
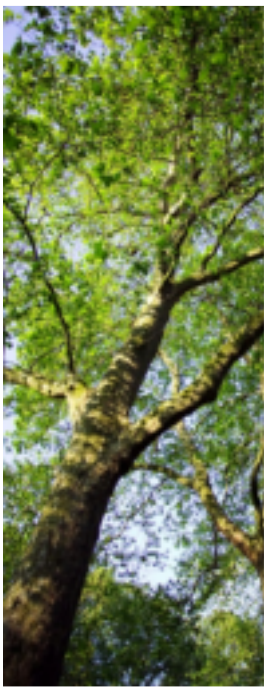


Nepean Green164 Station Street, Penrith

Civil Engineering, Infrastructure and Stormwater Report

June 2013

Parkview Penrith Pty. Ltd.

Mott MacDonald

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Content

1. Introduction

Parkview Penrith Pty Ltd is preparing a Concept Plan for the proposed redevelopment of 164 Station Street, Penrith. The land is situated within the Penrith City Council Local Government Area and covers an area of approximately 7.85 hectares.

The proposed Concept Plan development works are to be completed over six (6) stages and consist of the construction of a new multi-storey mixed residential/commercial development to be known as 'Nepean Green'. The first stage of the works, a bulky goods, hardware, building supplies and garden centre is proposed in the Stage 1 Development Application. While any actual works will be subject to future Development Applications, indicative proposals have been initially assessed in the context of existing infrastructure and services to inform Council's assessment of this Planning Proposal.

Mott MacDonald has been appointed by Parkview Penrith to undertake a review of the existing service infrastructure to outline the constraints associated with the proposed development of the site. The purpose of this report is to review the infrastructure requirements and identify the opportunities, constraints, risks and other issues associated with the proposed development works. The views expressed herein are to provide a broad strategy for servicing the proposed development and comment on the possible infrastructure opportunities and constraints associated with the development of the site.

Following a review of the available documentation, Mott MacDonald has prepared this Civil Engineering, Infrastructure and Stormwater Report for the site which addresses the following items:

- Undertake a comprehensive services search (DBYD) and liaise with the relevant service providers (Sydney Water, Telstra, Endeavour Energy, and Jemena);
- Identify the existing infrastructure, risks and other issues associated with servicing the proposed development. The primary development constraints and issues that are relevant to the project include:
  - Protection or augmentation of existing trunk services in the vicinity of the site during the construction of new infrastructure and temporary connections;
  - Demolition of existing services on site without affecting neighbouring properties;
  - Identifying suitable access to adequate infrastructure to serve the proposed development; and
- Assess the stormwater issues related to the subject site, including:
  - Concept Water Quantity analysis;
  - Concept Water Quality analysis; and

- Identify any potential impacts of flooding within the development areas.

It is expected that the following stakeholders will be involved in the future development of the site:

- Parkview Penrith Pty Ltd
- Penrith City Council;
- Department of Planning and Infrastructure (DoPI);
- Department of State and Regional Development;
- Department of Environment and Climate Change;
- NSW Transport - Roads & Maritime Services; and
- Relevant service authorities (Sydney Water, Telstra, Endeavour Energy, and Jemena).

1.1 Documentation

The following documentation has been resourced:

- A Comprehensive Services Search (DBYD);
- Detail site survey 15666-3 by Dunlop Thorpe & Co. Pty. Ltd.;
- Concept Architectural Plans by Turner and Associates;
- Project Application Architectural Plans by Leffler Simes Architects;
- Concept Landscape Plans by Site Image;
- A Sydney Water Hydra search;
- Sydney Water Feasibility Application; and
- Written correspondence from relevant authorities and service providers (refer to Appendices).

1.2 Drawings

The following plans have been prepared by Mott MacDonald for the proposed development in conjunction with this report (refer Appendices):

Drawing No.	Title
MMD-310574-C-SK-PV-XX-0100	Services Plan
MMD-310574-C-SK-PV-XX-0105	Existing Catchment Plan
MMD-310574-C-SK-PV-XX-0110	Proposed Stormwater Management Plan
MMD-310574-C-SK-PV-XX-0115	Concept Site Grading Plan
MMD-310574-C-SK-PV-XX-0200	Concept Intersection Design Plan

2. Site Description and Proposed Works

2.1 The Site

The subject site is Lot 12 DP234581 located at 164 Station Street, Penrith. It is situated approximately 1.2km south west of the Penrith CBD and is bounded by:

- Station Street / Penrith Stadium to the west;
- Jamison Road to the south;
- Woodriff Street to the east; and
- An existing commercial development (Centro Nepean) to the north.

Figure 2.1 – Site Area

The surrounding area has a diverse mix of residential, commercial and industrial properties. On the opposite side of Station Street lies Penrith Stadium, while the areas to the south and east are primarily residential. Further north of the site is the Penrith Town Centre with mainly commercial and industrial uses.

2.2 Topography

The existing site of approximately 7.85 ha is occupied by light industrial buildings to the north with a vacant paddock / open space area to the south. The site is highest towards the south east where it has a frontage to Jamison Road / Woodriff Street (Approx RL 28.51) and grades north-west towards Station Street (Approx RL 27.71). There is an existing grass-lined drainage swale centrally located within the development site which drains north-south to an outlet at Jamison Road.

2.3 Proposed Works

The proposed site works consists of the demolition of the existing buildings and structures on site and the construction of a new home improvement centre and multi storey mixed-use development. The development will form two (2) proposals:

2.3.1 Stage 1 - Site A

Stage 1 (referred to as Site A) consists of a 13,603m^2 commercial home improvement centre and 380 on grade car spaces to be constructed on the northern portion of the lot adjacent to the existing Centro Nepean site.

2.3.2 Future Stages 2-6 – Site B

Stages 2-6 (referred to as Site B) is to include a mix of residential (approximately 570 units), neighbourhood retail / commercial (approximately 995m^2 GFA), tavern (1,800m^2 GFA) and open space uses on the southern portion of the site. The proposed buildings are to rise between four (4) and ten (10) storeys with provision for both on grade and basement car parking capacity.

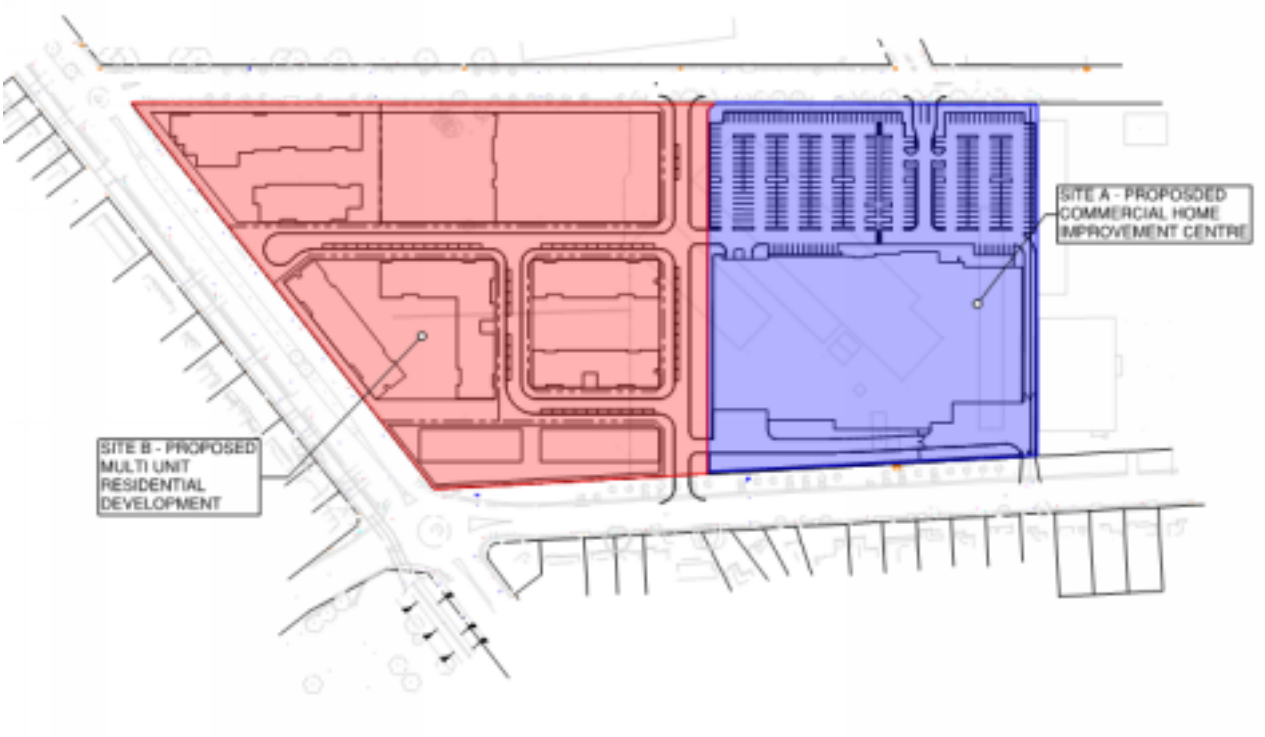
The following is a breakdown of the proposed building scope:

- Residential;
  - Stage 2 = 152 apartments
  - Stage 3 = 90 apartments
  - Stage 4 = 166 apartments
  - Stage 5 = 110 apartments
  - Stage 6 = 52 apartments

  Total = 570
- Retail / Commercial;
  - Commercial space is to consist of small specialty retail (995m^2 GFA) and a two storey tavern (900m^2 GFA each level) as part of Stage 3.

  Total GFA = 2,795m^2

Figure 2.2 – Proposed Site Layout



A number of trunk utility services exist around the perimeter of the site including water, sewer, electricity, telecommunication, and gas mains. These are discussed in more detail throughout the following report.

3. Services

3.1 Potable Water

3.1.1 Existing

The main water service in the vicinity of the site is a 600mm DICL trunk main which runs within an easement along the northern boundary of the development area. This water main is significant as it supplies water to the surrounding suburbs. As such, service disruptions should be avoided during future construction works and connection of proposed services.

Other potable water services located in the vicinity of the site include:

- a 150mm DICL water main located beneath the eastern verge of Station Street;
- a 100mm DICL main along the southern side of Jamison Road; and
- a 100mm DICL main which runs parallel to the site along the eastern verge of Woodriff Street.

