injuries to limbs - Medical	20	17	11	13	11	11	11
Knee Procedures	36	60	63	73	74	89	81
Local Excision & Removal of Internal Fixation Device Excl Hip & Femur	119	97	89	100	92	103	79
Other Orthopaedics - Non-Surgical	795	696	810	870	951	937	1,281
Other Orthopaedics - Surgical	66	68	71	103	93	102	119
Wrist and Hand Procedures incl Carpal Tunnel	167	170	164	153	172	150	170
TOTAL	1,209	1,112	1,217	1,321	1,409	1,407	1,754

Source: Cross Sectional - Inpatient Projections, Base Year 2014/15 (File supplied by QLD Department of Health, 2016)

Note: Excludes unqualified neonates and renal dialysis

Figure 15: Change in Same Day Separations SRG Orthopaedics, by ESRG by Year (2008/09 - 2014/15)



For overnight separations, a relatively constant trendline across all ESRGs can be seen, with the exception of ESRG Hip and Knee Replacement, which declined in volumes in the years 2013/14 and 2014/15. Refer Table 49 and Figure 16.

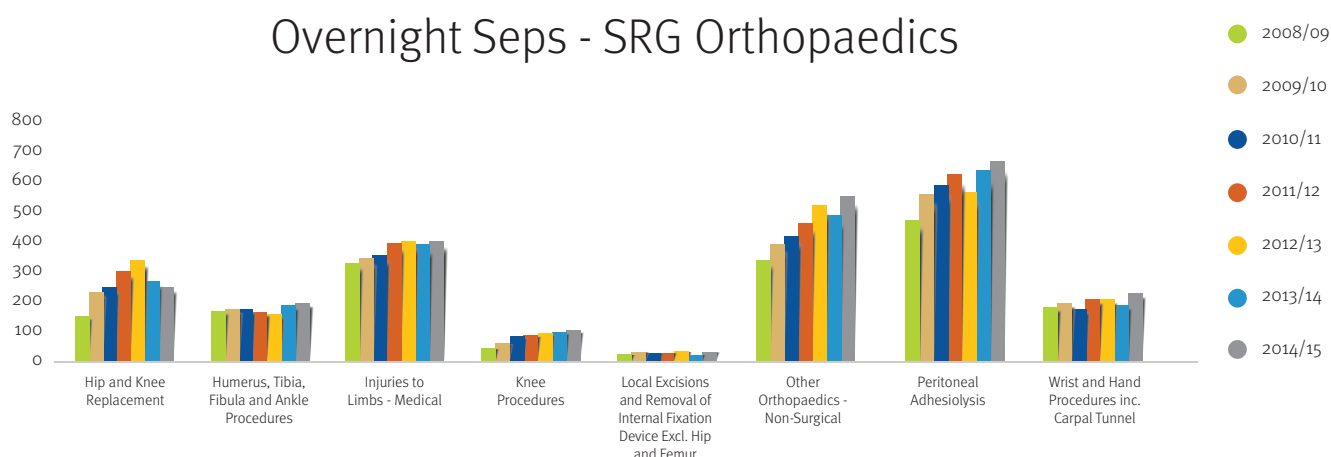
Table 49: Change in Overnight Day Separations SRG Orthopaedics, by ESRG by Year (2008/09 - 2014/15)

ESRG	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Hip & Knee Replacement	149	237	247	301	338	274	249
Humerus, Tibia, Fibula and Ankle Procedures	164	170	174	163	155	185	192
Injuries to limbs - Medical	330	352	366	403	404	395	409
Knee Procedures	45	59	81	79	84	91	99
Local Excision & Removal of Internal Fixation Device Excl Hip & Femur	16	22	20	16	25	16	25
Other Orthopaedics - Non-Surgical	337	399	433	470	528	499	562
Other Orthopaedics - Surgical	479	568	597	632	581	652	686
Wrist and Hand Procedures incl Carpal Tunnel	178	196	173	208	207	183	229
TOTAL	1,698	2,003	2,091	2,272	2,322	2,295	2,451

Source: Cross Sectional - Inpatient Projections, Base Year 2014/15 (File supplied by QLD Department of Health, 2016)

Note: Excludes unqualified neonates and renal dialysis

Figure 16: Change in Overnight Day Separations SRG Orthopaedics, by ESRG by Year (2008/09 - 2014/15)



4.3.3. Average Length of Stay

Table 50 and Figure 17 show that between 2010/11 and 2014/15, ALOS for the Top 10 SRG of greatest total volume (in separations) at TTH in 2014/15, has reduced. The single exception for this is for SRG Immunology and Infections, which has increased slightly by 0.08 days over the time period (largely due to an increase of 0.15 days in 2014/15). Refer Table 50 and Figure 17.

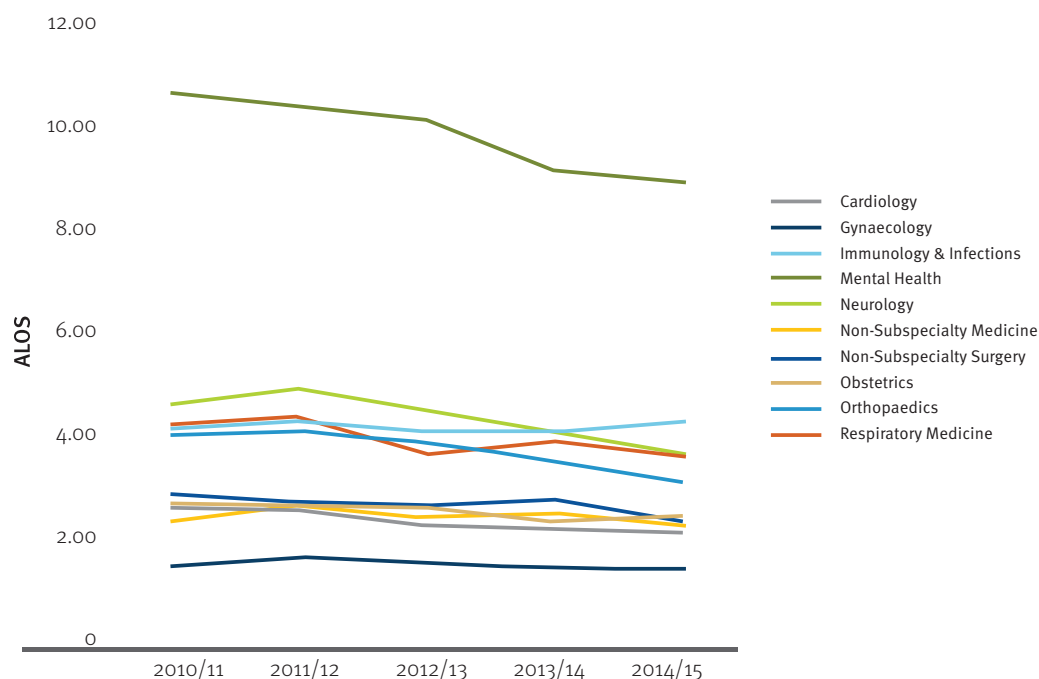
Table 50: ALOS for Top 10 SRGs with Greatest Total Volume of Separations in 2014/15, Townsville Hospital, by SRG by Year (2010/11 - 2014/15)

SRG	2010/11	2011/12	2012/13	2013/14	2014/15	Change (ALOS)
Cardiology	2.75	2.61	2.34	2.25	2.20	-0.55
Gynaecology	1.57	1.68	1.61	1.55	1.48	-0.09
Immunology & Infections	4.21	4.33	4.13	4.14	4.29	0.08
Mental Health	10.61	10.32	10.10	9.14	8.92	-1.69
Neurology	4.68	4.95	4.63	4.23	3.77	-0.91
Non-Subspecialty Medicine	2.43	2.77	2.50	2.54	2.40	-0.03
Non-Subspecialty Surgery	2.92	2.79	2.74	2.83	2.43	-0.50
Obstetrics	2.76	2.70	2.63	2.44	2.52	-0.24
Orthopaedics	4.12	4.16	3.93	3.61	3.20	-0.92
Respiratory Medicine	4.30	4.45	3.67	3.95	3.71	-0.59

Source: Cross Sectional - Inpatient Projections, Base Year 2014/15 (File supplied by QLD Department of Health, 2016)

Note: Excludes unqualified neonates and renal dialysis

Figure 17: ALOS for Top 10 SRGs with Greatest Total Volume of Separations in 2014/15, Townsville Hospital, by SRG by Year (2010/11 - 2014/15)



4.3.4. SRG with Declining Volumes

Five SRGs were identified as having a lower number of total separations in 2014/15 than in 2010/11. While separations for the SRG Vascular Surgery have increased since 2013/14, the overall trend over the five year time period remains one of decline. Refer Table 51 and Figure 18.

Table 51: SRGs with a Declining No. of Total Separations, Townsville Hospital, by SRG by Year (2010/11 - 2014/15)

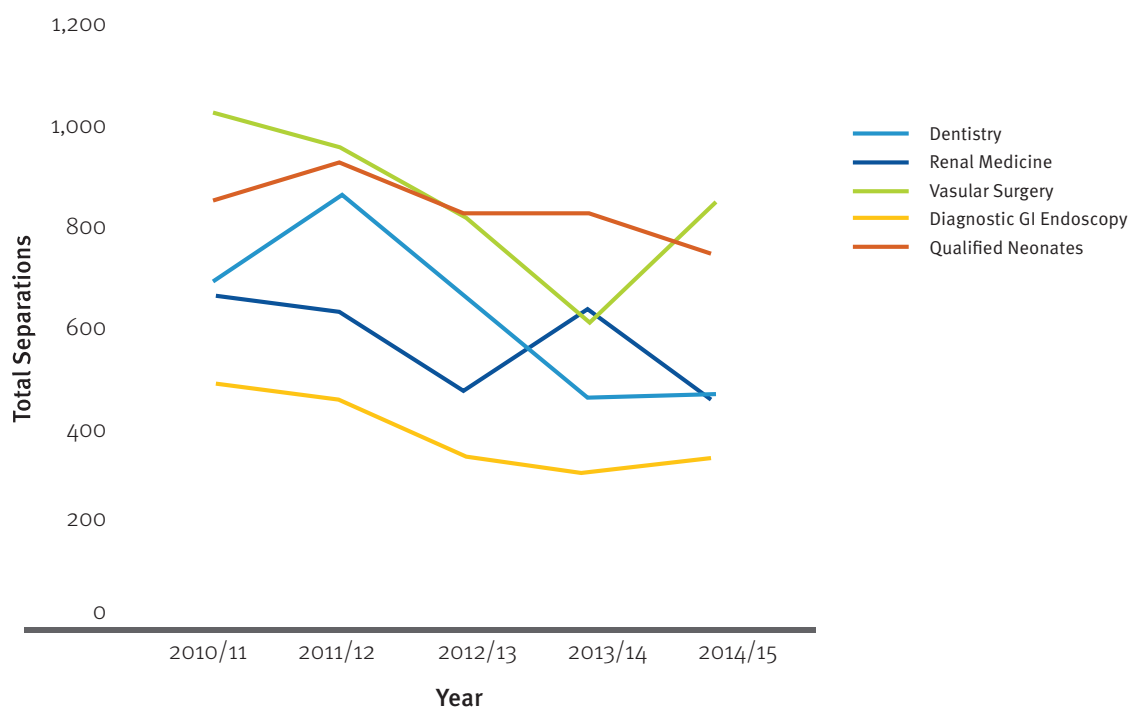
SRG	2010/11	2011/12	2012/13	2013/14	2014/15	Change (No.)	Change (%)	AGR ^
Dentistry	692	864	647	460	465	-227	-33%	-7.64%
Renal Medicine	660	628	467	636	449	-211	-32%	-7.42%
Vascular Surgery	1,027	958	822	614	844	-183	-18%	-3.85%
Diagnostic GI Endoscopy	477	448	338	305	335	-142	-30%	-6.82%
Qualified Neonate	856	924	828	823	748	-108	-13%	-2.66%

Source: Cross Sectional - Inpatient Projections, Base Year 2014/15 (File supplied by QLD Department of Health, 2016)

Note: Excludes unqualified neonates and renal dialysis

^Annual Growth Rate

Figure 18: Change in Separations, SRG with Declining Volumes, TTH, 2010/11 - 2014/15



4.3.5. Separations by Chargeable Status

Between 2010/11 and 2014/15 total chargeable patients have grown by 69% (2,540), with a 158% change (2,430) in chargeable patients staying overnight. Refer Table 52.

Table 51: SRG with a Declining No. of Total Separations, Townsville Hospital, by SRG by Year (2010/11 - 2014/15)

SRG	Stay Type	2010/11	2011/12	2012/13	2013/14	2014/15	Change (No.)	Change (%)	AGR ^
Chargeable	Overnight+	1,542	2,426	3,545	3,830	3,972	2,430	158%	20.8%
	Same Day	2,122	2,012	2,136	1,939	2,232	110	5%	1.0%
	Chargeable Total	3,664	4,438	5,681	5,769	6,204	2,540	69%	11.1%
Non-Chargeable	Overnight+	22,748	23,580	23,177	23,541	25,564	2,816	12%	2.4%
	Same Day	10,538	10,810	11,052	10,167	12,941	2,403	23%	4.2%
	Non-Chargeable Total	33,286	34,390	34,229	33,708	38,505	5,219	16%	3.0%
TOTAL		36,950	38,828	39,910	39,477	44,709	7,759	21%	3.9%

Source: Cross Sectional - Inpatient Projections, Base Year 2014/15 (File supplied by QLD Department of Health, 2016)

Note: Excludes unqualified neonates and renal dialysis

^Annual Growth Rate

4.4 Role of TTH as a referral hospital

Of the total TTH separations in 2014/15, 85% (38,097 separations, accounting for 144,146 or 79% of total beddays) were for residents of the THHS. Of all non-THHS residents, residents of the Mackay HHS accounted for the greatest volume of separations and beddays at TTH in 2014/15 (2,149 separations and 11,533 beddays). Residents of Cairns and Hinterland HHS and North West HHS used 4% (1,578) and 3% (1,369) of total TTH separations, and 6% (10,769) and 4% (7,292) beddays respectively. Refer Table 53.

Table 53: Total Separations by HHS of Residence, TTH, 2014/15

HHS of Residence	Separations	Beddays	% Total Separation	% Total Beddays
Townsville	38,097	144,146	85%	79%
Mackay	2,149	11,533	5%	6%
Cairns and Hinterland	1,578	10,769	4%	6%
North West	1,369	7,292	3%	4%
Other	1,516	7,623	3%	4%
TOTAL	44,709	181,363	100%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

Use of TTH services by residents of the Mackay, Cairns and Hinterland, and North West HHS has been analysed separately within the following Sections 4.4.1 to 4.4.3.

4.4.1. Mackay HHS Resident Use of TTH Services

Residents of the Mackay HHS accounted for 2,149 total separations at TTH in 2014/15. Of these, 10% (206) were for SRG Vascular Surgery, 9% (187) were for SRG Non-Subspecialty Surgery, and 7% (149) were for SRG Interventional Cardiology.

In terms of beddays, residents of Mackay HHS accounted for 11,533 total beddays at TTH in 2014/15. Of these, 9% (994 beddays) were for SRG Qualified Neonate (ALOS of 23.1 days), 8% (890 beddays) were for SRG Rehabilitation (non-acute) (ALOS 26.2 days), and 8% (875 beddays) were for SRG Vascular Surgery. Refer Table 54 and Table 55.

Table 54: Top 10 Separations by SRG for Mackay HHS Residents (including Beddays and ALOS), Townsville Hospital, 2014/15

SRG	Separations	Beddays	ALOS	% Total Separation	% Total Beddays
Vascular Surgery	206	875	4.2	10%	8%
Non-Subspecialty Surgery	187	609	3.3	9%	5%
Interventional Cardiology	149	549	3.7	7%	5%
Ear, Nose & Throat	123	174	1.4	6%	2%
Neurology	100	548	5.5	5%	5%
Neurosurgery	100	803	8.0	5%	7%
Obstetrics	100	491	4.9	5%	4%
Orthopaedics	79	314	4.0	4%	3%
Urology	79	177	2.2	4%	2%
Renal Medicine	76	110	1.4	4%	1%
Other	950	6,883	7.2	44%	60%
TOTAL	2,149	11,533	5.4	100%	100%

Table 55: Top 10 Beddays by SRG for Mackay HHS Residents (including Separations and ALOS), Townsville Hospital, 2014/15

SRG	Separations	Beddays	ALOS	% Total Separation	% Total Beddays
Qualified Neonate	43	994	23.1	2%	9%
Rehabilitation (non-acute)	34	890	26.2	2%	8%
Vascular Surgery	206	875	4.2	10%	8%
Neurosurgery	100	803	8.0	5%	7%
Haematology	70	676	9.7	3%	6%
Cardiac Surgery	71	637	9.0	3%	6%
Non-Subspecialty Surgery	187	609	3.3	9%	5%
Interventional Cardiology	149	549	3.7	7%	5%
Neurology	100	548	5.5	5%	5%
Obstetrics	100	491	4.9	5%	4%
Other	1,089	4,461	4.1	51%	39%
TOTAL	2,149	11,533	5.4	100%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

4.4.2. Cairns and Hinterland HHS Resident Use of TTH Services

Residents of the Cairns and Hinterland HHS accounted for 1,578 total separations at TTH in 2014/15. Of these, 10% (161) were for SRG Non-Subspecialty Surgery, 8% (134) were for SRG Neurosurgery, and 7% (110) were for SRG Obstetrics. In terms of beddays, residents of Cairns and Hinterland HHS accounted for 10,769 total beddays at TTH in 2014/15. Of these, 20% (2,179 beddays) were for SRG Qualified Neonate (ALOS of 29.4 days), and 12% (1,335 beddays) were for SRG Neurosurgery (ALOS 10 days). Refer Table 56 and Table 57.

Table 56: Top 10 Separations by SRG for Cairns and Hinterland HHS Residents (including Beddays and ALOS), Townsville Hospital, 2014/15

SRG	Separations	Beddays	ALOS	% Total Separation	% Total Beddays
Non-Subspecialty Surgery	161	473	2.9	10%	4%
Neurosurgery	134	1,335	10.0	8%	12%
Obstetrics	110	464	4.2	7%	4%
Non-Subspecialty Medicine	104	157	1.5	7%	1%
Cardiac Surgery	98	954	9.7	6%	9%
Ophthalmology	84	115	1.4	5%	1%
Interventional Cardiology	81	330	4.1	5%	3%
Qualified Neonate	74	2,179	29.4	5%	20%
Cardiology	62	206	3.3	4%	2%
Urology	61	120	2.0	4%	1%
Other	609	4,436	7.3	39%	41%
Total	1,578	10,769	6.8	100%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

Table 57: Top 10 Beddays by SRG for Cairns and Hinterland HHS Residents (including Separations and ALOS), Hospital, 2014/15

SRG	Separations	Beddays	ALOS	% Total Separation	% Total Beddays
Qualified Neonate	74	2,179	29.4	5%	20%
Neurosurgery	134	1,335	10.0	8%	12%
Prolonged Ventilation	33	966	29.3	2%	9%
Cardiac Surgery	98	954	9.7	6%	9%
Mental Health	42	659	15.7	3%	6%
Non-Subspecialty Surgery	161	473	2.9	10%	4%
Obstetrics	110	464	4.2	7%	4%
Rehabilitation (non-acute)	28	395	14.1	2%	4%
Neurology	42	357	8.5	3%	3%
Thoracic Surgery	48	352	7.3	3%	3%
Other	808	2,635	3.3	51%	24%
TOTAL	1,578	10,769	6.8	100%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

4.4.3. North West HHS Resident Use of TTH Services

Residents of the North West HHS accounted for 1,369 total separations TTH in 2014/15. Of these, 19% (262) were for SRG Orthopaedics, 8% (113) were for SRG Endocrinology, and 6% (83) were for SRG Interventional Cardiology. In terms of beddays, residents of the North West HHS accounted for 7,292 total beddays at TTH in 2014/15. Of these, 13% (967 beddays) were for SRG Orthopaedics (ALOS of 3.7 days), and 10% (737 beddays) were for SRG Rehabilitation (non-acute) (ALOS 24.6 days). Refer Table 58 and Table 59.

