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Our Reference: P3378.003L

18 January 2019

NSW Health Infrastructure
C/- TSA Management
Level 15, 207 Kent Street
Sydney NSW 2000

Attention: Sue Folliott

Sent via email: sfolliott@tsamanagement.com.au

Dear Sue

RE : TWEED VALLEY HOSPITAL EIS RESPONSE TO SUBMISSIONS – TRANSPORT AND TRAFFIC

1.0 BACKGROUND

Bitzios Consulting Pty Ltd (Bitzios) has been engaged to prepare responses and provide further information to the Transport Planning and Traffic Engineering items of relevant Government agency responses for the Tweed Valley Hospital EIS. This letter specifically responds to:

- Roads and Maritime Services (RMS) correspondence (RMS reference NTH18/00047) dated 28 November 2018;
- Transport for New South Wales (TfNSW) correspondence (TfNSW reference D18/09928) dated 30 November 2018;
- Tweed Shire Council (Council) correspondence (Council reference DA18/0685 LN40120) dated 7 December 2018;
- TAFE NSW (TAFE Reference DOC18/190546) dated 7 December 2018; and
- Department of Planning and Environment (DPE) correspondence (DPE reference SSD 9575) dated 18 December 2018.

2.0 RESPONSE TO ROADS AND MARITIME SERVICES ITEMS

2.1. General Comments

Roads and Maritime considers that in our technical assessment of the EIS, specifically section 5.7 SEAR 7- Transport and Accessibility that the 'baseline' for impact assessment is reasonable and the predictions of impact are robust and conservative with suitable sensitivity testing.

Roads and Maritime considers that in our technical assessment of the EIS, specifically Traffic Impact Assessment Part 1 to 3 that the proposal includes all reasonably feasible mitigation options.

The assessed impact is considered acceptable within the policy context of Roads and Maritime as the Traffic Impact Assessment (TIA) has been prepared in accordance with relevant Austroads Guidelines and the RTA Guide to Traffic Generating Developments 2002. The TIA has identified road network upgrades that are required over the ten year design horizon to 2033 to mitigate the impact of the development.

Response:

It is noted that RMS considers the Traffic Impact Assessment as acceptable and that the proposal includes all reasonably feasible mitigation options. Health Infrastructure is committed to continuing work and engagement with RMS and Council to ensure the timely and appropriate delivery of transport infrastructure.

2.2. Works Authorisation Deed

The Developer shall enter into a Works Authorisation Deed (WAD) with Roads and Maritime for the traffic signal infrastructure works the local and classified road network. The Developer will be responsible for all costs associated with the works and administration for the WAD.

Response:

It is noted that the developer will need to enter into a WAD with RMS for the traffic signal infrastructure works on the local and classified road network. Health Infrastructure will continue to work with RMS and Council in the timely delivery of necessary transport infrastructure.

2.3. Traffic Signal Design

The developer shall demonstrate that the mid-block pedestrian traffic signals on Cudgen Road satisfy the warrants as set out in Roads and Maritime (formerly RTA) Traffic Signal Design, Section 2 – WARRANTS.

Response:

The proposed traffic signals on Cudgen Road are for a new signalised access intersection, rather than a mid-block signalised pedestrian crossing. A number of factors were considered during the traffic assessment and design process for this signalised access intersection, including:

- intersection performance and operations (as determined through SIDRA intersection modelling). This considered design traffic volumes, queue management (both within the subject site and on Cudgen Road) and delays;
- pedestrian amenity and safety, particularly given the increased proportion of vulnerable “slow walkers” associated with a hospital including the elderly, people with disabilities and people with illnesses; and
- RMS Traffic Signal Design, Section 2 – Warrants.

Expanding on the above, the RMS Traffic Signal Design: Section 2 – Warrants was considered when assessing the suitability of a signalised access intersection, noting that the warrants are emphasised as being a guide only. With consideration to Traffic Signal Design: Section 2 – Warrants, the signalised access is further deemed appropriate on the basis of:

- **Traffic Demand** – major road flows on Cudgen Road exceeding 600 vehicles / hour in each direction during the peak hours and the minor road flows exceeding 200 vehicles in an hour (year of opening). Based on growth projections, through volumes on Cudgen Road are also continued to grow beyond year of opening; and
- **Pedestrian Safety** – major road flows on Cudgen Road exceeding 600 vehicles / hour in each direction during the peak hours. While specific pedestrian volumes associated with the hospital are not yet accurately quantified for this assessment, the proposed hospital will generate an notable increase in pedestrian demand including the demand for crossing Cudgen Road. The demand for crossing is generated by the westbound bus stop (noting the proposed new bus stop will located in close proximity to the intersection, the eastbound bus stop (for pedestrians crossing from the opposite residential developments and Kingscliff TAFE) and by the residential areas to the east of the Project Site. Consideration has also been given to the expected increase in “slow walkers” associated with a hospital including the elderly and people with disabilities who require larger gaps in traffic to safely cross. There are existing background pedestrian crossing demands associated with the eastbound bus stop, Kingscliff TAFE and the surrounding residential area.

The inclusion of a signalised access intersection is appropriate when considering intersection operations, pedestrian amenity and safety and signalised intersection warrants.

It is noted that design, construction, erection, installation, maintenance, repair, removal or replacement of traffic control signals must have the consent of Roads and Maritime on all roads in NSW in accordance with s87 of the Roads Act

2.4. Way Finding Signage

The TIA identifies a 'Way Finding Signage' scheme is required to direct traffic from the Pacific Highway to the Tweed Valley Hospital. Any signposting plan shall be prepared in consultation with Roads and Maritime to ensure it meets the requirements of the Service Signposting guidelines. All costs associated with the design, manufacture and installation of these signs is the responsibility of the Developer.

Response:

It is noted that any signposting plan for Way Finding Signage shall be prepared in consultation with RMS and that all costs associated with the design, manufacture and installation of these signs is the responsibility of NSW Health Infrastructure. It is also noted that any signage outside the Project site will also require endorsement from Council's Local Traffic Committee.