3.1.2 Proposed

A preliminary desktop review undertaken by Mott MacDonald for the proposed development indicates the following:

Site A:

- The most likely connection point for the proposed development will be to connect to the existing 150mm DICL water main in Station Street provided there is sufficient capacity; and
- The existing 600mm DICL trunk main running through the site along the northern boundary is to be avoided by any new building layout.

Site B:

- The existing potable water supply within the development area will be extended and upgraded where necessary. It is intended to retain as much of the major external mains network as possible, with all new pipe work to connect into the existing system; and
- The most likely connection point for the proposed development will be to connect to the existing 150mm DICL water main in Station Street provided there is sufficient capacity.

A feasibility application has also been lodged with Sydney Water to confirm our desktop assessment and identify any further requirements for the site (refer to Appendix A for details). A preliminary review by Sydney Water has indicated the following:

- The proposed developments will require extensions of the existing drinking water system within the proposed new street network to service each lot within the development area;
- An accredited WSC Designer will be required to prepare a servicing scheme plan at the Section 73 Application phase in order to determine detailed drinking water requirements; and
- At this stage, Sydney water have not indicated an appropriate connection point to service the developments; as such, this will need to be confirmed during subsequent detail design stages.

3.2 Sewer

3.2.1 Existing

The main sewer line in the vicinity of the site is a 525mm VC main which drains in a similar alignment to the 600mm DICL water main along the northern boundary of the development area. This line drains to a sewer pump station (SP0896) in the adjacent land to the west before being conveyed north via a 600mm DICL rising main. This sewer line is significant as it appears to be the carrier sewer line for the surrounding suburbs.

Other sewer services in the local area include:

- a 225mm VC main which bisects the site through the proposed development layout;
- a 225mm VC line which drains into the 525mm VC main from the existing commercial development to the north; and
- two (2) 500mm DICL rising mains which run in parallel through the adjoining development to the west of Station Street.

3.2.2 Proposed

A preliminary desktop review undertaken by Mott MacDonald for the proposed development indicates the following:

Site A:

- Site sewer flows are likely to discharge to the existing 225mm VC main (subject to capacity check) which currently bisects the site through the development area; and
- It is likely that this service will need to be locally realigned on site to suit the proposed building footprint. Design of the proposed main adjustment will need to be undertaken by a qualified water servicing coordinator for approval by Sydney Water. As such, ongoing discussions with Sydney Water will be required throughout the design development phase.

Site B:

- Based on a preliminary assessment of the site, the most likely connection point would be to connect to the existing 225mm VC main to the north (pending capacity check).

A feasibility application has been lodged with Sydney Water to confirm our desktop assessment and identify any further requirements for the site (refer to Appendix A for details). A preliminary review by Sydney Water has indicated the following:

- The proposed developments will require extensions of the existing wastewater system within the proposed new street network to service each lot within the development area. Sydney Water have advised that these works are defined as 'Major Works';
- An accredited WSC Designer will be required to prepare a servicing scheme plan at the Section 73 Application phase in order to determine detailed wastewater requirements; and
- At this stage, Sydney water have not indicated an appropriate connection point to service the developments; as such, this will need to be confirmed during subsequent detail design stages.

3.3 Electrical

3.3.1 Existing

The existing electrical supply network in the vicinity of the site consists of a combination of above ground and below ground reticulation. Overhead powerlines follow the alignment of the neighbouring road network, supplying the existing residential properties and commercial and industrial developments surrounding the site.

DBYD information indicates that under-ground conduits are also present beneath the surrounding road network, including:

- Station Street at the intersection with the nearby Ransley Road; and
- Woodriff Street to the north-east of the development area.

3.3.2 Proposed

Site A:

Preliminary assessment by Endeavour Energy has indicated that the existing feeders within the surrounding area do not have capacity to supply the required load for the proposed development (refer to Appendix B for details). As such, the development is to be supplied by installing a new 11KV feeder from Penrith Zone Substation to the site (approximately 1.7km). It should be noted that this will likely require

crossing the Western Railway Line. However, Endeavour has also indicated that, depending on the final development plan, there is potential to supply Stage 1 works via a new feeder from Kingswood Zone Substation (approximately 2.1km to the south-east). It is also likely that a 750kva kiosk substation in a suitable location with relevant easements will be required on site.

It should also be noted that a Level 3 Accredited Service Provider will be required to determine a suitable method of supply for the new development in accordance with Endeavour Energy's requirements.

Site B:

Preliminary assessment by Endeavour Energy has indicated that the existing feeders within the surrounding area do not have capacity to supply the required load for the proposed development (refer to Appendix B for details). As such, the development is to be supplied by installing a new 11KV feeder from Penrith Zone Substation to the site (approximately 1.7km).

A Level 3 Accredited Service Provider will be required to determine a suitable method of supply for the new development in accordance with Endeavour Energy's requirements.

3.4 Telecommunications

3.4.1 Existing

3.4.1.1 Telstra

The existing Telstra network consists of a below-ground reticulated service (including fibre optic cables) which follows the alignment of the surrounding road network.

3.4.1.2 Optus

Optus services have also been identified in the vicinity of the proposed development area, with conduits running beneath the western and southern verges of Station Street and Jamison Road respectively.

3.4.2 Proposed

Site A:

A preliminary desktop review of the proposed development indicates that connection to the service is likely to be provided at Station Street for distribution to the site.

Site B:

A preliminary desktop review of the proposed development indicates that connection to the service is likely to be provided at either Station Street / Jamison Road for distribution to the site.

It should also be noted that existing fibre optic cables have been identified in the surrounding road network. As such, care should be taken by the contractor when undertaking verge works in these areas.

The relevant service providers have been contacted and intent to develop lodged for project feasibility. These have been included in Appendix C of this report.

3.5 Gas

3.5.1 Existing

The existing gas supply network in the local area consists of a 150mm secondary main (1050 kPa) which enters Station Street from the northern approach of the nearby Ransley Street.

3.5.2 Proposed

Site A:

Currently there are no plans for gas as part of this proposal

Site B:

The gas supplier, Jemena, has been contacted about the proposed works and a feasibility application lodged with the service provider (refer Appendix D). A preliminary review has indicated the following:

- Jemena have advised there is natural gas infrastructure located within the public footpaths adjacent to the proposed development site. As such, any construction that takes place should include the use of Dial Before You Dig to provide location of services;

- the most likely connection point will be to connect to the existing 150mm secondary main within Station Street;
- any relocation of existing assets in public thoroughfares to accommodate the proposal will be at a third party cost; and
- a formal offer of supply is to be lodged with the service provider during the detail design phase once service loads are known.

4. Roads and Transport

4.1 Existing System

The proposed Nepean Green development area fronts Station Street and Woodriff Street. These roads are two-way sealed roads and traverse the site along the western and eastern boundaries.

Jamison Road also extends along the southern boundary of the subject site. This road is a two-way sealed road and can be classified as a major collector road.

4.2 Proposed Works

Site A:

Based on the latest architectural plans by Leffler Simes Architects, a new access is proposed off Station Street which will serve as the primary access point to the customer car parking areas within the site. As such, recent discussions with Parkview Penrith have indicated that there is potential to upgrade Station Street as part of the proposed development works. This upgrade is to consist of a new signalised intersection at Station Street / Ransley Road to accommodate customer traffic turning into the site at the new Station Street access. It is likely that these works will require the loss of existing on-street parking on one or both sides of Station Street in the vicinity of the site access (refer to Appendix J for Concept Intersection Design Plan).

Site B:

A new local road network is to be provided as part of the proposed Nepean Green development works. These roads are to be two-way sealed roads and will serve as the primary access points to the commercial and residential areas within the site, as well as providing a new transport link between Station Street and Woodriff Street in accordance with Councils *Penrith City Centre DCP 2007*.

There is also potential to upgrade the existing road assets in the surrounding street network as part of the development proposal, including:

- Regarding / filling of low-level verges;
- Reinstatement of redundant laybacks and crossings; and
- Provision of new footpaths / shared paths along Station Street, Woodriff Street and Jamison Road to improve pedestrian accessibility along the frontage of the site in accordance with Penrith City Council requirements.

4.2.1 Parking Provision

Refer to the separate *Traffic and Accessibility Impact Study for Proposed Nepean Green Development, 164 Station Street, Penrith* prepared by Colston Budd Hunt & Kafes Pty. Ltd. for details of the proposed parking provision for the development.

5. Infrastructure Management Issues

The items listed below have been identified as potentially having an impact on the Nepean Green project.

5.1 Sediment and Erosion Control

Prior to any earthworks commencing on the site, erosion and sediment control measures are to be put in place generally in accordance with Penrith City Council's requirements and Managing Urban Stormwater: Soils and Construction 4th Edition, March 2004. These measures may include:

- Installation of a 1.8m high chain wire fence covered with geo-textile filter fabric, to the perimeter of the work site area, where required;
- The use of sediment diverting methods to minimise sediment in Council's stormwater drainage using sandbagging at kerb inlet pits and geo-fabric filter fabric around drop inlet pits;
- The provision of a sediment basin will be required where disturbed areas are greater than 2,500m^2. The sediment basin will be required to be designed in accordance with Urban Stormwater Quality Management Plan (1999) for which stormwater runoff shall be channelled and treated during construction; and
- The provision of a temporary truck wash-down facility to service vehicles exiting the site during the construction stage.

5.2 Earthworks

Site A:

Based on the existing levels on site it is expected that filling will be required to construct the proposed commercial Building on a level pad.

A preliminary desktop assessment of earthworks volumes has been undertaken to determine indicative quantities of fill material required to be imported to site. Findings indicate that approximately 30,000m^3 of fill material will be required to construct the building pad level to the proposed floor level.

Site B:

It is anticipated that cut to fill for bulk earthworks will be required for the site.

5.3 Retaining Walls

We would expect that the majority of the site could be graded to accommodate any substantial level differences within the proposed

development site. Desktop assessment of the site indicates that retaining walls would likely be required along the northern boundary of the development site adjacent to the existing Nepean Centro. Confirmation of retaining wall heights and extents will need to be further investigated as the design progresses.

5.4 Pavement Design

Based on previous experience with similar projects we would expect pavement designs to be based on a CBR value of 5% subject to further investigation by the geotechnical engineer.

