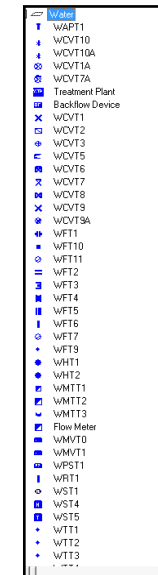
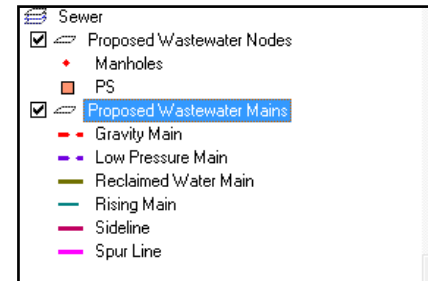
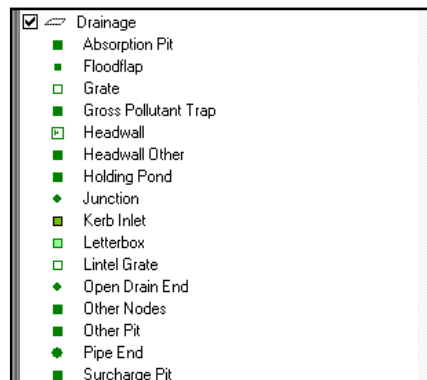


SERVICES TO BE AFFECTED BY NORTH NOWRA LINK ROAD

SECTION 1: Option 1 (Central Route)



Legends for Aerial Photographs

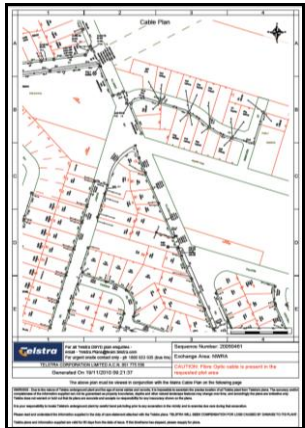


The services that exist in this (western) location for Option 1 (Central Route) are described by the following:

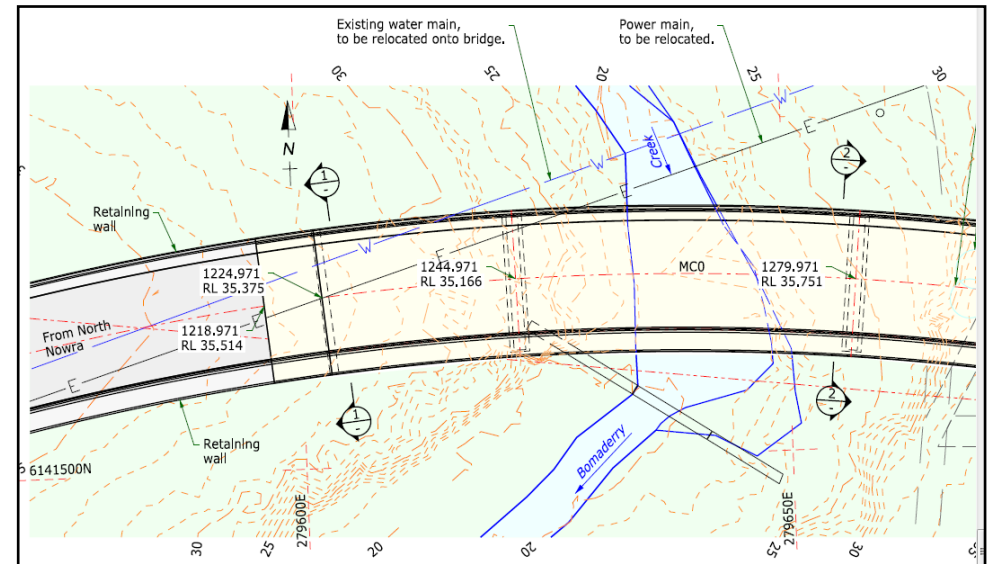
- 1 Water. The 600mm diameter trunk watermain is a significant part of the Shoalhaven services infrastructure. A concrete water tank can be seen in the lower left of the above graphic which provides a head of pressure to assist the delivery of water from the upper Shoalhaven River to Bomaderry and beyond. Road design in this location will need consideration of this service if Option 1 (Central Route) is approved as the preferred route.
- 2 Powerline. A 33kV transmission line was built in the early 1980s and remains a strategically important and essential link between the Nowra Transmission Substation and the Bomaderry Zone Substation runs in generally and east – west direction. This is a main part if the Nowra Bomaderry power service structure. There is also an aerial pole mounted service on the east side of Illaroo Road. (see photograph below)
- 3 Stormwater management. The closest underground stormwater drainage is in Byron Avenue to the south of this proposed intersection. Any future design will be required to cater for rainwater discharge.
- 4 Telstra has cabling on the west side of Illaroo Road in the road reserve. The infrastructure in this regard will not be affected by the proposed Option 1 (Central Route), however, consideration to relocation of the service infrastructure the design of the proposed roundabout. This is considered minor work. See graphics below.
- 5 The Optus buried service is on the west side of Illaroo Road. The levels will be investigated in the road design refinement, however, it is unlikely that the levels will change substantially for construction and affect this service.
- 6 There are no records of gas in the area of this link road option