Table 58: Top 10 Separations by SRG for North West HHS Residents (including Beddays and ALOS), Townsville Hospital, 2014/15

SRG	Separations	Beddays	ALOS	% Total Separation	% Total Beddays
Orthopaedics	262	967	3.7	19%	13%
Endocrinology	113	147	1.3	8%	2%
Interventional Cardiology	83	341	4.1	6%	5%
Non-Subspecialty Surgery	77	306	4.0	6%	4%
Ear, Nose & Throat	67	123	1.8	5%	2%
Obstetrics	59	256	4.3	4%	4%
Urology	55	166	3.0	4%	2%
Neurology	51	256	5.0	4%	4%
Ophthalmology	43	84	2.0	3%	1%
Cardiology	41	134	3.3	3%	2%
Other	518	4,512	8.7	38%	62%
Total	1,369	7,292	5.3	100%	100%

Table 59: Top 10 Beddays by SRG for North West HHS Residents (including Separations and ALOS), Townsville Hospital, 2014/15

SRG	Separations	Beddays	ALOS	% Total Separation	% Total Beddays
Orthopaedics	262	967	3.7	19%	13%
Rehabilitation (non-acute)	30	737	24.6	2%	10%
Qualified Neonate	33	589	17.8	2%	8%
Mental Health	30	481	16.0	2%	7%
Cardiac Surgery	24	449	18.7	2%	6%
Interventional Cardiology	83	341	4.1	6%	5%
Non-Subspecialty Surgery	77	306	4.0	6%	4%
Neurosurgery	22	304	13.8	2%	4%
Prolonged Ventilation	14	273	19.5	1%	4%
Obstetrics	59	256	4.3	4%	4%
Neurology	51	256	5.0	4%	4%
Other	684	2,333	3.4	50%	32%
Total	1,369	7,292	5.3	100%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016) Note: Excludes unqualified neonates

4.4.4. Analysis of Flows from Other Northern Queensland HHSs to Brisbane HHSs and Private Metropolitan Facilities

In 2014/15, there was a total of 6,925 separations provided by metropolitan Brisbane HHS to adult residents of Mackay, Cairns and Hinterland, North West and Torres and Cape HHS. Of these separations, 64% (4,417) were provided by private hospitals.

The greatest number of separations were provided to residents of the Mackay HHS (3,209 separations, with 73% (2,347) of these provided by private hospitals), followed by Cairns and Hinterland HHS residents (2,788 separations, with 52% (1,452) of these provided by private hospitals). Refer Table 60.

Table 60: Total Adult Separations by HHS of Residence by Place of Treatment, 2014/15

HHS of Residence	Children's Health Services	Metro North	Metro North Private	Metro South	Metro South Private	Mater Public Hospitals	Total	% Private
Mackay	28	430	1,702	335	645	69	3,209	73%
Cairns and Hinterland	37	493	1,020	289	432	517	2,788	52%
North West	8	119	444	29	117	14	731	77%
Torres and Cape	4	48	35	42	22	46	197	29%
TOTAL	77	1,090	3,201	695	1,216	646	6,925	64%

In 2014/15, there was a total of 909 separations provided by Metropolitan Brisbane facilities to paediatric residents of Mackay, Cairns and Hinterland, North West and Torres and Cape HHS. Of these separations, 19% (176) were provided by private hospitals. Refer Table 61.

The greatest number of paediatric separations were provided to residents of the Mackay HHS (383 separations, with 22% (86) of these provided by private hospitals), followed by Cairns and Hinterland HHS residents (370 separations, with 12% (46) of these provided by private hospitals).

Table 61: Total Paediatric Separations by HHS of Residence by HHS of Treatment, 2014/15

HHS of Residence	Children's Health Services	Metro North	Metro North Private	Metro South	Metro South Private	Mater Public Hospitals	Total	% Private
Mackay	275	10	52	7	34	5	383	22%
Cairns and Hinterland	290	12	28	7	18	15	370	12%
North West	68	3	30	1	8	5	115	33%
Torres and Cape	32	2	4	0	2	1	41	15%
TOTAL	665	27	114	15	62	26	909	19%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016) Note: Excludes unqualified neonates

In 2014/15, a total of 862 separations were provided to adult residents of the Mackay HHS by metropolitan Brisbane public hospitals. Of these, 11% (92) were for SRG Orthopaedics, followed by 7% (60) for SRG Non-Subspecialty Surgery. Refer Table 62.

Table 62 : Top 10 Adult Separations for Mackay HHS Residents by Place of Treatment (Public Hospitals), 2014/15

SRG	Children's Health Services	Metro North	Metro South	Mater Public Hospitals	Total	% Total
Orthopaedics	7	40	39	6	92	11%
Non-Subspecialty Surgery	1	24	28	7	60	7%
Urology	0	10	41	3	54	6%
Non-Subspecialty Medicine	8	25	9	6	48	6%
Gynaecology	0	39	1	2	42	5%
Renal Medicine	0	2	36	2	40	5%
Cardiology	1	29	7	1	38	4%
Plastic & Reconstructive Surgery	0	16	16	5	37	4%
Respiratory Medicine	2	29	6	0	37	4%
Obstetrics	0	28	1	4	33	4%
Other	9	188	151	33	381	44%
TOTAL	28	430	335	69	862	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016) Note: Excludes unqualified neonates

In 2014/15, a total of 1,336 separations were provided to adult residents of the Cairns and Hinterland HHS by metropolitan Brisbane public hospitals. Of these, 22% (294) were for SRG Urology, with 278 of these separations provided by Mater Public Hospitals. Refer Table 63.

Table 63: Top 10 Adult Separations for Cairns and Hinterland HHS Residents by Place of Treatment (Public Hospitals), 2014/15

SRG	Children's Health Services	Metro North	Metro South	Mater Public Hospitals	Total	% Total
Urology	0	6	10	278	294	22%
Medical Oncology	0	34	28	59	121	9%
Non-Subspecialty Medicine	19	23	7	42	91	7%
Non-Subspecialty Surgery	0	37	25	24	86	6%
Ophthalmology	0	76	6	1	83	6%
Gynaecology	0	10	2	51	63	5%
Orthopaedics	2	18	25	5	50	4%
Plastic & Reconstructive Surgery	0	16	25	1	42	3%
Upper GIT Surgery	0	12	28	2	42	3%
Respiratory Medicine	1	29	6	1	37	3%
Renal Medicine	0	1	9	23	33	2%
Other	15	231	118	30	394	29%
TOTAL	37	493	289	517	1,336	100%

In 2014/15, a total of 170 separations were provided to adult residents of the North West HHS by metropolitan Brisbane public hospitals. Of these, 11% (18) were for SRG Non-Subspecialty Surgery, followed by 8% (14) for SRG Orthopaedics. Refer Table 64.

Table 64: Top 10 Adult Separations for North West HHS Residents by Place of Treatment (Public Hospitals), 2014/15

SRG	Children's Health Services	Metro North	Metro South	Mater Public Hospitals	Total	% Total
Non-Subspecialty Surgery	0	8	8	2	18	11%
Orthopaedics	0	9	2	3	14	8%
Cardiology	0	10	2	0	12	7%
Gastroenterology	0	9	1	0	10	6%
Ophthalmology	0	7	0	3	10	6%
Rehabilitation (non-acute)	4	5	0	1	10	6%
Gynaecology	0	6	2	0	8	5%
Non-Subspecialty Medicine	3	3	1	1	8	5%
Respiratory Medicine	0	6	1	1	8	5%
Neurology	0	4	2	0	6	4%
Other	1	52	10	3	66	39%
TOTAL	8	119	29	14	170	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016) Note: Excludes unqualified neonates

In 2014/15, a total of 140 separations were provided to adult residents of the Torres and Cape HHS by metropolitan Brisbane HHS public hospitals. Of these, 17% (24) were for SRG Urology, followed by 12% (17) for SRG Obstetrics. Refer Table 65.

Table 65: Top 10 Adult Separations for Torres and Cape HHS Residents by Place of Treatment (Public Hospitals), 2014/15

SRG	Children's Health Services	Metro North	Metro South	Mater Public Hospitals	Total	% Total
Urology	0	1	0	23	24	17%
Obstetrics	0	16	0	1	17	12%
Non-Subspecialty Surgery	0	1	7	3	11	8%
Gynaecology	0	1	0	8	9	6%
Ophthalmology	0	6	1	2	9	6%
Non-Subspecialty Medicine	2	1	2	3	8	6%
Rehabilitation (non-acute)	0	1	7	0	8	6%
Medical Oncology	0	1	2	3	6	4%
Haematology	0	0	5	0	5	4%
Renal Medicine	0	0	2	3	5	4%
Other	2	20	16	0	38	27%
TOTAL	4	48	42	46	140	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016) Note: Excludes unqualified neonates

In 2014/15, a total of 297 separations were provided to paediatric residents of the Mackay HHS by metropolitan Brisbane HHS public hospitals. Of these, 14% (42) were for SRG Ear, Nose and Throat, followed by 10% (29) for SRG Orthopaedics. Refer Table 66.

Table 66: Top 10 Paediatric Separations for Mackay HHS Residents by Place of Treatment (Public Hospitals), 2014/15

SRG	Children's Health Services	Metro North	Metro South	Mater Public Hospitals	Total	% Total
Ear, Nose & Throat	42	0	0	0	42	14%
Orthopaedics	29	0	0	0	29	10%
Respiratory Medicine	24	0	1	0	25	8%
Haematology	22	0	0	0	22	7%
Qualified Neonate	11	5	0	5	21	7%
Non-Subspecialty Medicine	16	1	1	0	18	6%
Thoracic Surgery	17	0	0	0	17	6%
Immunology & Infections	14	1	1	0	16	5%
Non-Subspecialty Surgery	8	3	2	0	13	4%
Ophthalmology	12	0	0	0	12	4%
Other	80	0	2	0	82	28%
TOTAL	275	10	7	5	297	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016) Note: Excludes unqualified neonates

In 2014/15, a total of 324 separations were provided to paediatric residents of the Cairns and Hinterland HHS by metropolitan Brisbane public hospitals. Of these, 10% (31) were for SRG Non-Subspecialty Medicine, followed by 7% each for SRGs Haematology (23), Medical Oncology (23), Ophthalmology (23) and Qualified Neonate (23). Refer Table 67.

Table 67: Top 10 Paediatric Separations for Cairns and Hinterland HHS Residents by Place of Treatment (Public Hospitals), 2014/15

SRG	Children's Health Services	Metro North	Metro South	Mater Public Hospitals	Total	% Total
Non-Subspecialty Medicine	30	0	0	1	31	10%
Haematology	23	0	0	0	23	7%
Medical Oncology	23	0	0	0	23	7%
Ophthalmology	20	2	0	1	23	7%
Qualified Neonate	6	4	0	13	23	7%
Immunology & Infections	19	0	1	0	20	6%
Orthopaedics	19	0	0	0	19	6%
Non-Subspecialty Surgery	16	1	1	0	18	6%
Ear, Nose & Throat	16	0	1	0	17	5%
Plastic & Reconstructive Surgery	15	0	0	0	15	5%
Other	103	5	4	0	112	35%
TOTAL	290	12	7	15	324	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016) Note: Excludes unqualified neonates

In 2014/15, a total of 77 separations were provided to paediatric residents of the North West HHS by metropolitan Brisbane HHS public hospitals. Of these, 13% (10) were for SRG Ear, Nose and Throat, followed by 12% (9) for SRG Respiratory Medicine. Refer Table 68.

Table 68: Top 10 Paediatric Separations for North West HHS Residents by Place of Treatment (Public Hospitals), 2014/15

SRG	Children's Health Services	Metro North	Metro South	Mater Public Hospitals	Total	% Total
Ear, Nose & Throat	10	0	0	0	10	13%
Respiratory Medicine	9	0	0	0	9	12%
Haematology	7	0	0	0	7	9%
Qualified Neonate	2	0	0	5	7	9%
Neurology	6	0	0	0	6	8%
Non-Subspecialty Medicine	5	1	0	0	6	8%
Non-Subspecialty Surgery	4	1	1	0	6	8%
Orthopaedics	6	0	0	0	6	8%
Thoracic Surgery	4	0	0	0	4	5%
Cardiac Surgery	2	0	0	0	2	3%
Cardiology	2	0	0	0	2	3%
Other	11	1	0	0	12	16%
TOTAL	68	3	1	5	77	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016) Note: Excludes unqualified neonates

In 2014/15, a total of 35 separations were provided to paediatric residents of the Torres and Cape HHS by metropolitan Brisbane public hospitals. Of these, 14% (5) were for SRG Ear, Nose and Throat, followed by 11% (4) for SRG Orthopaedics and 11% (4) for SRG Qualified Neonate. Refer Table 69.

Table 69: Top 10 Paediatric Separations for Torres and Cape HHS Residents by Place of Treatment (Public Hospitals), 2014/15

SRG	Children's Health Services	Metro North	Metro South	Mater Public Hospitals	Total	% Total
Ear, Nose & Throat	5	0	0	0	5	14%
Orthopaedics	4	0	0	0	4	11%
Qualified Neonate	1	2	0	1	4	11%
Plastic & Reconstructive Surgery	3	0	0	0	3	9%
Respiratory Medicine	3	0	0	0	3	9%
Cardiac Surgery	2	0	0	0	2	6%
Cardiology	2	0	0	0	2	6%
Neurology	2	0	0	0	2	6%
Ophthalmology	2	0	0	0	2	6%
Endocrinology	1	0	0	0	1	3%
Other	7	0	0	0	7	20%
TOTAL	32	2	0	1	35	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016) Note: Excludes unqualified neonates

5. The role of other THHS facilities

Key findings



- In 2014/15, ALOS in the smaller hospitals in THHS varied from 2.5 days at the Joyce Palmer Health Service to 7.6 days at Richmond Health Service and 32.7 days at Home Hill Health Service. ALOS for the other facilities was approximately 4 days.
- The percentages of same day separations ranged from 23% for Home Hill Health Service to 33% for Richmond Health Service.
- Local self-sufficiency for the planning regions outside of Townsville City ranged from 51% for residents of Charters Towers to 62% for residents of Burdekin. Both Hinchinbrook and Northern Highlands planning regions were 59% self-sufficient.
- Local self-sufficiency for overnight stays was higher than levels for same day services across all areas.
- For all planning regions, levels of local self-sufficiency for overnight services were high for the larger volume medical SRG's such as SRG Cardiology, SRG Non-Subspecialty Medicine and SRG Respiratory Medicine.
- Local self-sufficiency rates varied for day only services by planning regions and SRG's, but were generally low for surgical SRG's. However, in volume terms, the number of same day surgical separations flowing to TTH from each planning region was relatively small.

Strategic questions



- The base year data is for 2014/15. Have there been any major changes to local service capability or capacity since then, for example, to obstetric services or oncology services?
- Are the constraints to increasing self-sufficiency related to the smaller hospital's clinical service capability or related to the capacity of TTH to provide outreach?
- The key benefit of increasing levels of self-sufficiency is improvement in local access but when total volumes are small the service may not be cost-effective or safety factors may arise. Are there particular specialties for which there would be a major benefit to TTH to increase capacity or capability of the smaller facilities?

5.1 Facilities within the Burdekin local planning region

5.1.1. Service Profile - Ayr Health Service



Ayr Health Service

Location: Ayr Health Service is a rural health service located 87 kilometres south of Townsville.

Size: Ayr Health Service has 28 inpatient beds, an Operating and Procedure Room with first and second stage recovery, an Emergency department that has acute and day only beds, and there is a helipad on site.

Capability: CSCF ratings are provided at Appendix B.

Services: The Ayr Health Service provides a range of inpatient and outpatient services including: Acute Care, Birthing, Endoscopy, Emergency, Surgery, Clinics, Aboriginal and Islander Health, Nursing Discharge Liaison, Community Mental Health, Child Health, Physiotherapy, Medical Imaging, Speech Therapy, Occupational Therapy, Social Work and Pharmacy.

5.1.2. 2014/15 Activity Profile - Ayr Health Service

In 2014/15, there were 2,013 total separations from Ayr Health Service, which accounted for a total of 6,213 total beddays. Of these, 25% (499) were same day separations and the Average Length of Stay (ALOS) across all separations was 3.1 days.

The SRG Non-Subspecialty Surgery accounted for the greatest number of separations (11% of total separations, 219), followed by the SRG Respiratory Medicine (10% of total separations, 209) and the SRG Cardiology (10% of total separations, 199). Refer Table 70.

Table 70: Top 10 SRGs by Total Separations (including Beddays), Ayr Health Service, by SRG by Stay Type, 2014/15

SRG	Overnight	Same Day	Total Seps	% Same Day	Total Beddays	ALOS (days)	% of Total Seps	% of Total Beddays
Non-Subspecialty Surgery	174	45	219	21%	495	2.3	11%	8%
Respiratory Medicine	187	22	209	11%	756	3.6	10%	12%
Cardiology	145	54	199	27%	486	2.4	10%	8%
Obstetrics	155	16	171	9%	409	2.4	8%	7%
Non-Subspecialty Medicine	140	28	168	17%	689	4.1	8%	11%
Immunology & Infections	132	3	135	2%	551	4.1	7%	9%
Neurology	88	37	125	30%	461	3.7	6%	7%
Diagnostic GI Endoscopy	2	118	120	98%	132	1.1	6%	2%
Orthopaedics	87	15	102	15%	304	3.0	5%	5%
Haematology	17	52	69	75%	97	1.4	3%	2%
All Other SRG's	387	109	496	22%	1,833	3.7	25%	30%
TOTAL	1,514	499	2,013	25%	6,213	3.1	100%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016) Note: Excludes Unqualified Neonates and Renal Dialysis

5.1.3. Service Profile - Home Hill Health Service



Home Hill Health Service

Location: Home Hill Health Service is a rural health service located 100 kilometres south of Townsville, and 12 kilometres south of the neighbouring town of Ayr.

Size: Home Hill Health Service has a 13 bed inpatient unit, 1 dedicated palliative care bed, an 8 chair renal unit, outpatient clinics, a physiotherapy and occupational therapy room, one minor procedural room and a private medical practice.

Capability: CSCF ratings are provided at Appendix B.

Services: Services provided include generalist nursing care for inpatients with a broad range of health care needs ranging from aged care, rehabilitation, general medicine, oncology, complex wound care and palliative care. The emergency service is a 24 hour nurse led emergency triage, with patient's requiring medical assessment transferred to Ayr. The renal unit is staffed by The Townsville hospital and health service.

5.1.4. 2014/15 Activity Profile - Home Hill Health Service

In 2014/15, there were 138 total separations from Home Hill Health Service, which accounted for a total of 4,511 total beddays. Of these, 23% (32) were same day separations and the ALOS across all separations was 32.7 days.

The SRG Other Non-Acute accounted for the greatest number of separations (39% of total separations, 54), followed by the SRG Haematology (20% of total separations, 27) and the SRG Immunology and Infections (13% of total separations, 18). Refer Table 71.

Table 71: Top 10 SRGs for Total Separations (including Beddays), Home Hill Health Service, by SRG by Stay Type, 2014/15

SRG	Overnight	Same Day	Total Seps	% Same Day	Total Beddays	ALOS (days)	% of Total Seps	% of Total Beddays
Other Non-Acute	54	0	54	0%	3,525	65.3	39%	78%
Haematology	13	14	27	52%	27	1.0	20%	1%
Immunology & Infections	1	17	18	94%	19	1.1	13%	0%
Neurology	14	0	14	0%	465	33.2	10%	10%
Non Subspecialty Medicine	13	0	13	0%	123	9.5	9%	3%
Palliative (non-acute)	3	0	3	0%	112	37.3	2%	2%
Orthopaedics	2	0	2	0%	119	59.5	1%	3%
Rehabilitation (non-acute)	2	0	2	0%	42	21.0	1%	1%
Dentistry	1	0	1	0%	19	19.0	1%	0%
Endocrinology	0	1	1	100%	1	1.0	1%	0%
Other	3	0	3	0%	59	19.7	2%	1%
TOTAL	106	32	138	23%	4,511	32.7	100%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016) Note: Excludes Unqualified Neonates and Renal Dialysis

5.1.5. Levels of Self-Sufficiency for the Local Planning Region

The following tables represent the levels of local self-sufficiency for the Top 10 SRGs for Burdekin residents by total volume of overnight and same day separations from THHS facilities (refer Table 72 and Table 73 respectively).

In 2014/15, 64% (1,521) of all overnight separations provided to Burdekin residents were provided at Ayr or Home Hill Health Services, and the remaining 36% (861) were provided at TTH. For the Top 10 SRG for overnight separations, local self-sufficiency was 80% or greater for SRG Other Non-Acute (97%, 56), SRG Non-Subspecialty Medicine (89%, 149), SRG Cardiology (82%, 139), SRG Immunology & Infections (81%, 125) and SRG Respiratory Medicine (80%, 178). Refer Table 72 and Figure 19.

