ATTACHMENTS

ATTACHMENT 1
PROPOSED CONDITIONS OF CONSENT

GENERAL

The following conditions of consent included in this Part identify the requirements, terms and limitations imposed on this development.

1. **Approved Plans/Documents.** Except where otherwise provided in this consent, the development is to be carried out strictly in accordance with the following plans (stamped approved by Council) and support documents:

Document Description	Date	Plan No/Reference
Cover sheet – Context Plan	10/09/14	DA00 Issue B
Basement 03 +02 plan	25/09/14	DA04 Issue B
Basement 01 Plan	25/09/14	DA05 Issue C
Ground Floor + L 1 plan	25/09/14	DA06 Issue D
L 2 & 3	10/09/14	DA07 Issue B
L4 & 5	10/09/14	DA08 Issue B
Roof Plan	10/09/14	DA09 Issue B
Elevations	25/09/14	DA10 Issue C
Elevations	10/09/14	DA11 Issue B
Section A-A	10/09/14	DA12 Issue B
Section B	10/09/14	DA13 Issue B
Landscape Plan	09/05/14	LS01-DA Issue A

Prior to the issue of a Construction Certificate, the following amendments shall be made:

a. **Amended Landscaping Plan:** A revised Landscaping Plan is to be submitted and approved by Principal Certifying Authority prior to the issue of the Construction Certificate. The amended landscaping plan is to reflect the amended ground floor architectural plan (DA06 Issue D) including details of the Disabled Access lifts.

2. **Building Code of Australia.** All building works approved by this consent must be carried out in accordance with the requirements of the Building Code of Australia.

3. **BASIX.** Compliance with all commitments listed in BASIX Certificate numbered 540042M_03, dated 19 September 2014. Any architectural and/or fixture changes to the development will require the submission of a new BASIX certificate. Please note that modifications may require the submission of a Section 96 application in accordance with the Environmental Planning & Assessment Act.

4. **Support for neighbouring buildings.** If the development involves excavation that extends below the base of the footings of a building on adjoining land, the person having the benefit of the development consent must, at the person's own expense:

(a) Protect and support the adjoining premises from possible damage from the excavation, and
(b) Where necessary, underpin the adjoining premises to prevent any such damage, in accordance with relevant Australian Standards.

5. **Signage – not approved unless shown on plans.** This consent does not authorise the erection of any signs or advertising structures not indicated on the approved plans. Separate approval must be obtained from Council for any additional signs, unless such signage is "exempt development". Note: The glass frontage of the two shops along the street frontages and the southern elevation is not to be covered over with signage. Signage is not allowed to cover more than 25% of the glass wall.

6. **Security Grilles.** This consent does not authorise the erection of any security grilles or barriers on the shopfront. Separate approval must be obtained for any such works.

7. **Submission of Development Applications.** A separate Development Application is to be submitted to Council for the use of each of the retail areas, unless such use falls within "exempt and complying development".

8. **Hours of work.** Building activities (including demolition) may only be carried out between 7.00am and 7.00pm Monday to Friday (other than public holidays) and between 8.00am and 4.00pm on Saturday. No building activities are to be carried out at any time on a Sunday or a public holiday.

9. **Hoardings.** A hoarding or fence must be erected between the work site and any adjoining public place.

10. **Illumination of public place.** Any public place affected by works must be kept lit between sunset and sunrise if it is likely to be hazardous to persons in the public place.

11. **Development to be within site boundaries.** The development must be constructed wholly within the boundaries of the premises. No portion of the proposed structure shall encroach onto the adjoining properties. Gates must be installed so they do not open onto any footpath.

12. **Public space.** The public way must not be obstructed by any materials, vehicles, refuse, skips or the like, under any circumstances, without prior approval from Council.

13. **Retaining Walls and Drainage -** If the soil conditions require it:

    a) retaining walls associated with the erection or demolition of a building or other approved methods of preventing movement of the soil must be provided.
    b) adequate provision must be made for drainage.

14. **Redundant driveways.** The redundant driveways along Porter and Church Streets MUST be removed and replaced with Kerb and Gutter to match existing.

15. **Design and Construction Standards.** All engineering plans and work shall be carried out in accordance with the requirements specified within Council's publication *Environmental Standards Development Criteria* and relevant Development Control Plans except otherwise as amended by conditions of this consent.

16. **Service Alterations.** All mains, services, poles, etc., which require alteration shall be altered at the applicant's expense.

17. **Restoration.** Public areas must be maintained in a safe condition at all times. Restoration of disturbed road and footway areas for the purpose of connection to public utilities will be carried out by Council following submission of a permit application and payment of appropriate fees. Repairs of damage to any public stormwater drainage facility will be carried out by Council following receipt of payment. Restoration of any disused gutter crossings will be carried out by Council following receipt of the relevant payment.

18. **Road Opening Permit.** The applicant shall apply for a road-opening permit where a new pipeline is proposed to be constructed within or across the footpath. Additional road opening permits and fees may be necessary where there are connections to public utility services (e.g. telephone, electricity, sewer, water or gas) required within the road reserve. No works shall be carried out on the footpath without this permit being paid and a copy kept on the site.

19. **Engineering plans assessment and works inspection fees** – The applicant is to pay to Council for assessment of all engineering and public domain plans and works inspection fees, in accordance with Council's Schedule of Fees & Charges, prior to any approval being granted by Council.

DEMOLITION CONDITIONS

The following conditions are imposed to ensure compliance with relevant legislation and Australian Standards, and to ensure that the amenity of the neighbourhood is protected.

A Construction Certificate is not required for Demolition.

20. **Provision of contact details/neighbour notification.** At least 7 days before any demolition work commences:

    (a) Council must be notified of the following particulars:
        (i) The name, address, telephone contact details and licence number of the person responsible for carrying out the work; and
        (ii) The date the work is due to commence and the expected completion date

    (b) A written notice must be placed in the letter box of each property identified in the attached locality plan advising of the date the work is due to commence.

21. **Compliance with Australian Standards.** All demolition work is to be carried out in accordance with the requirements of the relevant Australian Standard(s).

22. **Excavation**

(a) All excavations and backfilling associated with the development must be executed safely, properly guarded and protected to prevent the activities from being dangerous to life or property and, in accordance with the design of a structural engineer.

(b) A Demolition Work Method Statement must be prepared by a licensed demolisher who is registered with the Work Cover Authority, in accordance with AS 2601-2001: *The Demolition of Structures*, or its latest version. The applicant must provide a copy of the Statement to Council prior to commencement of demolition work.

23. **Asbestos - Remediation of land following detailed site investigation** - The detailed site investigation report has identified asbestos on the land. The asbestos must be removed in accordance with NSW Workcover guidelines during demolition and clearing of the land.

    A clearance certificate from a suitably qualified occupational hygienist verifying that the asbestos has been removed must be submitted to the Principal Certifying Authority before any further work commences.

24. **Contaminated soil** - All potentially contaminated soil excavated during demolition or construction work must be stockpiled in a secure area and be assessed and classified in accordance with the *Waste Classification Guidelines* (DECCW, 2009) before being transported from the site.

25. **Discovery of Additional Information**. Council and the Principal Certifying Authority (if Council is not the PCA) must be notified as soon as practicable if any information is discovered during demolition or construction work that has the potential to alter previous conclusions about site contamination.

26. **Asbestos – disposal.** All asbestos wastes must be disposed of at a landfill facility licensed by the New South Wales Environmental Protection Authority to receive that waste. Copies of the disposal dockets must be retained by the person performing the work for at least 3 years and be submitted to Council on request.

27. **Waste management plan.** Demolition material must be managed in accordance with the approved waste management plan. Council's DCP 2010, Part 7.2 – Waste Minimisation and Management, sets out your obligations for waste management.

28. **Disposal of demolition waste.** All demolition waste must be transported to a facility or place that can lawfully be used as a waste facility for those wastes.

29. **Demolition Work.** In relation to demolition, all work is to be carried out in accordance with the requirements of AS 2601 *(The Demolition of Structures)*.

30. **Security Fencing.** The site must be fenced prior to the commencement of construction, and throughout demolition and/or excavation and must comply with WorkCover New South Wales requirements and be a minimum of 1.8m in height. Measures are to be taken to prevent unauthorized entries of the site at all times during demolition and construction.

31. **Dust Control.** Adequate precautions must be taken to control the emission of dust from the site during demolition and construction work. These precautions could include minimizing soil disturbance, use of water sprays, erecting screens and not carrying out dusty work during windy conditions.

PRIOR TO CONSTRUCTION CERTIFICATE

A Construction Certificate must be obtained from a Principal Certifying Authority to carry out the relevant building works approved under this consent. All conditions in this Section of the consent must be complied with before a Construction Certificate can be issued.

Council Officers can provide these services and further information can be obtained from Council's Customer Service Centre on 9952 8222.

Unless an alternative approval authority is specified (eg Council or government agency), the Principal Certifying Authority is responsible for determining compliance with the conditions in this Section of the consent.

Details of compliance with the conditions, including plans, supporting documents or other written evidence must be submitted to the Principal Certifying Authority.

32. **Section 94.** A monetary contribution for the services in Column A and for the amount in Column B shall be made to Council prior to the issue of any **Construction Certificate**:

A – Contribution Type	**B – Contribution Amount**
Community & Cultural Facilities	$148,667.70
Open Space & Recreation Facilities	$356,059.16
Civic & Urban Improvements	$127,518.96
Roads & Traffic Management Facilities	$18,327.20
Cycleways	$10,865.32
Stormwater Management Facilities	$35,296.94
Plan Administration	$2,928.60
The total contribution is	**$699,663.89**

These are contributions under the provisions of Section 94 of the Environmental Planning and Assessment Act, 1979 as specified in Section 94 Development Contributions Plan 2007 (2010 Amendment) adopted by City of Ryde on 16 March 2011.

The above amounts are current at the date of this consent, and are subject to **quarterly** adjustment for inflation on the basis of the contribution rates that are applicable at time of payment. Such adjustment for inflation is by reference to the Consumer Price Index published by the Australian Bureau of Statistics (Catalogue No 5206.0) – and may result in contribution amounts that differ from those shown above.

A copy of the Section 94 Development Contributions Plan may be inspected at the Ryde Planning and Business Centre, 1 Pope Street Ryde (corner Pope and Devlin Streets, within Top Ryde City Shopping Centre) or on Council's website http://www.ryde.nsw.gov.au.

33. **Compliance with Australian Standards.** The development is required to be carried out in accordance with all relevant Australian Standards. Details demonstrating compliance with the relevant Australian Standard are to be submitted to the Principal Certifying Authority prior to the issue of the **Construction Certificate**.

34. **Security deposit.** The Council must be provided with security for the purposes of section 80A(6) of the *Environmental Planning and Assessment Act 1979* in a sum determined by reference to Council's Management Plan prior to the release of the **Construction Certificate.** (category: Other buildings with delivery of bricks or concrete or machine excavation)

35. **Fees.** The following fees must be paid to Council in accordance with Council's Management Plan prior to the release of the **Construction Certificate**:

    (a) Infrastructure Restoration and Administration Fee
    (b) Enforcement Levy

36. **Long Service Levy.** Documentary evidence of payment of the Long Service Levy under Section 34 of the Building and Construction Industry Long Service Payments Act 1986 is to be submitted to the Principal Certifying Authority prior to the issuing of the **Construction Certificate**.

37. **Sydney Water – quick check.** The approved plans must be submitted to a Sydney Water Quick Check agent or Customer Centre, prior to the release of the **Construction Certificate**, to determine whether the development will affect any Sydney Water assets, sewer and water mains, stormwater drains and/or easements, and if further requirements need to be met. Plans will be appropriately stamped.

    Please refer to the website www.sydneywater.com.au for:

    - Quick Check agents details - see Building, Developing and Plumbing then Quick Check; and
    - Guidelines for Building Over/Adjacent to Sydney Water assets - see Building, Development and Plumbing then Building and Renovating.

    Or telephone 13 20 92.

38. **Road and rail noise/vibration.** The development must be acoustically designed and constructed to meet the relevant provisions of Australian Standard AS 2107:2000 *Recommended design sound levels and reverberation times for building interiors*. Written endorsement of compliance with these requirements must be obtained from a suitably qualified person.

39. **Construction Works.** All demolition and construction vehicles are to be contained wholly within the site and vehicles must enter the site before stopping. A construction zone will not be permitted on Church Street.

40. **Reflectivity of materials.** Roofing and other external materials must be of low glare and reflectivity. External glass to be non-reflective and have a maximum of 20% tint. Details of finished external surface materials, including colours and texture must be provided to the Principal Certifying Authority prior to the release of the **Construction Certificate**.

41. **Design Verification in Respect of SEPP 65 -** Prior to a Construction Certificate being issued with respect to this development, the Principal Certifying Authority (PCA) is to be provided with a written Design Verification from a qualified designer. The statement must include verification from the designer that the plans and specifications achieve or improve the design quality of the development to which this consent relates, having regard to the design quality principles set out in Part 2 of State Environmental Planning Policy No. 65 – Design Quality of Residential Flat Development. This condition is imposed in accordance with Clause 143A of the Environmental Planning and Assessment Regulation 2000.

42. **Acoustical Assessment Report** -. The development is to incorporate all of the recommendations contained in Sections 5 & 6 of the DA Acoustical Report prepared by SLR Global Environmental Solutions dated 7 May 2014 with regards to glazing construction, external walls, roof/ceiling construction, external doors and mechanical ventilation. To ensure acceptable acoustic amenity within the development, the development is to be constructed in accordance with AS3674-1989 and AS3671-1987. Details of the measures to be undertaken as recommended in the Acoustic report are to be submitted to the Principal Certifying Authority prior to release of the **Construction Certificate.** Copy of the report by SLR Global Environmental Solutions is attached as Attachment 2 of the consent.

43. **Accessibility Report.** The development is to incorporate all of the recommendations on contained in the Accessibility Report prepared by BCA dated 2 May 2014. A copy of the Accessibility and DDA Report is attached as Attachment 3 of the consent.

44. **Arborist Report.** The development is to incorporate all of the recommendations/requirements contained in the Arboricultural Impact Appraisal and Method Statement Report by Victor John Molyneaux dated 28 August 2014 Details of the protections measures to be undertaken as recommended in the report are to be submitted to the Principal Certifying Authority prior to release of the **Construction Certificate.** No trees works are to be undertaken on any trees located on Hayes Reserve. A copy of the Arborist Report is attached as Attachment 4 of the consent.

45. **Adaptable Units.** A total of seven adaptable units are to be provided within the development. Theses apartments are to comply with the provisions of a Class A adaptable unit as specified in AS 4299. Details demonstrating compliance is to be provided on the Construction Certificate plans. Prior to the issue of the Construction

Certificate, a suitably qualified access consultant is to certify that the development achieves the spatial requirements of AS4299.

46. **Storage.** In addition to kitchen cupboards and bedroom wardrobes, units are to be provided with accessible storage facilities at the following rates:
    - studio apartments - 6.0m³
    - one-bedroom apartments - 6.0m³
    - two-bedroom apartments - 8.0m³

    The Construction Certificate plans are to demonstrate compliance with the above.

47. **Details of BASIX Commitments.** The Construction Certificate plans and specifications are to detail all of the 'CC plan' commitments of the BASIX Certificate.

48. **Energy Efficiency.** The retail component of the building must be in accordance with the City of Ryde's DCP in terms of energy efficiency and the following:

    (a) The total anticipated energy consumption for the base building is no greater than 450 Mega Joules / annum / metre square for commercial uses and 900MJ/am^2 for retail uses.
    (b) The use of electrical appliances such as dishwashers, refrigerators, freezers and washing machines are to be provided with a minimum star of 3.5.
    (c) The development is to incorporate energy-efficient lighting, motion detectors and dimmers.
    (d) AAA or AAAA rated fittings and fixtures are to be used to ensure high levels of water efficiency. Where fittings cannot be AAA or AAAA, self-regulating flow restrictors will be provided on the supplies to limit the discharges to levels equivalent to AAA ratings.

    The Construction Certificate plans are to demonstrate compliance with the above.

49. **Arts and Cultural Plan.** Prior to the issue of any Construction Certificate, a site specific Public Arts Plan is to be submitted for approval by Council. This plan is to be prepared by an arts and cultural planner and will be required to address the following:
    - Identify opportunities for the integration of public art in the proposed development;
    - Identify themes for public art;
    - Durability, robustness and longevity of the public art; and
    - Demonstrate how public art is incorporated in the site and built form design.
    - The public art to be undertaken is to have a value of 1% as a guide of the estimated costs of the works as identified on the development application form. Details of the costings are to be provided within the Public Arts Plan.

50. **Location of Service Infrastructure / Utilities -** All service infrastructure/utilities including fire hydrants, gas meters and the like shall be located within the building envelope. No service ducts or pipes are to be visible from the street. Where this is not possible and subject to Council approval such infrastructure shall be located on

the subject site and appropriately screened from view. Details of all service infrastructure/utilities are to be approved prior to issue of the **Construction Certificate.**

51. **Soil Depth over Structures.** Where planting is proposed over a structure, the development is to achieve the minimum standards for soil provision as contained in the Residential Flat Design Code. Information verifying that the development complies with these requirements is to be provided on the Construction Certificate plans.

52. **Driveway Grades.** The maximum grade of all internal driveways and vehicular ramps etc. shall comply with relevant section of AS 2890.1 & AS2890.2 where applicable. Detailed engineering plans including engineering certification indicating compliance with this condition are to be submitted with the Construction Certificate application.

53. **Disabled Car Parking**. Nine Disabled Car Parking spaces are to be provided within the development for people with a disability. Each of these spaces are to be clearly signposted as Disabled Parking with the width of these spaces being a minimum of 3.6 metres and a vertical clearance of 2.55 metres. One disabled parking space is to be allocated for retail use and one disabled space for visitor use. Seven disabled parking spaces are to be allocated for the residential component with a disabled parking space allocated to each of the adaptable unit.

54. **Bicycle Parking**. A minimum of 9 bicycle parking rails or lockers designed and installed in accordance with Australian Standard A52890.3, must be provided in a suitable location for the convenience of residents and visitors to the site.

55. **Boundary Levels**. The applicant is to apply to Council, pay the required fee, and have issued site specific alignment levels. These levels shall be incorporated into the design of the internal driveway, carparking areas, landscaping and stormwater drainage plans and must be obtained prior to the issue of the construction certificate.

56. **Vehicle Footpath Crossing(s).** Concrete footpath crossings and associated gutter crossovers must be constructed fronting the approved vehicle access location(s). The crossing(s) must be constructed in plain reinforced concrete with location, design and construction shall conform to Council requirements and AS 2890.1 – 2004 (Offstreet Parking). Accordingly, prior to issue of Construction Certificate an application shall be made to Council's Public Works division for driveway crossing alignment levels. These issued levels are to be incorporated into the design of the driveway access and clearly delineate on plans submitted with the Construction Certificate application.

57. **Vehicle Access & Parking.** All internal driveways, vehicle turning areas, garages and vehicle parking space/ loading bay dimensions must be designed and constructed to comply with the relevant section of AS 2890 (Offstreet Parking standards).

58. **Stormwater Management.** To ensure that stormwater runoff from the development is drained in an appropriate manner, without impact to neighbouring properties and downstream systems, a detailed plan and certification of the development's stormwater management system must be submitted with the application for a Construction Certificate.

Stormwater runoff on the site shall be collected and piped by gravity flow to the kerb inlet pit in Church Street, generally in accordance with the plans by Engineering Studio (Refer to Project No. 11064 Dwgs C00.01 to C05.01 Rev A dated 9 May 2014).

The detailed plans, documentation and certification of the system must be prepared by a chartered civil engineer with NPER registration with Engineers Australia and comply with the following;

- The certification must state that the submitted design (including any associated components such as pump/ sump, absorption, onsite dispersal, charged system) are in accordance with the requirements of AS 3500.3 (2003) and any further detail or variations to the design are in accordance with the requirements of City of Ryde – DCP 2010 Part 8.2 (Stormwater Management).
- The submitted design is consistent with the approved architectural and landscape plan and any revisions to these plans required by conditions of this consent.

59. **Stormwater Management – Connection to inground drainage system.** The connection to the inground stormwater drainage infrastructure located in Church Street will require approval under Section 138 of the Roads Act prior to the issue of a Construction Certificate. The requirements of the RMS are to be satisfied and will likely entail detailed engineering plans to be submitted with the application.

60. **Geotechnical – Design certification and monitoring program.** The proposed development involves excavation that has potential to adversely impact neighbouring property if undertaken in an inappropriate manner. To address this, the applicant must engage a suitably qualified and practicing geotechnical engineer to oversee the design and construction of all subsurface structures associated with the development.

    This engineer is to prepare a Geotechnical Monitoring Program (GMP) for implementation during the construction. The GMP must address the following requirements and any other geotechnical aspects of the development identified which pose a risk to adjoining property that may arise through further subsurface investigation;

    a) Certification that the civil and structural details of all subsurface structures are designed to provide appropriate support and retention, to ensure there will be no ground settlement or movement, during excavation or after construction, sufficient to cause an adverse impact to adjoining property or public infrastructure.

    b) A Geotechnical Report and Monitoring Program to be implemented during construction that;
        - is based on a geotechnical investigation of the site and subsurface conditions,
        - details the location and type of monitoring systems to be utilised, including those that will detect the deflection of all shoring structures, settlement and excavation induced ground vibrations to the relevant Australian Standard;

- details recommended hold points and trigger levels of any monitoring systems, to allow for the inspection and certification of geotechnical and hydro-geological measures by the professional engineer; and;
- details action plan and contingency for the principal building contractor in the event these trigger levels are exceeded.

The GMP is to be submitted for the approval of the Accredited Certifier prior to the issue of the Construction Certificate.

61. **Dilapidation Survey.** A dilapidation survey is to be undertaken that addresses all properties that may be affected by the construction work, namely "Hayes Reserve" adjoining the southern side of site, No. 11 Porter Street and 113 Church Street. A copy of the dilapidation survey is to be submitted to the Accredited Certifier *and Council* prior to the release of the Construction Certificate.

62. **Dilapidation Survey – Public Infrastructure.** To clarify any claims of damage to public infrastructure of the proposed development, that may arise during construction of the development, a dilapidation report of existing public infrastructure fronting the proposed development and in the vicinity of the proposed development must be undertaken. The report is to note observable defects, including a description of the location, nature of the defect and a photographic record. The report is to encompass damage to any of the following infrastructure.
    - Road pavement
    - Kerb and gutter
    - Constructed footpath.
    - Drainage pits.
    - Traffic signs
    - Any other relevant infrastructure

    The report must be submitted to Council's Public Works prior to the issue of the construction certificate and with another similar report submitted at completion and prior to issue of Occupation Certificate. The reports shall be used by council to assess whether restoration works will be required prior to the issue of the Occupation Certificate.

63. **Construction Traffic Management Plan - Approval.** As a result of the site constraints, limited vehicle access and parking, a Construction Traffic Management Plan (CTMP) and report shall be prepared by an RMS accredited person and submitted to and approved by Council prior to issue of Construction Certificate. This condition is to ensure public safety and minimise any impacts to the adjoining pedestrian and vehicular traffic systems. The CTMP is intended to minimise impact of construction activities on the surrounding community, in terms of vehicle traffic (including traffic flow and parking) and pedestrian amenity adjacent the site.

    The CTMP must:-
    - Make provision for all construction materials to be stored on site, at all times.
    - Specify construction truck routes and truck rates. Nominated truck routes are to be distributed over the surrounding road network where possible.
    - Provide for the movement of trucks to and from the site, and deliveries to the site. Temporary truck standing/ queuing locations in a public roadway/ domain

in the vicinity of the site are not permitted unless approved by Council's Public Works.