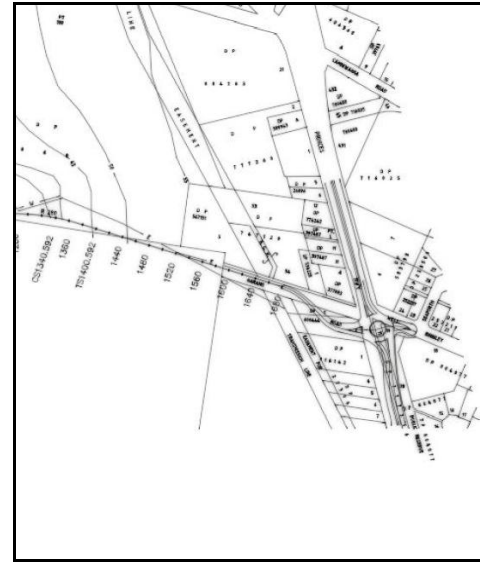
Right: Photograph shows Illaroo Road at the intersection of Pitt Street viewed in a southerly direction



Left: Telstra service at the intersection of Illaroo Road and Pitt Street



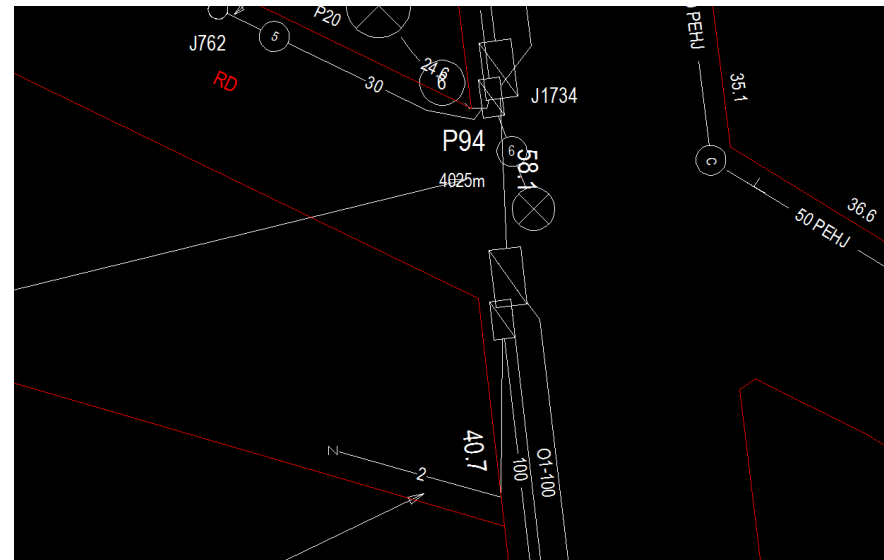
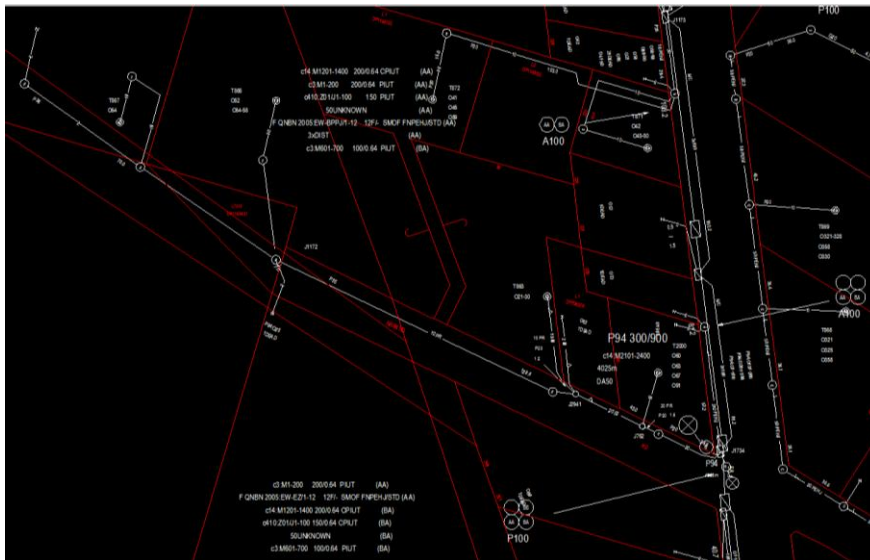
Above: Aerial photograph shows the location of the water trunk main in the sensitive environmental area aside the schematic bridge proposal at the creek crossing



