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**Proposed Tweed Billabong Holiday Park Extensions  
Dry Dock Road,  
South Tweed Heads**

**Traffic Impact Assessment**

Prepared for  
**Tweed Billabong Holiday Park**

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## 1. Introduction

TTM have been engaged by Tweed Billabong Holiday Park to conduct a traffic impact assessment of their proposed extensions. TTM has previously submitted a traffic engineering study for the development. This report is in reply to the Information Request with regards to Traffic Issues from the Tweed Shire Council dated 14 February 2006 and has incorporated the previous traffic study.

The following issues have been addressed in the report:

- access design and capacity; and
- the potential impact of development traffic upon surrounding roads and intersections;

## 2. Subject Site

The subject site is described by the following Real Property description:

Lot 14 on DP733411, Lot 1 DP9042 & Part Lot 6 DP9042  
Dry Dock Road, Tweed Heads South

As shown in Figure 2, the subject site is located on the southern side of Dry Dock Road just east of the Pacific Highway overpass. Land adjacent to the western boundary of the site is currently vacant. The subject site has a total area of approximately 1.6 hectares and contains one dwelling house. The site is currently zoned Low Density Residential. Under this zoning, approximately 19 dwellings could be developed (12 dwellings / hectare over 1.6 hectares). The existing Billabong Holiday Park is located to the south of the site and is currently accessed via Holden Street. Residential developments are located to the east of the site and have direct frontage to Dry Dock Road.

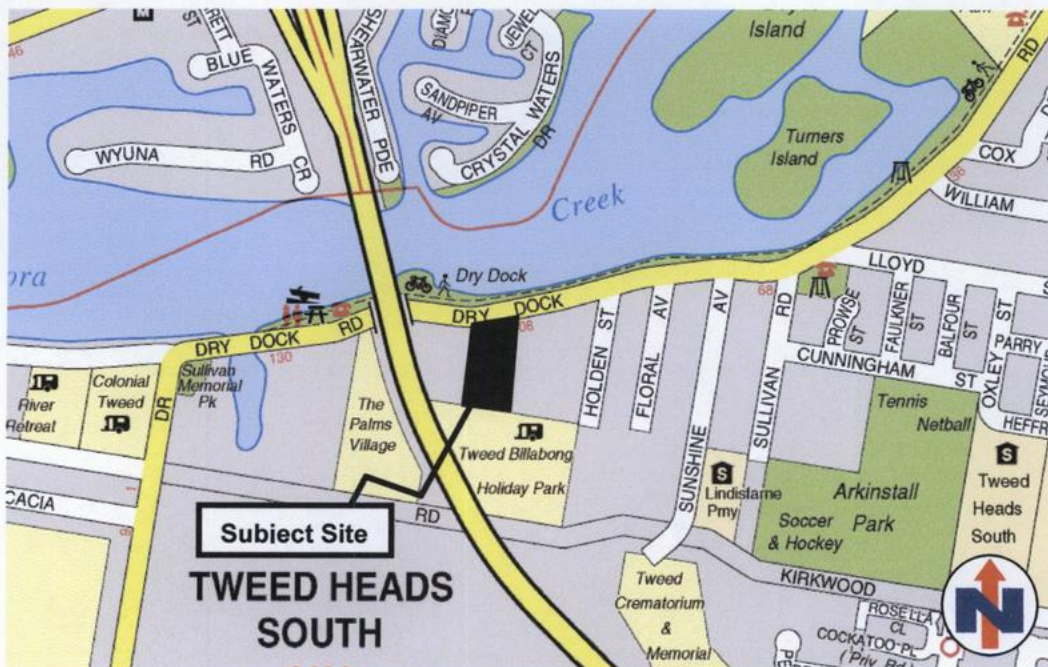


Figure 2 – Location of Subject Site – UBD Map 82, Grid D12

### 3. Proposed Development

The proposed development layout is depicted in Figure 3. Access to the existing and proposed caravan parks as well as to the proposed shop, general store and café / restaurant is to be obtained via one proposed driveway on Dry Dock Road. The Dry Dock Road access is to function as a priority "T" intersection which enables all movements. The existing access to Holden Street is to be closed to general public access.

The proposed caravan park will be comprised of:

- 23 Large Cabin Sites
- 24 Medium Cabin Sites
- 10 Powered Sites
- Shops, Café / Restaurant , General Store

The proposed shops, café / restaurant and general store are mainly intended to service the proposed and existing caravan park.