- Include a Traffic Control Plan prepared by an RMS accredited traffic controller for any activities involving the management of vehicle and pedestrian traffic.
- Specify that a minimum seven (7) days notification must be provided to adjoining property owners prior to the implementation of any temporary traffic control measures.
- Include a site plan showing the location of any site sheds, location of requested Work Zones, anticipated use of cranes and concrete pumps, structures proposed on the footpath areas (hoardings, scaffolding or shoring) and any tree protection zones around Council street tree's.
- Take into consideration the combined construction activities of other development in the surrounding area. To this end, the consultant preparing the CTMP must engage and consult with developers undertaking major development works within a 250m radius of the subject site, west of Church Street to ensure that appropriate measures are in place to prevent the combined impact of construction activities, such as (but not limited to) concrete pours, crane lifts and dump truck routes. These communications must be documented and supplied to Council.

The CTMP shall be prepared in accordance with relevant sections of Australian Standard 1742 – "Manual of Uniform Traffic Control Devices", RMS's Manual – "Traffic Control at Work Sites" and Councils DCP 2014 Part 8.1 (Construction Activities).

All fees and charges associated with the review of this plan is to be in accordance with Council's Schedule of Fees and Charges and is to be paid at the time that the Traffic Management Plan is submitted.

64. **SIDRA Analysis.** A copy of all electronic SIDRA analysis data shall be provided to Council's Traffic Engineer prior to the issue of the Construction Certificate. This shall include all input data sheets and all digital files.

65. **Signage and Line Marking.** A signage and road line marking plan is to be submitted to and approved by Council's Public Works (Traffic Engineer) prior to the issue of a Construction Certificate. The signage and line marking plan is to identify all parking restrictions around the site and any road pavement line markings associated with the site and the road widening. As recycling bins will be required to be presented on the kerbside an area needs to be allocated for ease of access to the bins, therefore "No Stopping" signs along the property's frontage of Porter Street for garbage collection days between the hours of 5.00am & 11.00am will be required to be implemented. The signage plan is to include details of the "No Stopping" sign/s and the plan submitted to Council's Public Works for approval by the Ryde Traffic Committee.

66. **Public Domain Works – Council Approval.** The Public Domain is to be upgraded in Porter Street and Church Street frontages of the development in accordance with the City of Ryde Public Domain Technical Manual Section 5 – Meadowbank. The following works must be undertaken in association with the development, completed prior to the issue of any Occupation Certificate and at no cost to Council;

a) The widening of the Porter Street carriageway fronting the site and corresponding realignment of the kerb, gutter and footpath to suit, as detailed below.
b) Construction of new kerb and gutter along the Porter Street and Church Street frontages of the site. The new kerb and gutter along Porter Street shall be constructed at an alignment 3.5m from the new property boundary. Proposed kerb profiles are to be provided to ensure proper connections to existing kerb and gutter along Porter Street and Church Street.
c) Infill of road pavement between the new kerb pavement and existing road pavement.
d) Construction of granite footway in accordance with the City of Ryde Public Domain Technical Manual Section 5 – Meadowbank, along the Porter Street and Church Street frontages of the site.
e) The relocation/adjustment of all public utility services affected by the proposed works. Written approval from the applicable Public Authority shall be submitted to council and their requirements being fully complied with.
f) The installation of parking and traffic control signs. A separate plan is required for the proposed parking and traffic control sign layout. This aspect is subject to Councils consideration and Local Traffic Committee.
g) All telecommunication and utility services are to be placed underground along the Porter Street and Church Street frontages. Plans prepared and certified by a suitably qualified Electrical Design Consultant for decommissioning the existing network and constructing the new network are to be submitted to Council and relevant utility authorities for approval prior to commencement of work.
h) New street lighting serviced by metered underground power and on multifunction poles (MFP) shall be designed and installed to Australian Standard AS1158.3.1-1999 Road Lighting vehicular luminance category V5 and pedestrian luminance category P2 along Porter Street, and categories V3 and P2 along Church Street. Lighting upgrade shall be in accordance with the City of Ryde Public Domain Technical Manual Section 5 – Meadowbank. The consultant shall liaise with Council' Public Works Group in obtaining Council's requirements and specifications for the MFP and components, including the appropriate LED luminaire and location of the meter box. Plans are to be submitted to Council for approval prior to lodgement of the scheme with Ausgrid for their approval.
i) Landscaping and street furniture along the frontages of Porter Street and Church Street are to be provided in accordance with the City of Ryde Public Domain Technical Manual. Plans are to be submitted to Council for approval prior to issue of Construction Certificate.

Detailed engineering plans detailing these works prepared by a Chartered Civil Engineer (with NPER registration with Engineers Australia) must be submitted to Council for approval. The plans must be in accordance with Council's DCP 2014 – Part 8.5 Public Civil Works, Part 8.2 Stormwater Management and any requirements identified during the detailed assessment by Council. Levels and grades are to be consistent in terms of level and grade with the adjoining sections of existing pavement. This should be verified on the plans to be submitted.

The approval of the Public Domain engineering plans and payment of any Council inspection fees (in accordance with Council's Plan of Management) must be finalised prior to the issue of a Construction Certificate.

67. **Vehicle Footpath Crossings.** Footpath crossings shall be constructed at all locations where vehicles cross the footpath, to protect it from damage resulting from the vehicular traffic. The location, design and construction shall conform to Ryde Environmental Standards - Development Criteria Section 4 - Public Civil Works, and all relevant Australian Codes and Standards. Crossings are to be constructed to match the granite paving and finished levels shall conform to property alignment levels issued by Council's Public Works Division. Kerbs shall not be returned to the boundary alignment line.

    The applicant shall provide Council with certification from a Charted Civil Engineer (with NPER registration with Engineers Australia) confirming that the vehicle crossing design meets Council requirements and the relevant standards.

68. **Construction of garbage and recycling rooms**. All garbage and recycling rooms must be constructed in accordance with the following requirements:

    (a) The room must be of adequate dimensions to accommodate all waste containers, and any compaction equipment installed, and allow easy access to the containers and equipment for users and servicing purposes;

    (b) The floor must be constructed of concrete finished to a smooth even surface, coved to a 25mm radius at the intersections with the walls and any exposed plinths, and graded to a floor waste connected to the sewerage system;

    (c) The floor waste must be provided with a fixed screen in accordance with the requirements of Sydney Water Corporation;

    (d) The walls must be constructed of brick, concrete blocks or similar solid material cement rendered to a smooth even surface and painted with a light coloured washable paint;

    (e) The ceiling must be constructed of a rigid, smooth-faced, non-absorbent material and painted with a light coloured washable paint;

    (f) The doors must be of adequate dimensions to allow easy access for servicing purposes and must be finished on the internal face with a smooth-faced impervious material;

    (g) Any fixed equipment must be located clear of the walls and supported on a concrete plinth at least 75mm high or non-corrosive metal legs at least 150mm high;

    (h) The room must be provided with adequate natural ventilation direct to the outside air or an approved system of mechanical ventilation;

    (i) The room must be provided with adequate artificial lighting; and

    (j) A hose cock must be provided in or adjacent to the room to facilitate cleaning.

    Details of the waste collection areas and hard waste collection bay are to be submitted to the Principal Certifying Authority for approval prior to issue of a Construction Certificate.

69. **Ventilation:** Ventilation are to be in accordance with the following requirements:

- Fresh air intake vents - All fresh air intake vents must be located in a position that is free from contamination and at least 6 metres from any exhaust air discharge vent or cooling tower discharge.
- Exhaust air discharge vents - All exhaust air discharge vents must be designed and located so that no nuisance or danger to health will be created.
- Carpark exhaust vent - The carpark exhaust vent must be located at least 3 metres above ground level or any pedestrian thoroughfare and:
  (a) at least 6 metres from any fresh air intake vent or natural ventilation opening; and
  (b) at least 6 metres or, where the dimensions of the allotment make this impossible, the greatest possible distance from any neighbouring property boundary.

Details of the proposed ventilations are to be submitted to the Principal Certifying Authority for approval prior to issue of a Construction Certificate.

70. **Connection to Sewer: Evidence of connection by gravity flow** - Documentary evidence from a professional hydraulic engineer or other suitably qualified person demonstrating that all of the premises will be connected directly to the sewerage system by gravity flow must be submitted with the application for the Construction Certificate.

71. **Mechanical ventilation.** Details of all proposed mechanical ventilation systems, and alterations to any existing systems, must be submitted for approval with the application for the Construction Certificate. Such details must include:

    (a) Plans (coloured to distinguish between new and existing work) and specifications of the mechanical ventilation systems; and

    (b) A design certificate from a professional mechanical services engineer certifying that the mechanical ventilation systems will comply with the *Building Code of Australia* and the conditions of this Consent.

PRIOR TO COMMENCEMENT OF CONSTRUCTION

Prior to the commencement of any demolition, excavation, or building work the following conditions in this Part of the Consent must be satisfied, and all relevant requirements complied with at all times during the operation of this consent.

72. **Site Sign**
    (a) A sign must be erected in a prominent position on site, prior to the commencement of construction:
        (i) showing the name, address and telephone number of the Principal Certifying Authority for the work,
        (ii) showing the name of the principal contractor (if any) or the person responsible for the works and a telephone number on which that person may be contacted outside working hours, and
        (iii) stating that unauthorised entry to the work site is prohibited.

(b) Any such sign must be maintained while the building work, subdivision work or demolition work is being carried out, but must be removed when the work has been completed.

73. **Excavation adjacent to adjoining land**
    (a) If an excavation extends below the level of the base of the footings of a building on an adjoining allotment of land, the person causing the excavation must, at their own expense, protect and support the adjoining premises from possible damage from the excavation, and where necessary, underpin the adjoining premises to prevent any such damage.
    (b) The applicant must give at least seven (7) days notice to the adjoining owner(s) prior to excavating.
    (c) An owner of the adjoining allotment of land is not liable for any part of the cost of work carried out for the purposes of this condition, whether carried out on the allotment of land being excavated or on the adjoining allotment of land.

74. **Footpath Works.** The applicant shall, at no cost to Council, excavate and/or fill the footpath adjacent to the subject property so the levels of the footpath comply with the levels specified by Council's Engineering Public Works. All work which is necessary to join the new footpath levels with the levels in front of the adjoining properties in a satisfactory manner shall be carried out by the applicant. The cost of reconstructing footpath paving or adjusting any services that may be affected shall be borne by the applicant.

75. **Footpath Paving Construction.** The applicant shall, at no cost to Council, construct standard concrete footpath paving across the frontage of the property. Levels of the footpath paving shall conform with levels issued by Council's Engineering Services Division.

76. **Full Width Footpath Paving Construction.** The applicant shall, at no cost to Council, construct full width concrete paving across the full frontage of the property. Levels of the footpath paving shall conform with levels issued by Council's Public Works Division.

77. **Property above/below Footpath Level.** Where the ground level adjacent the property alignment is above/below the ultimate footpath level, as set by Council, adequate measures are to be taken (either by means of constructing approved retaining structures or batters entirely on the subject property) to support the subject land/footpath. An approved fence shall be erected along the boundary for public safety.

78. **Ground Anchors.** The installation of permanent ground anchors into public roadway is not permitted. The installation of temporary ground anchors may be considered subject to application for approval from Council's Public Works department, as per the provisions of Section 138 of the Roads Act. The application for consent must include detailed structural plans prepared by a chartered structural engineer, clearly nominating the number of proposed anchors, depth below existing ground level at the boundary alignment and the angle of installation. Approval is subject to the applicant paying all applicable fees in accordance with Council's Management Plan.

DURING CONSTRUCTION

Unless otherwise specified, the following conditions in this Part of the consent must be complied with at all times during the construction period. Where applicable, the requirements under previous Parts of the consent must be implemented and maintained at all times during the construction period.

79. **Critical stage inspections.** The person having the benefit of this consent is required to notify the Principal Certifying Authority during construction to ensure that the critical stage inspections are undertaken, as required under clause 162A(4) of the *Environmental Planning and Assessment Regulation 2000.*

80. **Construction noise.** The L_{10} noise level measured for a period of not less than 15 minutes while demolition and construction work is in progress must not exceed the background noise level by more than 20 dB(A) at the nearest affected residential premises.

81. **Survey of footings/walls.** All footings and walls within 1 metre of a boundary must be set out by a registered surveyor. On commencement of brickwork or wall construction a survey and report must be prepared indicating the position of external walls in relation to the boundaries of the allotment.

82. **Sediment/dust control.** No sediment, dust, soil or similar material shall leave the site during construction work.

83. **Use of fill/excavated material.** Excavated material must not be reused on the property except as follows:
    (a) Fill is allowed under this consent;
    (b) The material constitutes Virgin Excavated Natural Material as defined in the *Protection of the Environment Operations Act 1997;*
    (c) the material is reused only to the extent that fill is allowed by the consent.

84. **Construction materials.** All materials associated with construction must be retained within the site.

85. **Site Facilities**
    The following facilities must be provided on the site:
    (a) toilet facilities in accordance with WorkCover NSW requirements, at a ratio of one toilet per every 20 employees, and
    (b) a garbage receptacle for food scraps and papers, with a tight fitting lid.

86. **Site maintenance**
    The applicant must ensure that:
    (a) approved sediment and erosion control measures are installed and maintained during the construction period;
    (b) building materials and equipment are stored wholly within the work site unless an approval to store them elsewhere is held;
    (c) the site is clear of waste and debris at the completion of the works.

87. **Work within public road.** At all times work is being undertaken within a public road, adequate precautions shall be taken to warn, instruct and guide road users safely around the work site. Traffic control devices shall satisfy the minimum standards outlined in Australian Standard No. AS1742.3-1996 "Traffic Control Devices for Work on Roads".

88. **Tree protection** – Trees 5,12 & 13 as mentioned in the Arborist Report by Horticultural Resources Consulting Group are to be retained and protected. The trees which are shown on the approved plans as being retained must be protected against damage during construction. Tree protections measures are to be put in placed as required. Tree 5 is located on the adjoining property and a separate approval is required to be obtained for the removal of this tree.

89. **Project Arborist** - A Project Arborist with minimum AQF level 5 qualifications is to be engaged to ensure adequate tree protection measures are put in place for all trees to be retained on the subject site and neighbouring allotments and that recommendations contained within Arboricultural Impact Appraisal and Method Statement dated 13.01.2014 prepared by Naturally Trees are carried out. All trees are to be monitored to ensure adequate health throughout the construction period is maintained. Additionally, all work within the Tree Protection Zones is to be supervised throughout construction. Details of the Project Arborist are to be submitted to Council prior to the commencement of construction. Council is to be notified, in writing, of the name, contact details and qualifications of the Consultant Arborist appointed to the site. Should these details change during the course of works, or the appointed Consultant Arborist alter, Council is to be notified, in writing, within seven working days.

90. **No unauthorised removal**. This consent does not authorise the removal of trees unless specifically permitted by a condition of this consent or otherwise necessary as a result of construction works approved by this consent. The trees that are shown to be removed are to be removed in accordance with NSW WorkCover Code of Practise (2007) and undertaken by an Arborist with minimum AQF Level 2 qualifications. No tree removal or landscaping works are to be undertaken within Hayes Reserve.

91. **CCTV Surveillance.** Surveillance cameras must be installed in and around the property to maximise surveillance opportunities. CCTV should be used throughout the retail complex and communal areas such as lobbies, lifts etc., and paying particular attention to the internal area of the communal plaza especially entry and exit points. CCIV should also be used around the loading dock area and car park entry and exit points. CCIV should be placed on the external area of the building capturing the area outside the retail and communal areas.

    Digital technology should be used to record images from the cameras. Installed surveillance equipment needs to be able to zoom in on a person without loss of focus. Recording equipment should be installed in a secure area to avoid tampering.

    Any surveillance system should be manufactured and installed by a qualified and reputable company and regularly function tested.

Management must ensure that the requirements of the Surveillance and Privacy Act are adhered to.

92. **Lighting.** Lighting shall be provided to the buildings' entrances, all common areas including underawning lighting, the car parking levels as well as the stairs and access to and including the public outdoor courtyard, communal gardens and the bin storage rooms. Such lighting to be automatically controlled by time clocks, and where appropriate, sensors to provide an energy efficient and controlled environment for residents. Lighting, both internal and external, will be provided in accordance with Australian Standards. The details to include certification from an appropriately qualified person that there will be no offensive glare onto adjoining residents.

93. **Signage -** Signage must be provided at:
    - entry/exit points, buildings entrance and throughout the development to assist users and warn intruders that they will be prosecuted.
      Warning: these premises are under constant surveillance.
      Warning: trespassers will be prosecuted.
    - Signage needs to be provided within the residential car park and the retail car park where spaces are allocated for residential visitors, to provide way finding to users of these areas.
    - Signage also needs to be provided on the fire exit doors warning users that the doors are to be used for emergency purposed only.

94. **Security Signs -** Signs should be erected in the car parks and near entry and exit points which details security measures and reminds people to lock their vehicles and remove valuables from their vehicles.

95. **Graffiti -** All surfaces on the street frontages that are not glass should use graffiti resistant paints and/or other surfaces that discourage graffiti.

96. **Intercom Facility -** The entry to the car park should have a ticket/boom gate system. Intercom facilities should be incorporated into these entry/exit points to enable residents to communicate and identify with people prior to admitting them to the development.

97. **Truck Shaker.** A truck shaker grid with a minimum length of 6 metres must be provided at the construction exit point. Fences are to be erected to ensure vehicles cannot bypass them. Sediment tracked onto the public roadway by vehicles leaving the subject site is to be swept up immediately.

98. **Erosion and Sediment Control.** The applicant shall install erosion and sediment control measures in accordance with the approved plan by Engineering Studio (Refer to Project No. 11064 Dwgs C02.01 Rev A dated 9 May 2014) at the commencement of works on the site. Suitable erosion control management procedures in accordance with the manual "Managing Urban Stormwater: Soils and Construction" by the NSW Department – Office of Environment and Heritage, must be practiced at all times throughout the construction. Where construction works deviate from the plan, soil erosion and sediment control measures are to be implemented in accordance with the

above referenced document. {To be utilised for lightweight development only, posing little risk to downstream property}

99. **Geotechnical – Implementation of geotechnical monitoring.** The construction and excavation works are to be undertaken in accordance with the Geotechnical Report and Monitoring Program (GMP) submitted with the Construction Certificate. All recommendations of the Geotechnical Engineer and GMP are to be carried out during the course of the excavation. The applicant must give at least seven (7) days notice to the owner and occupiers of the adjoining lots before excavation works commence.

100. **Construction Traffic Management Plan – Compliance**. All works and construction activities are to be undertaken in accordance with the approved Construction Traffic Management Plan (CTMP). All controls in the CTMP must be maintained at all times and all traffic management control must be undertaken by personnel having appropriate RMS accreditation. Should the implementation or effectiveness of the CTMP be impacted by surrounding major development not encompassed in the approved CTMP, the CTMP measures and controls are to be revised accordingly and submitted to Council for approval with any associated fees. A copy of the approved CTMP is to be kept onsite at all times and made available to the accredited certifier or Council on request.

101. **Stormwater Management - Construction.** The stormwater drainage system on the site must be constructed in accordance with the Construction Certificate version of the Stormwater Management Plan by Engineering Studio (Refer to Project No. 11064 Dwgs C00.01 to C05.01 Rev A dated 9 May 2014) submitted in compliance to the condition labelled "Stormwater Management." and the requirements in relation to connection to the trunk drainage system.

102. **Study.** The study area within Unit 6 of Building A is to be provided with the internal joinery for the construction of a desk and storage areas. At no time is the study to be used as a bedroom.

PRIOR TO OCCUPATION CERTIFICATE

An Occupation Certificate must be obtained from a Principal Certifying Authority prior to commencement of occupation of any part of the development, or prior to the commencement of a change of use of a building.

Prior to issue, the Principal Certifying Authority must ensure that all works are completed in compliance with the approved construction certificate plans and all conditions of this Development Consent.

Unless an alternative approval authority is specified (eg Council or government agency), the Principal Certifying Authority is responsible for determining compliance with conditions in this Part of the consent. Details to demonstrate compliance with all conditions, including plans, documentation, or other written evidence must be submitted to the Principal Certifying Authority.

103. **Porter Street Road Widening.** Dedication of a 2.0m strip of land to Council for public road along the Porter Street frontage of the site will be required. The

dedication shall occur prior to the issue of any Occupation Certificate and the associated administrative and registration costs where applicable, shall be borne by the Applicant.

104. **BASIX -** The submission of documentary evidence of compliance with all commitments listed in. NOTE: Certificates from suitably qualified persons are to be submitted to the Principal Certifying Authority (*if Council is the PCA*) verifying that all BASIX commitments listed have been fulfilled in accordance with the BASIX Certificate.

105. **Landscaping-** All landscaping works approved by condition 1 are to be completed prior to the issue of the final **Occupation Certificate**. The Landscape Architect is to provide a practical completion certificate (on completion of the landscape works) and a final completion certificate at the end of the maintenance period.

106. **Certification**. A Tree Protection Schedule, as indicated below, which provides a logical sequence of hold points for the various development stages including pre construction, construction and post construction and a checklist of various hold points that are to be signed and dated by the Project Arborist. This is to be completed progressively and included as part of the final certification. A copy of the final certification is to be made available to the City of Ryde Council on completion of the project.

Hold Point	Task	Responsibility	Certification	Timing of Inspection
1.	Indicate clearly (with spray paint on trunks) trees approved for removal only	Principal Contractor	Project Arborist	Prior to demolition and site establishment
2.	Establishment of tree protection fencing	Principal Contractor	Project Arborist	Prior to demolition and site establishment
3.	Supervise all excavation works proposed within the TPZ	Principal Contractor	Project Arborist	As required prior to the works proceeding adjacent to the tree
4.	Inspection of trees by Project Arborist	Principal Contractor	Project Arborist	Bi-monthly during construction period
5.	Final inspection of trees by project Arborist	Principal Contractor	Project Arborist	Prior to issue of Occupation Certificate

107. **Design Verification.** Prior to an Occupation Certificate being issued to authorise a person to commence occupation or use of a residential flat building, the Principal Certifying Authority (PCA) is to be provided with design verification from a qualified designer. The statement must include verification from the qualified designer that the residential flat development achieves the design quality of the development as shown on plans and specifications in respect of any Construction Certificate issued,

having regard to the design quality principles set out in Part 2 of State Environmental Planning Policy No. 65 – Design Quality of Residential Flat Development. This condition is imposed in accordance with Clause 154A of the Environmental Planning and Assessment Regulation 2000.

108. **Disabled Access.** Prior to the issue of an Occupation Certificate a report is to be provided from a suitably qualified access consultant to confirm that the development complies with the Disability Access to Premises Standards Buildings – 2010, the Building Code of Australia 2014, AS 1428.1-2009, AS/NZS 2890.6-2009 and AS 4299-1995 as outlined in Annexure A of the Accessibility Report prepared by BCA dated 2 May 2014.

109. **Fire safety matters.** At the completion of all works, a Fire Safety Certificate must be prepared, which references all the Essential Fire Safety Measures applicable and the relative standards of Performance (as per Schedule of Fire Safety Measures). This certificate must be prominently displayed in the building and copies must be sent to Council and the NSW Fire Brigade.

    Details demonstrating compliance are to be submitted to the Principal Certifying Authority prior to the issue of the Interim/Final Occupation Certificate.

