



# Services Infrastructure Report

7 City View Road, Pennant Hills

PREPARED FOR  
EG

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# Services Infrastructure Report

## Revision Schedule

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### Northrop Consulting Engineers Pty Ltd

ACN 064 775 088 | ABN 81 094 433 100

Level 11, 345 George Street, Sydney NSW 2000

02 9241 4188 | [sydney@northrop.com.au](mailto:sydney@northrop.com.au) | [www.northrop.com.au](http://www.northrop.com.au)

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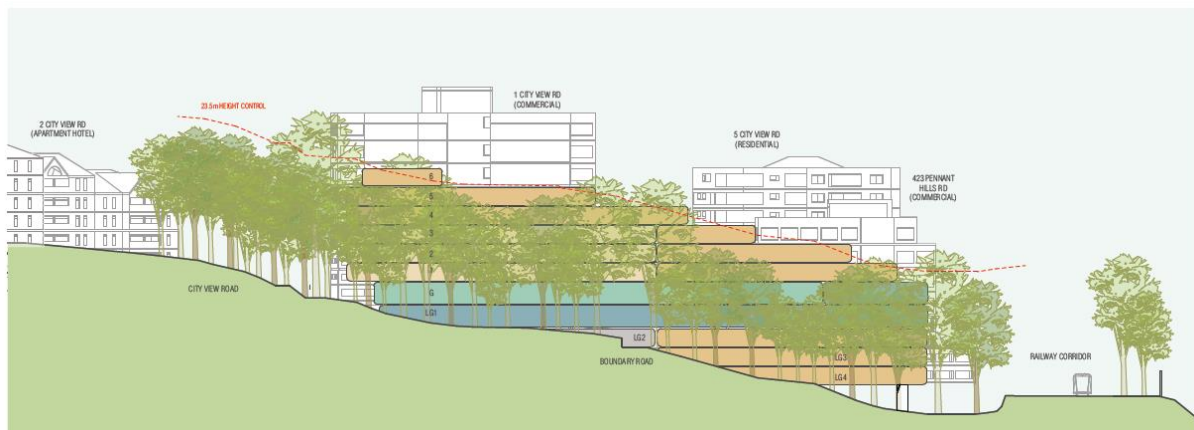
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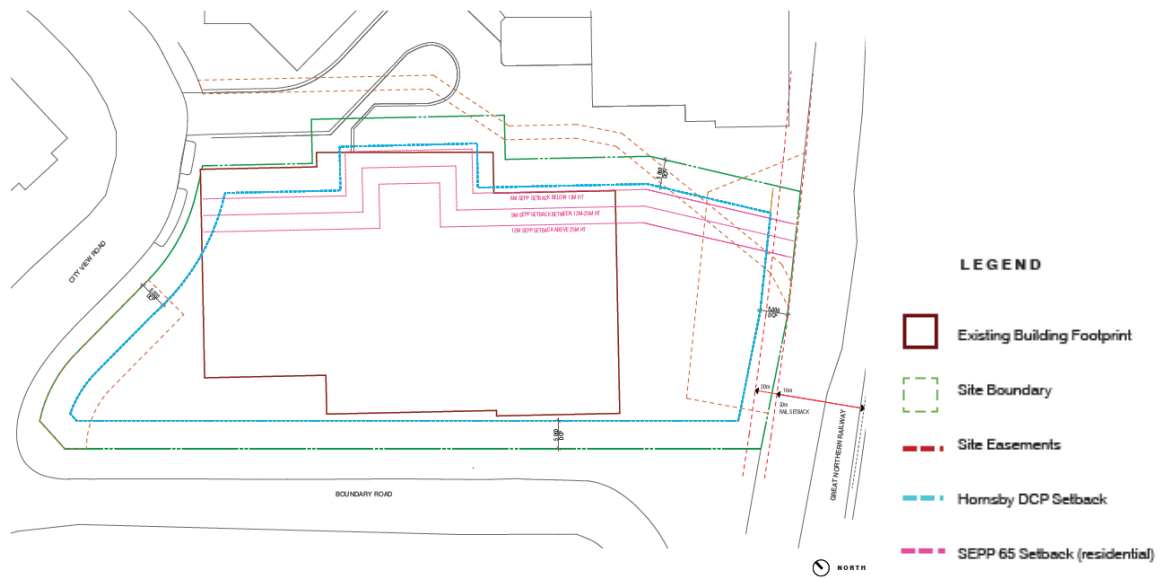
## Redevelopment Proposal

Architectural drawings have been prepared by Fender Katsalidis which depicts a mixed-use development comprising levels of car parking, commercial, residential, community and a café. In all, there are 11 floors which cascade down the hill from west to east (Figure 3).

