AUSHFG SPATIAL BENCHMARKS

PURPOSE OF THE SPATIAL BENCHMARKS

The purpose of the AusHFG Spatial Benchmarks, an Australasian Health Infrastructure Alliance (AHIA) initiative, is to support the development of high level area estimates for common hospital departments / services.

Spatial benchmarking data would typically be used during initial planning phases to inform early cost planning and indicative footprint requirements prior to the development of detailed schedules of accommodation. This is important information which can be used to advise early investment decisions, as well as site selection and staging strategies. The AusHFG spatial benchmarks will also provide a high-level reference for governing bodies to assess whether proposed area allocations for a project, throughout the phases of planning and design, are broadly in line with AusHFG recommended areas.

HOW WERE THE BENCHMARKS DEVELOPED?

The AusHFG spatial benchmarks are derived from schedules of accommodations (SOAs) within the AusHFG Health Planning Units (HPUs). The recommended AusHFG SOAs are developed through the following review process and provide a well developed starting point for planning and design:

- Review of Post Occupancy Evaluation (POE) outcomes where available
- Site visits to recently delivered facilities
- Benchmarking against recently delivered facilities
- Review of recommended SOAs with an expert reference group including clinical, operational and technical experts
- Establishment of SOA scenarios based on common unit capacities
- Review of recommended SOAs by other experts across all AHIA jurisdictions

In order to translate the recommended AusHFG SOAs into spatial benchmarks, the following assumptions were made:

- ‘Optional’ rooms within the AusHFG SOAs are assumed to be included in the benchmarking data
- Estimated staff office and workstation numbers, requiring direct collocation with the clinical and clinical support units, have been included based on reference to similar sized units that have been recently delivered
- The recommended spatial benchmark represents the average area per unit of measure across all SOA scenarios for that service area

APPLICATION OF THE BENCHMARKS TO PROJECTS

It is acknowledged that some service / facility requirements are frequently identified during project planning processes and the actual area required may be greater. This is demonstrated in the work undertaken by AHIA to compare AusHFG benchmarks with actual data from recently delivered facilities. On average, the actual facility areas were 5-10% greater than the recommended AusHFG areas. The AusHFG spatial benchmarks will provide a minimum estimated area requirement and, when combined with the SOA planning contingencies that are typically allocated during early planning phases, will support consideration of service / project specific requirements.

SCOPE OF THE SPATIAL BENCHMARKS

The spatial benchmarks include clinical, clinical support and non-clinical (back of house) services. Although benchmarks are provided for the majority of hospital services, it is important to acknowledge that they do not cover the full range of services. Additional services not covered in the AusHFG, for example education and training areas, central equipment stores, biomedical engineering, centralised staff areas etc, will need to be estimated separately.

Consideration of different facility types is provided for some support services, for example separate area benchmarks are included for small, medium and large / principal referral hospitals with delineation of hospital size by approximate bed numbers. This is included given consideration of requirements for facilities supporting a higher level / complexity of care and economies of scale that may be achieved within larger hospitals.

For Back of House services, a full area benchmark per hospital bed is provided for different sized facilities to cover kitchen, linen, cleaning, facility management, supply and loading dock, security services and porterage. This is then broken down into recommended benchmarks for individual service areas.

Further refinement of the service categories and sub-categories for clinical and clinical support areas will be undertaken over time to provide a greater level of certainty around estimated area requirements. This will be further supported by identification of appropriate SOA scenarios during the HPU review periods.

Data is not yet available for a number of services (noted as N/A), however these will be developed through future AusHFG HPU reviews.

HOW TO USE THE BENCHMARKS

AusHFG Spatial Benchmarks						
Service / Department / HPU	**AusHFG Health Planning Unit (HPU) No.**	**Sub-Category**	**Unit of Measurement**	**Average Area per Unit (AusHFG SOAs)**	**% Single Bedrooms Assumed**	**Comments**
Emergency						
Emergency Department	300		Per Patient Bay	**51**		Based on three scenarios of 15,30 and 60 bays. Bay numbers include resus, acute, paediatric & fast track. EDSSU and imaging areas are excluded.
Emergency Short Stay	300		Per Bed	**24**		Excludes staff support areas that are incorporated within the general ED.
Psychiatric Emergency Care Centre	133		Per Bed	**51**	100%	Based on two scenarios of 4 and 6 beds.

The AusHFG Spatial Benchmarks are delineated by **service / department** and relevant **sub-categories** (e.g. satellite versus in-centre renal dialysis units). The referenced AusHFG **Health Planning Unit (HPU)** is noted.

