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A SUPPLEMENTARY REPORT ON TRAFFIC AND PARKING IMPACTS OF A NEW REHABILITATION AND PALLIATIVE CARE FACILITY AT CALVARY HEALTH CARE RIVERINA

Property address	Corner of Emblen Street and Meurant Avenue, Wagga Wagga NSW 2650
Client	Health Projects International
Prepared by	O. Sannikov, MEngSc (Traffic Engineering), MIEAust, PEng, MAITPM
Date	10 January 2014
Job No.	13024
Report No.	**13024 Rep 02b**

Item	Report
	• **A summary of the original traffic and parking impacts assessment**
	◦ For full details refer to Report No. 13024 Rep 02a prepared by TEF Consulting on 26/08/13
	◦
Proposed development	• **Construction of an extension of a private hospital specialising in rehabilitation and palliative care**
	◦ Rehabilitation & Palliative Care Facility (**R&PCF**) at Calvary Health Care Riverina (CHCR) - refer to **Figure 1** for site location
	▪ Gross Floor Area (GFA)
	• 2,360 m^2 (approximate total) – refer to **Figure 2** for details
	▪ ***Facilities with traffic generation and parking demand potential***
	• Inpatient palliative care (approximately 839 m^2)
	◦ 8 inpatient beds
	• Inpatient physical rehabilitation (approximately 565 m^2)
	◦ 14 inpatient beds
	▪ replaces the existing medical consulting suites
	• a total of 14 existing doctor/specialist rooms / places
	• Outpatient day rehabilitation (approximately 588 m^2), including
	◦ Gymnasium (physiotherapy room)
	◦ Hydrotherapy pool 33 m^2 (designed for 5 patients at any one time)
	◦ Medical consulting rooms (2)
	◦ Medical treatment room (1)
	▪ ***Facilities and ancillary area not likely to generate additional traffic or parking demand*** *(used by staff, patients and visitors accounted for in the main facilities above)*
	• Staff meeting rooms
	• Mobility courtyard
	• Reception and office areas