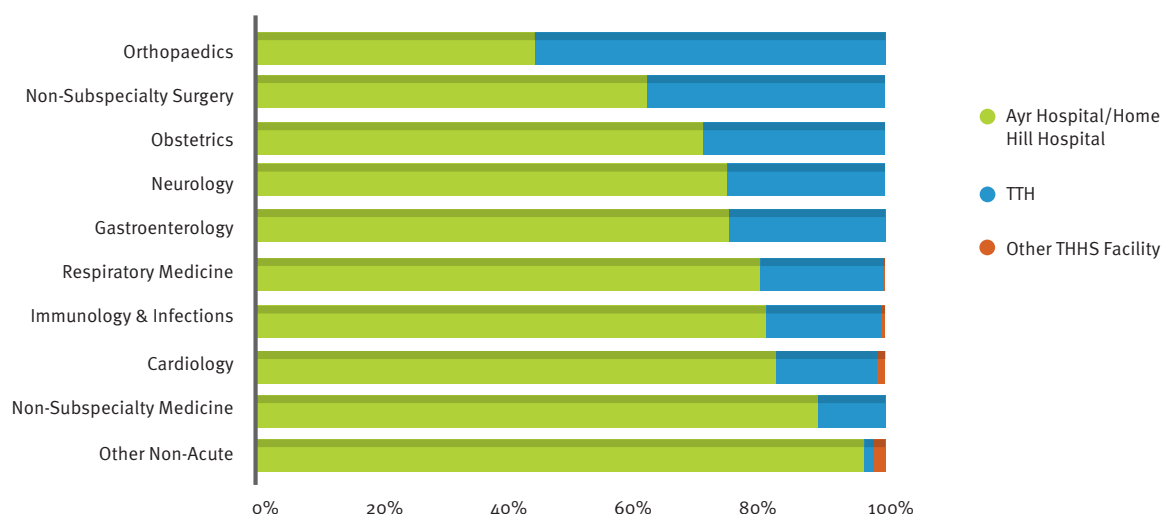
Table 72: Top 10 SRGs by Overnight Separations (% Total), Burdekin Residents, by Place of Treatment (THHS Facilities), 2014/15

SRG	Ayr Health Service/ Home Hill Health Service		TTH		Other THHS Facility		Total	
	Seps	% Total Seps	Seps	% Total Seps	Seps	% Total Seps	Seps	% Total Seps
Other Non-Acute	56	97%	1	2%	1	2%	58	100%
Non-Subspecialty Medicine	149	89%	18	11%	0	0%	167	100%
Cardiology	139	82%	28	17%	2	1%	169	100%
Immunology & Infections	125	81%	28	18%	1	1%	154	100%
Respiratory Medicine	178	80%	43	19%	1	0%	222	100%
Gastroenterology	52	75%	17	25%	0	0%	69	100%
Neurology	99	75%	33	25%	0	0%	132	100%
Obstetrics	138	71%	56	29%	0	0%	194	100%
Non-Subspecialty Surgery	163	62%	99	38%	0	0%	262	100%
Orthopaedics	84	44%	106	56%	0	0%	190	100%
Other	338	44%	432	56%	1	0%	771	100%
TOTAL	1,521	64%	861	36%	6	0%	2,388	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

Figure 19: Top 10 SRGs for Overnight Separations (% Total), Burdekin Residents, by Place of Treatment (THHS Facilities), 2014/15



In 2014/15, 56% (505) of all same day separations provided to Burdekin residents were provided at Ayr or Home Hill Health Services, and the remaining 44% (394) were provided at TTH. For the Top 10 SRGs for same day separations, local self-sufficiency was 80% or greater for SRG Diagnostic GI Endoscopy (99%, 117), SRG Haematology (93%, 66). Refer Table 73 and Figure 20.

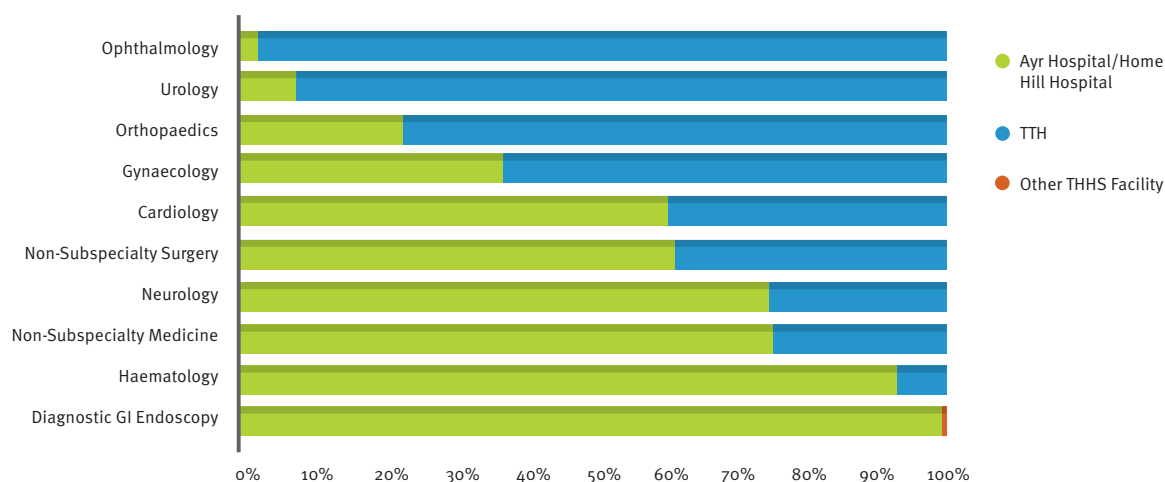
Table 73: Top 10 SRGs by Same Day Separations (% Total), Burdekin Residents, by Place of Treatment (THHS Facilities), 2014/15

SRG	Ayr Health Service/ Home Hill Health Service		TTH		Other THHS Facility		Total	
	Seps	% Total Seps	Seps	% Total Seps	Seps	% Total Seps	Seps	% Total Seps
Diagnostic GI Endoscopy	117	99%	0	0%	1	1%	118	100%
Haematology	66	93%	5	7%	0	0%	71	100%
Non-Specialty Medicine	27	75%	9	25%	0	0%	36	100%
Neurology	32	74%	11	26%	0	0%	43	100%
Non-Specialty Surgery	42	61%	27	39%	0	0%	69	100%
Cardiology	53	60%	35	40%	0	0%	88	100%
Gynaecology	16	36%	28	64%	0	0%	44	100%
Orthopaedics	13	22%	46	78%	0	0%	59	100%
Urology	2	7%	28	93%	0	0%	30	100%
Ophthalmology	1	1%	86	99%	0	0%	87	100%
Other	136	53%	119	46%	1	0%	256	100%
TOTAL	505	56%	394	44%	2	0%	901	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

Figure 20: Top 10 SRGs for Same Day Separations (% Total), Burdekin Residents, by Place of Treatment (THHS Facilities), 2014/15



Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

5.2. Facilities within the Charters Towers Local Planning Region

5.2.1. Service Profile - Charters Towers Health Service



Charters Towers Hospital

Location: Charters Towers Health Service is a rural health service located 135 kilometres west of Townsville.

Size: Charters Towers Health Service has a 2 bed Emergency Department space with 23 inpatient beds. When required the health service can provide for imminent birthing and procedural capacity.

Capability: CSCF ratings are provided at Appendix B.

Services: A range of services are provided including emergency, acute inpatient, low-risk procedural, all risk caseload group midwifery practice, community health, child and family and school based youth health services. Outreach nursing clinics including diabetes, women's health and renal health services as well as visiting Specialist Medical Clinics (Cardiac, Paediatric, Gastroenterology and Surgical) from TTH are provided.

5.2.2. 2014/15 Activity Profile - Charters Towers Health Service

In 2014/15, there were 1,487 total separations from Charters Towers Health Service, which accounted for a total of 6,193 total beddays. Of these, 33% (492) were same day separations and the ALOS across all separations was 4.2 days.

The SRG Cardiology accounted for the greatest number of separations (16% of total separations, 231), followed by the SRG Non-Subspecialty Surgery (11% of total separations, 168) and the SRG Non-Subspecialty Medicine (9% of total separations, 140). Refer Table 74.

Table 74: Top 10 SRGs for Total Separations (including Beddays), Charters Towers Health Service, by SRG by Stay Type, 2014/15

SRG	Overnight	Same Day	Total Seps	% Same Day	Total Beddays	ALOS (days)	% of Total Seps	% of Total Beddays
Cardiology	141	90	231	39%	396	1.7	16%	6%
Non-Subspecialty Surgery	115	53	168	32%	353	2.1	11%	6%
Non-Subspecialty Medicine	119	21	140	15%	596	4.3	9%	10%
Respiratory Medicine	119	20	139	14%	461	3.3	9%	7%
Immunology & Infections	87	7	94	7%	346	3.7	6%	6%
Plastic & Reconstructive Surgery	0	88	88	100%	88	1.0	6%	1%
Neurology	63	17	80	21%	218	2.7	5%	4%
Orthopaedics	46	33	79	42%	259	3.3	5%	4%
Gastroenterology	41	31	72	43%	126	1.8	5%	2%
Haematology	13	31	44	70%	55	1.3	3%	1%
Other	251	101	352	29%	3,295	9.4	24%	53%
TOTAL	995	492	1,487	33%	6,193	4.2	100%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016) Note: Excludes Unqualified Neonates and Renal Dialysis

5.2.3. Levels of Self-Sufficiency for the Local Planning Region

The following tables represent the levels of local self-sufficiency for the Top 10 SRGs for Charters Towers residents by total volume of overnight and same day separations from THHS facilities (refer Table 75 and Table 76 respectively).

In 2014/15, 50% (916) of all overnight separations provided to Burdekin residents, were provided at Charters Towers Health Service, and 49% (897) were provided at TTH. For the Top 10 SRG for overnight separations, local self-sufficiency was 80% or greater only for SRG Cardiology (84%, 134). Levels of self-sufficiency greater than 70% were for SRG Non-subspecialty Medicine (79%, 112), SRG Immunology & Infections (78%, 80) and SRG Respiratory Medicine (76%, 113). Refer Table 75 and o.

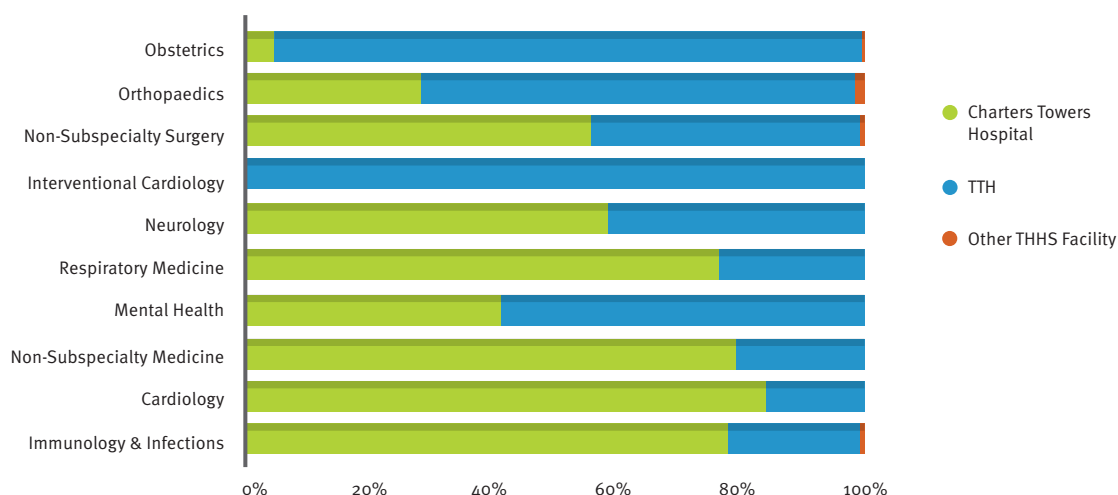
Table 75: Top 10 SRGs for Overnight Separations (% Total), Charters Towers Residents, by Place of Treatment (THHS Facilities), 2014/15

SRG	Charters Towers Health Service		TTH		Other THHS Facility	
	Seps	% Total Seps	Seps	% Total Seps	Seps	% Total Seps
Cardiology	134	84%	25	16%	1	1%
Non-Subspecialty Medicine	112	79%	29	21%	0	0%
Immunology & Infections	80	78%	22	22%	0	0%
Respiratory Medicine	113	76%	35	24%	0	0%
Neurology	61	59%	43	41%	0	0%
Non-Subspecialty Surgery	99	56%	77	44%	0	0%
Mental Health	24	41%	34	59%	0	0%
Orthopaedics	43	28%	107	71%	1	1%
Obstetrics	6	5%	123	94%	2	2%
Interventional Cardiology	0	0%	85	100%	0	0%
Other	244	41%	344	58%	2	0%
TOTAL	916	50%	897	49%	6	0%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

Figure 21: Top 10 SRGs for Overnight Separations (% Total), Charters Towers Residents, by Place of Treatment (THHS Facilities), 2014/15



In 2014/15, 52% (443) of all same day separations provided to Charters Towers residents, were provided at Charters Towers Health Service, and 47% (401) were provided at TTH. For the Top 10 SRGs for same day separations, local self-sufficiency was 80% or greater for SRG Haematology (97%, 31), SRG Gastroenterology (88%, 29), SRG Cardiology (84%, 79), SRG Dermatology (82%, 23) and SRG Plastics and Reconstructive Surgery (80%, 87) . Refer Table 76 and Figure 22.

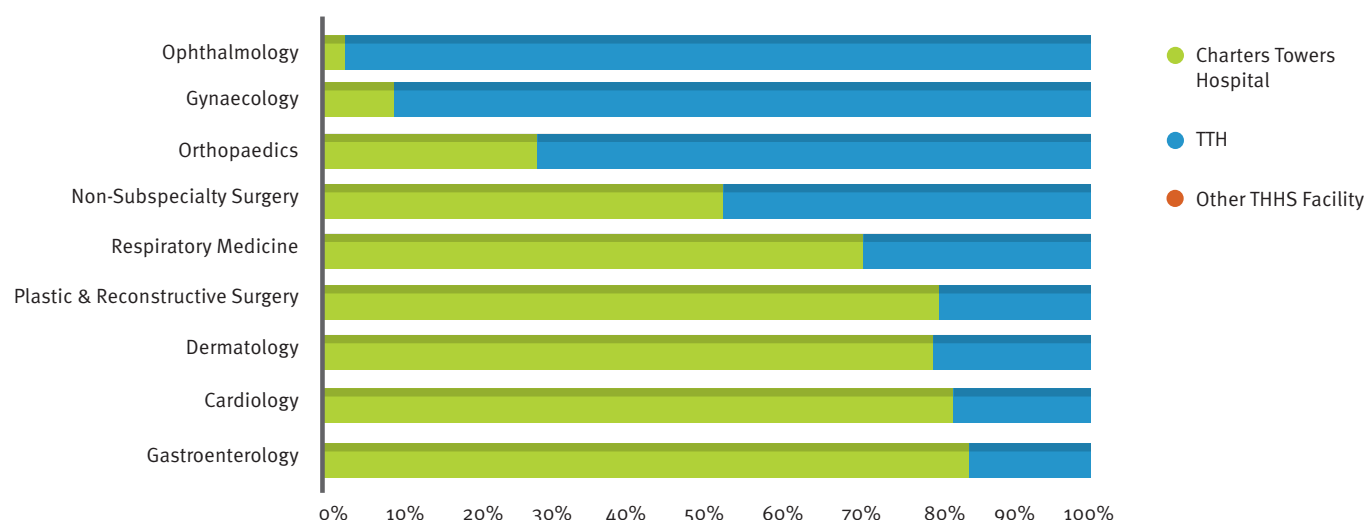
Table 76: Top 10 SRGs for Same Day Separations (% Total), Charters Towers Residents, by Place of Treatment (THHS Facilities), 2014/15

SRG	Charters Towers Health Service		TTH		Other THHS Facility	
	Seps	% Total Seps	Seps	% Total Seps	Seps	% Total Seps
Haematology	31	97%	1	3%	0	0%
Gastroenterology	29	88%	4	12%	0	0%
Cardiology	79	84%	15	16%	0	0%
Dermatology	23	82%	5	18%	0	0%
Plastic & Reconstructive Surgery	87	80%	22	20%	0	0%
Respiratory Medicine	19	70%	8	30%	0	0%
Non-Subspecialty Surgery	41	52%	38	48%	0	0%
Orthopaedics	29	28%	76	72%	0	0%
Gynaecology	3	9%	31	91%	0	0%
Ophthalmology	2	3%	78	98%	0	0%
Other	100	45%	123	55%	1	0%
TOTAL	443	52%	401	47%	1	0%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

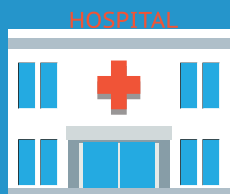
Note: Excludes unqualified neonates and renal dialysis

Figure 22: Top 10 SRGs for Same Day Separations (% Total), Charters Towers Residents, by Place of Treatment (THHS Facilities), 2014/15



5.3. Facilities within the Northern Highlands Local Planning Region

5.3.1. Service Profile - Hughenden Multi Purpose Health Service



Hughenden Multi-Purpose Health Service

Location: Hughenden Multi Purpose Health Service (MPHS) is 246 kilometres west of Charters Towers, 517 kilometres from Mt Isa and is 384 kilometres from Townsville.

Size: Hughenden MPHS has 9 acute beds and 6 high care aged care flexible beds.

Capability: CSCF ratings are provided at Appendix B.

Services: The MPHS provides an integrated acute and community health service. Emergency care is available 24 hours per day. Ambulatory clinics are conducted Monday – Friday. There is no outpatient clinic, all patients requiring access to a Doctor are referred to the Private Practice conducted by the Medical Superintendent (the exception being after hours or accident and emergency care). There is no birthing service or operating theatre, however pre-natal and post-natal care is available from the MPHS midwife in partnership with the General Practitioner and TTH.

5.3.2. 2014/15 Activity Profile - Hughenden Multi Purpose Health Service

In 2014/15, there were 295 total separations from Hughenden MPHS, which accounted for a total of 1,145 total beddays. Of these, 26% (78) were same day separations and the ALOS across all separations was 3.9 days.

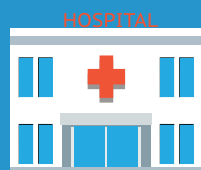
The SRG Non-Subspecialty Surgery accounted for the greatest number of separations (14% of total separations, 40), followed by the SRG Cardiology (12% of total separations, 36) and the SRG Respiratory Medicine (11% of total separations, 33). Refer Table 77.

Table 77: Top 10 SRGs for Total Separations (including Beddays), Hughenden MPHS, by SRG by Stay Type, 2014/15

SRG	Overnight	Same Day	Total Seps	% Same Day	Total Beddays	ALOS (days)	% of Total Seps	% of Total Beddays
Non-Subspecialty Surgery	25	15	40	38%	76	1.9	14%	7%
Cardiology	26	10	36	28%	81	2.3	12%	7%
Respiratory Medicine	26	7	33	21%	113	3.4	11%	10%
Neurology	18	6	24	25%	90	3.8	8%	8%
Non-Subspecialty Medicine	19	5	24	21%	105	4.4	8%	9%
Orthopaedics	14	5	19	26%	76	4.0	6%	7%
Endocrinology	14	2	16	13%	57	3.6	5%	5%
Immunology & Infections	13	3	16	19%	64	4.0	5%	6%
Other Non-Acute	11	0	11	0%	246	22.4	4%	21%
Gastroenterology	8	2	10	20%	15	1.5	3%	1%
Other	43	23	66	35%	222	3.4	22%	19%
TOTAL	217	78	295	26%	1,145	3.9	100%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016) Note: Excludes Unqualified Neonates and Renal Dialysis

5.3.3. Service Profile - Richmond Health Service



Richmond Health Service

Location: Richmond is the midpoint between Townsville and Mt Isa (approximately 500 kms from both centres).

Size: Richmond Health Service has 10 acute available beds, including 4 long stay nursing home type beds.

Capability: CSCF ratings are provided at Appendix B.

Services: Richmond Health Service provides a range of services including emergency care 24/7 to CSCF level, Queensland Ambulance services 24/7, general medical/surgical and paediatric services (10 beds), this includes 4 long stay nursing home type beds. General x-ray services are limited but available via licensed operators.

5.3.4. 2014/15 Activity Profile - Richmond Health Service

In 2014/15, there were 175 total separations from Richmond, which accounted for a total of 1,330 total beddays. Of these, 32% (56) were same day separations and the ALOS across all separations was 7.6 days.

The SRG Cardiology accounted for the greatest number of separations (15% of total separations, 27), followed by the SRG Non-Subspecialty Surgery (15% of total separations, 26) and the SRG Non-Subspecialty Medicine (13% of total separations, 22). Refer Table 78.

