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# PROPOSED RESIDENTIAL DEVELOPMENT

## 1138 NEPEAN HIGHWAY, HIGHETT – FORMER GASWORKS SITE

*Traffic Engineering Assessment*

Prepared for

DEPARTMENT OF TREASURY & FINANCE

JULY, 2017

OUR REFERENCE: G17634R-01B

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## 1138 NEPEAN HIGHWAY, HIGHETT – FORMER GASWORKS SITE

*Traffic Engineering Assessment*

| | | |
|---|---|---|
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# 1 INTRODUCTION

Traffix Group has been engaged by Meinhardt Australia Pty Ltd on behalf of the Department of Treasury & Finance (DTF) to undertake a traffic engineering report to inform the feasibility study in relation to a vacant 6.33 hectare (approx.) strategic property in the City of Kingston, being the former Gasworks site located at 1138 Nepean Highway in Highett.

This report considers the concept plans prepared by CHT Architects, provides advice in relation to the potential traffic engineering constraints to development of the site (including access constraints and requirements), considers likely parking requirements for the site having regard to Clause 52.06 decision guidelines, and sets out traffic impact assessments to advise on the likelihood of receiving town planning approval from a traffic engineering perspective.

# 2 EXISTING CONDITIONS

## 2.1 The Site

The development site is located on Nepean Highway between Bay Road to the south and Highett Road to the north. The subject site has frontage to the Nepean Highway service road to the east and Station Street and View Street to the north, as shown in the locality plan at Figure 1 below.

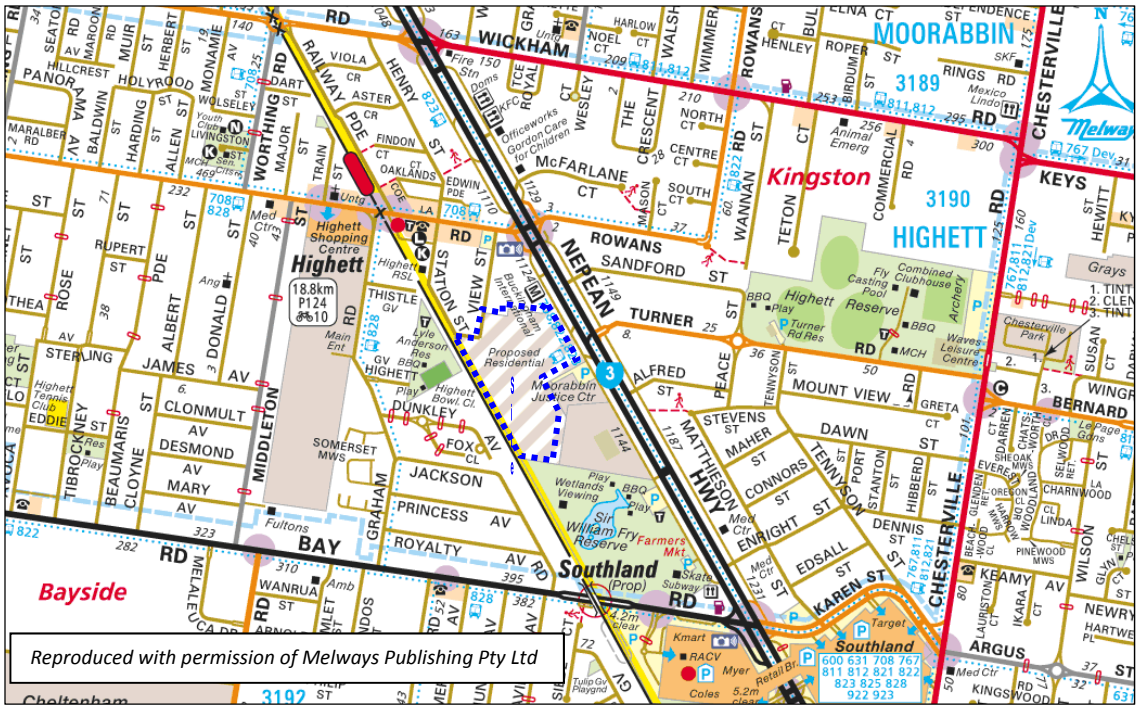


*Figure 1: Locality Plan*

The site was previously the Highett Gasworks facility and has since been remediated to remove contaminated soils and gas infrastructure.

The site has an area of approximately 6.33 hectares, with frontages to Nepean Highway service road, Station Street and View Street. An aerial view is shown in Figure 2 below.


*Figure 2: Aerial View of Site*

The site is zoned Residential Growth Zone – Schedule 1 as shown in Figure 3 below. Land use surrounding the site is predominantly residential to the north, west and east with some commercial uses.

Other significant land-uses in the nearby area include:

- Moorabbin Court House, located adjacent to the east of the subject site, with access to the Nepean Highway service road,
- Buckingham Hotel, located adjacent to the north boundary of the subject site, with access to the Nepean Highway service road,
- Commercial premises located on Nepean Highway, approximately 300m south of the subject site,
- Highett Shopping Precinct, located on Highett Road, approximately 400m walking distance north of the subject site,
- Highett Railway Station, located to the north-west of the subject site, approximately 500m walking distance from the site, and
- Westfield Southland Shopping Centre, located on Nepean Highway approximately 850m south of the subject site.

