

Our Ref: 18117

13 June 2019

Dunmore Sand & Soil Pty Ltd
Via Email: adnan.voloder@boral.com.au

Attention: Mr Adnan Volodor

Dear Adnan,

**RE: DUNMORE LAKES SAND EXTRACTION PROJECT
MODIFICATION TO DA 195-8-2004 MOD 2
RESPONSE TO ROADS & MARITIME SERVICES REQUEST FOR FURTHER INFORMATION
ADDITIONAL INTERSECTION MODELLING FOR PRINCES HWY & RIVERSIDE DRIVE
RMS REF : STH11/00218/15**

Please find presented herein, additional information prepared in response to Roads & Maritime Services (RMS) request for further information as set out in RMS correspondence dated 27 May 2019.

Locations for Further Intersection Operation Assessment

Consultation between RMS and TPPP (6 June 2019) has confirmed that the locations where further intersection operation assessment is required are as follows:

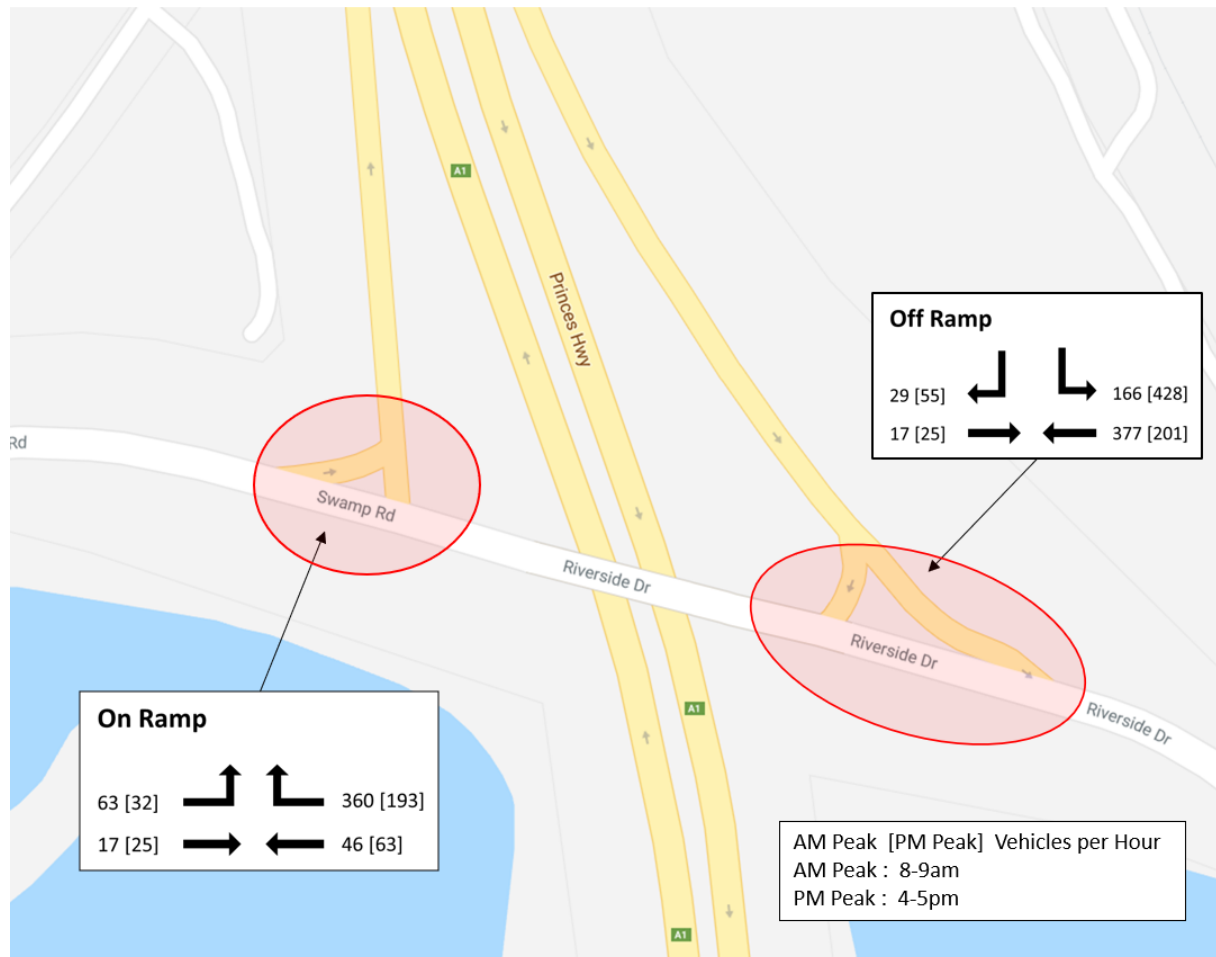
- Princes Highway Off Ramp / Riverside Drive
- Princes Highway On Ramp / Riverside Drive