- Dining and lounge rooms
- Kitchen, staff change rooms, engineering and stores

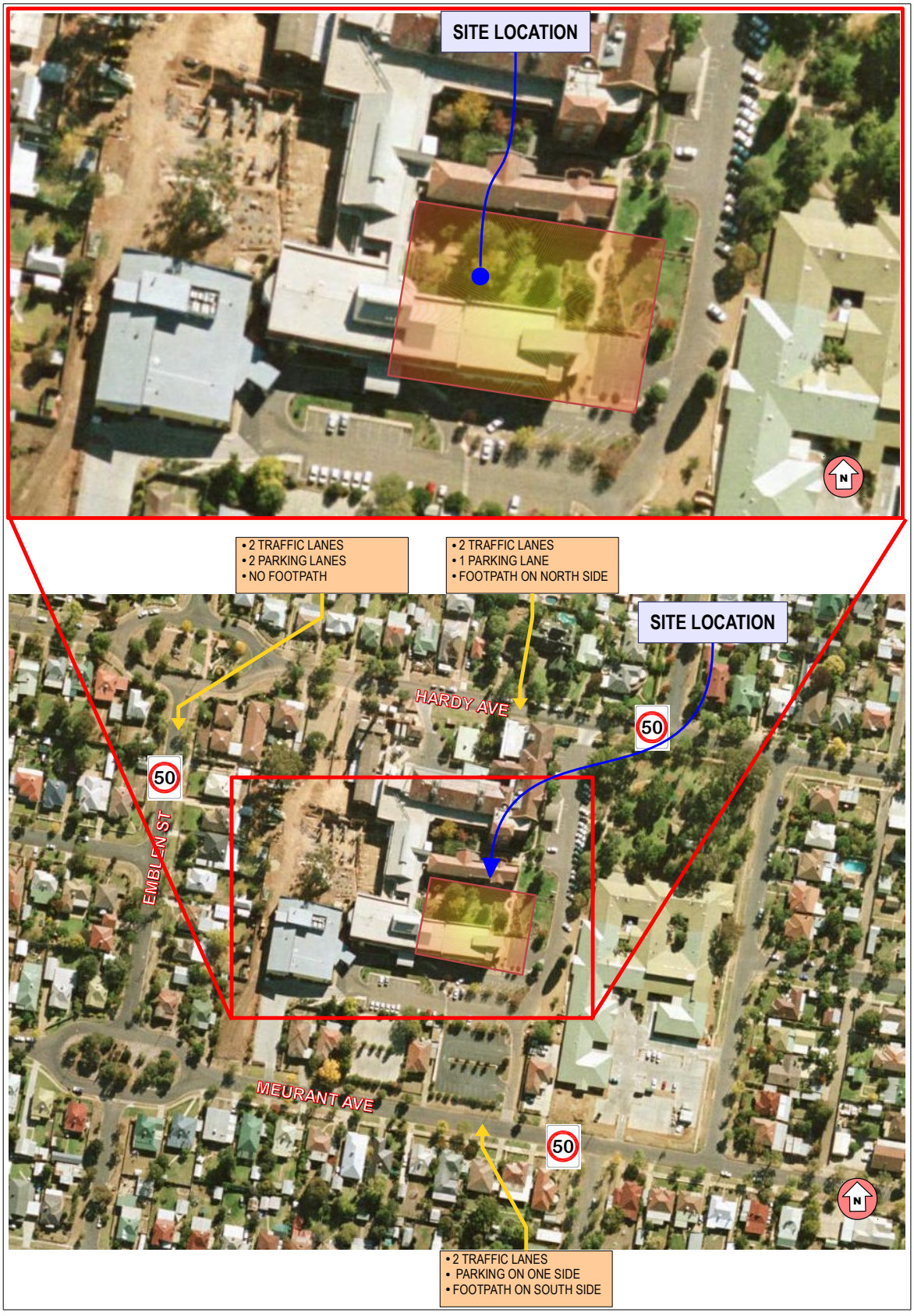

Figure 1. Site location.

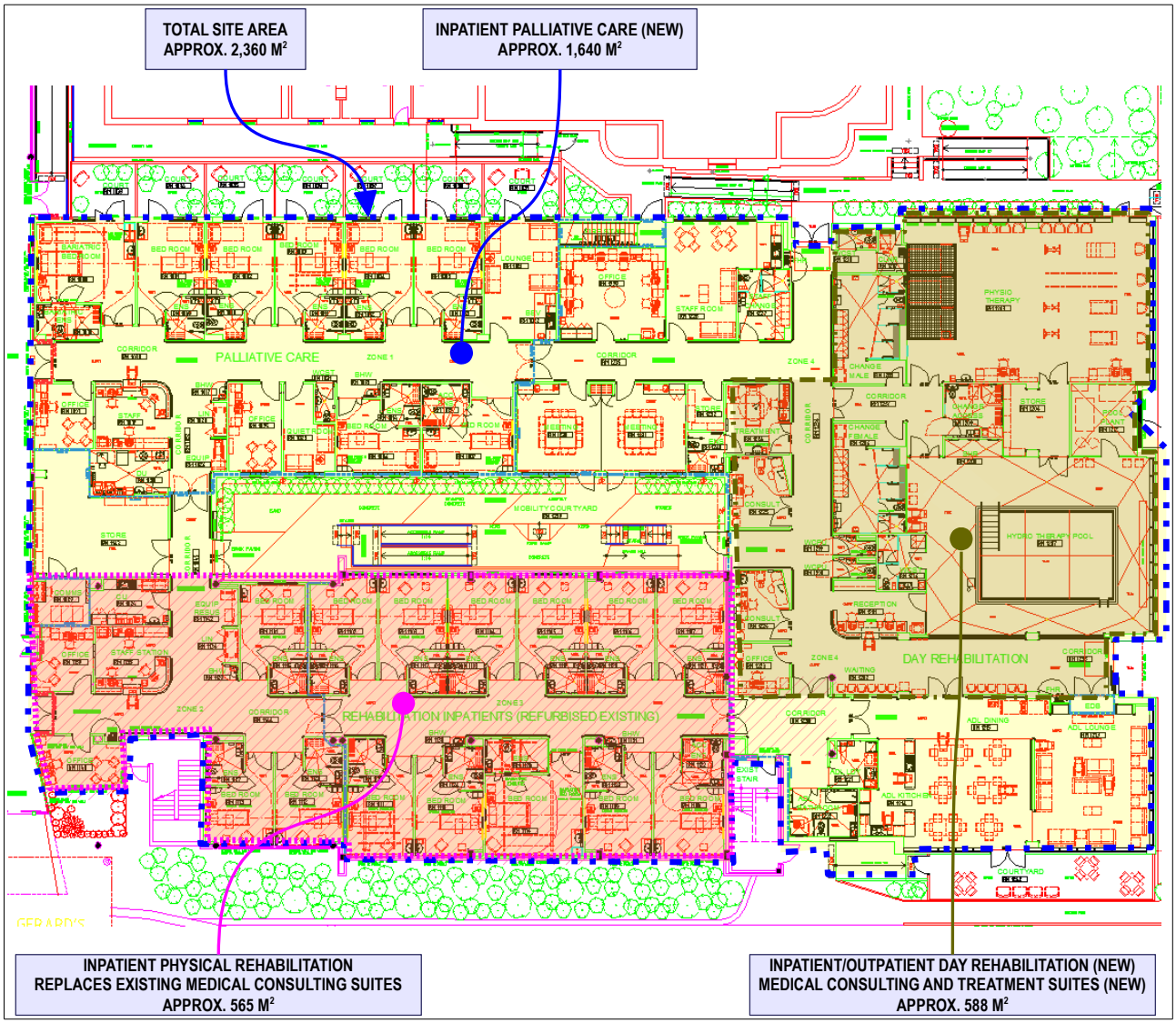

Figure 2. Details of the proposed development.