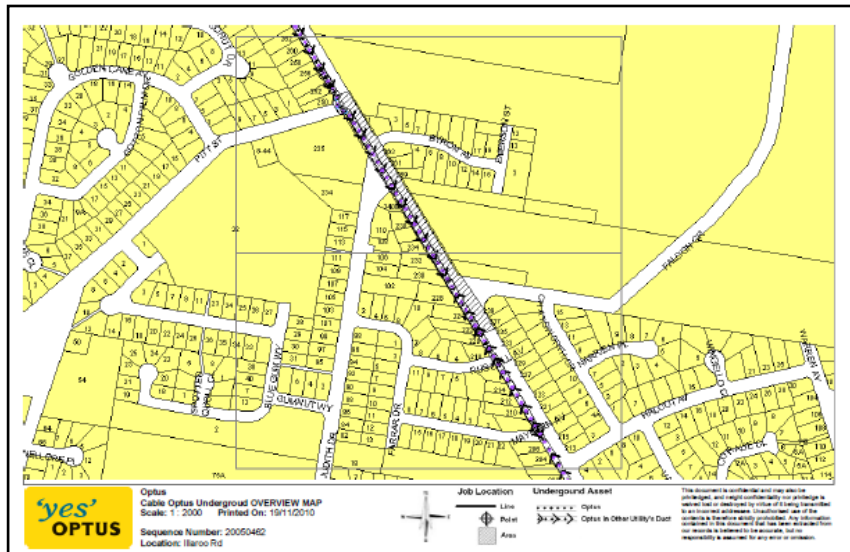
Between Bomaderry Creek and the Princes Highway there is an existing road partially constructed within an existing road reserve, partially on Council land Lot 108 DP131063 and partially on NPWS land Lots 7310 (approximately 30M long) 7311 (approximately 90M long), in DP1153421. The road design eastward from chainage 1440M is designed to align with the existing roundabout at the Princes Highway as can be seen in the diagram above. Road design is required to be undertaken with the NSW Roads and Traffic Authority (RTA).

The services that exist in this location are described by the following:

- 7 Water. Services traverse the NPWS land with underground property services to users in the western section of Narang Road (bowling alley, squash courts etc)
- 8 Powerline. A 33kV transmission line built in the early 1980s and remains a strategically important and essential link between the Nowra Transmission Substation and the Bomaderry Zone Substation runs in generally and east – west direction. This is a main part if the Nowra Bomaderry power service structure.
- 9 Stormwater management. There are kerb inlets and underground pipes ensuring the road system at the Princes Highway junction caters for rainwater.
- 10 Telstra has cabling on the north side of Narang Road in the road reserve. The infrastructure in this regard are not likely to be affected by the proposed Option 1 (Central Route), however, consideration to relocation of the service infrastructure will be required for where the proposed road intersects with the existing roundabout. See graphics below.
- 11 Gas reticulation will require further investigation at the advancement of the road design phase.



Above: Extracts from Telstra records



Left: Optus cabling runs along the western side of Illaroo Road

Right: Jemena confirmation of no services in this vicinity

Jemena Network Protection	
NATURAL GAS LOCALITY PLAN & ADVICE	
Sequence Number:	20050402
Date:	19/11/2010
To:	Mr Wayne Brighton
Requested Address:	3400 Rd North Illaroo VIC 3841
Email:	brighton@unishawm.nsw.gov.au
Pages:	2
<p>This document is a private communication and its contents may be privileged and confidential. The contents are intended only for the recipient named in this message and any unauthorised use is prohibited. If you do not receive the information in full, please contact us on the above number. If you have received this response in error please advise us and destroy your copy. Thank you.</p>	
<p>1. The following types of gas mains are in the vicinity of the location of your intended work as per the attached map (mark applicable):</p> <ul style="list-style-type: none"> <input type="checkbox"/> No record of gas mains <input type="checkbox"/> High pressure steel main (Refer Section 2) <input type="checkbox"/> Large diameter plastic feeder main (Refer Section 2) <input type="checkbox"/> Small diameter plastic distribution main (Refer Section 2) <p>NB: Individual customer gas connections are generally not shown on the accompanying maps. For information regarding individual gas connections refer to Section 4.</p>	
<p>2. Your obligations and responsibilities:</p> <p>Consistent with the requirements of Part 2 General - Section 5 of the Utility Networks (Public Safety) Regulations 2001 No. 38, Jemena requires that (mark applicable):</p> <ul style="list-style-type: none"> <input type="checkbox"/> You MUST meet with an Jemena representative on site prior to the commencement of any excavation works. Mandatory Standby may be required - note Charges. <input type="checkbox"/> You must follow the General Excavation Guidelines (Section 3) <input type="checkbox"/> We recommend you request an inert service location 	
<p>3. General Excavation Guidelines:</p> <p>In addition to the requirements of Part 2 General - Section 5 of the Utility Networks (Public Safety) Regulations 2001 No. 38:</p> <ul style="list-style-type: none"> The requestor is responsible to ensure all workers on site are aware of the presence of natural gas infrastructure in the vicinity of the intended work and emergency requirements. The requestor shall ensure that under no circumstances will mechanical excavation be carried out within 1.5 metres of a gas main without there being an Jemena Representative on site. The requestor shall be responsible to maintain the presence / visibility of all gas markings. 	
<p>4. Additional Information:</p> <p>You can obtain additional information or arrange a site meeting by contacting Jemena on (02) 9397 9284</p>	
<p>In Case of Emergency Phone 131 909 (24 hours)</p> <p>Jemena Asset Management Pty Ltd ABN 52 008 910 461 100 and on behalf of its assets.</p>	

SECTION 2: Option 2 (Southern Route)



The southern route passes through a disused Council waste management site. Council has programmed to demolish the pumphouse and fill the leachate pond and generally rehabilitate the site of the tip by not later than March 2011. There are no other services in the immediate above graphics that are affected by Option 2 (Southern Route).

