

21 December 2023

Attention: Chief Executive Officer Douglas Shire Council 64-66 Front Street Mossman QLD 4873 Our reference: 026-2201

## **Operational Works Application - Ocean Breeze Estate - Stages 3A2 & 3B**

With reference to Council's Information Request dated 11 July 2023 (your ref OP 2023\_5438/1 (1168266)) we provide further information below:

#### Earthworks

1. Clarification is required for the treatment and ongoing operation of the drainage path along the eastern boundary of lots 7 to 16 in particular.



Figure 1: Cross section of batter

a. Concern is raised with the resulting drain invert now shown as being offset 0.3 m from the property boundary compared to the existing offset of approximately 2 m. The applicant is to demonstrate how the invert will be protected and not filled over by future owners.

The current drain invert will be redundant due to the proposed stormwater network diverting the catchment through the site via the new pipe and road network.

The detail has been revised to provide a subsoil drain at the invert of the common property boundaries. Due to the small catchment at this location (small sliver at the rear of lots), the high sand content of the soil, and the addition of the proposed subsoil drainage, any ponding of the nuisance runoff will be very short term. This treatment will allow filling to occur, if desired, by the property owners.

# b. Confirm that there is no adverse flooding impact to existing properties along the boundary due to flow within this drain being reduced.

Reduced flow in the drain generally means less impact for flooding. The existing drain no longer takes flow from Melaleuca Drive, thus any flow is from the local allotments, and the portion of the existing lots which do not drain to their frontage, ie. their legal point of discharge.

# c. Clarify how the resulting drainage path will drain freely given that the levels provided in the Civil Engineering Drawings indicate sag points along the boundary of the development and existing Lots. The applicant is to demonstrate how free draining conditions will be maintained.

The survey has been inquired and there is a section of drain which does not freely drain. It is noted that some 'bird baths' are created at the rear of existing lots which cannot be designed out without filling in the rear of the existing allotments. The existing lots have a legal point of discharge being their respective road frontages but filling this space may cause undue drainage issues to these lots which have used the drain.

d. Confirm that the slope of the batter at the rear of Lots 7 to 16 along the eastern boundary of the development maintains the maximum slope of 1 in 4 as detailed in the Civil Engineering Drawings (maximum slope of 1 in 4 as stated in the typical cross section provided; see figure 1).

The note has been revised to be 1:2 max. There is no requirement for the batter to be 1:4 max.

# Stormwater

2. The proposed grade of Road F between the Chainages 75 to 251.124 is shown in the Longitudinal Section provided as being graded to 0.3%. Reference is made to FNQROC D1.06 which states that road "A general minimum gradient of 0.5 per cent should be adopted for all roads, which will ultimately include kerb and channel. In very flat conditions where approved by Council it may be reduced to 0.3 per cent." The applicant is requested to clarify the reasons for the reduction to the minimum 0.3% grade. For the 0.3% road grade, the capacity of the road to convey the Major event flows is to be confirmed.

A flatter grade of 0.3% with the approval of Council helps to minimise the height of the earthworks pads and road on the southern boundary against Melaleuca Drive.

3. The Stormwater Calculations report identifies non-compliance (ponding depth) in the Minor event. The report addresses the flow depths for the overtopping in the Minor event. The applicant is to provide calculations for the 1% AEP (Major) event, including flow depths and velocities to enable consideration of the outcome proposed.

The major event is compliant, that is overland flows are less than the calculated capacities. A calculation sheet for flow rates, velocities and the depth velocity product is attached with the following highlighted for emphasis:

At pit 7/1 the 1% AEP overland flow is calculated at 173mm deep (with a 250mm deep capacity)

At pit 4/1 the 1% AEP overland flow is calculated at 194mm deep (with a 250mm deep capacity)

4. It is acknowledged that the applicant has provided advice on the 1% AEP flow for the critical location of Melaleuca Drive in the Stormwater Calculations report. It is requested that the applicant clarify that the flow depths for the 1% AEP event along Melaleuca Drive remain trafficable. An annotated plan with road flows depths would assist to address this query.

A flow depth of 220mm with a depth velocity product of  $0.159m^2/s$  (below the pedestrian safety limit and the QUDM design recommendation for an urban causeway) was calculated in the vicinity of #29 and #31 Melaleuca Drive during a 1% AEP event. It is expected that the road reserve for Melaleuca Drive will convey some flows during a 1% AEP event as the major flow path.

The development has not impacted these flows significantly and the flow depth and depth velocity product are within the limits of QUDM.

# 5. Subject to the advice in 4 above, confirm road signage required to inform traffic (for example "Road subject to flooding" or similar).

No signage is required based on the response for item 4 above. Water only overtops in larger (major event) storms where almost all roadways will have inundation.

# 6. Explore rationalising stormwater pits 2/2, 1/2, and 3/1 to improve drainage.

We have explored multiple options in this area and the proposed solution is the most efficient for infrastructure. Pit 3/1 is a large structure already, connecting any larger pipes to the side of pit 2/1 will create a much larger structure at this location also.



