15 February 2019

Jon Stone
Planning Officer, Northern Region
NSW Department of Planning and Environment
PO Box 949
TAMWORTH NSW 2340

Our ref: 2219774-32350
Your ref: 2219774

Dear Jon

Solitary Islands Village
Site Compatibility Certificate at Lot 1 DP1128964, Mullaway Drive, Mullaway

Reference is made to our application for a Site Compatibility Certificate (SCC) for a proposed Senior Housing development on the above property and the Department's request for additional information.

1 Biodiversity

GHD's SCC outlined that the project would likely exceed the clearing thresholds associated with the Biodiversity Assessment Methodology (BAM) and Biodiversity Offsets Scheme (BOS). This means that a Biodiversity Development Assessment Report (BDAR) will be required to be prepared and submitted as part of the package of information required to support a future Development Application (DA) for the proposal. GHD understands that the DPE has requested further information regarding the following items in the absence of that assessment as part of the assessment of the SCC application:

- An understanding of the potential biodiversity credits required to offset the proposals impacts
- Information regarding the availability of surplus credits from the existing Darkum Road biobank site
- Was there any assumptions associated with the previous approval which rely on the retention of vegetation being impacted as part of the current proposal?

1.1 Credit estimate

The BAM has replaced the BioBanking Assessment Methodology (BBAM) as part of the NSW Governments Biodiversity Reform package. The BAM includes a new credit calculator which has different credit impact and generation rates than the previous BBAM credit calculator. GHD is aware OEH is in the process of completing a credit conversion (equivalency) tool but in the absence of this software, GHD has completed the following credit estimate for the proposal based on interpreting results from the BBAM assessment for the original development as well as recent BAM assessments GHD completed.

- The proposal will impact on PCT690 Blackbutt - Tallowwood dry grassy open forest of the central parts NSW North Coast Bioregion (NR119) or PCT692 Blackbutt - Tallowwood moist ferny open forest of the coastal ranges of the NSW North Coast Bioregion (NR120)
- The area of impact will be approx. 1.7 hectares

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- The previous BBAM assessment had a credit impact rate for NR119 of 48 credits per hectare. This would equate to approx. 82 credits for the current proposal (1.7 ha)
- GHD analysis of BAM assessments indicates credit impact rate has reduced by approx. 40%. This would equate to approx. 33 BAM credits being required for the current proposal.
- No species credits were required for the original development however this may change as the BAM does include several threatened species as species credit matters which were not considered under the BBAM (this is unlikely though).

Note: The estimate above is based on interpreting results from other assessments and GHD knowledge of the BAM. The final credit impact required can only be determined by completing a full BDAR for submission with a DA for the proposal.

1.2 Credits available from existing Darkum Road biobank site for the proposal

- The existing biobank has the following BBAM ecosystem credits available:
  - 36 credits of NR119
  - 2 credits of NR161
  - 29 credits of NR217
- The BAM has a lower credit generation rate and GHD has estimated that the following credits would be available when converting these to BAM credits
  - 16 credits NR119
  - 1 credit NR161
  - 13 credits NR217
- This means there would likely be a shortfall of credits required to offset the development from the existing site (not all of the credits above will be permitted to trade as offsets for NR119 or NR120). The options available to source any shortfall in offsets for the proposal in accordance with NSW legislation include the following:
  - Complete a variation to the existing biobank site to increase the size of the biobank and generate additional credits
  - Source credits from the open market from another site in accordance with the relevant trading rules associated with the BAM and BOS
  - Place funds in the Biodiversity Conservation Trust Fund

These options mean the ability to satisfy any offsets required for the project will not be difficult.

1.3 Previous approval

Approvals associated with the original development did not include any obligation to retain the vegetation which is the subject of this application. Cumulative impacts will be addressed by assessing the proposal's impacts via the BDAR in its own right. Offsets for this proposal are in addition to those required for the previous development meaning the cumulative impacts would be offsets in accordance with NSW legislation.

2 Bushfire

The site is identified as Bushfire Prone Land, as shown below. According to *Planning for Bushfire Protection* (PBP, 2006), the proposal is a "Special Fire Protection Purpose". To provide an indication of the impact bushfire would have on the proposal a desktop assessment and site visit was undertaken.