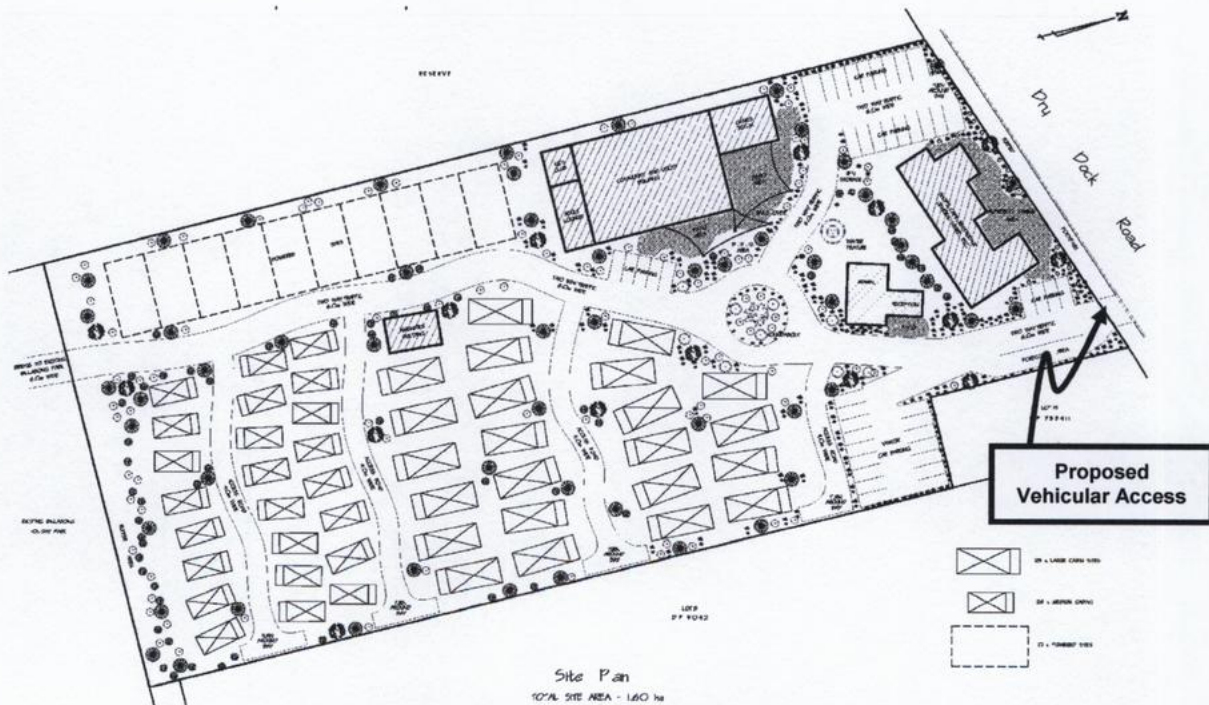


Figure 3 – Proposed Development Plan

## **4. Local Traffic Environment**

### **Existing Traffic Conditions**

Dry Dock Road functions as a sub-arterial road in the surrounding road hierarchy and provides east – west movement between Minjungbal Drive and Fraser Drive. Dry Dock Road is a two lane road with a posted speed limit of 60 km/h. Numerous local streets intersect with the southern side of Dry Dock Road. Direct residential property access is also provided, particularly at its eastern end.

Dry Dock Road currently carries in the order of 7,500 vehicles per day in the vicinity of the subject site.

### **Projected Future Traffic Conditions**

The rate of future traffic growth on Dry Dock Road is largely dependent on how the surrounding road network develops, particularly in the vicinity of Leisure Drive. The mooted connection of Kirkwood Road to the Pacific Highway would dramatically reduce traffic volumes on Dry Dock Road. It is understood that the New South Wales Road and Traffic Authority have indicated that they are unlikely to approve this connection. Subsequently, this assessment assumes that the Kirkwood Road connection to the Pacific Highway, or any other Highway connection in the local area, will not occur in the foreseeable future.

Transport modelling conducted on behalf of Tweed Shire Council indicates that traffic volumes on Dry Dock Road could increase to approximately 12,000 vehicles per day if Kirkwood Road is extended to Fraser Drive and Leisure Drive remains at two lane capacity. It is understood that Leisure Drive could potentially be upgraded to four lanes if required. Under this scenario, Dry Dock Road is predicted to carry in the order of 9,159 vehicles per day.

It should be noted that the travel demand forecasting model used on behalf of Council is an integrated transport model that predicts trip generation based on land use, demographic and socio-economic data. Future year models include all properties developed in accordance with their current zoning. On this basis, it is reasonable to assume that the above traffic projections include traffic generated by the subject site under its current zoning (low density residential).

