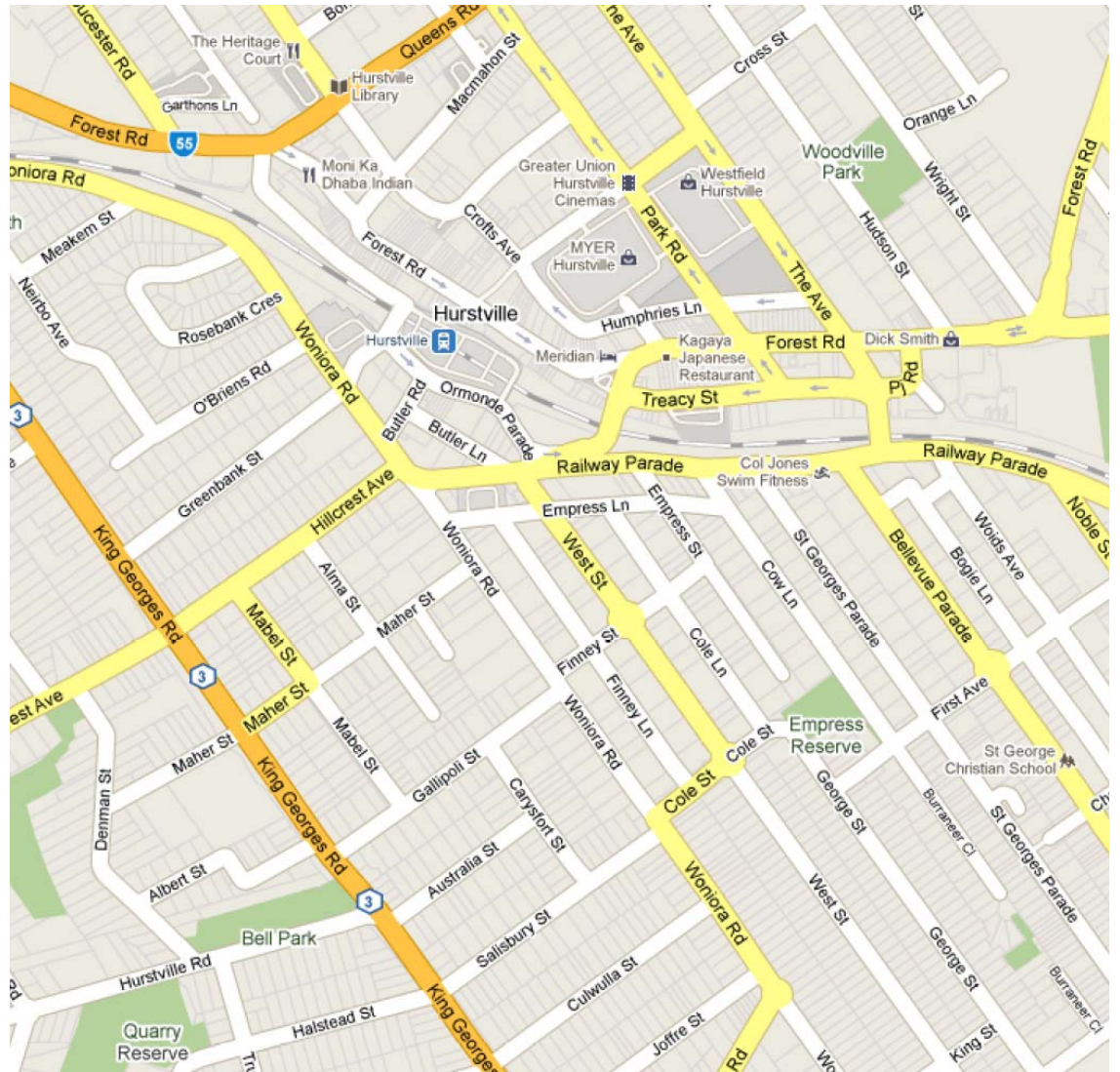


Earljest Pty Ltd

Part 3A Concept Plan Application (MP10_0101)
Proposed Mixed Use Residential/Retail Development
21-35 Treacy Street
Hurstville

Drainage and Utilities Report

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1. Introduction

Earljest is proposing a mixed use residential and retail development at 21-35 Treacy Street in Hurstville. The site is located adjacent to and on the northern side of the railway in the Hurstville CBD. The development will consist of 256 apartments, 4000m² of retail and basement carparking.