3.0 RESPONSE TO TRANSPORT FOR NSW ITEMS

3.1. Bus Services

Comment

The EIS states that TfNSW, in coordination with the bus operator (Surfside), are in the process of a service planning review. It is noted that this review is being conducted as ongoing service improvement investigations across the state and any recommended improvements are not committed or funded for delivery.

Recommendation

The proponent should continue ongoing consultation with TfNSW and Surfside to ensure safe and efficient levels of service are provided to the development. This would also ensure travel times are provided to meet customer needs and successful integration with the existing transport network, in line with the customer outcomes outlined in the Regional NSW Services and Infrastructure Plan.

Response:

It is noted that service reviews are being investigated and are not currently committed or funded for delivery. In the interim, the Project site has existing bus services with routes operating along Cudgen Road and existing bus stops on Cudgen Road at the site frontage are proposed to be upgraded.

Ongoing consultation with TfNSW and Surfside will be undertaken to ensure safe and efficient levels of service are provided to the development.

3.2. Green Travel Plan

Comment

It is estimated the proposed development will accommodate 430 beds and 1050 staff, which based off the current limited public transport mode share, will approximately generate 150 public transport trips during the peak periods. It is understood that a Green Travel Plan (GTP), that amongst other things will include the objectives and targets for public transport utilisation, will be prepared as part of the Stage 2 to support and maximise the use of alternate travel modes. As the current public and active transport mode share is limited, the TIA should also consider the transport impact (particularly on the needs of public and active transport users) of the development should the target public and active transport mode share suggested by the GTP be achieved.

Recommendation

Consideration of the number of public and active transport trips produced by the development if the desired mode share set by the GTP is reached should be included in the TIA.

Response:

Health Infrastructure has initiated a Transport, Access and Parking (TAP) working group to develop a range of transport strategies and measures that can be implemented throughout the design development, construction and operational phases of the project. The TAP working group will incorporate a range of stakeholders including Council, transport operators, staff and community representatives.

The TAP working group will be developing a Sustainable Transport Plan for the precinct, which include a Green Travel Plan (GTP). While specific targets for public and active transport are yet to be determined for the Green Travel Plan, it is expected that these would generally align with targets in TfNSW's "Regional NSW Services and Infrastructure Plan". This plan nominates public and active transport mode share targets for 2056, as follows:

- Public Transport – 3% to 5%;
- Walking – 4% to 8%; and
- Cycling – 2% to 5%.

Specific mode share targets for the Project will be included in a Green Travel Plan once developed.

3.3. Bus Stop Design

Comment

The EIS notes two new bus stops will be provided on Cudgen Road, to the east of the primary signalized intersection. The Master Plan (Drawing No: AR-SKE-10-006) indicates the location of these bus stops. As the proposal seeks approval for the concept plan and Stage 1 works, detailed design of the bus stops have not been provided at this stage, however should be provided in subsequent stages.

Pedestrian access between the hospital and the proposed bus stop within the indented bay on Cudgen Road will need to be provided in accordance with the relevant disability access standards and guidelines.

Recommendation

Detailed design of the bus stop and a site plan indicating the location of the bus stop and the lay-up zone should be provided in future stages.

These designs should include consideration of distance and grade requirements to comply with disability access standards/guidelines and be carried out in consultation with TfNSW and the local bus operator to ensure operational safety, accessibility and feasibility.

Response:

Further details regarding specific design elements of the two proposed indented bus stops on Cudgen Road, including specific stop locations, detailed design and pedestrian travel distances will be provided as part of Stage 2 Development Application submission. Detailed design will consider relevant design requirements including the State Transit – Bus Infrastructure Guide and grade requirements for appropriate access by persons with disabilities.

3.4. Parking Provision

Comment

The TIA notes there is unrestricted on-street parking in nearby residential streets which currently has little demand limited to utilisation during school periods for student pick-up and drop-off. As there is an abundance of unrestricted on-street parking and the on-site hospital parking is paid, staff, visitors and patients may opt to park on the surrounding streets as opposed to the on-site car park. This may cause significant impacts to the on-street parking supply as used by the Kingscliff TAFE and High School.

Recommendation

The TIA should further consider the impacts the proposed development may have on the on-street parking supply in surrounding streets, particularly Oxford St and Cambridge Court.

Response:

The Transport, Access and Parking Working Group has recently been established and will include a detailed review of car parking demand, supply and operations. The working group will review impacts that the Project may have on the on-street parking supply (including on Oxford Street and Cambridge Court). The working group will investigate and develop strategies to mitigate on-street parking impacts. Key focus areas include:

- reviewing expected parking demands with consideration to the parking supply;
- developing a Green Travel Plan and a Transport Access Guide to encourage the use of alternate transport modes; and
- investigating the need for physical mitigation measures (e.g. signage and line marking).

As part of the process of addressing these matters, relevant stakeholders (e.g. Kingscliff TAFE, Council Officers, TRAC Kingscliff) will be consulted. Mitigation and control measures are likely to include on-site parking policy and management for the Tweed Valley Hospital, operational and management strategies for surrounding off-street car parking to restrict use to bona fide visitors and discourage use by staff, patients and visitors of the Hospital. The review of car parking demands and revising the associated supply relative to this (which is currently being undertaken by the Transport, Access and Parking Working Group) will play an important role in managing and minimising the impacts of car parking in the surrounding area.

Parking and these associated matters will be further addressed in detail in the Stage 2 SSD application.

3.5. Design Traffic Modelling

Comment

The Tweed Road Development Strategy 2017 identifies a proposed upgrade of Tweed Coast Road to a four-lane cross section. On this basis, the SIDRA modelling conducted for the 10 year design horizon assesses the Tweed Coast Road/ Cudgen Road intersection with a four-lane cross-section and minor turning capacity improvement. However, it is noted that this upgrade may not be committed to for some time. As such a scenario in which the proposed upgrade is not in place should be considered.

Recommendation

The TIA should consider the scenario in which Tweed Coast Road is not upgraded and consider measures which may be required should council not succeed in acquiring the funds for the upgrade.

