6 Environmental Assessment

This section describes the potential environmental impacts of the proposed Illawarra private hospital proposal. Where appropriate, methodology for assessing and addressing these matters is provided.

6.1 Strategic Compliance

The site is located on the current fringe of the Dapto urban area and is situated adjacent to existing low-density residential development. The site is located within the strategic WDRA, which was subject to the comprehensive West Dapto Release Program that was on exhibition between November 2007 and May 2008 (**Figure 20**). It is included in Stage 4 of the Release Program.

The WDRA is expected to generate 11,000 dwellings by 2031 and 19,350 dwellings by 2046 at a delivery rate of 500 lots per annum. The original identification of Illawarra land reservoirs for future urban expansion. A series of release programs were introduced including:

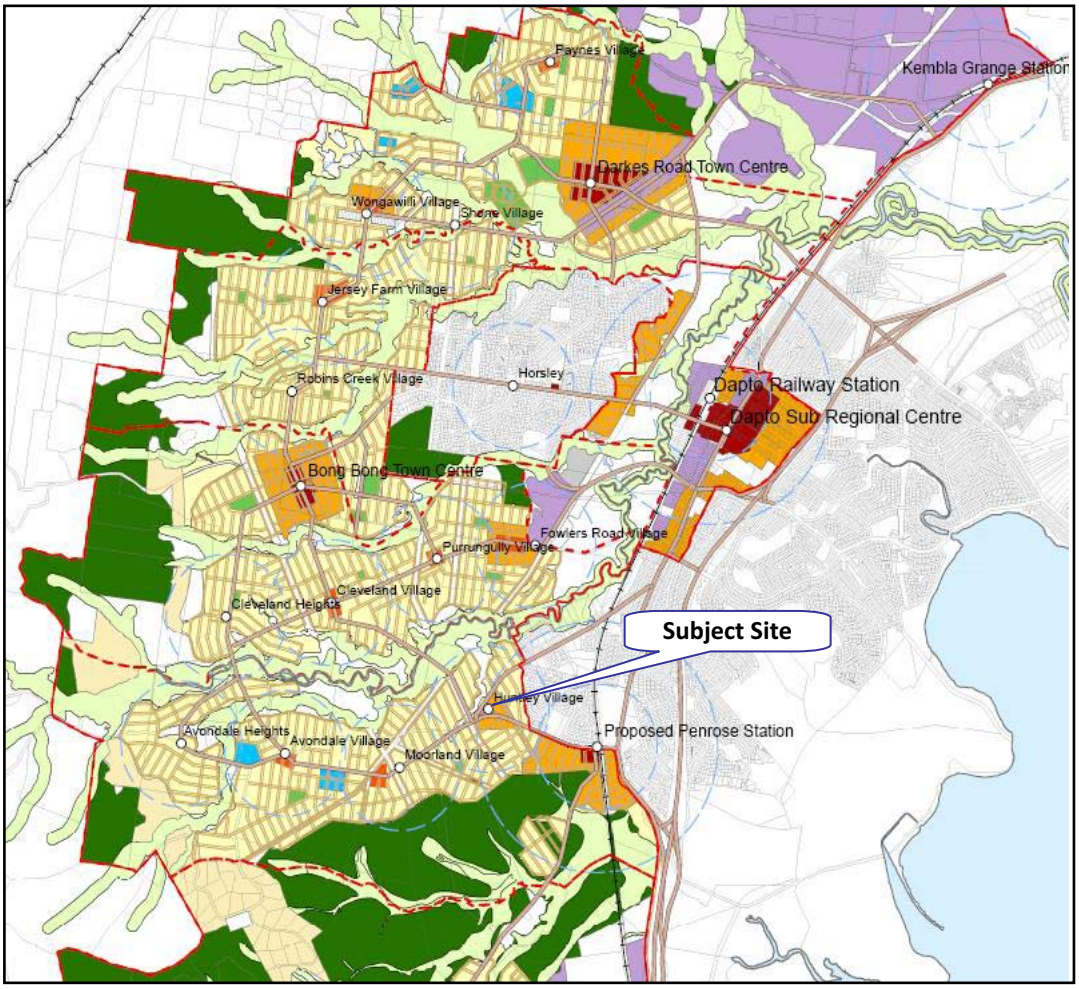
- Illawarra Urban Development Programme (UDP) in 1980s
- Updated UDP boundary in 1997
- Illawarra Metropolitan Development Program (MDP) in 2000
- WDRA in 2007

Within the identified release area, approximately 1,000 lots have been developed to form the suburb of Huntley in the 1990's. Apart from Huntley, the UDP has failed to produce urban development due to a range of factors both physical and political. This lack of progress is in part responsible for the current shortfall in land supply within the Illawarra.