Table 78: Top 10 SRGs for Total Separations (including Beddays), Richmond Health Service, by SRG by Stay Type, 2014/15

SRG	Overnight	Same Day	Total Seps	% Same Day	Total Beddays	ALOS (days)	% of Total Seps	% of Total Beddays
Cardiology	20	7	27	26%	37	1.4	15%	3%
Non-Subspecialty Surgery	11	15	26	58%	34	1.3	15%	3%
Non-Subspecialty Medicine	15	7	22	32%	157	7.1	13%	12%
Respiratory Medicine	12	4	16	25%	56	3.5	9%	4%
Immunology & Infections	10	2	12	17%	45	3.8	7%	3%
Neurology	7	5	12	42%	99	8.3	7%	7%
Orthopaedics	4	5	9	56%	10	1.1	5%	1%
Other Non-Acute	8	0	8	0%	817	102.1	5%	61%
Gastroenterology	4	2	6	33%	6	1.0	3%	0%
Urology	3	3	6	50%	7	1.2	3%	1%
Other	25	6	31	19%	62	2.0	18%	5%
TOTAL	119	56	175	32%	1,330	7.6	100%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016) Excludes Unqualified Neonates and Renal Dialysis

5.3.5. Levels of Self-Sufficiency for the Local Planning Region

The following tables represent the levels of local self-sufficiency for the Top 10 SRGs for Northern Highlands residents by total volume of overnight and same day separations from THHS facilities (refer Table 79 and Table 80 respectively).

In 2014/15, 60% (299) of all overnight separations provided to Northern Highlands residents, were provided at Hughenden or Richmond Health Services, and 38% (189) were provided at TTH. For the Top 10 SRGs for overnight separations, local self-sufficiency was 80% or greater for SRG Other Non-Acute (100%, 16), SRG Non-Subspecialty Medicine (88%, 30), SRG Cardiology (89%, 40), and SRG Endocrinology (88%, 15). Refer Table 79 and Figure 23.

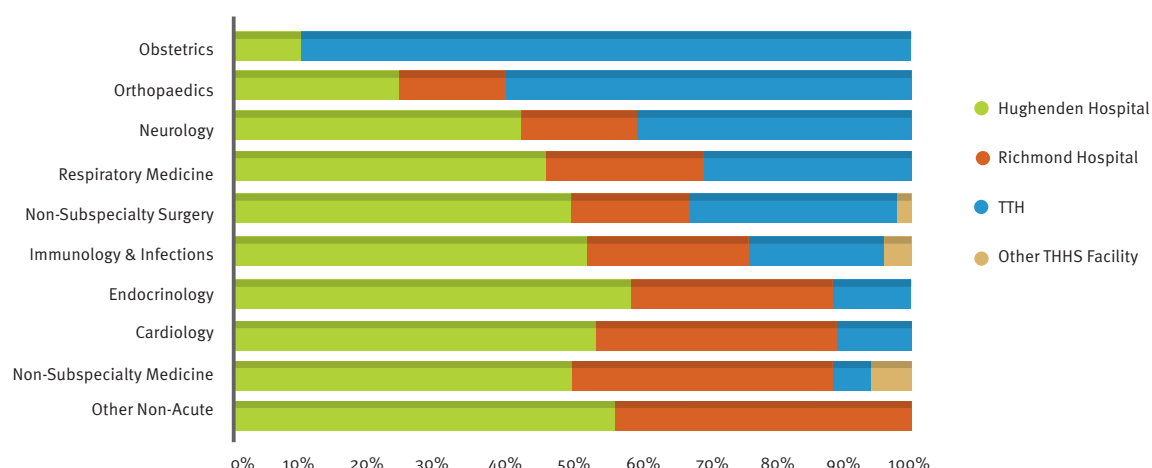
Table 79: Top 10 SRGs for Overnight Separations (% Total), Northern Highlands Residents, by Place of Treatment (THHS Facilities), 2014/15

SRG	Hughenden MPHS		Richmond Health Service		TTH		Other THHS Facility	
	Seps	% Total Seps	Seps	% Total Seps	Seps	% Total Seps	Seps	% Total Seps
Other Non-Acute	9	56%	7	44%	0	0%	0	0%
Non-Subspecialty Medicine	17	50%	13	38%	2	6%	2	6%
Cardiology	24	53%	16	36%	5	11%	0	0%
Endocrinology	10	59%	5	29%	2	12%	0	0%
Immunology & Infections	13	52%	6	24%	5	20%	1	4%
Non-Subspecialty Surgery	23	50%	8	17%	14	30%	1	2%
Respiratory Medicine	24	46%	12	23%	16	31%	0	0%
Neurology	18	43%	7	17%	17	40%	0	0%
Orthopaedics	13	31%	4	10%	25	60%	0	0%
Obstetrics	3	10%	0	0%	26	90%	0	0%
Other	45	31%	22	15%	77	53%	1	1%
Total	199	40%	100	20%	189	38%	5	1%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

Figure 23: Top 10 SRGs for Overnight Separations (% Total), Northern Highlands Residents, by Place of Treatment (THHS Facilities), 2014/15



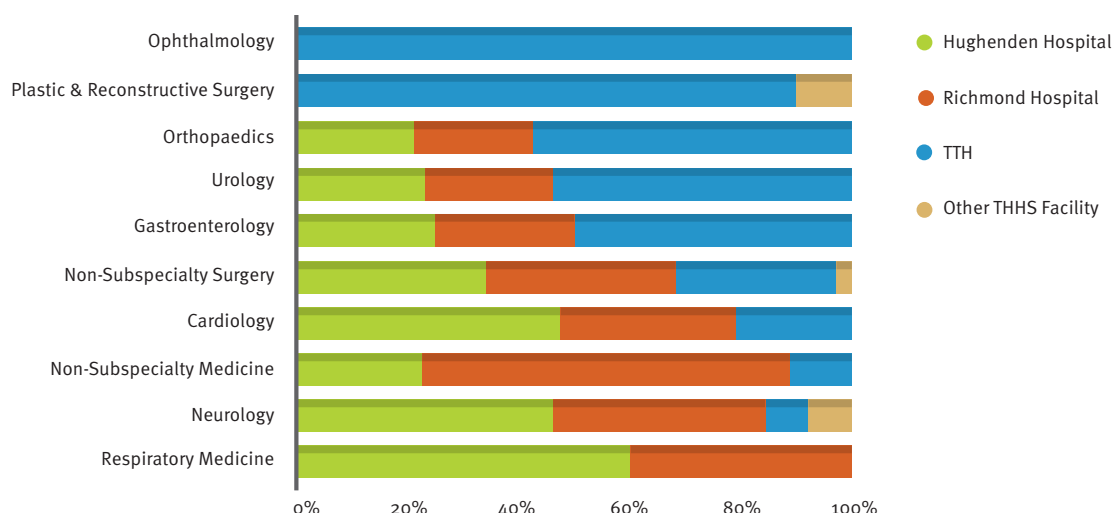
In 2014/15, 55% (115) of all same day separations provided to Charter Towers residents, were provided at Charters Towers Health Service, and 43% (92) were provided at TTH. For the Top 10 SRGs for same day separations, local self-sufficiency was 80% or greater for SRG Respiratory Medicine (100%, 10), SRG Neurology (84%, 11) and SRG Non-specialty Medicine (89%, 8). Refer Table 80 and Figure 24.

Table 80: Top 10 SRGs for Same Day Separations (% Total), Northern Highlands Residents, by Place of Treatment (THHS Facilities), 2014/15

SRG	Hughenden MPHS		Richmond Health Service		TTH		Other THHS Facility	
	Seps	% Total Seps	Seps	% Total Seps	Seps	% Total Seps	Seps	% Total Seps
Respiratory Medicine	6	60%	4	40%	0	0%	0	0%
Neurology	6	46%	5	38%	1	8%	1	8%
Non-Specialty Medicine	2	22%	6	67%	1	11%	0	0%
Cardiology	9	47%	6	32%	4	21%	0	0%
Non-Specialty Surgery	13	34%	13	34%	11	29%	1	3%
Gastroenterology	2	25%	2	25%	4	50%	0	0%
Urology	3	23%	3	23%	7	54%	0	0%
Orthopaedics	4	21%	4	21%	11	58%	0	0%
Plastic & Reconstructive Surgery	0	0%	0	0%	9	90%	1	10%
Ophthalmology	0	0%	0	0%	16	100%	0	0%
Other	22	39%	5	9%	28	49%	2	4%
TOTAL	67	32%	48	23%	92	43%	5	2%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016) Excludes unqualified neonates and renal dialysis

Figure 24: Top 10 SRGs for Same Day Separations (% Total), Northern Highlands Residents, by Place of Treatment (THHS Facilities), 2014/15



5.4. Facilities within the Hinchinbrook Local Planning Region

5.4.1. Service Profile - Ingham Health Service



Ingham Health Service

Location: Ingham is located 110 kilometres north of Townsville.

Size: The Ingham facility has a 28 bed unit with a dedicated birth suite and two palliative care beds, an emergency unit with a two bay resuscitation area and 2 bed consult. There is an operating suite with two procedural rooms, pre-admission and PACU areas, and medical imaging. The facility also has a community services wing which includes oral health services, allied health services with a rehabilitation gym and ADL kitchen, mental health services, midwifery services and ATSI services. Included in this space are five outreach consultancy rooms and three multifunction meeting rooms.

Capability: CSCF ratings are provided at Appendix B.

Services: Inpatient care is provided to patients with a broad range of health care needs ranging from cardiac monitoring, paediatrics, aged care, rehabilitation, general medicine, oncology, birthing, physiotherapy, occupational therapy, speech pathology, dietetics, social worker, ATSI health and palliative care. The emergency area provides services 24 hours/day. The operating suites are used regularly for elective lists by visiting general surgeons and gastroenterologists. Pharmacy services provide both inpatient and outpatient services, and medical imaging provides x-ray services Monday to Friday, with on call capacity and weekly ultrasound clinics. There are also a range of outreach specialist clinics provided on a regular basis. These clinics include: Orthopaedics, Chronic Kidney Disease Team, Women's Health Nurse Practitioner services, Mental Health, Cardiac Services, Respiratory, Child Development team, Australian Hearing Services, Dietetics and Townsville Aboriginal and Islanders Health Services.

5.4.2. 2014/15 Activity Profile - Ingham Health Service

In 2014/15, there were 1,946 total separations from Ingham Health Service, which accounted for a total of 7,827 total beddays.

Of these, 31% (604) were same day separations and the ALOS across all separations was four days. The SRG Cardiology accounted for the greatest number of separations (15% of total separations, 294), followed by the SRG Non-Subspecialty Surgery (14% of total separations, 279) and the SRG Non-Subspecialty Medicine (10% of total separations, 196). Refer Table 81.

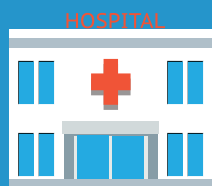
Table 81: Top 10 SRGs for Total Separations (including Beddays), Ingham Health Service, by SRG by Stay Type, 2014/15

SRG	Overnight	Same Day	Total Seps	% Same Day	Total Beddays	ALOS (days)	% of Total Seps	% of Total Beddays
Cardiology	189	105	294	36%	543	1.8	15%	7%
Non-Subspecialty Surgery	200	79	279	28%	529	1.9	14%	7%
Non-Subspecialty Medicine	174	22	196	11%	1,181	6.0	10%	15%
Respiratory Medicine	160	22	182	12%	582	3.2	9%	7%
Diagnostic GI Endoscopy	4	175	179	98%	179	1.0	9%	2%
Orthopaedics	78	35	113	31%	469	4.2	6%	6%
Neurology	76	26	102	25%	437	4.3	5%	6%
Immunology & Infections	72	8	80	10%	293	3.7	4%	4%
Gastroenterology	51	17	68	25%	174	2.6	3%	2%
Endocrinology	40	5	45	11%	150	3.3	2%	2%
Other	298	110	408	27%	3,290	8.1	21%	42%
TOTAL	1,342	604	1,946	31%	7,827	4.0	100%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

5.4.3. Service Profile - Joyce Palmer Health Service



Joyce Palmer Health Service

Location: The Joyce Palmer Health Service is located on Palm Island, 70 kilometres north of Townsville - off the coast near Ingham.

Size: The Joyce Palmer Health Services consists of an emergency department, a four chair renal dialysis unit and a 15 bed general ward. Outpatient clinics are provided.

Capability: CSCF ratings are provided at Appendix B.

Services: During 2016, the Joyce Palmer Health Service provided health services to over 3,500 Palm Island people, although a count by the Palm Island Aboriginal Shire Council registered 5000 people on the island. Patients treated include all non-critically ill patients which may be antenates, neonates, children, adults and aged care. Services include emergency services, general management of medical and aged patients, minor surgical procedures, outpatient clinics, basic radiography, pathology sample collection, antenatal and post natal care, pharmacy, child health, mens and womens business, mental health, oral health, and wound clinic. A number of visiting specialists conduct regular clinics with the facility.

5.4.4. 2014/15 Activity Profile - Joyce Palmer Health Service

In 2014/15, there were 888 total separations from Joyce Palmer Health Service, which accounted for a total of 2,248 total beddays. Of these, 28% (253) were same day separations and the ALOS across all separations was 2.5 days.

The SRG Respiratory Medicine accounted for the greatest number of separations (14% of total separations, 124), followed by the SRG Neurology (13% of total separations, 117) and the SRG Non-Specialty Surgery (12% of total separations, 103). Refer Table 82.

Table 82: Top 10 SRGs for Total Separations (including Beddays), Joyce Palmer Health Service, by SRG by Stay Type, 2014/15

SRG	Overnight	Same Day	Total Seps	% Same Day	Total Beddays	ALOS (days)	% of Total Seps	% of Total Beddays
Respiratory Medicine	111	13	124	10%	345	2.8	14%	15%
Neurology	31	86	117	74%	183	1.6	13%	8%
Non-Subspecialty Surgery	79	24	103	23%	271	2.6	12%	12%
Immunology & Infections	69	4	73	5%	304	4.2	8%	14%
Ear, Nose & Throat	37	35	72	49%	102	1.4	8%	5%
Cardiology	34	23	57	40%	89	1.6	6%	4%
Drug & Alcohol	35	11	46	24%	74	1.6	5%	3%
Non-Subspecialty Medicine	37	8	45	18%	112	2.5	5%	5%
Upper GIT Surgery	23	16	39	41%	51	1.3	4%	2%
Endocrinology	34	4	38	11%	108	2.8	4%	5%
Other	145	29	174	17%	609	3.5	20%	27%
TOTAL	635	253	888	28%	2,248	2.5	100%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

5.4.5. Levels of Self-Sufficiency for the Local Planning Region

The following tables represent the levels of local self-sufficiency for the Top 10 SRGs for Hinchinbrook residents by total volume of overnight and same day separations from THHS facilities (refer Table 83 and Table 84 respectively).

In 2014/15, 60% (1,838) of all overnight separations provided to Hinchinbrook residents, were provided at Ingham Health Service or Joyce Palmer Health Service, and 39% (1,203) were provided at TTH. For the Top 10 SRGs for overnight separations, local self-sufficiency was 80% or greater for SRG Non-Subspecialty Medicine (91%, 202), SRG Cardiology (88%, 211) and SRG Respiratory Medicine (80%, 257). Refer Table 83 and Figure 25.

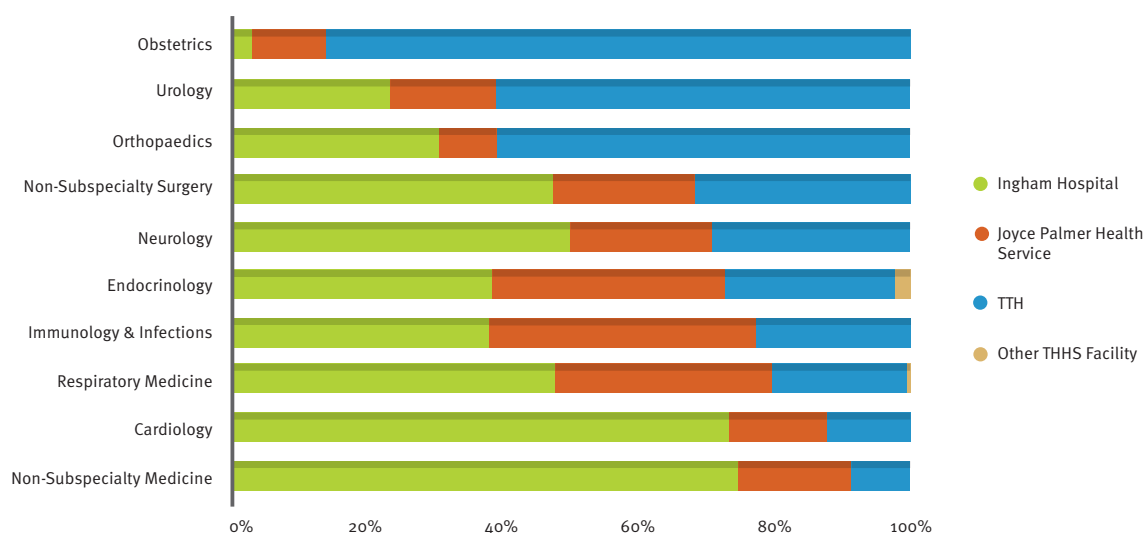
Table 83: Top 10 SRGs for Overnight Separations (% Total), Hinchinbrook Residents, by Place of Treatment (THHS Facilities), 2014/15

SRG	Ingham Health Service		Joyce Palmer Health Service		TTH		Other THHS Facility	
	Seps	% Total Seps	Seps	% Total Seps	Seps	% Total Seps	Seps	% Total Seps
Non-Subspecialty Medicine	166	75%	36	16%	19	9%	0	0%
Cardiology	177	73%	34	14%	30	12%	0	0%
Respiratory Medicine	153	47%	104	32%	65	20%	1	0%
Immunology & Infections	64	38%	67	40%	38	22%	0	0%
Endocrinology	38	38%	34	34%	25	25%	2	2%
Neurology	72	50%	30	21%	42	29%	0	0%
Non-Subspecialty Surgery	174	47%	77	21%	117	32%	0	0%
Orthopaedics	71	30%	20	9%	142	61%	0	0%
Urology	22	23%	15	16%	58	61%	0	0%
Obstetrics	5	3%	20	11%	153	86%	0	0%
Other	279	28%	180	18%	514	52%	9	1%
TOTAL	1,221	40%	617	20%	1,203	39%	12	0%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

Figure 25: Top 10 SRGs for Overnight Separations (% Total), Hinchinbrook Residents, by Place of Treatment (THHS Facilities), 2014/15



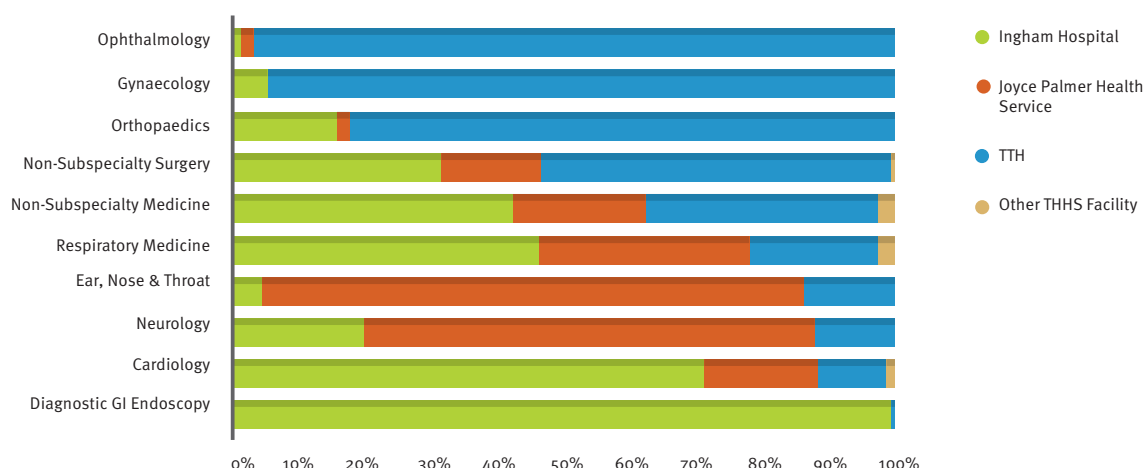
In 2014/15, 56% (779) of all same day separations provided to Hinchinbrook residents, were provided at Ingham Health Service or Joyce Palmer Health Service, and the remaining 44% (610) were provided at TTH. For the Top 10 SRGs for same day separations, local self-sufficiency was 80% or greater for SRG Diagnostic GI Endoscopy (99%, 173), SRG Cardiology (89%, 120) and SRG Neurology (88%, 111), SRG Ear, Nose and Throat (86%, 37). Refer Table 84 and Figure 26.