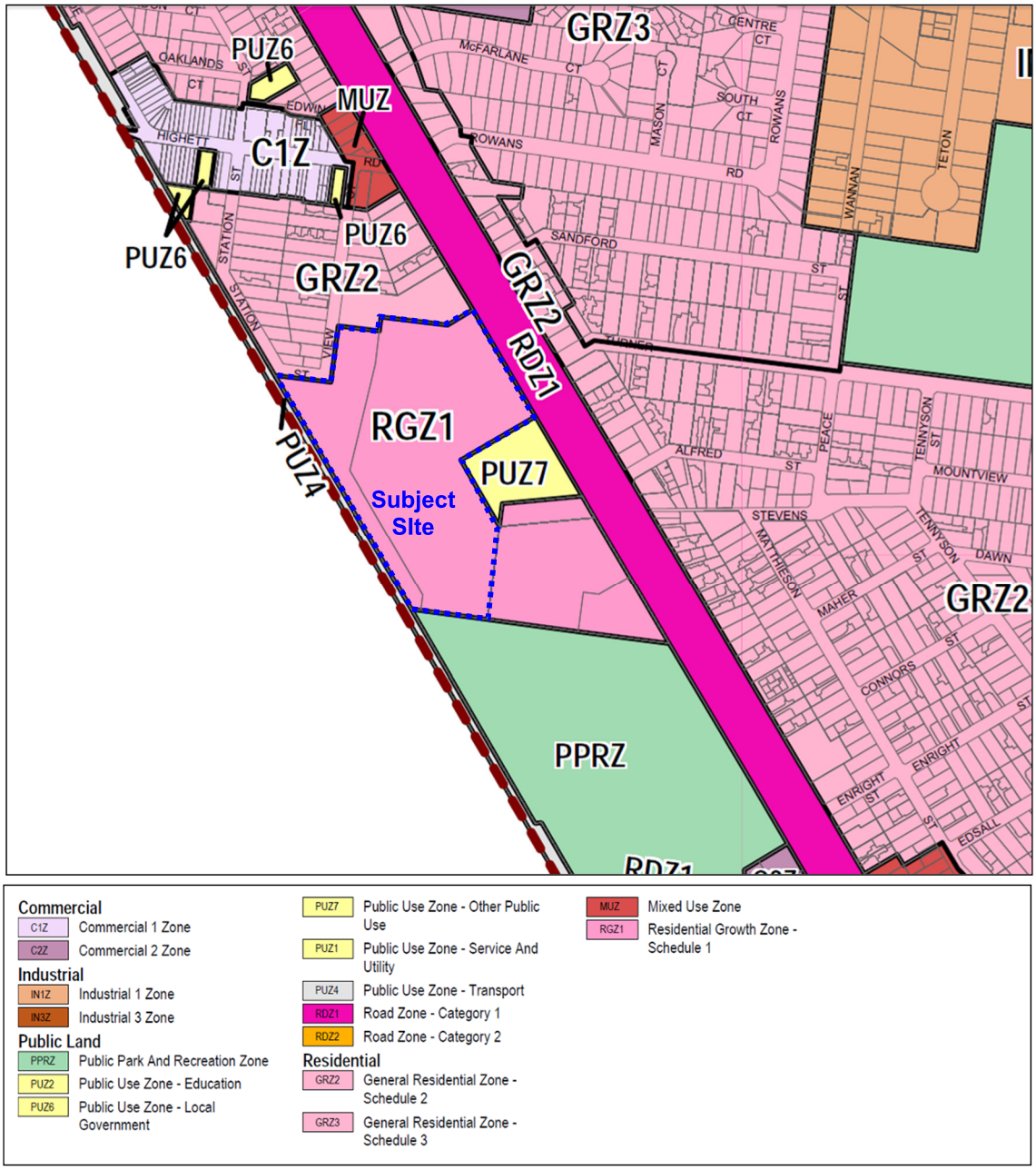


*Figure 3: Land Use Zone Map*

The land fronting Nepean Highway service road to the south of the Moorabbin Court House is currently under development for residential purposes

## 2.2 Road Network

### Nepean Highway

Nepean Highway is a VicRoads declared Main Road and located within a Category 1 Road Zone under the Planning Scheme. Nepean Highway generally spans along the eastern side of Port Phillip Bay, between Glen Huntly Road (Elsternwick) in the north (where it continues further north as Brighton Road) and Marine Drive (Safety Beach) in the south (where it continues further south as Point Nepean Road).

In the vicinity of the subject site, the Nepean Highway is a dual carriageway configured with three traffic lanes in each direction. A posted speed limit of 80km/h applies along the Nepean Highway in the vicinity of the site.

### Service Road

A service road exists on the west side of the Nepean Highway between Bay Road and Highett Road. The service road is restricted to one-way traffic flow (northbound only) and has a pavement width of approximately 7.1 metres, which allows for one lane of traffic flow and kerbside parking along the western side of the road ("No Stopping" restrictions apply along the east side of the service road).

For vehicles wishing to enter the subject site, the primary access point to the service road from the Nepean Highway is located approximately 230 metres south of the subject site. Vehicles travelling to the subject site from the north along the Nepean Highway can undertake a right-turn at a median break provided for entry into the service road. For vehicles exiting the site and wishing to travel south along the Nepean Highway, a U-turn can be facilitated at a median break, just south of the signalised intersection at Highett Road. The default urban speed limit of 50km/h applies to the Nepean Highway service road.

### Station Street

Station Street is classified as a local street and runs in a north-south direction between View Street in the south and Highett Road in the north.

In vicinity of the subject site, Station Street has a pavement width of approximately 7.2 metres, which accommodates kerbside parking along the west side of the road, apart from a section of 90 degree angle parking adjacent to the railway line, south of the RSL. The east side of the road is predominantly a "No Stopping" zone, however unrestricted parking is available near the frontage to the subject site. Station Street provides for one lane of traffic in each direction. The default urban speed limit of 50 km/h applies to Station Street.

### View Street

View Street is classified as a local street and runs in a north-south direction between Station Street in the south and Highett Road in the north.

In the vicinity of the site, View Street provides a pavement width of approximately 7.4 metres, which accommodates parallel parking on both sides of the road. The default urban speed limit of 50 km/h applies to View Street.

## 2.3 Public Transport

The following public transport services operate nearby to the site:

- Bus route 708 provides a connection between Hampton and Carrum. The route also services Highett Railway Station and Southland Shopping Centre that are within walking distance of the site. Services generally operate every 30 minutes throughout the day from Monday to Friday.
- Bus route 822 provides a connection between Chadstone and Sandringham via Murrumbeena and Southland Shopping Centre. Services generally operate every 30 minutes throughout the day from Monday to Friday.
- Bus route 823 provides a connection between North Brighton and Southland Shopping Centre. Services generally operate every 60 minutes throughout the day from Monday to Friday.
- Highett Railway Station is located approximately 500m walking distance to the north-west (from the northern boundary of the site). Highett Railway Station is located on the Frankston line and provides a service between Frankston and the City. Services operate approximately every 15 minutes Monday to Friday, every 20 minutes on Saturdays and every 30 minutes on Sundays.

