



Brisbane Waters Private Hospital Stage 2 Development Transport Impact Assessment

Client // Healthe Care

Office // NSW

Reference // 16S1217000 **Date //** 03/11/15

Brisbane Waters Private Hospital Stage 2 Development

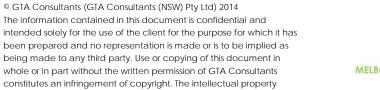
Transport Impact Assessment

Issue: A 03/11/15

Client: Healthe Care Reference: 16S1217000 GTA Consultants Office: NSW

Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
А	03/11/15	Final	Bernard Lo	Rhys Hazell	Brett Maynard	B. T. Mayned



contained in this document remains the property of GTA Consultants.





Table of Contents

1.	Introduction		
	1.1	Background	1
	1.2	Purpose of this Report	1
	1.3	References	1
2.	Exis	2	
	2.1	Site Overview	2
	2.2	Road Network	3
	2.3	Site Access and Traffic Generation	3
	2.4	Traffic Volumes	4
	2.5	Car Parking	5
	2.6	Public Transport	5
	2.7	Pedestrian and Cycle Infrastructure	6
3.	Dev	velopment Proposal	8
	3.1	Overview	8
	3.2	Car Parking	9
	3.3	Vehicle Access	9
	3.4	Bicycle and Pedestrian Facilities	9
	3.5	Loading Areas	9
4.	Car	Parking	10
	4.1	Car Parking Requirements	10
	4.2	Disabled Parking	10
	4.3	Motorbike Parking	10
	4.4	Car Parking Layout Review	10
5.	Traf	fic and Access	12
	5.1	Traffic Impact Assessment	12
	5.2	Service Vehicles	12
	5.3	Emergency Access	13
	5.4	Construction Traffic Management	13
6.	Cor	nclusion	14



Figures

•		
Figure 2.1:	Subject Site and Its Environs	2
Figure 2.2:	Private Hospital Site Extent	3
Figure 2.3:	Existing Site Access Locations	4
Figure 2.4:	Local Areas Bus Network	6
Figure 3.1:	Proposed Stage 2 Development	8
Tables		
Table 2.1:	Existing On-Site Car Parking Demand	5
Table 2.2:	Local Area Bus Services	6
Table 5.1:	Hospital Operation Comparison	12
Table 5.2:	Traffic Generation Comparison	12

Introduction

1.1 Background

Healthe Care engaged GTA Consultants to complete a traffic and transport impact assessment for the Stage 2 development of Brisbane Waters Private Hospital ('Hospital') located at 21 Vidler Avenue, Woy Woy.

The Hospital is cognisant of the region's growing health related demands and in response, a Development Application (DA) is to be submitted to Gosford City Council for:

- construction of a new building at the northern side of the site to consolidate existing administrative offices and consulting suites with ancillary facilities such as gym and imaging facilities
- o provision of 18 additional general hospital beds and 8 mental health beds
- o reconfiguration of an on-campus car park for greater efficiency
- provision of a new set-down/ pick-up area
- provision of a new pedestrian area fronting Vidler Avenue.

1.2 Purpose of this Report

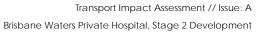
This report sets out an assessment of the anticipated transport conditions in the vicinity of the Hospital and includes consideration of the following:

- i pedestrian and bicycle requirements
- ii the transport implications of the proposed expansion
- iii existing transport and parking conditions surrounding the site
- iv suitability of the proposed parking in terms of supply (quantum) and layout
- v service vehicle requirements
- vi the traffic generating characteristics of the proposed expansion
- vii suitability of the access arrangements for the site
- viii the transport impact of the development proposal on the surrounding road network.

1.3 References

In preparing this report, reference has been made to the following:

- o an inspection of the site and its surrounds
- City of Gosford Development Control Plan (DCP)
- Australian Standard/ New Zealand Standard, Parking Facilities, Part 1: Off-Street Car Parking AS/NZS 2890.1:2004
- Australian Standard, Parking Facilities, Part 2: Off-Street Commercial Vehicle Facilities AS 2890.2:2002
- Australian Standard / New Zealand Standard, Parking Facilities, Part 6: Off-Street Parking for People with Disabilities AS/NZS 2890.6:2009
- Guide to Traffic Generating Developments, Roads and Maritime Services (RMS), 2002
- o Building Code of Australia, 2014





- plans for the proposed development prepared by Health Science Planning Consultants,
 Drawing Numbers DA0001, DA10-11, DA20-22, dated 02 November 2015
- other documents and data as referenced in this report.