Response:

The Tweed Coast Road four-lane upgrade and upgrade works to the Tweed Coast Road / Cudgen Road intersection is identified within the Tweed Road Development Strategy 2017 and has a funding mechanism in place via the Section 7.11 Plan (formerly Section 94) No. 4 – Tweed Road Contribution Plan. Throughout the planning of these upgrades there has been a strong level of certainty from Council that Tweed Coast Road four-lane upgrade is a priority within the TRCP delivery. This is re-iterated in the RMS agency response, which noted the following:

- *"Roads and Maritime has consulted with Tweed Shire Council (Mr Danny Rose) and can confirm the following issues were discussed in finalising this advice... Council confirmed planning work is in progress for the proposed duplication of Tweed Coast Road."*

Regardless, a number of upgrades are proposed as part of the Project, irrespective of the Tweed Coast Road four lane upgrade. These upgrades specifically cater for Project design traffic and to mitigate against peak hour impacts at the intersection. The proposed upgrades include:

- addition of a 100m southbound left-turn lane on Tweed Coast Road;
- phase sequence change to allow the southbound left-turn to overlap with the westbound right-turn (i.e. possible with the provision of dedicated southbound left-turn lane);
- lane discipline change for the two approach lanes on the south-eastern approach:
 - Change of the left through lane to a through and right lane;
 - Change of the right through and right lane to a right only lane;
- extension of the northbound departure lane from approximately 85m to approximately 200m; and
- conversion of the north-western leg departure to a single lane (no physical changes. i.e. through provision of chevron line marking). With the lane discipline changes on the south-eastern approach, there is only one lane travelling through to the north-western departure lane.

The specific details for upgrades being provided will be confirmed through further discussions with Council and as part of detailed design.

In summary, the four-lane upgrade is a nominated project within Tweed Shire Council's Tweed Road Contribution Plan and has a funding mechanism in place. Regardless, a number of capacity upgrades are proposed at the subject intersection as part of the Project. Based on discussions with Tweed Shire Council officers, it is not considered appropriate to provide significant additional turning capacity to and from Cudgen Road over and above that identified. This is due to the future capacity that will be added on Tweed Coast Road, at the intersection and through alternate east-west links to the north.

With consideration to the above, the traffic modelling and assessments undertaken are to the satisfaction of RMS as follows:

- *Roads and Maritime considers that in our technical assessment of the EIS, specifically section 5.7 SEAR 7- Transport and Accessibility that the 'baseline' for impact assessment is reasonable and the predictions of impact are robust and conservative with suitable sensitivity testing.*
- Roads and Maritime considers that in our technical assessment of the EIS, specifically Traffic Impact Assessment Part 1 to 3 that the proposal includes all reasonably feasible mitigation options.*

3.6. Active Transport

Comment

It is noted that 14 visitor and 29 staff bicycle staff parking spaces are required based on the Tweed Development Control Plan. The EIS states the concept plans do not show the bicycle parking and that secure bicycle parking, storage and end of trip facilities will be further considered in Stage 2.

Recommendation

Future design iterations should illustrate the location bicycle facilities in secure, convenient, accessible areas close to the main entries incorporating adequate lighting and passive surveillance and in accordance with Austroads guidelines and the relevant Australian Standards.

Response:

This item is noted. Future design iterations (i.e. as part of Stage 2) will include additional details on bicycle facilities (including location, overall provision and specific design) with consideration to the relevant Austroads guidelines and Australian Standards.

3.7. Recommended Conditions of Approval – Green Travel Plan

Recommended Condition

As part of the ongoing operation of the hospital, a detailed Green Travel Plan (GTP), which includes target mode shares for both staff and visitors to reduce the reliance on private vehicles, shall be prepared. The GTP must be implemented accordingly and updated annually.

Reason

To ensure sustainable transport outcomes and achieve the overall strategic planning objectives in the:

- Future Transport 2056 Strategy and supporting plans;
- Sydney's Bus Future 2013;
- Sydney's Cycling Future 2013; and
- Sydney's Walking Future 2013.

Response:

The recommended condition is noted.

4.0 RESPONSE TO TWEED SHIRE COUNCIL ITEMS

4.1. Road Connections

A Section 138 Application will need to be lodged with Council and discussion between Health Infrastructure as the applicant and Council needs to continue to ensure any hospital is serviced by a suitable road network with kerb and gutter and good public access opportunities.

Response:

It is noted that a Section 138 Application will need to be lodged and discussion between NSW Health Infrastructure and Council are on-going in this regard.

4.2. Traffic and Access

Traffic and Access

Appendix L provides a Traffic Impact Assessment (TIA) by Bitzios Consulting. This describes the existing and proposed road access for the site, and potential impacts of the development on traffic volumes and intersection capacity in the vicinity of the site.

The site will be serviced by four formal road accesses, 3 from Cudgen Road, and 1 from Turnock St, shown below. The TIA confirms that the design of the four accesses is adequate in terms of traffic capacity and general location. No objections are raised in this regard. The main concern is the configuration of Accesses A and C as slip roads rather than driveway accesses, and related issues with vehicle speeds as they intersect the cycleway along Cudgen Road. These matters have been raised with Health Infrastructure, as detailed below (noting that Access C is not part of the current application).

Accesses A and D have also been proposed as "preliminary works", to be undertaken under Part 5 of the EP&A Act and SEPP (Infrastructure). Council has received initial correspondence in the form of a Notification of Activity seeking consultation on these preliminary works and Council's requirements. Health Infrastructure will also make application under s138 of the Roads Act seeking approval to undertake works in the road reserve. Refer to specific comments at the end of this assessment report.

Access D works will also include extension of a water connection to the site across Turnock Street. Refer to Water and Sewer comments.

The consultants have estimated a daily trip assignment of 5,078, based on 11.81 trips per bed.

Peak hour in

- Morning Commuter Peak hour (8am-9am) is estimated 255 trips,
- Evening Commuter Peak (5pm -6pm) is estimated at 525 trips

- Peak Vehicle Trips (3-4pm) is estimated at 608 trips.