## 5. Development Traffic

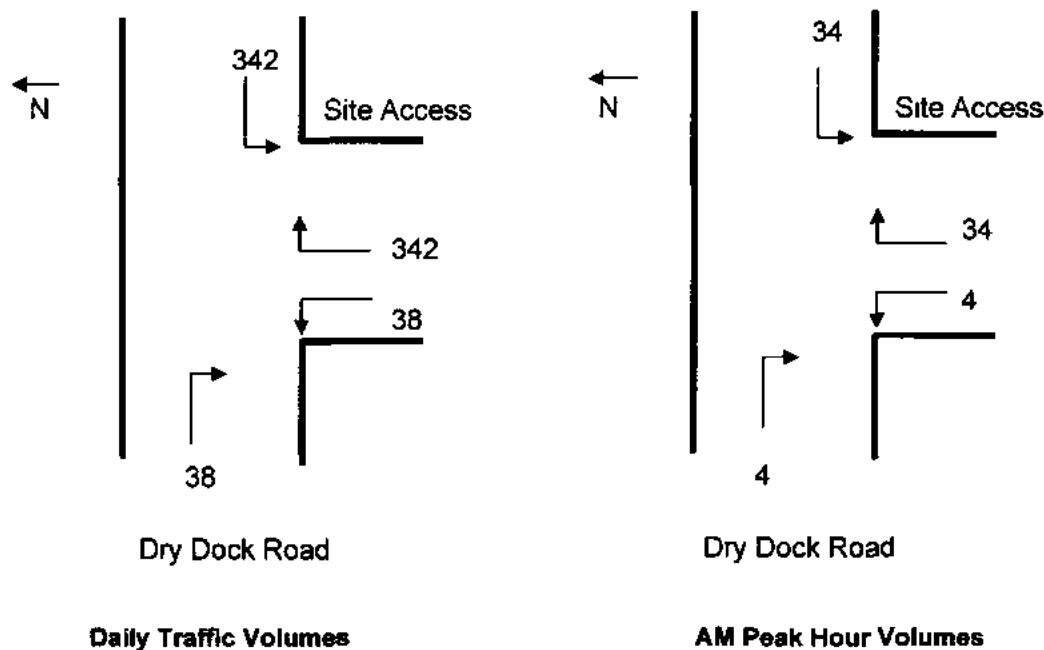
Tourist accommodation developments such as caravan parks typically generate in the order of 3 vehicle trips per unit per day (in + out). This includes trips generated by staff and the majority of these movements occur outside normal traffic peak periods that are usually generated by commuter travel. 10% of this volume are likely to be generated during the peak hour which typically occurs around the mid-morning period for tourist developments. The NSW RTA Guide to Traffic Generating Developments recommends using specific rates for shops, cafes / restaurants and general stores. These rates include trips generated by staff and the peak volumes are generated in the evening peak period. Information provided by Tweed Billabong Holiday Park has indicated that 30% of patrons of the shops, cafes / restaurants and general stores are expected to be from the public and the remaining 70% are expected to be from the existing and proposed caravan parks. Application of the above assumptions and traffic generation rates results in the estimated peak hour and daily two-way traffic generation detailed in Table 5.

Development	Units / GFA	Daily Traffic Generation Rate	Peak Hour Traffic Generation Rate	Daily Traffic Generation	Peak Hour Traffic Generation
Existing Caravan Park	182 Units	3 veh / Unit	0.3 veh / Unit	546 vpd	55 vph
Proposed Caravan Park	57 Units	3 veh / Unit	0.3 veh / Unit	171 vpd	17 vph
Proposed Shop	50m <sup>2</sup> GFA	121veh/100m <sup>2</sup> GF A	12.5veh/100m <sup>2</sup> GF A	61 vpd	6 vph
Proposed General Store	50m <sup>2</sup> GFA	121veh/100m <sup>2</sup> GF A	12.5veh/100m <sup>2</sup> GF A	61 vpd	6 vph
Proposed Café / Restaurant	40m <sup>2</sup> GFA	60veh/100m <sup>2</sup> GFA	5veh/100m <sup>2</sup> GFA	24 vpd	2 vph
Traffic Generation from Proposed Shop, General Store & Café / Restaurant				146 vpd	14 vph

**Table 5 – Estimated Peak Hour and Daily Traffic Generation**

It is estimated that the majority of development traffic movements, say 90%, will be destined for or originate from the east. Resultant daily and peak hour traffic movements at the Dry Dock Road access are shown in Figure 5. A 50% in / 50% out directional split is assumed for the daily and peak hour estimates.

