

Appendix D

Supporting Technical Reports Summary

DEPARTMENT OF PLANNING, LANDS AND HERITAGE	
DATE	FILE
16-Nov-2018	08-50167-1

DEPARTMENT OF PLANNING, LANDS AND HERITAGE	
DATE	FILE
16-Nov-2018	08-50167-1

Supporting Technical Reports Summary

Arboriculturist

An assessment of all trees located adjacent to the site has been undertaken to determine their current condition as well as the potential impacts of the proposed development on their ongoing health. The assessment and subsequent report provides design and construction recommendations to minimise the impact on trees adjacent to the development.

The Visual Tree Assessment (VTA) method was used to identify any health or potential structural issues that in turn could increase the risks associated with each tree.

The condition of each tree was determined as follows:

- Tree No. 163 looks to have been replaced with a new tree (of the same species) since the LandCorp arborist report was undertaken.
- Tree No. 165 looks to have been removed since the LandCorp arborist report was undertaken.
- Tree No. 167 looks to be in poor health suggesting that it may have limited life span remaining.
- Tree No. 168, No. 169, No. 170, and No. 171 look to be in 'fair' health condition at this time. Apical sections of the canopy of these trees do however look to be declining. Remaining lower-mid canopy area looks to be in reasonably good health at this time although volume does appear to be low for what would be typically expected for specimens of this species at this size/age. Cause of their declining health looks to be typical to abiotic (environment) factors rather than any pest or disease pathogen. As a result, some (if not all) of these trees may only have another 5-15 years of life span remaining; regardless of any development undertaken around them.
- Trees No.162, No. 164 and No. 166 look to be in reasonably good health based on the condition of their leaf and overall volume of leaf mass remaining in their canopy. These trees may have another 15-30 years of life span remaining.

The potential impacts of the proposed development on the above trees are outlined below:

Development of the Lot

Given the level of disturbance that already looks to have occurred during site clearing and demolition stages of the development, development of the lot itself looks likely to have minimal impact to the trees; if any.

Construction of Basement Level

Excavations for the construction of the basement level look likely to remain outside of the nominal or modified TPZ of any of the trees, and de-watering does not look to be required as part of construction. As such construction of the basement is not anticipated to have any impact to the trees.

Driveway Construction

Box-out for driveway may have some impact to the root zone of trees No.164/ No.166; depending on depth of box-out required and level of disturbance/excavation that has already occurred. However, some level of disturbance already looks to have occurred to within two metres of Tree No. 166. Increasing the levels of crossover to minimise depth of box-out excavation should help reduce the potential to impact roots from the trees. Final levels suggested to be subject to findings of exploratory excavations along the proposed crossover alignment.

Impact from Overshadowing

Following completion of the proposed development, overshadowing is likely to have minimal impact on the trees as the modelling undertaken would suggest that majority of overshadowing looks likely to occur during periods of limited/no active growth.

There are also a number of examples of specimens of this species situated in similar situations within the Perth metropolitan area (such as St Georges Terrace Perth and Richardson Street West Perth) where they are overshadowed for part of the year without major impact to their health.

Refer Appendix H - Arboriculturist Report.

Acoustics

An acoustic assessment of the proposed development was undertaken to address the comments raised by the Design Review Panel (DRC) on 20 August 2018. The environmental noise impacts resulting from the development are addressed through the Western Australian Environmental Protection (Noise) Regulations 1997 (EPNR). Compliance to relevant noise limits (assigned levels) outlined in the EPNR is compulsory.

Noise emissions from commercial tenancies proposed for the development shall comply with the EPNR criteria at the nearest sensitive receiver. To maintain a high degree of acoustic amenity for prospective residents, compliance to the EPNR criteria will also be targeted to residential balconies within the site.

Commercial Tenancy Loading Dock

A noise emissions assessment was conducted to determine noise impacts from the proposed development to the nearest sensitive receivers and internal apartment areas. The assessment has been conducted using 3D noise model modelling software package (SoundPLAN 8.0).

The predicted noise levels at all sensitive receivers, including internal apartments, are compliant to the EPNR criteria for all periods of the day. Therefore, no acoustic treatments are required for noise control.

Noise levels at the façade of the internal apartments are also acceptable as the glazing configurations have been designed to achieve the recommended internal noise level targets due to noise impact from the traffic. The noise impacts from traffic are expected to be significantly higher than the noise impacts due to the loading dock.