For clarity, these locations are shown in Figure 1 below.

Peak AM and PM period vehicle turning movement counts were undertaken at the intersections on Thursday 6 June 2019.

The surveyed peak flows are presented in Figure 1. The surveyed peak period flows were used to generate to “Base Conditions” models as presented in this further assessment.

Figure 1: Location of Additional Intersection Operation Assessment and Surveyed Peak Hour Traffic Flows



Assessment Scenarios

As presented in the *Dunmore Lakes Sand Project MOD 2 Stage 5 – Traffic Impact Assessment* (April 2019), for the purpose of the traffic assessment it is assumed that the importation of VENM to the site will occur over a 2 year commencing in 2027 and be completed by 2028.

For the intersection modelling presented herein, the following assessment scenarios have been considered:

- Scenario 1 – 2028 Base conditions (no Stage 5 traffic) – surveyed 2019 traffic + 2% pa growth to 2028.
- Scenario 2 – 2028 With Stage 5 traffic – Scenario 1 + 5 trucks per hour in + 5 truck per hour out.

Both scenarios include observed light and heavy vehicle flows.

SIDRA 8.0 Network Model Layout

The SIDRA network model utilised in the analysis presented herein is shown in Figure 2.

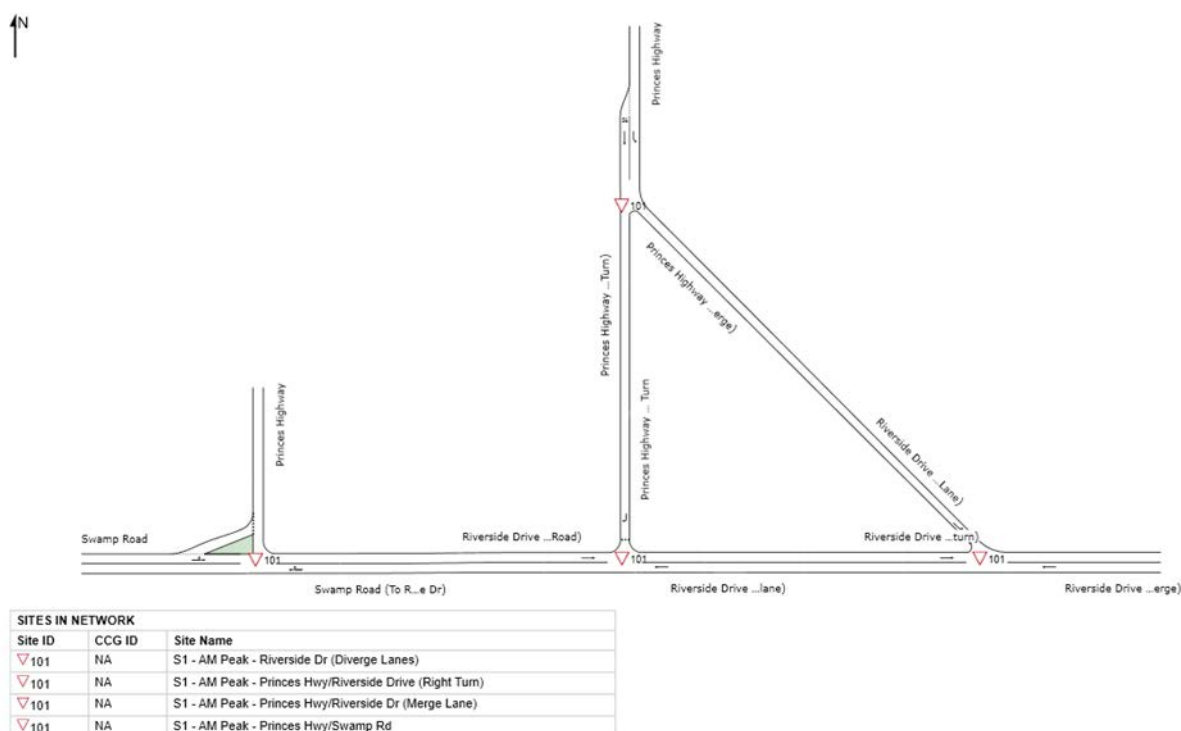
Figure 2: Modelled SIDRA Network

NETWORK LAYOUT