2. Existing Conditions

2.1 Site Overview

The Brisbane Waters Private Hospital site (Lot 1 DP 787109) is located at 21 Vidler Avenue, Woy Woy. The site occupies a large 1.02 hectare allotment and has frontages to Vidler Avenue and Dwyer Avenue.

The site is located approximately 1km south of Woy Woy Town Centre and is mostly surrounded by a mix of residential dwellings. Brisbane Waters Secondary College and light industrial uses are located to the north while Woy Woy Hospital adjoins the site to the south.

The location of the site and its surrounding environs is shown in Figure 2.1.

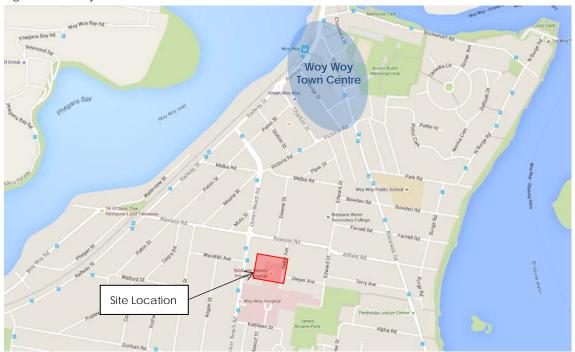


Figure 2.1: Subject Site and Its Environs

Basemap source: Google maps

The Hospital, which currently accommodates 55 general hospital beds and 34 mental health beds, provides a spectrum of Geriatric services backed by the support of an Allied Health Team comprising Dieticians, Occupational Therapists and Physiotherapists. It is also the only Private Mental Health facility in the Central Coast region.

The Hospital currently employs a total of 190 staff, with approximately 55 on duty during the busiest day shift. There are 4 on-site car parks accommodating a total of 120 cars, accessed via 7 driveways located on Vidler Avenue and Dwyer Avenue.

The layout of the Hospital campus is illustrated in Figure 2.2.





Figure 2.2: Private Hospital Site Extent

Basemap source: Google Maps

2.2 Road Network

Ocean Beach Road is the key north-south sub-arterial road connecting Woy Woy Town Centre to the north (via Railway Street) with Umina to the south. With a signposted speed limit of 60km/h, Ocean Beach Road has a carriageway width of approximately 12m and mostly provides one traffic lane and one parking lane in each direction.

Rawson Road is an east-west collector road connecting Blackwall Road to the east with Ocean Beach Road and Railway Street to the west. There is a signposted speed limit of 60 km/h and a carriageway width of approximately 12m, with one traffic lane and one parking lane in each direction.

Vidler Avenue and Dwyer Avenue each provide access to the Hospital and allow for two-way traffic and kerbside parking within a 50km/h speed environment.

There are several traffic and parking controls implemented on the local road system, with some of the key measures detailed as follows:



- o roundabout controlled intersection at Ocean Beach Road and Rawson Road
- o marked foot crossing on Ocean Beach Road south of Rawson Road
- School Zone restrictions on Rawson Road and the northern end of Vidler Avenue
- o pedestrian refuge on Rawson Road immediately west of Vidler Avenue
- o 2P parking restrictions on Vidler Avenue along the frontage of the hospital
- bus zones on both sides of Ocean Beach Road near Waratah Road.

2.3 Site Access and Traffic Generation

Access to the Hospital at-grade car parks is provided via several vehicle crossovers fronting Vidler Avenue and Dwyer Avenue. The main visitor car park is located in the south-east corner of Vidler Avenue and Dwyer Avenue.

Emergency vehicles and service vehicles are provided access via a single driveway crossover at the southern end of Vidler Avenue in the south-east corner of the hospital buildings.

The existing car park and emergency/ service vehicle site access locations are shown in Figure 2.3.



THE DESCRIPTION OF THE PROPERTY OF THE PROPERT

Figure 2.3: Existing Site Access Locations

Basemap source: HSPC

2.4 Traffic Volumes

GTA completed sample traffic counts of the site access driveways during the typical weekday mid-morning peak period to gain a good understanding of the existing traffic volumes associated with the Hospital. Based on these results, the site currently generates approximately 70 vehicle movements (two-way) during the 10:00am to 11:00am weekday peak hour.