Commercial Mechanical Exhaust

The proposed location of the commercial mechanical exhaust serving restaurants and supermarket is on the roof of the building. A noise emissions assessment was conducted to determine noise impacts from the proposed development to the nearest sensitive receivers and internal apartment areas. The assessment has been conducted using 3D noise model modelling software package (SoundPLAN 8.0).

The smoke exhaust fans will only be used during emergencies and during testing periods. Two scenarios were considered for the assessment in order to assess the scenario where the smoke exhaust fans are being used separately:

- Scenario A: All commercial mechanical exhaust fans except for the smoke exhaust fans; and
- Scenario B: All commercial mechanical exhaust fans including the smoke exhaust fans.

The predicted noise levels at the nearest sensitive receivers including the apartment units due to the commercial mechanical exhaust fans with the exception of the smoke exhaust fans were compliant to the EPNR criteria but will require the following treatments:

- Solid noise barrier at least one metre above the height of the mechanical equipment and a maximum of 0.5 metres away from the equipment; or
- The use of acoustic attenuators.

The predicted noise levels due to all the mechanical exhaust fans including the smoke exhaust fans are not compliant to the EPNR criteria. It is expected that the noise emissions levels will compliant once the following mitigation strategies are incorporate, pending detailed information from the mechanical engineer:

- Acoustic treatments to the mechanical exhaust fans as per Scenario A;
- Construction of solid noise barriers around the smoke exhaust fans;
- The use of acoustic attenuators for the smoke exhaust fans; and
- Testing of the smoke exhaust fans shall only be carried out between 0700 AM and 1900 PM on Mondays - Saturdays.

Refer Appendix N - Acoustic Report.

Landscape

The landscape design for the proposed development recognises the importance of the garden spaces for residents and visitors alike. Within the site, both the shared and private landscapes provide opportunities to add amenity and create 'special places' for residents to spend time with loved ones or a take break from the day-to-day activities. Landscape treatments to these zones will have an important and positive effect each resident's lifestyle and the community around them. The design teams' holistic approach to medium density living takes this project beyond technical delivery, in order to address cultural, social, intellectual and creative needs. Equitable access to gardens, courtyards, open space, fresh air and sunlight all contribute to better quality of life.

External areas in this apartment and retail environment have been planned, designed and managed in accordance with the requirements of Landcorp's Precinct Guidelines and WAPC's Design WA - Draft Apartment Design Guidelines. The design has endeavoured to meet these standards in innovative, creative and collaborative ways to ensure the positive experience of the place remains central to residents, visitors, and staff alike. Similarly, the planning and design of spaces has considered the heritage, site assets, long term maintenance needs and whole- of-life costs for the project.

Landscaping has been designed to build sense of place on the site which references the former uses and surrounds. Key themes identified to guide the landscape planning of the site include medical facilities, Karrakatta vegetation complex and Art Deco/Moderne style architecture.

The proposed landscape arrangements will be textured, verdant and focussed on the concept of greening vertical planes with simple detailing. This will be achieved through an innovative network of lightweight planters positioned to support climbing and cascading plants. Greening and shading will be further complemented by large, deep soil planters, constructed to support the establishment of extensive, flowering and deciduous tree canopies throughout the complex. This landscape will work as 'pattern-scape' to be looked down onto and engage with viewers on terraces whilst providing privacy and framed views to the vistas beyond the site boundary.

Ground Level

Planting themes will draw up on the natural setting of the site at ground level making reference to the broad and diverse flower palette of the Karrakatta vegetation complex local to the bushland tracts nearby. Selections from this diverse complex have been made to ensure long term durability of planting in areas ranging from deep shade to the south side of built form along with compact flowering groundcovers and interesting textured specimens that will support habitat and minimise the need for heavy irrigation.

Podium

The podium levels of the development are inspired by post-war period plantings typical of the era and the character of the hospital grounds. These plants are generally textural plants and flowering trees highlighted by modern cultivars of these species in compact and textural formalised combinations. Trees and shrubs selected for use on the podium level shall be suitable for the difficulties associated with rooftop planting, including areas of deep shade and elevated, exposed locations and shade tolerant edible species to support a viable community garden rationale.

Hard Landscaping

A simple, durable, safe and distinctive palette of hard landscape materials has been selected consisting of concrete in a variety of colours, textures and formats as well as hardwood decking, local stone, and corrosion-resistant steel and aluminium. The materials are arranged to emphasise the hierarchy of precincts and linkages across the site. These complementary materials will be installed using simple, coordinated detailing and a high quality of workmanship. Natural granite has been selected as a signature material, making reference to the building materials.