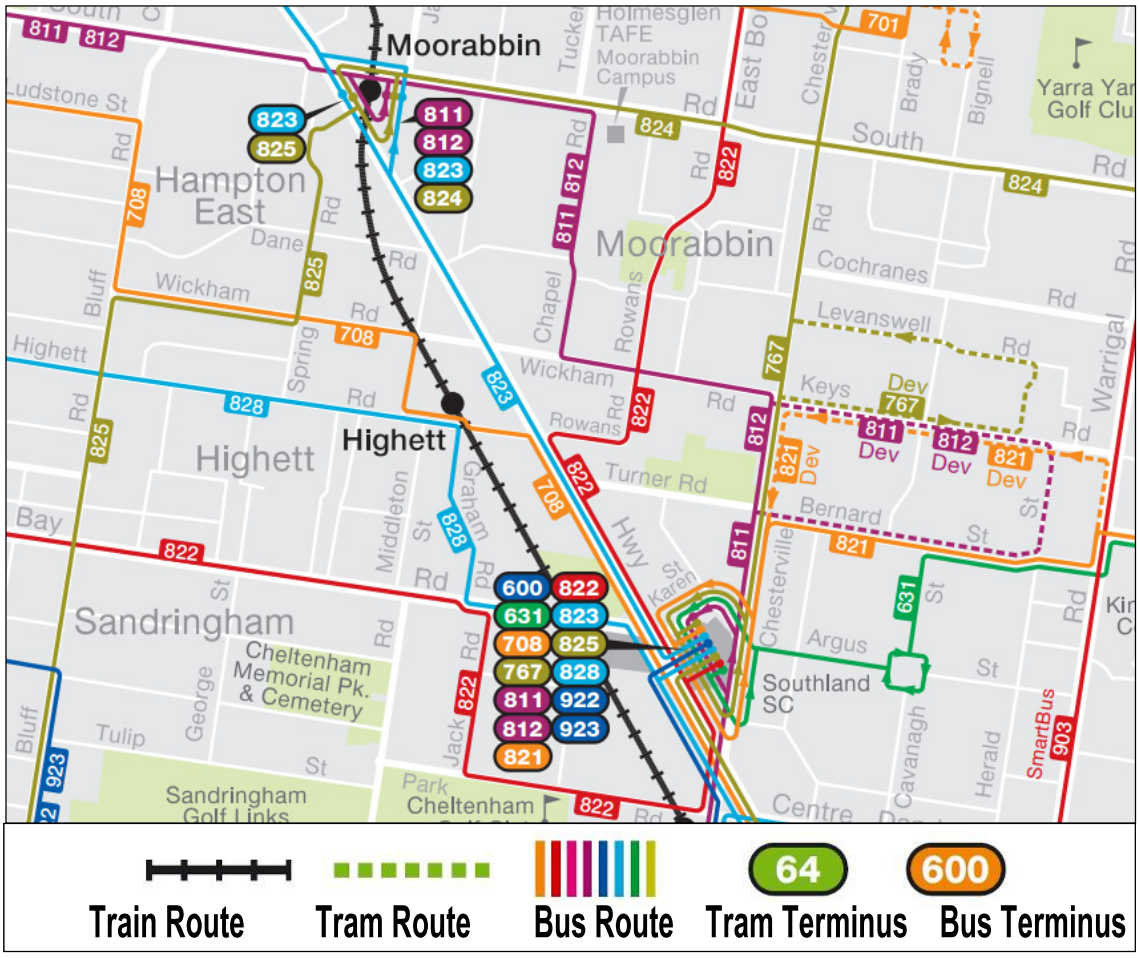


*Figure 4: Public Transport Map*

## 2.4 Traffic Volumes

VicRoads maintains a database of traffic volumes on freeways and arterial roads in Victoria derived from surveys or estimates, covering the last four years, and ten years ago. The Annual average daily traffic volume (AADT) is provided, including commercial vehicles (CV).

AADT is the sum of all traffic using the road for a year, divided by 365. The daily volumes on working weekdays are typically 5% higher than AADT in urban areas.

CV includes all vehicles from towing (e.g. car + caravan) and small trucks to the largest trucks. It does not include single light vehicles such as cars and vans.

The AADT and CV volumes for Nepean Highway in the vicinity of the site (between Bay Road and Rowans Road) are set out in Table 1 below.

**Table 1: Nepean Highway, Highett – AADT**

| | Northbound | Southbound | TOTAL |
|---|---|---|---|
| 2006 | 32,000* (1,400**) | 29,000* (1,200**) | 61,000 (2,600) |
| 2013 | 31,000* (1,300**) | 30,000* (1,300**) | 61,000 (2,600) |
| 2014 | 31,000* (1,300**) | 31,000* (1,300**) | 62,000 (2,600) |
| 2015 | 31,000* (1,000**) | 31,000* (1,000**) | 62,000 (2,000) |
| 2016 | 31,000* (1,000**) | 31,000* (1,000**) | 62,000 (2,000) |

*Note: Estimated volumes have been denoted * (where growth factors have been applied to traffic counts from surrounding years) or ** (where traffic counts are not available and volumes from surrounding roads have been used).*

Table 1 indicates that the AADT on Nepean Highway is currently in the order of 62,000 vehicles per day (two-way), and is likely to fluctuate to in the order of 65,000 vehicles per day (two-way) on weekdays, based on an increase of 5% above AADT.

Table 1 also indicates that there has not been any significant growth in traffic volumes on Nepean Highway over the last 10 years, and commercial vehicle volumes are in the order of 3% of total volumes.

# 3 THE CONCEPT PLAN

A concept plan for a potential residential development of the subject site has been prepared by CHT Architects. A copy of the concept plan is attached at Appendix A.

The concept plan includes the following:

- Main entry to the site via a new connection to the service road located directly opposite Turner Road.
- Secondary access to the site via a connection through the development site to the south (Remington Drive extension).
- No road access between the site and Station Street or View Street.
- 26 townhouses located at the north-west corner of the site, including 7 taking direct access (via individual crossovers) to View Street and the remainder taking access via new internal roadways.
- 11 multi-storey apartment buildings (between 6 and 8 levels).