The project has been nominated as a major project (MP10_0101) and Director General's Requirements (DGR's) were issued for the Concept Plan Application on the 8th October 2010.

Two of the key issues in the DGR's namely Drainage and Utilities are addressed in this report. The DGR requirements for these two issues are:-

15. Drainage

The EA is to address drainage/flooding issues associated with the development/site, including: stormwater, drainage infrastructure and incorporation of Water Sensitive Urban Design.

18. Utilities

In consultation with relevant agencies, address the existing capacity and requirements of the development for the provision of utilities including staging of infrastructure works.



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2. Existing Conditions

2.1. Drainage

The site is on the southern side of Treacy Street adjacent to the railway. The railway embankment level extends above the site and road frontage levels. The existing site has 100% coverage of impervious surfaces consisting of concrete pavement or buildings.

There is a sag in Treacy Street opposite Lot 3 in DP 2752 with the catchment extending to Forest Road in the north and The Avenue to the east. The catchment has an area of approximately 2.5ha.

There is limited pipe drainage in the catchment with the majority of flows in severe storms travelling overland because of the limited inlet put capacity on the drainage system. The pipe drainage in Treacy Street at the site is limited to the area around the intersection of Treacy and Alfred Streets. The sag in Treacy Street is located approximately 30m east of this intersection. This sag is drained by twin 300mm drainage pipes through Lot 3 DP 2752 and under the railway embankment to Railway Parade on the southern side of the railway. There is no overland flow path from Treacy Street along this drainage pipe alignment because the railway embankment is higher than levels on Treacy Street.

In severe storms, runoff would pond in Treacy Street until it overtops the level of The Avenue at the eastern end of Treacy Street and flows down the underpass for the railway. The level of the gutter on the south western corner of the intersection of The Avenue and Treacy Street is RL 60.4m AHD. The level of the inlet pit at the sag opposite the site in Treacy Street is RL 59.9m AHD.

2.2. Flooding

A flood assessment has been undertaken by Civil Certification. The estimated 100 year ARI and PMF flood flows to the sag in Treacy Street opposite the site are $1.4\text{m}^3/\text{s}$ and $5\text{m}^3/\text{s}$ respectively. At The Avenue, ponded floodwaters in Treacy Street would overflow across a half width of The Avenue carriageway (5m wide) for the 100 year ARI storm. In PMF conditions, the flows into The Avenue from Treacy Street would be across the full carriageway (10m). The estimated level of ponded floodwaters in Treacy Street and the flow depth as waters discharge around The Avenue would result in flood levels at the site of:-

- 100 year ARI RL 60.7m AHD
- PMF RL 60.85m AHD

These levels are based on the assumption that the pipe drainage or inlet pits in Treacy Street are blocked.



2.3. Utilities

Sewer

The existing sewer drains from Treacy Street through Lot 3 DP2752 on the site to a manhole at the rear of this lot. It then flows westwards to another manhole on the site (Lot 1, DP 2752) before heading under the railway embankment to Railway Parade on the southern side of the railway.

Water

There is a 150mm diameter watermain located along the site street frontage serviced by a 200 mm main at the western end of Treacy Street and 300mm and 600mm diameter watermains in Forest Road.

Electricity

High voltage supply is located in Alfred Street with underground connection to the overhead service along the northern side of Treacy Street.

Gas

There is a 50mm, 210kPa gas line along the site street frontage.



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3. Proposed Development

The proposed development consists of a high rise residential development with up to 260 apartments and 4000m² of retail floor space on the ground floor. It will have basement carparking with two driveway entries.



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4. Flooding

The proposed development has been designed to minimise the flooding impacts on the development and the adjacent properties. Hurstville Council has the following requirements for flood management:-

- Basement driveway crest – 100mm freeboard above 100 year ARI flood level; and
- Habitable floor levels – 300mm above 100 year ARI flood level.

The basement carpark driveway crest will comply with the Council requirement. In order to minimise the risk of flooding the basements, the driveway crests have been set at the PMF level of RL 60.85 in AHD. This provides a 150mm freeboard above the 100 year ARI level.

The residential floor levels will be at a minimum of RL ?? in AHD which is ?? mm above the 100 year ARI flood level.