    Each year the Owners must send to the Council and the NSW Fire Brigade an annual Fire Safety Statement which confirms that all the Essential Fire Safety Measures continue to perform to the original design standard.

110. **Road opening permit – compliance document.** The submission of documentary evidence to Council of compliance with all matters that are required by the Road Opening Permit issued by Council under Section 139 of the *Roads Act 1993* in relation to works approved by this consent, prior to the issue of the **Occupation Certificate**.

111. **Sydney Water – Section 73.** A Section 73 Compliance Certificate under the Sydney Water Act 1994 must be obtained from Sydney Water Corporation. Application must be made through an authorised Water Servicing Co-ordinator. Please refer to the Building Developing and Plumbing section of the web site www.sydneywater.com.au then refer to "Water Servicing Coordinator" under "Developing Your Land" or telephone 13 20 92 for assistance.

    Following application a "Notice of Requirements" will advise of water and sewer infrastructure to be built and charges to be paid. Please make early contact with the Co-ordinator, since building of water/sewer infrastructure can be time consuming and may impact on other services and building, driveway or landscape design.

    Details demonstrating compliance are to be submitted to the Principal Certifying Authority prior to the issue of any Interim/Final Occupation Certificate.

112. **Post-construction dilapidation report.** The submission of a post-construction dilapidation report which clearly details the final condition of all property, infrastructure, natural and man-made features that were recorded in the pre-commencement dilapidation report. A copy of the report must be provided to

Council, any other owners of public infrastructure and the owners of the affected adjoining and private properties, prior to the issue of the **Occupation Certificate**.

113. **Stormwater Management - Work-as-Executed Plan.** A Work-as-Executed plan (WAE) of the as constructed Stormwater Management System must be submitted with the application for an Occupation Certificate. The WAE must be prepared and certified (signed and dated) by a Registered Surveyor and is to clearly show the constructed stormwater drainage system (including any onsite detention, pump/ sump, charged/ siphonic and onsite disposal/ absorption system) and finished surface levels which convey stormwater runoff.

114. **Stormwater Management – Positive Covenant(s).** A Positive Covenant must be created on the property title(s) pursuant to Section 88 E of the Conveyancing Act (1919), providing for the ongoing maintenance of the onsite detention and pump/ sump components incorporated in the approved Stormwater Management system. This is to ensure that the drainage system will be maintained and operate as approved throughout the life of the development, by the owner of the site(s). The terms of the 88 E instrument are to be in accordance with the Council's draft terms for these systems as specified in City of Ryde DCP 2010 - Part 8.4 (Title Encumbrances) - Section 7, and to the satisfaction of Council, and are to be registered on the title prior to the release of the Occupation Certificate for that title.

115. **Compliance Certificates – Engineering.** To ensure that all engineering facets of the development have been designed and constructed to the appropriate standards, Compliance Certificates must be obtained for the following items and are to be submitted to the Accredited Certifier prior to the release of any Occupation Certificate. All certification must be issued by a qualified and practising civil engineer having experience in the area respective of the certification unless stated otherwise.
    a) Confirming that all components of the parking areas contained inside the site comply with the relevant components of AS 2890 and the City of Ryde DCP 2010, Part 9.3 "Car Parking".
    b) Confirming that the sites Stormwater Management system (including any ancillary components such as onsite detention) servicing the development complies with the City of Ryde DCP 2010, Part 8.2, "Stormwater Management" and has been constructed to function in accordance with all conditions of this consent relating to the discharge of stormwater from the site.
    c) Confirming that after completion of all construction work and landscaping, all areas adjacent the site, the site drainage system (including the on-site detention system), and the trunk drainage system immediately downstream of the subject site (next pit), have been cleaned of all sand, silt, old formwork, and other debris.
    d) Confirming that the connection of the site drainage system to the trunk drainage system complies with Section 4.7 of *AS 3500.3 - 2003* (National Plumbing and Drainage Code) and the relevant sections of the City of Ryde DCP 2010, Part 8.2 " Stormwater Management" and associated annexure.
    e) Confirming that the footings adjacent to drainage easements are founded below the zone of influence of this infrastructure, in accordance the City of Ryde DCP 2010, Part 8.2 "Stormwater Management" and associated annexure.
    f) Confirming that erosion and sediment control measures were implemented during the course of construction and were in accordance with the manual

"Managing Urban Stormwater: Soils and Construction" by the NSW Department – Office of Environment and Heritage and the City of Ryde DCP 2010, Part 8.1 "Construction Activities".

g) Certification from a suitably qualified structural or geotechnical engineer confirming that any temporary soil/ rock anchors installed into public roadway approved for use by the relevant Roads Authority, have been de-stressed and are no longer providing any structural support.

h) Certification from a suitably qualified geotechnical engineer confirming that the Geotechnical Monitoring Program (GMP) was implemented throughout the course of construction and that all structures supporting neighbouring property have been designed and constructed to provide appropriate support of the neighbouring property and with consideration to any temporary loading conditions that may occur on that site, in accordance with the relevant Australian Standard and building codes.

i) Compliance certificate from Council confirming that all external works in the public road reserve have been completed to Council's satisfaction.

116. **On-Site Stormwater Detention System - Marker Plate.** To ensure the constructed On-site detention will not be modified, a marker plate is to be fixed to each on-site detention system constructed on the site. The plate construction, wordings and installation shall be in accordance with City of Ryde, Development Control Plan 2010: - Part 8.2; Stormwater Management. The plate may be purchased from Council's Customer Service Centre at Ryde Civic Centre (Devlin Street, Ryde).

117. **Public domain – work as executed plan.** A works-as-executed plan for works carried out in the public domain must be provided to Council and endorsed by Council, as the Road Authority, prior to the issue of the Occupation Certificate. All public domain works are to be completed to Council's satisfaction prior to the issue of the Occupation Certificate.

118. **Waste Collection.** Where waste collection vehicles are required to enter the property to service the waste containers, the property owner must indemnify Council and its contractor against claims for damage to the driveways, manoeuvring areas and within the basement levels. This must be provided in writing to Council's Waste Co-ordinator before the issue of the Occupation Certificate.

119. **Certification of mechanical ventilation work** - Where any mechanical ventilation systems have been installed or altered, an installation certificate from a professional mechanical services engineer certifying that the systems comply with the approved plans and specifications must be submitted to the Principal Certifying Authority before the issue of an Occupation Certificate.

OPERATIONAL CONDITIONS

The conditions in this Part of the consent relate to the on-going operation of the development and shall be complied with at all times.

120. **Car Parking and allocation-** A maximum of 91 car parking is to be provided on site with the breakdown of the parking spaces as follows:
    - 8 x Retail spaces

- 71 x Residential spaces
- 12 x Visitors' spaces

121. **Graffiti Control.** Graffiti should be removed and cleaned within 48 hours. This is considered the most effective strategy for the reduction and deterrence of graffiti.

122. **Operation for the Commercial/retail uses.** Retail premises must limit any spruiking and the playing of amplified music or messages so as not to disturb the amenity of other public and private places. Furthermore to ensure that the residential amenity of the nearby residential apartments are not adversely impacted on, the hours of operation for the commercial uses are to be restricted between the hours of 7.00am and 7.00pm Monday to Sunday. Any extension beyond these hours would require the approval of Council.

123. **Waste Containers.** An adequate number of suitable waste containers must be provided on the premises for the storage of all wastes generated on the premises between collections.

124. **Waste Management.** All wastes generated on the premises must be stored, collected and disposed of in an environmentally acceptable manner. All waste storage areas, including any collection areas, must be maintained in a clean and tidy condition at all times. The hard waste collection is to be stored in the hard waste storage area on the ground floor and is not to be left on the kerbside.

125. **Hours of Collection.** The recycling bins which are to be presented to Porter Street for collection the night before and management is to ensure that the recycling bins/ container are returned to the garbage room(s) as soon as possible after servicing.

126. **Commercial Waste**. The commercial waste collection are to be collected within the building however if this is not possible where the collection occurs outside of the property, collection times should be restricted to between 6am-10pm to minimise night time disturbance to residents and neighbouring premises.

127. **Offensive noise** - The use of the premises must not cause the emission of 'offensive noise' as defined in the *Protection of the Environment Operations Act 1997.*

128. **Noise and vibration from plant or equipment** - Unless otherwise provided in this Consent, the operation of any plant or equipment installed on the premises must not cause:

    (a) The emission of noise that exceeds the background noise level by more than 5dBA when measured at, or computed for, the most affected point, on or within the boundary of the most affected receiver. Modifying factor corrections must be applied for tonal, impulsive, low frequency or intermittent noise in accordance with the *New South Wales Industrial Noise Policy* (EPA, 2000).

    (b) An internal noise level in any adjoining occupancy that exceeds the recommended design sound levels specified in Australian/New Zealand

Standard AS/NZS 2107:2000 *Acoustics – Recommended design sound levels and reverberation times for building interiors.*

(c) The transmission of vibration to any place of different occupancy.

129. **Council may require acoustical consultant's report** - Council may require the submission of a report from an appropriately qualified acoustical consultant demonstrating compliance with the relevant noise and vibration criteria.

130. **Letterboxes and street/house numbering.** All letterboxes and house numbering are to be designed and constructed to be accessible from the public way. Council must be contacted in relation to any specific requirements for street numbering.

131. **Waste collection point for commercial waste** - The commercial waste must be collected from inside the building.

Advisory

Use of the retail space for Food Premises:

Food Premises - Construction and fit-out of food premises – Ill proposed food premises (other than retail meat premises) must be constructed and fitted-out in accordance with the requirements of:

(a) Food Safety Standard 3.2.3: *Food Premises and Equipment*; and

(b) Australian Standard *AS 4674-2004*: *Design, construction and fit-out of food premises.*

The walls of all proposed food premises must be constructed of brick, concrete blocks, preformed panels filled with suitable material or other solid materials and adequate provision must be made for the installation of kitchen exhaust systems for any proposed food premises.

Kitchen Ventilation - The kitchen exhaust vent must be located above roof level:

(a) at least 6 metres from any fresh air intake vent or natural ventilation opening;

(b) at least 6 metres or, where the dimensions of the allotment make this impossible, the greatest possible distance from any neighbouring property boundary; and

(c) at least 8 metres from any cooling tower.

Plumbing and Drainage: Installation of grease trap – For any food premises, a grease trap must be installed if required by Sydney Water Corporation. The applicant is to contact Sydney Water Corporation to ascertain if a grease trap is required. The grease trap must be located outside the building or in a dedicated grease trap room and be readily accessible for servicing. Access through areas where exposed food is handled or stored or food contact equipment or packaging materials are handled or stored is not permitted.

Provision of Installation of Kitchen Exhaust - Adequate provision must be made for the installation of kitchen exhaust systems in any future food shops.

Trade waste permit - The applicant must contact Sydney Water Corporation to determine whether a Trade Waste Permit is required before discharging any trade wastewater to the sewerage system.

SLR

global environmental solutions

Proposed Mixed-Use Development

115 - 117 Church Street & 13 - 15 Porter Street, Ryde

DA Acoustical Assessment

Report Number 610.13991-R1

7 May 2014

Eastern Pearl Pty Ltd
C/- Aleksandar Design Group
41 Albion Street
PADDINGTON NSW 2021

Version: Revision 0

Proposed Mixed-Use Development

115 - 117 Church Street & 13 - 15 Porter Street, Ryde

DA Acoustical Assessment

PREPARED BY:

SLR Consulting Australia Pty Ltd
ABN 29 001 584 612
2 Lincoln Street Lane Cove NSW 2066 Australia

(PO Box 176 Lane Cove NSW 1595 Australia)
T: 61 2 9428 8100 F: 61 2 9427 8200
E: sydney@slrconsulting.com www.slrconsulting.com

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1 INTRODUCTION

SLR Consulting Australia Pty Ltd (SLR) has been commissioned by Aleksandar Design Group, on behalf of Eastern Pearl Pty Ltd, to prepare an acoustical assessment of a proposed mixed-use development on land located at 115 – 117 Church Street and 13 – 15 Porter Street, Ryde. This assessment forms part of the Development Application submission in support of the project to City of Ryde Council.

The proposed building works involves the construction of two apartment buildings containing 69 apartments in total and two retail spaces. The project site is located adjacent to Church Street (and Porter Street) and is therefore potentially affected by noise from road traffic.

This report presents an assessment with respect to the following:

- Environmental noise intrusion into the proposed new residential apartments;
- Operational noise emissions potentially associated with the proposed new apartments; and
- Sound insulation of future residential apartments.

Recommendations are included for construction that will achieve compliance with the requirements of the City of Ryde Development Control Plan 2011 (Draft) and the Building Code of Australia (NCC 2013) Part F5.

The assessment has been based upon drawings and information provided by Aleksandar Design Group.

2 PROJECT DESCRIPTION

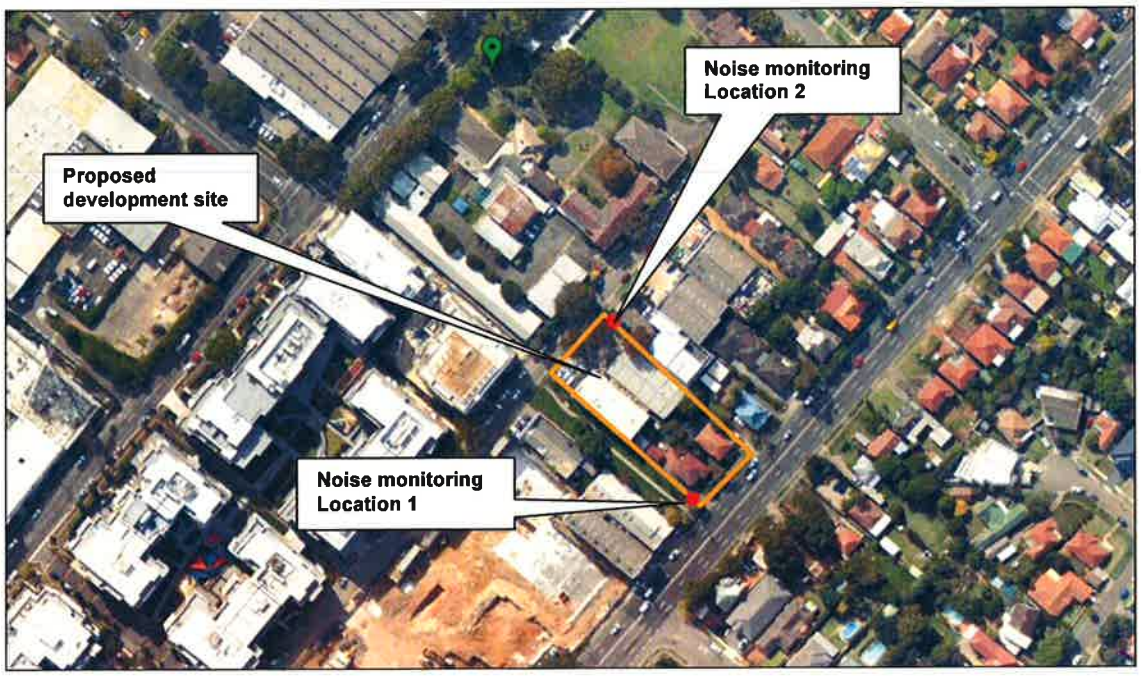
2.1 Site Location

The proposed development site is located at 115 – 117 Church Street and 13 – 15 Porter Street, Ryde as shown in **Figure 1**.

The site is located on the western side of Church Street, approximately 300 m north of the Ryde Bridge and surrounding premises are predominantly residential to the east along Church Street, light industrial to the north with residential apartments under construction to the west and south. Land immediately adjacent the southern boundary is public parkland (Hayes Reserve). According to the most recent traffic counts available from Roads and Maritime Services (RMS), Church Street carried a volume of 95,600 vehicles in 2012.

A review of the noise measurements and site observations indicate that the existing ambient noise in the area is primarily controlled by road traffic.

Figure 1 Proposed Development Site Location



Aerial image courtesy of Nearmaps

2.2 Proposed Development

The proposed development will involve the demolition of the existing light industrial buildings and residences currently located on the four allotments and the construction of two buildings on the consolidated site. Building A fronts Porter Street and consists of six-storeys with basement carparking, ground level retail and one-, two-, and three-bedroom apartments on the ground floor to Level 5. Building B fronts Church Street and consists of seven-storeys with basement carparking, ground level retail and one- and two-bedroom apartments on the ground floor to Level 6. The proposed ground floor plan and Level 1 plan are shown in **Figure 2**.

Figure 2 Proposed Ground and Level 1 Floor Plans

Drawing courtesy of Aleksandar Design Group

3 EXISTING NOISE ENVIRONMENT

3.1 Ambient Noise Monitoring

In order to characterise the existing acoustical environment in the area, ambient noise monitoring was carried out from Tuesday 29 April 2014 to Tuesday 6 May 2014. Two locations were selected, Location 1 at the eastern boundary of 115 - 117 Church Street (to quantify the exposure of the site to noise from road traffic) and Location 2 at the western boundary of 13 – 15 Porter Street to determine the minimum background sound levels likely to be experienced for the purposes of establishing environmental emissions criteria for future mechanical plant and equipment.

Instrumentation for the survey comprised two ARL Environmental Noise Loggers Type EL-316 (Serial numbers 16-207-020 – Location 1 and 16-207-021 – Location 2) fitted with microphone windshields. Calibration of the loggers was checked prior to and following measurements. Drift in calibration did not exceed ±0.5 dBA. All equipment carried appropriate and current NATA (or manufacturer) calibration certificates.

3.2 Noise Monitoring Results

In order to assess potential levels of road traffic noise intrusion to future residential apartments, the measured data from environmental noise logging was processed according to the daytime and night-time periods applicable to the assessment of road traffic noise impacts. **Table 1** details the $L_{Aeq(15hour)}$ daytime and the $L_{Aeq(9hour)}$ night-time road traffic noise levels recorded during the survey.

Table 1 Measured Road Traffic Noise Levels

Measurement Location	Noise Level - dBA re 20 µPa	
	LAeq(15hour)	LAeq(9hour)
Church Street (eastern boundary)	72	69
Porter Street (western boundary)	60	52

To determine the project specific criterion for operational noise emissions from any future mechanical plant associated with the development, the measured data from Location 2 (Porter Street logger) was processed according to the NSW Environment Protection Authority's (EPA) *Industrial Noise Policy* (INP) assessment time periods. **Table 2** details the RBL (background) noise levels and the L_{Aeq} noise levels recorded during the daytime, evening and night-time periods.

Table 2 Measured Ambient Noise Levels Corresponding to NSW Industrial Noise Policy Assessment Time Periods

Noise Level – dBA re 20 µPa					
Daytime 7:00 am – 6:00 pm		Evening 6:00 pm – 10:00 pm		Night-time 10:00 pm – 7:00 am	
RBL [1]	LAeq [2]	RBL	LAeq	RBL	LAeq
53	61	50	56	42	52

Note 1: The RBL noise level is representative of the average minimum background sound level (in the absence of the source under consideration), or simply the background level.

Note 2: The LAeq is essentially the average sound level. It is defined as the steady sound level that contains the same amount of acoustical energy as a given time-varying sound.

4 ASSESSMENT CRITERIA

4.1 Ryde Development Control Plan 2011

Part 4.2 of the City of Ryde Development Control Plan 2011 (DCP 2011) relates to Shepherd's Bay Meadowbank. Section 4.4.2 presents controls that are recommended to "mitigate the impacts of noise and vibration on residential development through appropriate design and use of insulation."

The measures recommended for residential developments include:

- Consideration of noise attenuation and acoustic treatment in the design with building layout and external elements detailed to reduce intrusive noise.
- Application of the principles documented in the Department of Planning's "Development Near Rail Corridors and Busy Roads – Interim Guideline".
- Location and design of balconies and other external elements to minimise noise ingress and facade reflection.
- Construction of new units in accordance with AS 3671-1989: *Acoustics – Road traffic noise intrusion, building, siting and construction* and AS 3671-1987 (sic – should read AS/NZS 2107-2000) *Acoustics – Recommended design sound levels and reverberation times for building interiors*.

The recommended controls applicable to commercial and industrial developments essentially require operational noise emissions to comply with the requirements of the NSW Industrial Noise Policy to prevent the generation of "offensive" noise.

Section 5.4 relates specifically to the Church Street precinct and makes reference to the need to include acoustic treatments such as high performance or double glazing on buildings fronting the major arterial road.

4.2 Environmental Criteria for Road Traffic Noise

4.2.1 NSW SEPP (Infrastructure) 2007

SEPP (Infrastructure) 2007 was introduced to assist the delivery of necessary infrastructure by improving regulatory certainty and efficiency. The Infrastructure SEPP has specific planning provisions and development controls for various types of infrastructure and to development adjacent to infrastructure.

Clause 102 includes provisions to ensure that noise sensitive development proposed adjacent to road corridors which carry considerable traffic volumes are not adversely affected by road noise or vibration.

The clause applies to development adjacent to roads with an annual average daily traffic volume (AADT) of more than 40,000 vehicles (based on the traffic volume data published on the website of the Roads and Maritime Services), and that the consent authority considers likely to be adversely affected by road noise or vibration.

Where residential development is proposed, appropriate measures must be taken to ensure that the following internal noise levels are met:

- The L_{Aeq} noise level between the hours of 10:00 pm and 7:00 am shall not exceed 35 dBA within a bedroom, and
- The L_{Aeq} noise level within any other habitable room (excluding a garage, kitchen, bathroom or hallway) shall not exceed 40 dBA at any time.

Church Street carried 95,600 vehicles according to the RMS 2012 traffic volume counts . The provisions of Clause 102 are mandatory for this development location.

4.2.2 NSW Department of Planning

The DOP's *Development near Rail Corridors and Busy Roads – Interim Guideline* (2008) aims to assist in the planning, design and assessment of developments in, or adjacent to, busy roads and supports the specific provisions of SEPP (Infrastructure) 2007 in relation to road traffic noise. The Guideline states that in circumstances where development is proposed adjacent to a road with an annual average daily traffic volume of 20,000 to 40,000 vehicles, the guidelines provide best practice advice. The noise criteria recommended for the assessment of road traffic noise intrusion into residential buildings is as specified in the Infrastructure SEPP.

4.2.3 AS/NZS 2107:2000

Australian/New Zealand Standard **AS/NZS 2107:2000** - *"Acoustics - Recommended design sound levels and reverberation times for building interiors"* is primarily concerned with establishing internal noise levels for relatively steady noise sources, such as air conditioning plant and continuous road traffic noise. **Table 3** provides a summary of recommended noise levels for residential buildings near "major" roads given in AS/NZS 2107:2000. The guideline lower and upper range of the noise levels are described as "satisfactory" and "maximum" respectively.

Table 3 AS/NZS 2107:2000 Recommended Design Sound Levels for Residential Spaces

Type of Occupancy/Activity	Recommended Design Sound Level L_{Aeq} dBA re 20 µPa	
	Satisfactory	Maximum
Houses and apartments near major roads		
Living areas	35 dBA	45 dBA
Sleeping areas	30 dBA	40 dBA
Work areas	35 dBA	45 dBA

The internal noise level recommendations of AS/NZS 2107:2000 are consistent with the requirements of SEPP (Infrastructure) 2007.

4.2.4 AS 3671-1989

Australian Standard 3671-1989 *"Acoustics – Road traffic noise intrusion- building siting and construction"* provides guidance on the location and construction of buildings in the areas near roadways carrying more than 2000 vehicles per day. The recommended internal noise levels presented in AS/NZS 2107:2000 form the basis for the determination of adequate external envelope construction.

