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Arne Jacobsen

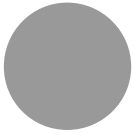
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Copenhagen
London
Sydney
Hong Kong
New York

Level 8, 9 Castlereagh Street
Sydney, NSW, 2000, Australia
ABN 50 001 189 037
t : +61 / 02 9967 2200
e : info@steensenvarming.com

BUILDING SERVICES

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Gosford Hospital Redevelopment and Health & Wellbeing Precinct Stage 1. State Significant Development (SSD) Infrastructure Management Plan



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e : info@steensenvarming.com

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Craig Marsh
Senior Electrical Engineer
craig.marsh@steensenvarming.com



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1.0 Executive Summary

The details within this document are preliminary and based on the information available at the time.

The Infrastructure Management Plan (IMP) has been prepared for lodgement with the State Significant Development (SSD) application for the Gosford Hospital Redevelopment, which consists of the new Gosford Hospital Building project and the Health and Wellbeing Precinct Stage 1 project (HWP).

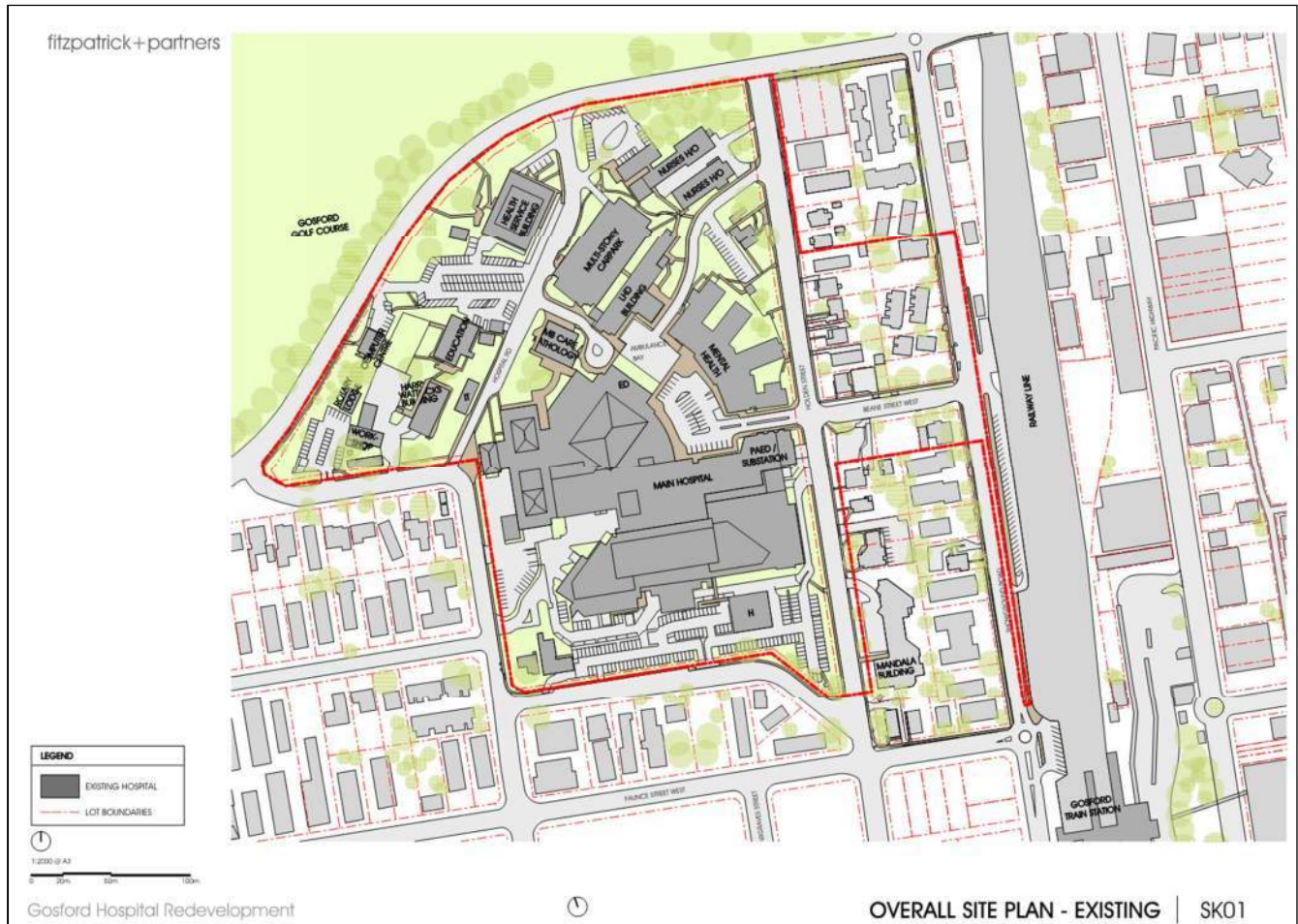
The report is provided to facilitate a record of investigations and information gathering regarding existing capacity of these services, and any augmentation/upgrades required. The report also details record of consultation with the relevant agencies.