For the car park areas of the site we would expect the pavement profile to consist of the following layers;

General Pavement – Car park
30mm Layer of Asphaltic Concrete
200mm thick layer of DGB20 Sub-base compacted to 95% MMDD
Sub-grade compacted to CBR 5%

For asphaltic vehicular pavement likely to be trafficked by service vehicles we would recommend a heavy duty vehicular pavement profile be adopted as follows;

Heavy Duty Pavement – New Street Network
30mm Layer of Asphaltic Concrete
200mm thick layer of DGB20 base course compacted to 98% MMDD
200mm thick layer of DGS40 compacted to 95% MMDD
Sub-grade compacted to CBR 5%

For service road / loading dock pavements likely to be trafficked by heavy articulated vehicles we would recommend the following concrete pavement profile;

Concrete Pavement – Service Road & Loading Dock
170mm thick concrete (F'c = 32MPa) with SL82 mesh (50mm top cover)
100mm thick layer of DGB20 compacted to 98% MMDD
Sub-grade compacted to CBR 5%

For pedestrian footpaths the following pavement profile may be adopted.

Concrete Footpath
125mm thick concrete (F'c 32MPa) with SL82 mesh (50mm top cover)
100mm thick layer of DGB20 compacted to 98% MMDD
Sub-grade compacted to CBR 5%

It is noted that the pavement designs noted above are preliminary only and would need to be confirmed by the project geotechnical / structural engineer.

6. Stormwater Management

The stormwater drainage for the proposed development is to be designed to comply with the following guidelines:

- Penrith City Councils *Development Control Plan DCP* (2010);
- Penrith City Councils *Guidelines for Engineering Works for Subdivisions and Developments* (1997);
- Australian Rainfall and Runoff (2001); and
- Managing Urban Stormwater: Soils and Construction, Volume 1, 4th Edition, March 2004.

The proposed stormwater management strategies for the site are to consist of the following:

6.1 Water Quality

Penrith City Councils *Development Control Plan (DCP)* 2010 requires improved water quality of the stormwater flow from the developed site prior to discharge into the authorities' drainage network.

Council also requires the removal of target pollutants from the site during the construction phase as vehicles that may enter or exit could generate various pollutants such as oil and grease. These target pollutants can be identified into five major groups of stormwater pollutants:

- Gross pollutants;
- Coarse, medium and fine sediments;
- Nutrients;
- Heavy metals; and
- Oil and grease.

6.1.1 Water Quality Objective

In accordance with Table C3.2: Pollution Retention Criteria of Penrith City Council's Development Control Plan, we note that the following targets have been set in relation to stormwater quantity:

- Reduction in annual average suspended solids (SS) export load of 50%;
- Reduction in annual average total phosphorus (TP) export load of 45%
- Reduction in annual average total nitrogen (TN) export load of 45%; and
- Reduction in annual average gross pollutant (GP) export load of 70%

The removal and treatment of the above pollutants can be achieved through the use of integrated water sensitive urban design principles. Possible treatment devices which are considered appropriate and may be included as part of the Nepean Green development works are discussed generally below:

6.1.2 Possible Treatments

6.1.2.1 Gross Pollutant Trap (GPT)

"Gross Pollutant Trap" is a term applied to either in-situ, or proprietary units that remove litter, vegetative matter and sediment. Although the numerous units fall under the one umbrella of gross pollutant traps, the actual mechanics of the different units vary, as do the achievable pollutant removal rates. GPTs come in a range of sizes, with the larger units able to effectively treat large catchment areas and high flow rates. They are usually sized based on their maximum treatable flow being equal to, or greater than the 3-month Annual Recurrence Interval (ARI) storm event (typically 50% of the 1-year ARI storm event) of the upstream catchment.

6.1.2.2 Bio-retention Systems

Bio-retention systems are similar to infiltration devices, but typically contain an extended detention zone above the gravel bed in the order of 100-300mm in depth and can contain water tolerant plant species to facilitate additional nutrient removal. Sediments and attached pollutants (including nutrients, metals and other soluble pollutants) are removed by filtration through the vegetative surface layer and filter media below.

They are often constructed as linear swales, but may also be designed as larger "rain gardens" and are designed to capture and treat the first flush volume.

6.1.2.3 Pit Inserts

Pit inserts sit beneath the stormwater pit grates and typically collect gross pollutants, sediments (nutrients attached to sediments), oils and grease.

6.1.2.4 Rainwater Tanks

Rainwater tanks are sealed tanks designed to retain rainwater collected from roofs for subsequent re-use for toilet flushing, laundry or garden watering on site. Due to the uncertain nature of the rainwater supply,

tanks are generally connected to mains water for “top-ups” in dry weather conditions.

It should be noted that the treatment devices listed above are **preliminary only**, with the type, size, and expected removal rates for the different treatment components for the site to be developed during the subsequent Development Applications for each stage of the project.

6.2 Water Quantity

6.2.1 Existing System

Detailed site survey by Dunlop Thorpe & Co. indentifies an open channel (approximately 6.3m wide x 2.1m high) and culvert system which traverses the site along the southern boundary of Jamison Road. Preliminary discussions with Penrith City Council and visual site inspections undertaken by Mott MacDonald indicate that piped stormwater flows from Jamison Road are conveyed to the channel via an existing 1050mm dia pipe, while an additional 750mm dia pipe allows flows to enter from the northern approach of Station Street.

There is an existing grass-lined drainage swale centrally located within the development site which drains north-south and conveys surface flows from the site to an outlet at Jamison Road. From here, flows are directed to the pit and pipe network within Jamison Road before discharging into the open channel downstream via the existing 1050mm dia pipe. GIS data supplied by Penrith City Council and visual site inspections indicate that the existing pit and pipe network in Jamison Road consists of two 375mm dia. stormwater lines which drain centrally to the 1050dia. pipe. As such, based on the upstream catchments and existing pipe sizes, it appears that the existing 1050mm dia. stormwater pipe connecting to the trunk stormwater channel has been sized to cater for future development of the subject site (refer to Appendix I for Council GIS Data).

6.2.2 Proposed System

6.2.2.1 Major/Minor Drainage System

The major/minor approach to stormwater drainage is the recognised drainage concept for urban catchments within the Penrith City Council local government area.

The minor drainage system is comprised of the below ground pit and pipe network and is designed to control nuisance flooding and enable

effective stormwater management for the site. Council's Stormwater Management Guidelines requires that the minor system be designed for a minimum 5 year ARI for all new developments (refer C3.6: Stormwater Management and Drainage from Councils DCP 2010 for details).

The major drainage system incorporates overland flow routes through proposed road, car parking and landscaped areas and is assessed against the 100 year ARI design storm event. The major system also exists to cater for minor system failures. In accordance with council's requirements, the major drainage system is to be designed in a manner that ensures that personal safety is not compromised. Subsequently, all overland flow routes for the site are to be designed so that the maximum velocity x depth product shall not exceed 0.4m^2/s as outlined in the NSW Floodplain Development Manual (2005).

6.2.2.2 On-Site Stormwater Detention (OSD)

Informal discussions with Penrith City Council have indicated that:

1. On-Site Stormwater Detention (OSD) is not required for the subject area; however
2. Post-development flows are not to adversely impact on existing drainage systems in the area.

Based on the above, it is our understanding that:

- If the existing pit and pipe network in the adjoining street network has sufficient capacity to accept minor system stormwater flows (5yr ARI flows as noted in Council's DCP 2010) from the post-developed site, than no OSD is required; and
- If the existing pit and pipe network in the adjoining street network has insufficient capacity to accept minor system stormwater flows from the post-developed site, then either:
    a. OSD is required to restrict post-developed flows to pre-developed levels; or
    b. Upgrade of the receiving (street) pit and pipe network is required.

These assumptions were later confirmed in email correspondence received from Penrith City Council dated 12 July 2012 (refer to Appendix H for details).

Figures MMD-310574-C-SK-PV-XX-0105 to 0110 in Appendix F present a concept stormwater management plan for the proposed Nepean Green Project. The proposed stormwater management

strategy for the site was developed based on the following methodology:

- Site A – it is anticipated that the majority of the catchment (approximately 2.924Ha) is to drain to the authorities existing stormwater network in Station Street. From here, piped flows will be conveyed to the downstream open channel and culvert system via the existing street stormwater drainage network. The remaining areas (approximately 1.010Ha) are proposed to discharge to the existing pit and pipe network in Woodriff Street.
- Site B – the most likely connection point for minor system (5yr ARI) flows will be to connect to the existing pit and pipe network in Jamison Street along the southern boundary of the development area. From here, flows are to be conveyed to the open channel system downstream via the existing 1050mm dia stormwater pipe.

A desktop review of Councils existing pit and pipe network indicates the following:

- Site A - preliminary assessment of Council's drainage network in Station Street / Woodriff Street indicates that the existing stormwater systems have insufficient capacity to receive increased stormwater flows as a result of the proposed development. As such, it is anticipated that OSD will be required for Stage 1 works to restrict the post-developed discharge flow rate to pre-development levels. Preliminary investigations undertaken for the site using the *DRAINS* software package indicates approximately 630m^3 of storage would likely be required to satisfy council's pre-post requirements. Subject to confirmation of the proposed finished floor levels, it is proposed to provide above-ground storage within the customer carpark (maximum pond depth = 0.2m) at the northern portion of the site to detain flows prior to discharge to Station Street, while a below ground tank located beneath the hardstand pavement on the southern portion of the site is proposed to control flows to Woodriff Street. It should be noted that the OSD volumes provided are provisional only and will need to be confirmed during the subsequent Development Application stage of the project; and
- Site B - preliminary assessment indicates that the proposed discharge point (existing 1050mm dia stormwater pipe) has sufficient capacity to accept 5yr ARI post-development flows from the site. As such, it is our understanding that OSD is not required as the proposed site will have no adverse impact on the downstream stormwater system. However, consideration will need to be given to the management of overland flows to ensure that additional flooding to downstream properties is not caused as a result of the proposed development.

It should be noted that the stormwater management strategies listed are indicative only, with detailed hydraulic calculations to be undertaken during the subsequent Development Application phases for each stage of the project to size the proposed site pit and pipe network to adequately convey the minor (5yr ARI) storm event with safe overland flows for the 100yr ARI storm event.

6.3 Flooding

Informal discussions with Penrith City Council have indicated that, due to the relatively flat nature of the existing site, the development area is affected by localised flooding in large storm events. Preliminary studies by council indicate that the existing site is partially inundated on the southern portion of the site during the 1% AEP storm event, with flood depths typically ranging between 0.15m – 0.4m.