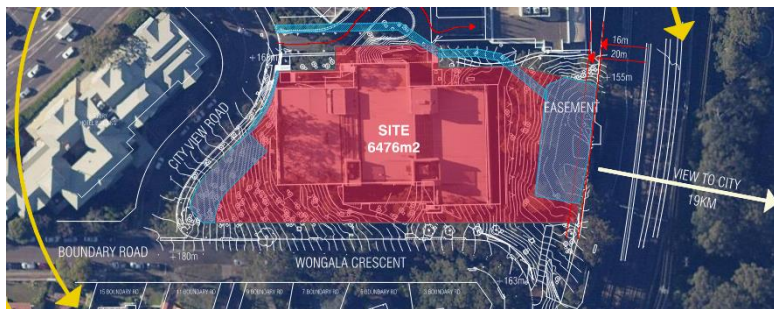


**Figure 3: Proposed development shown cascading down the slope**

Figure 4 shows the proposed development will have a larger footprint than the existing building on the site. A key point to note is the extension of the built form to the east and toward the railway corridor. This is proposed over land which currently functions as a drainage easement (Figure 5). Note that the easement will be retained as an undercroft area (Figure 6).



**Figure 4: Showing the increased development footprint proposed**



**Figure 5: Drainage easement indicated on northern boundary and onto site in the east**



**Figure 6: showing the rear easement as an undercroft**



## Existing services infrastructure

### Site imagery



**Figure 7: View from cnr Boundary Street and City View Road – note dense Blue Gum High Forest which is stabilising the slope**



**Figure 8: View toward property (on LHS) from City View Road**



**Figure 9: View from the bottom of Boundary Street with property on RHS**



The private road that bisects the northern part of the site has power (for street lighting) and stormwater drainage. There is a stormwater pond on the northern side of the road. Note the retaining wall indicating a grade change to the car park.

### Stormwater, flooding and riparian

#### Catchment context

The site forms part of a small yet steep catchment which drains to the low point at the eastern (rear) of the site (Figure 10). From there, stormwater drains under the railway line and into the stormwater network in Azalea Grove.



Figure 10: The site within its subcatchment draining to the east under the railway line

#### Flooding

The site is not categorised as flood-affected in any of Council's available flood mapping information. Being at the top of the catchment and on steep land, flooding is not an issue.

#### Riparian

The site is not near any "blue lines on the 1:25,000 topo map" and so riparian setbacks do not apply (Figure 11).