All release programs identified the subject site (and its locality) as areas for future urban developments.

Other than the West Dapto Release Program, the State Government has also released the *Illawarra Regional Strategy* to provide the strategic directions for future housing and employment generating developments for the Illawarra. The Strategy identifies West Dapto as the main urban area in the Illawarra. It provides an employment-generating target of 30,000 new jobs in the next 25 years. Detail description of the Strategy is provided in **Section 5.1**.

Figure 20 – Subject Site in Relation to West Dapto Masterplan



Source: Wollongong City Council

6.2 Land use Compatibility

DGR's Requirements

Land Use

- *Consider surrounding land use patterns, density and character and assess potential land use conflicts. Include proposed land uses as detailed in the Draft West Dapto Local Environmental Plan 2007.*

6.2.1 Existing Conditions

The site has many locational advantages from both a local and regional perspective. Locally, the site is located approximately 2.5km from Dapto CBD, which provides a range of services and facilities including a major shopping mall (approximately 25,000m^2 with over 1,000 car parking spaces), government services (e.g. Centrelink), entertainment venues, emergency services, health services, educational facilities, and community centres (refer **Figure 2**).

Regionally, the site is located within relatively short driving distance from the regional service and employment centres of Wollongong CBD (15 km), Port Kembla (11 km) and Shellharbour (8km) (refer **Figure 3**). Wollongong CBD provides a range of regionally significant higher order services and facilities, and is the regional centre of the Illawarra. Port Kembla is the largest industrial precinct in Australia and is home to the deep water port of Port Kembla, Port Kembla Steelworks as well as a number of other heavy industrial operators. Both these centres are significant generators of employment in the region. Shellharbour is a major centre in the region, supporting significant a major shopping centre, cinema, restaurants and community facilities.

6.2.2 Potential Impacts

As a result of a major hospital in this location, there is a potential for the hospital to attract other health related development into the locality. This trend is already evident in the area surrounding the Wollongong Hospital. We consider this as a positive impact on the area in terms of the potential economic and employment generation.

6.2.3 Measures to Address Impacts

There is an opportunity to identify this location as a specialist precinct, and provide a specific zoning to reflect this unique land use. We have previously lodged a written submission to Wollongong City Council to rezone the site and the surrounding area to SP1 Hospitals and Medical Research and Development under the draft West Dapto LEP. The written submission is provided in **Appendix F**. This zoning can potentially promote the future growth of the health care industry in this area.

6.3 Geotechnical

DGR's Requirements

Geotechnical and Contamination

- *Geotechnical report addressing matters such as suitability of the site for its proposed uses, slope stability, erosion hazard, proposed earthworks and retention methods.*

La Vie has commissioned Martens and Associates to undertake a Geotechnical Assessment on the subject site. The full report is provided in the **separate volume**.

6.3.1 Existing Conditions

Martens (2009), provides the following description on the existing geological conditions of the site.

The Kiama 1:100,000 Soil Landscape Sheet identifies the site as having soils of the Shellharbour soil landscape group. The Shellharbour soil landscape group consists of deep Prairie soils on crests and upper slopes, Brown krasnozems on midslopes, and Red podzolic Geological mapping indicates that the site is near the boundary of two geological groups.

The first geological group is comprised of Quaternary aged alluvium, gravel, swamp deposits and sand dunes. The second geological group is comprised of undifferentiated Permian aged siltstone, shale and sandstone from the Berry Formation.

On-site sub-surface investigations confirmed that the site was underlain by the Berry Formation geological group and indicated that the site is predominantly covered by silt topsoils underlain by clay with siltstone and shale bedrock. Soil depth was found to range between 0.15 m and 2.2 m soils and Prairie soils on lower slopes and drainage plains.

6.3.2 Potential Impacts

Martens (2009) undertook a slope instability slope assessment in accordance with Australian Geomechanics Society (2007). Instability risk has been determined for post development conditions with assessment made based on the condition that the geotechnical recommendations have been implemented.