Council has indicated that there is currently no flood planning level available for the site. It is understood that a flood study of the local catchment has been commissioned by Council to supersede the previous study completed in 2008. This study is currently being finalised with results expected later in 2013.

In lieu of more detailed data from Council, Mott MacDonald has undertaken a desktop review of the existing site flooding conditions. Preliminary assessment indicates that site overland flows are conveyed north-south via a grass swale to a trapped low point on the southern portion of the development area. The local topography of this area forms a natural depression which acts to trap and attenuate overland flows during large storm events. Based on detail survey data and visual site inspections, it appears that the resultant level of inundation is consistent with the flood depths provided by Council, with localised flooding being caused by a lack of continuous overland flow paths through the site. As such, it would appear that flooding issues on site are dictated primarily by on site drainage issues, with any impacts due to upstream flows from Woodriff Street / Jamison Road likely to be minimal. This was confirmed in email correspondence from Penrith City Council received on 27 May 2013 (refer to Appendix H for details).

6.3.1 Proposed Flood Management Strategy

As discussed earlier in this Report, it is understood that flooding issues on site are dictated by on-site drainage issues i.e. lack of continuous overland flow paths through the site. As such, preliminary assessment of the proposed re-development indicates that the subject site can

typically be improved from the existing scenario, with localised flooding issues to be managed by on-site measures. This includes:

- **Improved Floor Levels** – Engineered fill is proposed across the development site to build up the building pads to the required levels and allow surface flows to fall away from the proposed buildings and basement access locations;
- **Improved Overland Flowpaths** - Overland flowpaths with sufficient fall are to be provided along the proposed new local street network (minimum 0.5% as specified in Council's *Guidelines for Engineering Works for Subdivisions and Developments*) to convey stormwater flows in excess of the minor (pit and pipe network) capacity to the adjoining street network. Similarly, verge works will better define overland flows in these areas and help keep surface flows away from the proposed buildings; and
- **Improved Discharge Control** – As stated in Section 6.2.2.2 of this Report, On-Site Stormwater Detention (OSD) is proposed for the site to restrict the post-developed discharge rate to pre-development levels to ensure that no adverse impacts or additional flooding is caused to downstream properties as a result of the development.

7. Conclusions and Recommendations

All relevant services issues will be further investigated at the detailed design stage in order to take advantage of the opportunities for cost savings and reduced exposure to risk which may be expected to arise from consideration of the following:

- Finalise the detailed survey of the developable area to identify above ground and below ground structures, services and utilities requiring modification, removal or replacement;
- Preparation of Earthworks Management plans to coincide with the construction stages as part of the design development. This would minimise the double handling of excavated material or exporting surplus and importing deficit material from independent stages thereby providing cost savings;
- Investigation of the capacity of existing Authority services on the site and the extent of augmentation, and retention that is possible;
- Further discussion with service providers to determine any requirements for the area;
- Further investigation of the type, size and location of the site stormwater quantity and quality strategies needed to satisfy council's statutory requirements; and
- Further investigation of the site flooding requirements pending results of the Council commissioned flood study.

Appendix A. Sydney Water

Statement of Available Pressure and Flow

Sydney WATER

Mott MacDonald
Level 3, 90 Phillip St
PARRAMATTA, 2150

Attention: Blake Matthews

WMS No: **212370**
Contact No: 88493531
Fax No: 88493063

Date: 21/06/2012

Pressure & Flow Application Number: 8167611
Your Pressure Inquiry Dated: Wed June 20 2012
Property Address: 164 Station St Penrith 2750

The expected maximum and minimum pressures available in the water main given below relate to modelled existing demand conditions, either with or without extra flows for emergency fire fighting, and are not to be construed as availability for normal domestic supply for any proposed development.

ASSUMED CONNECTION DETAILS

Street Name: Station Street	Side of Street: West
Distance & Direction from Nearest Cross Street	210 metres North from Jamison Rd
Approximate Ground Level (AHD):	30 metres
Nominal Size of Water Main (DN):	150 mm

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	80 metre head
Minimum Pressure	54 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations (Two hose reels simultaneously)	0.66	54
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	5 10 20 25 30 40	56 54 49 46 42 32
Fire Installations based on peak demand (Pressure expected to be maintained with flows combined with peak demand in the water main)	5 10 20 25 30 40	53 51 46 42 38 28
Maximum Permissible Flow	42	25

(Please refer to reverse side for Notes)

Robert Wickham
Principal Planner
Urban Growth - Asset Services

Statement of Available Pressure and Flow

Sydney WATER

Mott MacDonald
Level 3, 90 Phillip St
PARRAMATTA, 2150

Attention: Blake Matthews

WMS No: **212410**
Contact No: 88493531
Fax No: 88493063

Date: 21/06/2012

Pressure & Flow Application Number: 8167640
Your Pressure Inquiry Dated: Wed June 20 2012
Property Address: 164 Station St Penrith 2750

The expected maximum and minimum pressures available in the water main given below relate to modelled existing demand conditions, either with or without extra flows for emergency fire fighting, and are not to be construed as availability for normal domestic supply for any proposed development.

ASSUMED CONNECTION DETAILS

Street Name: Woodriff St	Side of Street: East
Distance & Direction from Nearest Cross Street	134 metres North from Jamison Rd
Approximate Ground Level (AHD):	29 metres
Nominal Size of Water Main (DN):	100 mm

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	81 metre head
Minimum Pressure	57 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations (Two hose reels simultaneously)	0.66	57
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	5 10 20 25	58 56 48 42
Fire Installations based on peak demand (Pressure expected to be maintained with flows combined with peak demand in the water main)	5 10 20 25	55 53 45 39
Maximum Permissible Flow	26	37

(Please refer to reverse side for Notes)

Robert Wickham
Principal Planner
Urban Growth - Asset Services

Case Number: 128975

10 August 2012

PARKVIEW
c/- MOTT MACDONALD HUGHES TRUEMAN

FEASIBILITY LETTER

Developer:	**PARKVIEW**
Your reference:	**310574**
Development:	**Lot 12 DP234581 164 STATION ST, Penrith**
Development Description:	**Staged commercial/residential development.**
Your application date:	**21 June 2012**

Dear Applicant

This Feasibility Letter (Letter) is a guide only. It provides general information about what Sydney Water's requirements could be if you applied to us for a Section 73 Certificate (Certificate) for your proposed development. **The information is accurate at today's date only.**

If you obtain development consent for that development from your consent authority (this is usually your local Council) they will require you to apply to us for a Section 73 Certificate. You will need to submit a new application (and pay another application fee) to us for that Certificate by using your current or another Water Servicing Coordinator (Coordinator).

Sydney Water will then send you either a:

- Notice of Requirements (Notice) and Developer Works Deed (Deed) or
- Certificate.

These documents will be the definitive statement of Sydney Water's requirements.

There may be changes in Sydney Water's requirements between the issue dates of this Letter and the Notice or Certificate. The changes may be:

- if you change your proposed development eg the development description or the plan/ site layout, after today, the requirements in this Letter could change when you submit your new application; and

- if you decide to do your development in stages then you must submit a new application (and pay another application fee) for each stage.

What You Must Do To Get A Section 73 Certificate In The Future.

To get a Section 73 Certificate you must do the following things. You can also find out about this process by visiting www.sydneywater.com.au > Building and Developing > Developing Your Land.

1. **Obtain Development Consent from the consent authority for your development proposal.**

2. **Engage a Water Servicing Coordinator (Coordinator).**

   You must engage your current or another authorised Coordinator to manage the design and construction of works that you must provide, at your cost, to service your development. If you wish to engage another Coordinator (at any point in this process) you must write and tell Sydney Water.

   For a list of authorised Coordinators, either visit www.sydneywater.com.au > Building and Developing > Developing Your Land or call **13 20 92.**

   The Coordinator will be your point of contact with Sydney Water. They can answer most questions that you might have about the process and developer charges and can give you a quote or information about costs for services/works (including Sydney Water costs).

3. **Developer Works Deed**

   After the Coordinator has submitted your new application, they will receive the Sydney Water Notice and Developer Works Deed. You and your accredited Developer Infrastructure Providers (Providers) will need to sign and lodge both copies of the Deed with your nominated Coordinator. After Sydney Water has signed the documents, one copy will be returned to the Coordinator.

   The Deed sets out for this project:

   - your responsibilities;
   - Sydney Water's responsibilities; and
   - the Provider's responsibilities.

   You must do all the things that we ask you to do in that Deed. This is because your development does not have water and sewer services and you must construct and pay for the following works extensions under this Deed to provide these services.

   Note: The Coordinator must be fully authorised by us for the whole time of the agreement.

4. **Water and Sewer Works**

   4.1 **Water**

   Your development must have a frontage to a water main that is the right size and can be used for connection.

Sydney Water has assessed your application and found that:

- The proposed development area is currently fronted by three drinking water mains:
  - The 600 mm main traversing the property in easement
  - The 150 mm main in Station Street
  - The 100 mm main in Woodriff Street

  The proposed development will require extensions of the existing drinking water system.
- At the section 73 application phase, a servicing scheme plan will be required to be prepared for the ultimate development in order to determine detailed drinking water requirements.
- The accredited WSC/Designer will need to ensure that the submitted design is sized and configured according to the Water Supply Code of Australia (Sydney Water Edition WSA 03-2002).

§ Evidence of Code compliance should be attached with the design. This includes the ultimate and any staged interim servicing strategy detailing the requirement of the existing Sydney Water infrastructure. These details will include the proposed connection points to the water system and demand on the water network.

- The proposed development conflicts with the location of the 600 mm drinking water main traversing the property. Any adjustment or deviation required must be in accordance with the Water Supply Code of Australia (Sydney Water Edition WSA 03-2002).Refer to your WSC for details of requirements.

- **You must construct a water main extension to serve your development**. These works must be constructed by a constructor with the appropriate capability. Your Coordinator will be able to provide further advice about this.

4.2 Sewer

Your development must have a sewer main that is the right size and can be used for connection. That sewer must also have a connection point within your development's boundaries.

Sydney Water has assessed your application and found that:

- The proposed development area is currently serviced and traversed by two sewer mains:
  - The 525 mm and 225mm main constructed under PENRITH108, which drain directly to SP0896.

The proposed development will require extensions of the existing system which will provide a point of connection at least 1m inside the boundary of all the proposed lots.

