Transport
Roads & Maritime
Services

20 April 2017

SF2017/037839; WST17/00033

Mr Stephen O'Donoghue
Team Leader
Resource Assessments
Department of Planning & Environment
GPO Box 39
SYDNEY NSW 2001

Dear Mr O'Donoghue

SSD6456: Narrabri Gas Project

Thank you for your email on 21 February 2017 inviting Roads and Maritime Services to comment on the Environmental Impact Statement (EIS) submitted in support of the Narrabri Gas Project.

The EIS has been reviewed and Roads and Maritime notes that access to/from the Newell Highway from/to the project sites will be obtained via its intersections with X-Line Road and Old Mill Road. Access to the Westport Drillers Camp will also be via the X-Line Road/Newell Highway intersection with project generated traffic only using Westport Road and the intersection of Westport Road and the Newell Highway in extreme circumstances.

Roads and Maritime provides the following recommended conditions for inclusion in any consent issued by the Department of Planning and Environment in relation to SSD6456:

- The intersection of X-Line Road and the Newell Highway is to be upgraded to include sealed Auxiliary Left Short [AUL(S)] and Basic Right (BAR) turn treatments in accordance with Figures 8.3 & 7.5 Part 4A *Austroads Guide to Road Design* respectively (copies enclosed) and relevant Roads and Maritime supplements. The intersection works are to be designed and constructed to accommodate the largest vehicle accessing the intersection. Such designs are to be appropriate for the current speed zone of 110km/h.

- The intersection of Old Mill Road and the Newell Highway is to be upgraded to include a Channelised Right (CHR) turn treatment in accordance with Figure 7.7 Part 4A *Austroads Guide to Road Design* (copy enclosed) and relevant Roads and Maritime supplements. The channelised right turn treatment is to be designed and constructed to accommodate the largest vehicle accessing the intersection and be appropriate for the current speed zone of 110km/h.

- X-Line Road and Old Mill Road are to be sealed, and the seal maintained for the life of the project, a minimum of 30 metres from the edge of the Newell Highway travel lanes.

- As road works are required on a State road, the developer will be required to enter into a Works Authorisation Deed (WAD) with Roads and Maritime prior to the commencement of road works. Roads and Maritime will exercise its powers under Section 87 of the *Roads Act 1993* and/or the functions of the roads authority, to undertake road works in accordance with Sections 64 and 71 and / or Sections 72 and/or 73 of the Act, as applicable, for all works under the WAD.

- Prior to the commencement of construction work, the proponent is to contact Roads and Maritime's Field Traffic Manager to determine if a Road Occupancy Licence (ROL) is required. In the event that an ROL is required, the proponent will obtain the ROL prior to works commencing within three (3) metres of the travel lanes of the Newell Highway.

- The upgrades of the intersection of X-Line Road and the Newell Highway and the intersection of Old Mill Road and the Newell Highway are to be completed prior to the commencement of construction works associated with the Narrabri Gas Project.

- Works within the Newell Highway road reserve requires prior concurrence from Roads and Maritime Services under section 138(2) of the *Road Act 1993.* To apply for Roads and Maritime's concurrence for the proposed pipeline crossing of the Newell Highway, a request accompanied by drawn to scale plans of the proposed crossing is to be sent to westernlandaccess@rms.nsw.gov.au The pipe line crossing of the Newell Highway is to be in accordance with the attached *Roads and Maritime Services Requirements for Classified Road Crossings.*

- Any damage or disturbance within public road reserves is to be restored to match surrounding landform in accordance with the requirements of the relevant road authority.

- At the completion of the project, Works-As-Executed plans are to be provided to Roads and Maritime indicating final levels, distances and locations of the pipeline and associated infrastructure.

Please forward a copy of the Department's determination of the development application to Roads and Maritime at the same time it is sent to the applicant. Should you require further information please contact Andrew McIntyre, Manager Land Use Assessment, on 02 6861 1453.