The proposed concept design appears commensurate with the expected traffic generation of the development. The TIA has assessed road intersections external to the site. The only location where upgrade works have been identified is the Tweed Coast Road / Cudgen Road signalised intersection. These works are also proposed to be approved under Part 5 and a concurrent s138 application. Bitzios has been in consultation with Council around the proposed configuration of this intersection, to deal with existing capacity, upgrades due to hospital traffic, and the future four-laning of Tweed Coast Road, as identified in the recent update to the Tweed Road Development Strategy. The design of the intersection is generally acceptable, requiring some significant upgrades. Refer to specific comments at the end of this assessment report.

It is our understanding that the recommended intersection upgrade will be completed in its entirety in conjunction with the hospital development, paid for by the State. This commitment recognises:

- That the development will not pay developer contributions normally attributed to traffic generating development
- That the hospital brings forward the need to upgrade the intersection above background traffic growth, and
- General community perceptions / expectations.

However the EIS does not specifically state this commitment.

The TIA and concept plans show various pedestrian connections for the site. A shared user path exists along the Cudgen Road frontage. Provided the proposed road access works can maintain pedestrian and cyclist safety on this facility, the development will enhance active transport movements with the addition of signals on Cudgen Road with pedestrian phases. The assessment of Access D identifies some disconnection of pathways near the roundabout. These have been raised with HI and can be readily corrected. Consideration in the site design and facilities should also be given to mobility aides such as scooters.

Cudgen Road currently has a largely rural cross section. The formalisation of the hospital frontage with various accesses necessitates the upgrade of the full frontage of the site to an urban road cross section – that is installation of kerb and gutter, piping of open drainage, street lighting, signage and line marking etc. The application does not include any detail on the final configuration of Cudgen Road, perhaps as it will be the subject to the Stage 2 SSD. Further information should be requested, with these works also being subject to a s138 application.

The hospital development provides a large amount of at grade parking for staff and customers. Ultimate parking provision (700) is commensurate with council's DCP A2 which would require 688 spaces. Year of opening parking requires 652 spaces for 407 beds. This can be sufficiently accommodated on site. The TIA foreshadows paid parking arrangements, similar to Lismore Base Hospital. The TIA does not assess the impacts of paid parking on parking demand in the locality, or measures necessary for the paid parking system to work without adversely impacting on local amenity. This should include an economic demand analysis be conducted to determine the optimum charge to ensure Hospital parking does not impact on adjacent residents or businesses. Further information should be requested.

Council's DCP A2 specifies bicycle parking facilities for employees should be to a Class 1 level. The traffic report calls up Class 3 facilities and this should be reviewed. Further information should be requested. Internal road geometry has been designed to the appropriate standards.

On-site servicing arrangements appear adequate.

Response:

With regards to the accesses provided with Auxiliary Left Turn (AUL) treatments, the western site access was designed specifically for use by authorized vehicles and primarily emergency / ambulance vehicles accessing the site via Tweed Coast Road (west).

Both accesses are ingress only and left in only (no right turn). Based on the specific vehicle requirement and consultation with emergency services, a higher order treatment was proposed in accordance with Austroads design and turn warrants guidelines. The proposed arrangement allows left-turning vehicles to safely and efficiently leave the through travel lanes reducing the risk of rear-end collisions.

The design speed of 40km/h is in accordance with the design principles of Austroads and crossings points for pedestrians on roads with design speeds of 40km/h or greater is common practice. It is noted that this is the design speed, and in practice vehicles will be approaching the curved section of the internal road at lower speeds. The shared path crossing of these accesses is proposed with kerb ramps which encourages the user to stop prior to crossing. In addition, signs and line marking can be provided for both users of the

shared path and for vehicles. Pedestrian fencing and bicycle chicanes / bollards can also be included to further improve safety. Additional detailed design considerations will be incorporated to the satisfaction of Council.

With regards to external intersection upgrades, NSW Health Infrastructure is working closely with Council and RMS on the delivery and timing of external traffic infrastructure and to ensure that this is commensurate with Council's future planning for the surrounding road network.

The Transport, Access and Parking Working Group has recently been established to review car parking operations. The working group includes Council representatives and will undertake a detailed review of site specific parking demands, supply and mitigation measures both within the precinct and for the external network if required.

The TIA identifies Class 2 (referred to as Class B in AS2890.3-2015) facilities for staff. AS2890.3 recommends that Class B facilities be provided for destination parking (i.e. non-visitor workplace or residential parking). The application of Class A facilities is suitable for transport hubs or other locations where the highest level of security is desired. Class A facilities are onerous for staff parking at a workplace.

4.3. Public Transport

It is noted that consultations have taken place with the bus service provider. There is proposed rationalisation between the existing on road TAFE facilities and the Hospital facilities by removing the east bound bus bay and forming two new indented bus bays adjacent to the east of the proposed signals.

Comments provided to Health Infrastructure in response to Notification of Activity for Road Access Works (as of 22/11/18):

Response:

This is noted.

4.4. Access A

Left in only from Cudgen Rd at eastern boundary. The applicant has advised that the western access was designed for use by authorised vehicles only accessing the site via Tweed Coast Road (West). This was used to justify the design of the access to a "higher order treatment" "in accordance with Austroads design and turn warrants." However, it is noted in the concept design that direct access from this access is provided to the Staff Carpark and this is acknowledged in the Traffic Report on page 45. The report does not identify that the access bisects a shared user path and the potential risks for the existing users of this facility.

It is recommended that should the higher speed access design be pursued then internal access to the Staff and Public Carpark should be removed from this entrance.

Below is a picture of the newly constructed access to the Byron Bay Hospital and whilst this access allows right turns in, the access is constructed to a driveway configuration at right angles to the road and the shared user path.

Recommendation

G. Access A off Cudgen Road is to be modified to reflect the requirements of Council's Driveway Access Specifications and connect orthogonal to Cudgen Road in a similar configuration to the Byron Bay Hospital access from Ewingsdale Road.

Response:

The appropriateness of Access A has been reviewed in the response to Section 4.2 of this letter. subsequently, the access arrangements are proposed to remain as per the EIS submission. Additional safety measures can be investigated as part of detailed design including signs and line marking for both users of the shared path and for vehicles as well as pedestrian fencing, and bicycle chicanes / bollards.

The Transport, Access and Parking Working Group is reviewing car parking supply, demand and operations. Access into each of the car parking areas (both public and staff) will be reviewed and refined through further site plan development as part of this process.