Item	Report
Proposed development (continued)	• Car parking provision
	◦ Addition
	▪ 48 spaces within the Hospital grounds adjacent to the proposed facility
	◦ Loss
	▪ 23 spaces on the Hospital grounds
	◦ **Net addition – 25** car parking spaces
	• **Proposed mode of operation**
	◦ Staff (total for all facilities)
	▪ Morning (busiest) shift
	• 8 FTE (Full Time Equivalent)
	◦ Patients
	▪ In-patients (a total of 22 beds)

Item	Report
	• rehabilitation and palliative care ◦ typical set up for a hospital ward – traffic and parking demand from visitors only • day rehabilitation ◦ estimated 50% of patients (5 patients at any one time) will be inpatients from R&PCF and other hospital facilities • no additional traffic and parking demand ◦ Out-patients ▪ day rehabilitation (gymnasium and hydrotherapy pool) • estimated 50% of patients (5 patients at any one time) will be outpatients ▪ outpatients will generate additional traffic and parking demand ◦ Medical consulting rooms (2) and a medical treatment room ▪ outpatients will generate additional traffic and parking demand
Planning control document	• **Wagga Wagga City Council** ◦ Wagga Wagga Development Control Plan 2010 (WWDCP) ▪ Table 1 in Section 2.3 • **Hospital** ◦ 1 space per 25 m^2 GFA ◦ It is quite clear, however, that the above rate is grossly inconsistent with the typical parking rates for hospitals in other planning documents, e.g. other Councils' DCPs or the RTA (2002) Guide to Traffic Generating Developments (now the RMS NSW publication). ◦ It is one of the highest parking rates in WWDCP as well, being on par with such land uses as retail, restaurants, clubs and function rooms. ◦ The author of this report is of a firm opinion that the WWDCP document contains a copy/paste/formatting error whereby the appropriate rate for hospitals was moved to the next line in Table 1. ◦ Indeed, if one inspects the next land use in Table 1, "mortuary/funeral parlour", its required parking rate is ▪ **1 space/ 10 beds Plus** ▪ **1 space/ 2 employees and 1 ambulance space** ◦ Obviously, the above rate basis (beds plus employees) and the requirement for an ambulance space cannot be used for mortuaries, however **this parking rate** basis is typically used for hospitals and **should be used for the subject proposed development**. • There is no specific requirement for hospital based **day rehabilitation facilities** and **medical consulting/treatment rooms** in WWDCP ◦ "Health and professional consulting rooms" from WWDCP have been checked for their suitability for the assessment of parking requirements for medical consulting/treatment rooms ▪ Note that the proposed medical consulting rooms are not in effect health and professional consulting rooms as per WWDCP, because the latter are defined in WWDCP as those operating from residential premises ◦ There are no land uses similar to day rehabilitation facilities listed in WWDCP

Item	Report
Review of car parking requirements at other LGAs	• A comparative analysis of car parking requirements for health care facilities in planning controls has been carried out, including ◦ 15 other similar Local Government Areas (LGAs) ◦ RTA (2002) Guide to Traffic Generating Developments ◦ Design guidelines for hospitals and day procedure centres (DGHDPC) ▪ A comprehensive document used by The Department of Human Services, Victoria • Car parking rates for hospitals were established using NSW survey data • **Table 1** contains a summary of parking requirements in Development Control Plans (DCPs) of other LGAs (ranked by the rate per bed).

Table 1. Car parking rates required by other LGAs.