4.3 Internal Sound Insulation - Building Code of Australia (NCC 2013)

Criteria for airborne (and impact) sound transmission between sole occupancy residential units is documented in the Building Code of Australia (BCA).

The residential component of the development will be required to comply with the provisions relating to sound transmission and insulation under Part F5 of the BCA.

4.4 Operational Noise Emissions

The EPA oversee the *Industrial Noise Policy 2000* (INP) which provides a framework and process for deriving noise criteria for consents and licences that will enable the EPA and others to regulate premises that are scheduled under the Protection of the Environment Operations Act 1997.

The INP criteria for industrial (eg mechanical plant and equipment) noise sources have two components:

- Controlling the *intrusive* noise impacts for residents and other sensitive receivers in the short term; and
- Maintaining noise level *amenity* for particular land uses for residents and sensitive receivers in other land uses.

Intrusiveness Criterion

In setting an "Intrusive" noise goal, the ambient (background) L_{A90} noise level, termed the RBL, needs to be established at the nearest sensitive receivers. An "RBL plus 5 dBA" criterion is then applied to the 15-minute L_{Aeq} noise emissions of the noise source in question at the receivers of interest (normally at their property boundary).

Intrusive Design Goal: $L_{Aeq(15minute)} \leq$ RBL + 5 dBA

Amenity Criterion

The amenity assessment is based on noise criteria specific to land use and associated activities. The criteria relate only to industrial-type noise and do not include road, rail or community noise. If present, the existing noise level from industry is generally measured. If it approaches the criterion value, then noise levels from new industries need to be designed so that the cumulative effect does not produce noise levels that would significantly exceed the criterion. For high-traffic areas there is a separate amenity criterion.

The cumulative effect of noise from industrial sources needs to be considered in assessing the impact. In order to determine the amenity noise goal, the maximum ambient L_{Aeq} noise levels within an area should not normally exceed the acceptable noise levels specified in **Table 4**. Where existing L_{Aeq} noise levels approach or exceed the acceptable noise levels given in **Table 4**, L_{Aeq} noise design goals are set below the existing L_{Aeq} levels in order to limit any further increase or "creep" in the ambient levels.

An extract from the NSW INP that relates to the amenity criteria recommended for receiver types relevant to this assessment is given in **Table 4**.

Table 4 Amenity Criteria - Recommended L_{Aeq} Noise Levels from Industrial Noise Sources

Type of Receiver	Indicative Noise Amenity Area	Time of Day	Recommended L_{Aeq}[1] Noise Level	
			Acceptable	Recommended Maximum
Residence	Urban	Day	60 dBA	65 dBA
		Evening	50 dBA	55 dBA
		Night	45 dBA	50 dBA

Notes:

1 The LAeq index corresponds to the level of noise equivalent to the energy average of noise levels occurring over a measurement period.

2 For Monday to Saturday, Daytime 7:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm; Night-time 10:00 pm – 7:00 am.

3 On Sundays and Public Holidays, Daytime 8:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm; Night-time 10:00 pm – 8:00 am.

The project-specific goals for continuous operational noise emissions generated by sources such as any mechanical plant and equipment (such as air-conditioning units) associated with the development are given in **Table 5**. The ambient LAeq noise levels measured during the survey were principally controlled by road traffic noise, even at the Porter Street logger location which is to be used as the basis for determining the environmental emissions criteria for the development. The amenity criteria become equal to the Acceptable Noise Level in an Urban area.

Table 5 Assessment Criteria for Continuous Operational Noise Emissions

Location	Area Classification	Period [1]	ANL [2] LAeq (period) dBA	Measured RBL [3] LA90(15min) dBA	Measured LAeq(period) Noise Level dBA	Criteria for New Sources[4]	
						Intrusive[5] LAeq(15min)	Amenity LAeq(period)
Residence	Urban	Day	60	53	61	**58**	60
		Evening	50	50	56	55	**50**
		Night	45	42	52	47	**45**

Note 1: See footnote of **Table 4**.

Note 2: Recommended - ANL Acceptable Noise Level.

Note 3: RBL Rating Background Level.

Note 4: Assuming existing noise levels unlikely to decrease in the future.

Note 5: Intrusive criterion only applicable to residential receivers.

5 ACOUSTICAL ASSESSMENT & DESIGN RECOMMENDATIONS

5.1 Sound Insulation

5.1.1 Road Traffic Noise Intrusion

Based on the results of unattended noise measurements presented in **Table 1**, the predicted daytime and night-time noise levels incident upon the northern, eastern, western and southern facades of the two future residential apartment buildings are shown in **Table 6**.

Table 6 Predicted Road Traffic Noise Levels

Building	Facade	LAeq(15hr) Daytime dBA	LAeq(9hr) Night-time dBA	Internal Noise Criteria – dBA[1]	
				All Habitable Rooms Daytime	Bedrooms Night-time
Building A Porter Street	North East	59	56	40	35
	South West	59	56	40	35
	South East	62	59	40	35
	North West	60	52	40	35
Building B Church Street	North East	67	64	40	35
	South West	67	64	40	35
	South East	72	69	40	35
	North West	62	59	40	35

1 Criterion to be achieved with windows and doors closed.

Upgraded glazing will generally be required for windows and doors to habitable and sleeping spaces to achieve the design sound levels for airborne noise intrusion. Where the internal noise criteria is exceeded by more than 10 dBA when the windows (or doors) are open, a system of comfort ventilation is recommended to enable glazing to remain closed as required during noisier periods.

The sound insulation requirements (windows closed) of SEPP (Infrastructure) 2007 will be achieved within habitable and sleeping spaces with the in-principle glazing performances outlined in **Table 7**. The predictions are based upon an interior reverberation time of 0.5 seconds.

Table 7 Acoustic Performance Requirements of Glazing

Building	Facade	Room	Glazing	Comfort Ventilation
Building A	North West	Habitable	**Rw 26**	No
Porter Street	North West	Sleeping	**Rw 23**	No
	South East	Habitable	**Rw 28**	Yes
	South East	Sleeping	**Rw 30**	Yes
	South West	Habitable	**Rw 25**	No
	South West	Sleeping	**Rw 27**	Yes
Building B	South East	Habitable	**Rw 38**	Yes
Church Street	South East	Sleeping	**Rw 40**	Yes
	North West	Habitable	**Rw 28**	Yes
	North West	Sleeping	**Rw 30**	Yes
	South West	Habitable	**Rw 33**	Yes
	South West	Sleeping	**Rw 35**	Yes

Indicatively, and as a guide only, acoustical sound insulation performances can generally be achieved by the following glazing systems using heavy duty frames with full perimeter acoustic seals (eg Q-Lon seals – felt weather seals are unsuitable).

Rw < 24 Standard 4 mm monolithic

Rw 25/26 6 mm monolithic

Rw 27-32 6.38 mm laminate

Rw 33-36 10.38 mm laminate

Rw 38 Double glazing system indicatively 6 mm monolithic and 10.38 mm laminate panes separated by a 50 mm width airspace.

Rw 40 Double glazing system indicatively 6.38 mm laminate and 10.38mm laminate panes separated by a 75 mm width airspace.

Where glazing to habitable and sleeping spaces of apartments is required to be fully closed during noisy periods in order to achieve acceptable internal noise levels, an alternative means of achieving the requirement for "comfort ventilation" will need to be considered. Ventilation to the requirements of the **Building Code of Australia F 4.5 (b)** and **Australian Standard 1668.2 Table 4.2** must be provided. This means, as a minimum, providing fresh air at a rate of 5 litres/second per person in habitable rooms, to meet the requirements of AS 1668. Design input should be sought from an appropriately qualified mechanical consultant.

5.1.2 Sound Insulation Between Apartments

The residential component of the development will be required to comply with the NCC 2013 (BCA) provisions under Part F5 *Sound Transmission and Insulation.* **Table 8** details the minimum acoustic performance required for the project.

Table 8 NCC 2013 Sound Insulation Requirements

Construction	2013 BCA	
	Laboratory Rating	**Verification**
Walls between sole occupancy units	$R_w + C_{tr}$ not < 50	$D_{nT,w} + C_{tr}$ not < 45
Walls between a bathroom, sanitary compartment, laundry or kitchen in one sole occupancy unit and a habitable room (other than a kitchen) in an adjoining unit	$R_w + C_{tr}$ not < 50 and **Must have a minimum 20 mm cavity between two separate leaves**	$D_{nT,w} + C_{tr}$ not < 45 "Expert Judgment" Comparison to the "Deemed to satisfy" Provisions
Walls between sole occupancy units and a plant room or lift shaft	R_w not < 50 and **Must have a minimum 20 mm cavity between two separate leaves**[1]	$D_{nT,w}$ not < 45
Walls between sole occupancy units and a stairway, public corridor, public lobby or the like, or parts of a different classification	R_w not < 50	$D_{nT,w}$ not < 45
Door assemblies located in a wall between a sole-occupancy unit and a stairway, public corridor, public lobby or the like	R_w not < 30 [2]	$D_{nT,w}$ not < 25
Floors between sole-occupancy units or between a sole-occupancy unit and a plant room, lift shaft, stairway, public corridor, public lobby or the like, or parts of a different classification	$R_w + C_{tr}$ not < 50 $L_{n,w} + C_I$ not > 62	$D_{nT,w} + C_{tr}$ not < 45 $L'_{nT,w} + C_I$ not > 62
Soil, waste, water supply and stormwater pipes and ductwork to habitable rooms	$R_w + C_{tr}$ not < 40	n/a
Soil, waste, water supply and stormwater pipes and ductwork to kitchens and other rooms	$R_w + C_{tr}$ not < 25	n/a
Intra-tenancy Walls	There is no statutory requirement for airborne isolation via intra-tenancy walls.	

Note 1: A wall must be of "discontinuous construction" if it separates a sole occupancy unit from a plant room or lift shaft. Clause F5.3(c) defines "discontinuous construction" as a wall having a minimum 20 mm cavity between two separate leaves with no mechanical linkage except at the periphery.

Note 2: Clause FP5.3(b) in the 2013 BCA states that the required insulation of a floor or wall must not be compromised by a door assembly.

It should be noted that open-plan kitchen/dining/living areas are considered to be a "habitable room".

5.2 Operational Noise Emissions

Mechanical plant serving the development will be required to achieve the criteria set out in **Table 5**. Upon final selection, plant to be installed should be reviewed to ensure that all items with the potential to operate continuously will not exceed with the limiting noise criterion of **45 dBA** during the night-time period. Plant operating only up until 10:00 pm is required to achieve the evening criterion of **50 dBA** at nearby residential receivers.

6 CONCLUSION

SLR Consulting (Australia) Pty Ltd has conducted an assessment to review the requirements of the proposed residential development at 115 – 117 Church Street and 13 – 15 Porter Street, Ryde in regard to noise intrusion from road traffic, operational noise emissions and the sound insulation of the future residential apartments. The assessment involved a survey of the existing noise environment, derivation and establishment of assessment criteria for noise emissions in accordance with the City of Ryde DCP, EPA and DOP guidelines, a noise impact assessment relative to appropriate criteria, and, where required, recommendations for noise control measures. This assessment has been carried out in accordance with NSW regulatory requirements and this report is to form part of a Development Application in support of the proposed development.

The findings are as follows:

Sound Insulation

Provided the sound insulation performance recommendations and the statutory BCA requirements, as documented in this report are implemented satisfactorily, the proposed development will satisfy all statutory requirements in relation to acoustical amenity and design.

Mechanical Noise Sources

Mechanical services design was unavailable at this stage, as plant selection and design, where required, will take place during the detailed design phase of the project.

It is likely that the criteria set out in **Section 4.4** will be met through the use of conventional noise control methods (eg: selection of equipment on the basis of quiet operation).

Any mechanical plant associated with the development should be reviewed for acoustical compliance at the detailed design stage when mechanical services design is finalised and plant selection has been made.

BCA ACCESS

BUILDING REGULATION & FIRE SAFETY ENGINEERING CONSULTANTS

Project:	**15,117 CHURCH STREET AND 13, 15 PORTER STREET, RYDE**
Report:	**ACCESS FOR PEOPLE WITH A DISABILITY / ADAPTABLE HOUSING REPORT FOR DA SUBMISSION**
Reference:	**105191-Access-r1**
Date:	2nd May 2014
To:	**Eastern Pearl** 209/155 King St Sydney NSW 2000
Contact:	Tina Chen tina@easternpearl.com.au
CC:	Neil Warner-O'Connell Aleksander Design Group now@aleksandardesigngroup.com.au

BCA LOGIC

Level 1, 71-73
Archer Street
Chatswood
NSW 2067

All correspondence to:
PO Box 1580
Chatswood
NSW 2057

ABN 96 402 469 940
ph (02) 9411 5360
fx (02) 9411 5420
em info@bcalogic.com.au
www.bcalogic.com.au

DOCUMENT CONTROL

Revision	Date	Filename:	105191-Access-r1		
FINAL	2nd May 2014	Description:	Development Application Access Assessment Report		
			Prepared by	**Checked by**	**Approved by**
		Name:	Matthew Kemp Accredited Certifier Grade A1, No BPB0208 Snr Building Regulations Consultant	-	Matthew Kemp Accredited Certifier Grade A1, No BPB0208 Snr Building Regulations Consultant
		Signature:			

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PART 1 BASIS OF ASSESSMENT

1.1 Location and Description

The building development, the subject of this report, is located at 115-117 Church St and 13-15 Porter St, Ryde. It will comprise of the construction of mixed use development incorporating three levels of basement car parking, a ground floor retail tenancy and two residential towers containing a total of sixty nine (69) units.

The subject site is bounded by adjacent premises to the North East; Hayes public reserve to the South West, Church St to the South East and Porter St to the North West.

Vehicular access to the carpark will be from Porter St whilst pedestrian entrances to the property will be provided from both the Church and Porter St frontages.

Photograph courtesy of NearMap

1.2 Purpose

The purpose of this report is to assess the design proposal against the following reference documents:

1. SEPP 65 Design Code;
2. Ryde Council DCP 2010 prepared by Ryde Council;
3. AS4299 – Adaptable Housing (as required by Council's DCP);
4. Part D3, E3.6 and F2.4 of the Building Code of Australia (BCA) 2014; and
5. Related Australian Standards as applicable including AS1428.1-2009, AS1428.2-1992, AS1428.4.1- 2009, AS2890.3-1993, AS1680-1998, AS1680.1-2006, AS4586-2004;
6. The Federal Access to Premises Standards (Buildings) 2010; and

to clearly outline those areas where compliance is not achieved.

1.3 Limitations

This report is limited to an assessment of the access and amenity provisions against the provisions of the above documents listed in Part 1.2 of this report.

This report does not include nor imply any detailed assessment for design, compliance or upgrading for: -

- the structural adequacy or design of the building;
- the inherent derived fire-resistance ratings of any existing or proposed structural elements of the building (unless specifically referred to); and
- the design basis and/or operating capabilities of any existing or proposed electrical, mechanical or hydraulic fire protection services.

This report does not include, or imply compliance with:

(a) the Disability Discrimination Act (it cannot be guaranteed that that a compliant under the DDA will not be made, however should the building comply with BCA2014 and the Premises Standard then those responsible for the building cannot be subject to a successful complaint);

(b) BCA Sections B, C, E (except Clause E3.6), F (except Clause F2.4), G, H, I, J and Parts D1 and D2 – Refer separate BCA Assessment Report prepared by BCA Logic Pty Ltd Ref 104859-BCA-r1;

(c) Demolition Standards not referred to by the BCA;

(d) Work Health and Safety Act;

(e) Construction Safety Act;

(f) Requirements of other Regulatory Authorities including, but not limited to, Telstra, Water Supply Authority, Electricity Supply Authority, Work Cover, RTA, Local Council, ARTC, Department of Planning and the like; and

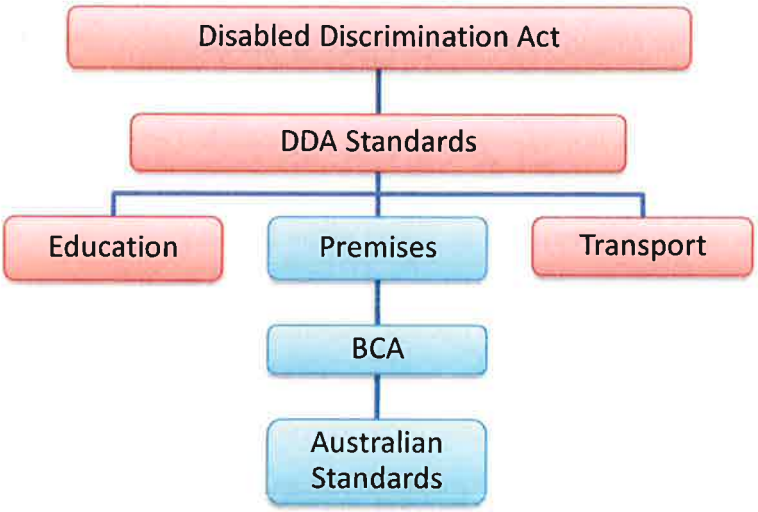
(g) this report does not assess the safety of the particular aspects of the building but merely the minimum standards called up by the Access provisions of BCA2014.

1.4 Design Documentation

This report has been based on the Design plans and Specifications listed in Annexure A of this Report.

1.5 Relationship to the DDA

The Disability Discrimination Act 1992 (DDA) applies nationally and is complaint based. While the BCA is recognised as a design standard to satisfy certain aspects of the DDA, compliance with the BCA and the referenced standards does not guarantee that a complaint will not be lodged. The graph below indicates the current relationship of the BCA to the DDA.



1.6 Organisational Responsibilities - Disability Discrimination Act 1992 (DDA)

All organisations have a responsibility, under the Federal Disability Discrimination Act (DDA), to provide equitable, dignified access to goods and services and to premises used by the public. Premises are broadly defined and would include all areas included within the subject development.

The DDA provides uniform protection against unfair and unfavourable treatment for people with a disability in Australia. It also makes it unlawful to discriminate against a person who is an "associate" (such as a friend, carer or family member).

Disability is broadly defined and includes disabilities which are:

- physical;
- intellectual;
- psychiatric;
- neurological;
- cognitive or sensory (a hearing or vision impairment);
- learning difficulties;
- physical disfigurement; and
- the presence in the body of disease causing organisms.

This broad definition means that everyone with a disability is protected. The Act supports the principle that people with a disability have the same fundamental rights as the rest of the community. Provisions apply to a wide range of life activities including:

- access to premises used by the public;
- education;
- provision of goods and services;
- employment;
- administration of Commonwealth laws and programs.

When a person with a disability wants to utilise premises including all buildings, outdoor spaces, car parking areas, pathways and facilities, then equitable, dignified access must be provided. The DDA requires that appropriate changes be made to provide access. A complaint can be made under the DDA if appropriate access is not provided.

1.7 Disability (Access to Premises – Buildings) Standards 2010 (Premises Standard)

On 15 March 2010 the Disability (Access to Premises - Buildings) Standards 2010, was tabled in Federal Parliament. These Standards have been under development for many years and significant public consultation has occurred during their development. The

Premises standard has now been introduced on 1st May 2011 in line with an updated National Construction Code which will incorporate the Building Code of Australia and the National Plumbing Code.

The aim of the Standards is to provide the building and design industry with detailed information regarding the required access provisions associated with the design and construction of new buildings and upgrade to existing buildings. They do not apply to existing buildings that are not undergoing upgrade. They will only apply to elements addressed within the Standards. All other elements related to premises will still be subject to the existing provisions of the DDA.

The Standards will generally align with the BCA (see below) and reference a range of Australian Standards relating to access and other associated matters. The Disability (Access to Premises - Buildings) Standards aim to provide certainty for the building industry in relation to meeting the requirements for access in new and upgraded buildings.

This Access Appraisal incorporates the key elements of the Standards as well as additional access requirements to assist in achieving best practice in the provision of access for all to buildings.

The Building Code of Australia 2014, in conjunction with the DDA, applies to all new buildings, new building works to existing buildings and buildings undergoing significant refurbishment or alteration.

Provision of access for a person using a wheelchair or mobility aid is often considered to be an indication of effective design to the built environment. However the majority of users of car parks, buildings and outdoor areas are pedestrians who also benefit greatly from wheelchair accessible design. Conversely, they can also be denied appropriate access if barriers are incorporated into designs.

In addition, older persons and people with disabilities within the community have a wide range of access needs that are not necessarily satisfied by just providing access for a person using a wheelchair. People also experience the effects of disability through impairment to:

- Sight;
- Hearing;
- Motor ability;
- Dexterity;
- Balance;
- Mental functioning etc.

Examples of a range of access challenges include:

- People who use wheelchairs face difficulties such as abrupt changes in levels (e.g. steps and steep slopes/gradients) and limited access under basins, benches and tables. They also need an increased circulation area, particularly at doorways and changes in direction.

- People who experience difficulty walking may have stiff hips, balance problems or uncoordinated movements which require attention to stairs and handrails, seating in waiting areas, slip resistant floor finishes and ramps with a gentle slope/gradient.

- People with manipulatory difficulties (finger or hand control) require appropriately selected handles, switches, buttons (in lifts) and taps to enable usage
- People with sensory disabilities, which affect either their hearing or vision, require clear, easy to understand signage and tactile indicators. This requires attention to a variety of factors including colour, contrast, print size, levels of illumination and the provision of appropriate communication systems in public areas.

- People with intellectual disabilities may have difficulty finding their way in new environments. Therefore, direct access routes and clear directional signage with graphics are important.

As a wide range of physical issues impact on the provision of access for people with disabilities, responsive design, incorporating a continuous accessible path of travel, needs to be equitable and therefore inclusive of the needs of all of the community. Access should cater for both pedestrians and users of wheelchairs and other mobility aids. In addition consideration must be given to the needs of users who may require assistance from other people as well as assistance animals.

PART 2 BUILDING DESCRIPTION

For the purposes of the Building Code of Australia (BCA2014) the development may be described as follows.

2.1 Rise in Storeys (Clause C1.2)

The building has a rise in storeys of seven (7).

2.2 Classification (Clause A3.2)

The building has been classified as follows.

Class	Level	Description
2	Ground floor through to Level 06	Residential sole occupancy units
6	Ground floor	Retail tenancy
7a	Basement Levels 1, 2 and 3	Basement carparking, bicycle storage areas, garbage rooms, plant rooms and services facilities.

* As the bicycle storage areas, amenities, garbage rooms, and services facilities are considered to be ancillary to the use of the rest of the floor they are considered to assume the same classification being Class 7a.

2.3 Adaptable / Accessible Areas

Under the provisions of reference documents, the following areas of the building are required to be accessible:

Level	Area / Room	Description
Basements	Basement	To and within the levels containing accessible car parking spaces.
Ground floor	Retail tenancies	To and within the area of the retail tenancies.
Ground floor to level 06	Common areas & Adaptable Units	To and within the common areas of the building and 7 adaptable residential units.

PART 3 ACCESS / ADAPTABILITY

3.1 Introduction

The tables below is a summary of all the individual elements that relate directly to the ability of a person with a disability to access all the portions of the building required to be accessible as outlined in Part 2.3 of this report.

Access has been assessed against the reference documents listed in Part 1.2 of this report. Compliance has been indicated by using the following symbols:

Symbol	Description
✓	Compliance is achieved, and no further information is required.
✓	Specific details are not provided, but compliance can be readily achieved.
✗	From the documentation provided, compliance is not achieved.