# 4 CAR PARKING

## 4.1 Statutory Car Parking Requirements

The Planning Scheme sets out the parking requirements for new developments under Clause 52.06. The purpose of Clause 52.06 is:

- *To ensure that car parking is provided in accordance with the State Planning Policy Framework and Local Planning Policy Framework.*
- *To ensure the provision of an appropriate number of car parking spaces having regard to the demand likely to be generated, the activities on the land and the nature of the locality.*
- *To support sustainable transport alternatives to the motor car.*
- *To promote the efficient use of car parking spaces through the consolidation of car parking facilities.*
- *To ensure that car parking does not adversely affect the amenity of the locality.*
- *To ensure that the design and location of car parking is of a high standard, creates a safe environment for users and enables easy and efficient use.*

The relevant Clause 52.06 car parking rates for residential dwellings are as follows:

- *1 car space to each one or two bedroom dwelling, plus*
- *2 car spaces to each three or more bedroom dwelling (with studies or studios that are separate rooms counted as a bedroom), plus*
- *1 visitor car spaces to every 5 dwellings for developments of 5 or more dwellings.*

## 4.2 Reducing the Requirement for Car Parking

Clause 52.06-6 allows for the statutory car parking requirement to be reduced (including to zero).

Practice Note 22 (June, 2012) specifies that the provisions draw a distinction between the assessment of likely demand for parking spaces, and whether it is appropriate to allow the supply of fewer spaces. These are two separate considerations, one technical while the other is more strategic. Different factors are taken into account in each consideration.

Accordingly, the applicant must satisfy the responsible authority that the provision of car parking is appropriate on the basis of a two-step process, which has regard to:

- *The car parking demand likely to be generated by the use.*
- *Whether it is appropriate to allow fewer spaces to be provided than the number likely to be generated by the site.*

An assessment of the appropriateness of reducing the car parking provision below the statutory requirement for a potential future planning application at the subject site is set out below.

## 4.3 Car Parking Demand Assessment

Any application to vary the statutory car parking requirements must be accompanied by a Car Parking Demand Assessment which considers the following key factors, as reviewed in Table 2 below.

**Table 2: Clause 52.06 Decision Factors**

| Car Parking Demand Factor | Assessment | Impact on Parking Demand | | |
|---|---|---|---|---|
| | | Reduce | Neutral | Increase |
| *Multi-purpose trips within an area.* | The site is likely to be developed solely for residential use, and accordingly multi-purpose trips to the site are unlikely. | | ✓ | |
| *The variation of car parking demand over time.* | Peak car parking demand for residential visitors typically occurs during evenings and on weekends. This is unlikely to coincide with peak demands for the neighbouring Moorabbin Court House and accordingly a sharing of the parking resources within the service road is possible. | ✓ | | |
| *The short-stay and long-stay car parking demand.* | Residents require long-stay parking while visitors would generally require short-stay parking. | | ✓ | |
| *The availability of public transport in the locality.* | The site is well located with respect to public transport services, being within walking distance of Highett Railway Station and also within walking distance of Southland Shopping Centre which includes a bus interchange. | ✓ | | |
| *The convenience of pedestrian and cyclist access to the site.* | The site is easily accessible to pedestrians and cyclists. The concept plan for the site also includes good pedestrian and cycle connections to the surrounding area. | ✓ | | |
| *The provision of bicycle parking and end of trip facilities for cyclists.* | Bicycle parking and end of trip facilities are likely to be provided in accordance with (or in excess of) statutory Clause 52.34 requirements. | | ✓ | |
| *The anticipated car ownership rates of likely or proposed occupants (residents or employees).* | A review of 2011 ABS Census data indicates a potential to support some small one-bedroom dwellings without car parking and also some three-bedroom dwellings with one car space (instead of the statutory two spaces. ABS data is discussed in more detail below this table. | ✓ | | |

### Consideration of Likely Car Ownership Rates (Residents)

Table 3 below sets out the relevant car ownership rates for various dwelling types and sizes in the suburb of Highett (Postcode 3190).

**Table 3: 2011 ABS Census Data – Highett (Postcode 3190)**

| Type | Measure | One-bedroom | Two-bedroom | Three-bedroom |
|---|---|---|---|---|
| Semi-detached, row or terrace house, townhouse, etc. | Average Car Ownership Rate | 0.7 | 1.1 | 1.5 |
| | % with no car | 33% | 12% | 9% |
| | % with zero or one car | 100% | 74% | 51% |
| | Sample Size (no. of dwellings) | 42 | 438 | 329 |
| Flat, unit or apartment in a one or more storey block. | Average Car Ownership Rate | 0.7 | 1.2 | 1.5 |
| | % with no car | 29% | 10% | 4% |
| | % with zero or one car | 100% | 73% | 52% |
| | Sample Size (no. of dwellings) | 24 | 282 | 96 |

It is noted that the sample size, particularly for one bedroom dwellings and for three-bedroom apartments in Highett is currently limited. Accordingly, Table 4 below sets out the data for the wider Kingston area.

**Table 4: 2011 ABS Census Data – City of Kingston**

| Type | Measure | One-bedroom | Two-bedroom | Three-bedroom |
|---|---|---|---|---|
| Semi-detached, row or terrace house, townhouse, etc. | Average Car Ownership Rate | 0.8 | 1.2 | 1.6 |
| | % with no car | 35% | 13% | 4% |
| | % with zero or one car | 91% | 74% | 47% |
| | Sample Size (no. of dwellings) | 392 | 3,812 | 3,824 |
| Flat, unit or apartment in a one or more storey block. | Average Car Ownership Rate | 0.8 | 1.1 | 1.5 |
| | % with no car | 33% | 17% | 8% |
| | % with zero or one car | 90% | 75% | 54% |
| | Sample Size (no. of dwellings) | 1,109 | 4,842 | 1,520 |

Tables 3 and 4 indicate that there is a demand for provision of some one-bedroom dwellings without a car space in Highett (up to 30% of one-bedroom dwellings could be provided without a car space based on the ABS Census data), and there is also a demand for some three-bedroom dwellings with one car instead of the statutory two spaces (up to 50% of the three-bedroom dwellings could be provided with a single car space instead of two spaces based on the ABS Census data). The site is well placed to accommodate a reduced parking provision, being located within walking distance of fixed rail and a principal activity centre (Southland) with associated services and amenities.

### Consideration of Visitor Parking Rates

In our experience, the statutory visitor parking rate of one space per 5 dwellings is excessive for smaller apartment-style dwellings. Empirical surveyed rates of 0.10 to 0.13 visitor parking spaces per dwelling have been observed by Traffix Group and others for this type of development.

Notably, Traffix Group surveyed a peak visitor parking demand of 0.13 visitor parking spaces per dwelling at a nearby apartment development located at 1142 Nepean Highway, Highett (2014 survey). In addition, we understand that the entire visitor parking requirement (15 spaces) was waived by Kingston Council for that 78 unit development, which suggests there is a precedent for a reduced on-site visitor parking provision in this area.

