

10.7 **Deadmans Creek Road, Cumbalum - Service Levels.DOC**



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11.1 Future of Deadmans Creek Road

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Delivery Program Asset Management

Objective To consider the future role of Deadmans Creek Road

Background

Council considered a report 22 July 2010, regarding amendment of the Combined DCP to facilitate the further development of Ballina Heights Estate. The report also canvassed options regarding the future role of Deadmans Creek Road for access to Ballina Heights. Options explored in the report included:

1. Close Deadmans Creek Road
2. Defer Closure of Deadmans Creek Road
3. Retain Deadmans Creek Road
4. Reconfigure Deadmans Creek Road

Council then resolved:

"That prior to taking any action on Deadmans Creek Road, Council receive a further report which examines the feasibility of maintaining the access via lowering the road as close as possible to natural surface level."

This report responds to the above motion.

Key Issues

- Preserving the amenity of Ballina Heights residents
- Optimising road network access to Ballina Heights
- Minimising upstream flood impacts caused by the obstruction of Deadmans Creek Road formation across the Emigrant Creek floodplain
- Safety during floods
- Infrastructure delivery and funding

Information

Locality

Deadmans Creek Road junctions with Tamarind Drive (Old Pacific Highway), 3 km north of Ballina and until recently was the only access to the Ballina Heights urban area. Late in 2014, Ballina Heights Drive, 3.9 km north of Ballina, was opened and is now the major designated access to Ballina Heights and the future CURA-A residential development further north.

Flooding Impacts of Deadmans Creek Road

The Ballina Flood Study Update (BFSU), March 2008, advised regarding flood flows from Emigrant Creek:

11.1 Future of Deadmans Creek Road

"At the downstream end of this narrow section of the floodplain, Deadmans Creek Road also forms a barrier to flow."

The BFSU recommended construction of an excavated 40m wide floodway parallel to the Ballina Bypass and a series of culverts 30 x 3m wide x 0.9m high beneath the proposed Cumbalum Way (now called Ballina Heights Drive). An alternative flood free route for Ballina Heights Drive, further north was then developed and has now been constructed. The change in location for Ballina Heights Drive offered benefits for the design of the development and importantly for Council it avoided the risks associated with the planning and construction of a significant culvert structure on soft soils. This has facilitated provision (adjacent to Tamarind Drive) of an unexcavated floodway corridor for Emigrant Creek flood flow, free of road obstacles, except for the western section of Deadmans Creek Road that was planned to be removed or lowered.

The issue of the future planning for Deadmans Creek Road was further reported in the now adopted "Ballina Floodplain Risk Management Study - Exhibition Version January 2012" which recommended:

"Due to the significant flood impact caused by Deadmans Creek Road, it is recommended that the road is lowered or removed. Culverts under the road have been assessed in the Ballina Flood Study Update, but were found to be cost prohibitive. It is recommended that waters in Emigrant Creek are monitored over time to determine if the road can be lowered to a level that does not flood regularly and at the same time not cause significant flood impacts."

The Ballina Floodplain Risk Management Plan, which recently completed public exhibition, includes an action item to investigate the feasibility of lowering or removing Deadmans Creek Road.

The outcomes of the Ballina Floodplain Risk Management Plan are reported separately in this business paper. As the Risk Management Plan is complete and Ballina Height Drive is in service, now is considered an appropriate time to report on the future options for Deadmans Creek Road in accordance with the 2010 resolution of Council.

How Much Should Deadmans Creek Road be Lowered?

The section of road under consideration extends east from Tamarind Drive for a distance of 100 m. The existing surface level is around 1.5 m AHD and the surrounding ground level is around 0.5 m AHD. Consultants BMT/WBM have recently modelled the impacts of lowering the road by a range of levels during an ARI 100 year local flooding event. The results are shown in Table One below.

11.1 Future of Deadmans Creek Road

Table One Flooding Benefits from Lowering Deadmans Creek Road

Level of Deadmans Creek Road (m AHD)	Reduction in flood Level (mm)			
	Private land, west of Cumbalum Interchange	Western Roundabout	Eastern Roundabout Ballina Heights Drive	Immediately upstream of Deadmans Creek Rd
1.5	0	0	0	0
1.4	1	2	3	5
1.3	2	3	5	8
1.2	4	5	6	10
1.1	4	4	7	12
1.0	4	5	8	13
0.9	4	6	9	15
0.8	5	6	9	15
0.7	5	6	9	16
0.6	5	6	9	17
0.5 natural ground level	5	7	9	17

The impact of reducing flood levels immediately upstream of Deadmans Creek Road is not significant as this is an unoccupied floodway. The flood level reductions at the interchange and on private land immediately west of the interchange roundabouts are important (maximum 9 mm) and considered significant for cumulative impacts. The table shows that a reduction of Deadmans Creek Road surface level to 0.9 m AHD substantially achieves this objective.

BMT/WBM in their summary advise:

"Whilst reducing the level of Deadmans Creek Road over a 100m long section reduces upstream peak flood levels, the optimal level is shown to be approximately 1.2m AHD. Any further lowering has minimal additional benefits, especially beyond 0.9m AHD."

Runoff from the subject section of Deadmans Creek Road is conveyed across Tamarind Drive via a flood gate controlled pipe that discharges into Emigrant Creek. In normal times, the action of the floodgate keeps the standing water level in the southern table drain adjacent to Deadmans Creek Road to around 0.35 m AHD (lower than the high tide level in the creek). During the recent rainfall event late February 2015, the water level adjacent to Deadmans Creek rose to 0.8 m AHD before falling back to 0.45 m AHD on Monday 24 February 2015. These levels indicate that if Deadmans Creek Road was lowered to 0.9 m AHD, during rainfall events similar to February 2015, the road would still have 0.1 m freeboard. In heavier rain events, levels would be higher and Deadmans Creek at a level of 0.9 m could become inundated.

In these heavier rainfall events, a lowered Deadmans Creek Road would function as causeway, with this part of the road being inundated to varying depths. Traffic would then access the subdivision area via Ballina Heights Drive. It would also be necessary to install appropriate signage and depth markers to inform and warn motorists of the water hazard. There would remain a risk that some motorists may ignore the warnings and place themselves and passengers at safety risk by using the road when inundated.