Table 84: Top 10 SRGs for Same Day Separations (% Total), Hinchinbrook Residents, by Place of Treatment (THHS Facilities), 2014/15

SRG	Ingham Health Service		Joyce Palmer Health Service		TTH		Other THHS Facility	
	Seps	% Total Seps	Seps	% Total Seps	Seps	% Total Seps	Seps	% Total Seps
Diagnostic GI Endoscopy	173	99%	0	0%	1	1%	0	0%
Cardiology	97	71%	23	17%	14	10%	2	1%
Neurology	25	20%	86	68%	15	12%	0	0%
Ear, Nose & Throat	2	5%	35	81%	6	14%	0	0%
Respiratory Medicine	19	46%	13	32%	8	20%	1	2%
Non-Subspecialty Medicine	17	43%	8	20%	14	35%	1	3%
Non-Subspecialty Surgery	50	31%	24	15%	84	53%	1	1%
Orthopaedics	31	16%	3	2%	161	83%	0	0%
Gynaecology	2	5%	0	0%	35	95%	0	0%
Ophthalmology	1	1%	2	2%	93	97%	0	0%
Other	109	31%	59	17%	179	51%	1	0%
TOTAL	526	38%	253	18%	610	44%	6	0%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016) Excludes unqualified neonates and renal dialysis

Figure 26: Top 10 SRGs for Same Day Separations (% Total), Hinchinbrook Residents, by Place of Treatment (THHS Facilities), 2014/15



6. Renal dialysis services

Key findings



- Just over half (57%) of total renal dialysis separations provided by THHS in 2014/15 were for Aboriginal and Torres Strait Islander people.
- Residents of North West HHS accounted for 14% of renal dialysis separations provided by THHS. Residents of all other HHS's in Queensland and interstate accounted for only 1% of the total separations.
- Residents of THHS utilised renal dialysis services at a rate more than two and a half times the average for Queensland (RU 200).
- The projected annual growth rate for renal dialysis services provided by THHS is 3.11%.

Strategic questions



- Are the large volume of flows of North West HHS residents related to clinical complexity or lack of capability and / or capacity in North West HHS?
- What are the CKD management models currently in place? Are these models also in place in North West HHS?
- What model of care and level of resourcing for CKD programs would be required to have an impact at a population level on the projected demand?
- What is the likelihood of greater availability of renal transplantation services to a population such as that serviced by TTH?
- What is the extent of comprehensive primary care in place to prevent development of chronic disease and reliance on the tertiary sector?
- What is the relationship with the Aboriginal Medical Service to promote early intervention and pathways for chronic disease management?
- What are the options to increase use of other forms of dialysis to allow people to remain at home?
- What are the options to increase haemodialysis at JPHS (existing infrastructure is available to support 16 people).
- What are the options to increase satellite haemodialysis at Charters Towers and Ingham to save people relocating and/or travelling 3 times per week?

6.1.1. 2014/15 Activity Profile¹

In 2014/15, THHS provided a total of 22,583 separations for SRG Renal Dialysis. Of these, 57% (12,861) were provided to Aboriginal and Torres Strait Islander people. 14% (3,152) of total SRG Renal Dialysis separations were provided to residents of the North West HHS, and a high percentage of these separations were provided to Aboriginal and Torres Strait Islander people (94%, 2,950 separations). Residents of THHS were provided 85% (19,215 separations) of total SRG Renal Dialysis separations in 2014/12. Refer Table 85.

Table 85: THHS Renal Dialysis Separations by HHS and Place of Residence, by Aboriginal and Torres Strait Islander Status, 2014/15

HHS of Residence	Place of Residence	ATSI	Non-ATSI	Total	% Indigenous	% Total
Other HHS/Interstate	Total Other HHS/Interstate	62	154	216	29%	1%
North West	Mt Isa	1,149	200	1,349	85%	6%
	North West ex. Mt Isa	1,801	2	1,803	100%	8%
	Total North West HHS	2,950	202	3,152	94%	14%
Townsville	Burdekin	580	834	1,414	41%	6%
	Charters Towers	295	263	558	53%	2%
	Hinchinbrook	1,401	204	1,605	87%	7%
	Northern Highlands	1	26	27	4%	0%
	Townsville City	3,429	3,492	6,921	50%	31%
	Townsville North	1,534	2,722	4,256	36%	19%
	Townsville South	2,609	1,825	4,434	59%	20%
	Total Townsville HHS	9,849	9,366	19,215	51%	85%
Total all HHS		12,861	9,722	22,583	57%	100%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

In 2014/15, residents of THHS used total public inpatient Renal Dialysis services at a rate significantly higher than the average for Queensland with a total RU of 200. Refer Table 86.

¹ The dataset provided by Queensland Health identifies TTH as the only place of treatment for SRG Renal Dialysis within THHS.

Table 86: Public Relative Utilisation THHS Residents, Renal Dialysis, 2014/15

SRG	Public	RU
Renal Dialysis	19,215	200

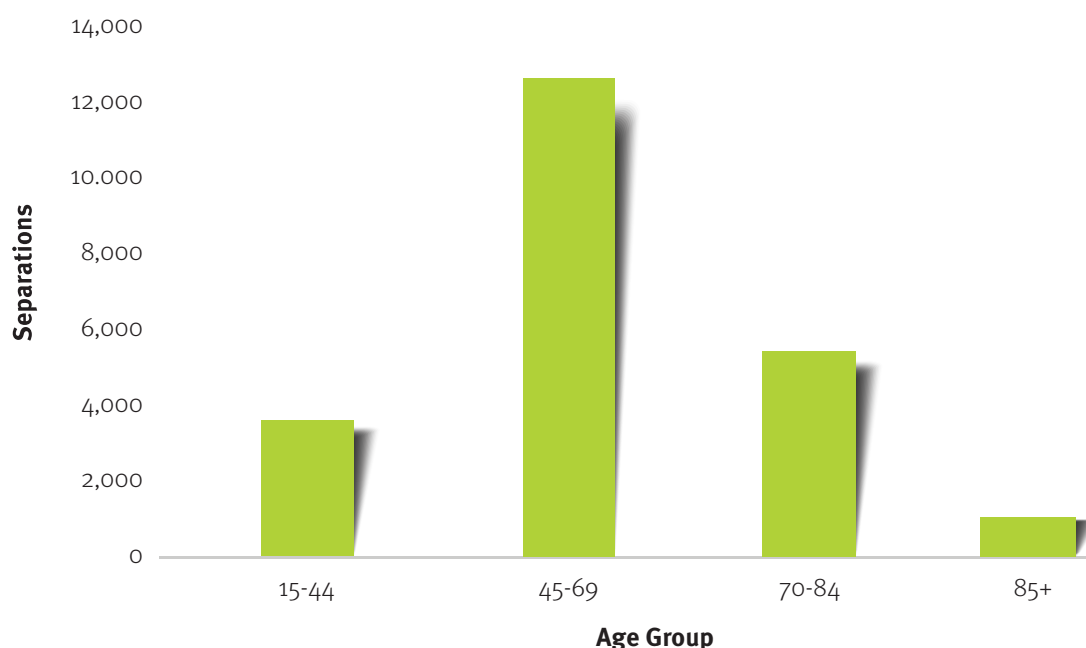
Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

In 2014/15, 18% (4,176) of total SRG Renal Dialysis separations were chargeable patients. The age group with the greatest percentage of chargeable patients was the 85+ years age group (85% chargeable, 893 chargeable patients). The age group receiving the greatest volume of services in 2014/15, was the 45 - 69 year age group (12,569 separations). Refer Table 87 and Figure 27.

Table 87 : THHS Renal Dialysis Separations by Age Group, by Chargeable Status, 2014/15

Age Group	Chargeable	Non-Chargeable	Total	% Chargeable
15-44	115	3,531	3,646	3%
45-69	1,213	11,356	12,569	10%
70-84	1,955	3,342	5,297	37%
85+	893	178	1,071	83%
TOTAL	4,176	18,407	22,583	18%

Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

Figure 27: THHS Renal Dialysis Separations by Age Group, 2014/15

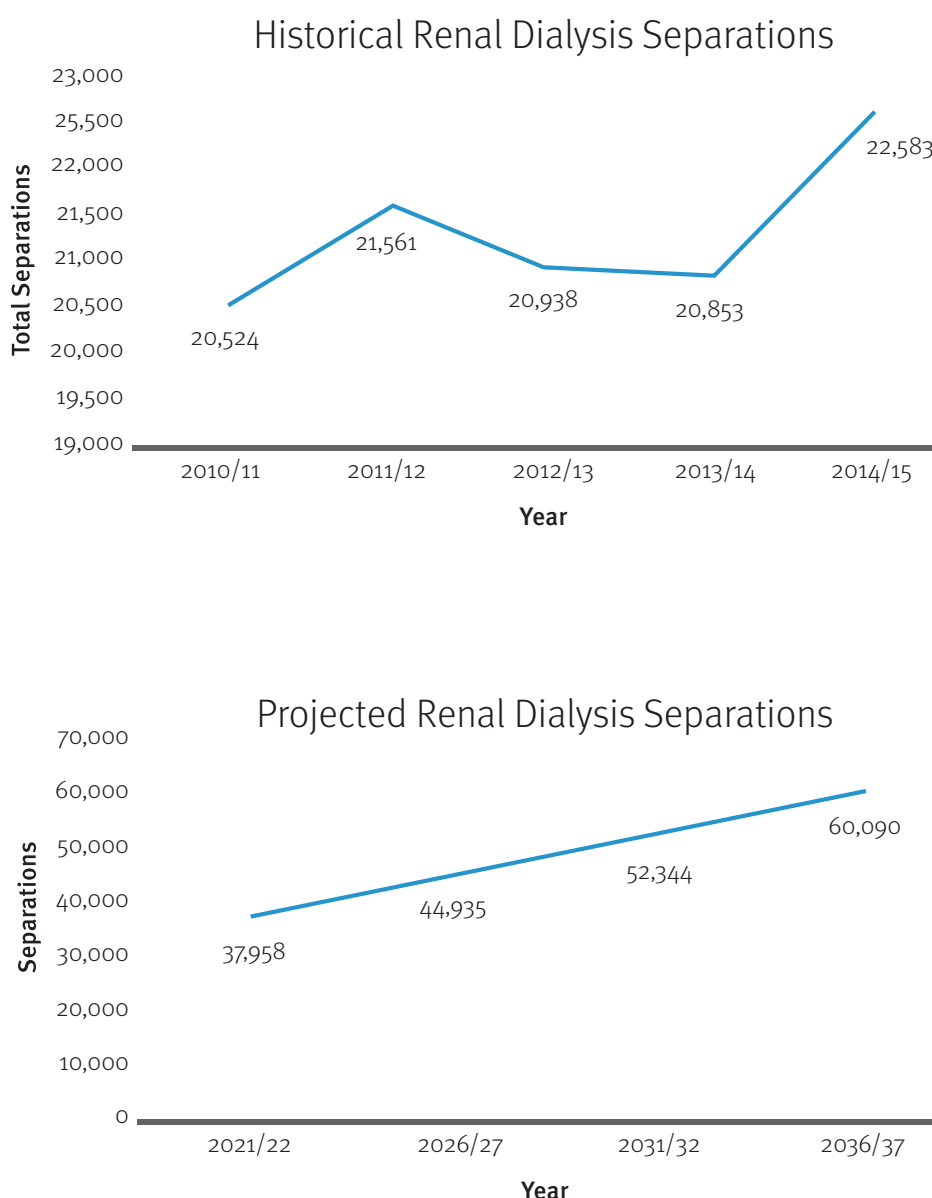
Source: AIM Base Case 14/15 (File supplied by QLD Department of Health, 15 Sep 2016)

6.1.2. Projected Demand for Renal Dialysis Services

Figure 28 shows that between 2010/11 and 2014/15, separations for SRG Renal Dialysis within THHS facilities increased from 20,524 separations, to 22,583 separations. A sharp increase in separations can be seen between the years 2013/14 and 2014/15.

Total separations for SRG Renal Dialysis from THHS facilities are projected to increase from 22,583 separations in 2014/15 to 44,935 separations in 2026/27, then to 60,090 separations in 2036/37. **Importantly, this includes all home-based and in-centre dialysis, with a home or community based dialysis modality target of 40% not yet applied).** This represents an annual growth rate of 3.11% for total renal dialysis separations. Refer Figure 28 and Table 88.

Figure 28: Historical and Projected Renal Dialysis Separations, THHS, 2010/11 - 2036/37



Source: Historical Renal Dialysis Separations sourced from Cross Sectional - Inpatient Projections, Base Year 2014/15 (File supplied by QLD Department of Health, 2016), Projected Renal Dialysis Separations sourced from Renal Dialysis Adult Projections 2016, provided by Health Service Research, Analysis and Modelling Unit, Queensland Health.

Projected growth in separations can also be reviewed by HHS of residence. Between the years 2021/22 and 2036/37, separations for SRG Renal Dialysis are projected to increase at the greatest rate for residents of THHS (19,189 separation increase or 64%). This represents an annual growth rate of 3.37 over the time period. Refer Table 88 and Figure 29.

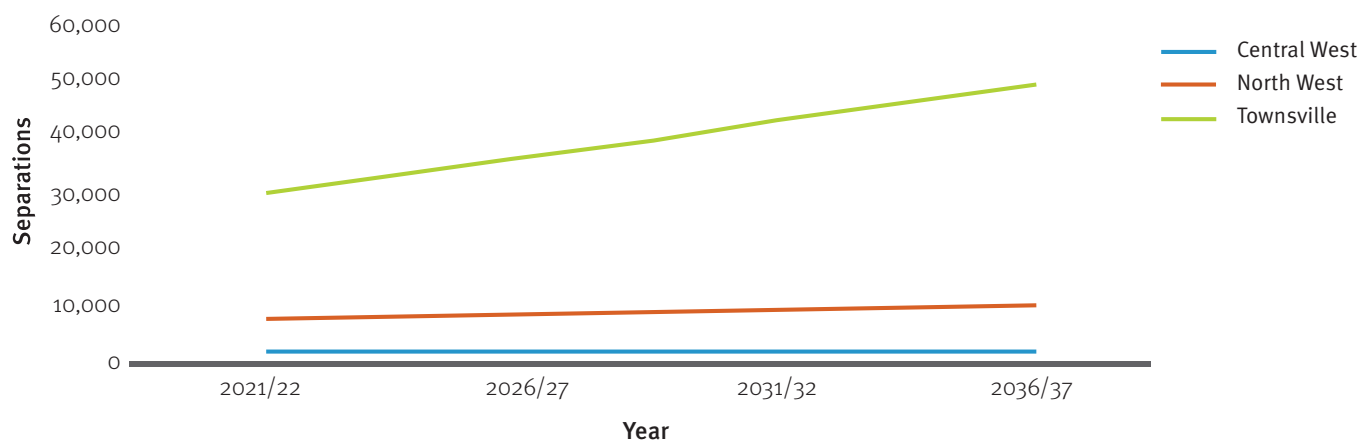
Table 88: Projected THHS Renal Dialysis Separations by HHS of Residence, 2021/22 - 2036/37

HHS of Residence	2021/22	2026/27	2031/32	2036/37	Change (No.)	Change (%)	AGR ^
Central West	915	1,034	1,141	1,248	333	36%	2.09%
North West	7,246	8,153	9,018	9,855	2,610	36%	2.07%
Townsville	29,797	35,749	42,184	48,987	191,899	64%	3.37%
TOTAL	37,958	44,935	52,344	60,090	22,132	58%	3.11%

Source: Renal Dialysis Adult Projections 2016, provided by Health Service Research, Analysis and Modelling Unit, Queensland Health.

^Annual Growth Rate

Figure 29: Projected THHS Renal Dialysis Separations by HHS of Residence, 2021/22 - 2036/37



Source: Renal Dialysis Adult Projections 2016, provided by Health Service Research, Analysis and Modelling Unit, Queensland Health.

7. Projected demand for services

Key findings



- Based on currently available projection modelling, the population level demand for public hospital services for residents of THHS has an annual growth rate of 3.85% for separations and 2.96% for beddays between 2014/15 and 2036/37.
- When analysed by Medical, Surgical and Procedural specialty groupings, the most significant growth in demand for THHS residents will be for Medical SRG's. In 2036/37, there is projected to be additional volume of just over 50,000 separations and 143,000 beddays for the combined Medical SRG's compared to the volumes in 2014/15. In contrast, by 2036/37, separations for Surgical SRG's are projected to have increased by just under 8,000 separations and 22,000 beddays.
- Use of hospitals in THHS by residents of other HHS's is also projected to increase in volume from just under 7,000 separations in 2014/15 to approximately 11,700 in 2036/37. As a percentage of total separations from THHS facilities, use by residents of other HHS's will proportionately decrease from accounting for 13% of the total in 2014/15 to 10% of the total in 2036/37. Similarly, bedday use by residents of other HHS's will proportionately decrease from 18% in 2014/15 to 14% of the total in 2036/37.

THHS Residents Aged 70+

- In terms of volumes, the greatest increases in THHS resident demand will be for the 70-84 age group in both separations and beddays. The annual growth rate for the 70-84 age group is projected to be 5.5% for separations and 4.15% for beddays.
- By 2026/27, people aged 70 years and over will account for 33% of the total THHS resident separations from THHS facilities increasing to 40% by 2036/37. In 2014/15, residents aged 70 years and over accounted for only 25% of total separations from THHS facilities.
- In terms of volume of separations, SRG's with the largest projected numbers of separations of 70+ aged residents include SRG Non-subspecialty surgery, SRG Cardiology, SRG Non-subspecialty Medicine and SRG Respiratory Medicine.
- In terms of beddays, SRG's with the largest projected numbers of beddays used by 70+ aged residents include SRG Rehabilitation, SRG Other Non-acute, SRG Orthopaedics and SRG Respiratory Medicine.

THHS Residents Aged 0-14

- Separations from THHS facilities for THHS residents aged 0-14 years are projected to increase by 35% between 2014/15 and 2026/27, and then only by 24% between 2026/27 and 2036/37. Bedday increases are projected to be relatively small, increasing by only 17% by 2026/27 and a further 15% by 2036/37.

Key findings continued



- As a percentage of total resident separations from THHS facilities, the proportion of 0-14 year old separations will decline from accounting for 9% of total separations in 2014/15 to 8% in 2026/27 and 7% for 2036/37.
- The percentage of same day separations is projected to increase from 33% in 2014/15 to 37% in 2026/27 and 40% in 2036/37. ALOS for overnight separations is projected to remain constant at 4 days.
- In 2014/15, Aboriginal and Torres Strait Islander children accounted for 24% of total separations for THHS residents aged 0-14 years. This proportion is projected to decrease only slightly to 23% by 2026/27 and 22% in 2036/37.

Strategic questions



- The most significant pressure in terms of future demand will be for medical services driven by the ageing population and the increasing incidence of multiple co-morbidities. Deconditioning is increasingly known to be a major risk for older people admitted into acute inpatient settings. These factors are recognised as a major challenge to traditional subspecialty models of care and work is occurring in many places nationally and internationally to develop more integrated models of care. What does this mean for a tertiary facility such as TTH?
- What are the major barriers to implementing care in alternative settings for older people such as home, primary care settings, and community based services? What are the known opportunities?
- The projections for use of hospital services by children assume an increasing proportion of same day services and relatively small increases in overnight beddays. What is the likelihood of this being achievable based on current models of care?
- What is the current status of partnerships with other public, private and non-government providers in terms of planning for the future? Which of these have the greatest future potential?
- What are the opportunities for disinvestment of services (e.g. old technologies) and investment in new models of care?

7.1. Projected Public Hospital Demand for THHS Residents

Total public hospital separations for THHS residents are projected to increase from 46,888 separations (186,356 beddays) in 2014/15, to 75,033 separations (262,130 beddays) in 2026/27, then to 107,597 separations (354,192 beddays) in 2036/37. This represents an annual growth rate of 3.85 % for separations and 2.96% for beddays.

Same Day activity is projected to increase at the greatest rate, with an annual growth rate of 4.52%. Refer Table 89 and Figure 30.