- At the section 73 application phase, a servicing scheme plan will be required to be prepared for the ultimate development in order to determine detailed wastewater requirements.
- An accredited Hydraulic Designer will be engaged by the developer to ensure that the proposed wastewater infrastructure for this development will be sized & configured according to the Sewerage Code of Australia (Sydney Water Edition WSA 02-2002).

§ Evidence of Code compliance should be attached with the design i.e. catchment plan and flow schedule. This should also include the ultimate and any staged interim servicing strategy detailing the requirement of the existing Sydney Water infrastructure. These details will include the proposed connection points to the wastewater system and demand on the wastewater network.

- The proposed development conflicts with the location of the 525 mm & 225 mm wastewater mains traversing the property. Wastewater deviations may be required. Any adjustment or deviation required must be in accordance with the Sewerage Code of Australia (Sydney Water Edition WSA 02-2009). Refer to your WSC for details of requirements.

- **You must construct a waste water main extension to serve your development**. The terms of the Deed define this extension as 'Major Works'.

Funding of works

Under Sydney Water's 'Funding of infrastructure to service growth' policy we may agree to contribute towards a portion of the cost of the works you are required to build. Your Water Service Coordinator can advise you in relation to this policy, the likelihood of Sydney Water sharing a portion of the cost and the process you need to satisfy Sydney Water's probity requirements.

The funding assessment will be made at the detailed design stage, prior to any construction works commencing. A firm commitment would not be made by Sydney Water until we:

- Have reviewed the detailed design and;
- Have reviewed the detailed construction quotations needed to meet our probity requirements and;
- Come to an agreement on the amount.

5. Ancillary Matters

5.1 Asset adjustments

After Sydney Water issues this Notice (and more detailed designs are available), Sydney Water may require that the water main/sewer main/stormwater located in the footway/your property needs to be adjusted/deviated. If this happens, you will need to do this work as well as the extension we have detailed above at your cost. The work must meet the conditions of this Notice and you will need to complete it **before we can issue the Certificate**. Sydney Water will need to see the completed designs for the work and we will require you to lodge a security. The security will be refunded once the work is completed.

5.2 Entry onto neighbouring property

If you need to enter a neighbouring property, you must have the written permission of the relevant property owners and tenants. You must use Sydney Water's **Permission to Enter** form(s) for this. You can get copies of these forms from your Coordinator or the Sydney

Water website. Your Coordinator can also negotiate on your behalf. Please make sure that you address all the items on the form(s) including payment of compensation and whether there are other ways of designing and constructing that could avoid or reduce their impacts. You will be responsible for all costs of mediation involved in resolving any disputes. Please allow enough time for entry issues to be resolved.

5.3 Costs

Construction of these **future** works will require you to pay project management, survey, design and construction costs **directly to your suppliers**. Additional costs payable to Sydney Water may include:

- water main shutdown and disinfection;
- connection of new water mains to Sydney Water system(s);
- design and construction audit fees;
- contract administration, Operations Area Charge & Customer Redress prior to project finalisation;
- creation or alteration of easements etc; and
- water usage charges where water has been supplied for building activity purposes prior to disinfection of a newly constructed water main.

Note: Payment for any Goods and Services (including Customer Redress) provided by Sydney Water will be required prior to the issue of the Section 73 Certificate or release of the Bank Guarantee or Cash Bond.

Your Coordinator can tell you about these costs.

6. Stamping and Approval of your Building Plans

You must have your building plans stamped and approved **before the Certificate can be issued. Building construction work MUST NOT commence until Sydney Water has granted approval.** Approval is needed because construction/building works may affect Sydney Water's assets (e.g. water and sewer mains).

Your Coordinator can tell you about the approval process including:

- Your provision, if required, of a "Services Protection Report" (also known as a "pegout"). This is needed to check whether the building and engineering plans show accurately where Sydney Water's assets are located in relation to your proposed building work. Your Coordinator will then either approve the plans or make requirements to protect those assets before approving the plans;
- Possible requirements;
- Costs; and
- Timeframes.

You can also find information about this process (including technical specifications) if you

either:

- visit www.sydneywater.com.au > Building and Developing > Building and Renovating. Here you can find Sydney Water's *Guidelines for Building Over/Adjacent to Sydney Water Assets*; or
- call 13 20 92.

Notes:

- **The Certificate will not be issued until the plans have been approved and, if required, Sydney Water's assets are altered or deviated;**
- **You can only remove, deviate or replace any of Sydney Water's pipes using temporary pipework if you have written approval from Sydney Water's Urban Growth Business. You must engage your Coordinator to arrange this approval; and**
- **You must obtain our written approval before you do any work on Sydney Water's systems. Sydney Water will take action to have work stopped on the site if you do not have that approval. We will apply Section 44 of the *Sydney Water Act 1994*.**

OTHER THINGS YOU MAY NEED TO DO

Shown below are other things you need to do that are NOT a requirement for the Certificate. They may well be a requirement of Sydney Water in the future because of the impact of your development on our assets. You must read them before you go any further.

Disused Sewerage Service Sealing

Please do not forget that you must pay to disconnect all disused private sewerage services and seal them at the point of connection to a Sydney Water sewer main. This work must meet Sydney Water's standards in the NSW Code of Practice for Plumbing and Drainage (the Code) and be done by a licensed drainer. The licensed drainer must arrange for an inspection of the work by a NSW Fair Trading Plumbing Inspection Assurance Services (PIAS) officer. After that officer has looked at the work, the drainer can issue the Certificate of Compliance. The Code requires this.

Soffit Requirements

Please be aware that floor levels must be able to meet Sydney Water's soffit requirements for property connection and drainage.

Requirements for Business Customers for Commercial and Industrial Property Developments

If this property is to be developed for Industrial or Commercial operations, it may need to meet the following requirements:

Trade Wastewater Requirements

If this development is going to generate trade wastewater, the property owner must submit an

application requesting permission to discharge trade wastewater to Sydney Water's sewerage system. You must wait for approval of this permit before any business activities can commence.

The permit application should be emailed to Sydney Water's Business Customer Services at businesscustomers@sydneywater.com.au

It is illegal to discharge Trade Wastewater into the Sydney Water sewerage system without permission.

A **Boundary Trap** is required for all developments that discharge trade wastewater where arrestors and special units are installed for trade wastewater pre-treatment.

If the property development is for Industrial operations, the wastewater may discharge into a sewerage area that is subject to wastewater reuse. Find out from Business Customer Services if this is applicable to your development.

Backflow Prevention Requirements

Backflow is when there is unintentional flow of water in the wrong direction from a potentially polluted source into the drinking water supply.

All properties connected to Sydney Water's supply must install a testable **Backflow Prevention Containment Device** appropriate to the property's hazard rating. Property with a high or medium hazard rating must have the backflow prevention containment device tested annually. Properties identified as having a low hazard rating must install a non-testable device, as a minimum.

Separate hydrant and sprinkler fire services on non-residential properties, require the installation of a testable double check detector assembly. The device is to be located at the boundary of the property.

Before you install a backflow prevention device:

1. Get your hydraulic consultant or plumber to check the available water pressure versus the property's required pressure and flow requirements.
2. Conduct a site assessment to confirm the hazard rating of the property and its services. Contact PIAS at NSW Fair Trading on **1300 889 099**.

For installation you will need to engage a licensed plumber with backflow accreditation who can be found on the Sydney Water website:
http://www.sydneywater.com.au/Plumbing/BackflowPrevention/

Water Efficiency Recommendations

Water is our most precious resource and every customer can play a role in its conservation. By working together with Sydney Water, business customers are able to reduce their water consumption. This will help your business save money, improve productivity and protect the environment.

Some water efficiency measures that can be easily implemented in your business are:

- Install water efficiency fixtures to help increase your water efficiency, refer to WELS (Water Efficiency Labelling and Standards (WELS) Scheme, http:// www.waterrating.gov.au/
- Consider installing rainwater tanks to capture rainwater runoff, and reusing it, where cost effective. Refer to http://www.sydneywater.com.au/Water4Life/InYourBusiness/ RWTCalculator.cfm
- Install water-monitoring devices on your meter to identify water usage patterns and leaks.
- Develop a water efficiency plan for your business.

It is cheaper to install water efficiency appliances while you are developing than retrofitting them later.

Contingency Plan Recommendations

Under Sydney Water's customer contract Sydney Water aims to provide Business Customers with a continuous supply of clean water at a minimum pressure of 15meters head at the main tap. This is equivalent to 146.8kpa or 21.29psi to meet reasonable business usage needs. Sometimes Sydney Water may need to interrupt, postpone or limit the supply of water services to your property for maintenance or other reasons. These interruptions can be planned or unplanned.

Water supply is critical to some businesses and Sydney Water will treat vulnerable customers, such as hospitals, as a high priority.

Have you thought about a **contingency plan** for your business? Your Business Customer Representative will help you to develop a plan that is tailored to your business and minimises productivity losses in the event of a water service disruption.

For further information please visit the Sydney Water website at: http:// www.sydneywater.com.au/OurSystemsandOperations/TradeWaste/ or contact Business Customer Services on **1300 985 227** or businesscustomers@sydneywater.com.au

Fire Fighting

Definition of fire fighting systems is the responsibility of the developer and is not part of the Section 73 process. It is recommended that a consultant should advise the developer regarding the fire fighting flow of the development and the ability of Sydney Water's system to provide that flow in an emergency. Sydney Water's Operating Licence directs that Sydney Water's mains are only required to provide domestic supply at a minimum pressure of 15 m head.

A report supplying modelled pressures called the Statement of Available pressure can be purchased through any Quickcheck agent and may be of some assistance when defining the fire fighting system. The Statement of Available pressure, may advise flow limits that relate to system capacity or diameter of the main and pressure limits according to pressure management initiatives. If mains are required for fire fighting purposes, the mains shall be arranged through the water main extension process and not the Section 73 process.

Large Water Service Connection

A water main will be available, once you have completed your drinking water main construction to provide your development with a domestic supply. The size of your development means that you will need a connection larger than the standard domestic 20 mm size.

To get approval for your connection, you will need to lodge an application with a Quick Check Agent. You, or your hydraulic consultant, may need to supply the following:

A plan of the hydraulic layout;
A list of all the fixtures/fittings within the property;
A copy of the fireflow pressure inquiry issued by Sydney Water;
A pump application form (if a pump is required);
All pump details (if a pump is required).

You will have to pay an application fee.