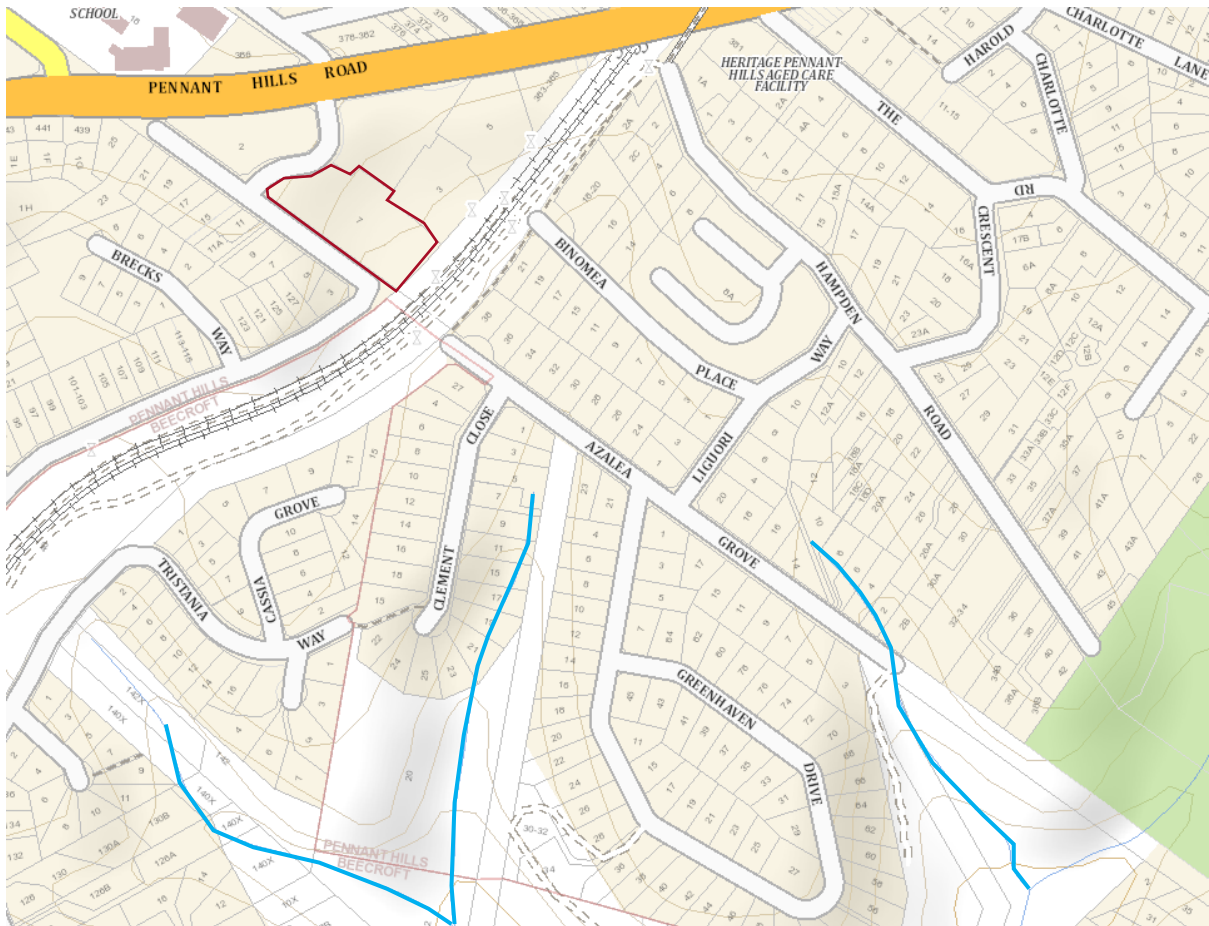


Figure 11: Nearest waterways (blue) are over 40m away from the site boundary. 1:25,000 topographic map, Source: SixMaps.

### Stormwater

Council's stormwater network diagram is shown in Figure 12. It shows pipes in Boundary Road and City View Road. The City View Road system enters the drainage easement on 1 and 7 City View Road. All pipes converge in the east (rear) of the site.

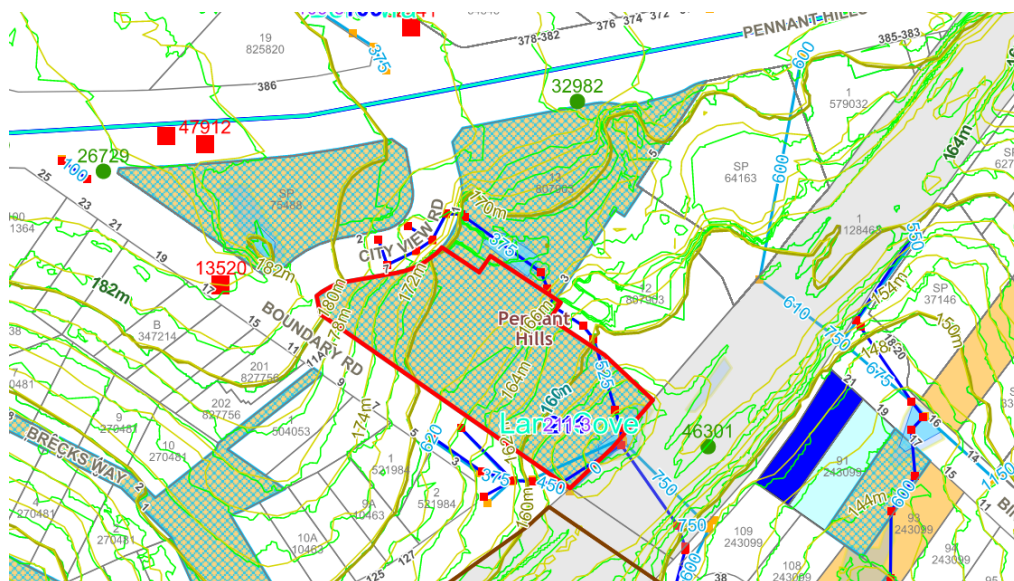


Figure 12: Council drainage network



The drainage easement on the northern site boundary (Figure 3) conveys flows from the following:

- The catchment upstream of the site which enters the Council network on City View Road
- Drainage from 1 and 7 City View Road sites

This drainage line/easement is quite unique and complex, as demonstrated in Figure 13.