Table 6.1 summarises the slope instability risk post development, subject to the implementation of the geotechnical recommendations.

Table 6.1 – Summary of Slope Instability Risk Assessment Following Proposed Development, Based on AGS (2007)

Risk	Description	Treatment Measure(s)	Likelihood[1]	Risk to Life[1]		Risk to Property[1]	
				Established Probability	Risk	Consequence	Risk
A	Soil creep	Maintain vegetation where possible. Ensure appropriate foundations and footings design.	Likely	1.00×10^{-7}	Acceptable	Insignificant	Low
B	Deep seated slide	Good hillslope engineering practice. Maintain or enhance vegetation where possible. Appropriate fill and cut batters.	Rare	5.00×10^{-7}	Acceptable	Minor	Very Low
C	Shallow rotational slide	Adequate shoring and retention structures for all excavations. Good site drainage. Appropriate fill and cut batters.	Rare	5.00×10^{-7}	Acceptable	Minor	Very Low

NOTES: [1] Based on 'treated' site conditions as per recommendations of this report.

(Source: Martens and Associates (2009))

Martens (2009) concluded that:

> *The proposed development is considered to constitute an acceptable risk to life and a low to very lo risk to property provided that our recommendations made in this report are adhere to.*

A preliminary geotechnical model has been developed for the site by Martens. The model is shown in the geotechnical report. The model shows the depth to extremely weathered rock from ground level and is based on interpolation between boreholes and Dynamic Cone Penetrometer tests. The geotechnical model indicates that the soil profile at the site is shallow with moderate soil depth occurring in isolated portions of the site.

6.3.3 Mitigation Measures

Section 4.7 of the Geotechnical Report provides a list of recommendations to the construction of the future developments. Where appropriate, these recommendations have been included into the Statement of Commitments.

6.4 Contamination

DGR's Requirements

Geotechnical and Contamination

- *Assess suitability of the site for the proposed uses in accordance with SEPP 55.*

Martens and Associates has undertaken a Stage 1 Land Contamination Assessment as required by the DGRs. The full report is provided in the **separate volume**.

6.4.1 Site History

Martens and Associates reviewed the history of the site based on an examination of the site aerial photographs and Council's development application records. The review indicated that:

- DA record shows that only two development applications have been received. The records indicate that no distinct forms of developments that are frequently associated with site contamination have existed on the site.
- Historical aerial photographs taken of the site during 1949, 1961, 1973 and 1990 show that the site was cleared prior to 1949 and has been used as pasture since then. No development is evident on the site until the appearance of a transmission tower in the 1973 photograph, located approximately in the same location as the present transmission tower on-site.

The results of the site history review suggest that the site has been used exclusively as grazing pastures for at least the last 60 years and the potential for site contamination is low.

6.4.2 Soil Testing

Martens and Associates further undertook soil testing and analysis to verify the contamination level. The results of the analysis show that the soil samples are below the guideline levels and, except for heavy metals, all results are less than laboratory detection limits.

6.4.3 Further Study

Martens and Associates suggested that further study is not required, and concluded that:

The results of the site history review indicated that the potential for site contamination is very low. Preliminary soil investigations did not find any site contamination. On this basis, further site assessment is not considered necessary and the site is deemed to be suitable for the proposed development.

6.5 Amenity

DGRs Requirements

Amenity Impacts

- *Analyse the potential impacts of the design on existing and future surrounding development, such as visual, privacy and overshadowing and proposed mitigation measures.*

6.5.1 Overshadowing

Shadow diagrams (available in the **separate volume**) have been prepared by Imagescape on the whole development for the following times:

- 21 June – 9am, 12pm, 3pm
- 21 December – 9am, 12pm, 3pm

The proposed development will not overshadow the existing residents at Penrose.

The most significant impact occurs on winter morning. The potential overshadowing would impact on the Huntley Road and on the existing farmland located to the south of the site. This impact is considered insignificant as this land does not currently support any significant uses. Future urban development on this adjoining site can be designed to minimise the overshadowing impact by incorporating appropriate front setback.