Council	Hospital			Medical Centre/ Health Consulting Rooms
	Per Bed	Per staff		
Maitland	1 per 10 beds	1 per 2 staff		N/A
Byron Bay	1 per 10 beds	1 per 2 staff		N/A
Dubbo	1 per 10 beds	1 per 1 staff		1 per 25 m^2
Bathurst	1 per 4 beds	1 per 2 staff		1 per 50 m^2
Albury	1 per 4 beds	1 per 2 staff		3 per Room or 1 per 25 m^2 (the greater of)
Newcastle	1 per 3 beds	1 per 2 staff		1 per practitioner 1 per other Staff
Taree	1 per 3 beds	1 per 2 staff	1 per 15 beds for visiting Doctors	3 per room 1 per practitioner 1 per staff
Orange	1 per 3 beds	1 per 2 staff	1 per 1 Resident Dr 1 per 2 Visiting Dr	2 per practitioner
Griffith	1 per 2 beds			3 per 1 room
Wollongong	1 per 2 beds	1 per 2 staff	1 per 1 Doctor	4 per room 1 per 3 employees
Queanbeyan	2.5 per bed			1 per 60 m^2
Coffs Harbour	1 per 2 beds			1 per 40 m^2
Port Macquarie	Study			3 per practitioner 1 per staff
Tamworth	Study			3 per practitioner + 1 per staff or 1 space per 25 m^2 (the greater of)
Lismore	RMS Guidelines			4 per practitioner 1 per staff

Item	Report
Notes on typical car parking rates	◦ It is evident from **Table 1** that typical parking rates are based on the number of beds and the number of staff. ◦ Various medical facilities, including health consulting rooms, when they constitute parts of the hospital, are included in the overall hospital requirements based on the total number of beds and staff. ▪ Specific requirements for medical centres or medical/health consulting rooms are used for development applications of stand-alone facilities.

Item	Report
	▪ In the original TEF report we used the parking rates for the existing (planned for removal) and proposed medical consulting rooms for a more detailed assessment of a specific facility.
	▪ If the proposed R&PCF was assessed within the overall hospital requirements, then only the rates per bed and per staff would have been applied.
	◦ Average car parking rates for hospitals based on the information presented in **Table 1** are as follows.
	▪ 1 car space per 4.6 beds plus
	▪ 1 car space per 1.4 staff
	• The above rates result in greater parking numbers than those in WWDCP (if corrected to be based on the number of beds and staff)
	◦ **WWDCP rates** (if corrected) are
	▪ 1 space/ 10 beds Plus
	▪ 1 space/ 2 employees
RTA (2002) Guide to Traffic Generating Developments	• **Private hospitals**
	◦ The peak parking accumulation (PPA) at a private hospital may be estimated using the following formula
	▪ PPA = -19.56 + 0.85 B + 0.27 ASDS
	• The hospitals surveyed had between 30 - 99 beds (B) and between 10 - 102 average staff per weekday day shift (ASDS).
	•
DGHDPC requirements	• Requirements are based on the following formulae
	◦ Pm = 0.9 Sm + 0.7 Ssm + 0.2 Bp + 0.3 Bm + 0.4 Bd + 1.5 DSo
	◦ Pa = 0.9 Sa + 0.7 Ssa + 0.3 Bp + 0.4 Bm + 0.25 Bd + 1.5 DSo
	▪ where
	• Sm - number of staff during the morning peak (typically between 10.00 am and 11.00 am), including visiting doctors;
	• Sa - number of staff during the afternoon peak (as during the nursing shift changeover, both morning and afternoon nursing shifts counted), including visiting doctors and medical research staff;
	• Ssm - number of medical and nursing students present during the morning peak;
	• Ssa - number of medical and nursing students present during the afternoon peak;
	• Cpt - coefficient of public transport provision – 0.9 if a public transport node (eg. bus/rail interchange) is located within 250 m from the facility boundary, otherwise 1.0;
	• Bp - number of beds, all patients except maternity and children patients;
	• Bm - number of maternity and children beds;
	• Bd - number of beds or recliners for day patients;
	• Dso - number of effective full time doctors and specialists treating outpatients (including community and allied health, physiotherapy and imaging).
	◦ It is important to note that DGHDPC rates are designed to estimate the actual total parking demand.

Item	Report
Application of other LGAs and RMS car parking rates	◦ The above car parking rates were used to calculate the car parking requirements for CHCR before and after the proposed redevelopment, for comparison. ▪ The results are contained in Table 2 overleaf. • Calculations were based on the following parameters • **Number of beds** ◦ **99** existing ▪ Includes 15 maternity beds ◦ 24 additional in R&PCF ◦ **121** after redevelopment • **Number of staff** during the morning (busiest) shift ◦ **109** existing ▪ Comprises • 80 hospital staff (all categories, maximum number) • 4 surgeons plus 4 anaesthesiologists (typical) • 15 staff in medical consulting rooms (nominal, these rooms are currnently not occupied) • 2 Visiting Medical Officers (VMOs) ◦ Note that VMOs are only present between 8 and 9 am ◦ Minus 7 staff due R&PCF replacing the existing medical suites ▪ 8 additional staff in R&PCF ▪ Reduction of staff by 15 due to a removal of 14 medical suites (14 specialist plus at least 1 nurse) ◦ **102** after redevelopment
Results of comparative analysis	• Average car parking rates from other similar LGAs ◦ No change in car parking requirements due to the proposed redevelopment • WWDCP rates (if corrected) ◦ A reduction by 1.3 car parking spaces due to the proposed redevelopment • RMS car parking rates ◦ Additional 17 spaces required due to the proposed redevelopment • DGHDPC rates ◦ A reduction by 8.7 car parking spaces due to the proposed redevelopment • **Conclusion** ◦ The proposed development does not require any additional car parking based on ▪ typical rates from other similar Councils ▪ WWDCP rates (if corrected) ▪ DGHDPC rates ◦ The proposed development requires a provision of a maximum of 17 additional car parking spaces based on RMS rates

Table 2. Comparison of car parking requirements using different methods.