For the majority of clinical services, the area benchmark references an area 'per bed' as the **unit of measurement**. However, for some services the unit of measurement may be 'per chair', 'per patient bay', 'per theatre' etc.

The recommended area benchmark (**'average area per unit')** represents the **Gross Department Area (GDA)**. This compromises the net functional area of the unit / department plus the intra-departmental circulation. It does not include estimated travel and engineering (T&E) area requirements. For further information relating to the calculation of GDA, refer to the examples below and AusHFG Part C Section 2.5.2.

For inpatient units, the **percentage of single bedrooms** assumed is noted given this will impact the GDA.

Comments are included to guide the reader on relevant assumptions associated with the benchmark. For example, the types of Emergency (ED) bays that are included within the assumed total patient bay numbers and any areas that are excluded.

EXAMPLE CALCULATIONS

To estimate the GDA required for a specific department, the recommended ‘average area per unit’ will be multiplied by the total number of units to be included in the project scope.

Example 1: the proposed delivery of a 12 chair in-centre renal dialysis unit will require an estimated area of:

- 12 chairs x 46m2 per chair = estimated GDA of 550m2

Example 2: the proposed delivery of 56 medical inpatient beds will require an estimated area of:

- 56 beds x 41m2 per bed = estimated GDA of 2,300m2.

Following calculation of the GDA for each service in scope, the Gross Building Area (GBA) is calculated by applying the additional T&E allowance as guided by AusHFG Part C Section 2.5.5. For example, a hospital that is proposed to be 3-4 storeys high would require an estimated additional T&E area allowance of 28% applied to the GDA.

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Emergency						
Emergency Department	300		Per Patient Bay	**51**		Based on three scenarios of 18, 36 and 60 bays. Bay numbers include resus, acute, paediatric & ambulatory spaces. Includes Education Area i.e. simulation room. EDSSU and imaging areas are excluded.
Emergency Short Stay	300		Per Bed	**23**		Based on three scenarios of 8, 12 and 20 bays. Excludes staff support areas that are incorporated within the general ED. Also assumes that general clinical administration is allowed for within the overall ED SOA/Allowance.
Mental Health Emergency Short Stay Unit	133		Per Bed	**52**	100%	Based on one scenario of 6 beds.
Acute Inpatient						
IPU Adult Acute Medical/Surgical	340		Per Bed	**41**	50%	Assumes inclusion of one negative pressure and one bariatric bed room. Includes all optional areas including multifunctional allied health area.
IPU Paediatric	540		Per Bed	**58**	65-70%	Based on 24 bed scenario. Includes 1 negative pressure room. Includes play and recreation areas.
IPU Maternity	510		Per Bed	**45**	93%	Based on one 28 bed unit scenario.
Intensive Care Unit	360	1 Pod Paediatrics	Per Bed	**92**	67%	Based on Paediatric 12 bed ICU scenario.
		1 Pod Adult	Per Bed	**87**		Based on Adult 12 bed ICU scenario.
		> 1 Pod	Per Bed	**75**		Based on 48 bed scenario (4 pods).
Cardiac Care Unit (CCU)	260		Per Bed	**63**	100%	Based on one 12 bed unit scenario.
Neonatal Care Unit	390	1 Pod	Per Cot	**59**	30-40%	Based on 12 and 16-cot scenarios (assumes overnight accommodation is provided elsewhere). Includes neonatal intensive care, high dependency and special care.
			Per Cot	**60**		Based on 12 and 16-cot scenarios with included family overnight accommodation (assumed to be 1 overnight room for 12-cot unit and 2 overnight rooms for 16-cot unit). Includes neonatal intensive care, high dependency and special care.
		> 1 Pod	Per Cot	**51**		Based on one 48-cot scenario (assumes overnight accommodation is provided elsewhere). Includes neonatal intensive care, high dependency and special care.
			Per Cot	**53**	30-40%	Based on one 48-cot scenario with included family overnight accommodation (assumed to be 5 overnight rooms for 48-cot unit). Includes neonatal intensive care, high dependency and special care.
Mental Health						
IPU Acute Mental Health	134		Per Bed	**77**	100%	Assumes 30% of beds are high dependency, requiring a separated HDU. Additional area required compared to Older People's Unit due to inclusion of seclusion and de-escalation areas, as well as secure entry zone.
IPU Subacute and Non Acute Mental Health	136		Per Bed	**80**	100%	Based on one 20 bed unit.
IPU Older Peoples Mental Health	135		Per Bed	**69**	100%	Assumes 30% of beds are high dependency, requiring a separated HDU.
IPU Child & Adolescent Mental Health	132		Per Bed	**90**	100%	Based on one 12 bed unit scenario.
IPU Mental Health Intensive Care	137		Per Bed	**95**	100%	Based on one 12 bed unit scenario.