Spot check traffic counts were also completed at the time of the site visit, to gain an understanding of existing traffic flows on the surrounding road network. The results are as follows:



Ocean Beach Road
 Rawson Road
 Vidler Avenue
 Ocean Beach Road
 450 vehicles per hour
 200 vehicles per hour.

When referencing the *Guide to Traffic Generating Developments* (RMS, 2002), these mid-block traffic volumes are typical of urban road functions and are generally within their expected environmental capacities. This is consistent with site observations given that general traffic flow and intersection operations were generally satisfactory.

2.5 Car Parking

2.5.1 Supply

There is a mix of kerbside parking and off-street car parks available for use by both Hospital staff and patients/ visitors. There are a total of 120 spaces available in the 4 on-site at-grade car parks providing parking for staff, visitors and disabled users.

A single ambulance bay is located in the southern car park with access directly via the southern end of Vidler Avenue.

There is also approximately 70 on-street parking spaces along Vidler Avenue and Dwyer Avenue in close vicinity to the Hospital entrances. Of these approximately 10 spaces are restricted to 2P parking.

2.5.2 Demand

Sample car parking demand surveys were also completed at the time of the site visit during the mid-morning peak period. The results are shown in Table 2.1.

Table 2.1: Existing On-Site Car Parking Demand

Location	Demand	Supply	% Occupied
South-east	35	42	83%
North-east	30	48	63%
North	11	26	42%
South	3	4	75%
	79	120	66%

As shown in Table 2.1, typical weekday mid-morning parking demand is up to 80 vehicles, or 66% of the total on-site car parking supply.

While it is difficult to confirm the proportion of on-street demand that is associated with the Hospital, the sample surveys confirmed that total demand for on-street parking is 35 spaces. With an approximate supply of 70 spaces, on-street parking demand during the mid-morning peak period equates to approximately 50%.

Overall, demand for parking both on-site and within the surrounding streets is moderate with a combined demand of approximately 60% during the peak mid-morning weekday period.





2.6 Public Transport

Busways currently operates two bus routes along Ocean Beach Road and in close proximity to the Hospital. These services combine to provide a relatively high frequency, with convenient connections between Woy Woy Town Centre and the surrounding local areas and regional centres.

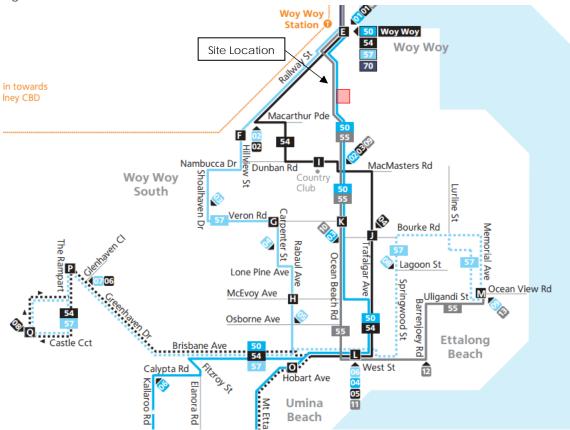
The local bus services are summarised in Table 2.2.

Table 2.2: Local Area Bus Services

Route	Route Description	Location of Stop	Distance to Nearest Stop	Frequency (Weekdays)	First/Last Service
50	Woy Woy Station to Umina Beach	Ocean Beach	400m (5 minute walk)	30 min.	3.42am/ 12.05am
55	Gosford Station to Ettalong Beach	Road near Waratah Avenue	400m (5 minute walk)	30 min.	5.56am/ 6.35pm

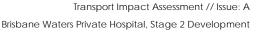
Details of the bus network map is reproduced in Figure 2.4.

Figure 2.4: Local Areas Bus Network



Source: Busways

Woy Woy Railway Station is located approximately 1.3km to the north (15-20 minute walk) and is a major station on the Central Coast and Newcastle Line. It provides convenient and high frequency connections between Sydney and Newcastle.





2.7 Pedestrian and Cycle Infrastructure

Well established pedestrian footpaths are provided on both sides of Vidler Avenue and on the southern side of Dwyer Avenue in the immediate vicinity of the Hospital. Established footpaths are also located on both sides of Rawson Road and Ocean Beach Road.