3.2 SEPP 65 Design Code Requirements

The SEPP 65 Design Code requires the following in relation to adaptability / accessibility within a residential flat building:

1. Accessible routes through open spaces and between buildings (page 47);
2. High quality accessible routes to the public and semi-public areas of the building and site, including major entries, lobbies, communal open space, site facilities, parking area, public streets and internal roads (page 64).
3. Promotion of equity by (page 64):
    a. Ensuring the main building entrance is accessible for all from the street and from carparking areas;
    b. Integrating ramps into the overall building and landscape design.
4. Maximisation, and optimisation, of the number of accessible, visitable and adaptable apartments in a building (with a rule of thumb of provision of barrier free access to at least 20% of dwellings in the development) (pages 64, 70 and 76).
5. A mix of unit types to be accessible / adaptable (page 70).
6. Maximisation of the number of accessible and visitable apartments on the ground floor (page77-78).

Outlined below is a detailed assessment of the proposal against the relevant provisions of the SEPP 65 Design Code, with reference to the requirements as numbered above;

Item No:	Location / Description	Compliance
1.	**Accessible routes to open spaces and between buildings**	✓
Comment:	The development provides accessible routes to the open space and within the building with the main sitting platform being accessible. Connection is available between the different buildings by the interconnecting basement level.	
2.	**High quality accessible routes**	✓
Comment:	Access has been allowed for as appropriate throughout the development. The design of the access ways readily achieves circulatory requirements and allows ease of movement through the development.	

Item No:	Location / Description	Compliance
3.	**Promotion of equity**	✓
Comment:	The building is considered to provide equitable access on the basis that both proposed main entrance points will be accessible. Those with a disability will be able to experience the common open space area and connection throughout the development will be available.	
4.	**Maximisation, and optimisation, of the number of accessible, visitable and adaptable apartments**	✓
Comment:	Access can be provided to the entry doorway of all residential units. Seven (7) adaptable units will be provided in the development.	
5.	**A mix of unit types to be accessible / adaptable**	✓
Comment:	The development is comprised of a mixture of one, two and three bedroom units. Seven (7) of those units will be adaptable.	
6.	**Maximisation of the number of accessible and visitable apartments on the ground floor**	✓
Comment:	All residential units on the ground floor will be visitable and at least one of those will be an adaptable type.	

3.3 Council DCP Requirements

Ryde Council DCP 2010 provides Council's planning controls on the provision of Accessibility and Adaptability under Part 9.2 – Access for People with Disabilities.

The relevant controls for Accessibility under Part 9.2 of Ryde Council DCP 2010 are as follows;

These access provisions apply to all development types throughout the Ryde Local Government Area and should be read in conjunction with the Lane Cove LEP and other Council policies; in particular Council's Disability Action Plan is to be taken into account, especially in relation to public spaces.

Objectives

The objectives of this Part are to;

1. Ensure that builders, developers and others provide access for people with disabilities in new and refurbished premises by the Disability Discrimination Act 1992.
2. Provide design criteria that achieve access for people with disabilities.
3. Promote the concept of an accessible environment for the whole community.

General

The relevant requirements for the particular classes of buildings are as follows;

Class 2 Residential

- An accessible path of travel from the street to and through the front doors of each residential unit must be provided.

Comments

Each residential unit entrance door will need to maintain an unobstructed clear opening width of 850mm and maintain the required circulation spaces of Clause 13 of AS 1428.1-2009 on the public corridor side. It is considered that the design suitably facilitates for this to occur.

- In developments with three or more habitable storeys a percentage of units shall comply with the provisions of a Class A adaptable unit as specified in AS 4299, being 10% in this instance.

Comments

It is noted that 10% of the units have been suitably proposed as being adaptable in accordance with this requirement. A further detailed assessment of the requirements of AS 4299 is outlined below.

Class 6 Retail

- The ground floor of retail must comply with all applicable provisions of this Part and in developments with two or more storeys, where the aggregate floor area of all storeys above the ground storeys above the ground storey is more than 400m^2 or more, all storeys must comply with all applicable provisions of this Part. In particular, lift access is to be provided to the upper storey or storeys.

Comments

Appropriate access is currently allowed for in accordance with the Federal Access to Premises Standards (Buildings) 2010, Building Code of Australia 2014 and AS 1428.1-2009. It is considered that this DCP requirement is met given that the appropriate legislative controls have been taken into consideration.

The following summarises Council's requirements and details how the proposal is an assessment against the relevant provisions of Ryde Council DCP 2010:

3.4 AS4299 – Adaptability Assessment Summary

Seven (7) adaptable units are required in the development. The adaptable units are required to comply with the requirements of AS4299-1995 for Class A adaptable units. The following table details the requirements for the design of a Class A adaptable unit.

The units are required to be designed and constructed so that they may be readily reconfigured to allow residence of persons with a disability. To obtain later certification as an adaptable unit 'as-built' drawings showing the unit in its pre-adaption and post-adaption stages shall be provided. A description of how the adaption is to be achieved shall also be provided.

It has been considered that the particular furniture and fixture fit out is largely indicative at this stage, further design development of the units will need particular attention to the items outlined within the table below.

Item No.	Room/Item	Clause No.	Comment	Compliance
	DRAWINGS			
1	Provision of drawings showing the housing unit in its pre-adaptation and post-adaptation stages	2.3	Required at the construction stage.	✓
	SITING			
2	A level or gently sloping site with up to 1:14 gradient	3.2.2	The standard does not preclude steeper sites provides appropriate	✓

			external access to facilities is available. It is considered that the design suitably provides for it to occur.	
3	A continuous accessible path of travel from street frontage and vehicle parking to entry complying with AS1428.1	3.3.2	No Street parking will be provided. An access way from the primary principle entrance from the street frontage and adjoining reserve will be provided. Access will be provided from the basement carpark to the public corridors and residential units.	✓
4	Additional paths and walkways to be continuous, slip-resistant and hard-surfaced with gradients complying with AS 1428.1	3.3.2	An accessible path can be provided from the allotment boundaries to the main lobby entrances.	✓
5	Within a residential estate development, common use facilities to be accessible	3.3.3	Access to the letterbox bank, garbage rooms and car parking areas will be provided. Access will be achieved to the main raised sitting area of the development.	✓
6	Within a residential estate development, street names with house numbers at each intersection	3.3.3	The development will be appropriately identified by naming and numbering as required.	✓
7	Within a residential estate development, internal roadways to be separate from pedestrian walkways	3.3.3	Not a residential estate.	**N/A**
	SECURITY			
8	Pathway lighting shall be positioned at low height to avoid glare and to provide min. 50 lux at ground level	3.6.1	Pathway lighting to comply at construction stage.	✓
9	Clear line of sight from a well-lit vehicle drop-off point to safe pedestrian entry point	3.6.2	No proposed street parking or drop off area for the building.	**N/A**
	LETTERBOXES IN ESTATE DEVELOPMENTS			
10	Within residential estate developments, letterboxes centrally located adjacent to street entry. Lockable	3.8	Not a residential estate.	**N/A**
11	Letterboxes to be on hard standing area connected to accessible pathway.	3.8	Letterboxes for the residential units are proposed to be provided in proximity to the street entry accessible from a hard stand area.	✓
12	Letterbox area roofed and in a well lit location.	3.8	The location could be readily lit by external lighting and a roof provided if necessary in the future.	✓
13	Parcel rack included with letterboxes	3.8	A parcel rack is required with the letterboxes at construction stage.	✓
	PRIVATE CAR ACCOMMODATION			
14	Carparking space or garage min area 6.0 m x 3.8 m	3.7.2	Accessible car spaces to be provided within basement car park.	✓
15	Roof to car parking space	3.7.1	Car parking will be within the basement and protected.	✓
16	Internal clearance of car parking 2.5m min	3.7.2	Accessible car spaces can maintain 2.5 metres in height.	✓

17	Provision for power-operated roller door to garage	3.7.2	Specific car space details have not been provided.	✓
18	Covered access to dwelling unit	3.7.3	Access to a lift lobby will be provided from within the basement carpark.	✓
19	Illumination level min 50 lux	4.10	Basement carpark lighting will be required to achieve a minimum 50 lux illumination.	✓
	ACCESSIBLE ENTRY			
20	Accessible entry	4.3.1	The entry door to an adaptable unit is to have a minimum clear opening of 850mm and comply with door circulation spaces under AS1428.1-2009. Details to be shown on the post adaption plan.	✓
21	Entry protected by porch or similar	4.3.1	Units are accessed from an enclosed corridor.	**N/A**
22	Accessible entry to be level (i .e. max. 1:40 slope)	4.3.2	Units are accessed from an enclosed corridor.	**N/A**
23	Threshold to be low-level	4.3.2	Public corridors assumed to be flat.	✓
24	Landing to enable wheelchair manoeuvrability	4.3.2	The landing areas outside the unit entry doors will maintain the circulation spaces in accordance with AS 1428.1-2009.	✓
25	Accessible entry door to have 850mm min clearance	4.3.1	The entry door to the adaptable units are to have a minimum clear opening of 850mm and comply with door circulation spaces under AS1428.1-2009. Details to be shown on the post adaption plan.	✓
26	Doors throughout shall have a minimum clear opening of 820mm, except where otherwise described.	4.3.3	Doors can maintain this dimension, details to be provided as part of construction design.	✓
27	Door lever handles and hardware to AS 1428.1	4.3.4	Door handles are to comply with AS1428.1-2009 at the construction stage.	✓
28	Provision for combined door/security door	4.3.5	The unit entry doors are internal to the building.	**N/A**
29	Potential min. Illumination level 300 lux	4.10	Lighting to comply at construction stage.	✓
	EXTERIOR: GENERAL			
30	All external doors to be keyed alike	4.3.4	The units effectively only have one external door.	✓
31	Provision for security screen to exterior opening or sliding windows and doors	4.7.6	Exterior doors and windows to have the capacity for the fitting of security screens. To be indicated on post adaption plan.	✓
32	Internal doors to have 820 mm min clearance	4.3.3	Internal doors are required to have a minimum clear opening of 820mm. Details to be shown on the post adaption plan.	✓
33	Internal corridors min. width of 1000 mm	4.3.7	Internal corridors within the unit are to have a minimum width of 1000mm. Details to be shown on the post adaption plan.	✓
34	Provision for compliance with AS 1428.1 for door approaches	4.3.7	Circulation spaces at doorways within the unit are to comply with AS1428.1-2009. Details to be shown on the post adaption plan.	✓

35	Window sills at max. 730mm above floor level to living and 600mm above floor level to bedroom areas	4.7.2 and 4.6.2	Living area is served by doors to a balcony. Glazed doors are to have a transom at 600mm to 730mm above the floor and be of safety glazing complying with AS1288. To be indicated on post adaption plan. Bedroom window sill to be maximum 600mm above floor level. Details are to be provided in the design documentation. Bedroom glazed doors are to have a transom at 600mm to 730mm above the floor and be of safety glazing complying with AS1288. To be indicated on post adaption plan.	✓ ✓ ✓
36	Provision for circulation space of min. 2250 mm diameter	4.7.1	A circulation space of min. 2250 mm diameter is to be made available in the living areas after the furniture has been placed. Details to be shown on the post adaption plan.	✓
37	Minimum 4 double GPO's	4.7.3	Minimum 4 double GPO's are to be provided to the living rooms to be indicated on post adaption plan.	✓
38	Telephone adjacent to GPO	4.7.4	Telephone outlet adjacent to GPO in living/dining area to be indicated on post adaption plan.	✓
39	Telephone outlet location between kitchen and living space, adjacent to GPO	4.7.4	Telephone outlet location between kitchen and living space, adjacent to GPO to be indicated on post adaption plan.	✓
40	Two TV antenna outlets adjacent to GPO (positioned so viewing from dining and kitchen is achievable)	4.7.5	Two TV antenna outlets adjacent to GPO (positioned so viewing from dining and kitchen is achieved) to be indicated on post adaption plan.	✓
41	Potential illumination level min. 300Lux	4.10	Lighting to comply at construction stage.	✓
	KITCHEN			
42	Minimum width 2.7 m (1550mm clear between benches)	4.5.2	1550mm clearance is required in front of sink and appliances. Details to be shown on the construction plans.	✓
43	Provision for circulation at doors to comply with AS 1428.1	4.5.1	No kitchen doors have been proposed.	**N/A**
44	Provision for benches planned to include at least one work surface of 800 mm length, adjustable in height from 750 mm to 850 mm or replaceable. Refer to Figure 4.8	4.5.5	Work surface of 800mm to be indicated on post adaption plan.	✓
45	Refrigerator adjacent to work surface	4.5.5	Refrigerator to be adjacent to the work surface and to be indicated on post adaption plan.	✓
46	Kitchen sink adjustable to heights from 750 mm to 850 mm or replaceable	4.5.6	The design is to allow for the removal of the cabinets under the sink and adjacent work surface.	✓
47	Kitchen sink bowl max. 150mm	4.5.6	Kitchen sink bowl to be max.	✓

	deep		150mm deep, this item is noted as something that can be altered post adaption.	
48	Tap set capstan or lever handles or lever mixer	4.5.6(e)	Taps may be updated post adaption, with no works required at this stage.	✓
49	Tap set located within 300 mm of front of sink	4.5.6(e)	Taps may be updated post adaption, with no works required at this stage.	✓
50	Installation of thermostatic mixing valve	4.5.6(f)	Taps may be updated post adaption, with no works required at this stage.	✓
51	Cook tops to include either front or side controls with raised cross bars	4.5.7	Cook top controls may be updated post adaption, with no works required at this stage.	✓
52	Cook tops to include isolating switch	4.5.7	Cook tops to be provisioned with isolating switches or gas stop valves that can be easily and safely operated with the cook top is in use. Cook top may be updated post adaption, with no works proposed at this stage.	✓
53	Work surface min. 800 mm length adjacent to cook top at same height	4.5.7	Work surface adjacent to, and at the same height as the, cook top of 800mm to be indicated on post adaption plan.	✓
54	Oven located adjacent to an adjustable height or replaceable work surface	4.5.8	The oven is to be adjacent to an 800mm wide work surface.	✓
55	Provision for microwave oven at height of 750mm-1200mm above floor	4.5.9	Provision for microwave oven at height of 750mm-1200mm above floor. To be indicated on post adaption plan.	✓
56	Central light with second light over sink. Potential illumination level min. 300 lux with 550 lux over work surfaces	4.10	Lighting to comply at construction stage.	✓
57	Adjustable shelving: depth 600mm max. Up to 800mm above floor; depth 450mm max. From 800 to 1500mm above floor; depth 300mm max. Above 1500mm	4.5.10	Shelving to be provisioned for compliance with this clause.	✓
58	Locate handles towards the top of below bench cupboards and towards the bottom of overhead cupboard. Provide 'D' pull handles	4.5.10	"D" pull handles to be located towards the top of below bench cupboards and towards the bottom of overhead cupboard. To be indicated on post adaption plan.	✓
59	GPOs to comply with AS 1428.1. At least one double GPO within 300mm of front of work surface	4.5.11	GPOs to comply with AS 1428.1. At least one double GPO within 300mm of front of work surface. To be indicated on post adaption plan.	✓
60	GPO for refrigerator to be easily reachable when the refrigerator is in its operating position	4.5.11	GPO for refrigerator to be easily reachable when the refrigerator is in its operating position. To be indicated on post adaption plan.	✓
61	Slip-resistant floor surface	4.5.4	Floors to be slip resistant to comply with AS3661.1. To be indicated on post adaption plan.	✓
	MAIN BEDROOM			
62	At least one bedroom of area sufficient to accommodate	4.6.1	Turning space minimum 1540 x 2070mm required. To be	✓

	queen size bed and wardrobe and circulation space requirements of AS 1428.2		indicated on post adaption plan.	
63	Two double GPOs on wall where bedhead is likely to be	4.6.3	Two double GPOs are required on wall adjacent to the bedhead to be indicated on post adaption plan.	✓
64	Minimum of one GPO on opposite wall	4.6.3	GPO on opposite walls to be indicated on post adaption plan.	✓
65	Telephone outlet next to bed on the side closest to door (with GPO adjacent to telephone outlet)	4.6.5	Telephone outlet next to bed on the side closest to door (with GPO adjacent to telephone outlet). To be indicated on post adaption plan.	✓
66	TV antenna point and double GPO on opposite wall to bedhead	4.6.6	TV antenna point and double GPO on opposite wall to bedhead. To be indicated on post adaption plan.	✓
67	2-way light switches, one located above bed, 1000mm high above floor	4.6.4	2-way light switches, one located above bed, 1000mm high above floor. To be indicated on post adaption plan.	✓
68	Potential illumination level 300 lux	4.10	Lighting to comply at construction stage.	✓
69	Sliding doors on wardrobe with full length mirror	4.6.7	Wardrobe sliding doors are desirable with a full length mirror on the most accessible door. Can be updated at post adaption stage with no works required at this stage.	✓
	BATHROOM			
75	Provision for bathroom area to comply with AS 1428.1	4.4.1	The bathroom area is to comply with Clause 15 of AS1428.1-2009. To be indicated on a pre-adaption plan and shown as an accessible bathroom on a post adaption plan.	✓
76	Slip-resistant floor surface	4.4.2	Floors to be slip resistant to comply with AS3661.1. To be indicated on a post adaption plan.	✓
77	Shower recess- no hob. Minimum size 1160 x 1100 to comply with AS 1428.1. (Refer Figures 4.6 and 4.7)	4.4.4(f)	Shower to be hob-less. The post adaption plans to show AS1428.1 compliant sizes and fitout.	✓
78	Shower area waterproofed to AS 3740 with floor to fall to waste	4.4.4(f)	Entire bathroom to comply with AS3740.	✓
79	Recessed soap holder	4.4.4(f)	Soap holder to be recessed.	✓
80	Shower taps positioned for easy reach to access side of shower sliding track	4.4.4(f)	Shower head and taps to be located at a height and clearance compliant to AS1428.1. To be indicated on a post adaption plan.	✓
81	Shower waste min. 80mm diameter	4.4.4(f)	Shower waste to be a minimum of 80mm in diameter.	✓
82	Provision for adjustable, detachable hand held shower rose mounted on a slider grabrail or fixed hook (plumbing and wall – strengthening provision)	4.4.4(h)	Provisioning to be provided. To be indicated on a post adaption plan.	✓
83	Provision for grabrail in shower (Refer to Figure 4.7) to comply	4.4.4(h)	Provisioning to be provided. To be indicated on a post adaption plan.	✓

	with AS 1428.1			
84	Provision for additional grabrail	4.4.4(h)	Provisioning to be provided. To be indicated on a post adaption plan.	✓
85	Provision for folding seat in shower to comply with AS 1428.1	4.4.4(h)	Provisioning to be provided. To be indicated on a post adaption plan.	✓
86	Tap sets to be capstan or lever handles with single outlet	4.4.4(c)	Taps may be updated post adaption, with no works required at this stage.	✓
87	Installation of thermostatic mixing valve	4.4.4(b)	Taps may be updated post adaption, with no works required at this stage.	✓
88	Provision for washbasin with clearances to comply with AS 1428.1	4.4.4(g)	Taps may be updated post adaption, with no works required at this stage.	✓
89	Wall cabinet with light over or similar	4.4.4(d)	Taps may be updated post adaption, with no works required at this stage.	✓
90	Double GPO beside mirror	4.4.4(d)	Double GPO to be provided beside mirror. To be indicated on a post adaption plan.	✓
91	Potential illumination level 300 lux generally with 600 lux task lighting	4.10	Lighting to comply at construction stage.	✓
	TOILET			
92	Provision of either 'visitable toilet' or accessible toilet	4.4.3	Once adapted the housing unit will be provided with an accessible toilet. To be indicated on a post adaption plan. Also the proposed retail toilets are accessible from the public corridor area.	✓
93	Provision to comply with AS 1428.1	4.4.1	The bathroom area is to comply with Clause 15 of AS1428.1-2009. To be indicated on a pre-adaption plan and shown as an accessible bathroom on a post adaption plan.	✓
94	Location of WC pan at correct distance from fixed walls	4.4.3	Pan to be located correct distances from the walls in accordance with AS1428.1-2009 at pre adaption stage.	✓
95	Provision for grab rail zone. (Refer Figure 4.6)	4.4.4(h)	Provisioning to be provided. To be indicated on a post adaption plan.	✓
96	Slip resistant floor surf ace. (Vitreous tiles or similar)	4.4.2	Floors to be slip resistant to comply with AS3661.1. To be indicated on a post adaption plan.	✓
97	Recessed toilet roll holder	4.4.3	The toilet roll holder is to be recessed. To be indicated on a post adaption plan.	✓
	LAUNDRY			
98	Circulation at doors to comply with AS 1428.1	4.8	Doorways at laundries to have appropriate circulation spaces in accordance with AS 1428.1. To be shown on post adaptation plan. Alternative may be to allow for laundries directly accessible from corridor areas.	✓
99	Provision for adequate circulation space in front of or beside appliances (min. 1550 mm depth)	4.8	A minimum of 1550mm is required in front of the laundry appliances. To be updated on design documentation.	✓

100	Provision for automatic washing machine	4.8(e)	Space for an automatic washing machine is to be provided. To be indicated on a post adaption plan.	✓
101	Provision for drier	4.8(f)	Space for a dryer is provided. To be indicated on a post adaption plan.	✓
102	Where clothes line is provided, an accessible path of travel to this	4.8(a)	No clothes line proposed.	**N/A**
103	Installation of thermostatic mixing valve	4.8(d)	Taps may be updated post adaption, with no works required at this stage.	✓
104	Taps positioned at side of tub	4.8(c)	Taps may be updated post adaption, with no works required at this stage.	✓
105	Double GPO	4.8(g)	Double GPO to be provided in the laundry. To be indicated on a post adaption plan.	✓
106	Provision of shelf for soaps and similar, 1200mm max. Height	4.8(h)	Provisioning to be provided. To be indicated on a post adaption plan.	✓
107	Potential illumination level 300 lux generally with 550 lux task lighting	4.10	Lighting to comply at construction stage.	✓
108	Slip-resistant floor surface	4.9.1	Floors to be slip resistant to comply with AS3661.1. To be indicated on a post adaption plan.	✓
	STORAGE			
109	Linen cupboard min. 600mm wide with adjustable shelving	4.11.5	A lien storage cupboard of minimum 600mm width with adjustable shelving is to be indicated on a post adaption plan.	✓
	DOOR LOCKS			
110	Door hardware operable with one hand, located 900–1100mm above floor	4.3.4	Door hardware operable with one hand, located 900–1100mm above floor. To be indicated on post adaption plan.	✓
	FLOOR COVERINGS			
111	Slip resistant surfaces – balconies and external paved areas (Vitreous tile or similar)	4.9.1	Floors to be slip resistant to comply with AS3661.1. To be indicated on post adaption plan.	✓
	ANCILLARY ITEMS			
112	Switches located 900-1100mm above floor in line with door handles	4.11.1	Switches to be located between 900 and 1100mm above the floors. To be indicated on post adaption plan.	✓
113	GPOs located not less than 600mm above floor	4.11.1	Provisioning to be provided to allow post adaption relocation of the GPO's, with GPOs at least 500mm from a corner. To be indicated on post adaption plan.	✓
114	Electrical distribution board located inside housing unit	4.11.2	The EDB for each unit is to be located with the unit in an accessible position. To be indicated on post adaption plan.	✓
115	Window controls located in an accessible position	4.11.4	Operating controls to be in an accessible position. To be indicated on post adaption plan.	✓
	GARBAGE			
116	Provision for bin in an accessible location	4.11.6	Waste service room provided within basement level which will be accessible.	✓