The spatial benchmarks will continue to be updated and refined following each AusHFG Health Planning Unit review.

AusHFG Spatial Benchmarks

Service / Department / HPU	AusHFG Health Planning Unit (HPU) No.	Sub-Category	Unit of Measurement	Average Area per Unit (AusHFG SOAs)	% Single Bedrooms Assumed	Comments
Sub-Acute Inpatient						
IPU Rehab	610	Rehab IPU Areas	Per Bed	**47**	50%	Based on a 24 bed unit with one negative pressure bedroom, one bariatric bedroom and an Independent Assessment Suite (assumed included in bed count). Excludes therapy areas. Increased areas compared to Acute IPU due to patient communal areas and additional storage.
	610	Rehab IPU Therapy Areas	Per Bed	**14**	N/A	Includes patient treatment / therapy areas only including individual and group gymnasiums, OT room, ADL areas, consult, interview rooms and storage. Excludes Allied Health / Therapy staff areas.
IPU Older Peoples Health	610	Older Peoples Health IPU Areas	Per Bed	**47**	50%	Based on a 24 bed unit with one negative pressure bedroom and one bariatric bedroom. Excludes therapy areas. Increased areas compared to Acute IPU due to patient communal areas and additional storage.
	610	Older Peoples IPU Therapy Areas	Per Bed	**7**	N/A	Includes patient treatment / therapy areas only including small group gymnasium, ADL areas, consult, interview rooms and storage. Excludes Allied Health / Therapy staff areas. Requirements will depend on service model, provision of individual and/or group therapy and access to shared gymnasium facilities.
IPU Palliative care	610	Palliative Care IPU Areas	Per Bed	**51**	90-100%	Excludes a separate entry/reception area and therapy areas given this will depend on the scope of services and equipment provided. Increased area compared to other subacute care units due to higher proportion of single bedrooms and 'special' sized bedrooms.
Ambulatory Care						
Ambulatory Care	155		Per Consult / Patient Care Room	**N/A**		AusHFG SOA combines outpatient and medical day stay services with associated support areas. Future HPU review to consider specific scenarios to inform benchmarking.
Community Health	155		Per Patient Care Room	**N/A**		Specific scenarios not well defined in AusHFG SOA given scope of community health services provided varies significantly between projects.
Renal Dialysis	620	Satellite Unit	Per Chair	**39**		Based on two scenarios of 10 and 20 chairs.
		In-Centre Unit	Per Chair	**46**		Based on two scenarios of 6 and 12 chairs.
Day Medical / Chemotherapy	155		Per Chair	**N/A**		AusHFG SOA combines outpatient and medical day stay services with associated support areas. Future HPU review to consider specific scenarios to inform benchmarking.
Radiation Oncology	600		Per Bunker	**733**		Includes 3-4 outpatient rooms per bunker, planning, treatment, holding areas, and medical physics/engineering. Excludes brachytherapy services. For brachytherapy invasive procedures refer to OT benchmark. For brachytherapy cavity insertions include an additional 70m2 per procedure room for treatment space and associated support areas.
Oral Health	280	Small Unit (6 or less chairs) On-site Reprocessing	Per Chair	**73**		Includes minor dental laboratory and instrument reprocessing for units with >2 chairs.
		Small Unit (6 or less chairs) Off-site Reprocessing	Per Chair	**69**		Includes minor dental laboratory, clean-up dirty collection, instrument reprocessing and sterile store.
		Large unit (> 6 chairs) On-site Reprocessing	Per Chair	**57**		Includes minor dental laboratory and instrument reprocessing.
		Large unit (> 6 chairs) Off-site Reprocessing	Per Chair	**56**		Includes minor dental laboratory, clean-up dirty collection, instrument reprocessing and sterile store.
Cardiac Investigations / Clinical Measurement	170		Per Consult / Diagnostic Room	**63**		Includes one scenario of 9 clinic rooms of varying function. Excludes cardiac catheter laboratories.
Transit Lounge	630	12 patient bay scenario	Per Patient Bay	**25**		Includes 8 holding bay - chairs, and 2 holding bay beds, 1 enclosed holding bay and 1 bariatric holding bay. Excludes optional patient waiting chairs.
		24 patient bay scenario	Per Patient Bay	**20**		Includes 16 holding bay - chairs, and 4 holding bay beds, 2 enclosed holding bay and 2 bariatric holding bay. Excludes optional patient waiting chairs.