In situ concrete and stone unit pavers with an exfoliated, non-slip finish have been selected to blend with the existing pavements with high contrast tactile indicators to be consistent with universal access standards like AS1428 for luminance contrast against a variety of finishes. Local hardwood decking and battens are included utilising timber salvaged from the site to provide a level of warmth and comfort not offered by steel, stone and concrete.

Streetscape planters will be detailed in durable off-form concrete, clad with perforated corten steel (wax-sealed to arrest staining) and articulated with geometries highlighted in sense of place analysis on page 6 of the Landscape Report and Plans. Panels will be LED backlit in key areas to provide subtle way finding mechanisms and accent lighting. The proportional dimensions are drawn from the scale of dado and art-deco features of Victoria House as a contemporary cultural reference.

Refer Appendix K - Landscape Report and Plans.

Crime Prevention Through Environmental Design (CPTED)

Crime prevention through environmental design (CPTED) is a multi-disciplinary approach to deterring criminal behavior through environmental design. The Landscape Report prepared by Propagule includes specific commentary on how the proposed development addresses the key CPTED principles, as follows:

Safety and Security

Areas that are not well-defined in terms of function can attract anti-social behaviour as defined by the principles of Crime Prevention through Environmental Design. Clearly defining the functions for public areas through this design helps to establish a perception of appropriate behaviours, particularly at night when most negative behaviour generally occurs.

Our intent for this project will be to clearly articulate the function of all external spaces around the building and to provide subtle indirect lighting to achieve good visibility with minimal impact to residents nearby. Passive Surveillance provides the perception that the space is being 'watched' which helps deter anti-social behaviour and makes the place feel secure.

Place Activation

Activation of spaces is a critical move towards making a place feel safe and secure. By introducing functions that activate a place, a sense of community or 'social capital' prevails. This in turn helps people feel welcome and to 'look out' for one another. Flexible spaces for events and passive recreation are becoming more popular in recent times as our society diversifies and densifies with population growth. Central flexibility to accommodate more events throughout the year whilst supporting day to day recreation activities requires pre-planned services provision.

Passive Surveillance

The principles described above represents the core of CPTED through passive surveillance. Passive surveillance occurs when people are attracted to overlook a public area. Our design rationale is to keeping clear views, and an open address to the street and public open spaces. Access routes for pedestrians and residents have been strategically placed to create a network that will contribute to passive surveillance whilst maintaining privacy.

Maintenance

Maintaining under-pruned canopies with low planting and turf adjacent activity areas precludes hiding-places or dead-ends developing over time as vegetation matures. Furniture, gardens and paving will be maintained to a high standard ensuring people feel welcome and comfortable to gather in the outdoor areas of the complex.

Refer Appendix K - Landscape Report and Plans.

Traffic Impact Assessment

A Traffic Impact Assessment (TIA) has been prepared in accordance with the WAPC Transport Impact Assessment Guidelines: Volume 4 – Individual Developments (2016) and aims to outline the transport aspects of the proposed development, with a focus on accessibility, traffic operation, circulation and car parking.

The site accesses are described below.

- Residential Access onto Victoria Avenue – full movement.
- Commercial/Supermarket Access onto Seymour Street – left in and left out only.
- Laneway Entry – left in and right in only.
- Laneway Exit – left out and right out only..
- Service Access onto Selby Street – left in and left out only.

A sightline assessment has been conducted in accordance to AS2890.1 requirements and shows no visibility obstructions at the residential car park access and the basement commercial/supermarket car park.

The statutory bicycle parking and End-of-Trip (EoT) Facility requirements are defined by the Improvement Scheme and *Green Star*. Green Star compliant residential bicycle bays, residential visitor bicycle bays and commercial visitor bicycle bays have been provided with commercial staff short term and long term bicycle bays and commercial staff lockers and showers provided in reference to the Improvement Scheme with minor variations.

Access for all delivery and waste vehicles will be provided off the proposed access along Selby Street and all loading and unloading activity will be conducted within the site. The City of Subiaco (where the section of Selby Street is located along) requires all delivery and waste vehicles to enter and exit the site in forward gear only with all turning manoeuvres to be conducted within the site boundaries. A swept path analysis has been undertaken for the largest design vehicle (12.5 metre HRV) and an eight metre bulk waste vehicle entering and exiting the site. Overall, the results of the swept path show that the 12.5 metre HRV and bulk waste vehicle is able to safely enter and exit the loading dock area, avoiding any structural elements.