Table 89: Projected Public Hospital Separations and Beddays, by Same Day and Overnight, THHS Residents, 2014/15 - 2036/37

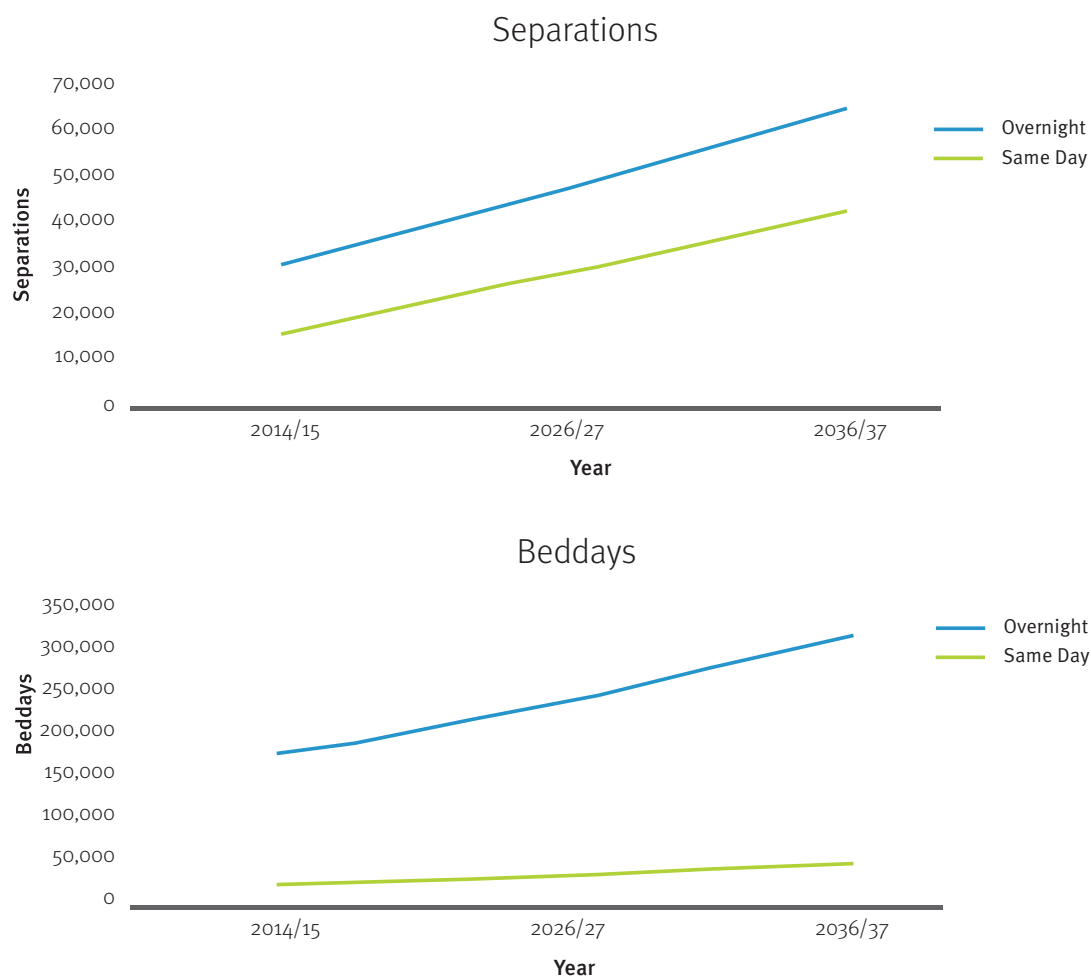
	Stay Type	2014/15	2026/27	2036/37	Change (No.)	Change (%)	AGR ^
Separations	Overnight	30,773	46,736	65,017	34,244	111%	3.46%
	Same Day	16,115	28,297	42,580	26,465	164%	4.52%
Total Separations		46,888	75,033	107,597	60,709	129%	3.85%
Beddays	Overnight	170,241	233,833	311,612	141,371	83%	2.79%
	Same Day	16,115	28,297	42,580	26,465	164%	4.52%
Total Beddays		186,356	262,130	354,192	167,836	90%	2.96%

Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

^Annual Growth Rate

Figure 30 : Projected Public Hospital Separations and Beddays, by Same Day and Overnight, THHS Residents, 2014/15 - 2036/37



Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

Projected demand for services has been analysed by activity groups to demonstrate the variance in annual growth rates between Medical, Surgical, and Procedural (Other) services. Refer Table 90 and Figure 31.

Of these groups, THHS resident Medical separations are projected to increase at the greatest rate, from 35,149 separations (142,272 beddays) in 2014/15, to 58,804 separations (206,340 beddays) in 2026/27, then to 86,878 separations (285,777 beddays) in 2036/37. This represents an annual growth rate of 4.2% for separations and 3.22% for beddays.

Table 90: Projected Public Hospital Separations and Beddays, by Group (Medical, Surgical, Procedural), THHS Residents, 2014/15 - 2036/37

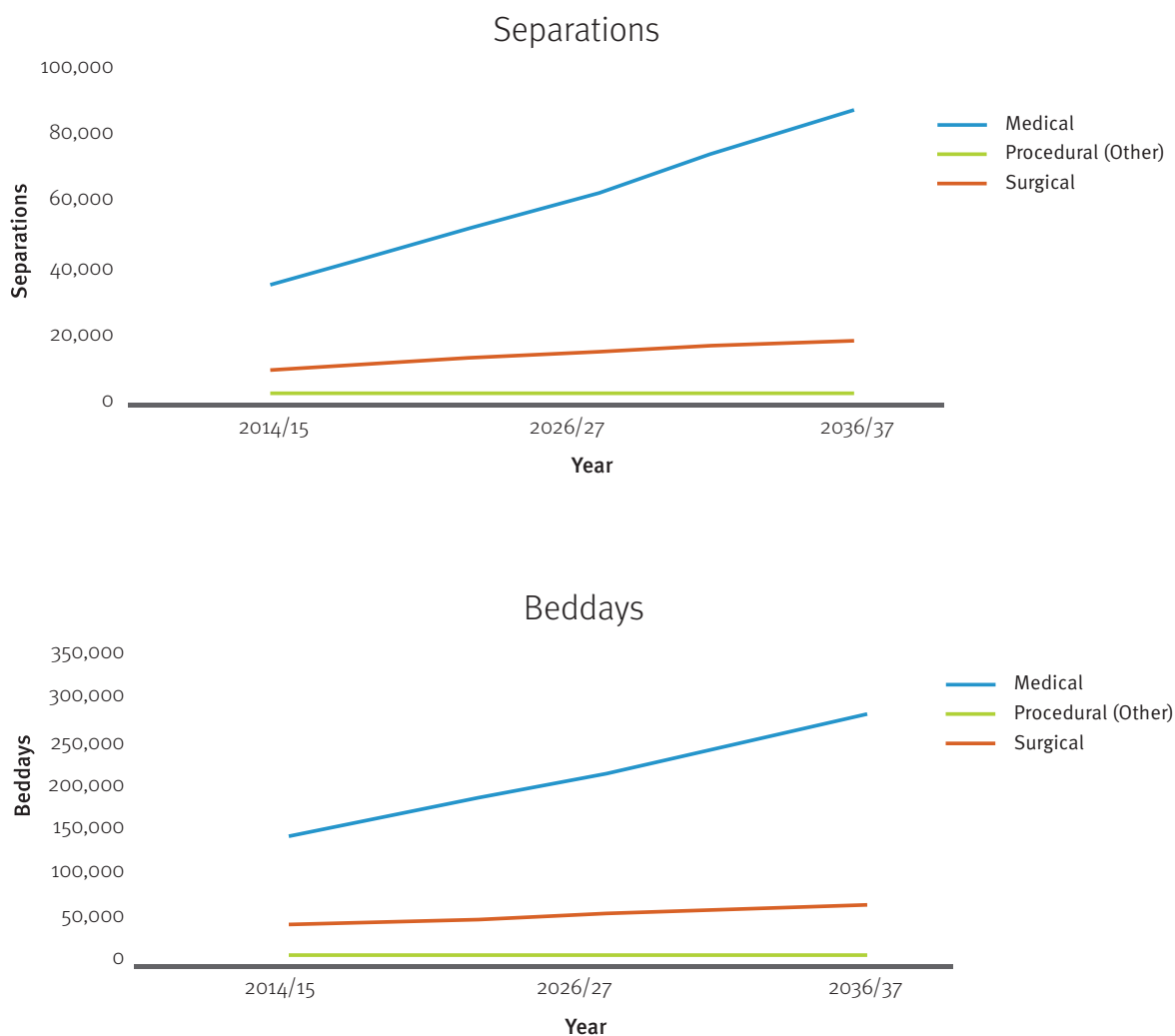
Activity	Group	2014/15	2026/27	2036/37	Change (No.)	Change (%)	AGR ^
Separations	Medical	35,149	58,804	86,878	51,729	147%	4.20%
	Procedural (Other)	1,533	2,099	2,665	1,132	74%	2.54%
	Surgical	10,206	14,130	18,054	7,848	77%	2.63%
Total Separations		46,888	75,033	107,597	60,709	129%	3.85%
Beddays	Medical	142,272	206,340	285,777	143,505	101%	3.22%
	Procedural (Other)	4,485	5,680	7,094	2,609	58%	2.11%
	Surgical	39,599	50,110	61,321	21,722	55%	2.01%
Total Beddays		186,356	262,130	354,192	167,836	90%	2.96%

Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

^Annual Growth Rate

Figure 31: Projected Public Hospital Separations and Beddays, by Group (Medical, Surgical, Procedural), THHS Residents, 2014/15 - 2036/37



Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

The age group of THHS residents that is projected to have the greatest rate of growth in public hospital separations and beddays is the 85+ years age group. Separations for this age group are projected to increase from 2,918 separations (24,295 beddays) in 2014/15, to 6,210 separations (37,411 beddays) in 2026/27, then to 13,867 separations (69,969 beddays) in 2036/37. This represents an annual growth rate of 7.34% for separations and 4.93% for beddays.

In terms of separation volumes, the 70-84 years age group is projected to have the greatest growth, increasing from 8,453 separations (46,039 beddays) in 2014/15, to 18,225 separations (81,984 beddays) in 2026/27, then to 27,884 separations (112,658 beddays) in 2036/37. This represents an annual growth rate of 5.57% for separations and 4.15% for beddays. Refer Table 91 and Figure 32.

Table 91: Projected Public Hospital Separations and Beddays, by Age Group, THHS Residents, 2014/15 - 2036/37

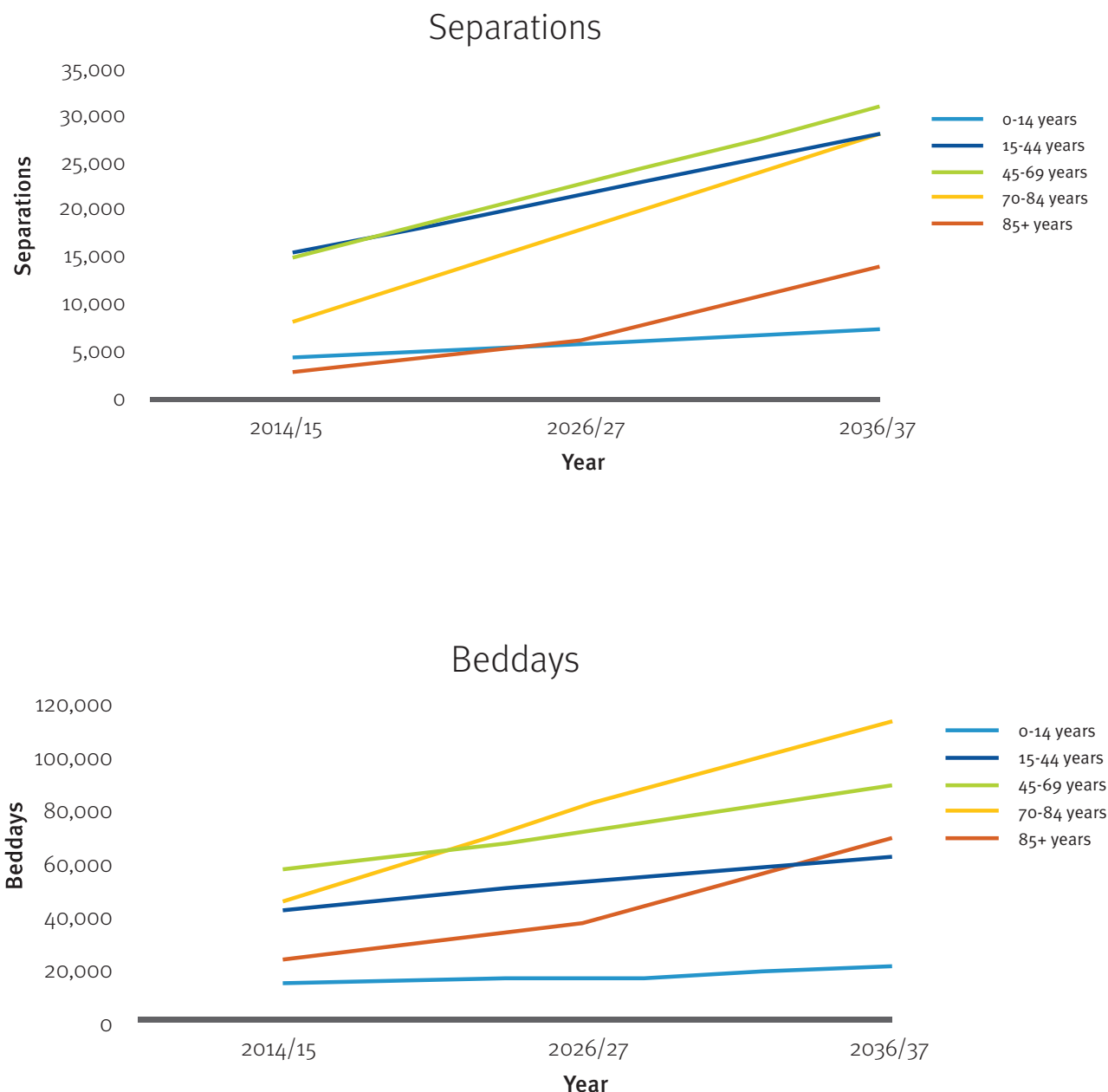
Activity	Age Group	2014/15	2026/27	2036/37	Change (No.)	Change (%)	AGR ^
Separations	0-14 years	4,432	5,997	7,451	3,019	68%	2.39%
	15-44 years	15,747	21,745	27,868	12,121	77%	2.63%
	45-69 years	15,338	22,856	30,527	15,189	99%	3.18%
	70-84 years	8,453	18,225	27,884	19,431	230%	5.57%
	85+ years	2,918	6,210	13,867	10,949	375%	7.34%
Total Separations		46,888	75,033	107,597	60,709	129%	3.85%
Beddays	0-14 years	14,744	17,386	20,061	5,317	36%	1.41%
	15-44 years	42,840	52,458	62,182	19,342	45%	1.71%
	45-69 years	58,438	72,890	89,323	30,885	53%	1.95%
	70-84 years	46,039	81,984	112,658	66,619	145%	4.15%
	85+ years	24,295	37,411	69,969	45,674	188%	4.93%
Total Beddays		186,356	262,130	354,192	167,836	90%	2.96%

Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

^Annual Growth Rate

Figure 32: Projected Public Hospital Separations and Beddays, by Age Group, THHS Residents, 2014/15 - 2036/37



Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

The top 10 SRGs with the greatest projected growth (in terms of change in the number of separations) are indicated in Table 92.

The SRG Non-Subspecialty Surgery is projected to account for the greatest increase in public hospital separations, from 5,138 separations in 2014/15, to 8,229 separations in 2026/27, then to 12,069 separations in 2036/37. This represents a total projected growth of 6,931 separations, and an annual growth rate of 3.96% over the time period. From the Top 10, the SRG with the greatest growth in terms of % change, is the SRG Mental Health (301%, 4,501 additional separations by 2036/37) followed by SRG Non-Subspecialty Medicine and SRG Neurology with 204% increases (an additional 4,964 and 5,224 separations respectively). Refer Table 92 and Figure 33.

Table 92: Projected Public Hospital Separations, by SRG (Top 10 Change No.), THHS Residents, 2014/15 - 2036/37

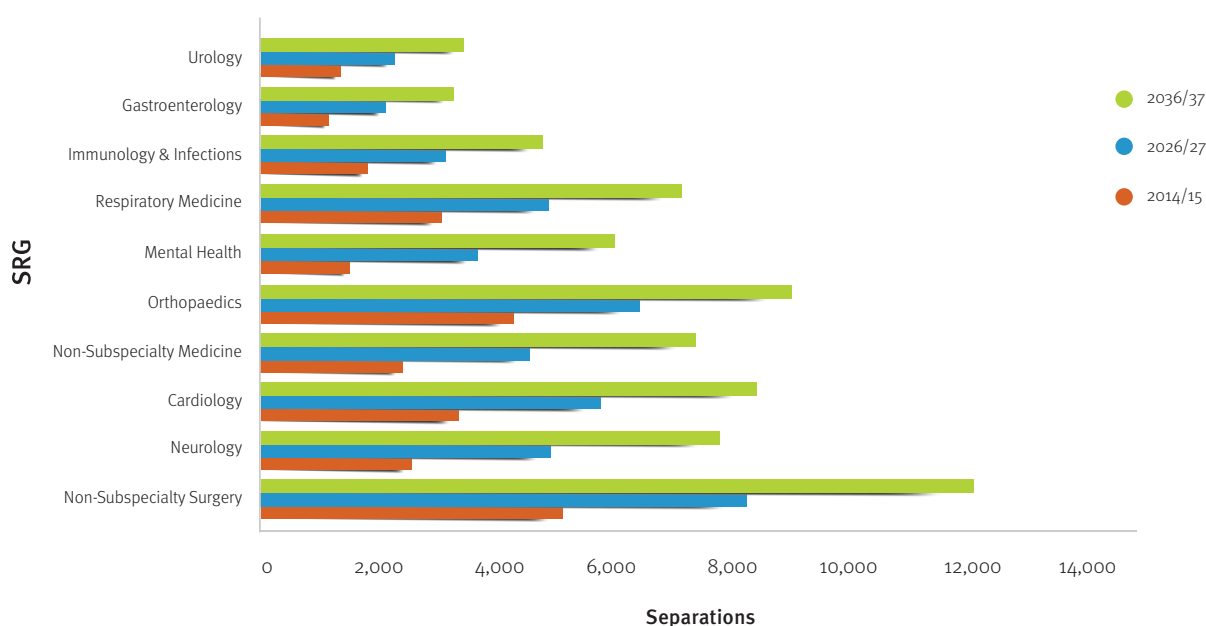
SRG	2014/15	2026/27	2036/37	Change (No.)	Change (%)	AGR ^
Non-Subspecialty Surgery	5,138	8,229	12,069	6,931	135%	3.96%
Neurology	2,556	4,913	7,780	5,224	204%	5.19%
Cardiology	3,367	5,747	8,396	5,029	149%	4.24%
Non-Subspecialty Medicine	2,434	4,567	7,398	4,964	204%	5.18%
Orthopaedics	4,286	6,412	8,979	4,693	110%	3.42%
Mental Health	1,495	3,705	5,996	4,501	301%	6.52%
Respiratory Medicine	3,049	4,851	7,154	4,105	135%	3.95%
Immunology & Infections	1,821	3,139	4,778	2,957	162%	4.48%
Gastroenterology	1,186	2,134	3,251	2,065	174%	4.69%
Urology	1,357	2,323	3,408	2,051	151%	4.27%
Other	20,199	29,013	38,387	18,188	90%	2.96%
TOTAL	46,888	75,033	107,597	60,709	129%	3.85%

Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

^Annual Growth Rate

Figure 33: Projected Public Hospital Separations, by SRG (Top 10 Change No.), THHS Residents, 2014/15 - 2036/37



Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

The top 10 SRGs with the greatest projected growth in terms of change in the number of beddays are indicated in Table 93.

The SRG Rehabilitation (non-acute) is projected to account for the greatest increase in total beddays, from 10,765 beddays in 2014/15, to 19,415 beddays in 2026/27, then to 30,742 beddays in 2036/37. This represents a total projected growth of 19,977 beddays, and an annual growth rate of 4.89% over the time period. SRG Mental Health is projected to increase from 14,264 beddays in 2014/15, to 23,225 beddays in 2026/27, then to 30,654 beddays in 2036/37. This represents a total projected growth of 16,390 beddays, and an annual growth rate of 3.54% over the time period. Refer Table 93 and Figure 34.