AusHFG Spatial Benchmarks

Service / Department / HPU	AusHFG Health Planning Unit (HPU) No.	Sub-Category	Unit of Measurement	Average Area per Unit (AusHFG SOAs)	% Single Bedrooms Assumed	Comments
Other Clinical						
Day Surgery / Procedure Unit (Dedicated Day Only Unit)	270		Per Theatre / Procedure Room	**395**		Based on scenarios of 2 and 4 operating / procedure rooms. Includes Pre-Procedure Holding, Theatre/Procedure Areas, Stage 1 recovery, Stage 2/3 recovery, Support & Staff Areas.
Operating Suite (Day Only and Overnight Activity)	520	Operating Theatres (including Stage 1 recovery)	Per Theatre	**300**		Based on 8 and 16 OR scenarios. Assumes 1 - 2 Hybrid ORs in line with benchmarking. Excludes Day Surgery / DOSA areas noted below.
	520	Day Surgery / DOSA - Waiting & Preoperative Holding	Per Theatre	**34**		For Day of Surgery and Day of Surgery Admissions (DOSA). Unit of measurement is per theatre used for day surgery and DOSA. Includings reception, waiting and pre-operative holding.
	520	Day Surgery - Stage 2/3 recovery	Per Stage 2 recovery bay	**20**		Day of Surgery Stage 2/3 recovery area. This is included separately to preoperative holding given the number of Stage 2 recovery bays will depend on the proportion of day only cases.
Interventional Imaging / Cardiac Cath Labs	170		Per Lab	**N/A**		SOAs included within HPU 440 Medical Imaging and HPU 170 Cardiac Investigations, however separated support areas are not included so this has been excluded from the database. Refer to Operating Theatres allocation given similar requirements including recovery areas.
Birthing Unit	510		Per Birthing Room	**143**		Based on 10 birthing room unit. Excludes Antenatal assessment unit
Clinical Support Services						
Medical Imaging	440	General X-Ray / Fluoro	Per GXR/Fluoro	**89**		
		OPG	Per OPG / Lat Ceph / CBCT	**30**		
		Ultrasound / Mammo	Per Ultrasound / Mammo Room	**46**		
		CT	Per CT	**155**		
		MRI	Per MRI	**160**		
		Shared Support	Per Total Modalities	**N/A**		Includes entry, reception, waiting; patient holding / recovery and staff support areas.
Nuclear Medicine & PET	500		Per Modality	**335**		Based on 2 scenarios. Includes SPECT/CT and PET/CT. Assumes Nuclear Medicine Service includes stress testing & bone densitometry (ie these are not included in the total modality count).
Sterilising Services Unit	190	Small Unit (approx 2 ORs)	Per Theatre	**129**		
		Medium Unit (approx 10 ORs)	Per Theatre	**64**		
		Large Unit (approx 20 ORs)	Per Theatre	**59**		
Pharmacy	560	Small Hospital (approx 40 beds)	Per Hospital Bed	**3.1**		Excludes aseptic compounding suites and clinical trials
		Medium hospital (approx 120 beds)	Per Hospital Bed	**3.2**		Excludes aseptic compounding suites and clinical trials
		Large Hospital (approx 450 beds)	Per Hospital Bed	**1.9**		Assumes inclusion of an aseptic production suite and clinical trials area.
Pathology	550	Small Hospital (approx 40 beds)	Per Hospital Bed	**3.1**		Excludes outpatient specimen collection
		Medium hospital (approx 120 beds)	Per Hospital Bed	**3.8**		Excludes outpatient specimen collection
		Large Hospital (approx 450 beds)	Per Hospital Bed	**2.7**		Excludes outpatient specimen collection
		Principal Referral Hospital	Per Hospital Bed	**min 5000m2 GDA**		
Allied Health	140		TBC	**N/A**		Next Allied Health HPU review to consider clinical scenarios to inform benchmarking.
Mortuary / Autopsy Unit	490	Without Autopsy	Per Hospital Bed	**0.6**		Based on one scenario including 9 body hold cabinets to support a 250 bed hospital. HPU recommends requirement for 4 body hold spaces per 100 beds excluding isolation storage.
		With Autopsy Suite	Per Autopsy Room	**80**		Includes change rooms, anteroom, observation room & storage.