The peak traffic generation for caravan parks is likely to occur around the mid-morning period and the peak period for shops, cafes / restaurants and general stores is in the evening. However, for the purposes of being conservative, TTM has assumed that all peak traffic volumes are generated in the morning peak period.



**FIGURE 5 – Estimated Traffic Generation at Dry Dock Road Access**

## 6. Impact Assessment

### Change in Traffic Volume

As indicated in Table 5, the proposed development will generate 215 traffic movements per day. If the subject site was developed in accordance with its current zoning of Low Density Residential, it could potentially yield in the order of 19 dwellings. This type and scale of development would generate traffic at a rate of approximately 9.0 vehicle movements per dwelling per day. On this basis, the traffic generation of the site would be in the order of 171 vehicles per day and 17 vehicles per hour during each peak hour and the peak hour of this use would coincide with the road traffic peak hour. The peak traffic generation period of the proposed development is likely to occur outside of the road traffic peak period. On this basis, it is expected that the traffic generation of the proposed developments will be similar to that if the subject site was developed in accordance with its current zoning.

### Residential Amenity

Vehicle access to the subject site is proposed to be gained directly via the Dry Dock Road frontage. On this basis, development traffic will not directly impact upon any surrounding residential streets.

The proposed development presents the opportunity for the access arrangements associated with the existing Billabong Holiday Park to be modified so that holiday makers and holiday park residents access Dry Dock Road via the subject site rather than Holden Street. This is considered a significant benefit over the low density residential land use scenario, whereby this option would not be feasible.

## Performance of Dry Dock Road

Dry Dock Road currently carries in the order of 7,500 vehicles per day. As discussed in Section 2, Council estimate that this volume could potentially increase to 12,000 vehicles per day, however, this level of growth is considered to be "worst case" as it assumes that desirable upgrades to surrounding roads will not occur.

Under the above "worst case" scenario, Dry Dock Road would carry in the order of 1,200 vehicles per hour during the morning and afternoon peak hour. A peak directional split of 70% eastbound / 30% westbound during the morning peak hour and vice versa during the afternoon peak hour is assumed. On this basis, the major flow during either peak period would be approximately 840 vehicles per hour. It is estimated that the proposed development will increase this flow by approximately 34 vehicles per hour during the morning peak hour. This represents an increase of 4%. This increase is considered negligible in terms of its impact upon the traffic carrying capacity of Dry Dock Road.

Should the above "worst case" traffic conditions occur, it is expected that Council would ultimately consider the implementation of specific traffic management measures along Dry Dock Road in order to improve its capacity, and create safer turning conditions at local street intersections and to private properties. This would typically include the implementation of roundabouts or similar treatments at strategic locations and the restriction of low level intersections to left in / left out movements only.

## 7. Recommended Access Conditions

The location and design of the proposed access intersection should comply with Austroads Guidelines with respect to sight distance and layout.

*Austroads GTEP Part 5 – Intersections at Grade* indicates that 105 metres of sight distance must be provided for a speed environment of 60 Km / Hr. Inspection of the subject site indicates that this requirement can be achieved at the proposed access point.

A right turn facility or passing lane in the western approach to the proposed access intersection is not considered to be warranted given the estimated right turn ingress demands. However, adequate width should be provided in the eastbound direction to allow through traffic to pass a stationary vehicle propped to turn right into the site.

If direct right turn movements to Dry Dock Road from the subject site are allowed in the long term, then they would cross an opposing flow of approximately 1,200 vehicles per hour during peak periods.

The Practical Absorption Capacity of this movement would be approximately 283 vehicles per hour. On this basis, it is concluded that the right turn movement would be approximately 12% saturated and the 95<sup>th</sup> percentile queue would be less than one vehicle.

## 8. Summary

- The subject site is located on the southern side of Dry Dock Road just east of the Pacific Highway overpass
- It is estimated that the proposed development will generate in the order of 215 vehicles per day and 21 vehicles per peak hour
- The traffic generation of the proposed development is expected to be similar to that if the subject site was developed in accordance with its current zoning
- The proposed development will have an inconsequential impact upon the traffic carrying capacity of Dry Dock Road.
- The proposed development will provide the opportunity to improve the amenity of Holden Street which is significantly impacted upon by the Billabong Holiday Park

It is recommended that Council approves the proposed development with respect to traffic impact and vehicular access