**Figure 13: drainage enters site in vertical pipes from City View Road before flowing through drainage easement on northern site boundary**

The drainage easement continues to the east (rear) of the site, where it flows over steep land to a basin containing a stormwater pit (Figure 14). The pit allows this water to enter a pipe and be conveyed under the train line.





Drainage easement



East (rear) of site containing basin



Steep slope leading to basin. This will be an undercroft in the new development



Street drainage entering stormwater easement in east of site

**Figure 14: Drainage easement at east (rear) of property**

## Water and Sewer

**Water** - Water service (150mm diam pipe) is present on the eastern side of City View Road and terminates adjacent to the northeast corner of the site. Note this is a “dead end” watermain so flows and pressures will be less than if this service was part of a ring main. There is also a 100mm water main generally located on the northern side of Boundary Road.

**Sewer** - Sewer is present on the eastern side of the site, however, this caters for flow from upstream and neighbouring properties (225mm). This sewer enters the property for a short distance and may be available for future connection. There is also a 150 sewer (southwest corner) that appears to be the point of connection for the existing building. There is also a 150mm and 225mm sewer along the eastern boundary adjacent to the railway corridor.

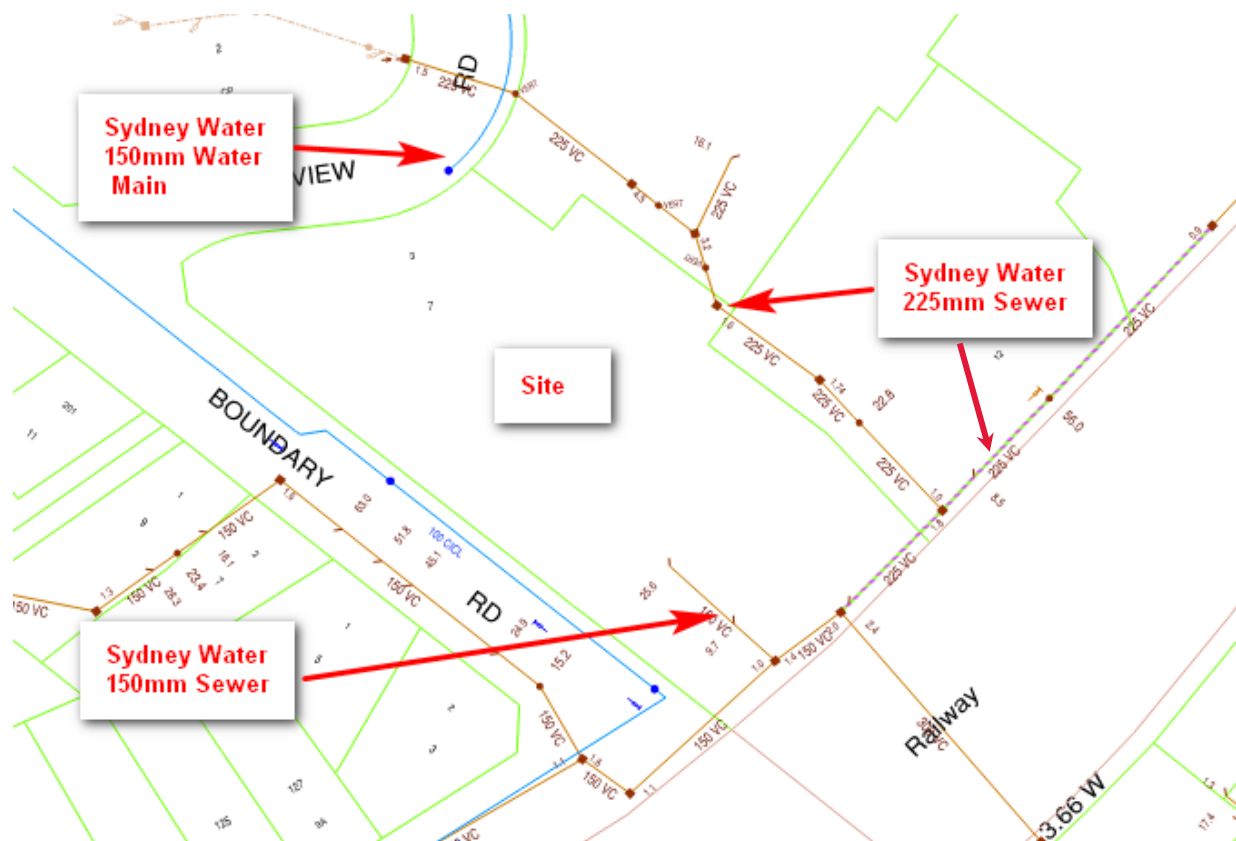
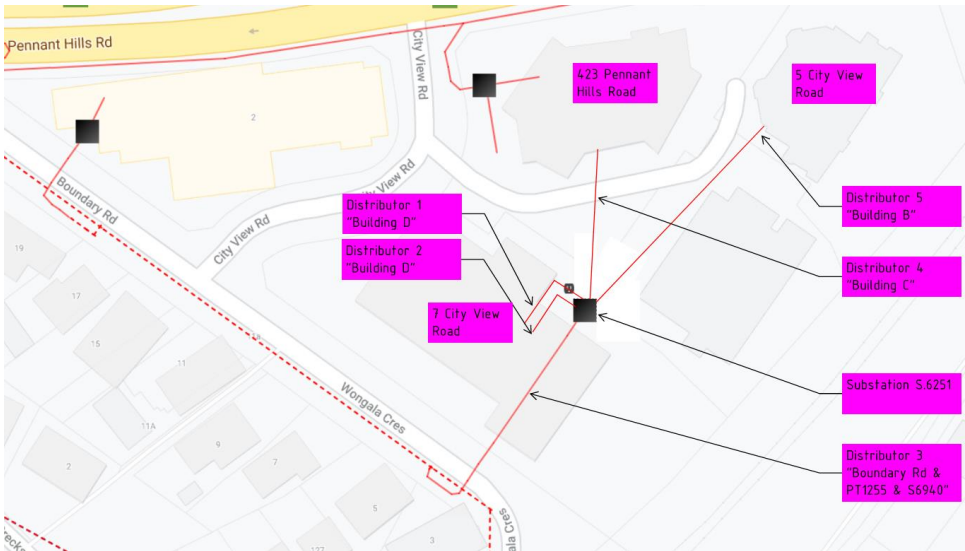