With regards to the referenced Byron Bay Hospital access, comparison between this access and the proposed accesses is not considered appropriate, particularly when considering the scale relative to the Tweed Valley Hospital and the therefore the traffic generating potential (i.e. the Byron Hospital has a future capacity of up to 43 beds, which equates to 10% of the Project).

Further to the above, the following is noted:

- Access A is now also proposed as part of Stage 1 Early Works (refer Section 7.0);
- the design of Access A has been amended to address safety concerns. The amended design notes that RMS approved pedestrian fencing is to be installed adjacent to the ancillary lane to ensure that pedestrians cross at the pram ramp, appropriate pedestrian cyclist chicanes to be installed to RMS/Austrroads requirements and signage to be installed on the shared advising of the road ahead; and
- Council Technical Officers noted acceptance of the design with the above-mentioned amendments. Council Technical Officers recommended approval of the s138 application for the access (with the abovementioned amendments) as documented in "Agenda – Ordinary Council Meeting Wednesday 12 December 2018". For further details refer Section 7.0.

4.5. Access D

All movement access to Cudgen Road/Turnock St by constructing a fourth leg to the existing roundabout. The concept design did not indicate a continuous path of travel for pedestrians at its north west corner.

Recommendation

H. The design is to be updated to show a continuous connecting path of travel for pedestrians at the north/west leg of the roundabout on Cudgen Rd.

Response:

The design of Access D will be amended as part of detailed design to incorporate a continuous pedestrian pathway connection at the northern and western legs of the roundabout.

It is noted that Access D is now also proposed as part of Stage 1 Early Works (refer Section 7.0).

4.6. Cudgen Road / Tweed Coast Road Intersection

The report identifies that by 2023 without the impacts of the Hospital traffic that the intersection would operate outside acceptable performance limits. A series of upgrades referred to as Upgrade 1 were modelled at the intersection. The upgrades improved the intersection's operation at peak hour to a practical capacity Degree of Saturation. This modelling did not include the traffic impacts from the Hospital.

Further upgrades are identified as being required at the intersection at the year of opening labelled as Upgrade 2 shown in section 5.3.3. Therefore, before opening of the Hospital the intersection needs to be upgraded as follows

- Addition of a 100m southbound left-turn lane on Tweed Coast Road;
- Phase sequence change to allow the southbound left-turn to overlap with the westbound right-turn (i.e. possible with the provision of dedicated southbound left-turn lane);

- Lane discipline change for the two approach lanes on the south-eastern approach:
 - Change of the left through lane to a through and right lane;
 - Change of the right through and right lane to a right only lane;
- Extension of the south-eastern short departure lane from approximately 75m to approximately 150m; and
- Extension of the northbound departure lane from approximately 85m to approximately 100m; and
- Conversion of the north-western leg departure to a single lane (no physical changes. i.e. through provision of chevron line marking). With the lane discipline changes on the south-eastern approach, there is only one lane travelling through to the north-western departure lane.
- Further upgrades are required to cater for the additional Project traffic in Year 2023, including:
 - Extension of the northbound departure lane to approximately 200m; and
 - Extension of the southbound departure lane to approximately 150m.

Any works associated with the Tweed Coast Road / Cudgen Road intersection should be commensurate with Council's ultimate plans for Tweed Coast Road.

Recommendation

I. Before opening of the Hospital the intersection of Tweed Coast Road and Cudgen Road needs to be upgraded as follows:

- Addition of a 100m southbound left-turn lane on Tweed Coast Road;
- Phase sequence change to allow the southbound left-turn to overlap with the westbound right-turn (i.e. possible with the provision of dedicated southbound left-turn lane);
- Lane discipline change for the two approach lanes on the south eastern approach:
 - Change of the left through lane to a through and right lane;
 - Change of the right through and right lane to a right only lane;
- Extension of the south-eastern short departure lane from approximately 75m to approximately 150m;
- Extension of the northbound departure lane from approximately 85m to approximately 200m; and
- Conversion of the north-western leg departure to a single lane (no physical changes. i.e. through provision of chevron line marking). With the lane discipline changes on the south-eastern approach, there is only one lane travelling through to the north western departure lane.
- Extension of the southbound departure lane to approximately 150m

J. Any works associated with the Tweed Coast Road / Cudgen Road intersection should be commensurate with Council's ultimate plans for Tweed Coast Road.

Response:

In regards to the traffic modelling and infrastructure upgrades proposed, the traffic modelling undertaken did an assessment of the Project Case noting that the works required at Tweed Coast Road / Cudgen Road intersection irrespective of the development (Base Case) are adequate to cater for additional traffic movements associated with the Project.

NSW Health Infrastructure and the project team have worked closely (and will continue to do so) with Council to ensure that upgrade works are commensurate with Council's ultimate plans for Tweed Coast Road.

4.7. Development Contributions

The EIS provides advice from the Department of Planning and Environment that Crown developments for community services, including health, are exempt from general developer contributions. While the development will significantly add to demand for infrastructure, such as road capacity, the Crown is not obligated to pay Section 94 Developer Contributions. On the basis that the existing Tweed Heads Hospital will not retain all of development credits and that the State Government continues to provide funding towards section 94 projects Council's standard conditions relating to developer contributions need not be applied.

Response:

This is noted.

4.8. Community Services – Accessibility, Transport and Public Safety

The proposed development rates the impact on physical accessibility as low.

Best practice would consider the demographics of the community who are likely to access the hospital and those living in the surrounding Tweed Hospital. We were unable to find evidence of this being considered. Best practice would also consider the benefits of improved pedestrian paths, cycle paths and public transport for patients and the future workforce and well located short term parking for people with limited mobility and their carer's.

Recommendation

It is recommended that the Department of Planning request additional information to clarify the considerations used in determining the impact as “low” and include demographic considerations, benefits to active and public transport linkages, accessible parking options for people with limited mobility.

Response:

The Transport, Access and Parking Working Group will further review and consider active transport pathways, public transport linkages and accessibility, on-site parking operations and parking for people with limited mobility and disabilities. Further information for these aspects will be provided as part of Stage 2.

