Proposed Skennars Head Residential Development
Proposed Amendment – Ballina Local Environmental Plan 2012
Traffic Engineering Report

Prepared for

Intrapac Skennars Head Pty Ltd

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1. Background

1.1 Purpose of This Report

Intrapac Skennars Head Pty Ltd has recently lodged an application for Development Approval regarding the first stage of a residential subdivision at Skennars Head. The first stage of development will contain 214 residential lots. Later development stages will result in approximately 400 dwellings within the development site together with a neighbourhood centre.

A Master Plan for the proposed Skennars Head Residential Development is shown in Fig 1.1.

A traffic engineering report (dated 9th May 2017) prepared by TPS Traffic and Parking Systems Pty Ltd (TPS) was submitted with the above-mentioned Application. This report should be read in conjunction with that report.

Whilst the recent development application only seeks approval to 214 residential lots, the TPS report accompanying the application was based on an expectation that 400 residential lots would ultimately be developed. The TPS report also assumed that the future Neighbourhood Centre will consist of a gross floor area of approximately 3,000 sq.m. (gfa) with the potential to contain a small supermarket, several specialty stores, personal services and/or small offices, restaurants, small tavern and child minding centre.

Intrapac Skennars Head Pty Ltd is now seeking to amend the Ballina Local Environmental Plan 2012 (BLEP) to facilitate the development of a neighbourhood centre and a reduction in the minimum allowable lot size on land to the south-west of the proposed neighbourhood centre location. The proposed amendments are as follows.

- Amend Land Zoning Map – Sheet LZN_005D by relocating Zone B1 towards the Coast Road and the edge of the R2 zoning and marginally increasing the extent of the B1 zone
- Amend Floor Space Ratio Map – Sheet FSR_005D by relocating Maximum Floor Space Ratio J in line with the proposed B1 relocation
- Amend Lot Size Map – Sheet LSZ_005D and LSZ_006C by introducing Minimum Lot Size D (300m2-349m2) and identifying lands to the south west of the relocated neighbourhood centre (Zone B1) for same.

The purpose of this report is to describe the traffic engineering characteristics of the proposed amendments and to describe any traffic engineering requirements which should be associated with amending the BLEP.

1.2 The Objectives of The Proposed Amendments

The stated objectives of the above proposed amendments are described below and summarised in Fig 1.1.

The relocation of Neighbourhood centre (B1 zone) will :

- Create direct links between the neighbourhood centre and the beach, pedestrian and cycling networks, and public transport services and facilities.
- Provide better integration of the neighbourhood centre with existing and future residential areas and associated road and street networks.

The introduction of Minimum Lot Size D (300m2 – 449m2) will:

- Facilitate a broad socio-economic mix and more sustainable neighbourhood catering for first time buyers to empty nesters.
- Enable a range of housing forms.
- Provide higher residential densities on lots which are close to the neighbourhood centre and local parklands.

1.3 Provision of Transport Infrastructure

The form and location of primary access roads for the ultimate development (400 residential lots and neighbourhood centre) will need to be established and constructed in the first stage of development. For that reason, the TPS report which accompanied the recent application was prepared in the context of the ultimate development, including the now proposed relocation of the neighbourhood centre and the proposed reduction in minimum allowable residential lot size.

As a consequence, the proposed long term road network shown in Fig 1.1 reflects traffic engineering requirements based on the now proposed BLEP amendments being approved.