Network: N101 [S1 - AM Peak (Princes Hwy/Riverside Dr/Swamp Rd)]

New Network

Network Category: (None)



Note: The Princes Highway and Riverside Drive intersection has been split into three separate intersections to accurately model the merging effects of the left turn from Princes Highway onto Riverside Drive (eastbound).

SIDRA 8.0 Network Modelling Results

The Level of Service (LoS) results of the SIDRA modelling are presented in Figure 3 and Figure 4. Average Level of Delay results are summarised in Table 1.

Copies of the electronic SIDRA modelling files have been attached and provided to the RMS as part of this additional information.

The results indicate that the intersections at the on and off ramps intersections between the Princes Highway and Riverside Drive will operate satisfactorily with and without additional truck traffic generated by the importation of VENM to the Stage 5 site in 2028.

Figure 3: Scenario 1 – Base 2028 Level of Service Modelling Results

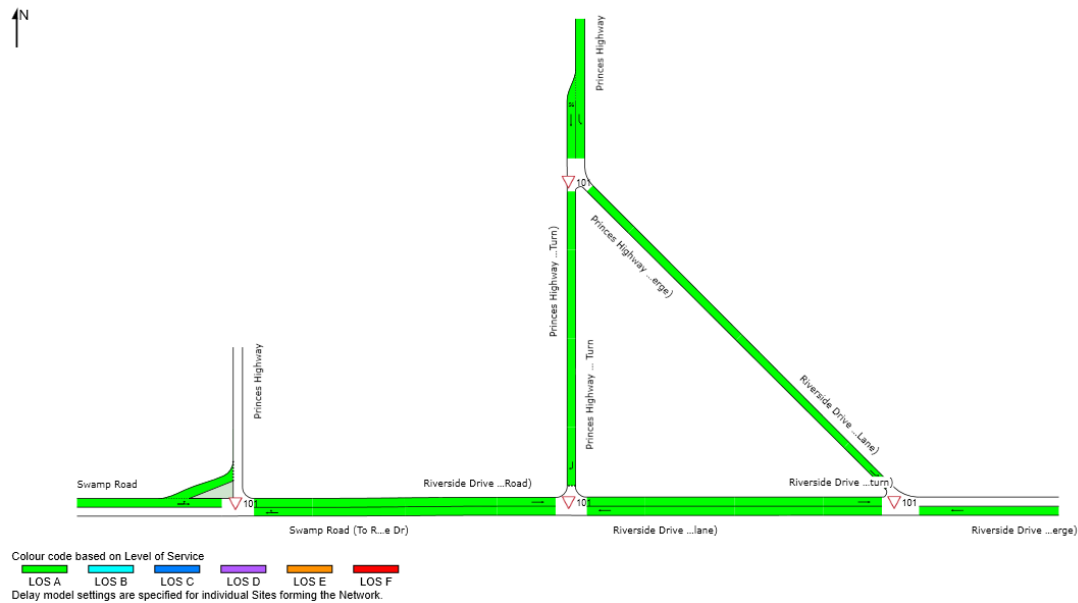
LANE LEVEL OF SERVICE

Lane Level of Service for Network Sites

Network: N101 [S1 - AM Peak (Princes Hwy/Riverside Dr/Swamp Rd)]

New Network

Network Category: (None)



LANE LEVEL OF SERVICE

Lane Level of Service for Network Sites

Network: N101 [S1 - PM Peak (Princes Hwy/Riverside Dr/Swamp Rd)]

New Network

Network Category: (None)