Requirements for existing hospital

		LGA average		
		rate		No. of bays
No. of staff	109	1 per	1.4	76.9
No. of beds	99	1 per	4.5	22.2
No. of parking bays				**99.2**

		WWDCP (corrected)		
		rate		No. of bays
No. of staff	109	1 per	2.0	54.5
No. of beds	99	1 per	10.0	9.9
No. of parking bays				**64.4**

		RMS Guide	
		rate	No. of bays
No. of staff	109	ASDS	
No. of beds	99	B	
No. of parking bays	-19.56 + 0.85 B + 0.27 ASDS		**94.0**

		DGHDPC	
		rate	No. of bays
No. of staff	90	Sm	
	105	Sa	
	19	DSo	
No. of beds	84	Bp	
	15	Bm	
No. of parking bays			**154.2**

Pa = 0.9 Sa + 0.7 Ssa + 0.3 Bp + 0.4 Bm + 0.25 Bd + 1.5 Dso

Requirements after proposed redevopment

		LGA average			Required addition
		rate		No. of bays	
No. of staff	102	1 per	1.4	72.0	
No. of beds	121	1 per	4.5	27.2	
No. of parking bays				**99.2**	**0.0**

		WWDCP (corrected)			
		rate		No. of bays	
No. of staff	102	1 per	2.0	51.0	
No. of beds	121	1 per	10.0	12.1	
No. of parking bays				**63.1**	**-1.3**

		RMS Guide		
		rate		No. of bays
No. of staff	102	ASDS		
No. of beds	121	B		
No. of parking bays	-19.56 + 0.85 B + 0.27 ASDS			**110.8**	**16.8**

		DGHDPC			
		rate		No. of bays	
No. of staff	98	Sm			
	113	Sa			
	4	DSo			
No. of beds	106	Bp			
	15	Bm			
No. of parking bays				**145.5**	**-8.7**

Pa = 0.9 Sa + 0.7 Ssa + 0.3 Bp + 0.4 Bm + 0.25 Bd + 1.5 Dso

Item	Report
Compliance of car parking provision	• Existing car parking provision at CHCR ◦ A total of **269** car parking spaces ▪ Excludes 18 spaces located on CHCR site but allocated to Regional Imaging (a separate entity, not part of CHCR) ▪ Substantially exceeds the required number of car parking spaces by all typical standards (refer to calculations based on various DCPs, RMS and DGHDPC requirements above) • More than satisfactory for the existing situation (**64 to 154** spaces **required**) • Proposed car parking provision at CHCR ◦ A total of 269 + 25 = **294** car parking spaces ▪ Excludes 18 spaces located on CHCR site but allocated to Regional Imaging (a separate entity, not part of CHCR) ▪ Substantially exceeds the required number of car parking spaces by all typical standards (refer to calculations based on various DCPs, RMS and DGHDPC requirements above) • More than satisfactory after the proposed redevelopment (**63 to 146** spaces **required**)
Actual car parking demand	• Determined by a manual count of parked cars ◦ Locations — • All car parking areas on CHCR site ◦ Refer to **Figure 3** • Streets around CHCR within walking distance (generally within 450 m) ◦ Refer to **Figure 4** ◦ Day / date — • Thursday 2 January 2014 ◦ Times — • 8 am, 11 am, 2 pm, 4 pm and 6 pm ◦ Results of the survey ▪ Refer to **Table 3**

Table 3. Results of car parking accumulation counts.

