

Reference: #12S9018500

29 March 2016

Grocon Group  
Level 4, Legion House  
161 Castlereagh Street  
SYDNEY NSW 2000

**Attention: Justin Clark (Senior Design Manager)**

Dear Justin

**RE: REDEVELOPMENT OF THE IMAX THEATRE AND SURROUNDING PUBLIC DOMAIN UPGRADES DARLING HARBOUR (SSD 7388)**

This letter is provided in response to matters raised by Transport for NSW (TfNSW) in their letter dated 8 March following review of the Transport Impact Assessment prepared by GTA Consultants as part of the above development application.

GTA Consultants' responses to each item are set out below.

**Proposed Car Stacker Operation**

*Based on Section 8.1 of the Transport Impact Assessment prepared to support the above development, traffic generation for the hotel and serviced apartments is 67-77 veh/h during peak periods. With the inclusion of traffic generation for the proposed function centre, the traffic generation to the car park is expected to be approximately 90-100 veh/h during peak periods.*

*However, the queue length calculations have been undertaken for a vehicle arrival rate of 46 veh/h with a service rate of 83.5 veh/h. The following comments are provided in relation to the proposed car park operation:*

- *The access to the car stacker will be shared with service vehicles. TfNSW requests that the applicant confirm the service rate of 83.5 veh/h for the car stacker can be achieved with disruptions caused by service vehicle movements at the entrance to the car stacker. This needs to be provided with the evidence from the manufacturer of the proposed car stacker;  
The applicant provide 95th percentile queue length to service 100 vehicles in an hour in the car stacker and confirm that the vehicle queuing from the car stacker would not extend to Harbour Street and block traffic movement along Harbour Street; and*
- *The applicant provide a car stacker management plan to manage car parking in the event of malfunction of the car stacker.*

As outlined in Section 8.4 of the Transport Impact Assessment (TIA), the queuing analysis was undertaken using a vehicle arrival rate of 46 veh/h which assumes a 90% peak hour arrival rate of the 35% of hotel guests that arrive by private vehicle (21 vehicles), the 9 vehicles associated with the serviced apartments, and the 19 vehicles associated with the function centre. TfNSW

**melbourne**  
sydney  
brisbane  
canberra  
adelaide  
gold coast  
townsville  
perth

Level 25, 55 Collins Street  
MELBOURNE VIC 3000  
PO Box 24055  
MELBOURNE VIC 3000  
t// +613 9851 9600

noted that the traffic generation for the hotel, serviced apartment and function centre was 90-100veh/h during peak periods which is correct, however this includes taxis and other vehicles which pick up and/or drop off passengers and will not utilise car stacker. As such, the peak arrival rate at the car stacker and contributing to queuing would be 46veh/h.

The proposed car stacker equipment supplier, Hercules, has provided an assessment of the car stacker capacity in order to verify the anticipated operational characteristics. It is noted that valet drivers would only be interfacing with the 2 car lifts that provide access to the stacker for a proportion of the average processing time for each vehicle (28 seconds of overall 86 seconds per car lift for parking vehicles and 16 seconds of 104 seconds for retrieving). This would still leave adequate time between vehicles for any loading dock activity, without substantially impacting car stacker operation. These interface times (and therefore overall vehicle processing capacity) are considered conservative as the car stacker will be operated by trained valet drivers, rather than resident or tenants (upon which the typical times are based).

In the event that the car stacker breaks down and/or becomes inaccessible, an emergency traffic management plan would need to be put into effect. Details of the plan and its execution would be developed in conjunction with the hotel operator, prior to occupation.