11.1 Future of Deadmans Creek Road

Immediately to the north of this section of Deadmans Creek Road, there is pre-load earthworks fill on private land, on the older, now abandoned alignment of Ballina Heights Drive. This preload is no longer needed and would need to be simultaneously removed for lowering of Deadmans Creek Road to be effective.

Costs and Funding for Lowering Deadmans Creek Road

The capital cost to lower a 100 m length of Deadmans Creek Road to a surface level of 0.9 m AHD is estimated at \$225,000. Cost to lower to 1.2 m AHD is estimated at \$185,000. The work may be eligible for 2:1 floodplain management grant as the lowering or removal of the road is a recommendation of the Floodplain Risk Management Study. If Deadmans Creek remains open there are ongoing maintenance costs, and part of the road is in poor condition.

Council's road asset register indicates the following schedule of works for Deadmans Creek Road based on its current configuration.

Remaining Pavement Life: Rip, shape and reseal in 2043
Full pavement reconstruction in 2083

Remaining Seal Life: Spray reseal in 2023

The annual maintenance and asset renewal costs have been estimated to be \$3,266 per year.

Impacts of Closing or Lowering Deadmans Creek Road

It is estimated that 200 residences currently in Ballina Heights, would use Deadmans Creek Road as their preferred access to points south based on travel time advantage only. This may rise to 350 residences when Ballina Heights is fully developed. For traffic emerging from the southern end of the Ridgeway, the route to Ballina is 1.5 km shorter using Deadmans Creek Road than by using Ballina Heights Drive. This preference is demonstrated by recent traffic counts (16 - 22 February 2015) that show 1,603 vehicles per day on Deadmans Creek Road and only 901 vehicles per day on Ballina Heights Drive.

With residents of Ballina Heights currently having a choice of using Deadmans Creek Road or Ballina Heights for access, many vehicles that choose to use Deadmans Creek Road also utilise the southern section of The Ridgeway to access their final destination. If Deadmans Creek Road was closed, it is likely that fewer vehicles would use the southern section of The Ridgeway and there would be a resultant improvement of amenity for The Ridgeway residents. This amenity issue for The Ridgeway has been raised in a number of representations, especially the impact of heavy construction vehicles. The Ridgeway has a road network collector road function and geometry and will always have more traffic than local access roads, however the amenity impact may be lessened if Deadmans Creek had a load limit (from Tamarind Drive to Summerhill Crescent) which would compel heavy vehicles to use Ballina Heights Drive.

Closing Deadmans Creek Road would increase vulnerability of Ballina Heights to temporary isolation in the event of an accident closing Ballina Heights

11.1 Future of Deadmans Creek Road

Drive. It would also cause more traffic to use the Cumbalum Interchange eastern roundabout and may bring forward the anticipated upgrading of this roundabout estimated to cost \$2,600,000.

The various impacts are summarised in table two below.

Table Two Option Analysis

Impacts	Option		
	Lower 100 m Section Deadmans Ck Rd to 0.9 m AHD	Close & Remove 100 m Section Deadmans Ck Rd	No change to Deadmans Ck Rd
Flooding	100 year ARI flood level reduced 4mm on upstream private land and 6mm-9mm at interchange	100 year ARI flood level reduced 5 mm on upstream private land and 7mm-9mm at interchange	No reduction in upstream flood level
Capital Cost	\$225,000	\$50,000	Nil
Maintenance Cost	On going maintenance cost for section of road	Nil	On going maintenance cost for section of road
Amenity of those preferring Deadmans Ck Rd	Vehicles must use Ballina Hts Dr during heavy rain events	Additional 1.5 km trip for 1,603 vehicles each day or an extra 877,642 vehicle km per year	No impact
Cumbalum Interchange eastern roundabout	Future roundabout upgrades (\$2.6 M) can be deferred longer	Traffic diverted to roundabout will bring forward future upgrade (\$2.6M)	Future roundabout upgrades (\$2.6 M) can be deferred longer
Security of access to Ballina Heights	Reduced vulnerability with 2 alternative accesses	Vulnerable to temporary isolation if single access closed by an accident	Reduced vulnerability with 2 alternative accesses
Safety	Risk of motorists unsafely using inundated road		

Sustainability Considerations

- **Environment**

Removing/lowering the obstruction to Emigrant Creek floodwater of Deadmans Creek Road will assist restoration of more natural floodplain hydraulics. Closing Deadmans Creek Road would increase vehicle mileage by 877,642 km per year with associated adverse energy consumption and emissions impacts.

- **Social**

Closure of Deadmans Creek Road will reduce amenity for a significant portion of Ballina Heights residents, requiring them to travel longer distance/time to/from destinations in Ballina. Closure of Deadmans Creek Road will reduce traffic volumes and thereby improve residential amenity on The Ridgeway.

- **Economic**

11.1 Future of Deadmans Creek Road

Lowering Deadmans Creek Road has a significant capital cost. Closing the road will cost residents an extra 877,642 vehicle km per year and bring forward the cost of upgrading the Cumbalum eastern roundabout.

Legal / Resource / Financial Implications

A public consultation process would be required if Council decides to permanently close Deadmans Creek Road. The closure is likely to economically disadvantage up to 250 existing residences, but whether this would be grounds for any legal action is beyond the scope of this report.

There would be a significant cost to reconstruct and lower the level of Deadmans Creek Road to eliminate a small adverse impact on flood behaviour. The closure of the road would have significant and ongoing costs to members of the public who would need to travel an extra 1.5 km for each trip on the non preferred route via Ballina Heights Drive.

The annual costs to maintain Deadmans Creek Road are discussed in the information section of this report.

Consultation

Previously the Council has published for public exhibition a number of strategic planning documents which have examined this issue. More recently Council has received submissions on this matter as part of the consultation for the Cumbalum Precinct A - DCP and Contributions Plan which was considered by Council, 26 February 2015 and for the Ballina Floodplain Risk Management Plan and Development Control Plan. These latter items are reported elsewhere in this agenda.

No specific consultation has been undertaken in the preparation of this report.

It is open to Council to conduct further consultation with affected stakeholders and the public prior to making a decision on the future of the road.

Options

1. Lower the 100 m length of Deadmans Creek Road, east of Tamarind Drive to a surface level of 0.9 m AHD.
2. Close and remove the formation of the 100 m length of Deadmans Creek Road, east of Tamarind Drive.
3. No change to Deadmans Creek Road.