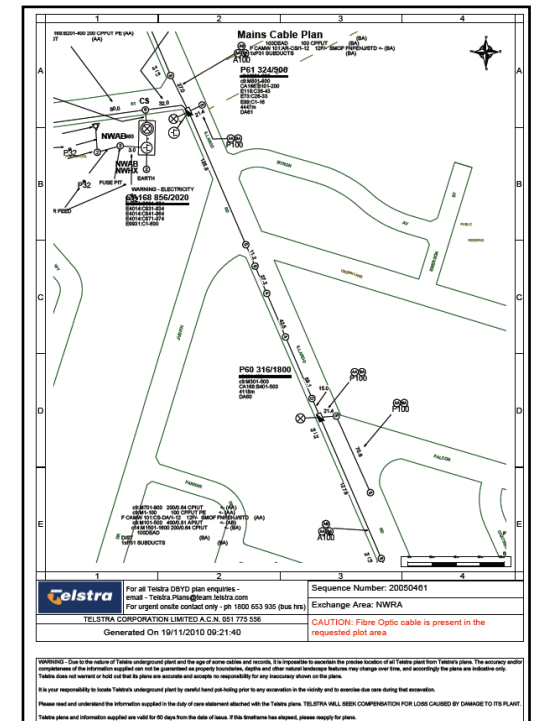
The services that exist in this (western) location are described by the following:

- 1 Water. Reticulation in the area where Option 2 (Southern Route) would intersect with Illaroo Road is on the west side of the road reserve and will remain unaffected in this route is used.
- 2 Electricity. The local aerial reticulation is pole mounted on the east side of Illaroo Road with subservient power poles on the west side of the road for residential feed. The photograph below is taken from the north and shows Illaroo Road in the vicinity of where Option 2 (Southern Route) would be constructed to intersect.
- 3 Stormwater management. The closest underground stormwater drainage is in Byron Avenue to the north of this proposed intersection. Any future design will be required to cater for rainwater discharge.
- 4 Telstra has cabling on the west side of Illaroo Road in the road reserve. The infrastructure in this regard will not be affected by the Option 2 (Southern Route), however, consideration to relocation of the service infrastructure may be required and investigated further at the road design phase. See graphics below.

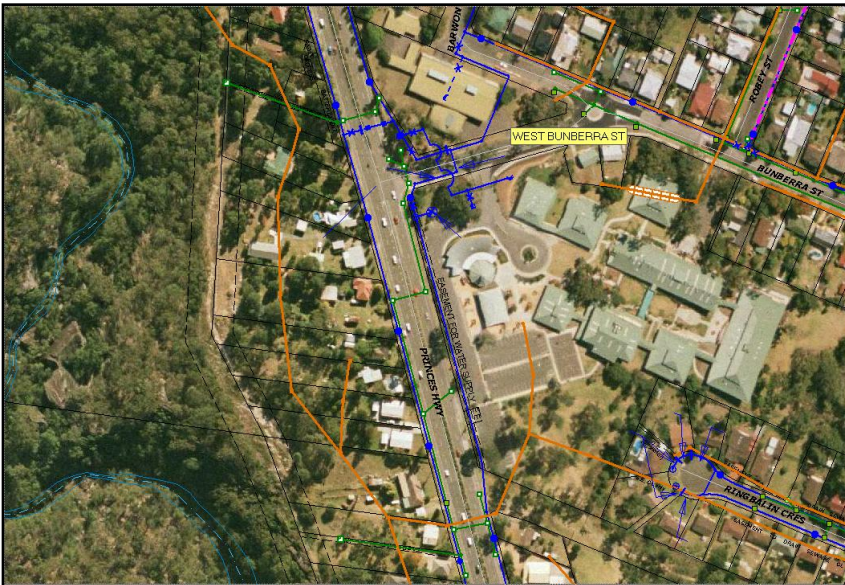
- 5 The Optus buried service is on the west side of Illaroo Road. The levels will be investigated in the road design refinement, however, it is unlikely that the levels will change substantially for construction and affect this service. Refer to graphic provided at the end of the first section of this report (p.5).
- 6 There are no records of gas in the area of this link road option



Left: Illaroo Road looking southwards

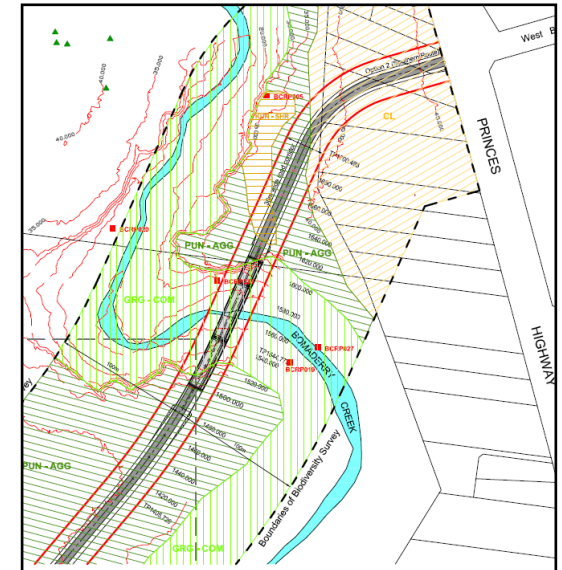


Right: Telstra services in Illaroo Road



This suite of graphics shows Option 2 (Southern Route) **eastern end** where the design interfaces with services. There are no utilities west of the residential land allotments (the lots that affront the Princes Highway). The new road would cross a sewer main which may require treatment such as concrete encasement where the proposed road traverses these properties (for compulsory acquisition).