For the purposes of the feasibility study, we recommend that visitor parking be provided at a rate of approximately 0.13 car spaces per apartment.

We note that some of this visitor parking could potentially be provided within the service road along the site's frontage, as addressed in Section 4.4 below.

## 4.4 Appropriateness of Providing Fewer Spaces than the Likely Demand

The second step in determining whether it is appropriate to reduce the statutory car parking rates is to consider whether it is appropriate to allow fewer spaces to be provided than the number likely to be generated by the site.

**Table 5: Assessment of Appropriateness of Providing Fewer Spaces than Expected Demand**

| Decision Factors | Assessment |
|---|---|
| *Any relevant local planning policy or incorporated plan*. | We are not aware of any relevant local planning policy or incorporated plan which specifically encourages provision of fewer car parking spaces than expected demand for this site. |
| *The availability of car parking including:*<br>○ *Efficiencies gained from the consolidation of shared car parking spaces.*<br>○ *Public car parks intended to serve the land.*<br>○ *On street parking in non-residential zones and streets in residential zones specifically managed for non-residential parking.*<br>○ *On street parking in residential zones for residential use.* | On-street parking in residential zones for residential use – the proposed use of the site is for residential use, and accordingly it would not be inappropriate for residential visitors to park on the site frontage. In the order of 12 – 15 visitor car spaces could be accommodated on the site's frontage, although this number may be reduced depending on whether the access point is signalised at Nepean Highway and the service lane truncated either side of the signals. |
| *Any adverse economic impact a shortfall of parking may have on the economic viability of an activity centre.* | A potential shortfall of residential visitor parking on the site (with the shortfall accommodated solely on the site's frontage) would not have an adverse economic impact on the viability of any nearby activity centres. |
| *The future growth and development of an activity centre.* | The site is not within an activity centre. |

| Decision Factors | Assessment |
|---|---|
| *Any car parking deficiency associated with the existing use of the land.* | The former use of the site (gasworks) has been closed for a significant length of time. We are not aware of any potential car parking deficiency associated with the former use that would carry forward to the proposed residential use. |
| *Any credit that should be allowed for the car park spaces provided on common land or by a Special Charge scheme or cash-in-lieu payment.* | We are not aware of any car spaces associated with the subject site that may have been provided off-site via a Special Charge scheme or cash-in-lieu payment. |
| *Local traffic management.* | Local traffic management (including any traffic management measures within future roads constructed within the subject site) would not impact on the need (or otherwise) to provide sufficient on-site parking to meet demands. |
| *The impact of fewer car parking spaces on local amenity including pedestrian amenity and the amenity of nearby residential areas.* | If fewer car spaces were provided on-site than the peak demand (notably, if a component of the visitor parking demand were provided within the service road on the site frontage), there would not be any adverse impact on local amenity including pedestrian amenity and the amenity of nearby residential areas, subject to the visitor parking demands being met on the site's frontage, and not extending further to residential frontages to the south of the site. |
| *The need to create safe, functional and attractive parking areas.* | These elements will need to be considered within the site at such time that a planning permit application is lodged. |
| *Access to or provision of alternative transport modes.* | The site has good access to alternative transport modes, in particular Highett Railway Station and the nearby bus interchange at Southland. |
| *The equity of reducing the car parking requirement having regard to any historic contributions by existing businesses.* | Not applicable to this site. |
| *The character of the surrounding area and whether reducing the car parking provision would result in a quality/positive urban design outcome.* | Not applicable to this site. |
| *Any other relevant consideration.* | Not applicable to this site. |

Having regard to the above decision factors, we believe that it would not be unreasonable to rely on up to say 10 visitor parking spaces within the service road, for the purposes of undertaking the feasibility analysis.

## 4.5 Car Parking Summary

For the purposes of the feasibility analysis for the site, we are of the opinion that the following car parking arrangements would be supportable for a planning application for the subject site:

- For the 26 townhouses, the statutory parking rate should be provided for residents, and visitors as below.
- For one-bedroom apartments, a parking provision of at least 0.7 cars per dwelling (not more than 30% of one-bedroom dwellings without a car space).
- For two-bedroom apartments, a parking provision in accordance with the statutory requirement, being at least one space per dwelling.
- For three-bedroom apartments, a parking provision of at least 1.5 cars per dwelling (not more than 50% of three-bedroom dwellings with a single car space instead of the statutory two spaces required under the provisions of the Table to Clause 52.06-5).
- A visitor parking provision of at least 0.13 car spaces per dwelling.
- The visitor parking requirement could be met in part by some long-term visitor spaces within the secure carparks of the apartment buildings, in part by on-street parking within the proposed street network on the site, and in part (up to say 10 spaces) by on-street parking within the service road, abutting the site's frontage.

# 5 BICYCLE PARKING PROVISION

Clause 52.34 of the Planning Scheme sets out bicycle parking requirements for new developments.

In residential developments of four or more storeys, the statutory bicycle parking requirements are as follows:

- one space per 5 dwellings for residents, plus
- one space per 10 dwellings for visitors.

In the event that some of the one-bedroom dwellings were provided without a car parking space, a dedicated bicycle space would likely need to be allocated to the dwellings without a car space, which would increase the overall bicycle parking provision on the site.

In terms of floor space, an efficient way to provide bicycle parking is staggered vertically hanging rails (Ned Kelly type), which typically require a space which is 0.5m wide and 1.2m long, accessed via a 1.5m access aisle, and with a 2.2m headroom clearance (dismounted) or a 2.5m headroom clearance (mounted).

# 6 ACCESS OPPORTUNITIES & CONSTRAINTS

Access to the site is currently provided via a two-way crossover to the Nepean Highway service road, located approximately 25 metres north of the site's southern boundary. No access is provided to the site from either Station Street or View Street.

Vehicles accessing the site's existing crossover can enter the service road immediately south of the crossover and exit immediately north. Additional access points to the service road are provided further north and further south.

Vehicles exiting the site and wishing to head southbound can undertake a U-turn at an existing median break located approximately 230 metres north of the service lane exit point (20 metres south of the Nepean Highway/Highett Road signalised intersection).

Vehicles entering the site from the north can undertake a U-turn at an existing median break located approximately 330 metres south of the service lane entry point (an additional service lane entry point is located opposite the median break to the south of the site).

Figure 5 below shows the existing access arrangements for the site.