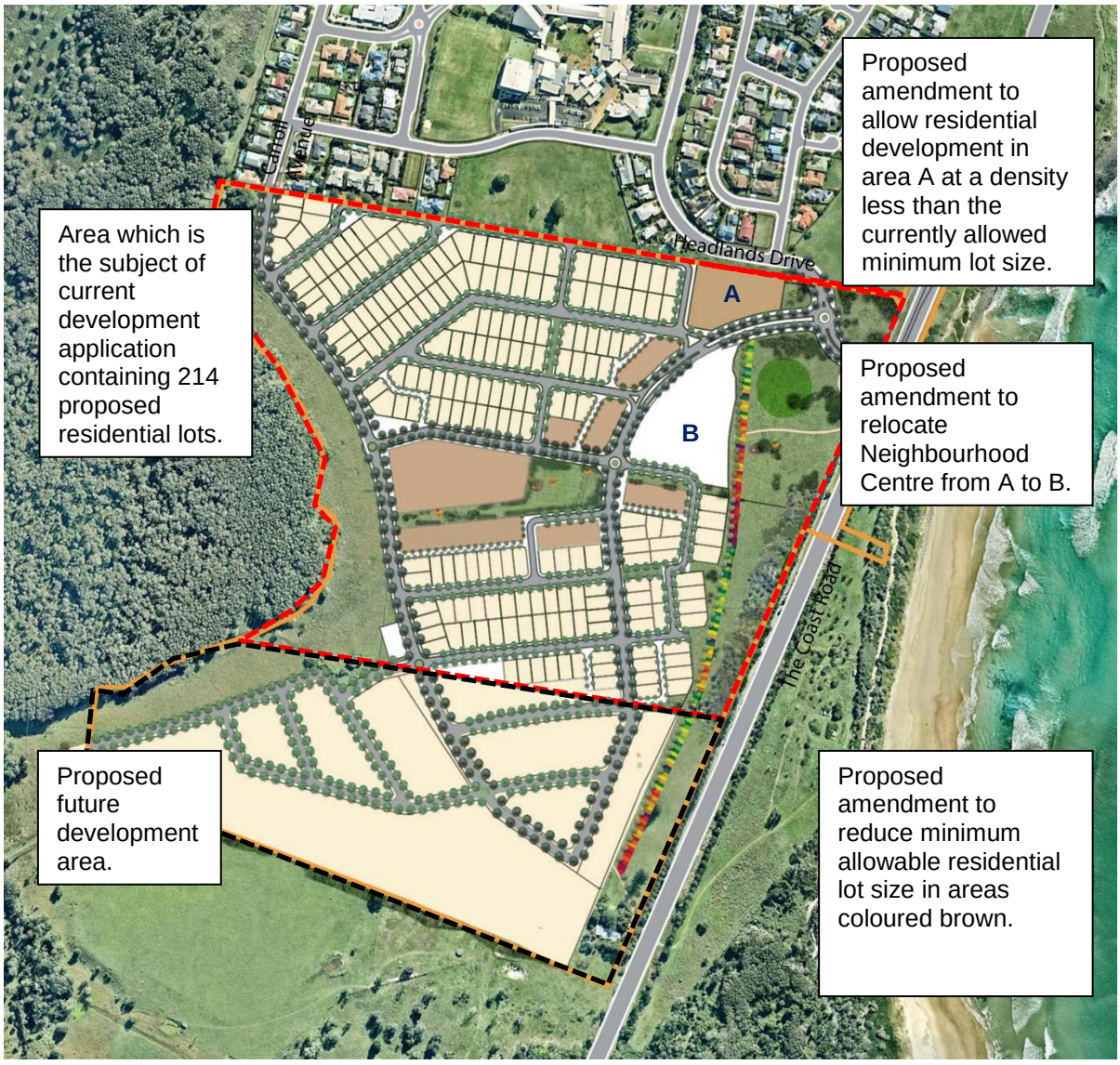

Fig 1.1 **The Skennars Head Residential Development Master Plan And Land which is the Subject of Proposed Amendments to the BLEP 2012**

2. Estimated Future Traffic Volumes

The TPS traffic report (dated 9th May 2017) which accompanied the recent development application contained the following traffic generation estimates shown in Table 2.1.

Table 2.1
Skennars Head Residential Development
Estimated Development Traffic Generation

Period	Total (Across Development Boundaries)			
	Rate	Inbound	Outbound	Total
Stage 1 - 218 Dwellings				
AM Peak Hour	0.75	16	147	164
PM Peak Hour	0.75	139	25	164
Daily	7.50	818	818	1635
Ultimate Development				
Residential - 400 Dwellings (not including neighbourhood centre)				
AM Peak Hour	0.70	28	252	280
PM Peak Hour	0.70	238	42	280
Daily	7.00	1400	1400	2800
Neighbourhood Centre - 3,000 sq.m.(gfa)				
Development - Drop-In				
AM Peak Hour	0.15	0	4	5
PM Peak Hour	0.75	19	3	23
Daily	4.50	68	68	135
To/From Development				
AM Peak Hour	0.22	3	3	7
PM Peak Hour	1.10	17	17	33
Daily	6.60	99	99	198
To/From External Locations				
AM Peak Hour	0.90	14	14	27
PM Peak Hour	4.50	68	68	135
Daily	27.00	405	405	810
Total Neithbourhood Centre				
AM Peak Hour	1.27	17	21	38
PM Peak Hour	6.35	103	87	191
Daily	38.10	572	572	1143
Total Traffic Across Development Boundary				
AM Peak Hour		46	266	312
PM Peak Hour		309	129	438
Daily		1873	1873	3745

The above estimates indicate that the proposed neighbourhood centre will generate up to approximately 1,200 vehs/day (in+out) on weekdays of which up to 200 vehs/hour could potentially occur in the afternoon peak hour between say 4:00pm and 5:00pm. The estimates indicate that up to two-thirds of these traffic movements could potentially be to and from areas outside the proposed Skennars Head residential development.