The retail area at ground floor level relies of easy access and an attractive amenity to the street frontage to work well. The design of this interface has gone to great lengths to achieve this while also providing a 300mm freeboard to the 100 year ARI flood level. In the sag, this flood requirement places the retail floor level approximately 1000mm above the street level. The use of ramps and stairs to provide access hinder the attractiveness of retail areas at street front and the need for these measures has been minimised by design of access from the higher parts of the street frontage.

Access to the supermarket below the ground floor retail level will be provided from the retail area. The level at this access point has been set with 300mm freeboard to the 100 year ARI flood level. This provides a 150mm freeboard above the predicted PMF level.

Some areas of the retail area on the ground floor have to be located with less that the Council required 300mm freeboard. This is because the combination of ramps and stairs would make these areas unattractive to users. It is proposed to floodproof these areas up to the 300mm freeboard above the 100 year ARI flood level to minimise the potential for flood damages. Flood proofing would incorporate use of outward opening entry doors with water resistant seals to minimise the ingress of any ponded water, power outlets raised and floor/wall linings which are water resistant.

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5. Drainage

5.1. Peak Flows

The proposed development would incorporate features to support a water sensitive urban design (WSUD) approach and not have any adverse impacts on the drainage system. The objectives of the drainage system for the development are to ensure the peak flow rate from the site does not exceed that for existing conditions and contributes to the long term improvement in runoff water quality.

The existing site is fully covered with impervious surfaces and as such the proposed site would not increase the extent of impervious services nor increase peak flow rate discharges to the Council drainage system. As such, onsite detention to control peak flow rates from the site is not required.

Hurstville Council has a requirement that the existing conditions on a site be recognised as a normal detached residential house no matter whether the impervious area on the site is greater than this standard. It is proposed that it be argued for no detention storage however space has been provided under the basement driveway entries for two detention storage tanks should they be required.

5.2. Runoff Water Quality

The quality of the runoff from the site will be improved through the incorporation in the proposed development of rainwater harvesting for reuse in toilet flushing and use of rain gardens where possible on the ground floor forecourt. Recycled water would be used to irrigate a roof top garden and the gardens proposed at various levels in the building design. These water sensitive urban design facilities will reduce the volume of runoff from the site and treat some of the runoff prior to discharge from the site. This will lead to less pollutants being discharged from the site runoff.

5.3. Existing Stormwater Pipes

The twin 300mm Council stormwater pipes which traverse the site will be passed through the basement of the proposed development in pipes strapped to the underside of the floor slabs.



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6. Utilities

6.1. Sewer

SWC has confirmed that the existing 225mm sewer under the railway embankment has sufficient capacity to service the proposed development. The existing 225mm sewer which traverses the site will be passed through the basement of the proposed development in pipes strapped to the underside of the floor slabs.

6.2. Water

SWC has confirmed that there is sufficient capacity in the system in the 200mm main at the western end of Treacy Street. The existing 150mm main leading from the site to the western end of Treacy Street will need to be upgraded to a 200mm main. The normal fire services components will be required within the development to augment the SWC supply from the street. The use of rainwater harvesting to service toilet flushing and garden irrigation will reduce the demand on the SWC infrastructure.

6.3. Electricity

Energy Australia has indicated that there is sufficient supply to service the development. The development will require a kiosk substation.

6.4. Telecom

Telstra will provide services to cater for the development to a timetable which matches the proposed rollout.

6.5. Gas

AGL/Jemena will assess the commercial viability of providing gas to the site. There is a main along the street frontage and a trunk supply in The Avenue.

6.6. Staging

There will be no need to stage the provision of services to the development. Full capacity would be provided to the development in terms of pipe/cable/infrastructure sizes along with the construction of the development.



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7. Conclusion

The proposed development at 21-35 Treacy Street:-

- Can be serviced with sewer, water, drainage, power and telecom;
- Will appropriately manage flood risk for its own uses and does not adversely impact the flood behaviour in adjacent areas;
- Has habitable floor levels that meet Council's freeboard requirements;
- Has driveway crest levels for basements that meet Council's freeboard requirements;
- Has retail ground floor areas which either conform to Council's flood freeboard requirements or are appropriately flood proofed to minimise flood damages and risk to personal safety;
- Incorporates WSUD features such as rainwater harvesting and rain gardens;
- Does not require onsite detention to control impacts on the Council drainage system but has space allowances for two detention tanks, if required;
- Will contribute to the long term improvement in runoff water quality discharged to Council's drainage system.