Table 93: Projected Public Hospital Beddays, by SRG (Top 10 Change No.), THHS Residents, 2014/15 - 2036/37

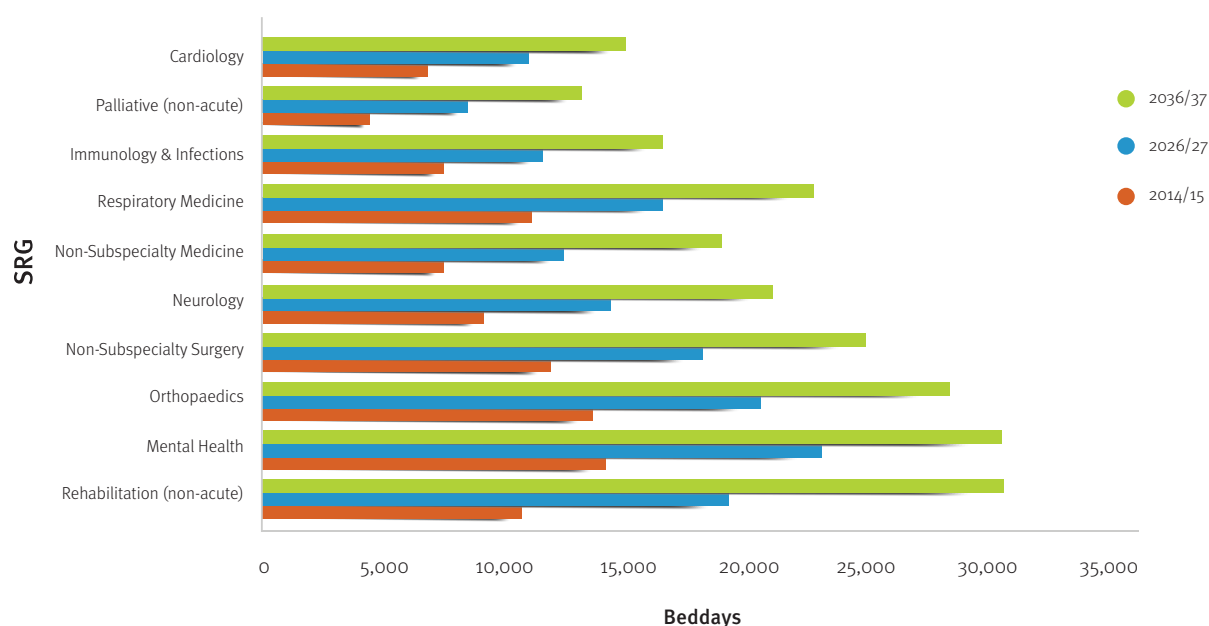
SRG	2014/15	2026/27	2036/37	Change (No.)	Change (%)	AGR ^
Rehabilitation (non-acute)	10,765	19,415	30,742	19,977	186%	4.89%
Mental Health	14,264	23,225	30,654	16,390	115%	3.54%
Orthopaedics	13,637	20,689	28,494	14,857	109%	3.41%
Non-Subspecialty Surgery	11,925	18,309	25,201	13,096	110%	3.43%
Neurology	9,197	14,343	21,076	11,879	129%	3.84%
Non-Subspecialty Medicine	7,382	12,461	19,084	11,702	159%	4.41%
Respiratory Medicine	11,108	16,640	22,779	11,671	105%	3.32%
Immunology & Infections	7,489	11,614	16,609	9,120	122%	3.69%
Palliative (non-acute)	4,363	8,467	13,199	8,836	203%	5.16%
Cardiology	6,897	11,030	14,983	8,086	117%	3.59%
Other	89,329	105,938	131,550	42,221	47%	1.77%
TOTAL	186,356	262,130	354,192	167,836	90%	2.96%

Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

^Annual Growth Rate

Figure 34: Projected Public Hospital Beddays, by SRG (Top 10 Change No.), THHS Residents, 2014/15 - 2036/37



Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

7.2. Projected Demand at THHS Facilities (All)

Projected demand at all THHS facilities (combined) is projected to increase from 51,651 separations (217,016 beddays) in 2014/15, to 80,772 separations (297,602 beddays) in 2026/27, then to 114,532 separations (395,376 beddays) in 2036/37.

While separations provided to THHS residents and residents of other HHS are both projected to grow, the proportion of total separations and beddays provided to THHS residents will increase. Refer Table 94 and Figure 35.

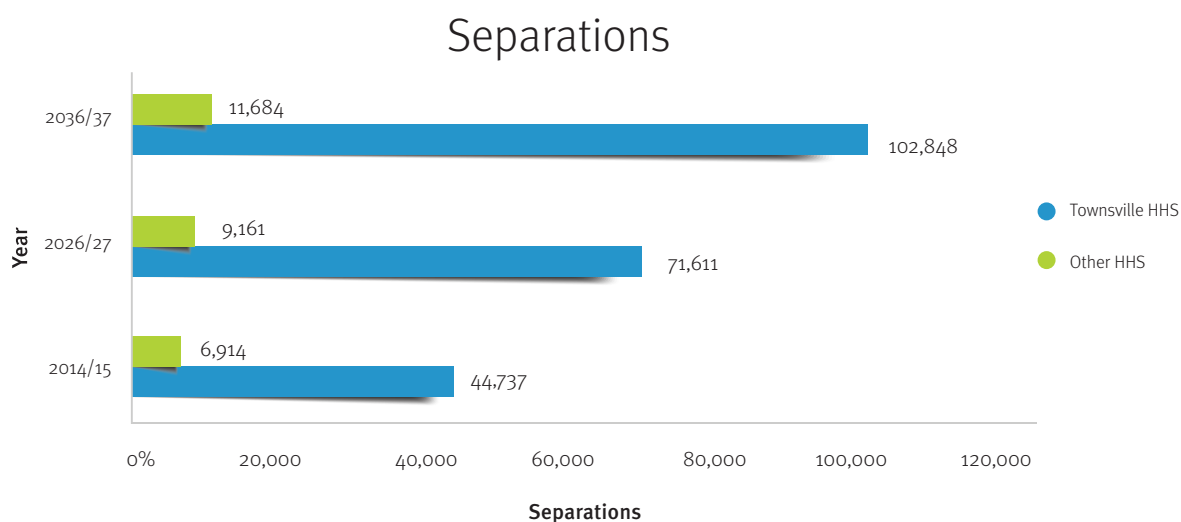
Table 94: Projected Separations and Beddays Townsville HHS Facilities by HHS of Residence, 2014/15 - 2036/37

Seps/ Beddays	HHS of Residence	Overnight			Same Day			Total		
		2014/15	2026/27	2036/37	2014/15	2026/27	2036/37	2014/15	2026/27	2036/37
Seps	THHS	29,525	44,863	62,521	15,212	26,748	40,327	44,737	71,611	102,848
	Other HHS	4,939	6,603	8,297	1,975	2,558	3,387	6,914	9,161	11,684
Total Seps		34,464	51,467	70,818	17,187	29,306	43,714	51,651	80,772	114,532
Beddays	THHS	163,352	224,650	300,170	15,212	26,748	40,327	178,564	251,398	340,497
	Other HHS	36,477	43,646	51,492	1,975	2,558	3,387	38,452	46,204	54,879
Total Beddays		199,829	268,296	351,662	17,187	29,306	43,714	217,016	297,602	395,376
Seps %	THHS	86%	87%	88%	89%	91%	92%	87%	89%	90%
	Other HHS	14%	13%	12%	11%	9%	8%	13%	11%	10%
Total Seps		100%	100%	100%	100%	100%	100%	100%	100%	100%
Beddays %	THHS	82%	84%	85%	89%	91%	92%	82%	84%	86%
	Other HHS	18%	16%	15%	11%	9%	8%	18%	16%	14%
Total Beddays		100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

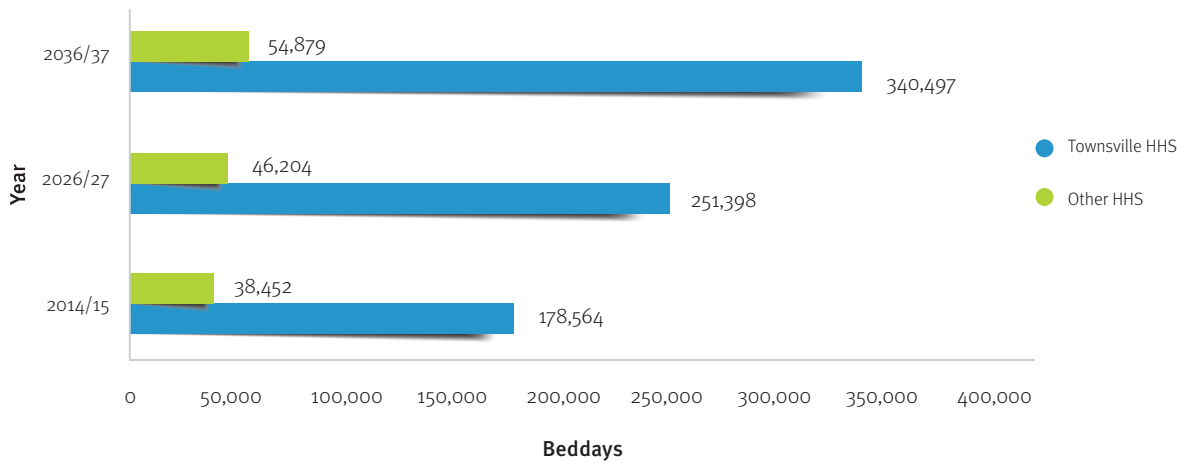
Figure 35: Projected Separations and Beddays Townsville HHS Facilities by HHS of Residence, 2014-2015 to 2036-2037



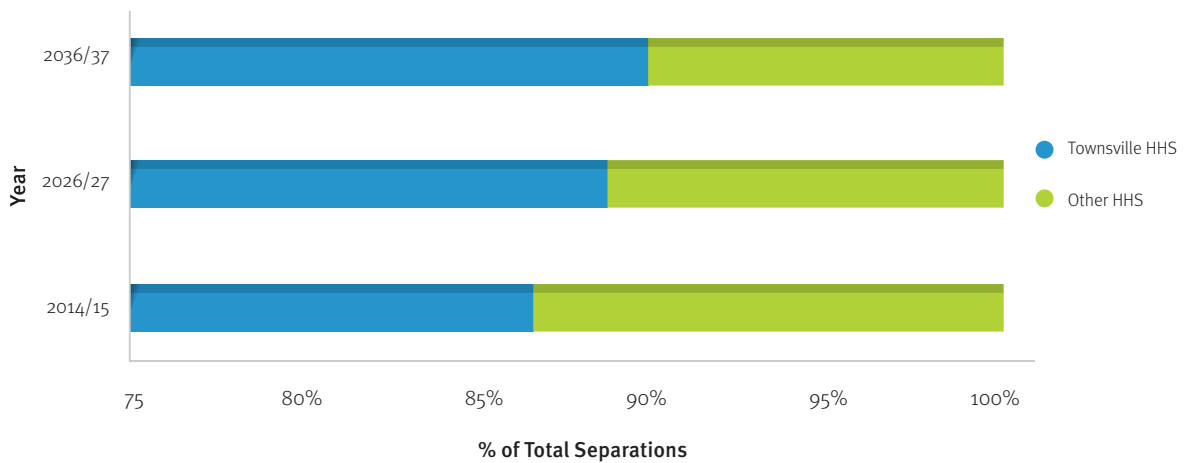
Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

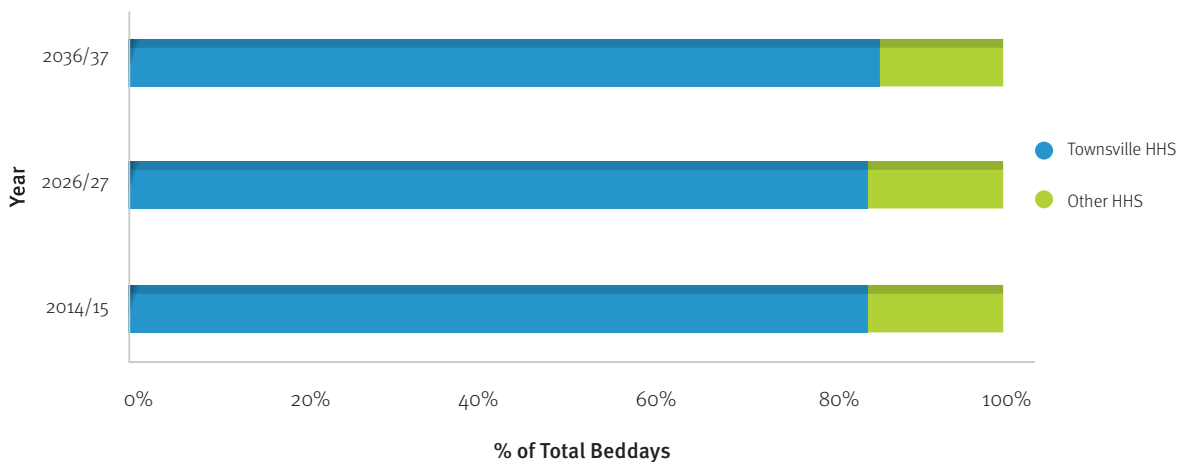
Beddays



Separations (as a % of Total)



Beddays (as a % of Total)



Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

7.3. Projected Demand for Older Residents of THHS

In 2014/15, 25% (11,127) of the total separations of THHS residents from THHS facilities were for residents aged 70 years and over. By 2026/27, separations by THHS residents aged 70+ will account for 33% (23,857) of total separations from THHS facilities, increasing to 40% (40,771) by 2036/37.

There is projected to be a very significant increase in the number of separations of older THHS residents from TTH, increasing from 8,678 in 2014/15 to 19,352 by 2026/27 and 33,851 by 2036/37.

By 2026/27, the percentage of THHS resident separations aged over 70 years will have also increased for Ayr (47%, 1,332), Home Hill (79%, 163), Charters Towers (52%, 1,060) and Ingham Health Services (58%, 1,673). Refer Table 95.

Table 95: Separations THHS Residents Aged 70+ years from THHS Facilities 2014/15 - 2036/37

Separations	Aged 70+			All Ages			% 70+ Years		
Place of Treatment	2014/15	2026/27	2036/37	2014/15	2026/27	2036/37	2014/15	2026/27	2036/37
Ayr Health Service	680	1,332	2,095	1,922	2,812	3,772	35%	47%	56%
Charters Towers Health	599	1,060	1,599	1,406	2,026	2,716	43%	52%	59%
Home Hill Health Service	96	163	241	138	206	285	70%	79%	85%
Hughenden MPHS	86	118	153	273	323	376	32%	37%	41%
Ingham Health Service	890	1,673	2,613	1,855	2,869	3,978	48%	58%	66%
Joyce Palmer Health Service	35	68	107	885	1,008	1,114	4%	7%	10%
Richmond Health Service	63	88	112	160	192	224	39%	46%	50%
Townsville Hospital	8,678	19,352	33,851	38,097	62,176	90,382	23%	31%	37%
TOTAL	11,127	23,853	40,771	44,737	71,611	102,848	25%	33%	40%

Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes renal dialysis

Table 96 below shows SRG's with greater than 50% of total THHS resident separations projected to be for residents aged 70 years and over by 2036/37. Greater than two-thirds of resident separations for SRG Rehabilitation (71%, 802), SRG Other Non-acute (75%, 472) and SRG Palliative care (67%, 686) will be for people aged 70 and over by 2026/27, increasing to approximately three-quarters of resident separations for those SRG's by 2036/37.

Table 96: Separations THHS Residents from THHS Facilities - SRG's with > 50% separations aged 70+ years by 2036/37

SRG	70+ Age Group			All Ages			% 70+ Years		
	2014/15	2026/27	2036/37	2014/15	2026/27	2036/37	2014/15	2026/27	2036/37
Geriatric Management (non-acute)	249	466	777	261	494	816	95%	94%	95%
Rehabilitation (non-acute)	208	802	1,506	432	1,128	1,925	48%	71%	78%
Other Non-Acute	372	472	615	430	628	812	76%	75%	76%
Palliative (non-acute)	276	686	1,273	497	1,022	1,718	56%	67%	74%
Chemotherapy	36	140	284	117	230	396	31%	61%	72%
Haematology	239	421	611	473	722	971	51%	58%	63%
Medical Oncology	191	290	351	470	547	565	41%	53%	62%
Ophthalmology	570	1,085	1,696	1,194	1,963	2,847	48%	55%	60%
Renal Medicine	157	395	730	379	774	1,269	41%	51%	58%
Non-Subspecialty Medicine	884	2,027	3,773	2,326	4,385	7,127	38%	46%	53%
Vascular Surgery	271	395	520	621	814	1,028	44%	49%	51%
Respiratory Medicine	971	2,000	3,423	2,914	4,646	6,876	33%	43%	50%
All other SRG's	6,748	14,673	25,213	34,623	54,260	76,497	19%	27%	33%
TOTAL	11,127	23,853	40,771	44,737	71,611	102,848	25%	33%	40%

Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016),

Note: Excludes Renal Dialysis

The greatest number of separations of THHS residents aged 70 and over will be for SRG Non-subspecialty Surgery with 2,451 separations in 2026/27 increasing to 4,310 by 2036/37. Other SRG's projected to have large volumes of separations for older people include SRG Cardiology (2,276 by 2026/27 and 3,776 by 2036/37), SRG Non-subspecialty Medicine (2,027 by 2026/27 and 3,773 by 2036/3) and SRG Respiratory Medicine (2,000 by 2026/27 and 3,423 by 2036/37). Refer Table 97.

Table 97: Separations THHS Residents from THHS Facilities - SRG's with > 1000 separations aged 70+ years by 2036/37

SRG	70+ Age Group			All Ages			% 70+ Years		
	2014/15	2026/27	2036/37	2014/15	2026/27	2036/37	2014/15	2026/27	2036/37
Non-Subspecialty Surgery	1,168	2,451	4,310	4,893	7,849	11,528	24%	31%	37%
Cardiology	1,051	2,276	3,776	3,207	5,485	8,026	33%	41%	47%
Non-Subspecialty Medicine	884	2,027	3,773	2,326	4,385	7,127	38%	46%	53%
Respiratory Medicine	971	2,000	3,423	2,914	4,646	6,876	33%	43%	50%
Neurology	773	1,873	3,419	2,465	4,751	7,541	31%	39%	45%
Orthopaedics	874	1,849	3,196	4,070	6,092	8,542	21%	30%	37%
Immunology & Infections	464	1,083	1,998	1,733	2,992	4,568	27%	36%	44%
Ophthalmology	570	1,085	1,696	1,194	1,963	2,847	48%	55%	60%
Rehabilitation (non-acute)	208	802	1,506	432	1,128	1,925	48%	71%	78%
Palliative (non-acute)	276	686	1,273	497	1,022	1,718	56%	67%	74%
Gastroenterology	294	661	1,168	1,128	2,025	3,087	26%	33%	38%
Urology	276	652	1,116	1,291	2,203	3,225	21%	30%	35%
All other SRG's	3,318	6,408	10,116	18,587	27,072	35,838	18%	24%	28%
TOTAL	11,127	23,853	40,771	44,737	71,611	102,848	25%	33%	40%

Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016),

Note: Excludes Renal Dialysis

SRG Rehabilitation is projected to have the greatest volumes of overnight beddays for THHS residents aged 70 and over with 13,810 by 2026/27 and 24,201 by 2036/37. SRG Other Non-acute has the next greatest projected volumes with 13,833 overnight beddays in 2026/27 increasing to 16,720 in 2036/37. Large volumes of overnight beddays for THHS residents aged 70 and over aged are also projected for SRG Orthopaedics (9,623 in 2026/27 increasing to 14,897 in 2036/37) and for SRG Respiratory Medicine (8,204 in 2026/27 increasing to 12,465 in 2036/37).

Table 98: Overnight Beddays, THHS Residents aged 70+ years, THHS Facilities, Top 10 SRGs by 2026/27 and 2036/37

SRG	70+ Age Group			All Ages			% 70+ Years		
	2014/15	2026/27	2036/37	2014/15	2026/27	2036/37	2014/15	2026/27	2036/37
Overnight Beddays									
Rehabilitation (non-acute)	4,088	13,810	24,210	10,318	18,880	30,075	40%	73%	80%
Other Non-Acute	14,793	13,833	16,720	18,637	17,021	20,654	79%	81%	81%
Orthopaedics	5,160	9,623	14,897	11,187	17,132	23,645	46%	56%	63%
Respiratory Medicine	4,422	8,204	12,465	9,994	14,778	19,977	44%	56%	62%
Non-Subspecialty Medicine	3,861	6,938	11,461	6,544	10,820	16,392	59%	64%	70%
Geriatric Management (non-acute)	5,797	7,431	10,864	6,222	7,557	11,005	93%	98%	99%
Neurology	4,543	6,825	10,752	7,990	11,807	17,009	57%	58%	63%
Non-Subspecialty Surgery	2,982	6,001	9,265	9,360	14,124	18,785	32%	42%	49%
Palliative (non-acute)	2,126	5,304	9,022	4,307	8,283	12,852	49%	64%	70%
Immunology & Infections	2,454	4,956	8,300	7,022	10,743	15,210	35%	46%	55%
All other SRG's	15,845	26,460	37,172	71,771	93,505	114,566	22%	28%	32%
TOTAL	66,071	109,386	40,771	44,737	71,611	102,848	25%	33%	40%

Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016),

Note: Excludes Renal Dialysis

7.4. Projected Demand for Paediatric Residents of THHS

In 2014/15, there were 3,985 separations from THHS facilities for THHS residents aged 0-14 years. The number of separations for children is projected to increase by 35% (an additional 1,393 separations) by 2026/27 and a further 24% (1,315 additional separations) by 2036/37. The majority of separations for THHS residents aged 0-14 years are from TTH (3,531 separations in 2014/15 increasing to 4,884 in 2026/27 and 6,166 in 2036/37. Refer Table 99.