This report determines that the following services are located above ground and below ground within the proposed construction sites for the Gosford Hospital and the HWP:

- Ausgrid high voltage and low voltage electricity networks
- Telecommunications fibre and copper cable owned and operated by the following:
 - o Telstra
 - o NBN Co
 - o Nextgen
 - o Optus Ucomm
- Gosford City Council and Gosford Hospital owned stormwater, sewerage and water networks
- Gas networks operated by Jemena Gas North.

This report also determines the proposed services augmentations for each of the above systems, based on information obtained from other relevant design consultants and stakeholders from the project team, as well as determining where discussions are required with statutory authorities.

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The new main Hospital Redevelopment and HWP project consists of two main sections of work.

1. A new eleven (11) level Hospital building across Hospital Rd shaded in magenta below.
2. The Health & Wellbeing Precinct Stage 1 to the eastern side of Holden St consisting of a multi storey carpark and health/health related and government administrative offices, shaded in Blue and, the 1,150m² future development in pink, with adjacent roadworks in Holden Street and Showground Road.

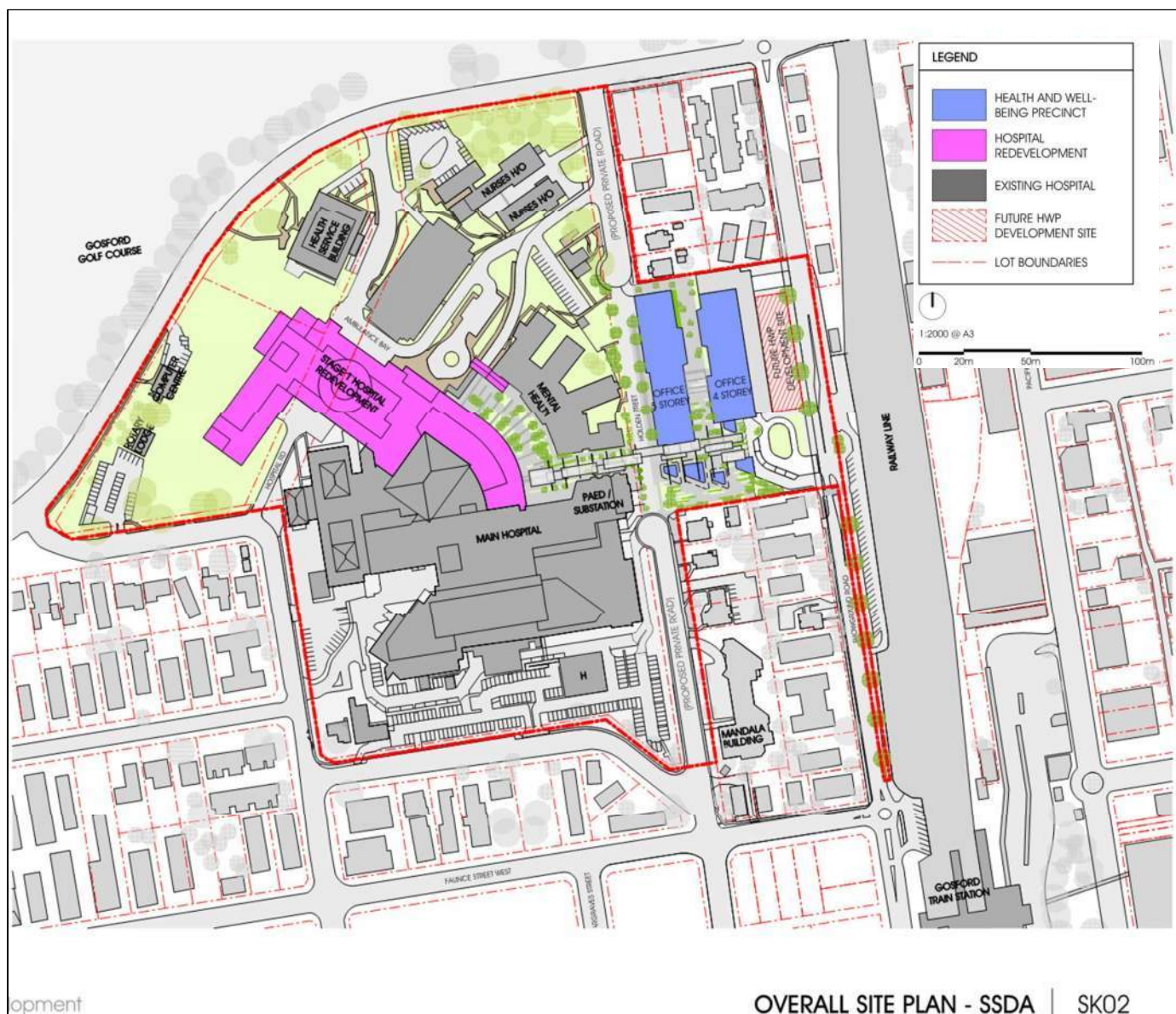
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e : info@steensenvarming.com