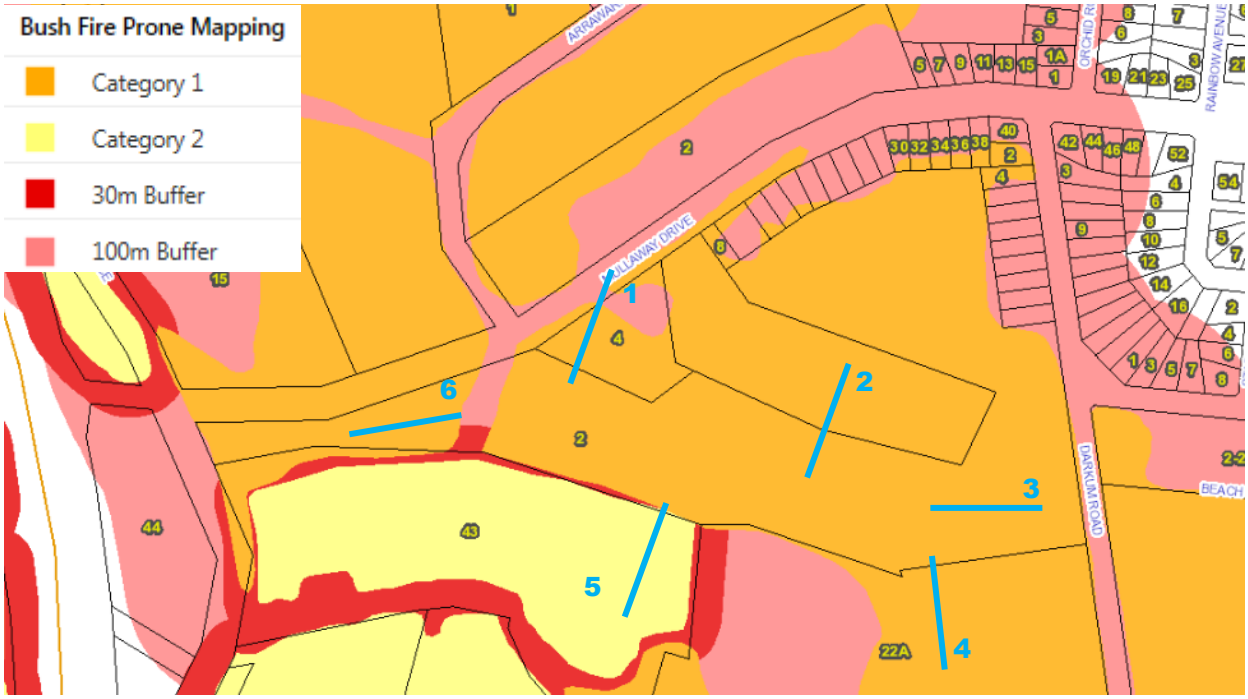


Figure 2-1 Bushfire prone land

A summary of the bushfire hazard assessment and the required asset protection zones (APZ) is provided in Table 1.

Table 1 Summary of Bushfire Hazard for proposed Solitary Island Village

Transect	Predominant Vegetation	Effective Slope	APZ (m)
1 (North)	Forest	Upslope	60
2 (North)	Forest	Upslope	60
3 (East)	Managed vegetation	>0-5° downslope	NA
4 (Southeast)	Forests	Upslope	60
5 (Southwest)	Managed vegetation	Upslope	NA
6 (West)	Managed vegetation	Upslope	NA

PBP (2006) requires all aged care facilities to meet a maximum of 10 kW/m^2 at the entry and exits to the buildings. The current concept plan provides entry and exits points away from the hazards and the separation distances generally meet the APZ requirements in Table 1, however the site would need to be partially cleared of vegetation in accordance with PBP (2006). It is therefore considered that the concept design could meet the PBP (2006) requirements.

The current concept plan also provides a through road to allow emergency access and egress, in case of a bushfire. This would need to be design and constructed in accordance with PBP (2006) requirements, and include fire hydrants.