6.5.2 Overlooking

The existing residents at Huntley currently overlook into a cleared rural land on the subject site. The proposed independent senior living units will be located at the western side of Goolagong Street, opposite the existing dwellings. An assessment on the potential overlooking impacts is provided as follows:

- Overlooking into the existing houses is likely to be insignificant, given the distance to the existing dwellings on Goolagong Street

- Extensive front setback has been incorporated into the design of the units to minimise potential overlooking impact onto the existing residents.
- Extensive street planting and landscaping in the front setback areas of have been proposed to ensure the impacts on the adjoining residents are minimum.
- Future developments will ensure that the habitable areas (eg. sleeping rooms) are located at the back of the units to minimise overlooking impacts.
- The site does not front other residential areas. Overlooking impact on the surrounding areas is insignificant.

Conceptual Diagram showing the future independent Senior Living Units. Extensive front setbacks have been incorporated into the design to minimise overlooking impacts and enhance the streetscape along Goolagong Street.

6.5.3 Mitigation Measures

- Extensive front setback, street planting and landscaping will be incorporated into the future design of the independent senior units to ensure there is sufficient distance between the units and the existing residences at the western side of Goolagong Street. It will also minimise the potential overlooking onto the existing dwellings through street planting.
- The future floor plan of the units will be designed to locate main habitable rooms (eg. sleeping rooms) at the back of the units to ensure privacy of these units and minimise potential overlooking onto the existing residences.

6.6 Traffic / Access

DGRs Requirements

Traffic, transport and access

- *Detail existing traffic conditions, road networks and road capacity;*
- *Detail proposed emergency and service vehicle access and public access arrangements, including potential conflicts between pedestrians and vehicles; and*
- *Identify pedestrian and bicycle linkages and facilities for cyclists to support and promote this mode of transport*

- *Prepare a traffic impact study in accordance with RTA Guide to Traffic Generating Development. This should also consider the suitability of the railway level crossing on Avondale Road.*
- *Prepare a Transport Management Accessibility Plan (TMAP) in accordance with the draft interim TMAP guidelines and addressing the following issues:*
    - *Detail the measures to be taken the meet the State Plan target of 25% of Journey to Work Trips by public transport at full development.*

It is important to assess the impact from this increased road and public transport usage on the IIHP site locality to ensure the new development does not have a significant impact on transport infrastructure and identify any necessary mitigation measures. La Vie has engaged Cardno Eppell Olsen, a specialist transport consultancy, to assess these matters.

This section summarises the finding of the Cardno Eppell Olsen Transport Management and Access Plan (TMAP) in relation to the IIHP development. The full TMAP report is available in **the separate volume**.