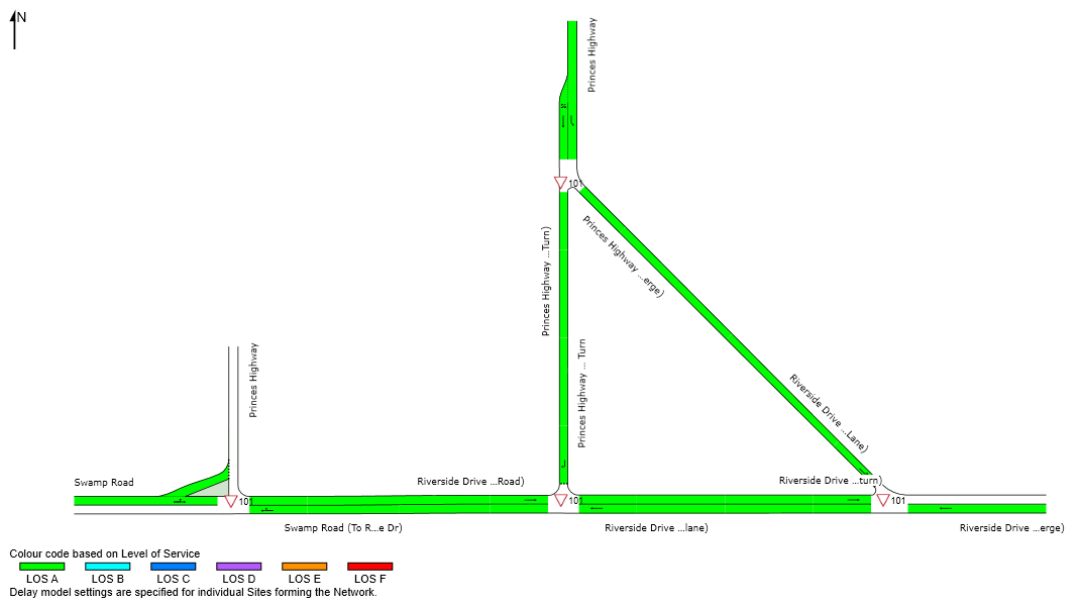


Figure 4: Scenario 2 – Base 2028 + Stage 5 (proposed development)
Level of Service Modelling Results

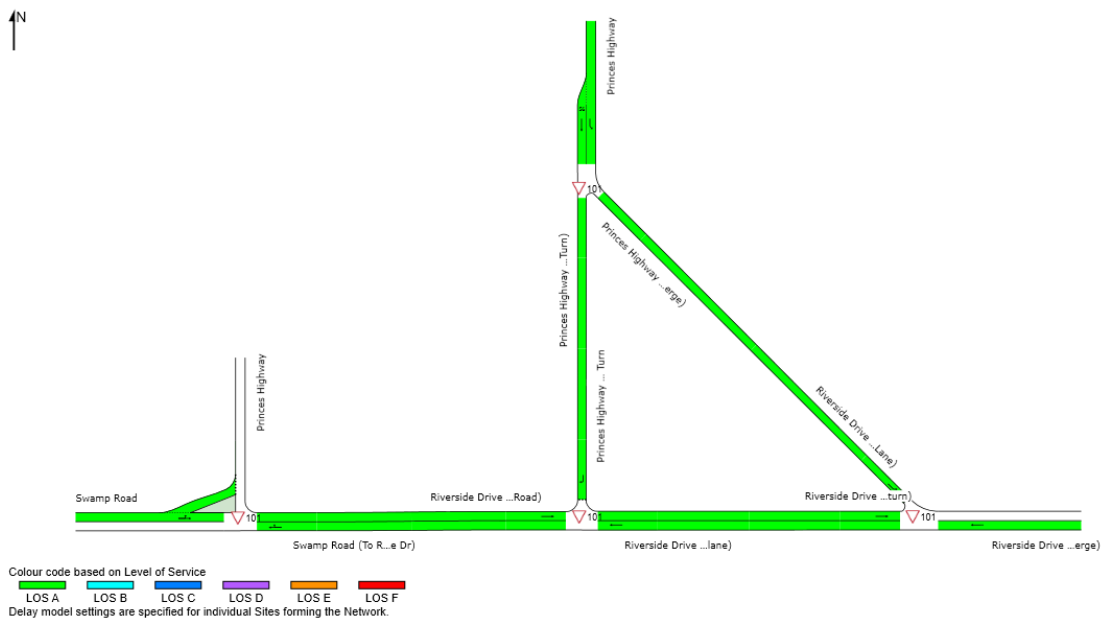
LANE LEVEL OF SERVICE

Lane Level of Service for Network Sites

Network: N101 [S2 - AM Peak (Princes Hwy/Riverside Dr/Swamp Rd)]