### **Public Transport**

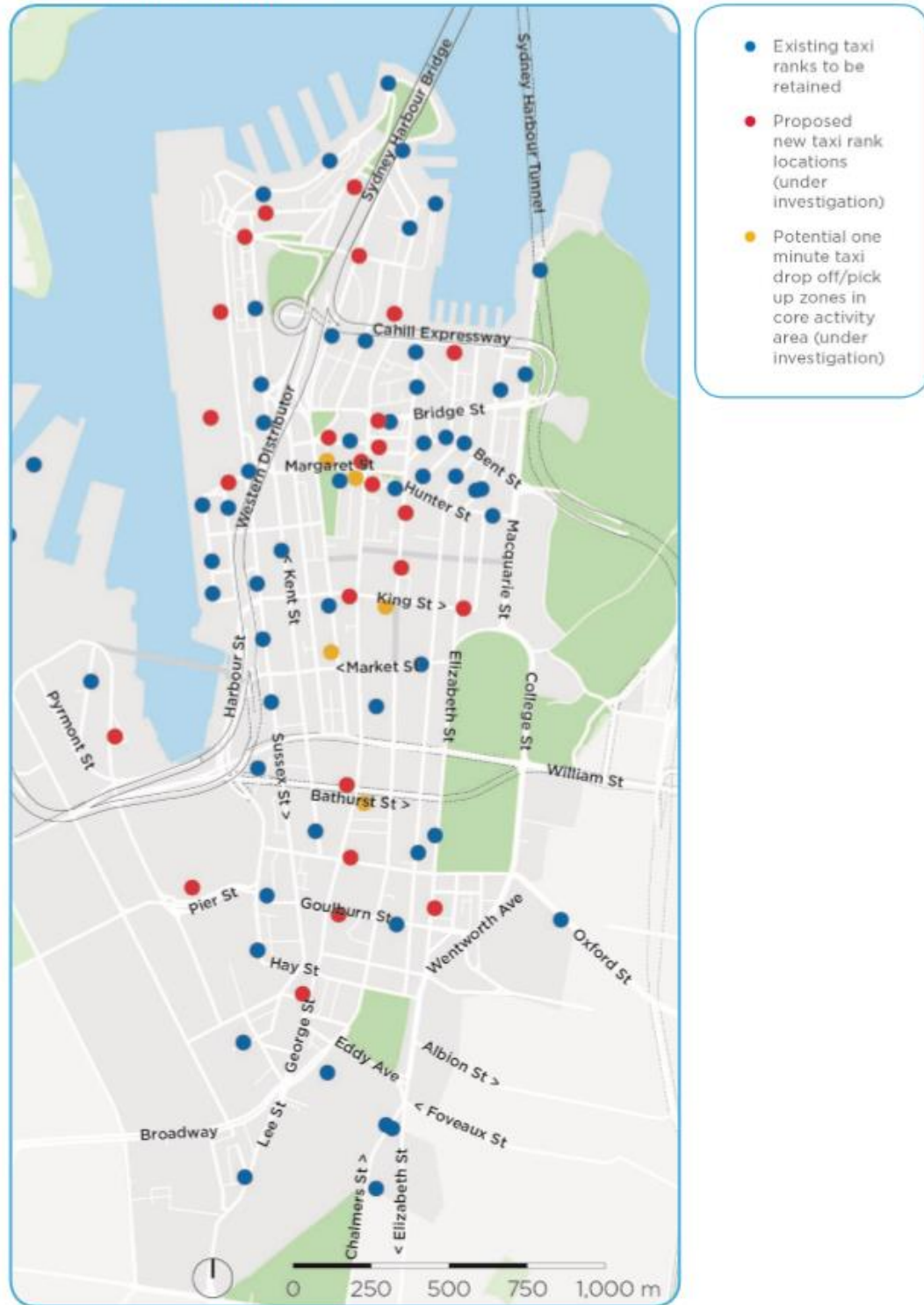
*TfNSW requests that information in relation to taxi ranks, in particular the taxi rank in Wheat Road be included in the Section 2.4 of the Transport Impact Assessment.*

There is currently a taxi zone in Wheat Road to the north of the bus zone, which can accommodate two taxis. The current layout results in manoeuvring issues between a bus and taxi when two taxis are waiting at the taxi zone.

It is noted that the Sydney City Centre Access Strategy does not include the Wheat Road taxi rank as a proposed or retained taxi rank as shown in Figure 1.