The major objective in considering closing or lowering Deadmans Creek Road is to reduce upstream flooding impacts of 4mm on private land and 6mm - 9mm at the Cumberlam interchange.

As noted in the above report, there will be considerable ongoing social and economic costs (equivalent to 877,622 vehicle km per year) to Ballina Heights residents if Deadmans Creek Road is closed.

11.1 Future of Deadmans Creek Road

Lowering Deadmans Creek Road represents a means of achieving these floodplain management objectives whilst avoiding the social and economic costs to residents of a full closure, but would be at a substantial capital cost to Council. This capital cost would be minimised if Council is able to obtain a floodplain management grant.

The ongoing maintenance and asset renewal cost for Deadmans Creek Road is considered reasonable when compared to the benefits of retaining the access.

On balance, option one, lower the road appears to be the preferred position as it achieves reasonable floodplain objectives and still provides a beneficial access. As asset renewal work is not scheduled for some time, it is recommended that Council take no further action at this point in time in respect of lowering the road, with the exception of seeking flood mitigation grants to reduce the costs to Council to complete a project to lower the road.

While Council has recently received many submissions in support for the retention of the road, previously there has been a strong level of interest from landholders affected by flooding and from residents who live near the road and would prefer for the closure to proceed. On this basis it is appropriate for Council to recognise all interests by seeking comment in response to the Council determining a preferred direction.

RECOMMENDATIONS

1. That, based on the information in the above report, Council determine its preference is to lower the surface of Deadmans Creek Road to a level of 0.9 m AHD when funds become available.
2. Council invite comments from the public and key stakeholders in response to the decision in point one above.
3. Council respond to opportunities to apply for flood mitigation grant funds to assist in the costs to lower the surface of Deadmans Creek Road.

Attachment(s)

Nil

MINUTES OF THE ORDINARY MEETING OF BALLINA SHIRE COUNCIL
HELD IN THE BALLINA SHIRE COUNCIL CHAMBERS
40 CHERRY STREET BALLINA,
ON 23/04/15 AT 9.00 AM

11.5 Floodplain Risk Management Study and Plan - Results of Public Exhibition

230415/3 RESOLVED

(Cr Keith Williams/Cr Keith Johnson)

1. That Council defer the adoption of the Floodplain Risk Management Study and Plan and Draft Chapter 2b Floodplain Management Development Control Plan pending further consideration of strategies to mitigate flood/drainage risk, at a Councillor briefing.
2. That Council advise relevant stakeholders, including Office of Environment and Heritage and Richmond River County Council, that it strongly supports the clearing of Drain Line C and reinstatement and clearing of Drain Line NR2 as a matter of some urgency, to address flooding impacts in the northern area of Deadmans Creek.

FOR VOTE - All Councillors voted unanimously.
ABSENT. DID NOT VOTE - Cr Jeff Johnson

11.1 Future of Deadmans Creek Road

230415/4 RESOLVED

(Cr Sharon Cadwallader/Cr Susan Meehan)

1. That, based on the information in the above report, Council determine its preference is to lower the surface of Deadmans Creek Road to a level of 0.9 m AHD when funds become available.
2. Council invite comments from the public and key stakeholders in response to the decision in point one above.
3. Council respond to opportunities to apply for flood mitigation grant funds to assist in the costs to lower the surface of Deadmans Creek Road.
4. That Council receive a report on mandatory load limits, traffic calming, Deadmans Creek Road becoming an exit only and undertaking regular maintenance of the current drainage system around Deadmans Creek Road.

FOR VOTE - All Councillors voted unanimously.
ABSENT. DID NOT VOTE - Cr Jeff Johnson

11.3 Deadmans Creek Road - Future

11.3 Deadmans Creek Road - Future

Delivery Program Engineering Works

Objective To further consider the future role of Deadmans Creek Road.

Background

Council considered a report 23 April 2015 on the future of Deadmans Creek Road and resolved as follows:

- "1. That, based on the information in the above report, Council determine its preference is to lower the surface of Deadmans Creek Road to a level of 0.9 m AHD when funds become available.
2. Council invite comments from the public and key stakeholders in response to the decision in point one above.
3. Council respond to opportunities to apply for flood mitigation grant funds to assist in the costs to lower the surface of Deadmans Creek Road.
4. That Council receive a report on mandatory load limits, traffic calming, Deadmans Creek Road becoming an exit only and undertaking regular maintenance of the current drainage system around Deadmans Creek Road."

This report responds to Part 4 of the resolution.

Key Issues

- Optimising the amenity of Ballina Heights residents
- Optimising road network access and traffic management at Ballina Heights
- Assessing the benefits and costs of traffic management measures to the community and the environment
- Drainage management

Information

Deadmans Creek Road, One Way Traffic Exit Only

Regulating Deadmans Creek Road to be one way, exit traffic only would provide some traffic volume reduction and therefore some improved residential amenity around the southern section of The Ridgeway.

Given the low accident record on the NSW CrashLink database for Ballina Heights, it may be difficult for the Local Traffic Committee to justify imposition of one way traffic on Deadmans Creek Road. It is likely the Committee would recommend that Council formally assesses the impact of noise with regard to relevant standards and guidelines. If required, alternative noise mitigation measures should be considered before or at least in conjunction with any option that reduces the service potential of the road.

11.3 Deadmans Creek Road - Future

Further traffic counts and modelling indicate imposition of one way traffic would burden Ballina Heights residents as a whole with an extra trip length of 1.5 km for 801 vehicle trips per day or 438,821 vehicle km per year. This is half the vehicle trip penalty of 1.5 km for 1603 vehicle trips per day or 877,642 vehicle km per year reported to the 23 April meeting if Deadmans Creek Road was closed at Tamarind Drive.

Further to this, discussed elsewhere in this business paper is the function of Deadmans Creek Road during flood events which have the potential to close Tamarind Drive. On these occasions it is essential that Deadmans Creek function in a two way capacity. From a traffic management point of view, if the one way system was in place, in times of flooding additional resources are required and other operational issues would arise to enable the two way function to be reinstated for the duration of the event.