As such, pedestrian connectivity between the Hospital and the key surrounding generators, including the nearest bus stops (on Ocean Beach Road close to Waratah Avenue) is satisfactory.

There is limited dedicated cycle infrastructure in the vicinity of the site at present and it was observed that roadways are generally shared between cyclists and motorists.



3. Development Proposal

3.1 Overview

To accommodate the growing demand for the private hospital services on the Central Coast, it is proposed to develop Stage 2 of the planned expansion of Brisbane Waters Private Hospital. The Stage 2 works include the following:

- construction of a new building at the northern side of the site to consolidate existing administrative offices and consulting suites with ancillary facilities such as gym and imaging facilities
- o provision of 18 additional general hospital beds and 8 additional mental health beds
- reconfiguration of an on-campus car park for greater efficiency
- provision of a new set-down/ pick-up area
- provision of a new pedestrian area fronting Vidler Avenue.

The schematic site layout plan is shown in Figure 3.1.

Figure 3.1: Proposed Stage 2 Development



Source: HSPC

3.2 Car Parking

The proposed new building location will necessitate modifications to the northern on-site car park layout and configuration. Given this, the car park is proposed to offer a new set-down/pick-up area with capacity for 2 vehicles and for use by visitors and patients as part of the Stage 2 works.

The overall supply of on-site car parking will be retained at 120 spaces.

3.3 Vehicle Access

The existing car parks and site access driveways are to be largely retained, with the only exception being the reconfigured set-down/pick-up area fronting Vidler Avenue.

The proposed set-down/ pick-up area would be accessed on the western side of Vidler Avenue via a 3.8m wide entry-only driveway, with the internal loop circulating north to intersect with the existing northern site access. Vehicles will exit the site via the existing 5.5m wide northern crossover along Vidler Avenue.

It is understood that all access and parking arrangements associated with ambulance operations/ movements will remain unchanged.

3.4 Bicycle and Pedestrian Facilities

Gosford City Council's Development Control Plan (DCP) 2013 does not specify requirements for bicycle parking. It is recommended that bicycle parking/ storage facilities be provided as part of the Stage 2 development to encourage and facilitate access to the primary hospital services for all user groups. Ideally bicycle parking/ storage facilities should be provided near hospital access locations to enable convenient access by users.

The primary pedestrian access and linkages from the local road network will be via a new pedestrian zone along the Vidler Avenue frontage. Pedestrians will continue to make use of the surrounding streets to access the Hospital, including Vidler Avenue as the primary route, with Dwyer Avenue and Rawson Road also important links.

A high level of pedestrian connectivity is currently provided internal to the hospital buildings to accommodate staff, patients and visitors throughout. The Stage 2 development will refocus the main pedestrian access with a higher level of amenity over existing facilities.

3.5 Loading Areas

While there will be a new service area within the reconfigured car park, access arrangements for majority of the loading/service activities will largely remain at the southern carpark.

It is understood that all service vehicles requiring access to the Hospital are rigid trucks and vans no larger than 8.8m in length and are generally limited to after-hours access only.



4. Car Parking

4.1 Car Parking Requirements

The car parking requirements for different development types are set out in Gosford City Council DCP 2013, however no specific guidance for private hospitals is provided. While DCP 2013 provides a recommendation for medical centres and health consulting rooms, it is broadly recognised that these facilities operate in a different manner to that of a typical private hospital.

The RMS Guide specifies car parking requirements for private hospitals based on an extensive parking demand survey (although the age of this data is noted). The Guide indicates that the Peak Parking Accumulation (PPA) can be estimated with reference to the total number of beds (B) and the average staff per day shift (ASDS) by the following calculation:

PPA= -19.56 + 0.85B + 0.27ASDS

Application of the RMS criteria to the Stage 2 development indicates a peak total Hospital parking demand of 96 spaces. Comparatively, the criteria reflect a current peak demand (based on existing bed and staffing levels) of 71 spaces and therefore represents an increase of 25 spaces over existing. The 71 spaces for existing site operations is relatively consistent with the observed existing peak occupancy of 79 spaces at the time of the site inspection.

On this basis, the projected RMS Guide parking demand of 96 spaces is considered representative of the Hospital's operation following the Stage 2 development, with the 120 on-site car parking spaces able to adequately accommodate any such additional demand.