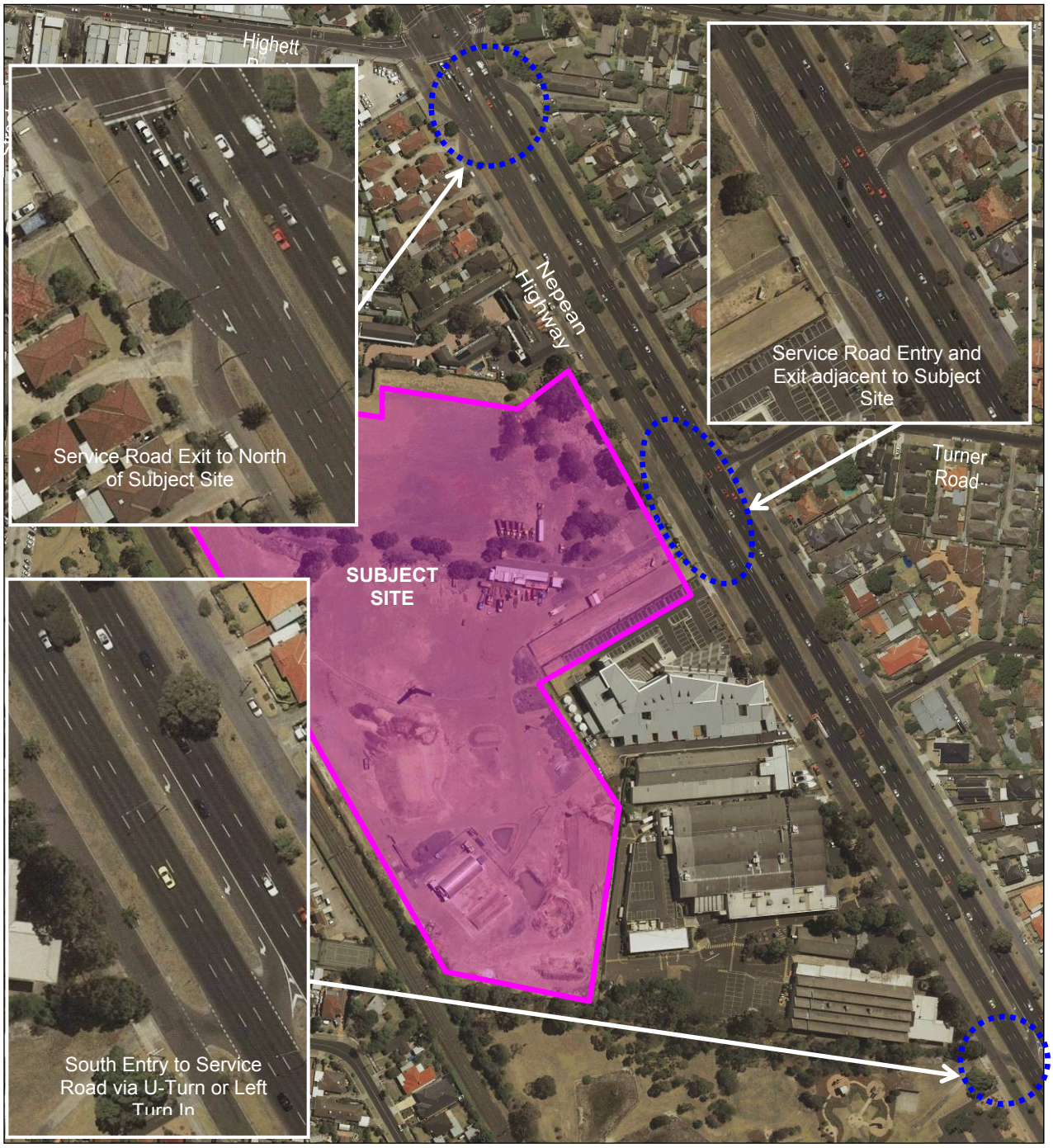


*Figure 5: Nepean Highway existing service road access arrangements to Subject Site*

A previous staged permit application for the site back in 2009 which considered a Stage 1 yield in the order of 190 dwellings and an overall 'master plan' yield for the site in the order of 730 dwellings was considered by VicRoads.

A letter from VicRoads in relation to that application dated 17th September 2009 (Ref: MF090917L1) included various approval conditions, which are outlined in Table 6 below.

**Table 6: VicRoads Approval Conditions to a 2009 Application on the Site**

| Condition | Comment |
|---|---|
| *VicRoads note that Stage 1 of the redevelopment plan is generally consistent with the Highett Structure Plan and that vehicular access to the site is to be acquired from the Nepean Highway service road to the north and from local roads to the south-west. Accordingly, VicRoads has no objection to the development of Stage 1.* | This condition was based on traffic engineering assessments allowing for in the order of 890 vehicle trip-ends per day and 89 vehicle trip-ends during the peak hour.<br><br>These assessments suggest that in the order of 200 apartments could be constructed as a first stage, prior to needing to provide traffic signals. However, it should be noted that the 2009 assessments and associated traffic counts would have preceded the development of the Halmarc site to the south, and traffic undertaking U-turns associated with that development may have since taken up some (if not all) of the capacity. |
| *With respect to the redevelopment of the remainder of the site, VicRoads notes that a s173 agreement exists for the adjacent site at 1144 Nepean Highway which, amongst other things, is intended to facilitate the completion of a loop road that passes through both 1144 Nepean Highway and the Gasworks site with both ends of the loop road connecting to Nepean Highway. In relation to this matter, VicRoads is of the view that only one end of the loop road shall connect to the main carriageways of Nepean Highway and that this connection shall be achieved via a signalised intersection. The other end of the loop should connect to the Nepean Highway service road only.* | The ultimate 'major' intersection location and design will be subject to discussion and agreement between relevant parties and authorities at the time of submitting a permit application for the subject site and as part of the development of the land at 1144 Nepean Highway.<br><br>We note that having regard to the configuration of the surrounding road network (including the location of existing signals and streets opposite), the site's frontage would be the best place for signals in our opinion, located directly opposite Turner Road, allowing for an efficient cross-intersection design. These signals would be spaced approximately 300 metres south of the nearest existing signals (at Highett Road).<br><br>The service lane would most likely need to be terminated either side of the signals at such time that the signals are installed. |
| *At this stage it is not possible for VicRoads to comment on the most suitable locations for the major (signalised) and minor road connections to Nepean Highway. These locations will need to be determined in consultation with the City of Kingston to ensure that traffic management objectives for both the arterial and local road networks are appropriately considered.* | |
| *Nonetheless, VicRoads supports the progression of Stage 1 in accordance with the Stage 1 Access/Stages/Uses Plan dated 26th August, 2009 ahead of the resolution of access arrangements for the balance of the site.* | This support is no longer guaranteed noting the amount of time which has passed, and more importantly, the significant development which has occurred in the service lane nearby to the site in recent times. |

Having regard to the anticipated yield of dwellings on the site (refer to Section 6 below), the existing high volume of traffic on Nepean Highway and the limited capacity of the existing U-turn slots, the development could not be satisfactorily accessed without signals.