Placing a Load Limit on Deadmans Creek Road

In regard to placing a load limit on Deadman's Creek Road, Clause 74 of the Road Transport (Mass, Loading and Access) Regulation 2005, provides the following powers to councils:

"74 Mass requirements on certain roads and bridges etc

(1) The council of a local government area or the Authority may do either or both of the following things by means of one or more notices (a limit notice) conspicuously displayed on or adjacent to the road, bridge or road-ferry concerned:

(a) prohibit vehicles with a laden mass exceeding a specified maximum mass from passing along or over a road, bridge or causeway,

(b) prohibit vehicles with a laden mass exceeding a specified maximum mass from using a road-ferry maintained in connection with a road.

(5) However, a limit notice does not prohibit any person from driving a vehicle along or over a public road if the destination of the vehicle lies in or on the road and there is no alternative route by which to reach that destination."

It would be open to Council to place a load limit on the section of Deadmans Creek Road between Tamarind Drive and Summerhill Crescent and force the majority of heavy vehicles going to and from Ballina Heights to divert to Ballina Heights Drive. Such a load limit would minimise wear, tear and maintenance on Deadmans Creek Road, reduce the volume of heavy vehicles using The Ridgeway and improve residential amenity in that area. Assuming heavy vehicles are 3% of total traffic volume on Deadmans Creek Road, the load limit is predicted to result in an additional 1.5 km for 48 heavy vehicle trips per day or 17,520 heavy vehicle km per year.

As this change is implementing a regulatory regime, the approval of the Local Traffic Committee would be required. It is the understanding of staff from previous reviews of this type that the RMS would prefer to only install load limits where there is a structural deficiency in a road asset meaning safety would be compromised if the asset was used and damaged by a heavy vehicle. The reason for this position is that there are concerns that regulatory signs lose impact and compliance levels reduce if drivers perceive the regulation is not needed to manage safety and function of a road, or the regulation is so widely used it is unreasonable.

11.3 Deadmans Creek Road - Future

While this is the understanding of staff, it is open for the Council to request the Local Traffic Committee to determine a response to the request.

The majority of heavy vehicle movements on this road are related to the construction of the subdivision. Council's subdivision approvals include conditions in relation to the operating hours for construction work to ensure an appropriate balance is maintained by the need to complete the work in an economic manner and have regard to the amenity of an area.

The demand for trucks at these works changes depending on the roll out of the subdivision and it is noted that in time this demand will continue to shift to the north meaning Power Drive and Ballina Heights Drive will provide the most direct route to the works site.

Proposed Traffic Calming

In NSW traffic calming devices are authorised as part of Local Area Traffic Management (LATM) schemes. These are comprehensive schemes and are defined in Austroads Guide to Traffic Management Part 8: Local Area Traffic Management (2008)

"Local Area Traffic Management is concerned with the planning and management of the usage of road space within a local traffic area, often to modify streets and street networks which were originally designed in ways that are now no longer considered appropriate to the needs of residents and users of the local area. LATM can be seen as a tool of traffic calming at the local level (Brindle 1991; O'Brien and Brindle 1999 p. 259). It involves the use of physical devices, streetscaping treatments and other measures (including regulations and other non-physical measures) to influence vehicle operation, in order to create safer and more pleasant streets in local areas".

The low number of accidents on the NSW CrashLink database does not support a priority for providing resources for an extensive Local Area Traffic Management scheme for Ballina Heights at this time.

Maintenance of Drainage System around Deadmans Creek Road

The topography of this area and the amount of change that has occurred over time has made the management of drainage at this area a challenge for Council. Works have been progressively undertaken by Council and the developer and these have been the subject of constant review.

In the opinion of staff several recent tasks have contributed to some improvements, however Council's technical staff would like to investigate some further opportunities for improvements and will undertake this work as soon as it can be incorporated into our program. General maintenance and inspection arrangements are in place as per our practices for Shire wide drainage assets.

It is also the case that due to the challenges of the site, technical and operational staff conduct regular site inspections during storm periods to ensure we continue to build our corporate knowledge and general observations.

11.3 Deadmans Creek Road - Future

It is also noted that elsewhere in this business paper, Cr Meehan has proposed a notice of motion relevant to the question of the future of Deadmans Creek Road.

Specifically this motion recommends that the Council does not take any further action in regards to the proposal to lower Deadmans Creek Road until drainage issues at Tamarind Drive are resolved.

If adopted, it is also proposed to incorporate this resolution into the Council's Floodplain Management Plan.

Specifically it is proposed that Council take no further action in regards to its decision to lower Deadmans Creek Road until the drainage issues with Tamarind Drive are resolved.

Sustainability Considerations

- **Environment**
Imposing one way exit only traffic on Deadmans Creek Road would increase vehicle trips 438,821 vehicle km per year with associated adverse energy consumption and emissions impacts. Imposing a heavy vehicle load limit on Deadmans Creek Road would increase heavy vehicle trips 17,520 heavy vehicle km per year with associated adverse energy consumption and emissions impacts.
- **Social**
Imposing one way exit only traffic on Deadmans Creek Road will reduce amenity for a significant portion of Ballina Heights residents, requiring them to travel longer distance/time to/from destinations in Ballina. Imposing one way exit only traffic and a heavy vehicle load limit on Deadmans Creek Road will reduce traffic volumes, particularly by heavy traffic, and thereby improve residential amenity for those residents around the southern end of The Ridgeway.
- **Economic**
Imposing one way exit only traffic on Deadmans Creek Road will cost Ballina Heights residents an estimated extra 438,821 vehicle km per year. Imposing a heavy vehicle load limit will cost an estimated 17,520 heavy vehicle km per year.

Legal / Resource / Financial Implications

Regulation of Deadmans Creek Road for one way exit only traffic would require the concurrence of the Local Traffic Committee. Clause 74 of the Road Transport (Mass, Loading and Accesss) Regulation 2005, would enable Council to impose a heavy vehicle load limit on Deadmans Creek Road.

Consultation

This report has responded to submissions to Council from the community about the future of Deadmans Creek Road and associated traffic management options.

11.3 Deadmans Creek Road - Future

Options

Deadmans Creek Road, One Way Traffic Exit Only

Option One – Request the Local Traffic Committee to provide advice in respect of the proposal to regulate for one way traffic on Deadmans Creek Road.

Option Two – Take no further action.

Option Three – Complete a formal assessment of potential noise impacts from Deadmans Creek Road.