A road design at the Princes Highway intersection would be undertaken post Concept Plan phase of the approvals assessment and determine what is required, if anything, in reference to water reticulation.

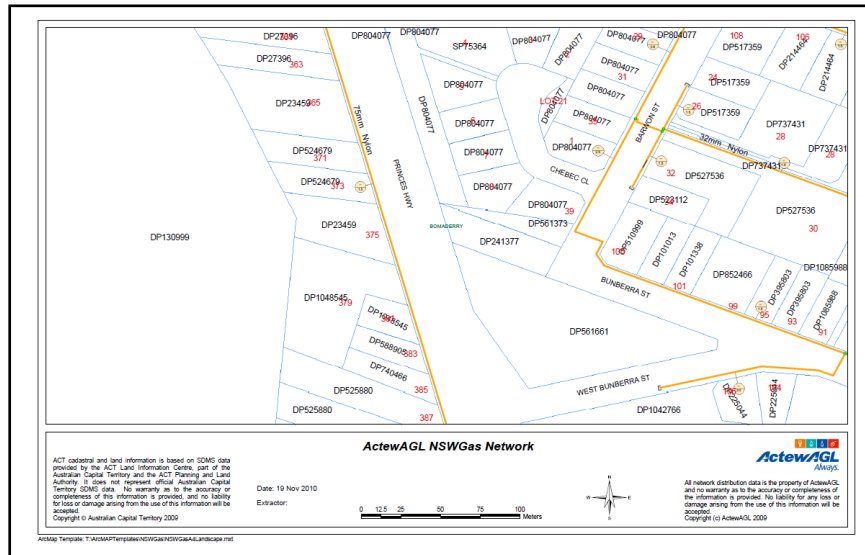




Photographs of the dwelling houses at the Princes Highway that would be compulsorily acquired for Option 2 (Southern Route)

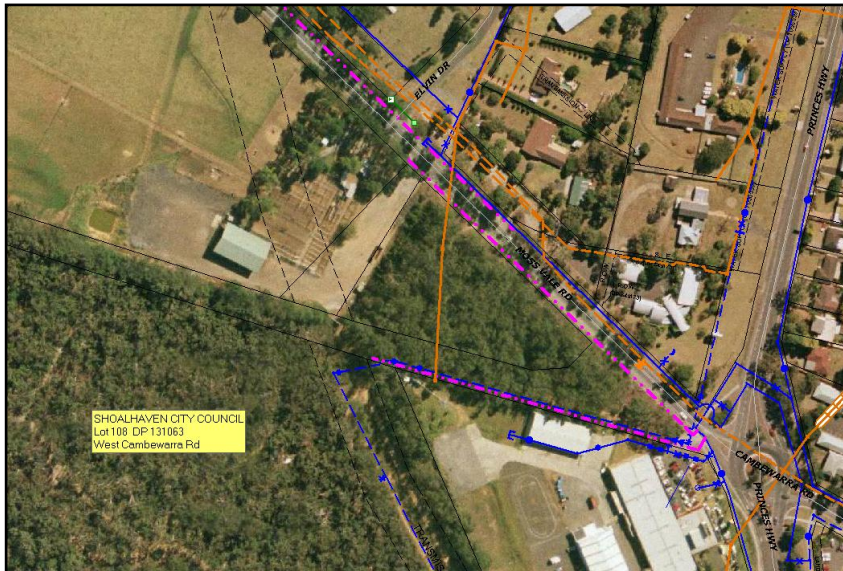
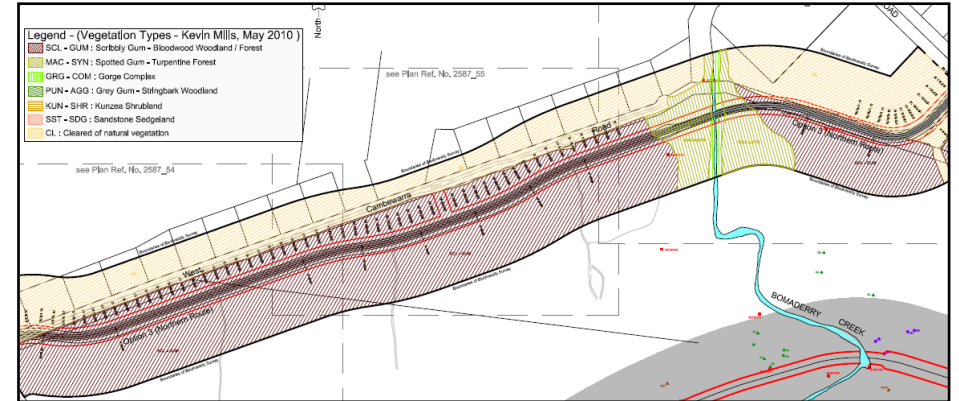


Below: Photographs of some services required to be considered with the road design in Council and RTA's design if Option 2 (Southern Route) is selected for the proposed North Nowra Link Road route



Left: Gas reticulation is underground in the footpath where Option 2 (Southern Route) would intersect at the Princes Highway and require further investigation and probable relocation or additional protection for the proposed roadworks.

SECTION 3: Option 3 (Northern Route)



The above plan extract is provided to show the location of the proposed road reserve for this Option 3 (Northern Route). The graphic top left shows the trunk mains, drainage and sewerage systems that exist.