		Time					
Survey areas	No. of parking spaces	8:00	11:00	14:00	16:00	18:00	
CHCR site	287	83	102	108	78	38	No. of parked cars
		29%	36%	38%	27%	13%	Occupancy rate
On street (all areas)	618	125	183	198	193	143	No. of parked cars
		20%	30%	32%	31%	23%	Occupancy rate
On street (CHCR bounding streets, both sides)	112	27	45	54	56	32	No. of parked cars
		24%	40%	48%	50%	29%	Occupancy rate
On street (CHCR bounding streets, CHCR side)	44	13	10	21	21	8	No. of parked cars
		30%	23%	48%	48%	18%	Occupancy rate

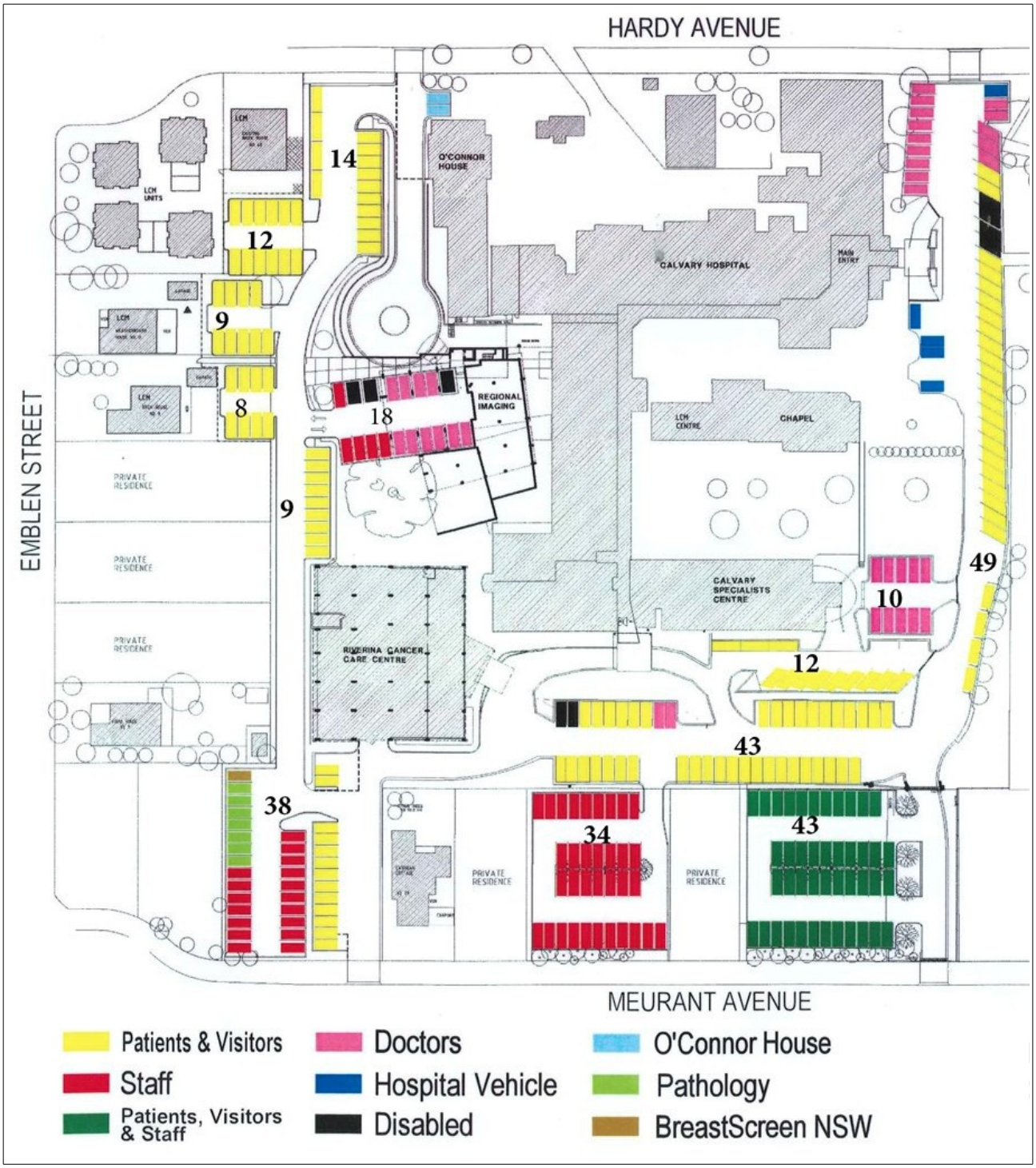

Figure 3. Off-street car parking areas.