Figure 1: Sydney City Centre Access Strategy – Proposed and Retained Taxi Ranks

Proposed and retained taxi ranks



Source: Sydney City Centre Access Strategy, December 2013

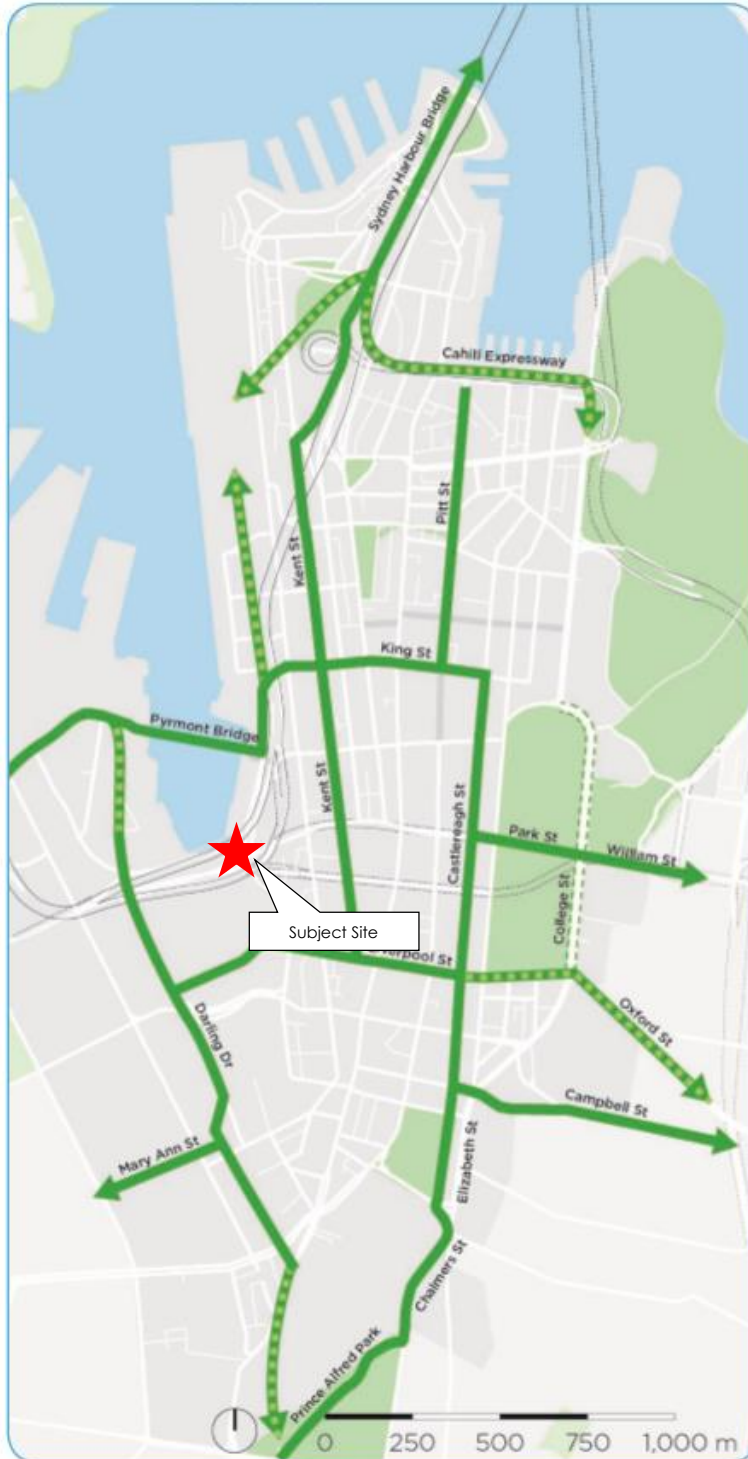
### **Strategic Cycleway Network**

*TfNSW requests that reference be made to the strategic cycleway network identified in the Sydney City Centre Access Strategy in the Section 2.4 of the Transport Impact Assessment.*

The Sydney City Centre Access Strategy provides a strategic cycleway network. As shown in Figure 2, the strategic cycleway network does directly interface with the proposed development site, but would serve to more broadly encourage cycling to/from the Darling Harbour precinct.