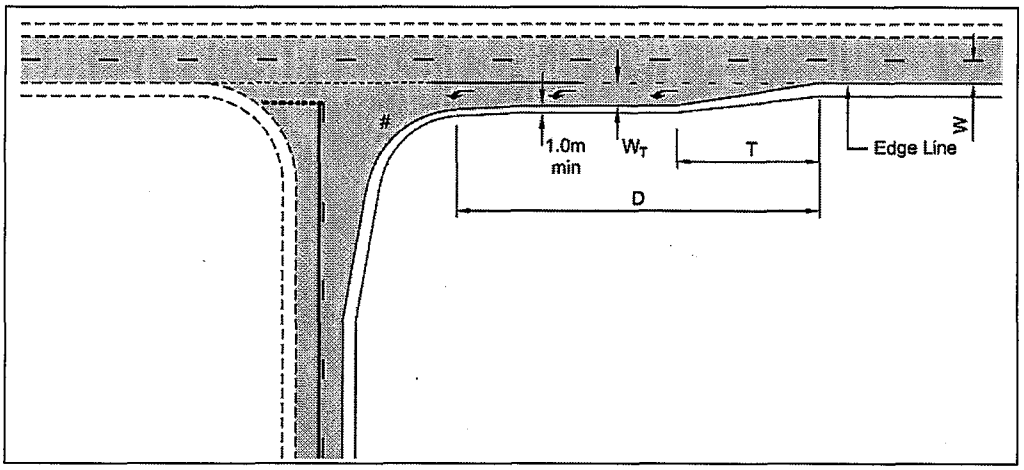
Yours faithfully

Jacqueline Anderson
Acting Network & Safety Manager
Western

8.2.2 *Rural Auxiliary Left-turn Treatment – Short Turn Lane [AUL(S)] on the Major Road*

An AUL(S) turn treatment is shown in Figure 8.3. This treatment is suitable where there are low to moderate through and turning volumes (Section 4.8). For higher volume sites, a full-length AUL turn treatment is preferred. The required length of treatment is shown in Table 8.2.

The AUL(S) layout should not be used where there is reduced visibility to the turn treatment. Left-turning drivers on the major road need to perceive the location of the deceleration lane and the side road in time to make the necessary speed reduction in the through lane prior to diverging.



Notes:

1. # for setting out details of the left-turn geometry, use vehicle turning path templates and/or Table 8.2.
2. Approaches to left-turn slip lanes can create hazardous situations between cyclists and left-turning motor vehicles. Treatments to reduce the number of potential conflicts at left-turn slip lanes are given in this guide.
3. The dimensions of the treatment are defined as follows. Values of D and T are provided in Table 8.2.

W = Nominal through lane width (m) (including widening for curves). For a new intersection on an existing road, the width is to be in accordance with the current link strategy.

WT = Nominal width of the turn lane (m), including widening for curves based on the design turning vehicle = 3.0 m minimum.

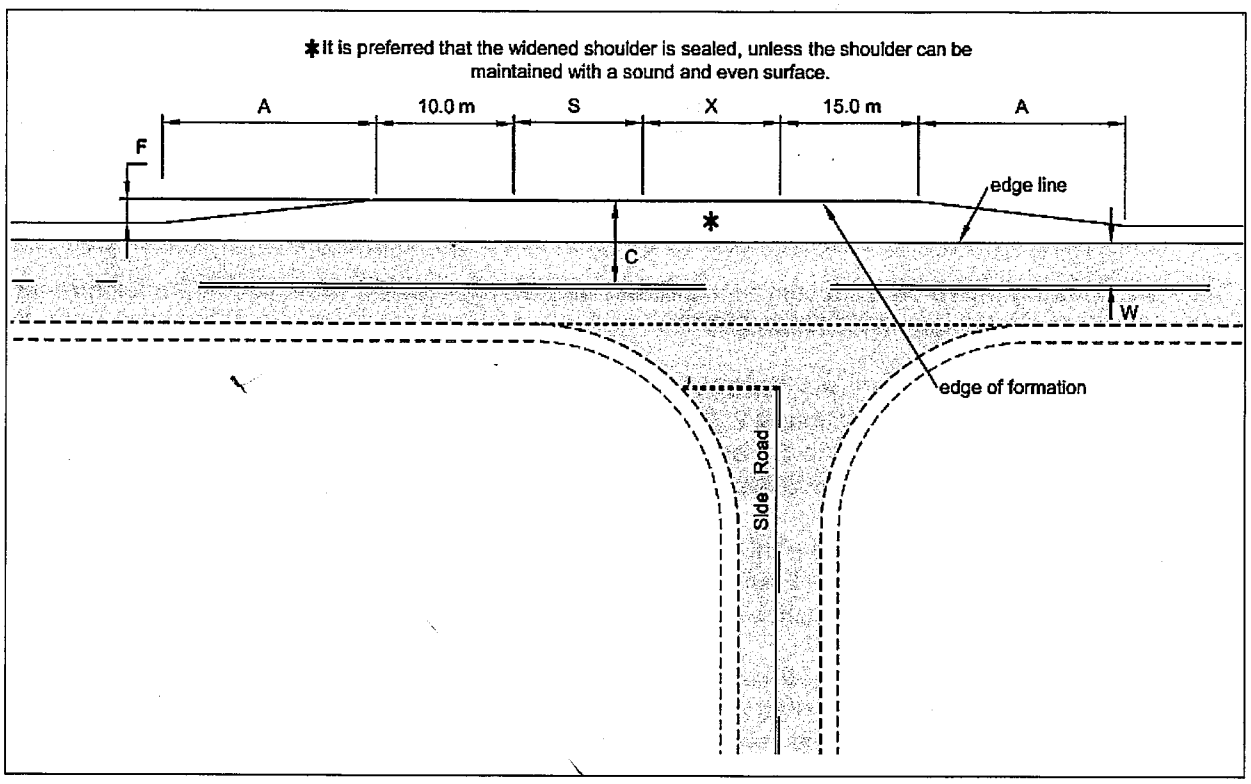
T = Physical taper length (m) given by:

$$T = \frac{0.5VF}{3.6}$$

V Design speed of major road approach (km/h).