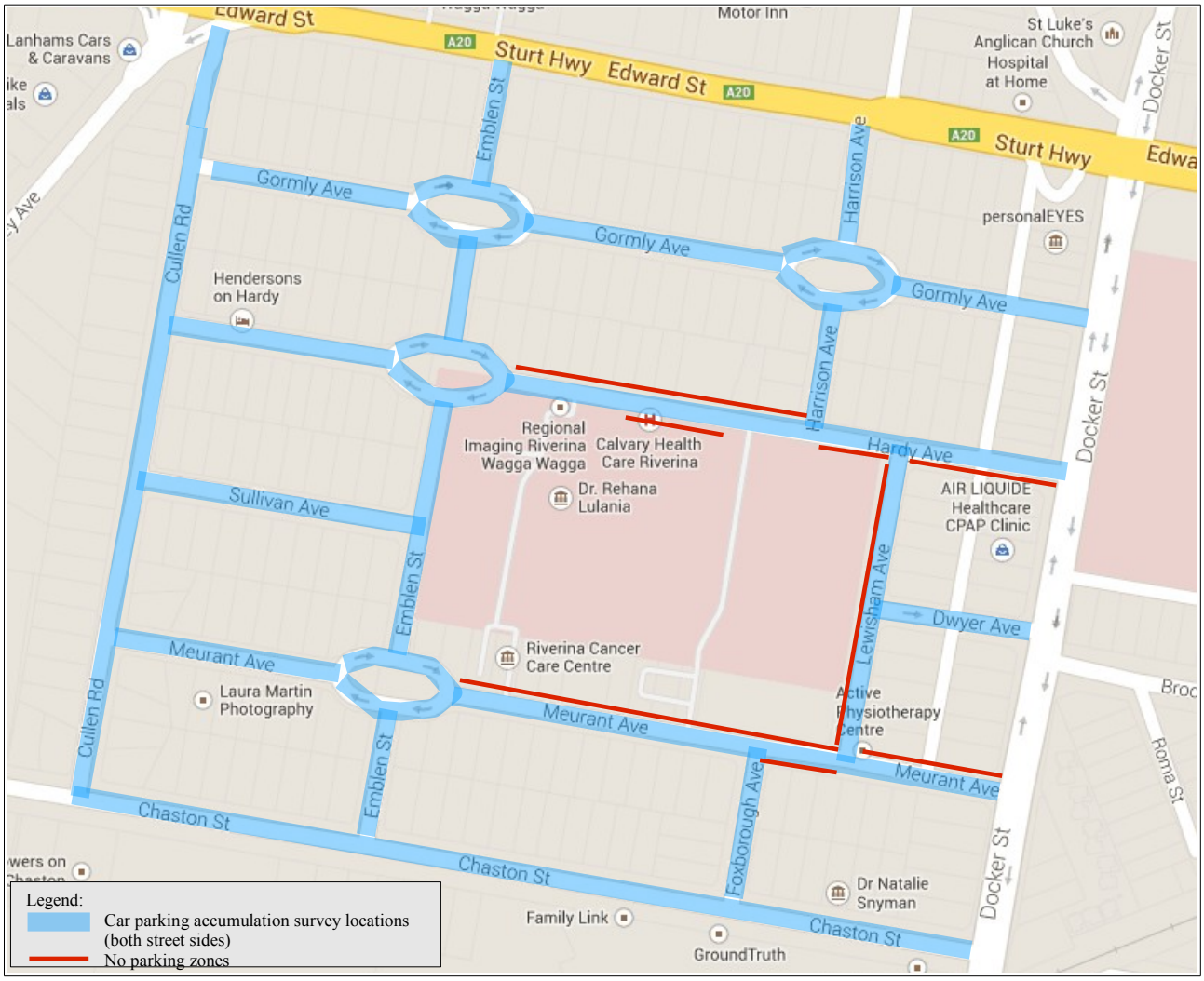

Figure 4. On-street car parking survey areas.

Item	Report
Actual car parking demand (continued)	• Results of the parking survey (continued)
	◦ On-site parking demand was substantially less than capacity (less than 40% during the peak time).
	◦ The observed on site parking demand was approximately the true full demand because there was no need for the drivers to park on street.
	▪ Some drivers probably still parked on street by choice.
	• It is assumed that these drivers would comprise 50% of those who parked on the site boundary streets.
	▪ It is noted that the survey was conducted on 2 January 2014, during the low demand period for hospital services.
	• The bed occupancy was 40% of that typical for busy periods.
	• Staff numbers were down to 65 during the morning peak period (61% of that typical for busy periods).
	▪ Comparison with the parking requirements calculated based on the reduced utilised bed and staff numbers on 2 January 2014 revealed the following
	• Refer to **Table 4.**
	• Parking requirements ranged between 32 and 87 vehicles, with the latter being the estimated unrestrained parking demand (as per DGHDPC).

Table 4. Car parking requirements for a day during the holiday season.