5.0 RESPONSE TO KINGSCLIFF TAFE ITEMS

5.1. Intersection Modelling

Intersection modelling of the Cudgen Road / TAFE access to reflect actual driver behaviour, as well as network operation with regards to nearby roundabout performance

Response:

Analysis of the Cudgen Road / TAFE access intersection and adjacent Cudgen Road / Turnock Street intersections where modelled in SIDRA Intersection 7 for the Year 2023 (year of opening) and Year 2033 background and design traffic volumes:

- the existing geometric layout for the intersection was used for analysis of the Cudgen Road / Kingscliff TAFE access intersection; and
- the existing geometric layout for the intersection was generally used for the analysis of the Cudgen Road / Turnock Street intersection, noting that a north-western leg has been added for the site access for the assessment of design.

Given the form of the Cudgen Road / TAFE access intersection being a “seagull intersection”, the intersection was modelled in SIDRA as two intersections in a network (i.e. each stage of the intersection is separated), following standard SIDRA methodology. Due to this network arrangement in SIDRA, there are limitations in including any additional intersections in the SIDRA network (i.e. this can't be achieved in the SIDRA model). It is noted however the methodology used for modelling the seagull treatment best reflects actual driver behaviour and traffic movements, in that it considers that right turning drivers can cross the westbound stream of traffic irrespective of eastbound traffic flows.

With regards to the operations of each subject intersection considering the adjacent intersection performance, the following is noted:

- the separation between the two intersections is approximately 120m;
- the operational impacts that could be caused by one intersection are possible under two scenarios, and are qualified as follows:
 - impacts to the operations of the Cudgen Road / TAFE access intersection due to queues extending from the south-western leg of the Cudgen Road / Turnock Street intersection through the intersection. A review of SIDRA results for the queuing of the design traffic volumes in the 2033 design year identified 95th percentile queues in the order of 46m, significantly less than the 120m separation between the intersections; and

- impacts to the operations of the Cudgen Road / Turnock Street intersection due to queues extending back from the Cudgen Road / TAFE access intersection through the intersection, although this is unlikely as these vehicles have priority and an AUL is provided. A review of SIDRA results for the queuing of the design traffic volumes in the 2033 design year identified no queuing.

5.2. Traffic Generation Rates

Clarification and further justification for the traffic generation rates adopted

Response:

The RMS Guide to Traffic Generating Developments was used to calculate the Project's peak hour traffic generation. Traffic generation rates nominated within the Guide to Traffic Generating Developments are based on historical traffic surveys and data analysis and utilisation of these rates is standard practice. As part of the assessment, a range of traffic generation periods were assessed including:

- Vehicle Trip Generation in the Morning Commuter Peak Hour (MVT);
- Vehicle Trip Generation in the Evening Commuter Peak Hour (EVT); and
- Peak Vehicle Trips (PVT) – this provides an indication of peak development traffic generation and incorporates a staff shift change. Due to the location of the Project Site with respect to Kingscliff TAFE and Kingscliff High School, the afternoon commuter peak period occurs around 3pm-4pm (which is earlier than typical commuter peak periods. As such both the developments EVT and PVT generation were assessed against the same period (i.e. commuter peak). This allowed for a conservative assessment and allowed for a sensitivity comparison by assessing different traffic splits.

The RMS *Guide to Traffic Generating Developments* does not provide daily traffic generation rates. In lieu of this the Institute of Transportation Engineers (ITE) daily rate was used. It is noted that this was not used for detailed intersection modelling.

With consideration to the above the traffic generation rates used are appropriate. This is further reiterated in comments from the RMS and Council agency responses with both agencies noting that the traffic assessment undertaken is reasonable and appropriate. Comments from the agencies in regard to the suitability of the traffic assessment are summarised below:

- RMS – *“Roads and Maritime considers that in our technical assessment of the EIS, specifically section 5.7 SEAR 7- Transport and Accessibility that the ‘baseline’ for impact assessment is reasonable and the predictions of impact are robust and conservative with suitable sensitivity testing.”; and*
- Council – *“The proposed concept design appears commensurate with the expected traffic generation of the development.”*

5.3. Future Proofing

Clarification that the proposed upgrades are suitable for the overall hospital and medical precinct (i.e. future proofing)

Response:

The Project proposal submitted as part of the EIS is defined as follows:

- *Concept Proposal and Stage 1 Early Works.*

A second development application will be submitted for Stage 2, as follows:

- *Stage 2: Hospital Delivery - Main Works and Operation.*

The TIA has been prepared with consideration to the proposal (i.e. Concept Proposal) which by definition includes a new Level 5 major referral hospital.

Any subsequent stages (e.g. future hospital expansion or other medical services not included in the concept proposal) would be subject to a separate application(s) as required and would be related to works for

potential future expansion of the facility. Details of this are unknown at this stage and would be developed as required. A separate traffic assessment would be required for any subsequent applications.

While not within scope, subsequent stages would fall outside the typical traffic design horizon used for assessment and a number of factors are likely to change traffic flows in the long term including:

- the planned northern east-west link between Kingscliff and Tweed Coast Road;
- the planned southern east-west link between Kingscliff and Tweed Coast Road;
- the planned four-lane upgrade of Tweed Coast Road; and
- future development in the surrounding area.

In summary, assessment of additional yields for “future proofing” is not applicable as part of the subject EIS application and will be subject to further assessment and development applications.

5.4. Car Parking Management

Car parking management and enforcement to ensure parking infiltration into the TAFE site does not occur.

Response:

The Transport, Access and Parking Working Group has recently been established to review car parking demand, supply and operations. The working group will review impacts that the Project may have on the on-street parking supply and on nearby off-street car parks (including the Kingscliff TAFE car park). The working group will investigate and develop strategies to mitigate on-street parking impacts. Key focus areas include:

- reviewing expected parking demands with consideration to the parking supply;
- developing a Green Travel Plan and a Transport Access Guide to encourage the use of alternate transport modes; and
- investigating the need for physical mitigation measures (e.g. signage and line marking).

While it is noted that Kingscliff TAFE is not part of the Transport, Access and Parking Working Group, it is understood that a TAFE working group has been established. The Transport, Access and Parking Working Group will work with Kingscliff TAFE to ensure car parking is appropriately managed.