In regards to Option Three, Council needs to be mindful that many residents would prefer reduced traffic noise at their properties. Therefore if the Council was to study Deadmans Creek Road, it is possible Council will receive many similar requests. Therefore Council should prioritise an investigation at this location only if it is satisfied that such a priority is warranted in the circumstances.

Given the social, economic and environmental benefits for the overall community from the two way option, and the limited residential amenity benefits associated with the potential change to one way, Option Two - No Action is the recommendation to this report.

Placing a Load Limit on Deadmans Creek Road

Option Four – Request the Local Traffic Committee to approve a heavy vehicle load limit on Deadmans Creek Road.

Option Five - No further action.

It is difficult, from the perspective of staff, to differentiate a position for either of these options.

Option Five is reasonable given the number of vehicles involved and there is sufficient control, through conditions of consent, on the time the vehicles can operate. Furthermore, as noted in the above report, by taking no further action Council will avoid the emissions and economic costs associated with approximately 17,000 extra heavy vehicle kilometres per year.

However on balance Option Four is recommended as to investigate further is considered the more the more proactive response to the issue raised to Council by some residents in the area. Council is reminded however there is the possibility that the Local Traffic Committee may not be in a position to support the request.

Proposed Ballina Heights Traffic Calming

Option Six - Commence the process to investigate, consult and implement a Local Area Traffic Management scheme at Ballina Heights.

Option Seven - No further action.

11.3 Deadmans Creek Road - Future

Given the low crash record, high resource requirements and limited likely benefits of a LATM scheme, option 7, no further action is the recommended option.

Maintenance of Drainage System around Deadmans Creek Road

If the Council has a specific maintenance request, these can be reviewed, otherwise it is recommended Council receive and note the information in the report above.

RECOMMENDATIONS

1. That based on the contents of this report Council take no further action to seek approval for one way exit only traffic on Deadmans Creek Road.
2. That Council request the Local Traffic Committee to consider the establishment of a heavy vehicle load limit on Deadmans Creek Road.
3. That based on the contents of this report Council take no action to commence a Local Area Traffic Management scheme at Ballina Heights.
4. That Council notes the contents of this report in respect to the drainage maintenance actions around Deadmans Creek Road.
5. That Council notes that matters relevant to the future of Deadmans Creek Road are to be determined elsewhere in this agenda as per the information in this report.

Attachment(s)

Nil

**MINUTES OF THE ORDINARY MEETING OF BALLINA SHIRE COUNCIL
HELD IN THE BALLINA SHIRE COUNCIL CHAMBERS
40 CHERRY STREET BALLINA,
ON 28/05/15 AT 9.00 AM**

available within 100 metres of the business which do not have residential frontage

6. That Council investigate the possible introduction of resident only parking restrictions/loading zone
7. That Council investigate a suitable site on the opposite side of the road to Belle General with a view to installing a bicycle rack.

FOR VOTE - Cr Sharon Cadwallader, Cr Keith Williams, Cr Keith Johnson, Cr Susan Meehan, Cr Ken Johnston and Cr Robyn Hordern

AGAINST VOTE - Cr David Wright, Cr Jeff Johnson, Cr Paul Worth and Cr Ben Smith

11.3 Deadmans Creek Road - Future

280515/4 RESOLVED

(Cr Susan Meehan/Cr Ben Smith)

1. That based on the contents of this report Council take no further action to seek approval for one way exit only traffic on Deadmans Creek Road.
2. That Council request the Local Traffic Committee to consider the establishment of a heavy vehicle load limit on Deadmans Creek Road.
3. That based on the contents of this report Council take no action to commence a Local Area Traffic Management scheme at Ballina Heights.
4. That Council notes the contents of this report in respect to the drainage maintenance actions around Deadmans Creek Road.
5. That Council notes that matters relevant to the future of Deadmans Creek Road are to be determined elsewhere in this agenda as per the information in this report.

FOR VOTE - All Councillors voted unanimously.

11.1 Floodplain Risk Management Plan - Adoption

280515/5 RESOLVED

(Cr Ben Smith/Cr Robyn Hordern)

That Council adopt the Ballina Floodplain Risk Management Plan, as previously exhibited, subject to the following amendments:

1. The addition of the following further flood modification measure.

7.1 **Intersection - Tamarind Drive/Deadmans Creek Road, Cumbalum**

7.1 **Intersection - Tamarind Drive/Deadmans Creek Road, Cumbalum**

Introduction

A local resident is concerned about the safety of this intersection and requests provision of street lighting to improve illumination at night.

Information

Resident's Issues

The Tamarind Drive/Deadmans Creek Road intersection was originally an intersection onto the then Pacific Highway managed by RTA/RMS. Since the opening of the Ballina Bypass the old highway (now Tamarind Drive) has been managed by Council. A local resident has made submissions to Council over a number of years regarding the safety of this intersection. Council staff has requested the Committee's technical advice on the matters raised in the resident's email of 25 September 2018. This email (sent to Committee Delegates separate to this agenda) requests installation of street lighting at the intersection and amongst other matters advises:

- *"I write to advise that I have now personally witnessed 2 recent dangerous vehicle operation related situations when turning right from Tamarind Drive into Deadman Creek Road Cumbalum at night during heavy rain.*

Despite being aware of the corner, and taking care, as a result of being "night blinded" by a passing truck, I was involved in the last one during the heavy rain last week and, from a stationary start, I underestimated the turn angle required and ended up 70% off the Deadman Creek road at the flood sign.

The other incident involved a car that stopped as it turned right to correct its incorrect entry approach in the rain as a second car approached from Lismore forcing it to take stop and take evasive action. Previously I was made aware of another near miss in the rain at night earlier in 2018 where a visitor missed the turn off in the dark when raining."

- *"The BHAG (Ballina Heights Action Group) has been campaigning for at least 4 years for this light with no success. It will take a serious accident sadly, and possibly a fatality. And the Coronal inquiry will find all the requests and data incorrectly risk assessed or ignored by the Shire. The Barrister for the deceased will have a field day suing the responsible authorities. The Shire is failing at it's duty of care, and by not even doing a cost estimate has no defencethat is strategically naïve in my experience."*

The resident is a strong advocate for using a risk assessment approach to assess the need for street lighting at the intersection.