Requirements for existing hospital reduced demand on 2 January 2014

		LGA average		
		rate		No. of bays
No. of staff	65	1 per	1.4	45.9
No. of beds	40	1 per	4.5	9.0
No. of parking bays				**54.9**

		WWDCP (corrected)		
		rate		No. of bays
No. of staff	65	1 per	2.0	32.5
No. of beds	40	1 per	10.0	4.0
No. of parking bays				**36.5**

		RMS Guide	
		rate	No. of bays
No. of staff	65	ASDS	
No. of beds	40	B	
No. of parking bays	-19.56 + 0.85 B + 0.27 ASDS		**32.0**

		DGHDPC	
		rate	No. of bays
No. of staff	61	Sm	
	76	Sa	
	4	DSo	
No. of beds	30	Bp	
	10	Bm	
No. of parking bays			**87.4**

Pa = 0.9 Sa + 0.7 Ssa + 0.3 Bp + 0.4 Bm + 0.25 Bd + 1.5 Dso

Item	Report
Actual car parking demand (continued)	◦ The actual counted parking accumulation on site was 118 vehicles, higher than the estimated demand of 87 as per DGHDPC by 36%.
	◦ Using the same ratio of 36%, the actual parking demand during the busy periods can be estimated as
	▪ 146 x 1.36 = 199 cars
	• Where 146 is the parking provision requirement after the proposed redevelopment using DGHDPC rates.
	▪ The above estimated actual car parking demand after redevelopment can be fully accommodated in the existing car parking areas.
	• It is noted that some drivers prefer to park on street for convenience (e.g. closer to the building entry).
	◦ The number of car parking spaces on the hospital side of the boundary streets is in the order of 44.
	◦ It is logical to accept that kerbside parking along the boundaries of a site should be available for parking by that site's users.
	• It is also noted that some car parking areas on site are allocated for specific users and thus may not be fully utilised at times.
Conclusion	• Nevertheless, **the existing car parking provision exceeds the likely actual car parking demand and is thus satisfactory**.

Item	Report
Actual car parking demand (continued)	◦ It is also important to note that most residencies in the vicinity of CHCR have their own off-street car parking provision and therefore do not compete with CHCR for on-street parking.
	◦ Other land uses in the area comprise private medical practices, a few small businesses and a number of industrial/warehouse developments (the latter on the southern side of Chaston Street)
	▪ Most if not all of these developments have their own off-street car parks.
	• It was noted during the survey, however, that some staff and patrons of the above businesses prefer to park on street.
	◦ Anecdotal evidence suggests that high parking demand in the streets around CHCR as well as on the CHCR site is in part due to the Notre Dame University students.
Measures to reduce personal car travel	• **On street**
	◦ Introduction of parking time restrictions around the CHCR site is likely to reduce long term parking from CHCR staff and non-CHCR users.
	▪ A 2 hour limit would be sufficient for the hospital visitors.
	• **Off-street**
	◦ **Existing**
	▪ CHCR already have in place a number of measures aimed to reduce personal car travel and to encourage walking and cycling. These measures include
	• Subsidised bus tickets through the salary sacrifice
	• Each staff has access to a conveniently located locker suitable for bicycle gear
	• Each staff has access to a conveniently located shower
	• Drying room is provided
	• Umbrellas are provided at reception for employees to borrow on wet days.
	• Guaranteed free ride home for walkers in case of an emergency
	• Events like a “Ride to conquer cancer” to promote walking and cycling
	• Staggered and flexible work hours to reduce travel peaks
	• Business Travel Policy
	◦ outlines what modes of travel staff should use where appropriate
	◦ contains rules about minimum journey length and/or load for the use of fleet cars
	• Two (2) teleconference rooms are provided and their use is promoted
	◦ Access to webEX to use for face to face virtual meetings from workplace
	• Headsets and webcams supplied
	• Regular workshops are held for employees on smart travel choices, to for employees on smart travel choices
	• New staff induction includes travel information
	• Advisory service on demand for visitors about travel options

Item	Report
	• Wayfinding signage for visitors to/from public transport at bus stops
	• Services on site to reduce the need to travel during the day
	◦ post box
	◦ dry cleaning
Measures to reduce personal car travel (continued)	◦ **Recommended**
	◦ Provide public transport timetables and maps displayed / available for pick up
	◦ Produce a dedicated hospital Travel Guide (TG) booklet
	◦ Provide cycle route information
	▪ On site / reception / info board
	▪ On web site
	◦ Provide clear paths and guidance to cycle parking
	◦ Improve wayfinding signage showing distances/times to main destination points
	◦ Improve new staff induction package to include smart travel information
	▪ Include a tour of cycling facilities
	▪ Discuss travel options as part of interview process when recruiting
	◦ Introduce patient travel information cards for appointments
	◦ Provide wayfinding signage for visitors to/from public transport on site
	◦ Provide recognition for those that use active and sustainable travel at an event / in a newsletter / on the website
	◦ Start a TravelSmart suggestion box in the workplace where employees can offer ideas on an ongoing basis; offer prizes for submissions
	◦ Add public transport access info to email signatures and business cards