Figure 15: Authorities sewer and water main locations





Item	Details
<b>Distribution from Chamber substation</b>	
<b>Impacts on Infrastructure</b>	<p>Substation S.6251 is a 2 x 1000kVA transformer surface indoor chamber and is non-firm rated at 2993A on a commercial load cycle.</p> <p>The substation has five (5) distributors of which distributors #1 (1200A) and #2 (800A) are dedicated to the 7 City View Road building.</p> <p>The other distributors supply 423 Pennant Hills Road (distributor #4) and 5 City View Road (distributor #5) with an LV interconnector back to the street (distributor #3).</p>

Item	Details
<b>Chamber substation</b>	
<b>Impacts on Infrastructure</b>	<p>Maximum demand readings undertaken by Ausgrid in 2010 indicate that the demand on the substation from the other three distributors serving other buildings is 750A. This indicates that there may be up to 2243A of spare capacity on the substation that could be allocated to the future development.</p> <p>Confirmation of the substation's capacity and spare capacity shall be sought by Ausgrid upon application for connection of load.</p> <p>Given the proximity of the substation to the building due to be demolished, it is likely that this substation will also be decommissioned. This means the existing services to the other buildings will need to be resupplied by another substation on the network or by a temporary substation while construction is ongoing.</p>



## Telecommunications

Utility telecommunications cabling is installed in underground conduits on street verges, with regular access points through pits along Wongala Crescent and City View Road.

According to the information given on DBYD, Optus fibre cabling also traverses the vicinity of the site.

This does not resolve the Contractor of their responsibility to conduct a thorough survey of all areas of excavation and ensure that no existing services shall be disrupted.

### Shared Communications Pathways

NBN trenches/ducts and cables are shared with Telstra services - due to NBN taking ownership of the existing Telstra Copper and hybrid-fibre-coaxial (HFC) network in Pennant Hills. The ducts contain NBN backbone fibre-optic cable and NBN customer Copper/HFC cabling, as well as Telstra backbone fibre-optic cable and Telstra customer Copper and fibre-optic cabling.