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2.0 Building Services Infrastructure Information

2.1 Electrical Power

Main New Hospital Redevelopment

The existing hospital does not have the capacity to serve the new eleven (11) level Hospital building. Thus new power augmentation is required from the local supply Authority Ausgrid.

The firm rating of an Ausgrid chamber substation containing 3x 1500kVA transformers is approximately 5,500amps/phase. Based on the areas and the assessed maximum demand two (2) off 3x 1500kVA Chamber Substations are required to support the new building. It is noted that the second chamber substation may not be fully fitted out with the 3 transformers, leaving space for fitout of additional transformers when the building expands in the future.

Ausgrid have been consulted on the proposed development and the connection application has been submitted to Ausgrid.

Health & Wellbeing Precinct Stage 1

The existing site does not have the capacity to serve the new building. Thus new power augmentation is required from the local supply authority, Ausgrid.

A number of options have been considered to provide the necessary power for the new building, including 3 x1500kVA transformers (150m²) - one transformer installed now with space for future expansion and an alternative option of multiple individual, smaller, 1000kVA transformers (20m² each). It is noted that Ausgrid may not allow more than two mini chamber substations on one site.

The preferred option, as indicated by the HWP Engineering Consultant (Floth), is that an electrical supply to these elements is provided by a new in-building chamber substation, located at Showground Road level and serviced from the Ausgrid high voltage mains located within Showground Road. The chamber substations shall service main switchboard(s) located within a dedicated room adjacent the chamber substation.

Ausgrid have been consulted on the proposed development and have all necessary information for their review.

It is also proposed that any existing overhead power lines along the Holden Street and Showground Road frontages are to be diverted in-ground.

2.2 Telecommunications

Main New Hospital Redevelopment

The existing hospital does not have the required number of connections and redundancy communications services to cater for the new Hospital building. Thus new telecommunications augmentation is required consisting of optical fibre cabling from the preferred telecommunications carrier.

Preliminary discussions with the relevant stakeholders indicate that the new lead-in connection will come from the north eastern section of the site, on the corner of Racecourse Rd and Holden St. The exact details will be confirmed with the preferred telecommunications carrier.

Floth has confirmed that the existing Telstra 100-pair and 50-pair cables within Showground Road and Holden Street are to be rerouted via Racecourse Road, whilst the existing 10-pair cables within Beane Street are to be removed.

Health & Wellbeing Precinct Stage 1

The existing site does not have the capacity to serve the new building. Thus new telecommunications services augmentation is required.

As the new health, health related and government administrative buildings will form part of the Hospital, new link cabling will be provided between the existing hospital and the new buildings across Holden St. Provision for future lead-in services direct from the relevant telecommunications carriers will also be provided from Holden Street and Showground Road.