Table 99: Separations THHS Residents Aged 0-14 years from THHS Facilities 2014/15 - 2036/37

Place of Treatment	Separations			Change in Seps (No.)		Change in Seps %	
	2014/15	2026/27	2036/37	2014/15 - 2026/27	2026/27 - 2036/37	2014/15 - 2026/27	2026/27 - 2036/37
Ayr Health Service	140	157	169	17	12	12%	8%
Charters Towers Health Service	46	54	65	8	11	18%	20%
Hughenden MPHS	23	20	19	-3	-1	-14%	-3%
Ingham Health Service	45	55	62	10	7	21%	13%
Joyce Palmer Health Service	183	195	198	12	3	7%	2%
Richmond Health Service	17	14	13	-3	-1	-17%	-5%
Townsville Hospital	3,531	4,884	6,166	1,353	1,283	38%	26%
TOTAL	3,985	5,378	6,693	1,393	1,315	35%	24%

Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

Compared to the projected increase in the volume of separations for children, projected bedday increases are relatively small. In 2014/15, there were 13,316 beddays used in THHS facilities by THHS residents aged 0-14 years. The number of beddays for children is projected to increase by only 17% (an additional 2,310 beddays) by 2026/27 and a further 15% (2,410 additional beddays) by 2036/37. The majority of beddays for THHS residents aged 0-14 years are from TTH (12,658 beddays in 2014/15 increasing to 14,906 in 2026/27 and 17,312 in 2036/37. Refer Table 100.

Table 100: Beddays THHS Residents Aged 0-14 years from THHS Facilities 2014/15 - 2036/37

Place of Treatment	Total Beddays			Change in Beddays (No.)		Change in Beddays %	
	2014/15	2026/27	2036/37	2014/15 - 2026/27	2026/27 - 2036/37	2014/15 - 2026/27	2026/27 - 2036/37
Ayr Health Service	195	222	226	27	4	14%	2%
Charters Towers Health Service	58	75	84	17	9	28%	13%
Hughenden MPHS	25	27	25	2	-2	10%	-9%
Ingham Health Service	52	76	83	24	6	47%	8%
Joyce Palmer Health Service	307	303	291	-4	-12	-1%	-4%
Richmond Health Service	21	17	15	-4	-1	-20%	-9%
Townsville Hospital	12,658	14,906	17,312	2,248	2,406	18%	16%
TOTAL	13,316	15,626	18,036	2,310	2,410	17%	15%

Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

As a percentage of total THHS resident separations from THHS facilities, the proportion of 0-14 year olds will decline from representing 9% (3,985) of total separations in 2014/15 to 8% (5,378) in 2026/27 and 7% (6,693) in 2036/37. The facility with the greatest percentage of separations for 0-14 year olds is Joyce Palmer Health Centre for which children accounted for 21% (183) of total separations in 2014/15, 19% (195) in 2026/27 and 18% (198) in 2036/37. Refer Table 101.

Table 101: THHS Residents Aged 0-14 years as % of Total THHS Resident Separations from THHS Facilities 2014/15 -2036/37

Separations	0-14 years			All Ages			% 0-14 years		
Place of Treatment	2014/15	2026/27	2036/37	2014/15	2026/27	2036/37	2014/15	2026/27	2036/37
Ayr Health Service	140	157	169	1,922	2,812	3,772	7%	6%	4%
Charters Towers Health Service	46	54	65	1,406	2,026	2,716	3%	3%	2%
Home Hill Health Service	0	0	0	138	206	285	0%	0%	0%
Hughenden MPHS	23	20	19	273	323	376	8%	6%	5%
Ingham Health Service	45	55	62	1,855	2,869	3,978	2%	2%	2%
Joyce Palmer Health Service	183	195	198	886	1,008	1,114	21%	19%	18%
Richmond Health Service	17	14	13	160	192	224	11%	7%	6%
Townsville Hospital	3,531	4,884	6,166	38,097	62,176	90,382	9%	8%	7%
TOTAL	3,985	5,378	6,693	44,737	71,611	102,848	9%	8%	7%

Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

The percentage of same day separations from THHS facilities for residents of THHS aged 0-14 years is projected to increase from 33% (1,330) in 2014/15 to 37% (1,982) in 2026/27 and 40% (2,645) in 2036/27.

SRG's with greater than 40% projected same day activity by 2026/27 include SRG ENT, SRG Orthopaedics, SRG Neurosurgery, SRG Neurology, SRG Dentistry, SRG Gastroenterology, SRG Endocrinology and SRG Urology. Refer Table 102.

Table 102: Same Day Separations Top 10 SRG THHS Residents Aged 0-14 years as % of Total THHS Residents Same Day Separations from THHS Facilities 2014/15 - 2036/37

Separations	Same Day			Total			% Same Day		
SRG	2014/15	2026/27	2036/37	2014/15	2026/27	2036/37	2014/15	2026/27	2036/37
Respiratory Medicine	146	268	416	614	805	1,041	24%	33%	40%
Qualified Neonate	21	28	32	587	746	879	4%	4%	4%
Non-Subspecialty Surgery	190	255	329	480	654	819	40%	39%	40%
Ear, Nose & Throat	163	250	322	393	517	627	41%	48%	51%
Non-Subspecialty Medicine	71	99	133	234	372	521	30%	27%	26%
Orthopaedics	158	199	250	381	450	519	41%	44%	48%
Immunology & Infections	12	23	33	179	263	331	7%	9%	10%
Neurosurgery	42	96	161	96	185	274	44%	52%	59%
Neurology	65	98	131	135	200	257	48%	49%	51%
Dentistry	142	197	225	159	213	239	89%	93%	94%
Gastroenterology	49	95	145	156	184	217	31%	51%	67%
Urology	62	98	119	98	152	180	63%	64%	66%
Endocrinology	15	41	72	57	93	134	26%	44%	53%
Drug & Alcohol	45	52	57	69	76	84	65%	68%	68%
Mental Health	10	15	30	27	48	78	37%	32%	39%
Other SRG's	139	166	189	320	417	493	43%	40%	38%
TOTAL	1,330	1,982	2,645	3,985	5,378	6,693	33%	37%	40%

Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

The average length of stay (ALOS) for overnight separations from THHS facilities for THHS residents aged 0-14 years is projected to remain at 4 days. Of the top 10 SRG's by volume of overnight separations, ALOS is projected to decrease for SRG Qualified Neonate (11 days in 2014/15 to 10 days in 2026/27 and 9 days in 2036/37), SRG Immunology and Infections (3 days to 2 days by 2026/27) and SRG Neurosurgery (4 days in 2014/15 to 3 days in 2026/27 and 2 days in 2036/37). Refer Table 103.

Table 103: Top 10 SRGs Overnight Separations and Overnight Average Length of Stay (ALOS) THHS Residents Aged 0-14 years from THHS Facilities 2014/15 - 2036/37

SRG	Overnight Separations			ALOS Overnight		
	2014/15	2026/27	2036/37	2014/15	2026/27	2036/37
Qualified Neonate	566	718	847	11	10	9
Respiratory Medicine	468	537	625	3	3	3
Non-Subspecialty Surgery	290	399	490	2	2	2
Non-Subspecialty Medicine	163	273	388	2	2	2
Ear, Nose & Throat	230	267	305	1	1	1
Immunology & Infections	167	239	298	3	2	2
Orthopaedics	223	251	269	2	2	2
Neurology	70	102	127	3	3	3
Neurosurgery	54	89	113	4	3	2
Gastroenterology	107	89	71	2	2	2
Other SRG's	317	431	515	n/a	n/a	n/a
TOTAL	2,655	3,396	4,047	4	4	4

Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

Aboriginal and Torres Strait Islander (ATSI) THHS residents aged 0-14 years accounted for 24% (969) of separations of children from THHS facilities in 2014/15. Whilst the numbers of separations for ATSI children is projected to increase slightly to 1,229 by 2026/27 and 1,442 by 2036/37, the proportion of total separations they represent will reduce slightly to 23% in 2026/27 and 22% in 2036/37. The greatest volumes of separations for ATSI children will be for SRG Qualified Neonate (190 separations in 2026/27 increasing to 218 in 2036/37) and SRG Respiratory Medicine (188 separations in 2026/27 increasing to 216 in 2036/37). Almost half of all 0-14 age group separations for SRG Immunology and Infections are for ATSI children accounting for 47% (85) in 2014/15 and 46% (122) in 2026/37. Refer Table 104.

Table 104: Separations Top 10 SRGs ATSI THHS Residents Aged 0-14 years as % of Total THHS Resident Separations from THHS Facilities 2014/15 - 2036/37

SRG	ATSI Separations			Non-ATSI Separations			% ATSI Separations		
	2014/15	2026/27	2036/37	2014/15	2026/27	2036/37	2014/15	2026/27	2036/37
Qualified Neonate	153	190	218	434	556	661	26%	25%	25%
Respiratory Medicine	166	188	216	448	617	825	27%	23%	21%
Ear, Nose & Throat	128	156	180	265	361	447	33%	30%	29%
Immunology & Infections	85	122	148	94	141	183	47%	46%	45%
Non-Subspecialty Surgery	89	112	128	391	542	692	19%	17%	16%
Orthopaedics	81	96	112	300	354	407	21%	21%	22%
Non-Subspecialty Medicine	47	67	86	187	305	435	20%	18%	16%
Dentistry	45	54	56	114	159	183	28%	25%	23%
Neurology	26	38	47	109	163	210	19%	19%	18%
Neurosurgery	17	29	41	79	156	233	18%	15%	15%
Other SRG's	132	178	209	595	794	975	18%	18%	18%
TOTAL	969	1,229	1,442	3,016	4,149	5,251	24%	23%	22%

Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

Aboriginal and Torres Strait Islander THHS residents aged 0-14 years accounted for 29% (3,918) of beddays of children from THHS facilities in 2014/15. Whilst the numbers of beddays for ATSI children is also projected to increase to 4,295 by 2026/27 and 4,793 by 2036/37, the proportion of total beddays they represent will reduce slightly to 27% in 2026/27 and 2036/37. The greatest volumes of beddays for ATSI children will be for SRG Qualified Neonate (2,173 beddays in 2026/27 increasing to 2,409 in 2036/37) followed by SRG Respiratory Medicine (423 beddays in 2026/27 increasing to 472 in 2036/37). SRG Prolonged Ventilation had the highest proportion of beddays for ATSI children accounting for 66% (156) in 2014/15. It should be noted that the projected volumes are small and are decreasing. Refer Table 105.

Table 105: Beddays Top 10 SRGs Indigenous THHS Residents Aged 0-14 years as % of Total THHS Resident Beddays from THHS Facilities 2014/15 - 2036/37

SRG	ATSI Beddays			Non-ATSI Beddays			% ATSI Beddays		
	2014/15	2026/27	2036/37	2014/15	2026/27	2036/37	2014/15	2026/27	2036/37
Qualified Neonate	1,968	2,173	2,409	4,628	5,375	6,066	30%	29%	28%
Respiratory Medicine	400	423	472	997	1,226	1,513	29%	26%	24%
Immunology & Infections	216	256	286	225	294	344	49%	47%	45%
Non-Subspecialty Surgery	218	230	251	610	812	992	26%	22%	20%
Orthopaedics	222	219	234	454	483	523	33%	31%	31%
Ear, Nose & Throat	170	193	214	315	420	504	35%	32%	30%
Non-Subspecialty Medicine	79	129	155	279	453	615	22%	22%	20%
Mental Health	20	60	104	243	218	299	8%	21%	26%
Prolonged Ventilation	156	100	102	82	69	66	66%	59%	61%
Neurology	58	63	75	226	298	381	20%	17%	16%
Other SRG's	411	449	492	1,339	1,682	1,940	23%	21%	20%
TOTAL	3,918	4,295	4,793	9,398	11,330	13,243	29%	27%	27%

Source: AIM HHS Scenario (14/15 Base Case) (File supplied by QLD Department of Health, 15 Sep 2016)

Note: Excludes unqualified neonates and renal dialysis

Note: Facility level projections for TTH, Ayr, Home Hill, Charters Towers, Ingham, Joyce Palmer, Hughenden and Richmond Health Services will be provided at a later stage of the planning process, following agreement on the assumptions for scenario modelling.

8. Next steps and further data analysis

This Background Paper (Deliverable 1 of the planning process) has provided a high level overview at a population and system level of the use of health services by residents of THHS and residents of other North Queensland HHS's flowing to facilities within THHS.

This information, along with the key strategic questions, is intended to be used by THHS decision makers to instruct the development of four planning scenario's (Deliverable 2, additional to a 'no change' or 'status quo' planning scenario).

Following feedback from decision makers on the information provided within this Paper, further detailed data analysis will be undertaken to inform the next project phases. This will include analysis of the following areas:

1. Projected activity at facility level for each hospital within THHS (based on agreed scenario modelling assumptions)
2. Inflows and outflows for selected specialty areas at ESG level
3. Non-admitted patient activity including emergency department, interventional cardiology, breast screen, cancer, endoscopy, oral health, home dialysis and outpatients
4. Mental health services by the full range of bed types
5. Qualified neonates.

This information, as relevant to each deliverable, will be provided in the form of a Scenario Modelling Assumptions Paper (Deliverable 2), a Consumer and Community Engagement Paper (Deliverable 3), and a paper presenting the results of health service activity and capacity requirement projections (Deliverable 4).

APPENDIX A: Glossary of words

Key Words	Explanation
AIM Base Case	<p>The Acute Inpatient Modelling (AIM) tool is the endorsed source of projected activity for a number of admitted health services (in particular medical, surgical and maternity services).</p> <p>The AIM tool projects future admitted patient activity based on historical trends of separation rates and lengths of stay, place of residence variations in utilisation of services and patient flow patterns. The tool generates a base case (or status quo) model of projected activity which assumes that current patient flow patterns will continue and that place of residence variations in utilisation will reduce over time.</p>
Australian Standard Geographical Classification - Remoteness Area (ASGC-RA)	<p>ASGC-RA is a geographic classification system developed by the ABS as a statistical geography structure which allows quantitative comparisons between 'city' and 'country' Australia. The purpose of the structure is to classify data from census Collection Districts (CDs) into broad geographical categories, called Remoteness Areas (RAs).</p> <p>The RA categories are defined in terms of 'remoteness'—the physical distance of a location from the nearest Urban Centre (access to goods and services) based on population size. The RA categories are: RA1—Major Cities of Australia, RA2—Inner Regional Australia, RA3—Outer Regional Australia, RA4—Remote Australia, RA5— Very Remote Australia.</p>
Chargeable Patients	<p>On admission to hospital, an eligible patient must elect to be as either a public or private patient.</p> <p>A public (Non-chargeable) patient is a patient who:</p> <ul style="list-style-type: none"> *elects to be treated as a public patient, and so cannot choose the doctor who treats them, or *is receiving treatment in a private hospital under a contract arrangement with a public hospital or health authority. <p>A public patient who is allocated single room accommodation due to clinical need is still a public patient.</p> <p>A private (Chargeable) patient is a patient who elects to be treated by a doctor of their choice.</p> <p>Their chargeable status is shared, unless they request and are accommodated in a single room, in which case their chargeable status is 'private single'.</p>

Key Words	Explanation
Chargeable Patients Contined	<p>A private patient allocated single-room accommodation due to clinical need, rather than by choice, is still a private shared patient rather than a private single patient.</p> <p>Further information can be found on page 63: https://www.health.qld.gov.au/hsu/pdf/manuals/qhapdc16-17/qhapdc-1617-final-v1.o.pdf</p>
Clinical services Capability Framework (CSCF)	<p>The CSCF for Public and Licensed Private Health Facilities provides a standard set of minimum capability criteria for service planning and delivery. The current version (v3.2), published in December 2014, has been designed to guide a coordinated and integrated approach to health service planning and delivery in Queensland. It applies to both public and licensed private health facilities and will enhance the provision of safe, quality services by providing health service planners and service providers with a standard set of minimum capability criteria. The CSCF's purpose is to:</p> <ul style="list-style-type: none"> · describe a set of capability criteria that identifies minimum requirements by service level · provide a consistent language for healthcare providers and planners to use when describing and planning health services · assist health services to identify and manage risk · guide health service planning · provide a component of the clinical governance system, credentialing and scope of practice of health services · instil confidence in clinicians and consumers services meet minimum requirements for patient safety and guide health service planning.
Enhanced Service Related Group (ESRG)	A level below the SRG classification, is the Enhanced Service Related Group (ESRG) classification.
Episode of Care	The period of admitted patient care between a formal or statistical admission and a formal or statistical separation, characterised by only one care type.
Flows	Flows reflect where people go to receive healthcare treatment. Outflow refers to residents from within the catchment area who go to facilities outside the catchment to receive services. Inflow refers to people who live outside of the catchment area, but who receive services at facilities within the catchment. Reverse flow refers to activity expected to return to or leave a hospital or catchment.

Key Words	Explanation
Relative Utilisation	Relative Utilisation (RU) is the ratio of the number of admissions for residents of a particular region (regardless of where they were admitted) to the expected number of admissions. RU definition can be found: http://qheps.health.qld.gov.au/ppb/docs/hsram/ru_factsheet.pdf
Separation	The discharge of an inpatient from the hospital to home, another facility or through death.
Self-Sufficiency	Self-sufficiency is an indicator of the local accessibility of health services. The self-sufficiency index or capture rate is used to describe the degree to which the population in a catchment area depends on a local facility. It is one way of estimating how well the facility meets the designated catchment's health service needs. Self- Sufficiency definition can be found: http://qheps.health.qld.gov.au/ppb/docs/hsram/ss_factsheet.pdf
Service Related Group (SRG)	The SRG classification is based on Australian Refined Diagnosis Related Group (AR-DRG) aggregations and categorise admitted patient episodes into groups representing clinical divisions of hospital activity. SRGs are used to assist the planning of services, in analysing and comparing hospital activity, examining patterns of service needs and access, and projecting potential trends in reservices.

APPENDIX A: The clinical services capability framework (2016)

CSCF v3.2 Townsville HHS Self-Assessment Summary – August 2016

CSCF Service v3.2	Townsville	Ayr	Charters Towers Rehab	Charters Towers	Home Hill	Hughenden	Ingham	Joyce Palmer	Magnetic Island	Richmond
Anaesthetic	6	3		3			3			
Anaesthetic - Children's	5	3		3			3			
Cancer										
Children's	5									
Haematological Malignancy	6			3		3	3		3	3
Medical Oncology	6									
Radiation Oncology	6									
Radiation Oncology - Children's										
Cardiac										
Cardiac (Coronary) Care Unit	6									
Cardiac Diagnostic & Interventional	6	3		3			3			
Cardiac Medicine	6			3			3			
Cardiac Outreach		1		1		3	1			
Cardiac Surgery	6									
Cardiac Rehabilitation - Inpatient	6									
Cardiac Rehabilitation - Outpatient	5	4		4		4	4			
Cardiac Rehabilitation - Ongoing prevention & maintenance										
Emergency	6	3		3	1	2	3	2	2	2
Emergency - Children's	5									
Intensive Care	6									
Intensive Care - Children's	5									

CSCF Service v3.2	Townsville	Ayr	Charters Towers Rehab	Charters Towers	Home Hill	Hughenden	Ingham	Joyce Palmer	Magnetic Island	Richmond
Maternity	6	3		1		1	3	1	1	1
Medical	6	3		3	2	2	3	2	1	2
Medical - Children's	5	3		3			3	2	1	2
Medication	6	4		4	3	3	3	3	3	3
Medical Imaging	5	3		3		1	3	3		1
Mental Health - Adult										
Ambulatory	5	4		4			3	5		2
Acute inpatient	5	2		2			2	2		2
Non-acute inpatient										
Mental Health - Child & Youth										
Ambulatory	5	4		4			3	2		2
Acute inpatient	5	2		2			2	2		2
Non-acute inpatient										
Mental Health - Older persons										
Ambulatory	5	4		4			4	3		2
Acute inpatient	4	2		2			2	2		2
Mental Health - Statewide & Other Targeted services										
Adult Forensic										
Child & Youth Forensic	5									
Deafness & Mental Health										
Eating Disorder										
Emergency	5									
Evolve Therapeutic	5									
Homeless Health Outreach	5									
Perinatal & Infant										
Transcultural										
Neonatal	6	3		1			3	1	1	1

CSCF Service v3.2	Townsville	Ayr	Charters Towers Rehab	Charters Towers	Home Hill	Hughenden	Ingham	Joyce Palmer	Magnetic Island	Richmond
Nuclear Medicine	5									
Palliative Care	6	3		3	3	2	3	1	1	2
Pathology	6	2		2	2	2	2	2		2
Perioperative										
Acute Pain	5									
Day Surgery	4	3		3			3			
Endoscopy	6	3		3			3			
Operating Suite incorporating Sterilising services	6	3		3			3			
Post-Anaesthetic Care	6	3		3			3			
Children's Post-Anaesthetic Care	5			3						
Rehabilitation	6	3		3	2	2	3		1	2
Renal	6	1		1	2	2	1	2		1
Surgical	6	2		2			2	2		
Surgical oncology	6									
Surgical - Children's	5	2		2			2	2		

APPENDIX C THHS ORGANISATIONAL CHART