The following sections applicable to Telstra and to NBN assume that infrastructure is shared.

### NBN

Existing NBN ducts reticulate along Wongala Crescent on the northern verge and City View Road on the eastern verge (Figure 17). There is currently not an NBN lead-in to the site, however, there is a manhole to the north which could be used to supply the future development.

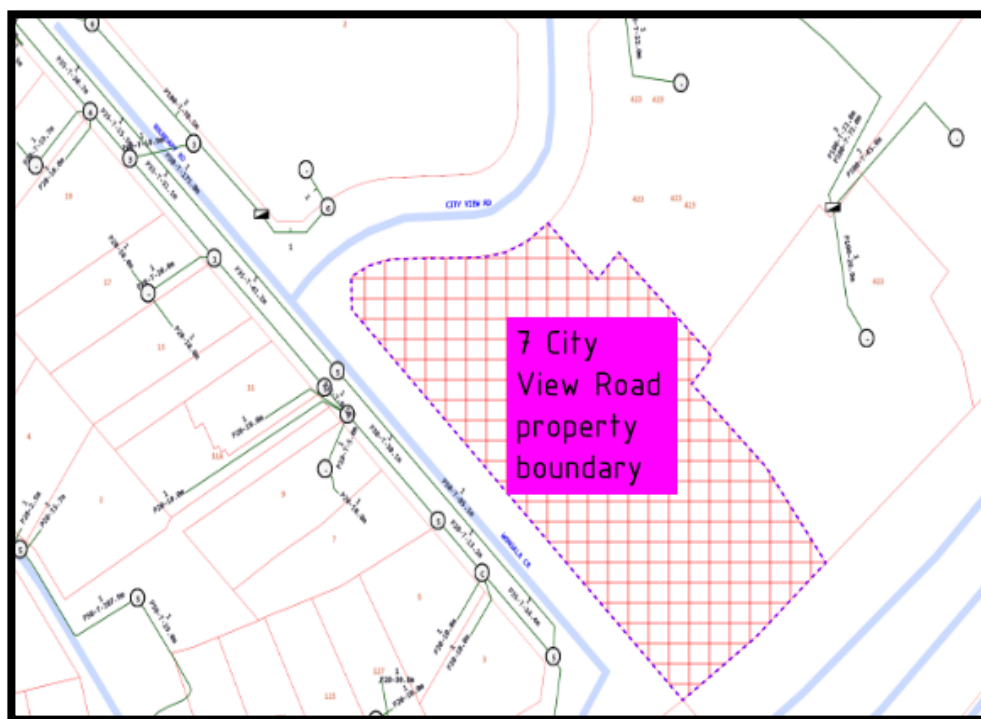


Figure 17: NBN network in vicinity of development site

### Telstra

Telstra ducts are reticulated along Wongala Crescent on both verges (Figure 18). There are currently two P100 Telstra single mode fibre lead-in conduits within the site terminating at an above ground pillar (B24). One is derived from a manhole, whilst the other from a type 6 pit, both located on Wongala Crescent.