A meeting was held with NSW Rural Fire Service's (RFS) Alan Baldwin in Coffs Harbour to discuss the above assessment. The RFS clarified what their expectations are in regards to aged care developments and the level of assessment required and did not offer any objections to the proposal.

3 Traffic

As discussed in the SCC application, the RTA Guide to Traffic Generating Developments (2002) provides a traffic generation rate for aged care facilities of 1 to 2 daily movements per dwelling and 0.1 to 0.2 evening peak hour movements per dwelling.

Given that the proposal includes a residential aged care facility where residents are unlikely to own or drive a car, traffic movements are expected to be significantly less than that of self care senior housing developments. Nevertheless the standard has been used in the instance to offer a conservative estimate of traffic likely to be generated by the proposal and to determine the potential impacts to the surrounding road network.

Applying the RTA Guide to Traffic Generating Developments standard, the proposal would have the potential to generate an additional 108 to 216 vehicle movements per day or 11 to 22 evening peak hourly movements.

3.1 Existing Road Network

Solitary Islands Way is a collector road links townships and provides collector road access to local communities along its length. At Mullaway Drive the road has an undivided carriageway with one northbound lane and a right turn lane and two southbound lanes plus a southbound left turn lane.

Currently, Mullaway Drive intersects Solitary Islands Way within a 100 km/h speed zone. The intersection is constructed as a Type CHR Rural Intersection with painted medians on Solitary Islands Way, a sheltered right turn bay and a long deceleration and left turn lane for southbound vehicles turning into Mullaway Drive to minimise delay to following southbound traffic.

Since the opening of the Pacific Highway upgrade, traffic volumes on Solitary Islands Way have significantly reduced as a result of the separation between highway traffic and local traffic.

3.2 Existing site access

The site has direct frontage to Darkum Road 196 m in length, commencing approximately 190 m from Mullaway Drive and ending approximately 380 m from Mullaway Drive. The length of Mullaway Drive from Solitary Islands Way to Darkum Road is 950 m.

Mullaway Drive is a two way two lane road with sealed surface approximately 5.9 m to 7.4 m wide and gravel shoulders of varying width.

Darkum Road is sealed full width from Mullaway Drive with roll kerb both sides (7.5 m wide) to approximately 24 m past the intersection of The Boulevarde. Of the 190 m frontage of the development site to Darkum Road, 76 m is kerbed. South of the end of the kerbed frontage the road has a 5.9 m seal and grassed verges and table drains.

Figure 3-1 View south along Darkum Rd with The Boulevarde LHS in background.

3.2.1 Solitary Islands Way Intersection with Mullaway Drive

The intersection of Solitary Islands Way with Mullaway Drive is constructed as a rural type CHR intersection. The highway has a single northbound lane and dual lanes southbound, plus a separate right turn lane sheltered by a painted median, a short left turn southbound acceleration taper and a southbound deceleration and left turn lane.

- The right turn lane has a deceleration and storage length of 170 m.

- The auxiliary left turn lane has a length of 135 m.
- The left turn acceleration taper has a length of 45 m.

3.2.2 Sight distance

The adequacy of the existing sight distance at intersections and along the route from Solitary Islands Way to the site access in Darkum Road is fundamental to the assessment of traffic safety for the access route. The specific sight distance criteria used in the report has been extracted from the Austroads Publication "Guide to Road Design – Part 4A Unsignalised and Signalised Intersections" (2009) which specifies the following:

Approach Sight Distance (ASD)

This is the minimum level of sight distance which must be available on the minor road approaches to all intersections to ensure that drivers are aware of the presence of an intersection.

Figure 3-2 Drivers sight line from Mullaway Dr north along Solitary Islands Way

Figure 3-3 Drivers sight line from Mullaway Dr south along Solitary Islands Way

It is also desirable on the major road approaches to an intersection so that the driver of a vehicle has adequate distance to observe the road layout, including pavement markings, kerbs, islands, etc, in sufficient time to react and stop if necessary before entering the conflict area. Approach Sight Distance is measured from driver eye height (1.1m) to 0.0m (i.e. the road surface).