117	Provision for external wheelchair storage	4.11.6	Show location of wheel chair storage outside the unit on the post adaption plan.	✓
118	Provision for external battery charging facility	4.11.6	Show location of external battery charging facility outside the unit on the post adaption plan.	✓
119	Guide dog accommodation	4.11.6	Where necessary landscaping area could be accessed.	✓

3.5 BCA2014 and Premises Standards Assessment Summary

Clause	Comment	Status
SECTION D: ACCESS AND EGRESS		
PART D3 - ACCESS FOR PEOPLE WITH A DISABILITY		
D3.0: Deemed-to-Satisfy Provisions	Noted	-
D3.1: General Building Access Requirements	Access is to be provided to and within all common areas used by the occupants. This is to be extended to not less than one type of rooms or spaces for use in common by the residents. This would include both the garbage spaces and common open space areas. Access is to be provided to each entrance doorway of the sole occupancy units as a passenger lift is provided. Access is to be provided to and within the basement levels containing accessible car parking spaces. Access must be provided to and with both of the retail tenancies. Accessible areas must contain the features specified by this part and AS 1428.1-2009. It is understood that the building will be used to house permanent long term residents in this regard the Premises Standards does not require access to the residential units.	✓
D3.2: Access to Buildings	An access way is to be provided from the allotment boundaries from both Porter and Hayes Reserve as they are the main points of pedestrian entry to the allotment. It is not intended that the Church St entry be defined as a main entry as the will be orientated more towards these points. Suitable walkways are proposed to service these entrance points. It is noted that 50% of the building entrances will be accessible served directly from the main points of pedestrian entry on to the site. Connection with the accessible car spaces will be required and is suitably allowed for by the provision of passenger lifts. The entrances into the building foyers are required to be accessible and the doorways are required to maintain a minimum unobstructed width of 850mm.	✓
D3.3: Parts of Buildings to be Accessible	Ramps, stairways, walkways, circulation spaces at doorways, door widths and accessible paths are to comply with AS1428.1-2009. All stairways throughout the development are to comply with the requirements of Clause 11 of AS 1428.1-2009 except for the fire isolated stairwells will need to comply with Clause 11.1(f) and (g) of AS1428.1-2009. It is considered that the requirements can be achieved. The proposed walkways will need to comply with the requirements of Clause 10 of AS 1428.1-2009. It is	✓

SECTION D: ACCESS AND EGRESS		
	noted that the gradients of the pedestrian entrances will not exceed 1:20 and therefore are not considered to be ramps. It is considered that the requirements can be achieved. It is considered that the access ways will maintain appropriate dimensions to facilitate turning and passing in accordance with AS 1428.1-2009. Appropriate dimensions have been allowed for at the corridor ends to facilitate 180^0 turning. Doorways openings will need to maintain an unobstructed clear opening width of 850mm including those units proposed to be adaptable and security gates. Appropriate provision has been made to ensure that doorways will be accessible as required by Clause 13 of AS 1428.1. Care will need to be taken at the retail accessible toilets between the successive doors within the air lock. It is recommended that these air locks not be provided as it is permissible by the BCA2014 to open directly into the lobby area. Note: The Access to Premises Standards to not provide the concessions provided in sub-cluses (g) and (h) in this clause, hence compliance with the Access to Premises Standards will require the floor covering in the accessible areas to strictly comply with Clause 7.4.1(a) of AS1428.1-2009.	
D3.4: Exemptions	The following areas in the building are considered to not be accessible due to the specific uses of the room or space: • Plant rooms, switch rooms and cleaners facilities.	Noted
D3.5: Accessible Car Parking	The number of car spaces allocated to the units is to be determined in accordance with the requirements of the Ryde DCP. Each adaptable unit is to be provided with an accessible car space. It is noted that 8 car spaces are required for the retail tenancies and as such one of those will need to an accessible car space designed in accordance with AS/NZS 2890.6-2009. In total 9 car spaces would therefore be required to be accessible. It is noted that nine spaces have been suitably nominated. The retail car spaces must be designed in accordance with AS/NZS 2890.6-2009 (incorporating shared areas) whilst those associated with the adaptable units may achieve the design requirements of AS 4299-1995 (extended width). Whilst the car spaces can readily achieve the particular requirements it will need to be ensured that the final space allocations will comply with the respective requirements.	✓
D3.6: Signage	Braille and tactile signage complying with Specification D3.6 and incorporating the international symbols as appropriate must identify each sanitary facility, all accessible entrances where an entrance is not accessible and each door required by E4.5 of the BCA2014 to be provided with an exit sign.	✓
D3.8: Tactile Indicators	The fire isolated stairs are not required to be provided with tactile indicators. The current proposal will require tactile ground surface indicators to stairways and where overhead obstructions are less than 2 metres in height. Tactile ground surface indicators must comply with sections 1 and 2 of AS/NZS 1428.4.1.	✓

SECTION D: ACCESS AND EGRESS		
D3.11: Ramps	The current proposal will not have access way gradients exceeding 1:20 and therefore no ramps are considered to be provided within the building.	✓
D3.12: Glazing on an Accessway	On an accessway, where there is no chair rail, handrail or transom, all frameless or fully glazed doors, sidelights and any glazing capable of being mistaken for a doorway or opening, must be clearly marked in accordance with AS 1428.1.	✓

SECTION E: SERVICES AND EQUIPMENT		
PART E3 – LIFT INSTALLATIONS		
E3.0: Deemed-to-Satisfy Provisions	Noted	-
E3.6: Passenger Lifts	The proposed passenger lifts are noted to be either electric or electrohydraulic which will be an appropriate type. Given that the lifts travel more than 12m the lift floor dimensions are required to be 1400mm x 1600mm. It is noted that suitably sized lifts will be provided. The lifts will need to contain the accessible features in accordance with Table E3.6b of this Clause.	✓

SECTION F: HEALTH AND AMENITY		
PART F2 – SANITARY AND OTHER FACILITIES		
F2.0: Deemed-to-Satisfy Provisions	Noted	-
F2.4: Accessible Sanitary Facilities (including Table F2.4)	The retail tenancies must be served by accessible facilities, it is noted that suitable provision has been made within each particular tenancy. The accessible facilities will need to contain a closet pan, washbasin, shelf or bench top and adequate means of disposal of sanitary towels. The facility will need to contain the fixtures, fittings and meet the design requirements of AS 1428.1-2009. It is considered that suitable circulation spaces have been allowed for to achieve compliance with the requirements of the standard.	✓

PART 4 STATEMENT OF COMPLIANCE

The design documentation as referred to in this report has been assessed against the applicable provisions of the Federal Disability Access to Premises Standards Buildings – 2010, the Building Code of Australia 2014, AS 1428.1-2009, AS/NZS 2890.6-2009 and AS 4299-1995 as outlined in Annexure A of this report. It is considered that such documentation complies or is capable of complying with those documents for the purposes of a Development Application subject to on-going design development.

Annexure A Design Documentation

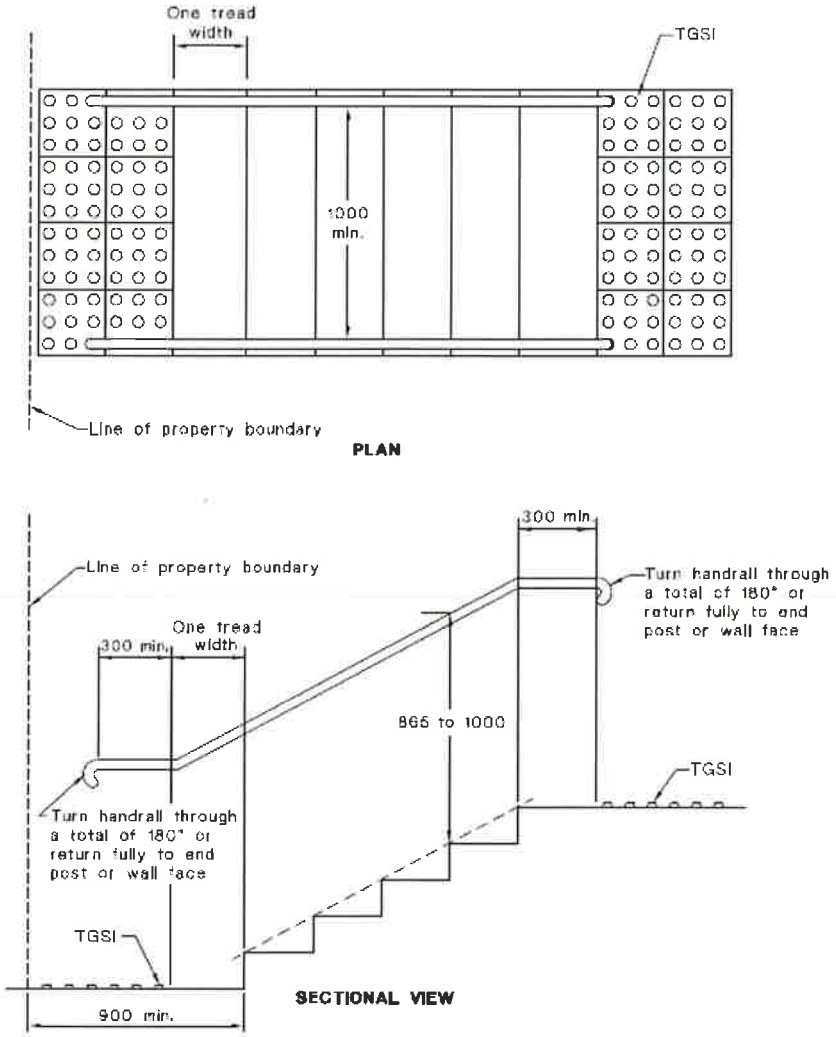
This report has been based on the following design documentation.

Architectural Plans Prepared by Aleksander Design Group		
Drawing Number	**Revision**	**Title**
DA04	A	Basement plan 03 + 02
DA05	A	Basement plan 01
DA06	A	Ground + level 01 plan
DA07	A	Level 02 + 03 plan
DA08	A	Level 04 + 05 plan
DA09	A	Level 06 + roof plan
DA10	A	Elevations
DA11	A	Elevations
DA12	A	Section A-A
DA13	A	Section B-B + typical apartment building B

Landscape Plans Prepared by Melissa Wilson Landscape Architect		
Drawing Number	**Revision**	**Title**
LS01-DA	A	Preliminary Landscape Plan

Annexure B Figures and Drawings Sample

B 1



DIMENSIONS IN MILLIMETRES

FIGURE 26(A) STAIRWAY LOCATION AND HANDRAIL EXTENSIONS AT BOUNDARY

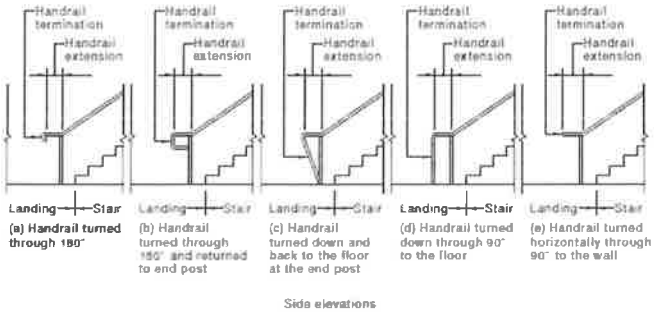
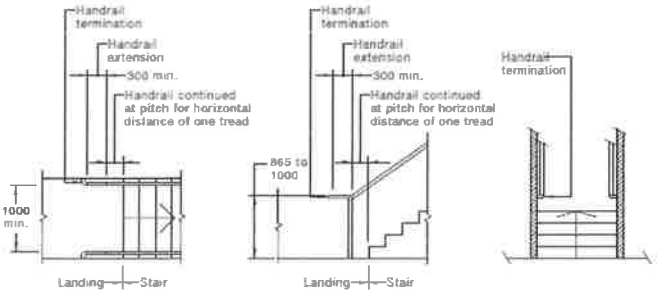
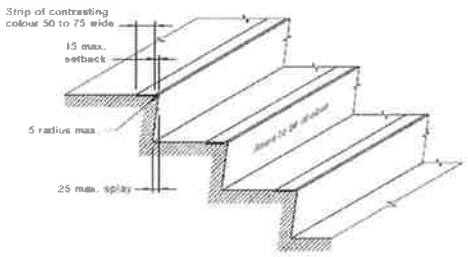


FIGURE 26(C) STAIR HANDRAILS—HANDRAIL TERMINATIONS



DIMENSIONS IN MILLIMETRES

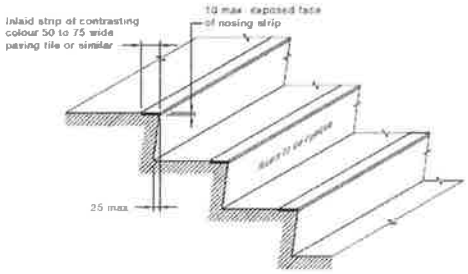
FIGURE 26(D) DETAIL FOR HANDRAILS TERMINATED BY TURNING HORIZONTALLY THROUGH 90° TO THE WALL



NOTE. A chamfered nosing 5 × 5 mm may be used.

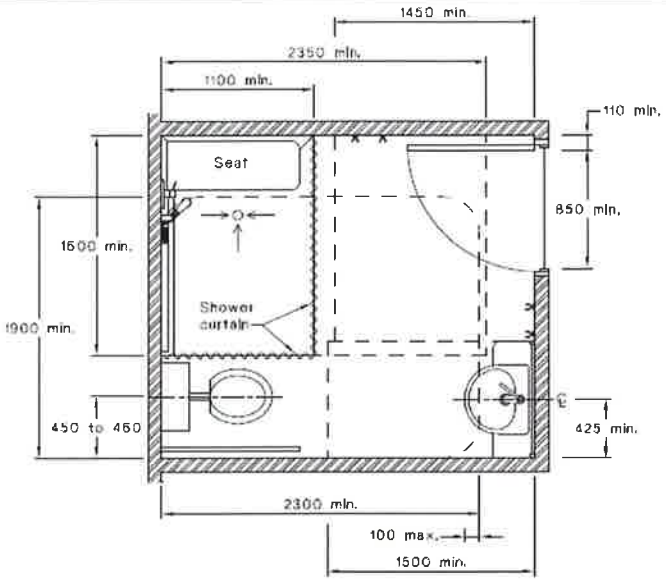
DIMENSIONS IN MILLIMETRES

FIGURE 27(A) A TYPICAL STAIR NOSING PROFILE WITH NOSING STRIP



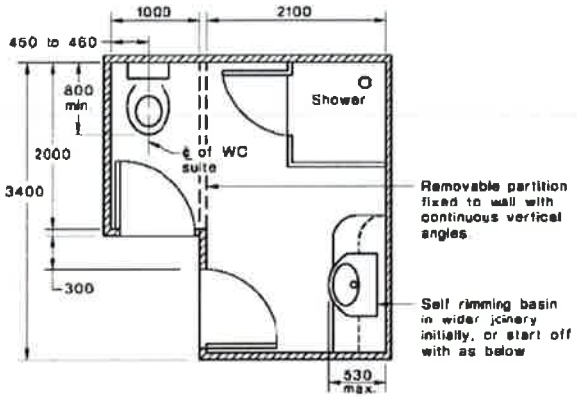
DIMENSIONS IN MILLIMETRES

FIGURE 27(B) A TYPICAL STAIR NOSING PROFILE WITH EXPOSED NOSING STRIP

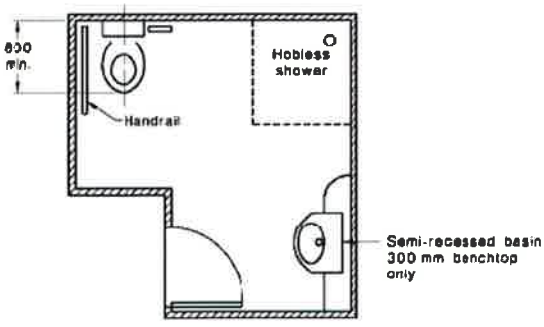


DIMENSIONS IN MILLIMETRES

FIGURE 50 SANITARY COMPARTMENT SHOWING OVERLAP OF WASHBASIN FIXTURE INTO SHOWER CIRCULATION SPACE



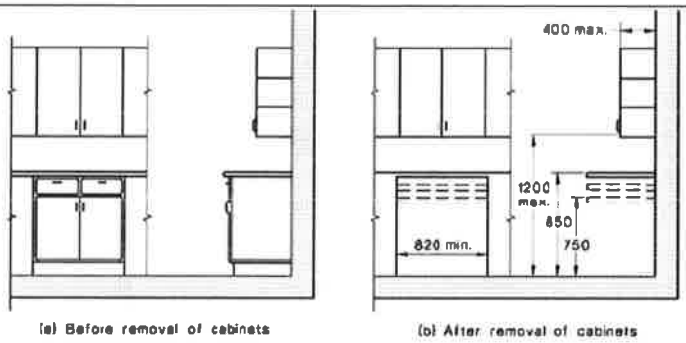
(a) Before adaptation



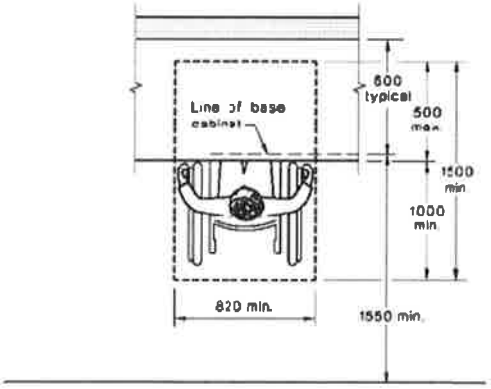
(b) After adaptation

DIMENSIONS IN MILLIMETRES

FIGURE 4.2 EXAMPLE OF BATHROOM BEFORE AND AFTER ADAPTATION



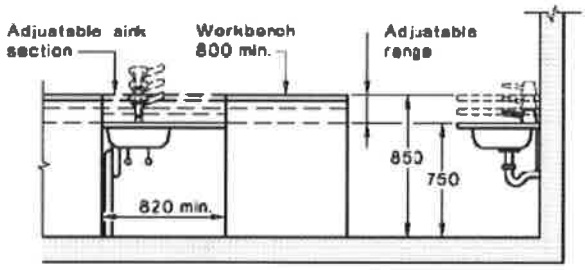
(a) Before removal of cabinets (b) After removal of cabinets



(c) Clear floor space under work surface

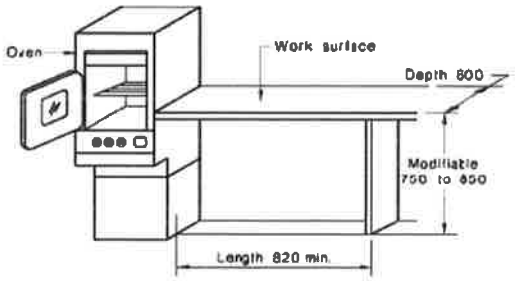
DIMENSIONS IN MILLIMETRES

FIGURE 4.8 WORK SURFACES



DIMENSIONS IN MILLIMETRES

FIGURE 4.9 SINKS AFTER MODIFICATION



DIMENSIONS IN MILLIMETRES

FIGURE 4.10 OVENS

LDA2014/0236 - Attachment 4

Wednesday, 22 October 2014
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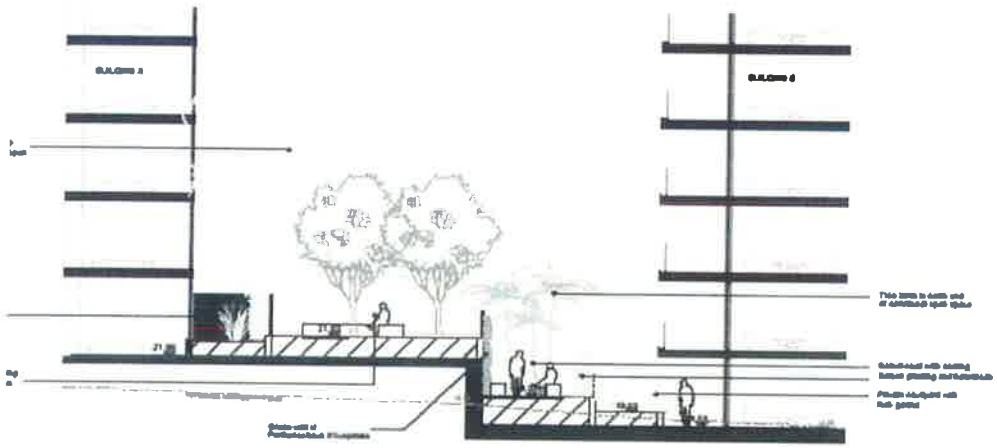
Arboricultural Implication Assessment and Arboricultural Method Statement

For proposed mixed development
115-117 Church Street and 13-15 Porter Street, Ryde, NSW



2. SECTION THROUGH CENTRAL COURTYARD

Compiled for Aleksander Design Group

Prepared 28th August, 2014 by Victor John Molyneaux
B.E.;M.Eng.Sc.;M.B.A.; AQF Level 5 Arboriculture

Horticultural Resources Consulting Group
Admin Postal Address: PO Box 1020 Eastwood NSW 2122
Sydney NSW 2000 Tel: (02) 9874 9888 Fax: (02) 9874 9899

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Appendix 1 Tree Numbers and Locations
Appendix 2 Photographs of each tree and shrub
Appendix 3 Samples of Tree Protection Signs required

Executive Summary

The HRC Group has been engaged by the Eastern Pearl Pty Ltd through the Aleksandar Design Group **41 Albion Avenue, Paddington NSW 2021** to prepare an Arboricultural report in respect to trees on or adjacent to the proposed mixed use development at 115-117 Church & 13-15 Porter Street, Ryde, NSW.

The report has been prepared to satisfy Ryde City Council's request that an Arborist Report for the site and surrounds be compiled to asses the existing site trees and the likely impact and protection procedures for retained trees.

An arborist assessment of the existing trees and the proposed development activities has been undertaken and found that:-

- There is only one site tree – a mature ***Magnolia x soulangiana*** that can be retained and incorporated into the proposed Landscape Plan

- The Porter Street is to be widened with a new footpath and this will require the removal of the existing trees on that side of the project. The project will require the removal of three of these four trees to facilitate the driveway. But there is no need to re-design the driveway location as there trees will be lost anyway.

- A neighbour's tree in the front yard of No. 11 Porter Street - a very healthy ***Liquidambar styraciflua*** - is only 2.0 M from the boundary and close to the proposed driveway ramp. This tree will be compromised by the proposed project and will not be sustainable without intensive care and great cost. No. 11 Porter is to be redeveloped and this tree will be removed to facilitate that development. Further, the tree is despised by all local parties including the property owner as the Cockatoos raid and strip the fruit and small branches, filling the box gutters and blocking downpipes. This process has caused extensive damage to both nearby buildings. After discussion with the property owner, it is proposed to submit a separate **Tree Management Application** for the tree to be removed. This tree will be retained and protected if in the unlikely event that the neighbours do not process and obtain Ryde City Council approval to have the tree removed by the time of demolition.

- All Hayes Reserve trees and shrubs on the southern side of the project were examined and assessed for any potential impact from the proposed development. No adverse effects are anticipated.

This report has three main subject areas;-

Section 1 details the formal assessment made of each tree, categorizes them using internationally accepted approaches and makes recommendations about the trees that are valued and suitable for retention and those that should be removed.

Section 2 formally assesses the impact of the proposed excavation, building, pipe work hydraulics and landscaping activities on the trees that are to be retained. The findings are that there are likely to be no significant negative effects on the trees to be retained.

Section 3 details the Root Protection Area requirements and all procedures required to safeguard the trees.