## Kerb Grades

7. The applicant is requested to review the proposed grade of kerb at the crest of the cul-de-sac. Levels provided on the Intersection Details sheet of the Civil Engineering Drawings indicate that the kerb grade at the crest of the cul-de-sac drops below the 0.3% minimum grade. The Applicant is requested to demonstrate the minimum grade is achieved as stipulated in FNQROC D1.06.

The design model and levels on the plans have been adjusted to have an apex in the kerb with 0.3% negative fall in lieu of a vertical curve.

8. Attention is brought to the grade of the proposed on the outside of the curve between Chainages 210 and 240. The road centreline is shown as having a grade of 0.3%, meaning the kerb grade on the outside of the kerb is less. A check of the levels appears to indicate that this is the case. The applicant is requested to confirm that the minimum grade is maintained along the kerb between Chainages 210 to 240.

See amended drawings with the road grade that has been amended to achieve 0.3% longitudinal grade for the outside kerb.

## Infrastructure

9. The applicant is to confirm the clearances and services alignments where the twin 1050mm diameter RCPs cross existing infrastructure on Cooya Beach Road. The existing water main is shown on



the General Arrangement Plan close to the proposed stormwater crossing location, as well as existing streetlighting and electrical pillar.

It is requested that the services and clearances be shown on the Stormwater Long

Sections provided to demonstrate works are outside of the zone of influence of existing infrastructure. The applicant is also requested to demonstrate how the scheduling of works will take place.

Advice Note: Council will likely condition a detailed staging plan for the construction of the development.

Potholing will occur during the construction. Any relocations, if required will be undertaken at that time with the relevant approvals.

# 10. Extend concrete footpath to the head of the cul-de-sac and increase width to 2m.

The 1.5m width of pathway matches the width of existing path, and historical DA and approvals. There is no requirement to extend the pathway to the cul-de-sac, and the current proposal shows a logical termination for this development. (find masterplan?)

11. With reference to the cross section (in Figure 2 below) for the twin 1050 RCPs between Manhole 2/1 and 1/1. The applicant is to confirm the zone of interference for the RCPs and demonstrate that there is no impact on the above infrastructure. The applicant is to confirm the zone of impact for the RCPs and demonstrate that there are no restrictions on adjacent lots and/or no impact to replacement of pipes in the future. The depth of the RCPs are not provided on the cross section to determine zone of influence.



Figure 2: Cross Section of Twin 1050 RDPs between Manhole 2/1 and 1/1

The infrastructure is contained within easements, and the 'zone of influence' extends outside the easement width by 780mm to the west and 700m to the east. The width of the zone of influence is outside normal building setbacks of 1.5m to OMP. The section is typical in nature to detail the concrete stab at the finished surface level. The drainage longsections show the depth of pipe as it varies along the length.

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#### Landscaping

12. Provide a landscape plan detailing the landscaping to be installed and location of street trees having regard to the location of services.

Landscaping plans will be submitted as a separate application.

We trust the above meets with your approval and look forward to receipt of your approval. Should you require any additional information, please do not hesitate to me on 0402 568 698 or the email address below.

Yours sincerely

Craig Crahch

Craig Caplick Principal Engineer | RPEng RPEQ 25102 craig@consultneon.com.au | 0402 568 698









1:100 0

1:1000 0

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A 16.08.23 INITIAL ISSUE

Rev Date Revision Note:

Drawings\03 Drawings\026-2201-03-DRG-9201\_Drain Existing.dwg



JONPA PTY LTD

OCEAN BREEZE ESTATE - COOYA BEACH - STAGE 3A2 & 3B

INFORMATION FOR REAR OF LOTS 7 TO 16

А

A3 Full Size (Scale as shown

026-2201-03-DRG-9201





Section: ROAD F (Road Width = 6m / Road Crossfall = 3% / Verge Crossfall = 3% / Reserve Width = 17m)

Description	Long Slope	Flow Depth	Flow	Velocity	dxV	
	(%)	(m)	(m <sup>3</sup> /s)	(m/s)		
1% AEP Design Case Capacity	0.3	0.250	1.602	0.913	0.228	Capacity for major event, 250mm depth limited
1% AEP Severe Case Capacity	0.3	0.285	2.211	0.955	0.273	Capacity for severe event, full road reserve
18% AEP Design Case Capactiy	0.3	0.102	0.156	0.529	0.054	Minor event limit to crown (0.078m3/s each side)
18% AEP Within Top of Kerb Capacity	0.3	0.130	0.310	0.647	0.084	Minor event limit to top of kerb (0.155m3/s each sid
18% AEP at 7/1 (Calculated)	0.3	0.120	0.249	0.603	0.072	Minor event, at pit 7/1 flow is 18mm above crown (0
18% AEP at 4/1 (Calculated)	0.3	0.113	0.211	0.573	0.065	Minor event, at pit 4/1 flow is 11mm above crown (0
1% AEP at 7/1 (Calculated)	0.3	0.173	0.646	0.783	0.135	Major Event Calculated
1% AEP at 4/1 (Calculated)	0.3	0.194	0.860	0.827	0.160	Major Event Calculated