It is also proposed that any overhead telecommunications cabling running along the Holden Street and Showground Road frontages are to be diverted in-ground, as required.

2.3 Sewer

Main New Hospital Redevelopment

Sanitary plumbing and drainage from the hospital development will connect to the existing sewer line located in Hospital Road.

Health & Wellbeing Precinct Stage 1

Sanitary plumbing and drainage from the HWP development, and the additional 1,150m² development site will connect separately to the existing Authority's mains located in Showground Road.

The existing 150mm sewers in Hospital Road, and affected by the proposed development, will be diverted along the northern and southern boundaries, within the site, subject to Council approval.

2.4 Water

Main New Hospital Redevelopment Water supply for the new hospital will be supplied from the existing hospital connection within the hospital site. This supply is connected to the water mains located in both Holden St and Beane St West.

Water will supply an on-site water storage tank, with water from this tank supplying domestic cold water fixtures and fittings as well as hot water plant and mechanical services plant.

Health & Wellbeing Precinct Stage 1

Water supply for the proposed HWP will be provided from the upgraded 150mm Authority main in Holden Street. The upgrade of the Authority water main in Holden St will be coordinated by the Development team. The additional 1,150m² development site will connect separately to the existing Authority's main located in Showground Road.

Water may supply an on-site water storage tank, with water from this tank supplying domestic cold water fixtures and fittings as well as hot water plant and mechanical services plant.

2.5 Gas

Main New Hospital Redevelopment

Gas supply to the new development will be connected to the main supply located in Holden St. Gas will supply domestic hot water plant and mechanical heating plant via a gas meter located within the site. The final configuration will be determined with the supply authority.

Health & Wellbeing Precinct Stage 1

Gas supply to the HWP development will be connected to the main supply located in Holden St. Gas will supply domestic hot water plant and mechanical heating plant via a gas meter located within the site. The final configuration will be determined with the supply authority.

Gas supply from the additional 1,150m² development site will connect separately to the existing Authority's main located in Showground Road.

2.6 Fire Hydrants and Sprinklers

Main New Hospital Redevelopment

Fire Hydrants and Sprinklers for the new development will be connected to the existing internal supply lines located at the rear of the existing Hospital building.

Health & Wellbeing Precinct Stage 1

Fire hydrants and Sprinklers for the HWP development will be connected to the 150mm water main within Holden Street. Booster assemblies will be located on Holden Street, adjacent the main entry to the Western administrative building. Supplementary water storage will be provided for the fire hydrant and fire sprinkler protection systems, in accordance with BCA, AS2419 and AS2118.

2.7 Stormwater

Main New Hospital Redevelopment

The Civil Engineer, TTW have confirmed that on-site detention systems from previous development within the Hospital are not proposed to be impacted by this project. Proposed new roads and pavements are located within areas that are currently occupied by pavements and/ or buildings and stormwater runoff and routing from these paved areas has been designed to mimic existing conditions. Therefore, on-site detention (OSD) is proposed for the new hospital building only. Stormwater will be collected from the roof of the new building and conveyed to a combined retention/ detention (OSD) tank located at Level 0. The on-site detention component of the tank (20m³) has been sized in accordance with Section 6.7.7.4 of Council's DCP.

Section 6.7.7.2.4 of the DCP requires that a portion of stormwater runoff is retained on site and discharged slowly over one week. Per Council guidance, up to 50% of the retention volume can be claimed as part of the detention volume. Therefore, the OSD tank has been design to provide 200m³ of total storage. The tank is proposed to be fitted with a pump and pipe connection to the landscape irrigation system for reuse of retained stormwater.

Stormwater discharge from the OSD tank will be controlled by a 400mm diameter orifice to limit post development flow rates to predevelopment flow rates for all storms up to the 1 in 100 year recurrence interval. Discharge from the OSD tank will be conveyed via a 450mm diameter pipe through to the Council system in Racecourse Road to the west of the new building. Stormwater pits and pipes will convey stormwater from the proposed roads and pavements to existing pits on the Hospital site. The stormwater conveyance system has been designed to mimic existing stormwater flow conditions.

Stormwater quality treatment devices will be selected to meet Council pollutant loading reduction criteria prior to each new stormwater discharge point.