SECTION 1 FORMAL ASSESSMENT OF SITE TREES

BACKGROUND

The HRC Group has been engaged by the Eastern Pearl Pty Ltd through the Aleksandar Design Group **41 Albion Avenue, Paddington NSW 2021** to prepare an Arboricultural report in respect to trees on or adjacent to the proposed mixed use development at 115-117 Church & 13-15 Porter Street, Ryde, NSW.

Following a DA submission Ryde City Council's Landscape Consultant inspected the site and identified several significant trees that have not previously been considered in the project documentation.

This report has been prepared to satisfy Ryde City Council's request that an Arborist Report for the site and surrounds be compiled to asses the existing site trees and the likely impact and protection procedures for retained trees.

The report identifies those trees that will require removal for the proposed works, and makes recommendations with regard to other trees based on their species, amenity value and condition. Recommendations are also made in respect to protection of trees proposed for retention This Arboricultural implication Assessment was undertaken in accordance with the procedures dictated by the Australian Standard 4970-2009 the Protection of Trees on Development Sites.

Arborist Details

The site arboricultural survey and report compilation has been carried out by Victor John Molyneaux, Consulting Arborist with the Horticultural Resources Consulting Group. The HRC Group postal address is PO Box 1020 Eastwood NSW 2122. Telephone number (02) 9874 9888 Fax: (02) 9874 989. Email contact (preferred) victormolyneaux@hotmail.com mobile number 0410 755 338

Victor John Molyneaux has a Civil Engineering degree and Masters degrees in Science and Business Administration. Victor is a seasoned Arborist physically working with removal of large trees and progressing with his Arboriculture studies through all level of TAFE certification to Diploma Level 5 and migrating to a consulting Arborist role in his senior years. His extensive engineering background coupled with tree morphology knowledge is valued by project developers and building contractors.

Disclosure of any pecuniary or non pecuniary interests

Victor John Molyneaux and the HRC Group have no pecuniary or non pecuniary interests in the project other than receiving a professional fee for preparing a factual arboricultural related report.

The purpose of the report.

This Implication Study and Arboricultural Method Statement has been compiled to manage the existing trees during the planning and construction of the proposed project.

The project consist of demolition of existing structures and construction of a mixed use development comprising of two buildings. Building A will be six stories facing Porter Street and Building B will be seven stories facing Church Street. The development will comprise of two commercial/home office areas, 68 apartments, and parking for 96 car spaces over two basement levels.

This analysis has been undertaken to assess the established trees of the site destined for redevelopment, then assist with sound arboricultural advice to manage the existing trees during the planning, design and construction of the proposed residential re-development, including the definition of required tree protection measures, obtaining local government approval for the removal and pruning of relevant trees.

The short-term objectives are to assess the condition of each tree and assess their longer-term worth, and then determine their ability and the impact of the proposed development activities. When the actual site trees that will be retained are better defined, the report then develops practical and implementable measures for the long-term protection and tree stewardship.

Tree Data collection

The site trees were inspected on several occasions. An initial inspection in late July, 2014 to establish the high values tree(s) and interact with the design development process and then 24th August, 2014 main tree survey and inspection of neighbouring trees.

There were nineteen (19) significant trees observed on site and neighbouring blocks on 24th August, 2014, these trees were numbered as shown in Appendix 1 and photographs of each tree shown in Appendix 2. A visual tree assessment was undertaken by Arborist, Victor John Molyneaux. All significant trees on site and neighbouring properties were identified and defined with a summary of key measurements and observations summarised in Table 1.

More detailed field notes are available if required and pictures of each tree are included in Appendix 2 so a detailed description of each tree is not included in this report.

Survey Plan

An H Ramsay & Co Surveyors Pty Ltd Topographical Survey of the site dated 6/11/3013 was provided to the Arborist. The survey plans shows sufficient detail and accurate locations of all relevant trees except the neighbouring dead tree No. 5 and those in Hayes Reserve.

Status

The recommendations of this report are based on several discussions with the Aleksandar Design Group and a indicative Site Plan, Arborist site observations on 24th August, 2014, the comprehensive Landscape Plan by Melissa Wilson Landscape Architects. A meeting with council officers early September, 2014 being imminent this is the draft edition of this arboricultural based report to brief all parties and may be superseded with typos corrected and any last minute amendments to the design.

The Site

The subject property consists of two residential blocks along Church Street and two commercial blocks along Porter Street and the assessment included part of the adjacent parkland known as Hayes Reserve. The properties and their direct neighbours **are not in a designated Urban Bushland setting.** (See Urban Bushland in Ryde LGA Map in reference 2 below). These blocks retain domestic and commercial dwellings earmarked for demolition. The site has an AHD elevation of about 22 to 16 metres gradually sloping south east no observed areas of water pooling. Average annual rainfall for the localized area is rather low for medium sized trees estimated as being about 1050 mm per annum.

Soils

Soils of this immediate area are typical of the Glenorie Soil Landscape Group (as classified in the Soil Landscapes of the Sydney 1:100,000 Sheet) [1], consisting of shallow to moderately deep Red and Brown Podzoic Soils with soil materials that are derived from Wianamatta Group Shales.

These local soils are known for their good water carrying capability and relatively good fertility. The site soil has been significantly disturbed and compacted by vehicles in the front yard with the rear yard in a more natural condition with a delightful garden soil rich with organic matter. This site can therefore sustain large native trees provided supplemental irrigation is available during periods of extended drought.

[1] GA Chapman & CL Murphy (1989)
Soil Landscapes of the Sydney 1:100,000 Sheet
Soil Conservation Service of NSW. Sydney

The Original Vegetation
The original vegetation of this area consisted of Sydney Turpentine Ironbark Marginal Forest[2] which is now mostly cleared form existence in the local area.

It is important to appreciate the indigenous vegetation which proved over millennia to be the appropriate species of the localized area. However, it is also important to note at this juncture that the annual rainfall is now lower and more variable, further most rainfall on residential blocks is now captured and piped from the site, so sustaining the large native Eucalypts (or other mature large trees) is now not feasible without reliable supplemental irrigation.

With an appreciation of the above **Soils** and **Original Vegetation** circumstance, we are pleased to note that the proposed Landscape Plant Schedule specifies enduring natives. These are considered sustainable provided they are established with supplemental irrigation and mulching.

Appendix 2 displays a photograph of each significant tree

[2] Urban Bushland in Ryde LGA By Oculus Landscape Architecture Urban Design Environmental Planning April 2001 Booklet and Map

TABLE 1
SHRUBS and TREES MEASUREMENTS and OBSERVATIONS SUMMARY

Ref. No.			AREA												
Id	Species	Maturity	Height	Spread All	Spread N	Spread S	Spread E	Spread W	DBH	Health	Condition	Age	ULE	Landscape Significance	Retention Value	Comment
1	***Eucalyptus scoparia,*** Wallangarra White Gum Street tree outside No 15 Porter	M	13		7	5	4	6	620	Raised root flare base damaged trunk compacted harsh soils Some dead wood	Fair condition for environment good foliage colour and density	35	20	high	medium	**This tree is going to be removed with proposed road widening (No further consideration)**
2	***Eucalyptus scoparia,*** Wallangarra White Gum	M	12	6					524	Strong form small root area available	Fair considering environment	40	10+	HIGH	HIGH	**Under proposed driveway REMOVE to facilitate development**
3	***Lophostemon confertus*** Brush Box, In planter box with T2	SM	7	3X3					200	Suppressed by T2 Struggling in harsh conditions Not sustainable	Congested in planter box Leaning south in decline – should be replaced	7	5	Low	LOW	**Not sustainable Under proposed driveway REMOVE to facilitate development**
4	***Flindersia australis Crow's Ash*** Street tree outside 13 Porter	SM	6	1.5					160	Fair, three branch junction at 2 m off ground, may split in future, good trunk taper	Healthy and well formed, pleasing shape	6	20+	MEDIUM As young	HIGH	**Under proposed driveway in road widening setback**
5	***Liquidambar styraciflua*** Liquidambar In front yard of No. 11 Porter close to proposed driveway and 2 M from boundary	M	17	7					530	Very healthy tree with good form and condition though fence line pruned making it asymmetric	**This tree is causing flooding problems in both properties by tree debris clogging gutters and downpipes. The property owner prefers for it to be removed. The property at No 11 Porter is also to be re-development in the short-term 12-18 months. A Tree Management Application will be lodged with Ryde City Council shortly for tree removal and be signed by the current owner of 11 Porter Street. It is not practical to retain and protect this tree when it will be removed in the short-term with re-development. If retained the tree would be compromised by massive changes in groundwater hydrology due to the nearby basement facilities. It would not very pruning required to build would** Neville Kiely Central Monitoring Services Pty Ltd, 11 Porter Street, Ryde It is strongly recommended that the tree be removed for practical reasons, it is not a preferred					

											species					
6	***Jacaranda mimosifolia*** **Jacaranda** Rear yard of 115 Church St	OM	14		8	7	10	2	510	This is a very large and old Jacaranda it is at the end of its useful life and there is no way it can be retained with the proposed development Large epicormic shoots from concrete slab installed adjacent		70	20	low	low	**REMOVE to facilitate the development**
7	***Callistemon viminalis*** Weeping Bottlebrush	M	10		4	2	7	8	410/ 490	This is a very large and old Bottlebrush – wide spreading and very healthy with intense foliage density and colour It is near the end of its useful life and there is no way it can be retained with the proposed development		70	12	low	low	**REMOVE to facilitate the development**
8	*Sapium sebiferum* now called ***Triadica sebifera*** Chinese Tallowood	M	8	4					380	Poor form – co-dominate – not a preferred species and form does not warrant any retention consideration		20	20	low	low	**REMOVE not worthy and to facilitate the development**
9	***Lagerstroemia indica*** ***Crape Myrtle*** On 115-113 boundary	M	4	3					Eq 180	light timbered with extensive suckering	Low retention value shrub as it hat has not developed well	12	20	low	low	**REMOVE Of no amenity value**
10	***Camellia sasanqua*** Sasanqua Beside house 115	M	6	2					220	Lopped at 2 M Trimmed against house	Unattractive though healthy	20	20	low	low	**REMOVE Of no amenity value**
11	***Camellia japonica*** Camellia	M	6	3					180	Mushroom shaped large domed head	Unattractive though healthy	30	40	low	low	**REMOVE Of no amenity value**
12	***Magnolia x soulangiana*** Soulangiana Magnolia	M	7		2	5	4	4	Eq 300	5 limbs generally pleasing form needs shaping	Excellent health and no defects Observed	30	30	high	high	**RETAIN and PROTECT**
13	3X ***Ulmus spp.*** Deciduous elm Hard to ID Street trees	M	5		2	1	2	4	310 340	Heavily lopped under service wires	Very harsh environment Unsightly needs shaping	25	20	medium	medium	**Investigate replacement for present RETAIN and PROTECT**

14	**9X *Magnolia grandiflora* Bull Bay Magnolia** Along southern site boundary in Hayes Reserve	**SM**	3-4	1					110-70	Young row of Dwarf Magnolia Possibly "Little Gem"	All except 1 doing well	2	15	medium	high	**For present RETAIN and PROTECT but could be Relocated to more appropriate location if parklands remodeled**
15	***Dead trunk*** Dead Eucalypt	**OM**	6						760	dead						**Remove and stump grind**
16	***Jacaranda mimosifolia* Jacaranda In Hayes reserve**	**M**	12		7	4	6	7	340 370	Co-dominate Spreading canopy Excellent parkland tree in good health	Extensively pruned against neighbouring building	70	**Uncertain**	high	High	**RETAIN and PROTECT Note redevelopment of adjacent neighbouring block will compromise this tree in the near future**
17	***Jacaranda mimosifolia* Jacaranda In Hayes reserve**	**M**	9	4					235	Isolated Jacaranda mid park beside path thin trunks and poorly formed branch structure	Still young may develop	20	20	low	medium	**Retain and protect for present but could be removed with remodeling of parkland**
18	***Liriodendron chinense* Chinese Tulip Tree In Hayes reserve**	**M**	7	3					205	Graceful, isolated specimen tree in excellent health	Vigorous	12	40	high	High	**Retain and protect**
19	***2X Stand of Murraya paniculata and Melaleuca bracteata*** *'Revolution Gold'* At park entrance Church Street side	**M**	7						The park access from Church Street has well designed screening on both sides consisting mostly of massed Murraya and Melaleuca. The garden bed shapes are excellent and forms a great entrance to the East West Corridor. The trees would benefit from shaping and dead-wooding if retained. This older style park entrance can be retained with minimal maintenance – however – with the considerable redevelopment in the localised area the numbers of pedestrians transiting the park will skyrocket. Catering for the anticipated traffic will probably require a parkland redesign and these strands of trees removed.						**REMOVE if parkland re-designed to cater for much greater traffic**

Height is measured in metres from ground level to the highest point of the tree using tape measures and clinometers.

Diameter at breast height (DBH) is measured and rounded down to the nearest ten millimeters at 1.4m above ground level using specialist tapes. Where a tree divides into multiple stems below 1.4m it will be measured at a representative point above the root flare to give a clear indication of equivalent trunk mass or the relative dimensions of several trunks are given.

Canopy spread is measured in metres listing North, South East then West extent in metres. Symmetrical canopies have only two entries.

Maturity is divided into young, semi-mature, mature, over mature, and veteran or senescent. This is an indication of which stage a tree is at in its natural life cycle, allowing for an assessment of how energy and growth will be prioritised within a tree. In general, younger trees are more able to cope with disturbance or stress.

Biological health and physiological condition are assessment of the health and vigour of the trees and include an evaluation of the size, colour and density of the foliage. Trees in good physiological condition are better able to cope with disturbance or stress.

Structural health and mechanical condition is an indication of the structural integrity of the tree. This is given as good, average, fair or poor.

Amenity value is a qualitative value sometimes mentioned which is assessed using a combination of factors such as species, size and location, also a tree in a similar group of trees has a higher amenity value.

Initial Category Ratings
Category ratings are now allocated based on the current condition of a tree in its current surroundings **assuming the recommendations of this report are carried out.** No consideration is given to any specific development proposal when allocating category ratings.

Category A – a HIGH tree retention rating is given for trees which have high visual amenity value, are in good structural and physiological condition and are expected to contribute for at least another 40 years.

Category B - MODERATE tree retention rating for trees which would be considered as category A trees but which are of lower value, poorer structural condition, or which are expected to contribute for less than 40 years.

Category C - a LOW tree retention rating are those which have low amenity value, are in poor condition, or are expected to contribute for less than 20 years.

Category R trees are those which are expected to contribute for less than 10 years due to serious defects. As is common in risk management, where there is doubt, the precautionary principal may be applied. In certain circumstances trees may be considered

of higher value due to cultural or ecological reasons.

TABLE 2 INITIAL TREES CATEGORY RATINGS

#	***Botanical Name/*** **Common Name**	**Category**
1	***Eucalyptus scoparia,*** Wallangarra White Gum Street tree outside No 15 Porter	**CATEGORY B MEDIUM** **TO BE REMOVED for STREET WIDENING** [redacted]
2	***Eucalyptus scoparia,*** Wallangarra White Gum	**CATEGORY B Medium** **This tree location is in the new 2 M wide street widening setback. A new footpath area will be over this location and it is required for the project driveway** **REMOVE**
3	***Lophostemon confertus*** Brush Box, In planter box with T2	**CATEGORY C LOW** **NOT SUSTAINABLE – same as for T2** **REMOVE FOR DRIVEWAY/FOOTPATH**
4	***Flindersia australis Crow's Ash*** Street tree outside 13 Porter – street tree	**CATEGORY A HIGH** **TO BE REMOVED for STREET WIDENING and required for proposed driveway** **REMOVE**
5	***Liquidambar styraciflua*** Liquidambar In front yard of No. 11 Porter close to proposed driveway	**CATEGORY C LOW REMOVE** **for practical reasons – both properties are to be redeveloped and this tree is not sustainable in the for either project** **It is proposed to REMOVE this tree under a Tree Management Application to Ryde Council The property owner is very interested in the tree being removed and will gladly sign the TMA form and the project will share the costs for the tree removal**
6	***Jacaranda mimosifolia*** Jacaranda Rear yard of 115 Church St	**CATEGORY B Medium** [redacted] **TO FACILITATE DEVELOPMENT**
7	***Callistemon viminalis*** Weeping Bottlebrush	**CATEGORY B Medium** [redacted] **TO FACILITATE DEVELOPMENT** Required to be removed as under proposed footprint
8	*Sapium sebiferum* now called ***Triadica sebifera*** Chinese Tallowood	**CATEGORY C LOW** [redacted] Not a preferred species in a difficult position to incorporate into landscape plan and too close to proposed footprint

9	***Lagerstroemia indica*** **Crape Myrtle**	CATEGORY C LOW AMENITY Not a well developed specimen, in a difficult position along the property boundary to incorporate into landscape plan REMOVE for practical reasons
10	***Camellia sasanqua*** Sasanqua	CATEGORY C LOW AMENITY REMOVE TO FACILITATE DEVELOPMENT
11	***Camellia japonica*** Camellia	CATEGORY C LOW AMENITY REMOVE TO FACILITATE DEVELOPMENT
12	***Magnolia x soulangiana*** Soulangiana Magnolia,	Category B MEDIUM RETAIN AND PROTECT
13	3X ***Ulmus spp.*** Deciduous elm Hard to ID Street trees	Category B MEDIUM RETAIN and PROTECT These street trees look appalling and should be shaped. They can be retained and protected if council prefers or replaced see discussion regarding main roads policy issues
14	9X ***Magnolia grandiflora*** **Bull Bay Magnolia** Along southern site boundary in Hayes Reserve	CATEGORY A HIGH RETAIN AND PROTECT unless park up-graded for more pedestrian traffic
15	***DEAD Eucalyptus trunk***	CATEGORY R REMOVE
16	***Jacaranda mimosifolia*** **Jacaranda In Hayes reserve**	CATEGORY A HIGH RETAIN AND PROTECT
17	***Jacaranda mimosifolia*** **Jacaranda In Hayes reserve**	CATEGORY B MEDIUM RETAIN AND PROTECT unless park up-graded for more pedestrian traffic
18	***Liriodendron chinense*** **Chinese Tulip Tree In Hayes reserve**	CATEGORY A HIGH RETAIN AND PROTECT
19	***Murraya paniculata and Melaleuca bracteata*** Tree stands - In corner of Hayes reserve on Church street	CATEGORY B Medium RETAIN AND PROTECT unless park up-graded for more pedestrian traffic Good screen at present – but could sacrifice for better park entrance

Preliminary assessment of retention value of site trees.

The only site tree worthy of retention is Tree 12 the *Magnolia x soulangiana* (Soulangiana Magnolia), which has been incorporated into the proposed Landscape Plan. The protection specification will be detailed in the following sections of the report.

The Porter Street trees 1, 2, 3, and 4 will all eventually be removed by the proposed road widening and new pathway configuration. Trees 2, 3 and 4 will also be required to be removed for the proposed driveway.

The neighbour's Tree 5 ***Liquidambar styraciflua*** (Liquidambar) is very healthy but already causing grief for the seed pods and branch ends being harvested by Cockatoos and filling the gutters and downpipes on both building. The flooding costs have been extensive. This tree will be severely compromised by the installation of the lower car park ramp basement. The groundwater hydraulics will drastically change. Thirty percent (30%) of the roots will be lost with a 500 mm intrusion into the Structural Root Zone (SRZ) and the southern side fence line prune has disfigured the tree.

No tenants, property owners or visitors appreciate this large tree - it is not a suitable species for this location. Further, according to the property owner, the site of No 11 will be re-developed within the next 18 months. It would be ridiculous and impractical to compromise the proposed design for the sake of this unwanted and obviously temporary tree.

A Tree Management Application will be lodged with Ryde City Council shortly for tree removal and be signed by the current owner of 11 Porter Street.

It is strongly recommended that the tree be removed for practical reasons; it is definitely not an appropriate species for this location and is not sustainable.

The Case for removing Street Trees No 13

At present Street Trees No 13 (***Ulmus spp.***) are recommended for retention. However RMS policy is to discourage street trees on narrow verges beside busy main arterial roads. It is understood that Local Councils have some influence in this matter and a case by case assessment is made.

The project is strongly recommending the removal of street Trees 13 as they are unsightly misshaped - in decline and not providing adequate amenity. Retaining them is not visually pleasing and there is the option to remove all three and conform to the RMS policy.

Alternatively, the project could remove the street trees and not replace with any OR the project could remove the street trees and if council officers prefer replace with three (3) trees suitable trees, such as:; ***Leptospermum petersonii*** Lemon-scented Tea Tree or e.g. ***Photinia glabra*** no closer together than 6 metres.

Trees 13 can be retained and protected if preferred by Council Officers with no other street trees planted or with the addition of say 3 X ***Photinia glabra*** however, the planting behind the fence will provide a pleasant street screening alone.

The project believes that no street trees are preferable as there is a high investment in behind the fences planting that will provide the desired street-scrape. Council officers will need to make a decision on the number and species of street trees.

The Conditions of Project Consent could specify if Street Trees needed to be planted after Public Liability issues and Street Tree Master Plan objectives have been considered by Council Officers and a decision made. The Arborist and Landscape Architect have conferred and believe that the proposed site planting will provide the desired streetscape without Church Street, Street Trees. For the interim the street Trees No 13 will be retained and protected.

Hayes Reserve Trees Discussion

For the interim, all the reserve trees will be retained and protected (except the dead tree trunk Tree 15 recommended for removal), pending a decision by council staff on the re-planting and park up-grade proposed by the project.

The HRC Group has been asked to make general comments about the tree issues of the reserve - to provide some arboriculture based information to assist decision making of the parkland's future.

The Hayes Reserve park access from Church Street has well designed screening on both sides consisting mostly of massed Murraya and Melaleuca (Tree Stands 19). The garden bed shapes are excellent and forms a great entrance to the **East-West Corridor**. The trees would benefit from shaping and dead-wooding if retained.

This older style park entrance can be retained with minimal maintenance – however – with the considerable redevelopment in the localised area the numbers of pedestrians transiting the park will skyrocket. Catering for the anticipated traffic will probably require a parkland redesign and these strands of trees removed.

The East-West pedestrian usage numbers will go from units of tens to units of thousands of daily transits as the area is redeveloped.

The Hayes Reserve area presents a prospect to provide more functional space amenity for the surrounding area now that the area is zoned for multi-unit residential development. It is appreciated that that the HAYES RESERVE/ PUBLIC DOMAIN CONCEPT PLAN does conceptualize the expected evolution of park facilitates for that East-West transit corridor. It presents some ideas for discussion with Council Officers.

Regarding arboricultural (tree) issues for Hayes Reserve in the mid-term:-

- To cater for the expected numbers of reserve users the Church Street Entrance will need to be redesigned and the entrance gardens (Tree Stands 19) will be removed.

- The anticipated re-development of No 19 Porter Street will necessitate the removal of Tree 16 the Jacaranda. If Tree 16 is removed the then isolated Tree 17 Jacaranda in the middle of the park loses its Raison d'être ("reason for existence") as it's value is in complementing its matching bigger brother. In isolation Tree 17 has little in the way of redeeming features. Therefore looking forward none of the reserve trees, except Tree 18 ***Liriodendron chinense*** **- Chinese Tulip,** should be retained in the parkland design.

- The row of nine, semi-mature Magnolia (Tree 14) is an established feature, but not necessarily suitable for a high pedestrian usage area design. These young shrubs can be transplanted (preferably in the middle of winter when the tree is dormant or not actively growing).