Sydney Water does not consider whether a water main is adequate for fire fighting purposes for your development. We cannot guarantee that this water supply will meet your Council's fire fighting requirements. The Council and your hydraulic consultant can help.

Disused Water Service Sealing

You must pay to disconnect all disused private water services and seal them at the point of connection to a Sydney Water water main. This work must meet Sydney Water's standards in the NSW Code of Practice for Plumbing and Drainage (the Code) and be done by a licensed plumber. The licensed plumber must arrange for an inspection of the work by a NSW Fair Trading Plumbing Inspection Assurance Services (PIAS) officer. After that officer has looked at the work, the drainer can issue the Certificate of Compliance. The Code requires this.

Other fees and requirements

The requirements in this Notice relate to your Certificate application only. Sydney Water may be involved with other aspects of your development and there may be other fees or requirements. These include:

- plumbing and drainage inspection costs;
- the installation of backflow prevention devices;
- trade waste requirements;
- large water connections and
- council fire fighting requirements. (It will help you to know what the fire fighting requirements are for your development as soon as possible. Your hydraulic consultant can help you here.)

No warranties or assurances can be given about the suitability of this document or any of its provisions for any specific transaction. It does not constitute an approval from Sydney Water and to the extent that it is able, Sydney Water limits its liability to the reissue of this Letter or the return of your application fee. You should rely on your own independent professional advice.

END

Appendix B. Endeavour Energy

Reilly, Dean F

From: David Ho [David.Ho@endeavourenergy.com.au]
Sent: Tuesday, 10 July 2012 10:05 AM
To: Taylor, John P
Subject: ENL1808 - Proposed Mixed Use Development | Lot 12 DP 234581, 164 Station Street PENRITH

Dear John,

Thank you for your enquiry regarding electricity supply to above development . This enquiry has been registered under Customer Application Process (CAP) Number ENL1808; please quote this number for all future correspondence.

Proposed Development

Mixed used development is now proposing and will consists of 2 stages:

- **Stage 1**
    - A commercial home improvement centre including a 400 space car park
    - Estimated load = 1.34MVA
    - No definite development plan

- **Stage 2**
    - Approximately 573 residential units, a tavern and a retail area
    - Estimated load = 3.13 MVA
    - Supply will require few years after completion of Stage 1.

Possible Supply Arrangements

The existing feeders in this area do not have capacity to supply the required load 4.47MVA in total, hence this entire development will be supplied by installing a new 11kV feeder from Penrith ZS to the site. However it is highly dependent from your development plan, Stage 1 may be supplied from Kingswood ZS.

I trust this preliminary advice provides the information that was requested. Please note that the advice provided is in response to an enquiry only and does not constitute a formal method of supply.

If you have any questions regarding this matter, please contact me.

Regards,

David Ho
Contestable Projects Manager – North | **Network Connections**
☎ Direct: (02) 9853 7901 | Fax: (02) 9853 7903
✉ Email: david.ho@endeavourenergy.com.au

490 Hoxton Park Road, Hoxton Park NSW 2171


Penrith ZS
Site
Peachtree Hotel
Peachtree Rd
River Road Reserve
Woodriff Gardens
Army Reserve
Jane St
Penrith
High St
Belmore St
Penrith
Mulgoa Rd
Panther's World of Entertainment
Penrith Park
Howell Oval
Jamison Rd
Jamison Park
Skate Park
Penrith High School
Preston St
York Rd

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Appendix C. Telstra and Optus

Reilly, Dean F

From: Schneider, Mark P [Mark.P.Schneider@team.telstra.com]
Sent: Wednesday, 25 July 2012 4:10 PM
To: Reilly, Dean F; Bonser, Damian F
Subject: RE: Feasibility Enquiry - Nepean Green

Dean,

With regard to stage 1 –
As long as the development does not impact on the footpath, no impact is anticipated, except from accessing the site for construction purposes from which a simple protection plan can be adopted; and probable pit level adjustment for any footpath works, whilst ensuring that no driveway is planned to be located over any Telstra manhole/pit. Estimate $20,000. If a manhole needs to be moved due to a new driveway, estimate $250,000 for manhole in Woodriff, $190,000 for either manhole Jamison. Any small pits approximately $5,000 each.
However, the likelihood of potential impact will arise from the construction of slip lanes in Jamison and Woodriff over the Telstra network. I would assume that this may be a requirement. In this event, complete network renewal is likely to be required. Estimate $600,000 for relocation of network Woodriff St for stage 1.
Estimate $300,000 for relocation of network Jamison Rd.
Station street Stage 1 no anticipated impact.

With regard to stage 2- same applies in Woodriff St. Two driveways should be designed to avoid the Telstra manholes and pits. In the event that slip lanes are required to the driveways and the network cannot be reasonably protected to Telstra requirement, relocation of affected network is estimated at $750,000.00.
Station street only requires decommission of service and recovery of equipment. Estimate $10,000.

Combined stage 1 and 2 if impacted estimate $900,000.

This is simply a desktop assessment estimate of costs and does not take into account site conditions, other unknown impacts, other services.

Regards

Mark Schneider
Project Specialist
Network Integrity
L9, 18 Smith Street, Parramatta NSW Australia

Tel. (02) 8842 5185 Mob. 0419 242 044

IT'S HOW WE CONNECT

Dial 1100 Before You Dig Network Integrity: Working with the civil construction industry to prevent damage to Telstra's underground assets

Appendix D. Jemena

Reilly, Dean F

From: Hilton, Neale [Neale.Hilton@jemena.com.au]
Sent: Thursday, 21 June 2012 12:12 PM
To: Reilly, Dean F
Subject: RE: Feasibility Enquiry - Nepean Green

Dean
Thanks for your early notification of this proposal. Jemena suggests that supply would come from the 110mm medium pressure network to supply this proposal based on historical gas loads in the absence of a load profile. We are unable to provide any costs at this time however you should note that any relocation of existing assets in public thoroughfares required to accommodate this proposal will be at a third party cost. Jemena will provide a formal offer for connection and metering once a formal offer for supply is received. Thanks.

Neale Hilton
Network Development Manager
Sydney

Jemena Gas Networks (NSW) Limited
Address Level 20, 111 Pacific Highway North Sydney NSW 2060
Postal Address Locked Box 2/159 Ridgecrop Drive Castle Hill 2154
Mobile 0402 060 151 Fax (02) 9899 3571 Email neale.hilton@jemena.com.au

thenaturalchoice.com.au

From: Peters, Elle
Sent: Thursday, 21 June 2012 10:40 AM
To: Hilton, Neale
Subject: FW: Feasibility Enquiry - Nepean Green

Over to you.

Elle Peters
Network Development Manager
Sydney South and Illawarra

Jemena Gas Networks (NSW) Limited
Postal Address PO Box 287 Unanderra NSW 2526
Mobile 0402 060 559 Fax (02) 4261 2916 Email epeters@jemena.com.au

thenaturalchoice.com.au

From: Reilly, Dean F [mailto:dean.reilly@mottmac.com.au]
Sent: Thursday, 21 June 2012 9:38 AM
To: Peters, Elle
Cc: Avis, Chris J
Subject: Feasibility Enquiry - Nepean Green

Hi Eliana,

You previously assisted Mott MacDonald with a feasibility enquiry for a mixed commercial/residential development in Zetland. We have since been engaged to perform another feasibility enquiry for a similar mixed-use development in Penrith.

The subject site is located at 164 Station Street, Penrith, with the proposed development to be done in two (2) stages (see attached concept site plans for details).

Based on the dial before you dig enquiry, it appears that there is Jemena assets in the areas surrounding the development site.

Can you please advise if the above mentioned networks require adjustment / relocation to accommodate the proposed development (Stage 2 only), and also provide an indicative budget cost estimate for design and adjustment / upgrade (if required) to service the Stage 2 works.

I have attached the following documentation for your reference;

Document Ref No.	Document Description
310574 120619 Feasibility Enquiry.docx	Feasibility Letter
PE6C_HIGH_PRESSURE_PRIMARY_SECONDARY.pdf	Jemena DBYD .pdf file
09017_DA003_Context_B.pdf	Proposed Site Layout / Staging

If you have any questions, please feel free to contact the undersigned on 9891 5044.

Regards,

Dean Reilly
Civil Engineer
Mott MacDonald

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PO Box 163, Parramatta NSW 2124
www.mottmac.com

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E dean.reilly@mottmac.com.au

~~ Following Files were attached ~~
09017_DA003_Context_B.pdf
310574 120619 Feasibilty Enquiry.docx
PE6C_HIGH_PRESSURE_PRIMARY_SECONDARY.pdf

Appendix E. Services Plan

NOTE:
THE LOCATION OF SERVICES AS SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM DIAL BEFORE YOU DIG (DBYD) DATA AND ARE INDICATIVE ONLY.

EXISTING 500mm DICL SEWER RISING MAIN

150mm DICL WATER MAIN

EXISTING TELECOM PROPERTY CONNECTION TO BE DEMOLISHED AND REMOVED WHERE IT DOES NOT FOLLOW PROPOSED BUILDING LAYOUT

150mm SECONDARY GAS MAIN

EXISTING SERVICES IN VICINITY OF NEW INTERSECTION MAY NEED TO BE CONCRETE ENCASED TO SUIT

EXISTING 225mm VC SEWER MAIN MAY NEED TO BE EXTENDED/UPGRADED TO SERVICE MASTERS SITE

525mm VC SEWER CARRIER LINE

600mm DICL TRUNK WATER MAIN WITHIN 3.2m WIDE EASEMENT

525mm VC SEWER LINE ADJACENT TO NEW BUILDING LIKELY REQUIRED TO BE PIERED/CONCRETE ENCASED TO SUIT. ALL WORKS IN ACCORDANCE WITH SYDNEY WATER REQUIREMENTS

EXISTING 225mm VC SEWER LINE TO BE LOCALLY REALIGNED TO SUIT PROPOSED BUILDING LAYOUT

750Kva KIOSK SUBSTATION LIKELY REQUIRED TO SERVICE MASTERS SITE. LOCATION TO BE CONFIRMED

100mm DICL WATER MAIN

100mm CICL WATER MAIN

750Kva KIOSK SUBSTATION LIKELY REQUIRED TO SERVICE MASTERS SITE. LOCATION TO BE CONFIRMED

EXISTING OVERHEAD POWERLINES IN SURROUNDING STREET NETWORK (TYP)

EXISTING OPTIC FIBRE CABLES PRESENT. CARE TO BE TAKEN WHEN UNDERTAKING VERGE WORKS IN THESE AREAS (TYP)

EXISTING SERVICES LEGEND

eeAG	EXISTING ABOVE GROUND ELECTRICAL
eeUG	EXISTING UNDERGROUND ELECTRICAL
eg	EXISTING GAS
et	EXISTING TELECOMMUNICATIONS
etfo	EXISTING OPTIC FIBRE TELECOMMUNICATIONS
ew	EXISTING WATER
es	EXISTING SEWER

Preliminary - Not for Construction

Notes

20 10 0 20 40 60
PLAN SCALE 1:1000 @ A1

Key to symbols

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
P2	31.05.13	AMP	Issued for information	-	-
P1	28.05.13	AMP	Issued for information	-	-

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Client

Title
Nepean Green Penrith
Infrastructure Sketch
Services Plan

Deslgned	D.Rellly	.	Eng check		.
Drawn	A.Paciben	.	Coordination	D.Reilly	.
Dwg check	D.Reilly	.	Approved	X	.