The graphic left shows an enlargement of the general area at the east end where this option would cut through the existing Nowra Livestock Saleyards under the north-south power transmission line and link to Moss Vale Road adjacent Elvin Drive.

The pink line a spur line to the sewerage system. Road design would be undertaken after the Concept Plan phase of the assessment process and consider the height and nature of these services.

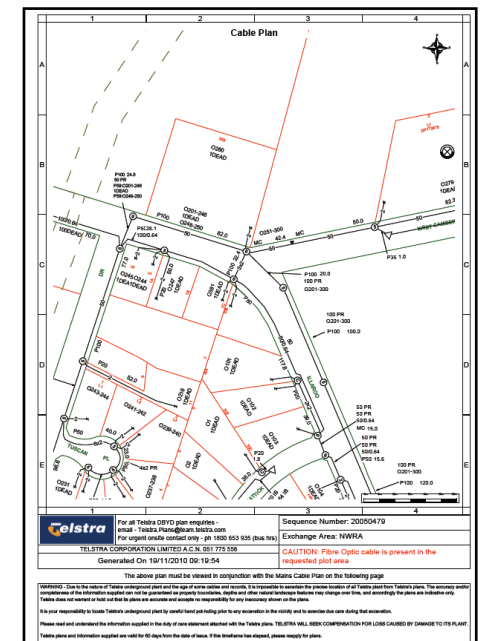
The services that exist in this (western) location are described by the following:

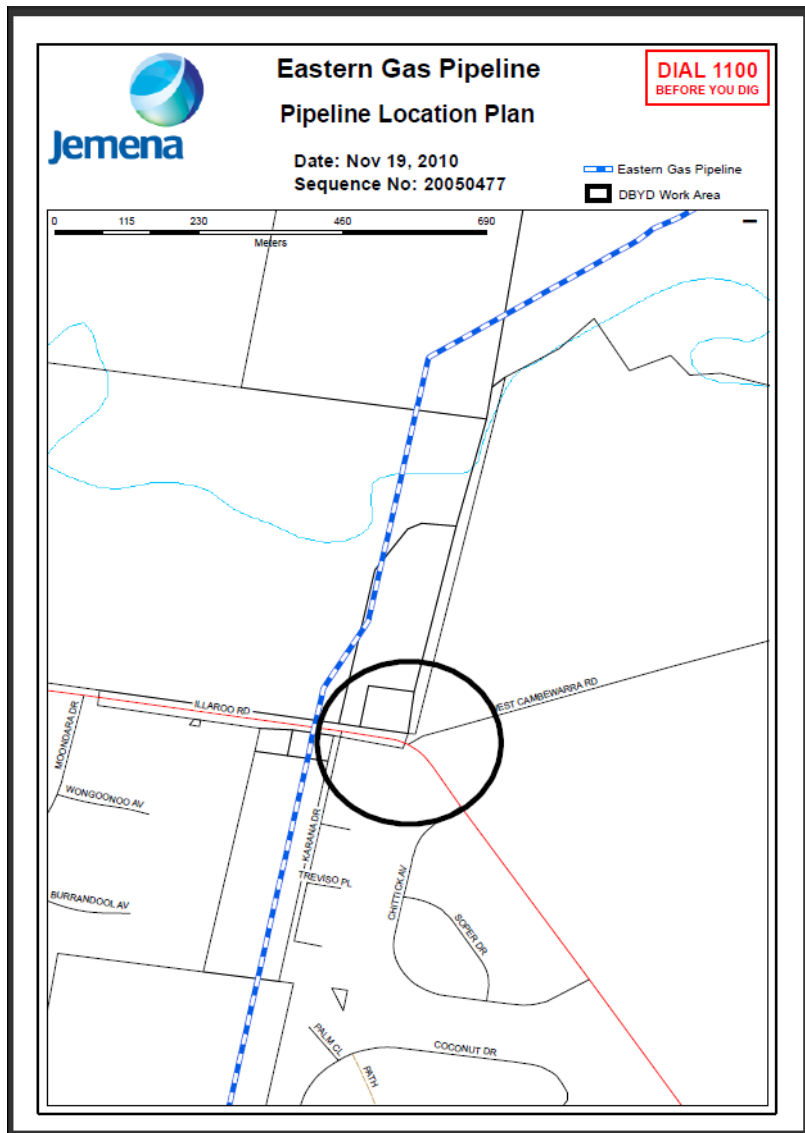
- 1 Water. Reticulation in the area where Option 3 (Northern Route) would intersect with Illaroo Road is complex and require attention in design and construction of the link road.
- 2 Electricity. The local aerial reticulation is pole mounted on the east side of Illaroo Road with subservient power poles on the west side of the road for residential feed. The photograph below is taken from the west and shows Illaroo Road in the vicinity of where Option 3 (Northern Route) would be constructed to intersect.
- 3 Stormwater discharges northwards to the natural watercourse and thence to Bomaderry Creek.
- 4 Telstra has cabling at the intersection of Illaroo Road with West Cambewarra Road which continues on the northern side of street to service the residential allotments. Consideration to relocation some of the service infrastructure may be required and investigated at the road design phase. See graphics below.
- 5 The Optus buried service is on the west and south sides of Illaroo Road. The levels will be investigated in the road design refinement stage, however, it is unlikely that the levels will change substantially for construction and affect this service. Refer to graphic provided below (overleaf).
- 6 The Eastern Gas Pipeline is in the vicinity of this intersection and is shown in the diagram as provided by Jemena below.