When traffic movements between the neighbourhood centre and external developments are combined with traffic movements to and from residential properties within the proposed Skennars Head development, the estimates indicate that approximately 3,750 vehs/day will occur in and out of the Skennars Head development area of which up to 12% could occur in the afternoon peak hour.

Based on the estimates shown in Table 2.1 and existing traffic survey data, TPS made estimates of likely 2030 traffic volumes assuming completion of the ultimate development containing 400 dwellings and a neighbourhood centre of 3,000 sq.m.(gfa). The estimates were described in the TPS report which accompanied the recent development application and are reproduced below as Fig 2.1.

The estimates shown in Fig 2.1 reflect a development scenario in which the now proposed amendments to the BLEP are approved and implemented.

The estimates are consistent with those given in the recent Cardno road network modelling for Council for 2036 conducted as part of the Section 94 review.

Fig 2.1 Estimated 2030 Weekday Traffic Volumes For Ultimate Development (400 Dwellings + Neighbourhood Centre)

3. Development Design and Access Arrangements

3.1 Land Subject to Proposed Amendment Affecting Increased Residential Density

The TPS traffic report submitted with the recent application was based on lots contained within land affected by the proposed amendment being developed to the higher density sought in the proposed amendment. Consequently, future traffic estimates shown in Fig 2.1 and street designs and layouts shown in the Master Plan and the recent application are unaffected by the proposal to increase the minimum allowable residential lot size in affected land.

3.2 Land Currently Zoned for the Neighbourhood Centre

TPS has not been provided with a preliminary design representing the development of land situated to the immediate north of the proposed Skennars Head access road. That is, land marked “A” in Fig 1.1 of this report.

TPS estimates that this area has the potential to contain approximately 20 residential lots at a rate of 350 sq.m./lot. This would have the potential to generate approximately 150 vehs/day (in+out) or between 15 & 20 vehs/hour on weekdays during peak traffic hours.

The following vehicular access options exist for this land, either as sole access or in combination. These are shown in Fig 3.1.

a. <u>On the Headlands Drive frontage.</u>
Whilst traffic volumes in Headlands Drive would technically allow an all-movements access street intersection to function safely, an access in this location would present design and potential amenity issues arising from the objective to retain sight lines from Headlands Drive to the south-east across the top of developments within the subject land. This objective will require levels within the subject land to be significantly lower than the level of Headlands Drive. Also, an access on Headlands Drive would be likely to attract objection from Headlands Drive residents due to perception of increased traffic in Headland Drive. Notwithstanding both those matters, if provided, an access on Headlands Drive would need to be located no further east than the approximate location shown in Fig 3.1.

b. <u>On the Skennars Head access road frontage.</u>
It is proposed to construct a median in the Skennars Head access road for landscaping purposes. If the median was to be no less than 5.0m in width, an access for the subject land at this point could potentially be provided via a median break without the need for a right turn lane. Alternatively, the access could be limited to a left-in/left-out arrangement. Any access would need to be located at approximately the location shown in Fig 3.1.

c. <u>On the western frontage – PREFERRED</u>
Plans submitted with the recent development application show the street on the western boundary of the subject land as having a carriageway of 7m width in a reserve width of 14.0m. In view of the relatively low traffic generating potential of the subject land, it would be acceptable in traffic engineering terms to construct a development access on the western boundary. Such an access would need to be located at approximately the location shown in Fig 3.1 and parking should not be allowed on either side of the north-south street on which the access would be located.

TPS is of the opinion that the most preferable access for residential development would be an access via the western boundary of the site (shown as “c” in Fig 3.1).

Fig 3.1 Access Options for Residential Development

3.3 The Proposed Neighbourhood Centre

Whilst the developer has been investigating alternative neighbourhood centre plans, TPS has not been provided with a design representing the most likely development form and layout.

TPS estimates that the neighbourhood centre has the potential to generate approximately 1,200 vehs/day or 200 vehs/hour in peak hours. TPS estimates also indicate that traffic volumes in the primary access road across the frontage of the neighbourhood centre site will ultimately carry approximately 3,000 vehs/day and between 300 and 350 vehs/hour in peak hours.

The practical capacity for vehicles to cross (or turn across) a two-way vehicle movement of 350 vehs/hour is approximately 485 vehs/hour. This estimate is for a situation where there is no intersection management such as a roundabout and no median in which turning or crossing vehicles can store. This is an order of magnitude greater than the maximum likely demand from the neighbourhood centre. For example, based on a traffic generation of 200 vehs/hour (in+out) for the neighbourhood centre, the absolute maximum egress demand from the centre to the frontage road would be 100 vehs/hour.