However, as suggested in the VicRoads correspondence outlined in Table 6, early stages could potentially be facilitated prior to the construction of signals, subject to further detailed assessments at such time that a planning permit application is made.

It is also important to note that access appears to be required via a connection through 1144 Nepean Highway (Hallmarc site). This has been indicated by Council, and the VicRoads correspondence outlined in Table 6 also refers to a Section 173 agreement to this affect. The preliminary concept plan allows for this connection, with the intent of the connection being that one set of signals to Nepean Highway can serve both sites. It will be important to reach an agreement between the representatives for the two sites with regard to cost apportionment of the signals.

The preliminary concept plan does not show any road connection between the main development site and Station Street/View Street (7 townhouses are shown to have direct access via individual crossovers).

From a traffic engineering perspective, a direct road connection to these streets would provide a more direct connection for site-generated traffic wishing to head westbound along Highett Road, and may reduce the site's impact on Nepean Highway and reduce queue lengths and delays at future site access signals.

It is acknowledged that providing a direct connection to Station Street/View Street may potentially increase delays for existing residents of those local streets entering and exiting to Highett Road, although it would also open up an opportunity for residents of Station and View Streets to access the arterial road network through the subject site via the new signals to Nepean Highway.

Ultimately, provision of a connection (or otherwise) to Station Street/View Street can be considered at such time that a planning application is put forward for the site.

# 7 TRAFFIC IMPACT ASSESSMENTS

## 7.1 Potential Lot Yield

Preliminary concept plans for the site indicate super lots and gross floor areas (GFA), rather than a set apartment yield.

Based on a high level of efficiency of 85% of GFA being net saleable area, and allowing 60m$^2$ per apartment, would result in a yield of 1,547 apartments. We note that apartments of this size would represent large one-bedroom apartments or small two-bedroom apartments.

This yield assessment provides an upper limit of the likely development potential of the site, and the actual yield could potentially be up to 30% less, and potentially include some larger (perhaps three-bedroom) dwellings.

In addition to the apartment super lots, 26 townhouses are shown on the preliminary concept plans. The townhouse sites are small and are likely to accommodate two-bedroom dwellings.

## 7.2 Traffic Generation

The RTA Guide to Traffic Generating Developments (2002) (RTA Guide) sets out traffic generation rates based on survey data collected in New South Wales for a range of land uses. This guide is referred to in the AustRoads Guide which is used by VicRoads, and is generally regarded as the standard for metropolitan development characteristics.

The RTA Guide sets out the following relevant traffic generation rates for medium density residential development:

Smaller Units (one and two bedrooms):

- *Daily vehicle trips = 4 – 5 per dwelling per day*
- *Weekday peak hour vehicle trips = 0.4 – 0.5 per dwelling per day*

Larger Units (three or more bedrooms)

- *Daily vehicle trips = 5 – 6.5 per dwelling per day*
- *Weekday peak hour vehicle trips = 0.5 – 0.65 per dwelling per day*

In addition, the RTA Guide sets out a peak hour traffic generation rate of 0.29 vehicle trip-ends per dwelling for high density residential apartment buildings in sub-regional (non CBD) areas.

The 'upper limit' yield estimate of 1,547 apartments and 26 townhouses is based on small (one and two bedroom) dwellings within a series of high density (6 – 8 storey) residential apartment buildings. On that basis, for the purposes of estimating traffic generation for the 'upper limit' scenario, a rate of 4 vehicle trip-ends per dwelling per day (with 0.4 vehicle trip-ends per dwelling in the peak hours) is considered appropriate.

This equates to a potential generation of approximately 6,300 vehicle trip-ends per day, with approximately 630 vehicle trip-ends entering and exiting the site during the road network peak hours.

An alternative scenario is a reduced dwelling yield (1,250 dwellings would equate to approximately a 20% reduction in the yield), but with some larger dwellings and an average traffic generation rate of 5 vehicle trip-ends per dwelling per day (and 10% in the peak hours).

This would equate to a potential generation of approximately 6,250 vehicle trip-ends per day, with approximately 625 vehicle trip-ends entering and exiting the site during the road network peak hours, which is comparable to the 'upper limit' (smaller dwelling) scenario.

Accordingly, we are satisfied that full build-out of the site is unlikely to result in a traffic generation of more than 6,300 vehicle trip-ends per day.

We note that this traffic generation estimate significantly exceeds previous 'full build out' traffic generation estimates for the site, reflecting a conservatively high upper yield estimate and higher density development potential now being considered.

We also note that in the event that some of the one-bedroom dwellings are provided without car parking, these dwellings would not contribute to the traffic generation for the site, which would reduce the impact of the development on the surrounding road network.

### 7.3 Traffic Distribution

It is expected that traffic using Nepean Highway will generally be distributed in-line with the existing splits along Nepean Highway, being roughly 60% northbound and 40% southbound traffic in the AM peak and 40% northbound and 60% southbound traffic in the PM peak.

### 7.4 Traffic Impact

Detailed traffic impact assessments will be required at such time that a planning permit application is made, in order to gain approval from VicRoads and Council.

The planning application will need to be accompanied by a traffic impact assessment report (TIAR) which would require up-to-date turning movement counts to be undertaken at the Nepean Highway/Turner Road intersection, within the Nepean Highway service road, and at the existing U-turn slots in the median break to the north and south of the site, as a minimum.

In the event that access is proposed to Station Street and View Street, turning movement counts are also likely to be required at the Station Street/Highett Road and View Street/Highett Road intersections, and the Nepean Highway/Highett Road intersection may also be required to be analysed using intersection modelling software (such as SIDRA) to VicRoads' satisfaction.