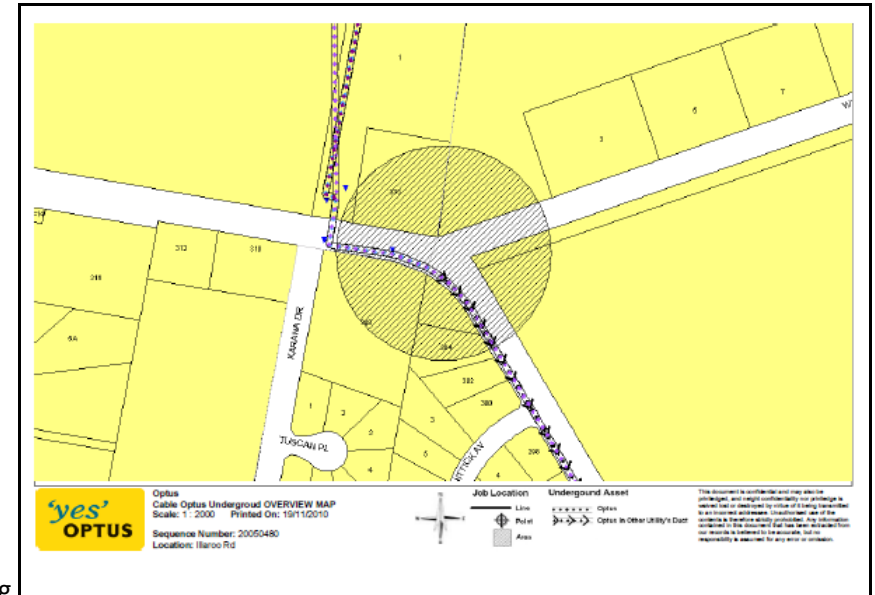
Left: Looking east to West Cambewarra Road

Right: Telstra advice of services

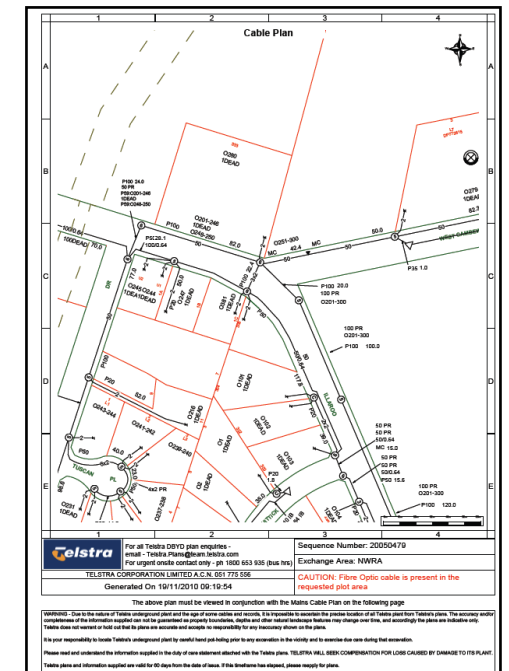




Left: Eastern Gas Pipeline



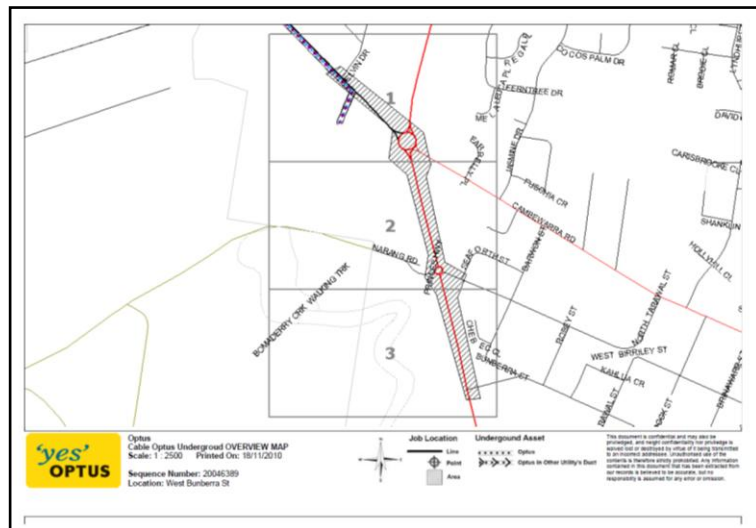
Right: Optical fibre cabling



Right: Telstra cabling diagram at the western end of Option 3 (Northern Route)