*It is the same as **Stopping Sight Distance** (SSD) except that SSD is measured from 1.1 m to 0.2m being a nominal object height.*

Safe Intersection Sight Distance (SISD)

SISD provides sufficient sight distance for a driver of a vehicle on the major road to observe a vehicle from the minor road approach moving into a collision situation (eg in the worst case stalling across the traffic lanes), and to decelerate to stop before reaching the collision point. Safe Intersection Sight Distance is measured from the driver eye height (1.1 m) to a car height of 1.25m.

The whole of Mullaway from the intersection with Solitary Islands Way is a designated urban zone with a speed limit of 50 km/h. Solitary Islands Way at this location has a posted speed limit of 100 km/h.

A comparison of the required and available ASD and SISD for vehicles approaching and departing the proposed access driveway in Darkum Road, the intersection of Darkum Road with Mullaway Drive and the intersection of Mullaway Drive with Solitary Islands Way is set out in Table 2 for a vehicle speed of 100 km/h on the highway and 50km/h in the urban zone.

Table 2 Sight Distance

Location	ASD (desirable requirement)		SISD (minimum requirement)	
	Desirable	Measured	Required	Measured
Solitary Islands Way Northbound at Mullaway Drive	221 m	150 m	262 m	>300 m

Location	ASD (desirable requirement)		SISD (minimum requirement)	
	Desirable	Measured	Required	Measured
Solitary Islands Way Southbound at Mullaway Drive	221 m	165 m	262 m	>300 m
Mullaway Drive Eastbound at Darkum Road.	55 m	125 m	97 m	125 m
Mullaway Drive Westbound at Darkum Road.	55 m	>160 m	97 m	>160 m
Internal driveway access to Darkum Road.***	NA	NA	45 to 69 m	>100 m
Individual garage driveways access to Darkum Road.***	NA	NA	40 m	>100 m

* Limiting distance to Solitary Islands Way

*** Per AS2890.1:2004 Fig. 3.2 1.15 m to 1.15 m.

3.3 Existing Traffic Generation

Traffic counts provided by Coffs Harbour City Council for Mullaway Drive 50m west of Darkum Road (see attachment), reveal that average daily traffic (ADT) in 2014 was 1,733 vehicles per day (vpd) whilst peak traffic was 151/hr in the pm. Applying a 2% annual growth to traffic numbers to reflect likely 2019 rates, the average daily traffic (ADT) in 2019 is likely to be 1,907 vehicles per day (vpd) whilst peak traffic was 166/hr in the pm.

3.4 Existing Traffic Management Controls

The proposed private access road into the site will form a T-junction with Darkum Road. Traffic travelling along Darkum Road will be subject to the T-junction rule at the intersection with Mullaway Drive.

Signal Control

- There is no signal control.

Give-Way Control

- There is a Give-Way control currently signposted, at the intersection of Mullaway Drive and Solitary Islands Way.

Priority Control

- Darkum Road access to Mullaway Drive and Mullaway Drive access to Solitary Islands Way;

Sign-Posted Speed Limits

- 100 km/hr speed limit along Solitary Islands Way;
- 50 km/h urban area speed limit for the whole of the Mullaway area;

3.5 Existing and Proposed Road Performance

The performance of Mullaway Drive has been assessed in terms of Level of Service (LOS). The LOS criteria has been based on peak hour flows per direction for urban roads and peak hour flows on two (2) lane two way roads (with design speed of 100 km/h) for rural roads as defined in RTA's Guide to Traffic Generating Developments and detailed in **Error! Reference source not found.** and Table 4 respectively.

The LOS is a qualitative assessment of the quantitative effect of factors such as speed, volume of traffic, geometric features, traffic interruptions, delays and freedom to manoeuvre experienced by motorists. There are six levels of service (LOS), as described below, from AUSTROADS *Guide to Traffic Engineering Practice - Part 2: Roadway Capacity*, (1988).

Level of Service A.

The top level is a condition of free flow in which individual drivers are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is extremely high, and the general level of comfort and convenience provided is excellent.

Level of Service B.

This level is in the zone of stable flow and drivers still have reasonable freedom to select their desired speed and to manoeuvre within the traffic stream, although the general level of comfort and convenience is little less than that of the level of Service A.