Figure 2: Sydney City Centre Access Strategy – Strategic Cycleway Network

Completed strategic cycleway network



### **Proposed Porte Cochere and Car Stacker Access Arrangements**

The proposed porte cochere and car stacker access arrangements have potential safety issues and may result in crashes in the road network adjacent to the proposed development due to the following reasons:

- The Transport Impact Assessment states that vehicles entering from Harbour Street will have priority over other movements, however it is not clear how this will be achieved, or how vehicles will be prevented from turning left to access the car stacker directly from Harbour Street;
- There are potential conflicts between the vehicles entering Wheat Road, bus services and the vehicles accessing the car stacker via loop road at the porte cochere;
- Confusing lane arrangements particularly in the area where there is three lanes between the two entry points;
- Potential conflicts between vehicle accessing the loading bays and the cars waiting to be serviced by the car stacker; and
- No designated turn-around area in front of the car stacker.

TfNSW requests that the applicant undertake a Stage 2 (Concept Plan) Road Safety Audit for the proposed access arrangements for the porte cochere and the car stacker, in accordance with Austroads Guide to Road Safety Part 6: Road Safety Audit by an independent TfNSW accredited road safety auditor. Based on the results of the road safety audit, the applicant shall review the design drawings and implement safety measures as required.

Vehicles can enter the site from Harbour Street into either the loading and car stacker area, or into the porte cochere. At both locations the vehicles entering have priority over other vehicles which are required to give way (hold lines provided). The only vehicles that will be travelling south within the site will be those driven by trained valet drivers from the porte cochere to the car stacker area. The valet drivers will be inducted as to how to navigate the site including to give way to vehicles entering from Harbour Street. In conjunction with appropriate delineation, regular driver confusion is unlikely.

Vehicles are permitted to turn left from Harbour Street to access the car stacker directly, noting that it is assumed that all hotel function space vehicles use the porte cochere and valet service, and it is only the serviced apartment vehicles and service vehicles that directly access the car stacker area.

The lane configurations and safety concerns regarding conflicts between movements will be addressed at the detailed design stage which will include signage to ensure all vehicles entering the site understand the arrangements. A detailed management plan for the porte cochere and car stacker/ loading area will be prepared as part of the detailed design.

Loading and unloading will be undertaken outside of peak hours when there is limited demand for the car stacker. This will be included as part of the above management plan.

A Stage 2 (Concept Plan) Road Safety Audit is being undertaken as part of the RMS WAD process currently being initiated. This audit would inform the final detailed design and construction traffic management planning.

### **Bicycle Parking and End of Trip Facilities**

TfNSW requests the following in relation to bicycle parking and end of trip facilities:

- Bicycle parking and end of trip facilities for pedestrian and bicycle riders in accordance with City of Sydney Council development control plans, standard and guideline documents;
- Bicycle facilities be located in secure, convenient, accessible areas close to the main entries incorporating adequate lighting and passive surveillance and in accordance with Austroads guidelines;
- Consideration be given for the connectivity, safety and accessibility for pedestrians and bicycle riders to existing pedestrian and bicycle networks/road networks and public transport; and
- Wayfinding strategies and travel access guides be developed to assist with increasing the mode share of walking and cycling.

The end of trip facilities are provided within the ground floor at the western end of the building, with access via the Darling Harbour waterfront. It is proposed to provide 239 secure bicycle spaces which exceeds the City of Sydney DCP requirement of 110 spaces. It is also proposed to provide 7 showers and 70 lockers to be utilised by staff. The end of trip facilities would be designed in accordance with Austroads guidelines and AS 2890.3:2015.

The travel access guide and wayfinding strategy are important elements and will be developed as part of detailed design, in consultation with TfNSW as appropriate.

### **Pedestrian Capacity Analysis**

Section 6.1.1 of the Transport Impact Assessment provides the detailed pedestrian level of service assessment for existing situation. However, no detailed pedestrian level service assessment for undertaken for future situation in Section 6.2 has been undertaken, in particular:

- The pedestrian capacity analysis should consider weekends and special events when pedestrian volumes are higher;
- The available width for pedestrians is reduced to the north-east of the current IMAX building. Analysis of this location should be undertaken to ensure sufficient width is maintained; and
- The pedestrian capacity analysis should include an assessment of the redesigned Spanish Steps and surrounding area to accommodate future demands.