4.2 Disabled Parking

The disabled car parking requirements for different development types are set out in the Building Code of Australia, 2014. There is currently one on-street disabled parking space along Vidler Avenue near the main entrance with one additional disabled space to be provided as part of the Stage 2 development.

This results in a total provision of two disabled spaces available for use by the Hospital.

4.3 Motorbike Parking

DCP 2013 does not provide specific guidance on motorcycle parking for private hospitals. It is however recommended that up to 5 motorcycle spaces be provided where possible and within the existing hospital car parking areas to encourage motorcycle travel to the hospital, especially by staff.

4.4 Car Parking Layout Review

The design plans have been reviewed against the requirements of the Australian Standard for Off Street Car Parking (AS2890.1:2004 and AS2890.6:2009). This assessment included the following:

bay and aisle widths

- adjacent structures
- turnaround facilities
- o circulation roads and any ramps/ grades
- set-down/ pick-up area
- parking for persons with disabilities.

The reconfigured car parks have been designed in accordance with the requirements of AS 2890.1:2004 and AS 2890.6:2009 with respect to car space dimensions and adjacent aisle widths. The set-down/ pick-up area should be designed to accommodate two parked vehicles while maintaining a through adjacent lane to maintain appropriate operations. The driveway crossovers are located away from adjacent intersections with appropriate sight lines in each direction for pedestrian and vehicle safety.



5. Traffic and Access

5.1 Traffic Impact Assessment

The Guide to Traffic Generating Developments (RMS, 2002) documents extensive traffic generation rates for a variety of land uses.

For private hospitals, the Guide recommends the following trip generation rates based on the number of beds and the average number of staff per weekday shift:

- Peak Vehicle Trips (PVT) = -14.69 + 0.69B + 0.31ASDS
- Morning Vehicle Trips (MVT) = -10.21 + 0.47B + 0.06ASDS
- Evening Vehicle Trips (EVT) = -2.84 + 0.25B + 0.40ASDS.

where 'B' represents the number of beds proposed and 'ASDS' is the average staff per day shift.

It is understood that the Hospital expansion would result in changes to bed numbers and daily staff levels as detailed in Table 5.1.

Table 5.1: Hospital Operation Comparison

	Bed No. (B)	Staff (ASDS)
Existing	89	55
Post-Development	115	67

Application of the RMS criteria on the above details indicate the following traffic generation as a result of the Stage 2 development.

Table 5.2: Traffic Generation Comparison

	Peak Trips (PVT)	Morning Trips (MVT)	Evening Trips (EVT)
Existing	Existing 64 veh. trips/hr		42 veh. trips/hr
Future	85 veh. trips/hr	48 veh. trips/hr	53 veh. trips/hr
Increase	21 veh. trips/hr	13 veh. trips/hr	9 veh. trips/hr

The RMS traffic generation rates indicate the proposed expansion is likely to generate 21 additional vehicle trips per hour during the Hospital's operational peak period; that is 10:00am to 12:00pm and 2:00pm to 4:00pm.

Importantly, the post-development operation would result in minor increases to vehicle trips during the weekday AM and PM peak traffic hours. This equates to 13 vehicle trips during the AM peak hour and 9 vehicle trips during the PM peak hour.

On the basis of the above and taking into consideration the existing performance of the surrounding road network, the additional traffic generated by the Stage 2 development is not expected to impact on the function and operation of the surrounding roads and intersections, or parking areas in the immediate vicinity.



5.2 Service Vehicles

It is understood that existing servicing arrangements and vehicles are adequately accommodated and will have sufficient capacity to accommodate the minor additional demand resulting from the Stage 2 development.

5.3 Emergency Access

As discussed, access and parking for ambulances is provided via Vidler Avenue in the south-west corner of the site and along the southern boundary. This is not proposed to change as a result of the Stage 2 development.

5.4 Construction Traffic Management

The proposed construction of the Stage 2 development generally involves the demolition of onsite structures and parking in the northern section of the site and construction of a new building to house new Hospital beds and associated facilities.

The overall principles of traffic management during construction activity include:

- o provide an appropriate and convenient environment for pedestrians
- minimise the impact on pedestrian movements
- maintain appropriate capacity for pedestrians on footpaths adjacent to the site along
 Vidler Avenue
- maintain appropriate public transport access
- minimise the loss of on-street parking
- maintain access to/ from adjacent properties
- o restrict construction vehicle movements to designated routes to/ from the site
- manage and control construction vehicle activity in the vicinity of the site
- o carry out construction activity in accordance with approved hours of works.