New Network

Network Category: (None)



LANE LEVEL OF SERVICE

Lane Level of Service for Network Sites

Network: N101 [S2 - PM Peak (Princes Hwy/Riverside Dr/Swamp Rd)]

New Network

Network Category: (None)

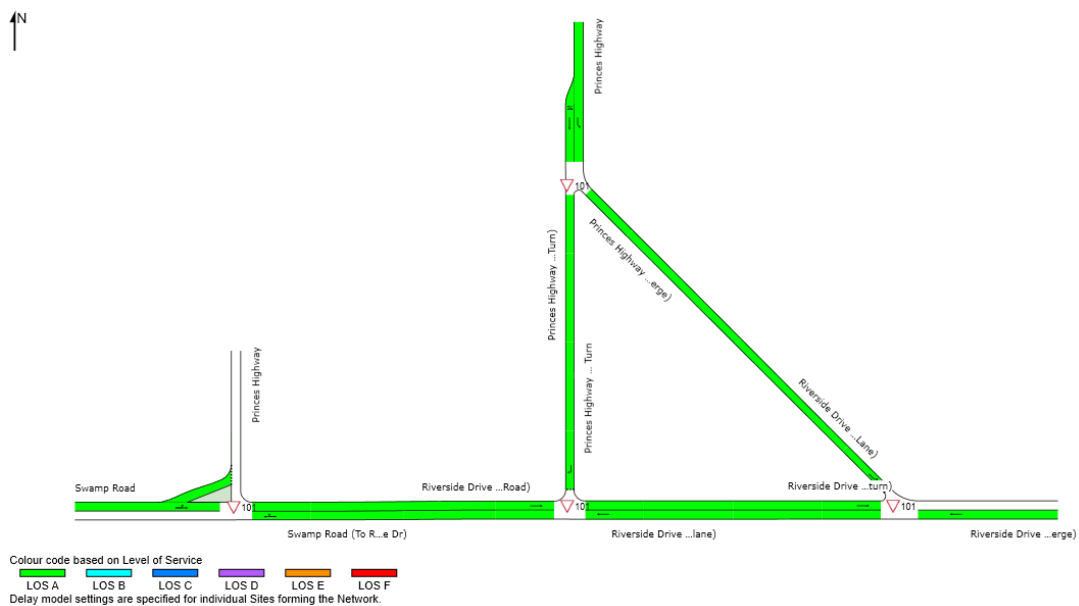


Table 1: 2028 Modelled Average Vehicle Delay

Intersection	S1 (Base Case 2028)		S2 (S1 + 5 Trucks)	
	AM Peak Ave Vehicle Delay (seconds / vehicle)	PM Peak Ave Vehicle Delay (seconds / vehicle)	AM Peak Ave Vehicle Delay (seconds / vehicle)	PM Peak Ave Vehicle Delay (seconds / vehicle)
Princes Highway (Diverge)	6.9	6.9	6.9	6.9
Princes Highway (Right Turn)	7	4.7	7.1	4.9
Riverside Drive (Eastbound Merge Lane)	6.6	6.6	6.6	6.6
Princes Highway- Swamp Road	8.1	6.7	8.3	6.8

Table 1 above shows a negligible increase in delay at the Princes Highway and Riverside Drive intersection, with a maximum average vehicle delay increase of 0.2 seconds as a result of the proposal.

Summary and Conclusion

The information presented herein has been prepared in response to a RMS request for further information.

The additional intersection modelling has demonstrated that the Princes Highway on and off ramps at Riverside Drive will continue to operate satisfactorily with the additional traffic generated by the proposed future importation of VENM to the Stage 5 site of the Dunmore Lakes Sand Extraction Project.

We trust the above is to your satisfaction. Should you have any queries regarding the above or require further information, please do not hesitate to contact the undersigned on 8437 7800.

Yours sincerely,



Jason Rudd
Director