Health & Wellbeing Precinct Stage 1

Stormwater will be collected from the roof and plaza level of the HWP and conveyed to an OSD tank located at ground level. The on-site detention component of the tank (150m³) has been sized in accordance with Section 6.7.7.4 of Council's DCP. Provision has been made to connect the 1,150m² future development area to the proposed tank at a later time.

Section 6.7.7.2.4 of the DCP requires that a portion of stormwater runoff is retained on site and discharged slowly over one week. Per Council guidance, up to 50% of the retention volume can be claimed as part of the detention volume. Therefore, the OSD tank has been design to provide 350m³ of total storage. The tank is proposed to be fitted with a pump and pipes to allow for reuse of retained stormwater for landscape irrigation and non-potable uses within the proposed HWP health related office and retail buildings.

Stormwater discharge from the OSD tank will be controlled by a 385mm diameter orifice to limit post development flow rates to predevelopment flow rates for all storms up to the 1 in 100 year recurrence interval. Discharge from the OSD tank will be conveyed via a 450mm diameter pipe through to the Council system in Showground Road.

Stormwater pits and piping will be provided to maintain stormwater connections from existing buildings and from existing/ proposed pavements. The existing overland flow path falling from the crest of Holden Street and down to Beane Street will be replaced by a pit and pipe system designed to convey flows from the upstream catchment for up to the 1 in 100 year ARI storm event including provision for up to 50% blockage; this pipe is proposed to be suspended below Level 6 along the southern wall of the carpark and discharged directly into the Council's stormwater system in Showground Road.

Stormwater quality treatment devices will be selected to meet Council pollutant loading reduction criteria prior to each new stormwater discharge point.

3.0 Sub Division and Road Closures

3.1 Sub division

The Gosford Regional Hospital Redevelopment consists of 50 existing allotments contained within the area bound by Racecourse Road, Showground Road, Faunce Street West, Ward Street, Cape Street North and Beane Street West.

The State Significant Development is intended to rationalise the land holdings in order to develop two key precincts for development. The resultant titling structure will allow for the future management and development of the land in an orderly and effective manner.

The development of the allotments include:

- The Gosford Hospital precinct; and
- Health & Wellbeing Precinct Stage 1 (HWP).

To facilitate the future development of the allotments, the existing allotments will be sub-divided as per the list below and the layout included within Appendix A

- The eastern halves of the following allotments will be amalgamated into a single allotment, which shall be referred to as allotment 300
 - o 32 D.P. 1074996
 - o 5 D.P. 503690
 - o 6 D.P. 503890
 - o 7 D.P. 503890
- The following allotments and Beane Street West (between Holden Street and Showground Road) and part of Holden Street (between allotment A D.P. 316723 and 1 D.P. 163187) are to be amalgamated into a single allotment, referred to as allotment 301
 - o 1 D.P. 163187
 - o 1 D.P. 996187
 - o B D.P. 160507
 - o 1 D.P. 157918
 - o 9 D.P. 503890
 - o 8 D.P. 503.890
 - o 31 D.P. 1074966
 - o 32 D.P. 1074996 (eastern half)
 - o 5 D.P. 503690 (eastern half)
 - o 6 D.P. 503890 (eastern half)
 - o 7 D.P. 503890 (eastern half)
 - o 1 D.P. 1050222
 - o A D.P. 316723
 - o B D.P. 316723
 - o C D.P. 316723

All other allotments bound by Racecourse Road, Showground Road, Faunce Street West, Ward Street, Cape Street North and Beane Street West will remain unchanged.

In reference to appendix A, to suit the proposed future subdivision into Lots 300 and 301, the power, water and telecommunications building services augmentation together with the stormwater and sewer services from the blocks of lands will be segregated. Where necessary, approved easements and right of ways will be established. Details of the services will be coordinated with the relevant Authorities and the detailed design and final consent will be undertaken in the finalisation of the subdivision and its registration.

3.2 Road Closures

Main New Hospital Redevelopment

To facilitate the construction of the proposed Main New Hospital building, road closures are required on Hospital Road. Hospital Road north and south of the new hospital building is proposed to be closed.