Source: QDMR (2006).

Figure 8.3: Rural AUL(S) treatment with a short left-turn lane



Notes:

1. This treatment applies to the right turn from a major road to a minor road.
2. The dimensions of the treatment are defined thus:

W = Nominal through lane width (m) (including widening for curves). Width to be continuous through the intersection.

C = On straights – 6.5 m minimum

7.0 m minimum for Type 1 & Type 2 road trains

On curves – widths as above + curve widening (based on widening for the design turning vehicle plus widening for the design through vehicle).

A = $\frac{0.5VF}{3.6}$

Increase length A on tighter curves (e.g. those with a side friction demand greater than the maximum desirable). Where the design through vehicle is larger than or equal to a 19 m semi-trailer the minimum speed used to calculate A is 80 km/h.

V = Design speed of major road approach (km/h).

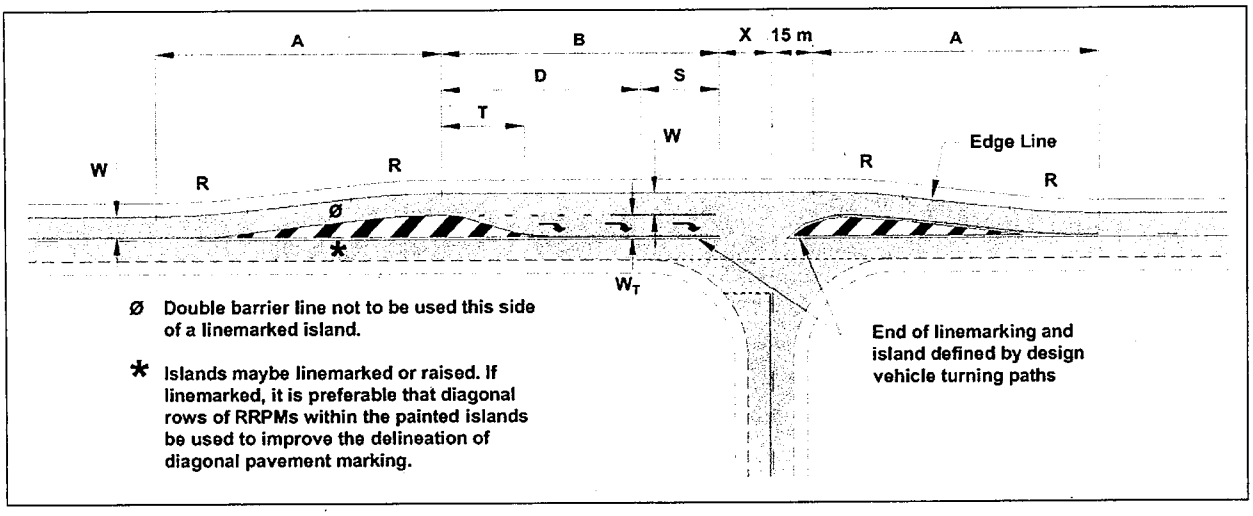
F = Formation/carriageway widening (m).

S = Storage length to cater for one design turning vehicle (m) (minimum length 12.5 m).

X = Distance based on design vehicle turning path, typically 10–15 m.

Source: QDMR (2006).

Figure 7.5: Basic right (BAR) turn treatment on a two-lane rural road



Notes:

1. An alternative to the double white line on the offside edge of the right-turn slot is a 1.0 m painted median. The 1.0 m median is particularly useful when the major road is on a tight horizontal curve and oncoming vehicles track across the centreline. Provision of this median will require the dimension 'A' to be increased.
2. A raised concrete median on the minor road may be used with this treatment to minimise 'corner cutting', particularly for higher turning volumes.
3. The dimensions of the treatment are defined below and values of A, D, R and T are shown in Table 7.2:

W = Nominal through lane width (m) (including widening for curves). For a new intersection on an existing road, the width is to be in accordance with the current link strategy.

W_T = Nominal width of turn lane (m), including widening for curves based on the design turning vehicle. Desirable minimum = W, absolute minimum = 3.0 m.