Notwithstanding the above estimated practical capacity for traffic movements, it will be desirable to provide access for the neighbourhood centre in the form of a roundabout or T-intersection.

The following vehicular access options exist for the neighbourhood centre, either as sole access or in combination. These are shown in Fig 3.2.

A. At the northern end of the site - PREFERRED
This location could be provided as a roundabout or T-intersection with the latter requiring access for the street on the north side of the primary access road to be restricted to left-in/left-out. A roundabout controlled access may assist in avoiding street network access issues which would arise from such a left-in/left-out arrangement.

B. At the centre of the site
The same comments as those above apply to an access at this location.

C. On the southern boundary of the site
This access could be provided in combination with either of the above. It has the potential to facilitate vehicle access through the neighbourhood centre (between access points) which may assist car park operations, and to provide a commercial vehicle access independent from car parking and pedestrian areas.

Whilst TPS prefers the access location marked “A” in Fig 3.2, this preference is only marginally preferred over location “B”, primarily due to the relatively close location of location “B” to the roundabout to the south. Further, TPS is of the view that the access marked “C” in Fig 3.2 should be provided regardless as to whether “A” or “B” is chosen. This view is related to the provision of an independent commercial vehicle access and the added operational security which an alternative access will provide to the centre.

In conclusion, the flexibility that exists in relation to determining the exact location and nature of an access for the neighbourhood centre will allow the matter to be decided at the stage of detailed design and subsequent development application.

Fig 3.2 Access Options for Neighbourhood Centre

4. Other Relevant Transport Planning and Traffic Engineering Considerations

4.1 Provision for Pedestrians

Residential development in the area shown in Fig 3.1 and a Neighbourhood Centre development in the location shown Fig 3.2 will amplify the need for pedestrian road crossing facilities to be provided in proximity to the neighbourhood centre. A crossing should desirably take the form of a central pedestrian refuge, capitalising on the proposed central median in the main access road. Desirably, two pedestrian facilities should be provided generally in the locations as shown in Fig 4.1. Exact locations will need to be decided in the context of the final location and form of a neighbourhood centre access intersection.

Fig 4.1 Desirable Locations for Pedestrian "Refuge" Crossings

4.2 Public Transport

The proposed location of a neighbourhood centre on the site shown above in Fig 4.1 will be to require bus stop facilities to be provided on both sides of the development access road frontage of the site.

The need for bus operations along the development access road which fronts the site and the need for bus stops at the development frontage has been anticipated in the development plans submitted with the recent application.

An approval to develop the site as a neighbourhood centre should reasonably include the condition that the frontage road is designed to accommodate bus movements and bus stops to service the centre.

5. Conclusions and Recommendations

Based on our understanding of the purpose of the proposed amendments to the BLEP (2012) and our assessments and knowledge of the proposed Skennars Head residential development described in the TPS report dated 2nd June 2017 which accompanied the recent development application, we conclude and recommend the following.

a. The proposed amendments were anticipated and assumed to be implemented in estimates and traffic engineering advices provided by TPS and reported in the TPS June 2nd 2017 traffic report. Consequently, the proposed transport infrastructure for the Skennars Head development provides for residential developments, changed development densities and the relocation of the neighbourhood centre which will arise from the proposed amendments.

b. Traffic estimates conclusively indicate that the developments which will arise from the amendments can be satisfactorily accommodated in transport and traffic engineering infrastructure proposed in the recent Intrapac Skennars Head Pty Ltd development application and the overall Skennars Head master plan.

c. Traffic estimates are conclusive in confirming that vehicle access for the development sites affected by the proposed amendments can be constructed and will operate safely and significantly below capacity. This conclusion relates to a number of access options for the proposed neighbourhood centre and the proposed residential development on the site which is currently zoned for that centre.

d. The proposed amendments do not introduce the need for any pedestrian or cyclist facilities but will have the effect to amplify the need for pedestrian crossing facilities in the main access road near the proposed neighbourhood centre. Fig 4.1 of this report shows the desirable number and location of these crossings.

e. The proposed relocation of the neighbourhood centre will have the effect to require bus operations and bus stops across the development frontage. This requirement has been anticipated in the design of the Skennars Head development. The need to provide for these operations and facilities should reasonably be managed via the imposition of a Condition in the development approval.

Based on the above findings etc. we are of the opinion that the there are no transport planning or traffic engineering reasons why the proposed amendments should not be approved.