Linemarking is proposed to be updated to allow for two-way traffic from Racecourse Road to the northern portion of Hospital Road maintaining access to the existing multi-deck carpark, health services building and nurses h/o. Improvements to the intersection with Racecourse Road are proposed below.



Proposed Racecourse Road / Hospital Road Intersection Improvements

A cul-de-sac to the north of the new Hospital building has been designed to allow vehicles including passenger cars (B-99), commuter buses (Toyota Coaster) and 8.8m Service Vehicles (MRV) to turn around.

South of the new Hospital building, Hospital Road is proposed to terminate in a paved multi-use vehicle area and will be dedicated to patient transport operation including parking within two standard car spaces, a bariatric ambulance unloading space and a standard ambulance unloading space.

The southern portion of Hospital Road will be expanded to 7m allow for two-way traffic and a lay-by space for a 12.5m fuel truck to park and fill the proposed underground diesel tanks.

Health & Wellbeing Precinct Stage 1

To facilitate the construction of the proposed HWP, road closures are required to Beane Street West and Holden Street.

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As part of the construction works Holden Street will be closed in both directions between Faunce Street and Racecourse Road. Beane Street West will be closed in its entirety (between Holden Street and Showground Road). This is illustrated below.



Extent of Holden Street road closureExtent of Beane Street West Closure

Holden Street and Beane Street currently provide access to the existing hospital, several health facilities and one Health owned property. Access to this property will be maintained during the course of redevelopment of the site through the creation of easements for access and services as required. As the redevelopment of the site proceeds, and in conjunction with the relevant authorities, existing services will ultimately be removed or realigned as required. Appendix B illustrates the proposed road closures for the HWP development.

Access to the proposed HWP carpark is proposed from Showground Road and the northern Holden Street cul-de-sac. The proposed loading bay can be accessed from Holden Street by trucks up to 8.8m (MRV). A bus stop is proposed on Showground Road adjacent to the Health and Wellbeing Precinct Stage 1. Proposed access improvements within Showground Road are shown below.

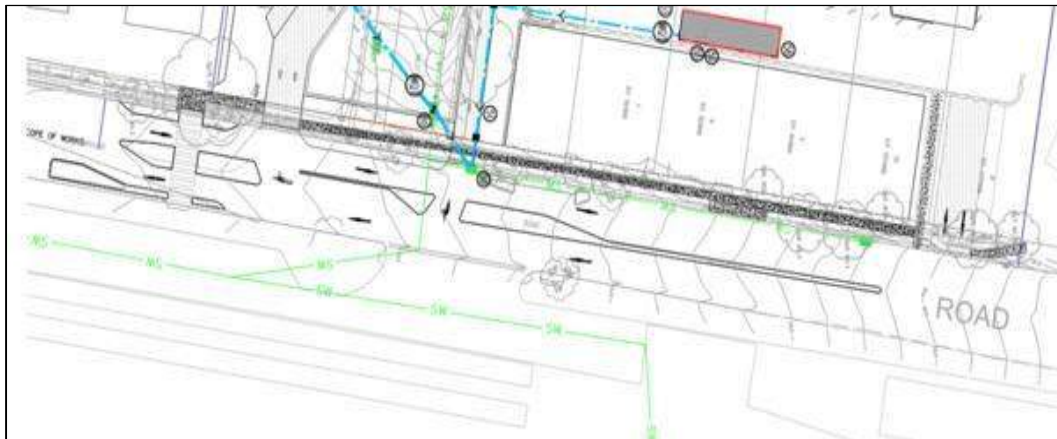
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Showground Road Health and Wellbeing Precinct Access Improvements