TfNSW requests that the applicant provides a detailed pedestrian level service assessment for the construction period and the future situation.

The development proposes to reduce the walk width along the Harbour Street frontage from 4m to 2.5m.

As outlined in Section 6.2 of the TIA, the maximum patrons at the complex at any one time is 2,300 people with the peak demand for pedestrians to the site likely to occur between 5:00pm and 7:00pm. To provide a conservative analysis, it is assumed that 50% of patrons access the complex via the Harbour Street pedestrian footpath between the hours of 5:00pm and 7:00pm with an even distribution of arrivals and departures. This would result in an additional 144 pedestrians using the footpath in a 15min period. An assessment of the current pedestrian peak hour volumes with the future development pedestrian volumes is shown in Table 1.

**Table 1: Future Pedestrian LOS Assessment**

Peak Pedestrian Volume (p)		Walkway Width (m)	Flow Rate [1] (p/ m/ min)	LOS
(p/ 15min)	(p/ min)			
199	13.2	2.5	5.3	A

The future pedestrian LOS Assessment shows the Harbour Street site frontage operating at a LOS A with the future development pedestrian volumes. The proposed development will therefore not have a detrimental effect on the surrounding pedestrian network.

The Harbour Street approach (from Bathurst Street) to Cockle Bay is a “back-of-house” route that is not typically use by tourists, event patrons and/or other unfamiliar users. As such, a significant increase in pedestrian activity during special events in not typically expected. Notwithstanding this, pedestrian activity would be addressed in the detailed management plan for the porte cochere and car stacker/ loading area.

#### **Impacts on Erskine Street Intersections**

*All vehicles leaving the site are expected to use the Sussex Street/ Erskine Street and Shelly Street/ Erskine Street intersections. No detailed traffic assessment has been undertaken to assess the performance of these intersections. TfNSW requests that assessment of these intersections be undertaken, taking into consideration the cumulative impact of other developments.*

There are currently several developments being undertaken in the vicinity of the site including the \$6 billion Barangaroo development. These developments will have a cumulative impact on the surrounding intersections, however no reliable data is publicly available to meaningfully assess the impacts.

The traffic volumes anticipated from the development will be limited compared to other developments in the vicinity of the site, however the project team is happy to consult further with TfNSW to establish data for such an assessment.

#### **Taxi Rank within Wheat Road**

*TfNSW requests that a dedicated area for the existing secure taxi rank to be accommodated within Wheat Road.*

There is insufficient space within section of Wheat Road adjacent to the site to provide a dedicated secure taxi rank, however an integrated facility will be provided within the porte cochere, to be managed by the hotel including a taxi call-up service. Details of these arrangements would be documented in the detailed management plan for the porte cochere and car stacker/ loading area.

#### **Porte Cochere and Loading Bay Management**

*Based on Section 7 of the Transport Impact Assessment, the proposed development requires 17 loading bays. However, the proposed development only provides seven (7) loading bays on site. In addition, there are potential conflicts between service vehicles using the loading bays and cars waiting to use the car stacker. Therefore, service vehicle movements and car stacker operation need to be managed to minimise impact on the operation road network adjacent to the proposed development in particular along Harbour Street.*

*TfNSW requests that a detailed porte cochere/ loading bay management plan be developed to manage vehicle conflicts and the car stacker operation and provided for approval from CBD Coordination Office within TfNSW. The management plan should also identify how access to the site by heavy rigid vehicles will be prevented, as they cannot be accommodated on site.*

*In addition, swept turning path shows that a bus will not be able to pass if another vehicle has already stopped in the porte cochere. It also shows that a bus will not be able to make the last turn near the pedestrian bridge steps as indicated on the plan.*

*From the swept path analysis it does not appear that a bus could access the bus zone if there are vehicles parked on entire length of the western side of Wheat Road. The design of Wheat Road/ porte cochere should be revised to ensure buses can be accommodated.*

*Heavy vehicles should enter and exit in forward motion and would not be permitted to access the foreshore area as shown in Appendix A of the Transport Impact Assessment.*

A detailed management plan for the porte cochere and car stacker/ loading area would be prepared as discussed previously to address any potential conflict between any loading vehicles and car stacker queued vehicles. Loading and unloading will be undertaken outside of peak hours (where possible) when there is limited demand for the car stacker. It is also anticipated that service vehicles would be able to travel adjacent to any queued vehicles in order to access the loading area. Vehicle manoeuvring in the basement area would be managed by an attendant or security personnel.