B = Total length of auxiliary lane including taper, diverge/deceleration and storage (m).

D = Diverge/deceleration length including taper. Adjust for grade using the 'correction to grade' factor (Section 5)

T = Physical taper length (m) and is given by:

$$T = \frac{0.33VW_T}{3.6}$$

S = Storage length (m) should be the greater of:

1. the length of one design turning vehicle or
2. (calculated car spaces –1) x 8 m (*Guide to Traffic Management – Part 3: Traffic Studies and Analysis* (Austroads 2009h), or use computer program e.g. aaSIDRA).

V = Design speed of major road approach (km/h)

X = Distance based on design vehicle turning path, typically 10–15 m

Source: Based on QDMR (2006).

Figure 7.7: Channelised right turn (CHR) on a two-lane rural road

Table 7.2: Dimensions of CHR treatment for various design speeds

Design speed of major road approach (km/h)	Lateral movement length A (m) (1)		Desirable radius R (m)
	W_T=3.5 m	W_T=3.0 m	
50	50 (2)	40 (2)	110
60	60	50 (2)	175
70	70	60	240
80	80	65	280
90	90	75	350
100	100	85	425
110	110	95	500
120	120	100	600

Notes:

1. Based on a diverge rate of 1 m/sec. If the through road is on a tight horizontal curve (e.g. one with a side friction demand greater than the maximum desirable) increase the lateral movement length so that a minimal decrease in speed is required for the through movement.
2. Where Type 2 road trains are required minimum A = 60.0 m.

Roads and Maritime Services Requirements for Major Gas Route Classified Road Crossings

Roads and Maritime Services requirements for major gas route crossings are as follows:

- Applicant to complete the details on the Consent form provided (under Part 9, Division 3 of the *Roads Act, 1993*), then be submit to this office for approval by the Asset Manager. A copy of the completed Consent form will then be forwarded to the Applicant.

- A copy of the Certificate of Currency for Public Liability Insurance, for an amount not less than $20 Million, from the contractor carrying out the work, is to be provided with the Consent application.

- A description of the work location (including location plan), giving the distance from the nearest major intersection (or other well defined reference feature).

- The pipeline should have a minimum cover of 1500mm under the road formation and 900mm to any other point on the surface within the road reserve, including from the bottom of any drain. Further to this, Roads and Maritime requires that the pipeline be at such a depth that still allows future road maintenance to occur without interfering with the pipeline. This requires that Roads and Maritime be able to dig out up to 1m depth of existing pavement material and utilize heavy road construction equipment (eg. 24 tonne vibrating roller). If a suitable depth that allows this maintenance activity cannot be practicably achieved using under boring then trenching through the road formation may be considered by RMS, requiring the installation of a concrete slab covering the pipeline in the trench, for extra protection.

- Pipeline crossings should be carried out using mechanical underboring construction rather than hydraulic means, unless it is impracticable to meet depth requirements to allow various RMS maintenance activities, and a concrete slab over the pipe is required, in which case trenching may be considered by Roads and Maritime.

- Any crossing should be at right angles (or as near as possible) to the road centreline to minimise the impact area of pipe sensitivity. Also the crossing should avoid being in close proximity to any existing road intersection as there is an increased likelihood that there will be improvement maintenance works at that location in the future.

- Ensure that the "Dial Before You Dig" service (Dial 1100) is accessed to prevent damage and disruption to any of the existing underground pipe and cable network which carries many essential services, including electricity, gas, communications and water.

- In rural areas there should be readily visible location markers on either side of the road, placed outside the clear zone (10m from edge line). In urban areas the location of the bore (or conduit) should be recovered on the kerb directly above the bore casing to enable its exact location to be determined should future roadworks be necessary.

- The pipeline in the road reserve should be located as near as practicable to the road reserve boundary. The minimum distance away from the road (in the road reserve, running parallel to the road centreline) should allow Roads and Maritime to undertake shoulder widening work, curve improvement and any addition of an overtaking lane, without adversely impacting on the integrity of the pipeline. In the road reserve the pipeline should avoid any existing rest areas or active stockpile sites. These are located outside the road formation but may also require future Roads and Maritime maintenance activities.

- Prior to commencement of construction works, the proponent is to contact Roads and Maritime's Field Traffic Manager on 02 6861 1461 to determine if a Road Occupancy Licence (ROL) is required. In the event that an ROL is required, the proponent will obtain the ROL prior to works commencing.

- If any part of the work is to be carried out within a Travelling Stock Route (TSR), Local Land Services, whose control that land comes under, shall be contacted for their concurrence to the work.

- Roads and Maritime's Area Maintenance Manager is to be contacted for liaison, at least 10 days prior to commencing work.