6.0 RESPONSE TO DEPARTMENT OF PLANNING AND ENVIRONMENT ITEMS

6.1. Traffic Assessment – Concept Proposal

Please clarify whether:

- The cumulative traffic impacts considered by the Traffic Impact Assessment Report (TIA) includes traffic associated with the support building for the ancillary services.
- The TIA includes details of works referred to as “Upgrade 1” and then proposes “Upgrade 2”. Please clarify whether the TIA assumes that the Upgrade 1 works are to be undertaken by Tweed Shire Council or other.

Response:

The following is noted with regards to the above:

- The traffic impact assessment prepared considers a range of components / ancillary services as nominated in EIS for the Concept Proposal and summarised in Section 1.1.1 of the Traffic Impact Assessment report and the EIS; and
- It is not considered practical or feasible to undertake the works nominated as Upgrade 1 and then Upgrade 2 as separate packages given the similarity of scope and nature of upgrades. The nominated upgrades demonstrate the capacity improvements required for background traffic volumes as well as design traffic volumes to operate within acceptable performance limits. A range of intersection upgrades are proposed which generally align with those nominated as “Upgrade 2” are being investigated. NSW

Health Infrastructure and the project team have worked closely (and will continue to do so) with Council to ensure that upgrade works are commensurate with Council's ultimate plans for Tweed Coast Road. NSW Health Infrastructure is also working with Tweed Shire Council and RMS with regards to the timing and delivery of these upgrades.

6.2. Traffic Assessment – Stage 1 Works

Please clarify whether:

- The Traffic Impact Assessment Report (TIA) indicates that during Stage 1 works, an average of 180 truck movements are expected per day but does not include information regarding the duration of the construction period. The duration of the Stage 1 works should be identified and then the impact of the movement of 180 trucks during that period of time should be assessed.
- The TIA also includes the details of average daily truck movements in lieu of the worst case scenario. The maximum number of truck movements that can be expected on a day should be provided.
- The TIA for the Stage 1 works does not identify whether the average 180 trips per day is predicted to have an effect on the LoS of the nearby intersections. This should also be done with the worst-case scenario considering the maximum number of trips per day.
- The EIS notes that there will be 21,159m³ of excess spoil which is required to be moved off site. Please clarify whether the predicted construction truck movements include the vehicles that would be removing the fill from the site.
- The anticipated size of the construction trucks associated with each activity should be included.
- Please provide details of the number of on-site car parking spaces for the construction workers to be provided in Stage 1 works.

Response:

Further clarification is provided as follows:

- It is understood that the construction period for Stage 1 is approximately 10 months. The TIA provides an estimate of daily traffic volumes associated with the construction period based on the scale of the works. Detailed construction methodologies and documentation are prepared by the construction contractor. These methodologies are required to inform more detailed construction vehicle movement information. Further, construction traffic movements are expected to be significantly lower than traffic movements associated with the operation of the Tweed Valley Hospital (design traffic volumes). Noting the impact and outcomes of the design traffic assessment, the impact of construction traffic associated with Stage 1 is expected to be minor. Further, construction traffic will be managed as part of a CTMP;
- As above, without detailed construction methodologies, specific traffic movements associated with construction works are preliminary estimates. However, it is re-iterated that construction traffic will be managed as part of a CTMP. It is expected that the CTMP will manage peaks through delivery and staff scheduling (i.e. thus limiting specific peak profiles and impacts);
- the TIA identifies that there may be some impacts in terms of delays (and therefore level of service) as a result of construction activities associated with Stage 1. Based on the volumes relative to the assessment of the operational phase of the Tweed Valley Hospital, these impacts are expected to be minor. It is expected that the CTMP, under which construction works will be undertaken, will manage peak construction traffic movements through delivery and staff scheduling;
- The TIA estimates construction traffic volumes relative to the expected construction traffic volumes for construction of the new Maitland Hospital (given the similar scale). Estimated traffic volumes consider a range of traffic movements (including the removal of spoil). Construction traffic volumes and expected movement types are summarised in Section 6.4 of the TIA. As noted previously specific construction methodologies will be prepared by the construction contractor which will allow for more detailed assessment of construction traffic volumes;
- Expected vehicle sizes associated with construction traffic movements are summarised in Section 6.4 of the TIA. Additional information for specific vehicle requirements will be detailed in the construction methodologies prepared by the construction contractor. In lieu of this, some typical vehicle types used during construction are summarised below:
 - Tipper trucks – in the order of 8m to 12.5m length. Used for transporting spoil, fill, materials, equipment and plant;

- Truck and dogs – up to 19m length. Used for transporting spoil, fill and other materials, equipment and plant;
- Articulated Vehicles – typically 19m. Used for transporting materials, plant and equipment (e.g. low-loaders);
- Medium Rigid Vehicles – typically 8.8m. Used for transporting equipment and materials;
- Small Rigid Vehicles – typically 6.4m. Used for transporting equipment and materials;
- Light Vehicles – cars, vans etc. Predominantly used by construction personnel;

Vehicle movements and access will be managed under the CTMP. If oversize and/or over mass vehicles and loads are required, approval will be required from RMS; and

For all stages of construction, the principal contractor has advised that the future permanent carparking areas will be prioritised to enable their use for Workers Carparking. During Early Works, labour peak is estimated to be around 40 to 50 workers, with 25 to 40 cars expected on site. During Main Works, labour is estimated to peak just over 400 workers, with some 250 to 300 cars expected on site. During both stages parking will be accommodated within the site.

7.0 CHANGES TO THE PROJECT

Additional works are now proposed as part of Stage 1 Early Works. These include:

- Addition of new site access point from Cudgen Road at south-western site boundary of the project Site (referred to as access 'A' on plan AR-SKE-10-007); and
- Addition of new site access point from Turnock Street roundabout to the Project Site (referred to as access 'D' on plan AR-SKE-10-007).

These works are not considered to constitute a significant change as they relate to elements included and assessed in the originally submitted Concept Proposal and Traffic Impact Assessment.