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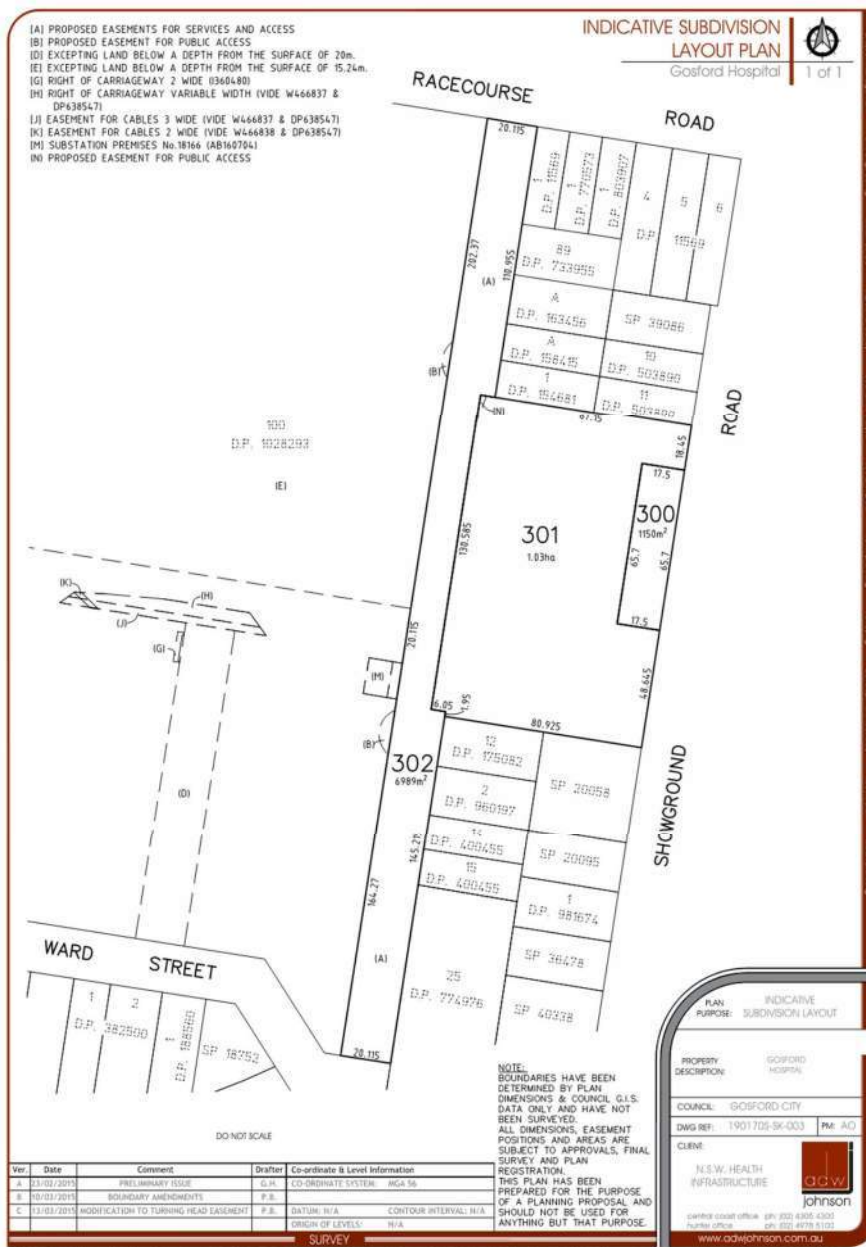
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Appendix A – Subdivision Plan



Level 8, 9 Castlereagh Street
Sydney, NSW, 2000, Australia
ABN 50 001 189 037
t: +61 / 02 9967 2200
e: info@steensenvarming.com

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Appendix C – Drawing and Detail Reference List

The following drawings and details, provided by stakeholders, other design consultants and utility/network providers, have been used in the production of this report:

Drawing Information				
Document Owner	Document Number	Document Name	Revision	Relevant Sections
Trehy Ingold Neate Land Development	18257L-SB04 18257L-SB08 18257L-SB09 18257L-SB12 18257L-SB13 18257L-SB14	Detailed Survey Plan for Development Application Purposes Over Gosford Hospital, Gosford	D	Section 2.0 and all sub-headings
Trehy Ingold Neate Land Development	18257L-SC02	Plan Showing Electrical Services, Gosford Hospital, Gosford	A	2.1 – Electrical Power
Trehy Ingold Neate Land Development	21228-SA01-A	Gosford Hospital, Main Electrical Supplies & Essential Power Supplies	A	2.1 – Electrical Power
Trehy Ingold Neate Land Development	18257L-SC01	Plan Showing Communication Services, Gosford Hospital, Gosford	A	2.2 - Telecommunications
Trehy Ingold Neate Land Development	18257L-SC05	Plan Showing Sewer Service, Gosford Hospital, Gosford	B	2.3 - Sewer
Donnelly Simpson Cleary	7630-NEWB-HY-DG-0002	Hydraulics Site Plan	05	2.3 - Sewer 2.4 – Water 2.5 – Gas 2.7 – Storm Water 3.0 – Subdivision and Road Closures
Taylor Thompson Whitting	141191-HWBP-CV-DG-C3001	Overall Siteworks Plan	P4	2.7 – Storm Water
Taylor Thompson Whitting	141191-HWBP-CV-DG-C3002	Siteworks Plan, Sheet 1 of 5	P4	2.7 – Storm Water
Taylor Thompson Whitting	141191-NEWB-CV-DG-C3003	Siteworks Plan, Sheet 2 of 5	P3	2.7 – Storm Water
Taylor Thompson Whitting	141191-HWBP-CV-DG-C3004	Siteworks Plan, Sheet 3 of 5	P3	2.7 – Storm Water
Taylor Thompson Whitting	141191-HWBP-CV-DG-C3005	Siteworks Plan, Sheet 4 of 5	P3	2.7 – Storm Water
Taylor Thompson Whitting	141191-HWBP-CV-DG-C3006	Siteworks Plan, Sheet 5 of 5	P3	2.7 – Storm Water
Taylor Thompson Whitting	141191-HWBP-CV-DG-C6001	Existing Survey Plan	P2	2.7 – Storm Water
Document Owner	Document Number	Document Name	Revision	Relevant Sections

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Taylor Thompson Whitting	141191-NEWB-CV-DG-C3002	Siteworks Plan, Sheet 1 of 4	P7	2.7 – Storm Water
Taylor Thompson Whitting	141191-NEWB-CV-DG-C3003	Siteworks Plan, Sheet 2 of 4	P7	2.7 – Storm Water
Taylor Thompson Whitting	141191-NEWB-CV-DG-C3004	Siteworks Plan, Sheet 3 of 4	P8	2.7 – Storm Water
Taylor Thompson Whitting	141191-NEWB-CV-DG-C3005	Siteworks Plan, Sheet 4 of 4	P5	2.7 – Storm Water
Taylor Thompson Whitting	141191-NEWB-CV-DG-C6001	Existing Survey Plan	P3	2.7 – Storm Water
ADW Johnson	190170S-SK-001	Proposed Road Closure	C	3.0 – Subdivision and Road Closures
Dial Before You Dig Information (Multi Storey Carpark Health & Wellbeing Precinct Stage 1 site area)				
Document Owner	Relevant Information			Relevant Sections
Ausgrid	Plan drawings for grid references 1K2 and 1K3			2.1 – Electrical Power
NBN Co	Job number 8824650, sequence number 43864258			2.2 - Telecommunications
Nextgen	Sequence number 43864252			2.2 - Telecommunications
Telstra	Sequence number 43864255			2.2 - Telecommunications
Gosford City Council	Site image provided			2.3 - Sewer 2.4 - Water
Roads and Maritime Services	Drawing number 7000.184.W.2914			2.4 – Water
Roads and Maritime Services	Drawing number 7000.184.VV.3349			2.4 – Water
Jemena Gas North	Layouts for grid references G05A, G05B, G05C, G05D, G06A, G06C, G08A, G08B and g09A.			2.5 – Gas
Dial Before You Dig Information (Main New Hospital Redevelopment & Extension)				
Document Owner	Relevant Information			Relevant Sections
Ausgrid	Job number GO5433GMLA0, distribution number 40439251			2.1 – Electrical Power
AAPT PowerTel	Confirmation that no assets are affected			2.2 - Telecommunications
NBN Co	Confirmation that no assets are affected			2.2 - Telecommunications
Nextgen	Sequence number 40439248			2.2 - Telecommunications
Optus Ueomm	Sequence number 4039253			2.2 - Telecommunications
Telstra	Job number 8094179, plans A1 and B1			2.2 - Telecommunications
Gosford City Council	Site image provided			2.3 - Sewer 2.4 - Water
Roads and Maritime Services	Drawing number 7000.184.W.2914			2.4 – Water
Roads and Maritime Services	Drawing number 7000.184.VV.3349			2.4 – Water
Jemena Gas North	Layouts for grid references G05A, G05B, G05C, G05D, G06A, G06C, G08A, G08B and g09A.			2.5 – Gas