6.6.1 Existing Conditions

Road Classification

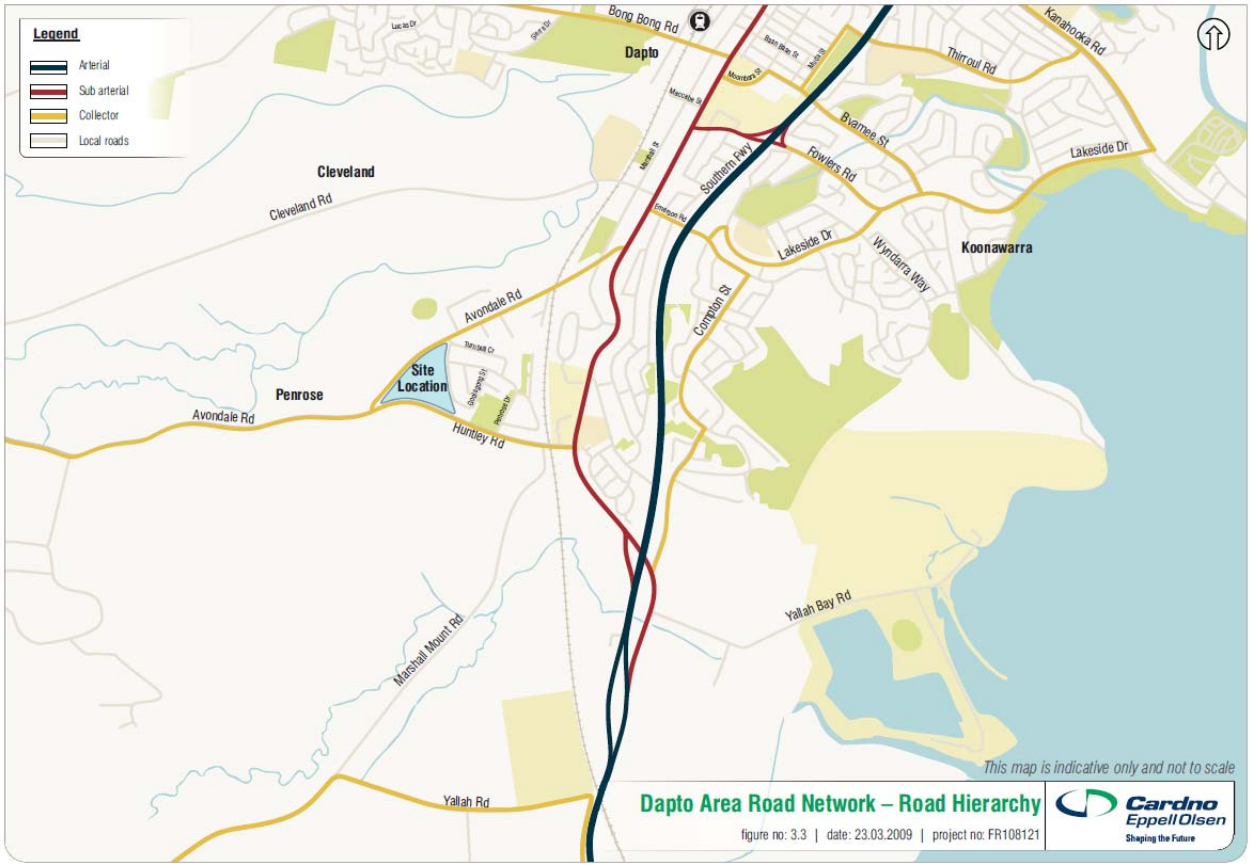
Access to the subject site is currently available from both Huntley and Avondale Roads, which connect to Princes Highway.

The RTA document classifies roads according to the role they fulfil and the appropriate volume of traffic that they should convey:

- **Arterial Road** - is typically a main road carry in excess of 15,000 vehicles per day and over 1,500 vehicles per hour in the peak period. They predominantly carry traffic from one region to another, forming principal avenues of communication for metropolitan traffic movements.
- **Sub-Arterial Road** – is typically a secondary road carrying between 5,000 and 20,000 vehicles per day and over 500 and 2,000 vehicles per hour in the peak period. They predominantly carry traffic from one sub-region to another forming secondary inter-regional transport links.
- **Collector Road** – is typically a minor road carrying between 2,000 and 10,000 vehicles per day and over 250 and 1,000 vehicles per hour in the peak period. They provide a link between local areas and regional road carrying low traffic volumes. At volumes greater than 5,000 vehicles per day, residential amenity begins to decline noticeably.
- **Local Road** – is typically a local street carrying less than 2,000 vehicles per day and 250 vehicles per hour in the peak period. They provide immediate access to individual houses and carry low traffic volumes.

In the Huntley area the functional road hierarchy is shown in **Figure 21**.

Figure 21 – Road Hierarchy



(Source: Cardno Eppell Olsen (2009))

A description of the roads within the study area is provided in Section 3.2.2 of the TMAP.

Intersection Control

The form of intersection control at the junctions within the study area is shown in **Figure 22**.