Intersection Context

7.1 Intersection - Tamarind Drive/Deadmans Creek Road, Cumbalum

Deadmans Creek Road and Ballina Heights Drive are the two accesses to the Ballina Heights/Cumbalum urban release area. Ballina Heights Drive intersects with Tamarind Drive (Old Pacific Highway) at the eastern Cumbalum Pacific Highway Interchange roundabout, 3.5 km north of the of the Ballina urban area. Deadmans Creek Road intersects with Tamarind Drive 830m further south towards Ballina. Ballina Heights Drive is the major arterial road for access to the Ballina Heights/Cumbalum urban release area and is planned to be extended as development proceeds and eventually link to proposed urban areas at Ross Lane.

Deadmans Creek Road provided the initial and only access to Ballina Heights in the initial period of development. Since the connection and extension of Ballina Heights Drive, there has been some debate in Council about the long term future of Deadmans Creek Road, having regard to residents requests to minimise the traffic volumes on The Ridgeway in Ballina Heights and to flood studies that suggest the formation of Deadmans Creek Road is impeding floodwaters and could be removed once the alternative access via Ballina Heights Drive is operable.

Options considered have included:

- close the section of Deadmans Creek Road connecting to Tamarind Drive (Tamarind Drive to Summerhill Crescent)
- convert this section to one way traffic only
- keep Deadmans Creek Road open, but due to its flooding impedence, lower its level across the floodplain to create a low level causeway
- impose a load limit to reduce volume of trucks reaching The Ridgeway.

The Tamarind Drive/Deadmans Creek Road intersection is located in a rural area. Its configuration provides channelised right and left turn lanes from Tamarind Drive (see aerial view attached). It is located on flat land where there is satisfactory sight distance from all directions. Recent traffic counts are:

- Deadmans Creek Road, Traffic Volume January/February 2017 - 1,860 vpd.
- Tamarind Drive, Traffic Volume September 2017 - 10,928 vpd.

The accident record for the intersection in the NSW CrashLink database is summarised in the following table:

ID	Date	Street	Time	Degree	RUM	TU1 DIRN	TU1 MAN	TU2 DIRN	TU2 Man
718093	14/2/2010	Pacific Hwy	2145	Injury	13 Right Near	West	Turn Right	South	Proceed in lane
830432	18/2/2013	D'mans Ck Rd	0835	Non injury	31 Left Near	West	Veering left	West	Wait turn left

Street Lighting Standards

In regards to the need for street lighting, *Austroad Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings* advises:

7.1 Intersection - Tamarind Drive/Deadmans Creek Road, Cumbalum

"In rural areas it is common not to illuminate a route, but intersection lighting may be used to indicate the presence of an intersection or to illuminate vehicle paths through a channelised treatment. This is particularly important if signage (directional, regulatory, or warning) or delineation is insufficient to provide clues to enable deceleration to a safe manoeuvring speed.

There are two basic lighting situations at intersections:

- *Flag-lit – used at minor rural intersections that are remote and do not have channelisation and compromise one or two luminaries specifically to indicate the presence of the intersection*
- *Normal – used at intersections where more than one of the following apply:*
 - *High conflicting traffic volumes*
 - *Channelisation at the intersection*
 - *It would be difficult for drivers to readily identify in advance the general layout of the intersection or their desired route through the intersection*
 - *Significant crossing movements, especially by pedestrians or cyclists (significant pedestrian movement across a road requires floodlighting of the facility)*

Australian and New Zealand Lighting Standards are contained in AS/NZS 1158 and design details are covered in the Guide to Road Design Part 6B (Austroads9k)."

AS/NZS 1158.1.1:2005 advises:

"3.5 ISOLATED INTERSECTIONS

3.5.1 Application

The provision of lighting at intersections on otherwise unlit roads, may be warranted in the interests of road safety.

Lighting of this type is sometimes referred to as 'flag lighting' since its purpose is to draw the attention of approaching motorists to the presence of the intersection from a sufficient distance away. Flag lighting is not intended to illuminate the intersection to the requirements of Table 2.1, however it is essential that care be taken not to create a glare source for motorists. The treatment required will depend on the nature of the site, as follows:

- (a) Intersections in outer urban and semi-rural locations where the approach roads are presently unlit.*
- (b) Intersections that are geographically remote from urban development (e.g. rural site).*

Flag lighting shall, where deemed necessary at a particular intersection, be provided in accordance with Clause 3.5.2.

If reticulated electricity is remote, the use of luminaries powered by solar panels should be considered.

3.5.2 Design Rules

7.1 Intersection - Tamarind Drive/Deadmans Creek Road, Cumbalum

- (a) For intersections of the type referred to in Clause 3.5.1(a), lighting complying with Clause 3.4 shall be provided at the intersection and at least two spans of lighting complying with Clause 3.2 shall be provided on each of the roads leading into the intersection
- (a) For intersections of the type referred to in Clause 3.5.1(b), the lighting provided may depend on the importance of the intersection as follows:
- (i) If channelised to reduce the possibility of vehicular conflicts and provided with retroreflective advanced warning and guidance signage, lighting may be deemed not to be necessary. If, because of high volumes or potential safety problems, lighting is deemed necessary, then the lighting provided shall comply with Clause 3.4.
 - (ii) If the intersection is not channelised and the traffic volumes are low, conventional road lighting techniques may not be warranted. For such applications one or two strategically placed luminaries shall be installed to highlight the location of the intersection for approaching traffic and to generally illuminate the limits of the traffic conflict area. The luminaries shall utilise lamps with a light output not greater than 16000 lm and shall be mounted at a height of not less than 7 m."

Risk Management Approach

Road authorities are guided by Austroads in their approach to risk management of road network crashes. The *Austroads Guide to Road Safety Part 7 Road Network Crash Risk Assessment and Management* (Austroads Pt 7) identifies a range of methodologies for identifying, analysing, evaluating/prioritising and treating road network crash risk. This risk management approach has been specifically developed for road networks and contains guidance for the steps in the road network crash risk assessment and management process.

In regard to identifying risks, Austroads Pt 7 advises that the insights provided by the Haddon Matrix have led to the safe systems approach being developed:

- safer speeds – speed limits which are appropriate for the function and construction of the road, terrain, and adjoining land use
- safer vehicles – vehicles which protect occupants through structural design, protective equipment and features designed to ensure use of protective equipment (e.g. seat belt reminders), with design features which reduce injuries to vulnerable road users, and which provide better conspicuity of the vehicle and signals (e.g. through high-mounted brake lights or daytime running lights)
- safer roads and roadsides – treating sites with adverse crash histories or which have the potential to generate higher than average numbers of crashes, roll-out of cost-effective road improvements and mass action programs, providing safer roadsides.