Level of Service C.

This service level is also in the zone of stable flow, but most drivers are restricted to some extent in their freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience declines noticeably at this level.

Level of Service D.

This level is close to the limit of stable flow but is approaching unstable flow. All drivers are severely restricted in their freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience is poor, and small increases in traffic flow will generally cause operational problems.

Level of Service E.

This occurs when traffic volumes are at or close to capacity and there is virtually no freedom to select desired speeds or to manoeuvre within the traffic stream. Flow is unstable and minor disturbances within the traffic stream will cause a traffic-jam.

Level of Service F.

This service level is in the zone of forced flow. With it, the amount of traffic approaching the point under consideration exceeds that which can pass it. Flow break-down occurs and queuing and delays result.

Table 3 Urban road peak hour flows per direction

Level of Service	One Lane (veh/hr)
A	200
B	380
C	600
D	900
E	1400

Source: RTA Guide to Traffic Generating Developments, October 2002, Version 2.2 Table 4.4.

Table 4 Peak hour flow on two (2) lane rural road and level terrain (veh/hr)

Level of Service	Veh/hr (5% HV)	Veh/hr (10% HV)	Veh/hr (15% HV)
B	590	560	530
C	970	920	870
D	1550	1480	1410
E	2500	2390	2290

Source: RTA Guide to Traffic Generating Developments, October 2002, Version 2.2 Table 4.5

The LOS criteria in Table 4 is based on the following assumptions:

- Design speed of 100 kph;
- Terrain level with 20% no overtaking;
- 3.7 metre traffic lane widths; and
- 60/40 directional split of traffic.

Assuming that the peak hourly two way flow is 10% of the annual average daily traffic (AADT) then it is clear that current traffic density is well short of the hourly counts in the two tables above for both Mullaway Drive and Darkum Road.

Traffic generation from the proposal will increase evening peak hour volume in Mullaway Drive in 2019 from 166 to 188 vehicles per hour (vph), an increase of 13% and in 2029 from 199 to 226 vph, an increase of 13%.

3.6 Existing and Proposed Intersection Capacity

It is anticipated that 80% of the total traffic volume at the Mullaway Drive/ Darkum Road intersection would be generated from north and east of Mullaway Drive while Darkum Road/ The Boulevarde area contributes approximately 20% of the total. If it is assumed that the 2029 traffic volume along Mullaway Drive is 226 vph (pm peak), then this corresponds to 181 vph from north and east of Mullaway Drive. The

corresponding volumes in Darkum Road in the vicinity of the proposal would be 46 vph. These volumes are well below the threshold volumes noted in Table 5 below.

For these low combinations of flows, the busier streets can comfortably absorb the minor road traffic at a good level of service. These combinations of flows are below the threshold values where intersection capacity analysis is normally required as shown below.

Table 5 Intersection Volumes below which Capacity Analysis is Unnecessary

Type of Road	Light Cross & Turning Volumes Maximum Design Hour Volumes vehicles per hour (twoway)		
Two lane major road	400	500	650
Cross road	250	200	100
Four lane major road	1,000	1,500	2,000
Cross road	100	50	25

Source: Austroads Part 2, Table 8.1 Roadway Capacity

3.7 Conclusion

Traffic generation from the proposal will increase evening peak hour volume in Mullaway Drive in 2019 from 166 to 188 vph, an increase of 13% and in 2029 from 199 to 226 vph, an increase of 13%.

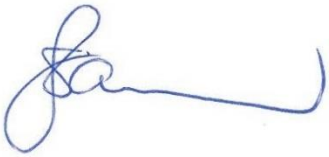
Expected increases in traffic along both Mullway Drive and Darkum Road are not expected to impact upon current levels of service or environmental capacity.

The opening of the Pacific Highway upgrade will reduce Solitary Islands Way AADT north of Mullaway Drive intersection from 13,402 in 2011 to 6,762 in 2021, a reduction of 50%.

The intersections of Mullaway Drive and Solitary Islands Way currently operates at LOS A. With the development included, the projected LOS in 2029 is anticipated to continue at LOS A.