The proposed configuration incorporates a higher order facility compared to a standard driveway crossover as typically stipulated under Council's Driveway Access to Property Specifications. The reasonings for this are as follows:

- The proposed access location is ultimately planned to connect to a service ring road and provide dedicated access to emergency services and authorised vehicles only to the precinct. Access will be limited to left-in movements only and shall be appropriately signed. No right turns will be permitted at Site Access A;
- Council's driveway specification does not specify turn treatments. The installation of turn treatments for property access is also not explicitly stipulated within Austroads, but may be used as a guide only. The design service vehicle using this access coupled with the through traffic volumes were reviewed through the design process. Given these volumes combined with the signalised intersection located to the west, the installation of a turn treatment was considered necessary to allow design vehicles entering the site to do so without the risk of rear end collisions associated with through traffic. We are of the view that a turn treatment is appropriate at this access location to improve safety when compared to a standard driveway crossover;
- Council's requested standard driveway crossover incorporates a perpendicular driveway to the road. This configuration requires a 90-degree angled turn into the site and traverse the kerb and channel crossover. Whilst this operation is acceptable for typical crossovers that allows two-way movements turning right and left into a site, the proposed access is for left-in movements only and by Ambulances and service vehicles. As such, the driveway alignment and splays are only required for left-in movements and by the nominated largest vehicle, which in this case is an Articulated Vehicle. In order for an Articulated Vehicle to enter the site from the kerbside turn lane, the driveway splay across the shared pathway will be significantly wider than the proposed configuration. This configuration will increase the pedestrian / cycle 'crossing distance' from 3.5m up to an estimated 13m under Council's requested configuration. In addition, under the Council proposal eastbound pedestrians / cyclist are required to check for entering vehicles a full 180 degrees (i.e back in the opposite direction of travel) for

inbound vehicles seeking to enter the driveway. Under the proposed configuration, pedestrian / cyclists would be required to rotate 90 degrees to check for approaching vehicles; and

- The installation of vertical thresholds or sharper turns to enter the site via a driveway crossover was expressed through the stakeholder consultation process as an issue for Ambulance operations. Specifically, Council's requested configuration impacts the delivery of emergency patients to the hospital who may in distress, fragile or undergoing emergency procedures while in transit. The proposed access configuration allowed for a level and direct access to the site, whilst still maintaining adequate pedestrian crossing facilities past the access.

As noted above, the proposed access configuration includes a 3.5m access roadway width, with a pedestrian ramp crossing positioned at 90 degrees to the roadway. This proposed configuration provides a significantly shorter crossing distance for pedestrians with improved pedestrian sight lines when compared to an industrial vehicle crossover as requested by Council. The proposed access configuration is consistent with other existing private access configurations located in both the Tweed Shire and Gold Coast jurisdictions.

The western site access (Access A) was designed specifically for use by authorised vehicles and primarily emergency / Ambulance vehicles accessing the site via Tweed Coast Road (west). The access is an ingress only and left in only (no right turn). Based on the specific vehicle requirement and consultation with emergency services, a higher order treatment was proposed in accordance with Austroads design and turn warrants. Pursuant to the above, the authorised vehicle access has been designed as a kerb return with the inclusion of a deceleration lane.

The pathway crossing of the left-in access lane is designed as per Austroads requirements, providing perpendicular ramps with clear sight lines to the west to view approaching traffic.

It is noted that Council initially raised concern with Access A due to potential safety issues (refer Section 4.4), however these have been addressed with the following amendments noted on design plans:

- RMS approved fencing is to be installed adjacent to the ancillary lane for Access A to ensure that pedestrians cross at the pram ramp;
- Appropriate cyclist/pedestrian chicanes to be installed as per RMS/Austroads requirements, on the shared user path approaches to Access A; and
- Signage to be installed on the shared user path advising pedestrians/cyclists that a road is ahead on the approaches to Access A.

Council Technical Officers noted acceptance of the design with the above-mentioned amendments. Council Technical Officers recommended approval of the s138 application for the access (with the abovementioned amendments) as documented in "Agenda – Ordinary Council Meeting Wednesday 12 December 2018". An excerpt from the agenda is presented in Figure 7.1 which summarises the options identified by Council Officers and their recommendation.

<p>OPTIONS:</p> <ol style="list-style-type: none"> 1. Issue an approval for the works within the road reserve with conditions and approved plans, as per Attachments 1 and 2 of this report. 2. Refuse the application and require the applicant to modify the Access A alignment to meet Council's specifications for a driveway access aligned perpendicular to Cudgen Road, rather than an ancillary lane, and resubmit the application. 3. Refuse the application. <p>Council officers recommend Option 1, to approve the s138 application with appropriate conditions and marked up plans in accordance with Attachments 1 and 2 of this report.</p>

Figure 7.1: Excerpt from Agenda – Ordinary Council Meeting Wednesday 12 December 2018 - Page 171

With regards to Access D, it is noted that Council initially raised concern with Access D as it did not show a continuous footpath connection (refer Section 4.5). The design of Access D has been amended to include a continuous footpath connection. Council Technical Officers noted acceptance of the design with the footpath connection as documented in "Agenda – Ordinary Council Meeting Wednesday 12 December 2018". An excerpt from the agenda is presented in Figure 7.2 demonstrating the Council Officers acceptance of the amended design.

Council response: The revised plans have addressed connectivity of footpaths around the new site access. Modifications to the roundabout circulation lanes are acceptable, and consistent with other configurations used successfully in Tweed Shire.

Figure 7.2: Excerpt from Agenda – Ordinary Council Meeting Wednesday 12 December 2018 - Page 171

The Council Agenda is available on Tweed Shire Council's website:

- <https://www.tweed.nsw.gov.au/CouncilMeetings/Archived/2018/December>

The plans for Access A and D are attached to the Submissions Report.

8.0 CONCLUDING STATEMENT

I trust that the above information is sufficient to respond to RMS, TfNSW, Council, TAFE NSW and DPE in relation to the traffic engineering and transport planning items and will allow reasonable and relevant conditions of approval to be prepared.

Yours faithfully



Andrew Eke
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Principal Traffic Engineer / Transport Planner
 BITZIOS CONSULTING