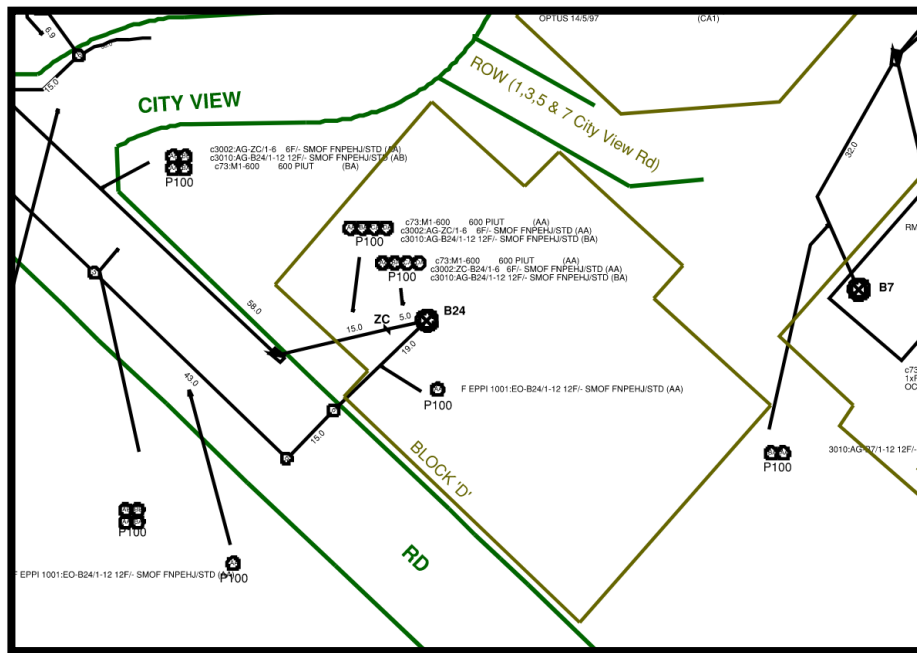


Figure 18: Telstra fibre lead-in

### Optus

Optus ducts are reticulated along Pennant Hills Road on the southern verge (Figure 19). A pit exists on the corner of City View Road from which a fibre lead-in can be derived.



Figure 19: Optus fibre network in the vicinity of site



## Proposed infrastructure servicing

### Stormwater

The presence of the drainage easement simplifies the drainage at the site. All or most of the site's drainage can be directed to it, and there are several connection points available as pits along the length of the easement.

At the downstream end of the easement (i.e. the eastern or rear boundary), the existing basin needs to be retained. This is where runoff collects and surcharges prior to entering a pit which conveys the flow under the rail corridor. The proposed site design shows part of this area as an undercroft beneath the building (Figure 20). The only limitation is that the easement contains stormwater pipes which require access for maintenance or renewal. Therefore, adequate clearance needs to be provided for this purpose. Figure 21 shows the approximate location of the pipes that require clearance for machinery access. Alternatively, to accommodate a development that encroaches into this easement, the stormwater pipes could be relocated, if required. This is depicted as a black dashed line in Figure 21.

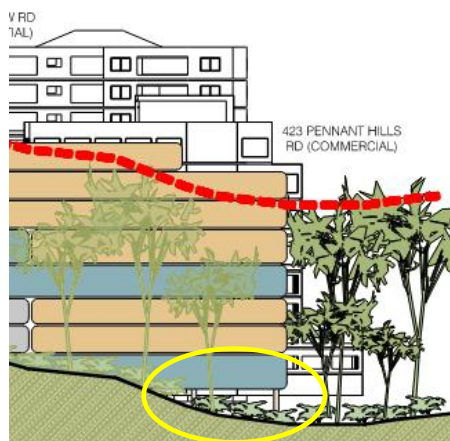


Figure 20: Drainage easement in rear of site needs to be retained with provision for access



Figure 21: Relocated stormwater pipes in the eastern easement, shown as dark green dashed line

### Water and Sewer

**Water** - The development will connect to the authorities 150mm dia watermain in City View Road. As noted, this is a “dead end” main and therefore flows and pressures are less when compared to a “ring main” installation. Due to this, pumps might be required. This will be confirmed after obtaining pressure and flow advice from Sydney Water.

A Master Water Meter will be located within the property on the property line to City View Road. The meter will be located in the northeast corner of the property due to the termination/location of the watermain.

Water for firefighting to the development will connect to the authorities 150mm dia watermain in City View Road. As noted, this is a “dead end” main and therefore flows and pressures are less when compared to a “ring main” installation. Due to the size and nature of the proposed development, both Fire Hydrants and Sprinklers systems will be required. As noted, the scenario of a dead-end main will require pumps but also on-site fire water storage might also be required to supplement the delivery of water from the main. This will be confirmed after obtaining pressure and flow advice from Sydney Water.

Booster Valve Assemblies will be located within the property on the property line to City View Road. These will be located in the northeast corner of the property due to the termination/location of the watermain.

After receipt of the DA, a Section 73 will need to be lodged to Sydney Water. This will enable Sydney Water to comment on the proposed development and the impact on their infrastructure. The outcome of this could be payment of fees associated with “Head Works” charges, amplification of main infrastructure etc.

**Sewer** - The 225mm dia sewer located outside the northern site boundary should not be impacted by the development. It is important to note that the building along this boundary should be located outside the zone of influence of this sewer and the sewer manhole.

The 150mm dia sewer that extends into the site (southwest corner) will probably be removed. This approach will simplify the construction of the building in this area to ensure the building is not being noted as “Building Over Sewer” (BOS).

The 150mm and 225mm dia sewers located parallel with the eastern boundary will need to be accurately surveyed to ensure the proposed development is not located over or within the zone of influence.