In order to accommodate the site-generated traffic, mitigating works will be required, and the extent of these works will need to be determined at such time that a planning permit is sought, with the works to be agreed with the relevant authorities (including Council and VicRoads). In the case that access the site is only taken via Nepean Highway, we are satisfied that a signalised intersection can accommodate the entire potential daily traffic generation of 6,300 vehicles. This daily traffic volume is consistent with a collector road which would typically require signals to facilitate an intersection with a major arterial such as Nepean Highway.

## 8 PEDESTRIANS & CYCLISTS

The development of the site will need to take into account provision of pedestrian/cyclist connectivity within the site and also provide for external connections.

The preliminary concept plan shows pedestrian/cycle connections through the site and to Station Street to the north, Nepean Highway service road to the east, Remington Drive (Hallmarc site) to the east and William Fry Reserve to the south.

We are satisfied that this proposed level of pedestrian/cycle connectivity is appropriate in the context of the site.

## 9 INTERNAL ROADWAY DIMENSIONS

At least one internal road is likely to be required to become a public road, being the connection between the Hallmarc site and the site's main entry to Nepean Highway (opposite Turner Road). The dimensions of this road will need to accord with Clause 56.06-8 of the Planning Scheme. Other roads within the site could potentially be private roads, in which case lesser dimensions (in particular reduced verge widths, with services potentially provided beneath the road) could be considered.

# CONCLUSIONS

Having perused relevant documents and plans and undertaken preliminary car parking and traffic generation assessments to inform the feasibility study for residential redevelopment of the former gasworks site located at 1138 Nepean Highway in Highett, we are of the opinion that: -

a) a reduction in the statutory car parking requirements is likely to gain planning approval,

b) some one-bedroom apartments could be provided without a car space,

c) some three-bedroom apartments could be provided with one car space instead of the statutory two spaces required under the provisions of Clause 52.06,

d) a reduction in the visitor parking requirement would be appropriate for apartments on this site (a visitor parking rate in the order of 0.13 spaces per dwelling is supportable having regard to empirical data from a nearby development site),

e) with regard to points a) to d) above, a permit application to reduce the statutory Clause 52.06 requirements would need to be accompanied by a Car Parking Demand Assessment as required under the provisions of Clause 52.06 of the Planning Scheme,

f) as a minimum, bicycle parking will need to be provided at the rates specified in Clause 52.34 of the Planning Scheme,

g) in the event that some dwellings are provided without a car space, bicycle parking is likely to be required to be provided in excess of the minimum statutory requirements to provide for a bicycle space for each of the dwellings which do not have a car space,

h) internal roads which are to become public (Council) roads will need to accord with the requirements of Clause 56.06-8 of the Planning Scheme with regard to carriageway and verge widths,

i) early stage(s) of development may be able to take access via the service lane subject to detailed capacity assessments,

j) traffic signals will be required (most likely directly opposite Turner Road) to facilitate suitable access to subsequent development stages,

k) other mitigating works (such as termination of the existing service lane either side of the future signals) may be required, and

l) pedestrian/cyclist connectivity within and external to the site will need to be provided, generally as shown on the preliminary concept plan.

Preliminary Concept Plans

# APPENDIX


1136 - 1138 Nepean Highway, Highett
Ground Level
1:1250 @ A3
14.11.14

CHT ARCHITECTS


1136 - 1138 Nepean Highway, Highett
Typical Upper Level
1:1250 @ A3
14.11.14

CHT ARCHITECTS

**1136 -1138 NEPEAN HIGHWAY - HIGHETT**

**Site area - 63,3000m²**

14.11.14

## TOWNHOUSES

| | Levels | GFA | Total GFA | No. of Houses | **Grand Total GFA** |
|---|---|---|---|---|---|
| Type | | | | | |
| A | 2 | 95 | 190 | 7 | **1,330** |
| B | 3 | 90 | 270 | 18 | **4,860** |
| C | 3 | 80 | 240 | 1 | **240** |
| | | | **Total** | **26** | **6,430** |

## PODUIM

| | Levels | GFA | **Total GFA** |
|---|---|---|---|
| Podium Townhouses | | | |
| A | 2 | 671 | **1,342** |
| B | 2 | 1,246 | **2,492** |
| C | 2 | 1,105 | **2,210** |
| D | 2 | 682 | **1,364** |
| E | 2 | 1,546 | **3,092** |
| F | 2 | 2,139 | **4,278** |
| G | 2 | 1,039 | **2,078** |
| | | **Total** | **16,856** |

| Parking | | | | / 30m² - (approx. spaces) |
|---|---|---|---|---|
| A | 3 | 1,730 | **5,190** | 173 |
| B | 3 | 5,272 | **15,816** | 527 |
| C | 3 | 1,866 | **5,598** | 187 |
| D | 3 | 1,803 | **5,409** | 180 |
| E | 3 | 5,052 | **15,156** | 505 |
| F | 3 | 4,190 | **12,570** | 419 |
| G | 3 | 897 | **2,691** | 90 |
| | | **Totals** | **62,430** | **2,081** |

## TOWERS

| | Levels | GFA | Total GFA | **85%** |
|---|---|---|---|---|
| A | 6 | 1,513 | 9,078 | **7,716** |
| B1 | 8 | 1,635 | 13,080 | **11,118** |
| B2 | 6 | 1,376 | 8,256 | **7,018** |
| C | 6 | 1,742 | 10,452 | **8,884** |
| D | 6 | 1,710 | 10,260 | **8,721** |
| E1 | 6 | 2,194 | 13,164 | **11,189** |
| E2 | 6 | 1,658 | 9,948 | **8,456** |
| F1 | 8 | 921 | 7,368 | **6,263** |
| F2 | 6 | 921 | 5,526 | **4,697** |
| F3 | 8 | 1,800 | 14,400 | **12,240** |
| G | 6 | 1,282 | 7,692 | **6,538** |
| | **Totals** | | **109,224** | **92,840** |

## ROAD NETWORKS & AMENITIES

| | Type | GFA |
|---|---|---|
| Road Networks | | |
| | Vecular | 7,488 |
| | Bike | 2,111 |
| | **Total** | **9,599** |

| | Area | GFA |
|---|---|---|
| Green Open Space | | |
| | P1 | 654 |
| | P2 | 606 |
| | P3 | 860 |
| | P4 | 872 |
| | P5 | 597 |
| | **Total** | **3,589** |