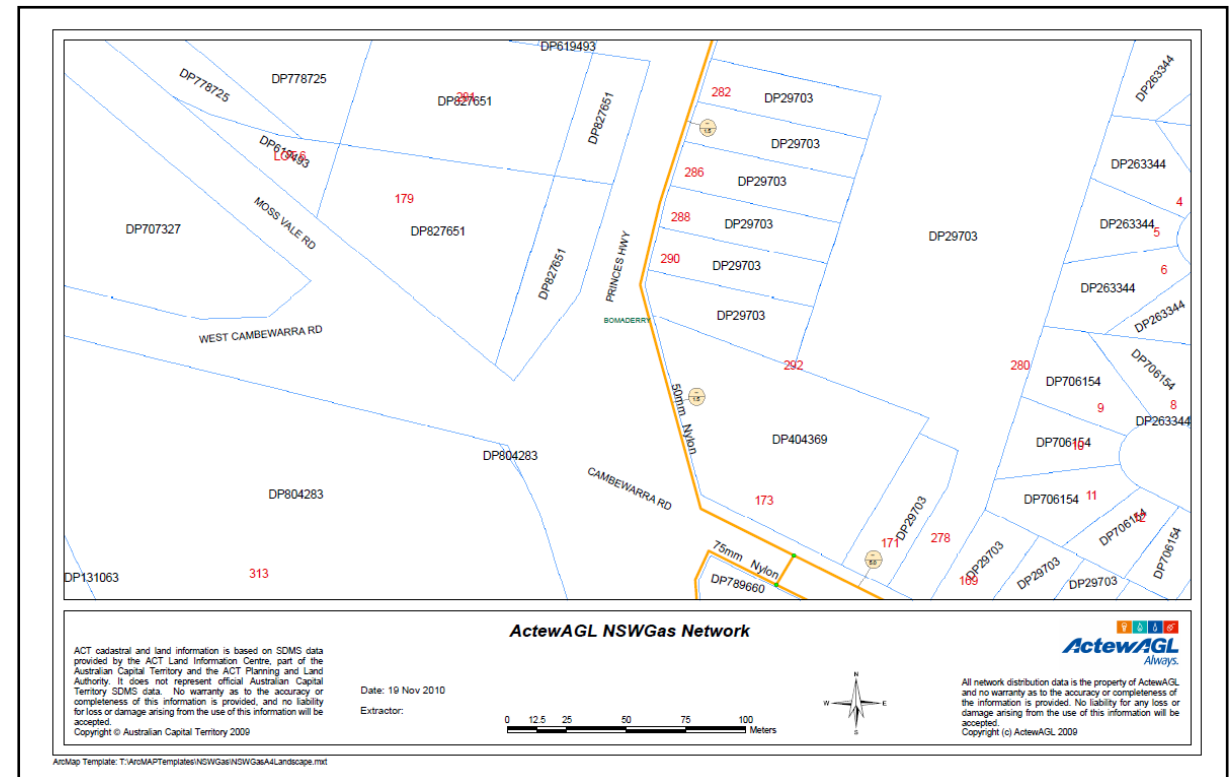
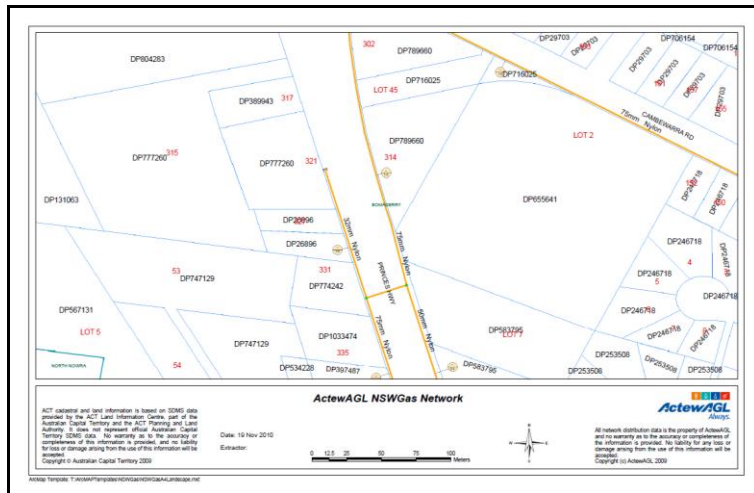
The services that exist in this (eastern) location are described by the following:

- 1 Water. Reticulation in the area where Option 3 (Northern Route) would intersect with Moss Vale Road is straightforward and will be investigated in design phase of the link road if this route was selected.
- 2 Electricity. The local aerial reticulation is pole is shown in centrally a graphic below (p.16)
- 3 Stormwater discharges northwards to the natural watercourse and thence to Bomaderry Creek.
- 4 Telstra has cabling at south side of Moss Vale Road.
- 5 Optus has cabling at south side of Moss Vale Road. The levels will be investigated in the road design refinement, however, it is unlikely that the levels will change substantially for construction and affect this service.
- 6 The closes gas service line is located at the intersection of the Princes Highway with Moss Vale Road, however, consideration would be required to service the propsoed residences in this location with gas in any road design.



Left: Optus only has underground infrastructure at the saleyards and the advice is provided with an Optus standard disclaimer letter.

Below and right: Jemena Asset Management Pty Ltd advise that in reference to gas in the subject area, that it has a small diameter plastic distribution main but not to the west of the intersection of Moss Vale Road with the Princes Highway .



The gas service will not be affected by the construction of this option.



Right: A view from Elvin Drive southwards to the Nowra Livestock Saleyards entrance where Option 3 (Northern Route) would intersect with Moss Vale Road.



A transmission line traverses perpendicular to Option 3 (Northern Route) over the route corridor at the Nowra Livestock Saleyards. No modifications to the powerline are envisaged.

Right: There are services at the intersection of Moss Vale Road with Elvin Drive that may be the subject of relocation if Option 3 (Northern Route) was selected at the link road route.



Left: Optic fibre cabling warning signpost at the front of the Nowra Livestock Saleyards