After receipt of the DA a Section 73 will need to be lodged to Sydney Water. This will enable Sydney Water to comment on the proposed development and the impact on their infrastructure. The outcome of this could be payment of fees associated with “Head Works” charges, amplification of main infrastructure etc.

## **Gas**

The site will connect to the gas main in Boundary Road. An application will need to be made to Jemena outlining the size of the projects and gas usage/demand. This will determine if the main has the capacity to meet the demand or if amplification is required.

A boundary gas regulator will be located within the property on the property line to Boundary Road.

## **Electricity**

Maximum electricity demand estimation is used to determine the required augmentation to utility power services to service the development. Maximum demand calculations are prepared based on AS/NZS 3000:2018 Table C3, using proposed floor areas and with assumptions of no substantive loads over and above typical residential/ commercial building requirements. Maximum demand estimates are expected to change subject to detailed design development.

### Maximum Demand

Based on areas provided by Fender Katsalidis as part of the Architectural Concept to support a Planning Proposal, the maximum demand calculated for the new development is 1722A/ 1189kVA. (Table 1).



**Table 1- Maximum Demand for 7 City View Road Development**

NON-DOMESTIC						
Group	Sub Location	Description	Area	VA/m2	Load (kVA)	Load (A / Phase)
Ground	Commercial	Office Space	1393	80	111.44	160.85
Ground	Car park	Underground Carpark	2384	15	35.76	51.62
Level 01	Car park	Underground Carpark	2919	15	43.79	63.20
Level 02	Car park	Underground Carpark	2889	15	43.34	62.55
Level 03	Commercial	Office Space	2875	80	230.00	331.98
Level 04	Commercial	Office Space	1728	80	138.24	199.53
Specific Loads		Description	Quantity		Load (A)	Load (A / Phase)
Residential loads		28 ILUs + 68 apartments	1		366	366
Lifts		5x 63A Lifts	1		200	200
Spare Capacity					20.00%	
Total AS3000 Maximum Demand (Non Domestic)					1188.78 kVA	
					1722.86 Amps/Phase	

Subject to an application to Ausgrid and negotiations with other customers currently supplied by the substation, the substation S.6251 could theoretically be retained because the maximum demand of the new development is within the total capacity of the two distributors serving the existing building (2000A). Furthermore, the maximum demand is also within the capacity of the substation including the other existing loads (2243A).

However, given the proximity of the substation to the demolition site, it is likely that the substation will need to be decommissioned. As such, the existing supplies to other customers will either be re-supplied by other local substations on the network, or a new temporary substation will need to be installed on site until the new chamber substation is commissioned.

The project will need to be registered with Ausgrid by way of application for connection, detailed design of the infrastructure will be directed by a Design Information Package pertaining to this project.

The provision of a new substation upgrade shall be determined by Ausgrid and their confirmation that there is sufficient 11kV HV infrastructure in the vicinity to upgrade the substation.

## Telecommunications

The existing site is currently served by two Telstra fibre lead-in connections. These connections will be required to be removed as the site is being constructed and new connections will be terminated into the relevant pits subject to utility approval.

Required alterations to suit the new development are to be considered throughout design development. The project will need to be registered with the relevant service providers.

New cable connections from the relevant telecommunication service providers will reticulate underground to the new building in existing and modified infrastructure.

It is anticipated that there is no direct impact on Wongala Crescent/ City View Road related to the telecommunications services.

## Conclusion

The desktop and site investigations undertaken combined with engineering analysis has shown that there are adequate services proximal to the site. These should be able to service the proposed development. The following needs to be considered as the development proposal proceeds:

- The building footprint needs to be kept clear of the **drainage easement**. If it is proposed to encroach into the easement, the affected stormwater pipes would need to be relocated, with Council's consent.
- **Enquiries to Authorities** to confirm the availability of services.
- **Water supply** may need to be supplemented by on-site tanks and pumps.
- The development needs to remain clear of the **sewer zone of influence** on the eastern side of the development. Accurate survey of sewer assets is required to inform design.
- A **chamber substation** upgrade may be required to support the proposed development in full as a result of the demolition works. Provision of such a substation requires further investigation of the current capacity of the local HV network to support the proposed utility works. Further investigation of possible options for resupplying other customers currently served by substation S.6251 will also be required.
- The existing facility may not have the required number of **telecommunication** connections. Telecommunications augmentation may be required consisting of optical fibre cabling from the preferred telecommunications carrier.