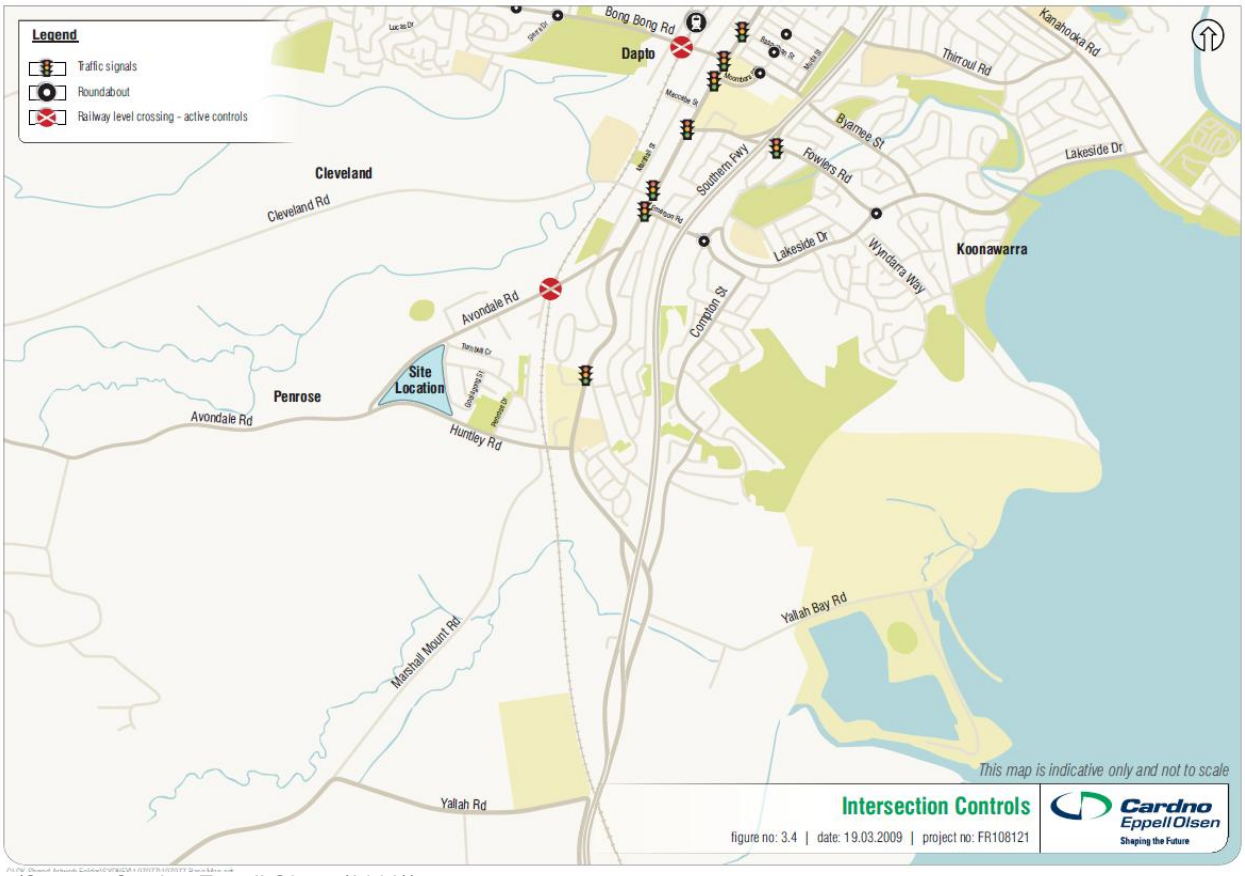
Of particular importance is the intersection of Huntley Road and Avondale Road on the south eastern edge of the site. It is currently a stop controlled t-junction. The current design is confusing to motorists as to their travel path when making a right turn from Huntley Road into Avondale Road.

Access to the Site

The site is currently vacant and there are no formally constructed access points. A gate, located adjacent to the eastern end of the cutting on Huntley Road, provides vehicular access to the site, e.g. for service vehicle tending to the overhead power lines of gas pipeline.

An additional gate also facilitates vehicular access to the site, and is located adjacent to the intersection of Avondale and Huntley Roads.

Figure 22 – Existing Intersections



(Source: Cardno Eppell Olsen (2009))

Traffic Volumes

The RTA published Annual Average Daily Traffic Volumes (AADT) are shown in the **Table 6.2**.

Table 6.2 – Annual Average Daily Traffic (AADT) Volumes (Vehicles Per Day)

	Years					
Location	**1994**	**1997**	**1998**	**2000**	**2003**	**2005**
Southern Freeway						
- at Mullet Creek	51,922	52,579	-	56,839	60,136	-
- 1.2km south of Kanahooka Road	-	40,264	38,023	43,142	46,477	48,772
- south of Fowlers Road	-	29,969	-	33,091	37,674	-
Princes Highway						
- north of Bong Bong Road	14,009	12,862	12,850	13,139	14,496	11,509
- south of Fowlers Road	-	-	15,019	16,400	17,829	15,077
- at Macquarie Rivulet bridge	37,781	40,752	41,873	44,635	48,648	48,842

Source: Roads and Traffic Authority of New South Wales, Average Annual Traffic Volume Data for Southern Region, 2006