Scale at A1: 1:1000
Status: PRE
Rev: P2

Drawing Number
MMD-310574-C-SK-PV-00-0100

Appendix F. Water Cycle Plans

NOTE:
EXISTING STORMWATER PIPE DIAMETERS AS SHOWN ON THIS PLAN ARE BASED ON GIS DATA SUPPLIED BY PENRITH CITY COUNCIL AND ARE INDICATIVE ONLY

Ø750 STORMWATER LINE FROM STATION STREET CONNECTS TO EXISTING TRUNK STORMWATER CHANNEL

CONCRETE TRUNK STORMWATER CHANNEL

Ø1050 STORMWATER LINE BENEATH JAMISON ROAD CONNECTS TO EXISTING TRUNK STORMWATER CHANNEL.

EXISTING GRASS SWALE THROUGH CENTRE OF SITE

EXISTING PIPE DIAMETERS IN WOODRIFF STREET CURRENTLY UNKNOWN

4.377Ha
12% IMP
Q_{5YR} = 694 L/s
Q_{100YR} = 1330 L/s

2.084Ha
53% IMP
Q_{5YR} = 531 L/s
Q_{100YR} = 906 L/s

1.387Ha
37% IMP
Q_{5YR} = 0.324 L/s
Q_{100YR} = 0.576 L/s

Legend

- SUB-CATCHMENT BOUNDARY
- 2.084Ha / 53% IMP / Q_{5YR} = 531 L/s / Q_{100YR} = 906 L/s — SUB-CATCHMENT AREA / PERCENTAGE IMPERVIOUS / 5_{YR} ARI PEAK DISCHARGE / 100_{YR} ARI PEAK DISCHARGE
- APPROXIMATE LOCATION OF EXISTING STORMWATER LINE
- EXISTING STORMWATER PITS
- Ø525 — EXISTING STORMWATER PIPE DIAMETER
- C1 — SUB-CATCHMENT LABEL
- EXISTING SITE AREA DRAINING TO JAMISON ROAD
- EXISTING SITE AREA DRAINING TO STATION STREET
- EXISTING SITE AREA DRAINING TO WOODRIFF STREET
- EXISTING CONCRETE TRUNK STORMWATER CHANNEL

Preliminary - Not for Construction

Notes

20 15 10 5 0 20 40
PLAN SCALE 1:800 @ A1

Key to symbols

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
P2	31.05.13	AMP	Issued for information	-	-
P1	28.05.13	AMP	Issued for information	-	-

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Client

Title
Nepean Green Penrith
Infrastructure Sketch
Existing Stormwater
Catchment Plan

Designed	D.Reilly	.	Eng check		.
Drawn	A.Paciben	.	Coordination	D.Reilly	.
Dwg check	D.Reilly	.	Approved	X	.

Scale at A1: 1:800
Status: PRE
Rev: P2

Drawing Number
MMD-310574-C-SK-PV-00-0105

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sln55925

NOTE:
EXISTING STORMWATER PIPE DIAMETERS AS SHOWN ON THIS PLAN ARE BASED ON GIS DATA SUPPLIED BY PENRITH CITY COUNCIL AND ARE INDICATIVE ONLY

STORMWATER FLOW FROM SUB-CATCHMENT C2 TO DISCHARGE TO EXISTING Ø525 STORMWATER LINE IN STATION STREET

PROPOSED ABOVE GROUND OSD STORAGE VOLUME PROVIDED = 415m³

Ø750
Ø750
Ø600
Ø600
Ø525
Ø375
Ø1050
Ø375
Ø375

C1
C2
C3

3.932Ha
80% IMP
Q_{5YR} = 872 L/s
Q_{100YR} = 1070 L/s

2.924Ha
90% IMP
Q_{5YR} = 420 L/s
Q_{100YR} = 832 L/s

1.010Ha
37% IMP
Q_{5YR} = 0.172 L/s
Q_{100YR} = 0.483 L/s

CONCRETE TRUNK STORMWATER CHANNEL

STORMWATER FLOW FROM SUB-CATCHMENT C1 TO DISCHARGE TO EXISTING Ø1050 STORMWATER LINE IN JAMISON ROAD

EXISTING PIPE DIAMETERS IN WOODRIFF STREET CURRENTLY UNKNOWN

PROPOSED BELOW GROUND OSD STORAGE VOLUME PROVIDED = 215m³

STORMWATER FLOW FROM SUB-CATCHMENT C3 TO DISCHARGE TO EXISTING PIT AND PIPE NETWORK IN WOODRIFF STREET.

Legend

- SUB-CATCHMENT BOUNDARY
- 2.084Ha / 53% IMP / Q_{5YR} = 872 L/s / Q_{100YR} = 1070L/s — SUB-CATCHMENT AREA / PERCENTAGE IMPERVIOUS / 5_{YR} ARI PEAK DISCHARGE / 100_{YR} ARI PEAK DISCHARGE
- APPROXIMATE LOCATION OF EXISTING STORMWATER
- EXISTING STORMWATER PITS
- Ø525 — EXISTING STORMWATER PIPE DIAMETER
- C1 — SUB-CATCHMENT LABEL
- PROPOSED SITE AREA DRAINING TO JAMISON ROAD
- PROPOSED SITE AREA DRAINING TO STATION STREET
- PROPOSED SITE AREA DRAINING TO WOODRIFF STREET
- EXISTING CONCRETE TRUNK STORMWATER CHANNEL

Preliminary - Not for Construction

Notes

20 15 10 5 0 20 40
PLAN SCALE 1:800 @ A1

Key to symbols

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
P3	07.06.13	AMP	Issued for information	-	-
P2	31.05.13	AMP	Issued for information	-	-
P1	28.05.13	AMP	Issued for information	-	-

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Client

Title
Nepean Green Penrith
Infrastructure Sketch
Proposed Stormwater
Drainage Strategy Plan

Designed	D.Reilly	.	Eng check		.
Drawn	A.Paciben	.	Coordination	D.Reilly	.
Dwg check	D.Reilly	.	Approved	X	.

Scale at A1: 1:800
Status: PRE
Rev: P3

Drawing Number
MMD-310574-C-SK-PV-00-0110

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Appendix G. Grading Plan

Legend

TOK 29.60
IK 29.45 - PROPOSED TOP OF KERB LEVEL
- PROPOSED INVERT OF KERB LEVEL

PROPOSED CREST

PROPOSED OVERLAND FLOWPATH

NOTE:
THE MINIMUM GRADE ALONG THE PROPOSED NEW ROADWAYS IS TO BE 0.5% IN ACCORDANCE WITH COUNCILS GUIDELINES FOR ENGINEERING WORKS FOR SUBDIVISIONS AND DEVELOPMENTS

PROPOSED CARPARK AREA TO BE GRADED TO ALLOW FOR ABOVE GROUND OSD STORAGE. MAXIMUM PONDED DEPTH = 0.2m (TYP)

EXISTING
IK 27.80

TOK 28.85
IK 28.70

TOK 28.85
IK 28.70

TOK 28.85
IK 28.70

TOK 28.13
IK 27.98

FFL 29.60

FFL 29.40

TOK 29.60
IK 29.45

TOK 29.30
IK 29.15

TOK 28.78
IK 28.63

TOK 28.90
IK 29.05

TOK 28.52
IK 28.65

TOK 28.67
IK 28.52

FFL 29.50

FFL 29.60

TOK 29.60
IK 29.45

FFL 29.60

TOK 28.80
IK 28.65

TOK 29.45
IK 29.30

TOK 28.67
IK 28.52

TOK 29.30
IK 29.15

FFL 29.60

TOK 28.67
IK 28.17

EXISTING
IK 28.17

Preliminary - Not for Construction

Notes

20 15 10 5 0 20 40
PLAN SCALE 1:800 @ A1

Key to symbols

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
P2	31.05.13	AMP	Issued for information	-	-
P1	28.05.13	AMP	Issued for information	-	-

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Client

Title
Nepean Green Penrith
Infrastructure Sketch
Preliminary Road
Grading Sketch

Designed	D.Reilly	.	Eng check		.
Drawn	A.Paciben	.	Coordination	D.Reilly	.
Dwg check	D.Reilly	.	Approved	X	.

Scale at A1: 1:800
Status: PRE
Rev: P2

Drawing Number
MMD-310574-C-SK-PV-00-0115

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sln55925

Appendix H. Email Correspondence

Reilly, Dean F

From: Caraballo Charlie [ccaraballo@penrithcity.nsw.gov.au]
Sent: Monday, 27 May 2013 12:01 PM
To: Reilly, Dean F
Cc: Masters Steve
Subject: Engineering Advice RE: 164 Station Street - Overland Flows

Importance: High

Hi Dean,

I have met with our flood engineers and had a chance to look at the draft overland flow study model that they are reviewing and the information from the study confirms that there is very minimal overland flow affectation on the subject site externally other than internal surface runoff from within (from the formed depression on the southern part of the site draining towards Jamison Road).

Any filling of the subject land will require the consideration of the overland flow runoff from the subject site to the receiving road stormwater drainage system such that no adverse impacts or additional flooding is caused.

As previously advised, the subject site will require On-Site Detention for all storm events up to the 100 year ARI with any proposed development. Unfortunately, Council's has no intention of upgrading the street drainage system surrounding the subject site in the near future.

Should you have any other questions with regards to the above matter, do not hesitate to contact me on my details below.