Should you require any additional information in regard to the above please don't hesitate to contact the undersigned.

Sincerely
GHD



Shaun Lawer
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Attach: CHCC Traffic Counts

Coffs Harbour City Council - Traffic Data
Weekly Vehicle Counts (Virtual Week)

Site: **[Mullaway Dr] Mullaway Dr at Darkum Rd intersection**
Attribute: [-30.076706 +153.197270]
Filter time: **0:00 Friday, 19 September 2014 => 0:00 Tuesday, 30 September 2014**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1-10) Dir(NESW) Sp(10,160) GapX(>0) Span(0 - 100) Lane(0-16)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages 1 - 5	Averages 1 - 7
Hour									
0000-0100	0.5	2.0	1.0	2.0	2.5	5.5	6.5	1.6	3.2
0100-0200	0.0	2.0	5.0	2.0	0.0	3.5	4.5	1.3	2.3
0200-0300	1.0	0.0	5.0	1.0	1.0	2.5	5.5	1.4	2.4
0300-0400	5.5	2.0	3.0	3.0	2.5	7.5	6.0	3.4	4.6
0400-0500	3.0	3.0	2.0	3.0	2.5	7.0	3.0	2.7	3.5
0500-0600	23.0	31.0	29.0	34.0	39.5	27.5	20.0	31.3	28.5
0600-0700	44.5	52.0	50.0	40.0	60.5	53.5	35.0	50.3	48.1
0700-0800	110.5	114.0	111.0	95.0	95.5	109.5	100.5	104.6	104.7
0800-0900	115.0	121.0	121.0	91.0	**146.5**	**167.0**	103.0	122.3	126.9
0900-1000	129.5	136.0	104.0	132.0	124.0	166.0	152.5	125.6	**137.8**
1000-1100	119.0	**139.0**	**124.0**	**135.0**	140.0	156.5	138.5	**130.9**	136.9
1100-1200	**139.0**	128.0	111.0	112.0	118.0	157.5	**167.0**	123.6	137.6
1200-1300	107.5	141.0	131.0	129.0	135.0	**136.5**	131.5	126.6	129.3
1300-1400	106.5	121.0	107.0	118.0	111.5	125.0	**151.5**	111.7	121.4
1400-1500	123.5	125.0	130.0	**132.0**	119.0	130.0	146.5	124.6	129.5
1500-1600	156.5	154.0	120.0	127.0	137.5	125.5	131.5	141.3	136.6
1600-1700	**182.5**	**171.0**	**169.0**	127.0	**164.5**	130.5	122.0	**165.9**	**151.5**
1700-1800	138.5	147.0	132.0	127.0	160.5	114.5	105.5	143.4	131.3
1800-1900	79.0	80.0	81.0	93.0	95.0	84.5	70.5	86.0	82.9
1900-2000	42.0	52.0	40.0	36.0	54.0	41.0	35.5	45.7	43.0
2000-2100	34.0	25.0	34.0	32.0	37.5	23.5	25.5	33.4	30.2
2100-2200	20.0	32.0	31.0	25.0	23.0	21.0	15.0	24.9	22.4
2200-2300	7.0	8.0	14.0	11.0	23.0	15.5	9.0	13.3	12.9
2300-2400	3.0	0.0	9.0	10.0	11.0	5.5	4.0	6.7	6.0
Totals									
0700-1900	1507.0	1577.0	1441.0	1418.0	1547.0	1603.0	1520.5	1506.3	1526.5
0600-2200	1647.5	1738.0	1596.0	1551.0	1722.0	1742.0	1631.5	1660.6	1670.1
0600-0000	1657.5	1746.0	1619.0	1572.0	1756.0	1763.0	1644.5	1680.6	1689.0
0000-0000	1690.5	1786.0	1664.0	1617.0	1804.0	1816.5	1690.0	1722.3	1733.5
AM Peak	1100	1000	1000	1000	0800	0800	1100		
	139.0	139.0	124.0	135.0	146.5	167.0	167.0		
PM Peak	1600	1600	1600	1400	1600	1200	1300		
	182.5	171.0	169.0	132.0	164.5	136.5	151.5		