Ballina Shire Council incorporated the safe systems approach into its "Road Safety Strategy 2014/15 – 2023/24". Key priorities of the strategy being:

7.1 Intersection - Tamarind Drive/Deadmans Creek Road, Cumbalum

PRIORITIES

- SRR1: Apply Safe Systems principles and better integrate land use planning and transport planning to improve safety for all road users.
- SRR2: Deliver a roads and roadside maintenance and construction program that minimises risk to all road users.
- SRR3: Improve the safety of vulnerable road users and encourage the uptake of more sustainable travel modes.
- SRR4: Manage the impact of heavy vehicles on the local road network.
- SRR5: Protect and increase funding streams for roads and roadside improvements.

Austrroads Pt 7 advises that *“When assessing risks for road trauma, blackspot analysis is typically used to identify locations with high levels of risk. Blackspot sites, lengths of road or areas with crashes over a minimum number per year are selected for inclusion in the analysis (for instance, three casualty crashes over a five year period may be used as a minimum for a site). A list of sites is produced which forms a ‘short list’ for more in depth assessment and consideration for treatment.”*

In part, Austrroads Pt 7 gives the following guidance for prioritisation of risks:

6.2 Prioritising risks

One of the overall aims of risk management in the road safety context is to reduce trauma, and to do this in the most cost effective way. Given limitations on budgets, it is important to determine which interventions will produce the greatest savings in casualty numbers and severity. In many cases risks may be identified, the treatment of which would be at the expense of other more serious risks. As identified earlier, there are several sources of information relating to risk, including blackspot analysis, information from pro-active approaches (such as road safety audit), maintenance programs and public feedback. Each of these sources needs to be used in the process of prioritisation for later treatment.

Blackspots, routes and areas are perhaps the easiest of risks to prioritise, and there are well-established techniques available for this task. Other types of risk are more difficult to prioritise, although there is an emerging array of location-specific and network-level tools available.

6.2.1 Evaluation based on historic data

The most commonly applied technique to evaluate existing crash locations is to assess historical trends in data (including blackspot analysis and other techniques described in the previous section). This involves comparison with existing crash numbers (or crash rates, or the social cost of these crashes) over the network. However, evaluation also requires knowledge of expected reductions at the locations if they are treated. Predicted reductions in crashes from proposed treatments are calculated to provide input to a benefit cost analysis at each site. Sites can then be compared, and the most economically advantageous set of sites and interventions programmed for remedial work. For further discussion on this issue, see Appendix D, or for more detailed coverage, see Austrroads (2004).

Austrroads Pt 7 advises regarding treatment of risk:

7.1 Intersection - Tamarind Drive/Deadmans Creek Road, Cumbalum

When treating the risk associated with road trauma, there are a number of ways that authorities can decrease the level of risk. These include:

- reduction of exposure to the risk
- reduction in the likelihood of a crash (including the concept of a 'no surprises' environment)
- reduction in severity (e.g. creating a more forgiving road environment).

In terms of solutions to the risk related to exposure and consequences, remedial treatments could be viewed as:

- elimination - remove the hazard
- substitution - use a safer option
- engineering controls - in terms of design modifications
- isolation - where the hazard is removed from direct influence
- administrative controls - including educational initiatives, speed limits, licensing, drink driving laws, or
- personal protective equipment – for example vehicle improvements (air-bags, electronic stability control etc.).

Additionally, the Haddon Matrix and Safe System may be used to formulate countermeasures based on human, vehicle and road related issues (including speed), and how these can influence safety before, during and after a crash.

Of greatest relevance to most authorities is the effect on risk from changes to the road environment. Through the monitoring of engineering based measures, information exists on the level of reduction that can be expected from measures in different road environments.

Site Evaluation

Prior to writing this report, the site was inspected in vehicle (for all turning movements) and on foot in daylight and night conditions. Particular attention was paid to the Tamarind Drive northbound, right turn into Deadmans Creek Road movement (raised as a major concern in the resident's email of 25 September 2018). The movement area is relatively undefined due to the need to accommodate both right and left turns from their respective protected turn lanes on Tamarind Drive into the Deadmans Creek eastbound lane.

There is also a small horizontal curve east of the intersection that may confuse identification of the alignment of the eastbound lane. The lack of definition could lead to uncertainty in selection of the correct turning path.

Normally there is a Deadmans Creek Road centreline and edge lines on the turning splay to define the area, however a recent reseal has covered much of this delineation infrastructure (planned to be restored when linemarking contractor is available in December).

Improved delineation of this movement area would improve certainty regarding the correct path to be driven through the intersection.

A further site inspection was conducted with road design staff to explore options for improved delineation of the intersection, particularly at night for the right turn movement from Tamarind Drive.

The options for improved delineation of the turn movements (see attachment to report) include:

- Restoration of linemarking on Deadmans Creek Road centreline and intersection splay edges

7.1 Intersection - Tamarind Drive/Deadmans Creek Road, Cumbalum

- Provision of raised reflective pavement markers on the splay edges
- Provision of close spaced guideposts behind the north east splay
- Provision of a small painted median to better define and separate the left and right turn, turning paths from Tamarind Drive.

Discussion

Council has used the black spot analysis technique for assessing, prioritising and treatment of road network crash risks. This technique is generally based on historical data and in some cases on road safety audits. A significant number of high priority blackspots with high accident records have been identified and treated in recent years. The crash record at the Tamarind Drive/Deadmans Creek Road intersection does not indicate there is a high level of risk and high priority for treatment on this basis.

Whilst street lighting would improve illumination and vision for drivers at night at this intersection, it is considered it would not provide the delineation required to provide more certainty of correct turning paths in both daylight and night time conditions. If street lighting was to be provided, compliant with AS/NZS 1158.1.1:2005, it would also need to be compliant with Clauses 3.4 and 3.5 (in regard to illumination) and be provided at the intersection and at least two spans of lighting on each of the roads leading into the intersection. Given the size of the intersection, this form of street lighting would be very expensive. Minimalist "flag lighting" would not be compliant with the standard at this intersection (being a *Clause 3.5.1(a)* type intersection and having a channelised configuration).