Kind Regards,

Charlie C. Caraballo
Senior Engineer - Major Developments

E ccaraballo@penrithcity.nsw.gov.au
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PENRITH
CITY COUNCIL

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Reilly, Dean F

From: Caraballo Charlie [ccaraballo@penrithcity.nsw.gov.au]
Sent: Thursday, 12 July 2012 11:06 AM
To: Reilly, Dean F
Cc: Avis, Chris J
Subject: RE: Parkview Penrith - OSD

Hi Dean,

You assumptions are correct from your email below.

Kind Regards,

CHARLIE C. CARABALLO
SENIOR ENGINEER - MAJOR DEVELOPMENTS

E ccaraballo@penrithcity.nsw.gov.au
T (02) 4732 7932 | F (02) 4732 7958 |
PO Box 60, Penrith NSW 2751

PENRITH
CITY COUNCIL

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www.penrithcity.nsw.gov.au

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From: Reilly, Dean F [mailto:dean.reilly@mottmac.com.au]
Sent: Tuesday, 10 July 2012 2:25 PM
To: Caraballo Charlie
Cc: Avis, Chris J
Subject: RE: Parkview Penrith - OSD

Hi Charlie,

Thanks for the email. I have spoken to Chris Avis about this, and based on your advice, it is our understanding that:

> If the existing pit and pipe network in the adjoining street network has sufficient capacity to accept minor system stormwater flows (5yr ARI flows as noted in Councils DCP 2010) from the site, than no OSD is required;
> If the existing pit and pipe network in the adjoining street network has insufficient capacity to accept minor system stormwater flows from the site, then either;
> OSD is required; or
> Upgrade of the receiving (street) pit and pipe network is required.

Can you please confirm if our assumptions are correct?

Regards,

Dean

From: Reilly, Dean F
Sent: Monday, 9 July 2012 4:07 PM

To: Avis, Chris J
Subject: FW: Parkview Penrith - OSD
Importance: High

FYI

From: Caraballo Charlie [mailto:ccaraballo@penrithcity.nsw.gov.au]
Sent: Monday, 9 July 2012 3:58 PM
To: Reilly, Dean F
Subject: RE: Parkview Penrith - OSD
Importance: High

Penrith City Council
Civic Centre, 601 High Street, PENRITH NSW 2750
Telephone: (02) 4732 7777 Fax: (02) 4732 7958
e-mail: pencit@penrithcity.nsw.gov.au

Our Ref:
Contact: Charlie Caraballo
Telephone: 4732 7932
Date: 9 July 2012

Dean,

OSD is not required for the subject area. However, post development flows are not to adversley impact on existing drainage systems in the area.

Kind Regards,

Charlie C. Caraballo
Senior Engineer - Major Developments

E ccaraballo@penrithcity.nsw.gov.au
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PO Box 60, Penrith NSW 2751
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CITY COUNCIL
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www.penrithcity.nsw.gov.au

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From: Reilly, Dean F [mailto:dean.reilly@mottmac.com.au]
Sent: Thursday, 5 July 2012 8:57 AM
To: Caraballo Charlie
Subject: Parkview Penrith - OSD

Hi Charlie,

Can you please confirm whether council requires on-site detention (OSD) for the proposed Parkview Penrith development. The street address is 164 Station Street (Lot 12 DP 234581).

Thanks,

Dean Reilly
Civil Engineer
Mott MacDonald
Level 3, 90 Phillip Street, Parramatta NSW 2150 Australia
PO Box 163, Parramatta NSW 2124
www.mottmac.com

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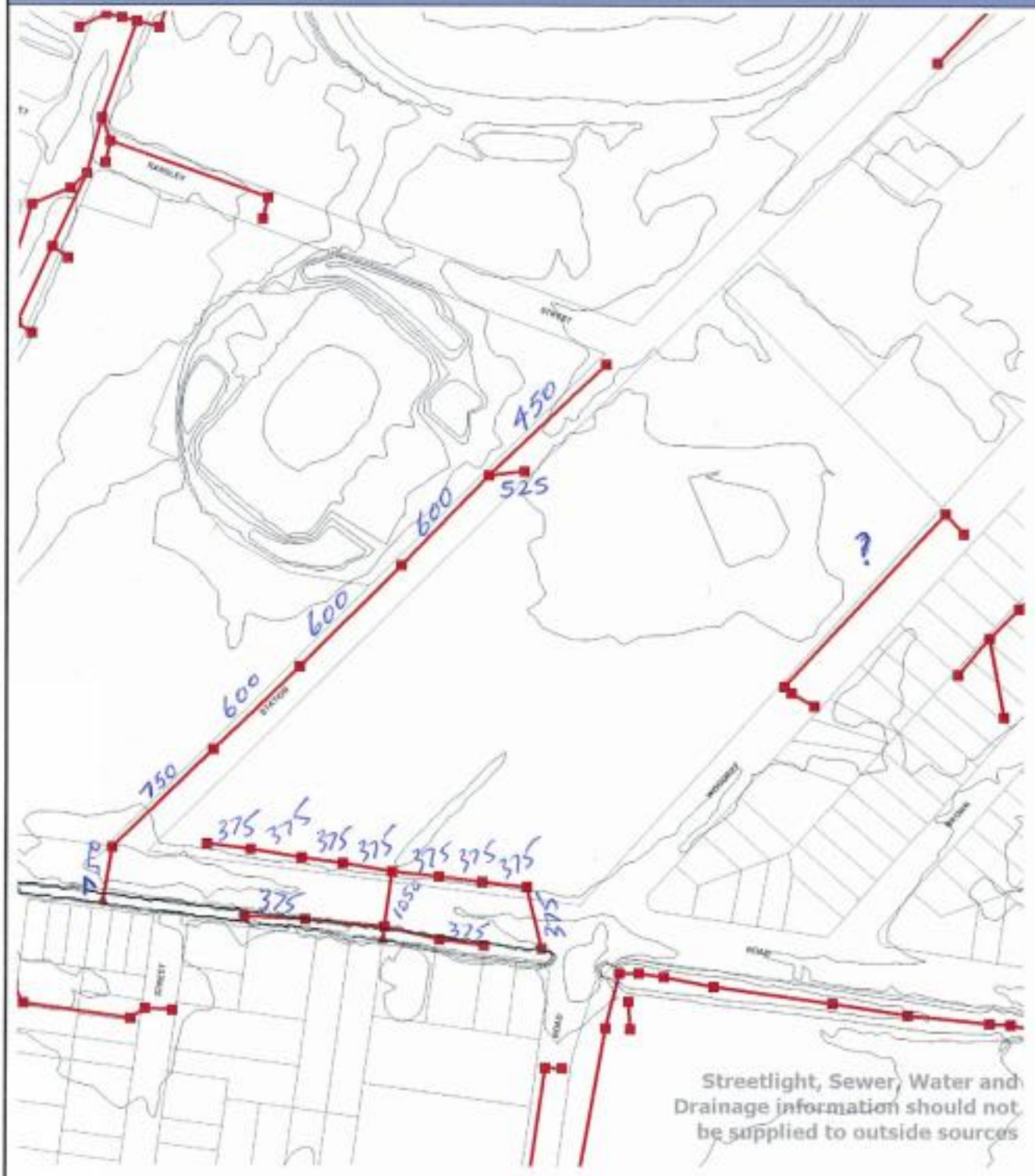
E dean.reilly@mottmac.com.au

~~ Following Files were attached ~~
image001.png
image002.jpg
image003.png
~~ Following Files were attached ~~
image001.png
image002.jpg
image003.png

Appendix I. GIS Stormwater Data

PENRITH CITY COUNCIL
Serving Our Community

Map



Map Scale: 1:3,530

About this Document	Disclaimer
This map has been created for the purpose of showing basic locality information over Penrith City Council. Property boundary line network data is maintained by Council. Any errors should be reported to the GIS Section, Penrith City Council.	This map is a representation of the information currently held by Penrith City Council. While every effort has been made to ensure the accuracy of the product, Council accepts no responsibility for any errors or omissions. Any feedback on omissions or errors would be appreciated.

Appendix J. Concept Intersection Design Plan

NOTE:
THE INTERSECTION LAYOUT AS SHOWN ON THIS PLAN IS FOR DISCUSSION PURPOSES ONLY AND IS NOT TO BE USED FOR PRICING FOR CONSTRUCTION.

EXISITNG KERB AND GUTTER TO REMAIN IN USE

NEW KERB AND GUTTER TO BE CONSTRUCTED 60m ALONG RANSLEY STREET ~0.35m

EXISITNG KERB AND GUTTER TO REMAIN IN USE

EXISTING BUS STOP FURTHER WEST ON STATION ST TO BE UNAFFECTED BY PROPOSED INTERSECTION WORKS

EXISTING BUS ZONE LIKELY TO BE RELOCATED

STORMWATER TO BE RELOCATED TO SUIT NEW KERB LINE

NEW KERB AND GUTTER TO BE CONSTRUCTED ALONG FRONTAGE OF PROPERTY AT WIDENED EXTENTS SHOWN ~0.5-0.6m

BOUNDARY ADJUSTMENT REQUIRED ALONG FRONTAGE OF PROPERTY

LIGHT AND POWER POLE TO BE RELOCATED

TREES TO BE REMOVED ALONG FRONTAGE DUE TO PROXIMITY WITH NEW KERB LINE

SERVICE ADJUSTMENTS REQUIRED TO SUIT NEW ROAD LEVEL

LIGHT AND POWER POLE TO BE RELOCATED

TAPER TO SINGLE LANE

Preliminary - Not for Construction

Notes

2 0 5 10 20
PLAN SCALE 1:300 @ A1

Key to symbols

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
P3	11.06.13	AMP	Re-Issued for information	-	-
P2	28.05.13	AMP	Re-Issued for information	-	-
P1	28.05.13	AMP	Issued for information	-	-

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Client
PARKVIEW
CONSTRUCTIONS • DEVELOPMENTS • PROJECTS • INTERIORS

Title
Nepean Green Penrith
Infrastructure Sketch
Concept Interesection Design
Station Street and Ransley Road

Designed	G.Collins	.	Eng check	C. Avis	.
Drawn	G. Collins	.	Coordination	D. Reilly	.
Dwg check	D. Reilly	.	Approved	X	.

Scale at A1	Status	Rev
1:300	PRE	P3

Drawing Number
MMD-310574-C-SK-PV-XX-0200

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