5.4.1 On-Street Works Zone

It is assumed that construction vehicles could generally be accommodated on-site. As such, works zones would not likely be required. If necessary, approval for works zones would be sought through Council.

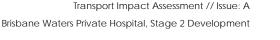
5.4.2 Hours of Operation

It is recommended that construction hours of operation are chosen in consultation with Council and in accordance with the NSW Environment Protection Authority (EPA). As such, the following construction hours are recommended, subject to further correspondence with Council:

Monday to Friday 7.00am to 6.00pmSaturday 7:00am to 1:00pm

Sunday no work.

Any work outside the approved construction hours would be subject to specific prior approval from Council.





6. Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

- i Brisbane Waters Private Hospital provides medical services to the surrounding local and regional areas and recognises the growth in the region's health-related demands.
- ii The site is accessible by selected bus services with links to Woy Woy Railway Station, however the majority of staff and visitors are likely to travel by car.
- iii The provision of bicycle and pedestrian facilities is somewhat limited as part of the existing Hospital.
- iv The surrounding road network and intersections currently operate satisfactorily with minimal queuing and delay during the mid-morning hospital peak period.
- v Existing demand for parking is moderate, with approximately 60% of all on-street and on-site car parking spaces occupied during the mid-morning peak period.
- vi The Stage 2 development would likely result in an increased demand of 25 spaces to bring about a total Hospital parking demand of 96 spaces. Parking demand estimates for the existing Hospital compare relatively well against site observations.
- vii The existing parking supply of on-site 120 spaces is not proposed to change and will be able to meet the future Hospital parking demands.
- viii The design plans include a new set-down/ pick-up area along the Vidler Avenue frontage with capacity for two vehicles to park and still allow vehicles to pass.
- ix Emergency vehicle access is via the southern end of Vidler Avenue and is not proposed to change.
- x Service vehicle access would be maintained in the same locations, albeit with some minor additional capacity at the western end of the reconfigured northern car park.
- xi Internal and external access for pedestrians would be expanded through a wide pedestrianised area adjacent to the new building fronting Vidler Avenue and in the vicinity of the set-down/ pick-up area.
- xii Site access, internal circulation and overall design of the new car park is generally compliant with the relevant Australian Standards.
- xiii It is recommended that parking and storage for bicycles and motorcycles is provided on-site to encourage uptake of more sustainable transport modes, especially for staff.
- xiv The Stage 2 development is expected to result in a marginal increase in traffic generation, with between 9 and 21 additional vehicle trips in any peak hour.
- xv There is adequate capacity in the surrounding road network to cater for the traffic generated by the Stage 2 development.
- xvi Appropriate traffic and pedestrian control measures would be implemented during construction for safe movement of all road users.



 Melbourne
 Brisbane
 Adelaide
 Townsville

 A Level 25, 55 Collins Street
 A Level 4, 283 Elizabeth Street
 A Suite 4, Level 1, 136 The Parade
 A Level 1, 25 Sturt Street

 PO Box 24055
 BRISBANE QLD 4000
 PO Box 3421
 PO Box 1064

 MELBOURNE VIC 3000
 GPO Box 115
 NORWOOD SA 5067
 TOWNSVILLE QLD 4810

 P + 613 9851 9600
 BRISBANE QLD 4001
 P + 618 8334 3600
 P + 617 4722 2765

 E melbourne@gta.com.au
 P + 617 3113 5000
 E adelaide@gta.com.au
 E townsville@gta.com.au

 Sydney
 Canberra
 Gold Coast
 Perth

 A Level 6, 15 Help Street
 A Tower A, Level 5,
 A Level 9, Corporate Centre 2
 A Level 27, 44 St Georges Terrace

 CHATSWOOD NSW 2067
 7 London Circuit
 Box 37, 1 Corporate Court
 PERTH WA 6000

 PO Box 5254
 Canberra ACT 2600
 BUNDALL OLD 4217
 P +618 6361 4634

 WEST CHATSWOOD NSW 1515
 P +612 6243 4826
 P +617 5510 4800
 E perth@gta.com.au

 E sydney@gta.com.au
 F e0ldcoast@gta.com.au
 E coldcoast@gta.com.au