Site inspections investigating the specific issue raised in the resident's email, being the right turn from Tamarind Drive, have identified that delineation of this movement can be significantly improved by restoring the pre-reseal linemarking, installation of raised reflective pavement markers (centreline and splays), provision of close spaced guideposts behind the north east splay and provision of a small painted median to better define and separate the left and right turn, turning paths from Tamarind Drive. This treatment would have only moderate cost and provide a significant benefit in both day and night conditions.

RECOMMENDATION

The Committee's technical advice is requested regarding the Tamarind Drive/Deadmans Creek Road intersection.

Attachment(s)

1. Tamarind Drive / Deadmans Creek Road Aerial View
2. Tamarind Drive / Deadmans Creek Road Delineation Proposals

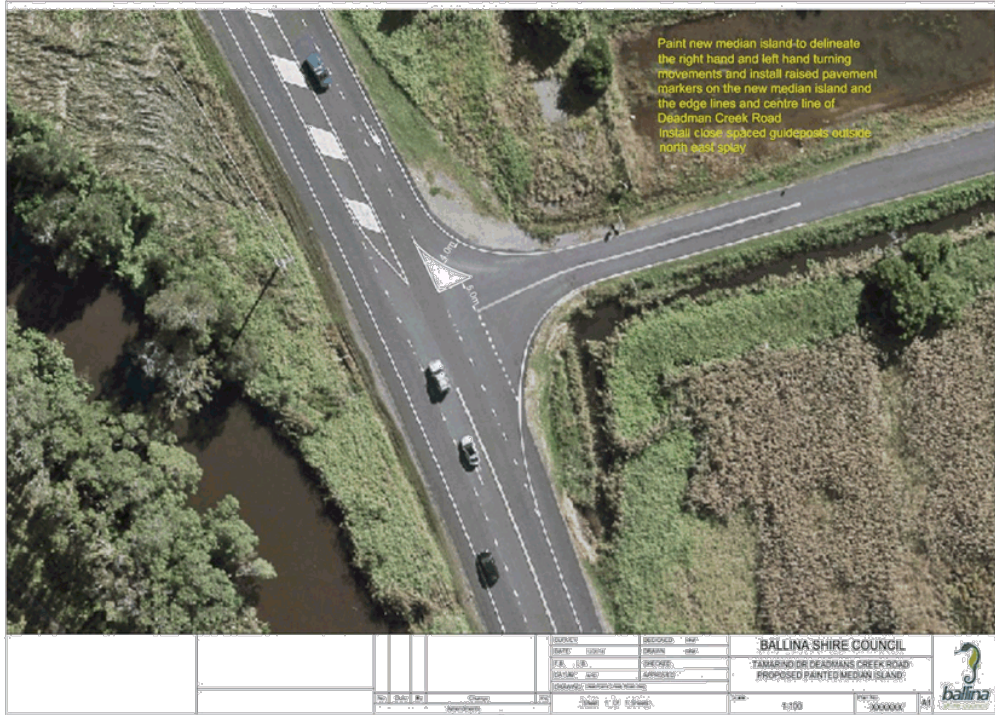
10.7 Deadmans Creek Road, Cumbalum - Service Levels.DOC

7.1 Intersection - Tamarind Drive/Deadmans Creek Road, Cumbalum.DOC



10.7 Deadmans Creek Road, Cumbalum - Service Levels.DOC

7.1 Intersection - Tamarind Drive/Deadmans Creek Road, Cumbalum.DOC



enquiries refer
John Truman
in reply please quote
19/1405, 19/4728



18 January 2019

Mr John Bout
johnbout@inet.net.au

Dear Mr Bout

Re: Intersection of Deadmans Creek Road and Summerhill Crescent

I refer to your email regarding visibility at the intersection of Deadmans Creek Road and Summerhill Crescent.

We have again inspected the site to review the sight distances at this intersection. The sight distances were assessed with reference to Austroads Guide to Road Design Part 4A and using speed data collected in January and February 2017.

As per our previous assessment, the intersection was found to have adequate visibility for a driver approaching the intersection (from either direction) and a vehicle preparing to turn right into Summerhill Crescent. The distances were checked for a range of design speeds as well as recorded vehicle speeds. The sight distances were also checked for an upper limit design speed of 70km/h, and only on the southbound approach was the sight distance reduced slightly by vegetation growth within private property.

The inspection also confirmed that the sight distance is compliant with the design guide when the maintenance method is our regular slasher. Visibility between vehicles on Deadmans Creek Road approaching the intersection in opposing directions is improved when side arm slasher trimming is carried out on vegetation along the drain bank but this additional work is not a design requirement. This means the existing, regular maintenance cycles for the slashing and side arm trimming are sufficient for this intersection.

We have also reviewed our maintenance records and these reports show we have attended the slashing on a regular 5-6 week maintenance cycle during the two growing seasons in 2018 being January to June and October to December.

In respect of your concerns about high vehicle speeds, as the posted speed limit is below the design speed limit, and an expected level of driver compliance exists with the speed zone, in these circumstances enforcement action is the preferred strategy to manage those drivers who use the road with very high speed.

Your suggested options of relocating, or lining the drain have been considered and costed by our technical officers. In respect of spraying vegetation, this is not considered a permanent solution, however we have identified there will be benefits if we increase the spraying around the streetlight posts and guideposts at the intersection to retard growth between slashing.

To relocate the drain requires us to acquire an easement over private property and in light of our assessment of the sight distance requirements, pursuing this option is not supported at this point in time. This option will involve infrastructure costs, legal and survey costs plus potential compensation costs in the order of \$10,000.

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Lining the drain with spraycrete is not a standard treatment for drains of this type and we estimate the cost of this work to be \$10,000.

As the maintenance slashing is part of a wider program, it is relatively inexpensive with the slashing costs for 2018 estimated to be \$675. Therefore, in our opinion, these options are unlikely to fully negate the requirement for regular slashing of the verge which is what provides the required sight distances and any additional benefits are marginal when compared to the cost.

In respect of your comments regarding the street lighting, as per your email, this matter has now been considered by the Local Traffic Committee and based on the Committee's advice, Council does not intend to take any further action at this point in time.

I have provided a copy of your email and this response to all councillors.

Thank you for taking the time to write to us with your suggested options to improve this intersection.

Yours faithfully



John Truman
Group Manager
Civil Services