AS2890.1 specifies a maximum of one in 20 (5%) between edge of frontage road and the property line, building alignment or pedestrian path and for at least the first six metres into the car park. While the proposed residential ramp geometry is proposed to be one in eight, this is not considered to represent an operational or safety concern in this location for the following reasons:

- The provision of a one in 20 gradient for the first six metres into the car park is primarily to ensure that exiting vehicles have clear visibility of pedestrians. A steep upgrade can angle the vehicle in such a way that visibility may be limited by the hood of the car. The proposed residential car park ramp is a downgrade ramp which does not have this issue.
- Appropriate truncations have been provided in accordance to AS2890.1 requirements to ensure that clear pedestrian visibility is provided.
- The proposed one in eight ramp gradient is still well below the maximum allowable gradient of one in four as specified in AS2890.1. Vehicles can therefore approach the lot boundary slowly and in full control.

SIDRA analyses were conducted on surrounding intersections to assess predicted increased traffic volumes and new intersection treatments and are summarised below:

- The Selby Street/Nash Street intersection can accommodate the additional traffic generated by the site for all scenarios.
- The Selby Street/Victoria Avenue intersection can accommodate the additional traffic generated by the site for all scenarios.
- The Selby Street/Lemnos Street intersection can accommodate the additional traffic generated by the site for all scenarios.

Refer Appendix E – Traffic Impact Statement.

Waste Management

The Waste Management Plan (WMP) describes the responsibilities of the Strata Manager, Caretaker and occupants of the complex and describes the spatial allocation and management of waste services for the complex.

The WMP must satisfy the requirements of the City of Nedlands which requires that all residential collections, including bulk waste are to be carried out by its waste collection contractors as authorised by the City of Nedlands. As the City of Nedlands does not have guidelines for preparing WMP's, guidelines from the City of Perth and the City of South Perth have been used to guide the preparation of the WMP for the proposed development.

The proposed development will use 660 litre Mobile Garbage Bins (MGBs) for the collection of all waste and recycling generated by the residential apartments and commercial tenants of the complex. Two bin stores are proposed for the residential aspect of the complex. MGBs will have to be moved from one residential bin store to the other and the use of 660 Litre MGBs will make it easier to relocate the full MGBs. It is intended that the City of Nedlands will provide the garbage and recycling collection services for residential collections once weekly. The commercial 660 litre MGBs will be collected three times a week for both garbage and recycling by a private waste contractor engaged by Strata Management.

The same collection process will be used for both residential and commercial collections and is detailed as follows:

- The waste collection truck will drive into the loading dock in a forward motion and reverse up to the bin collection area that is adjacent to the main bin store;
- MGBs will be brought to the truck from the bin store by the waste collection driver;
- The waste collection driver will empty the MGBs into the truck;
- Empty MGBs will be taken back in to the bin store by the waste collection driver; and
- Waste collection truck will exit the loading dock and continue on its collection route.

The collection area is built with sufficient height clearance and floor area to facilitate the easy access and exit of heavy rigid chassis vehicles.

The commercial tenants will deliver waste and recycling to the commercial bin store located adjacent to the loading dock. The commercial bin store will have an area of 57m², considered to be of appropriate size as per the City of South Perth Waste Guidelines for New Developments. At ground level will be the main bin store for storage of residential 660 litre MGBs. The main bin store has a combined area of 211m² and includes storage for the requisite number of 660 litre residential MGBs (as required by the City of Nedlands), two bin chutes, two bin carousals located below the bin chutes, bulk waste storage and a bin wash bay. On the northern side of Level 1 is a satellite bin store of 28m² for residential use. The satellite bin store supports a small number of MGBs, approximately six, to collect waste and recycling from the northern section of the residential tower.

Waste chutes will be used to transfer garbage and recycling to the two residential bin stores. Two waste chutes will be used in each bin store, one for garbage and one for recycling. At the end of the garbage chutes will be compaction equipment that will compact the waste at a design compaction ratio of 3:1. Once the garbage is compacted the billet of garbage is dropped into the MGB that is below the chute.

The bulk waste collection for residential tenants will utilise two 4.5m³ skip bins provided either by the City of Nedlands or Strata Management. The waste collection contractor delivers skip bins to the collection area of the loading dock and collects the skip bins when full.

Refer Appendix L – Waste Management Plan.