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Non-Clinical (Back of House) Services						
Front of House (Total)	430			**N/A**		Next Front of House HPU review to consider scenarios to inform benchmarking.
Back of House (Total)	700	< 50 beds	Per Hospital Bed	**9**		Includes kitchen, linen, cleaning, waste, facility management, supply and loading dock, security services and porterage. Bulk storage linen model and traditional supply services models are assumed.
		150 beds	Per Hospital Bed	**8**		Includes kitchen, linen, cleaning, waste, facility management, supply and loading dock, security services and porterage. Bulk storage linen model and traditional supply services models are assumed.
		300 beds	Per Hospital Bed	**6**		Includes kitchen, linen, cleaning, waste, facility management, supply and loading dock, security services and porterage. Bulk storage linen model and traditional supply services models are assumed.
		600 beds	Per Hospital Bed	**5**		Includes kitchen, linen, cleaning, waste, facility management, supply and loading dock, security services and porterage. Bulk storage linen model and traditional supply services models are assumed.
Food Services / Kitchen	700	< 50 beds	Per Hospital Bed	**2.32**		Assumes cook fresh model.
		150 beds	Per Hospital Bed	**2.94**		Assumes cook fresh model.
		300 beds	Per Hospital Bed	**1.49**		Assumes cook fresh model.
		600 beds	Per Hospital Bed	**1.16**		Assumes cook fresh model.
Linen Services - Roll On / Roll Off Model	700	< 50 beds	Per Hospital Bed	**0.53**		
		150 beds	Per Hospital Bed	**0.48**		
		300 beds	Per Hospital Bed	**0.40**		
		600 beds	Per Hospital Bed	**0.34**		
Linen Services - Bulk Storage Model	700	< 50 beds	Per Hospital Bed	**0.58**		
		150 beds	Per Hospital Bed	**0.76**		
		300 beds	Per Hospital Bed	**0.60**		
		600 beds	Per Hospital Bed	**0.46**		
Cleaning Services	700	< 50 beds	Per Hospital Bed	**0.55**		
		150 beds	Per Hospital Bed	**0.40**		
		300 beds	Per Hospital Bed	**0.31**		
		600 beds	Per Hospital Bed	**0.21**		
Waste Management	700	< 50 beds	Per Hospital Bed	**1.08**		
		150 beds	Per Hospital Bed	**0.84**		
		300 beds	Per Hospital Bed	**0.74**		
		600 beds	Per Hospital Bed	**0.58**		
Facility Management	700	< 50 beds	Per Hospital Bed	**1.73**		
		150 beds	Per Hospital Bed	**1.73**		
		300 beds	Per Hospital Bed	**1.39**		
		600 beds	Per Hospital Bed	**1.18**		
Supply Services / Loading Dock - Traditional Supply Model	700	< 50 beds	Per Hospital Bed	**1.52**		
		150 beds	Per Hospital Bed	**1.40**		
		300 beds	Per Hospital Bed	**1.25**		
		600 beds	Per Hospital Bed	**0.91**		
Supply Services / Loading Dock - Direct to Imprest Supply Model	700	< 50 beds	Per Hospital Bed	**1.06**		
		150 beds	Per Hospital Bed	**1.04**		
		300 beds	Per Hospital Bed	**0.90**		
		600 beds	Per Hospital Bed	**0.64**		
Security Services	700	< 50 beds	Per Hospital Bed	**0.72**		
		150 beds	Per Hospital Bed	**0.31**		
		300 beds	Per Hospital Bed	**0.24**		
		600 beds	Per Hospital Bed	**0.14**		

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Porterage / Orderly / Wardsperson	700	< 50 beds	Per Hospital Bed	**0.04**		
		150 beds	Per Hospital Bed	**0.03**		
		300 beds	Per Hospital Bed	**0.09**		
		600 beds	Per Hospital Bed	**0.06**		
Fleet Services	700	< 50 beds	Per Hospital Bed	**0.00**		
		150 beds	Per Hospital Bed	**0.00**		
		300 beds	Per Hospital Bed	**0.05**		
		600 beds	Per Hospital Bed	**0.04**		
Mail Services	700	< 50 beds	Per Hospital Bed	**0.00**		MPS and small hospitals will typically have facilities included in front of house reception.
		150 beds	Per Hospital Bed	**0.00**		MPS and small hospitals will typically have facilities included in front of house reception.
		300 beds	Per Hospital Bed	**0.08**		
		600 beds	Per Hospital Bed	**0.06**		