The vehicle positions shown within the porte cochere vehicle bays are indicative only. The bus swept path is a worst case situation (14.5m long rigid bus which are not used the Sydney Explorer service and would only be occasional pre-arranged coaches for the hotel). The swept path analysis shows there is adequate spare width within the porte cochere area for a 14.5m long rigid bus to pass parked vehicles, however the resultant vehicle positioning at the bus stop would be considered further during detailed design to deliver an appropriate outcome.

To maintain Darling Harbour special event access, the site incorporates the ability for a 19m semi-trailer to access the foreshore area. The associated swept paths to satisfy SHFA requirements were included with the Transport Impact Assessment and does not reflect day-to-day operation.

### **Construction Traffic Management Plan**

*Several construction projects, including the Sydney Light Rail Project are likely to occur at the same time as this development within the CBD. The cumulative increase in construction vehicle movements from these projects could have the potential to impact on general traffic and bus operations in the CBD, as well as the safety of pedestrians and cyclists particularly during commuter peak periods.*

*Demolition and reconstruction of the Spanish Steps is likely to have a significant impact on pedestrian access. A detailed assessment of the alternative access arrangements including capacity analysis, safety implications and wayfinding requirements is required. Pedestrian access including mobility access from the Druitt Street bridge must be maintained at all times. The construction pedestrian and traffic management plan should be updated to include details on the following:*

### **Construction program**

- Any potential impacts to general traffic, cyclists, pedestrians and bus services within the vicinity of the site from construction vehicles during the construction of the proposed works;
- Cumulative construction impacts of projects including Sydney Light Rail Project. Should any impacts be identified, the duration of the impacts; and
- Measures proposed to mitigate any associated general traffic, public transport, pedestrian and cyclist impacts should be clearly identified and included in the Construction Pedestrian Traffic Management Plan (CPTMP).

In addition, specific issues that should be addressed include:

- In general all work activities should be conducted behind the hoarding to minimise the interaction with general traffic;
- The CBD Coordination office should be included as a stakeholder and approval authority;
- Access to Wheat Road should be maintained at all times;
- During construction vehicles queuing to enter the site may block traffic on Harbour Street when operational considering the hoarding location. Further assessment or management plan should be undertaken to ensure that Harbour Street is not impacted at all by the construction activities;
- Alternative facilities to accommodate buses/ taxis throughout the various phases of the construction program, in particular the realignment of Wheat Road, have not been identified. Alternative facilities should be developed in consultation with TfNSW,
- The proposed hoardings may block the traffic signals on the approach to Harbour Street and should be reviewed;
- Details on the proposed modifications to pedestrian access during the stage 2 construction work should be identified; and
- The applicant is to work with the CBD Coordination Office on the location of any holding areas for construction vehicles and how it will be managed.

TfNSW requests that the applicant submit a copy of the final CPTMP to the Coordinator General, CBD Coordination Office for approval, prior to the commencement of any work. TfNSW requests that the applicant consults with the CBD Coordination Office within TfNSW in relation to the above issues. TfNSW would be pleased to consider any further material forwarded from the applicant.

A more detailed Construction Traffic Management Plan will be provided as part of the detailed design and construction planning process. The project team will consult with the CBD Coordination Office during the construction planning process for the benefit of all parties.

I trust this information provides the necessary details in response to matters raised by TfNSW from a transport perspective. Naturally, should you have any questions or require any further information please do not hesitate to contact me in our Sydney office on (02) 8448 1800.

Yours sincerely

**GTA CONSULTANTS**



**Brett Maynard**  
**Director**