In summery, the parkland re-design, need only retain Tree 18 – Tulip tree and relocate the 9 Magnolia. This allows a great deal of autonomy and the chance to generate a high pedestrian through-put facility.

Reserve Landmark Trees Proposed
The suggested landmark trees on Porters Street entrance – "Kauri Pines" are great in concept and the Church Street entrance also needs a dramatic entrance that can be clearly identified along the busy arterial road.

There are two alternative "Kaurie Pines"; the Australian Native - Queensland Kauri Pine ***Agathis robusta*** that has very high water requirements and does not perform reliably in Sydney, and the New Zealand native ***Agathis australis*** which is the largest tree in the ARAUCARIACEAE and the third largest conifer, after ***Sequoiadendron*** and ***Sequoia***. The NZ native performs better in Sydney but it should be appreciated that water requirements would be high and growth rates low.

Both species would require supplemental irrigation and great patience. Incidentally, the mature width of these trees is the width of the park (13.5M). These trees are magnificent but would take 30 years for any of them to reach a height of 9 M.

For parklands, it would be best to specify indigenous native species for long duration design concepts. For shorter–term design horizons – a glitzy instant look can be achieved by purchasing advanced plant stock. The basic requirement of this park is to facilitate the high numbers of pedestrians moving through requiring paved surfaces and trimmed edge foliage.

The Commonwealth Government provides finance for such projects and each property being re-developed in the area is making a substantial contribution to Open Space and Recreation Facilities directly to council. Funds for the Hayes Reserve upgrade are readily available.

Hayes Reserve Trees Conclusion
We believe that the reserve area 13.5 metres wide by 82 metres long is a blank canvas (green field site) and the only tree that should be considered for conservation is Tree 18 ***Liriodendron chinense* - Chinese Tulip.** The usage pattern of this parkland will drastically change in the short-term. The funds and the need exist and that are virtually no tree constraints.

Proposed Arborist Supervision of tree protection effort
It will be recommended that a Level 5 Project Arborist to be appointed with and approved budget to provide, install and maintain the Tree Protection provisions and signage as well as supervise the excavation and installation of nearby pipework and any fence installation.

Final existing tree Considerations
Final considerations about the retention value of the trees can now be made. First by appreciating the allocated tree category in the table above before any development implications are considered, then considering the proposed development pressures what will be placed on the trees, with any conservation or remedial measures we can incorporate.

After due consideration of this evaluation process and the proposed development stress imposed on retained site Tree 12, the Street Trees No. 13 and all the retained Reserve trees, it is our considered opinion it would be practical to retain and protect these trees.

Height of crown clearance of the all trees to be retained appears to be satisfactory. There are no concerns about the lower branches of trees being damaged during the construction process by machinery and materials movement.

Soil Compaction is a serious issue in the critical root zone of all trees and the protected tree will need to be fenced off from any machinery or building material storage.

Recommendations

Recommendation 1
That a Level 5 Project Arborist be appointed with and approved budget to provide, install and maintain the Tree Protection measures for and supervise the excavation and installation of nearby pipework and fencing.

Recommendation 2
That Trees; 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, and 15 be removed.

Recommendation 3
That Tree 5 is removed and this can be dealt with by a Tree Management Application separately signed by the owners of the neighbouring property and most probably removed at the time of demolition under a cost sharing agreement. This report assumes that the Tree 5 will be removed although permission is not through this DA submission process unless Council officers will allow Tree 5 removal with written consent from the present property owner.

Recommendation 4
That Council Officers stipulate in Conditions of Consent if additional Church Street trees need to be planted or the existing trees removed under RMS policy requirements.

Recommendation 5
To proceed with the proposed development layout and apply appropriate tree protection measures for Trees 12, 13 and those in Hayes Reserve.

SECTION 2 ARBORICULTURAL IMPACT ASSESSMENTS

The Developer sought arboricultural advice about the existing tree issues of this site after Ryde City Council requested that more details about the existing site trees should be provided.

A comprehensive review of the existing trees impacted by the proposal has been undertaken and after careful consideration it has been recommended to retain and protect Trees 12, 13 and those in Hayes Reserve.

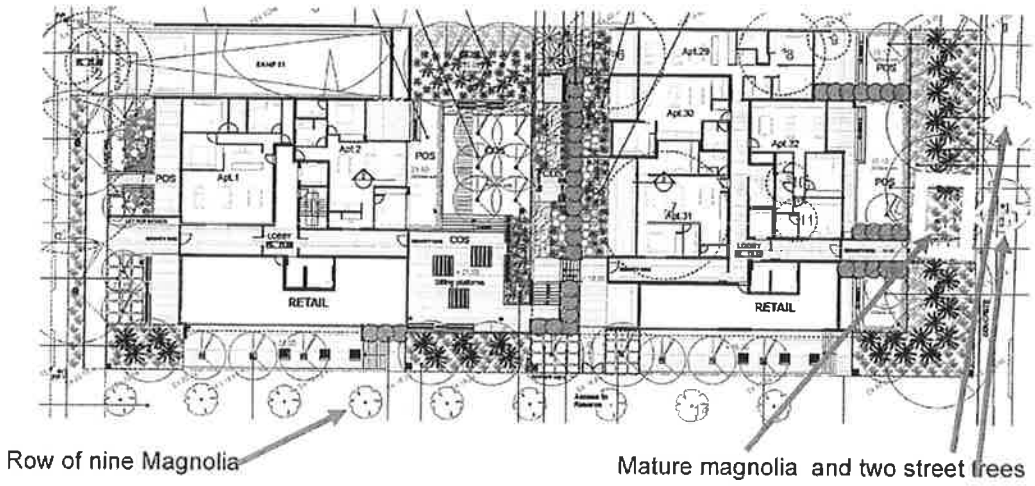
Distances for Tree Protection Zones

The Australian Standard for the Protection of Trees on Development Sites AS 4970-2009 suggests a setback of 12 times the trunk diameter as a guide to a Tree Protection Zone (TPZ). The intent is to avoid damage to major roots by severing or by soil compaction. In ideal situations there should be no excavation or construction within the Tree Protection Area in order to ensure that there is no damage to the root network. There will definitely not be any excavation allowed in the Structural Root Zone as specified in AS4970.

On this site, it is practical and appropriate to have structured Tree Protection Areas for the trees under protection. Neighbouring trees are protected by the boundary fences. Signage and straw bales will be used to provide the required protection. The Street Trees No. 13 if retained under Council - not RMS preferences are better left without any obstacles or obstructions. The area under will be mulched and nearby signs will warn site workers of their protection status.

Table 3 on defines the tree protection zone, areas available and incursions into the tree drip-lines. According to the generous allowanced preferred by Australian Standard 4970 there would be adequate area to accommodate the retained trees.

Position of Trees under Protection



Tree use by Wildlife considerations

During the site inspections the trees on the site were checked for signs of use by wildlife. Trees 1 and 2 on Porter Street exhibited signs of usage by wildlife such as scratch marks or scats under tree canopies that were most likely made by a Common Brushtail Possum (*Trichosurus vulpecula*) or Common Ringtail Possum (*Pseudocheirus peregrinus*). There were several domestic cats (*Felis catus*) observed in the area and they obviously frequent the reserve.

Obviously site trees would be used by native fauna at various times for food, shelter and roosting purposes and the retention and/or replacement of trees on the site will retain this facility.

The following bird species was noted on site during the data collection inspections in Church Street and Hayes Reserve properties: Noisy Miner (*Manorina melanocephala*), Rainbow Lorikeet (*Trichoglossus haematodus*), White Ibis (*Threskiornis molucca*), Pee Wee, Magpie Lark (*Grallina cyanoleuca*), Common Koel (*Eudynamys scolopacea*), Little Wattlebird (*Anthochaera chrysoptera*), Australian Magpie (*Gymnorhina tibicen*) and the introduced species Feral Pigeon (*Columba livia*) and Indian Mynah (*Acridotheres tristis*).

None of the identified specimens are listed as vulnerable, endangered or threatened species and it is considered unlikely that the trees on the site would be used by threatened species on a regular basis for food, shelter and roosting purposes.

TABLE 3 TREE PROTECTION ZONES AND ROOT AREAS AVAILABLE

Tree	Name	DBH mm	SRZ M	work in SRZ	12 DBH radius M	Actual Area immediately available %	Proposed Dev Roofs out of Drip-line %	Comments
12	***Magnolia x soulangiana*** Soulangiana Magnolia,	Malli form Eq 300	2.00	Path 900 mm away but same level and stairs	3.6 M 40 sq M 10% slice is 2.4 M	Building 3.7 M distant of activities proposed Retail courtyard partition 1.5 M distant	100%	This is a tight situation. The garden bed environment needs to be created around this tree carefully. Arborist Supervision - see required procedures to preserve this tree – see under this table. **ARBORICULTURALLY ACCEPTABLE DESIGN**
13	3X ***Ulmus spp.*** Deciduous elm Hard to ID Street trees	310 230	2.00	none	3.6 M 40 sq M 10% slice is 2.4 M	No activities proposed Some garden bed and fence foundations- see notes	100%	**Well Clear OK** The existing nature strip is sufficiently away from any significant development . **ARBORICULTURALLY ACCEPTABLE DESIGN** **TPZ sign on existing fence**
14	**9X *Magnolia grandiflora* Bull Bay Magnolia** Along southern site boundary in Hayes Reserve	110/140	1.5 Min applies	No activity	2.0 MIN applies	Only garden bed and fence construction 1.5 M away OK Reserve access and pedestrian compaction an issue	100%	Development well away for these trees which will protected by security parameter fencing with signage. A TIMBER WALKWAY to avoid soil compaction maybe required at any gateway entering the reserve during construction if within 2 m of a Magnolia. **TPZ signs are required ACCEPTABLE DESIGN**

Tree 11 will need to be selectively pruned back significantly to reduce the burden on the stressed root system. It is important that a pleasing shape is maintained. Soil needs to be fertilized, mulched and kept damp This species is very tolerant of construction stress - the main concern is losing a pleasing tree shape with the re-growth, so a suitably experienced Arborist is recommended to undertake this selective pruning and shaping.

Development Impact Assessment

The design layout as shown on the plan has been assessed in accordance with British BS5837:2005 Section 6 plus the generous Root Protection Zone areas of AS4970 and the findings are that there are likely to be no significant negative effects on the trees to be retained:-

- The building structures are located outside an acceptable distance for the species.
- Absolutely no development activity is required within the Structural Root Zone (SRZ) and the stormwater pipes installation will be carried out by the Project Arborist.
- Tree drip-lines are not encroached
- The retained trees are significantly away from any proposed living space and it is unlikely to cause undesired or excessive shade to either the house or the usable garden space.
- All services will be excluded from the TPZ

Regardless the Project Arborist will be onsite if necessary, during this minimal excavation for the nearby driveway, pipe excavation/installation and fence installation to ensure that not significant tree roots are damaged or severed if at all possible.

SECTION 3 TREE MANAGEMENT AND PRESERVATION
Preparation for development

Tree Protective fencing (TPF)

- Protective fence installation will not be required for the Church Street, Street Trees.
- A square TPF will be placed around Tree 12 after it is selectively pruned by a suitably experienced Arborist and the ground fertilized and mulched. A water irrigation mechanism will be put in place – a hose specifically for thus tree that reaches the nearest outlet. The TPF will be assembled and in place **before the demolition** of the nearby house.
- The site security parameter fence will protect the Hayes Reserve Magnolias and a timber walkway installed if there is a side access gate in the reserve to the site of such an entrance is within 2.0 M of a Magnolia.

The tree protection fence shall be constructed of galvanised pipe at 2.4 metre spacing and connected by securely attached chain mesh fencing to a minimum height of 1.8 metres prior to work commencing. Standard temporary fencing panels are suitable.

Soil Rehabilitation

The area around and defined by the Tree 12, 13 and 14 dripline will be rehabilitated on three occasions. Before the commencement of site activates when the tree protection fence in installed, mid-construction, and when the fence is removed. One these occasions the Project Arborist will:-

- Water thoroughly and apply a soil wetting agent – eco-hydrate preferred.
- Apply *Seasol*® to stimulate and promote new root growth
- Apply mycorrihiza inoculant – beneficial micro- biological organisms so that the existing root system can assimilate high amounts of nutrients – Neutrog juice preferred
- • Fertilize the tree surrounds with soluble nutrients and absorbable nitrogen compounds
- Monitor for vigour, stability, pest and disease.

The soil moisture surrounding the root ball area shall be monitored on a regular basis.

Should an irrigation system be installed advice from the Consulting Arborist shall be sought in regard to volume and frequency of water applied.

Penalty Infringement Notices
Ryde City Council has introduced a policy of inspections of Tree Protection Fencing on Development Sites. If the fences are not adequately installed and or materials or spoil stockpiles are within the Tree Protection Zone, the City of Ryde may issue penalty infringement notices to the builder, typically $1,500 or $3,000.

Site inspections
A program of Project Arborist inspections, operations and the issue of formal Certificates of Compliance to the certifying authority will be undertaken. Every opportunity should be taken to explain to the builder, sub-contractors and owner the necessity of the tree protection effort.

It is very important that the Project Arborist be present on site when any excavation near the protected trees is undertaken to ensure roots that maybe uncovered are identified and evaluated. Accurate and clinical severing of any tree roots will be necessary and this must be done **by the Project Arborist – not the excavator!**

Development Phase

The Root Protection Zone (RPZ)
The Root Protection Zone (RPZ) is the area of ground which is desirable to leave undisturbed during development. AS4970 and BS5837:2005 specifies an idealized circle around the tree trunk 10-12 times the tree trunk diameter at breast height.

Table 3 defines the preferred areas set aside for the trees and the indicative Root Protection Zone. It is proposed to erect signage warning site workers of the presence of protected trees.

Protection and maintenance of Tree 12 *Magnolia x soulangiana*
Tree 12 is an exotic species (not native) that can be grown in a container and close to building structures. This species does quickly re-generate roots and does seek out water drainage pipes. This is a good feature as it indicates that provided the tree is nursed during the construction period and lost root mass has a very good change of re-growing.

There will be considerable activity around this tree in the TPZ. Excavations will not be deep. The structural roots should not be tampered with however some feeder roots maybe lost. The area in the fenced TPZ will be mulched to 100 mm with Eucalyptus mulch and a nearby irrigation system will be made available. The Tree 12 root-ball needs to be kept and it has an excellent chance of thriving. However, in some cases – say 10%-15% of the time Magnolias do suddenly die when they are stressed. It is sudden and irreversible. This sometimes happens in a garden environment where that

has prospered for decades that a hot summer's day and they die, much to dismay of the owners. Heat stress and water supply loss are critical factors that need to be guarded against.

The Project Arborist will need to supervise the excavation of the pathway and courtyard wall foundation. At the time of site inspection the majority of surface tree roots were away for this area. This tree is viewed as a high priority and the project will make every effort to retain and protect Tree 12. Just a professional note of warning, if the roots system, in the professional opinion of the Project Arborist will be too severely compromised during this excavation of the nearby pathway and courtyards (though unlikely) the tree will be removed at that time – as it will be pointless to attempt to persevere a severely compromised tree. It is estimated that there is an 85% to 90% change the tree can be saved. But if the roots are congregated uphill around a water source which needs to be removed, the tree will not be sustainable. The terra cotta drainage to the street might be feeding this tree and if it is removed the tree will suffer. More will be known at the time of excavation and the Project Arborist will be on-site.

Changes in ground level

Ground levels should not be lowered within the tree root protection area as this would cause serious damage to tree roots. Soil levels can not be raised as this will starve the roots of oxygen and nutrients.

Occasionally ground levels may need to be raised within the tree root protection area. This can be achieved by the use of a granular material with a no fines content to allow the vertical diffusion of gasses. A detailed plan agreed by the assigned Project Arborist would be needed in such cases.

Post Construction Landscaping

The trees on the site will be subject to landscaping or seeding beneath the canopy after the main development phase has been completed. At this stage, it is inevitable that the protective fencing will have to be removed. In view of this fact, the landscaped works should be carried out in such a way as to avoid ground level changes or deep digging. Tractor mounted tillers or other mechanised cultivation methods should be avoided near the tree.

No heavy machinery should be brought into the vicinity of trees to be retained.

Herbicides should be appropriate for the purpose and should not be used in such a way as will damage any vegetation to be retained. Where possible, it is preferable for the trees to be located within a mulched, shrub planted, garden bed. This minimises long term disturbance or compaction to the tree rooting environment and encourages occasional irrigation by the residents.

During the summer months all three trees should be irrigated by hand. Some organic matter and granular material is to be added to the soil to aid water penetration.

I trust edition this report dated, 28th August, 2014, 2013 provides all the required information to progress the project. However, if further advice is needed then please contact me.

Victor John Molyneaux

B.E.;M.Eng.Sc.;M.B.A.; Level 5 Arboriculture

General guidance

All tree works should be carried out by suitably qualified, experienced and insured contractors in accordance with Australian Standard 4373-1996 - Pruning of Amenity Trees and the WorkCover Code of Practice for the Amenity Tree Industry.

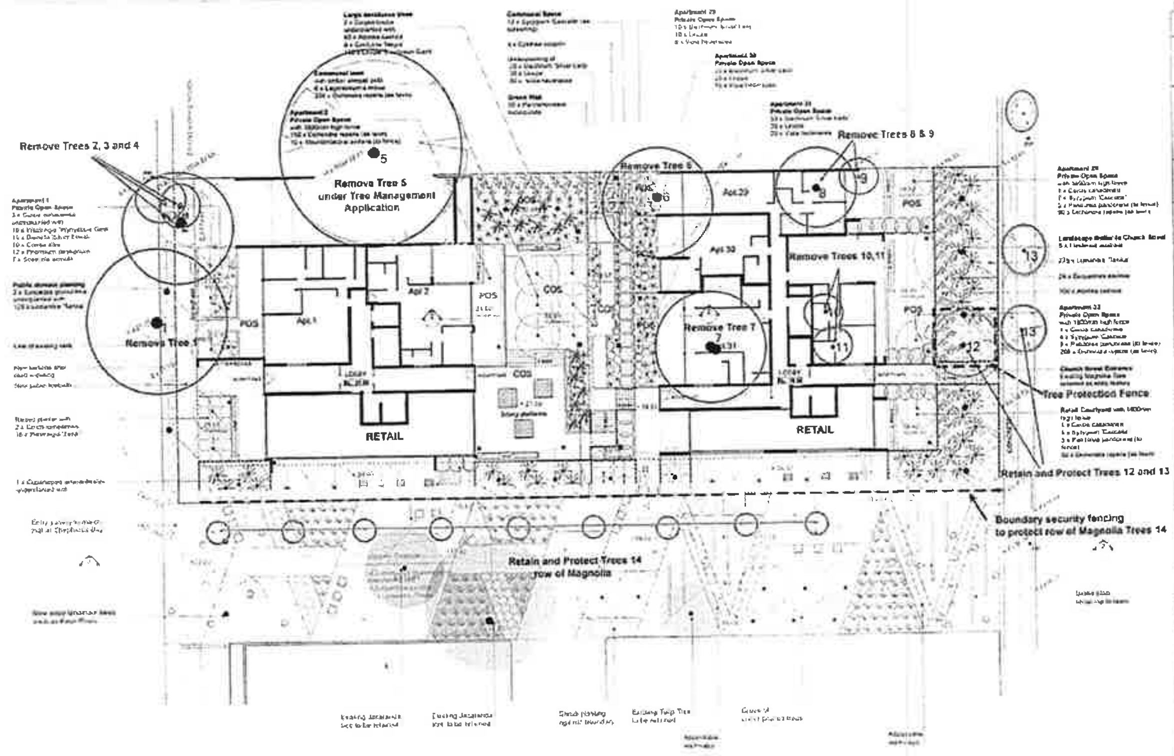
This report is based upon a visual survey. The consultant shall not be responsible for events which happen after the date of survey due to factors which were not apparent at the time of the survey.

Any defects seen by a contractor that were not apparent to the consultant must be brought to the consultant's attention immediately.

No liability can be accepted by the consultant in respect of the trees unless the recommendations of this report are undertaken within the time period recommended.

It is advisable to have trees of any concern regularly surveyed by a suitably qualified and experienced arboricultural consultant. In this instance it is recommended that these surveys are made every two years.

Horticultural Resources Consulting Group
Admin Postal Address: PO Box 1020 Eastwood NSW 2122
Sydney NSW 2000 Tel: (02) 9874 9888 Fax: (02) 9874 9899



1. LANDSCAPE PLAN

STRICTLY ENFORCED

TREE PROTECTION ZONE

Magnolia x soulangiana - Soulangiana Magnolia

NO MATERIALS TO BE STORED WITHIN 3.6 METRES OF THIS TREE

Appointed Consultant Arborist

Victor John Molyneaux
B.E.;M.Eng.Sc.;M.I.L.A.; Level 5 Arboriculture
Horticultural Resources Consulting Group
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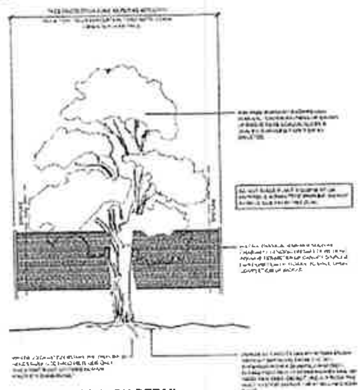


TREE PROTECTION DETAIL

TREES CATEGORY RATINGS AND RECOMMENDED OUTCOMES

#	Botanical Name/ Common Name	Category
1	*Eucalyptus scoparia*, Wallangarra White Gum Street tree outside No 15 Porter	CATEGORY B MEDIUM TO BE REMOVED for STREET WIDENING [redacted]
2	*Eucalyptus scoparia*, Wallangarra White Gum	CATEGORY B Medium This tree location is in the new 2 M wide street widening setback. A new footpath area will be over this location and it is required for the project driveway [redacted]
3	*Lophostemon confertus* Brush Box, In planter box with T2	CATEGORY C LOW NOT SUSTAINABLE – same as for T2 [redacted] FOR DRIVEWAY/FOOTPATH
4	*Flindersia australis* Crow's Ash Street tree outside 13 Porter – street tree	CATEGORY A HIGH TO BE REMOVED for STREET WIDENING and required for proposed driveway [redacted]
5	*Liquidambar styraciflua* Liquidambar In front yard of No. 11 Porter close to proposed driveway	CATEGORY C LOW [redacted] for practical reasons – both properties are to be redeveloped and this tree is not sustainable in the for either project It is proposed to REMOVE this tree under a Tree Management Application to Ryde Council The property owner is very interested in the tree being removed and will gladly sign the TMA form and the project will share the costs for the tree removal
6	*Jacaranda mimosifolia* Jacaranda Rear yard of 115 Church St	CATEGORY B Medium [redacted] TO FACILITATE DEVELOPMENT
7	*Callistemon viminalis* Weeping Bottlebrush	CATEGORY B Medium [redacted] TO FACILITATE DEVELOPMENT Required to be removed as under proposed footprint
8	*Saxium sedifolium* now called *Triadica sebifera* Chinese Tallowood	CATEGORY C LOW [redacted] Not a preferred species in a difficult position to incorporate into landscape plan and too close to proposed footprint
9	*Lagerstroemia indica* Crape Myrtle	CATEGORY C LOW AMENITY Not a well developed specimen, in a difficult position along the property boundary to incorporate into landscape plan [redacted] for practical reasons
10	*Camellia sasanqua* Sasanqua	CATEGORY C LOW AMENITY [redacted] TO FACILITATE DEVELOPMENT
11	*Camellia japonica* Camellia	CATEGORY C LOW AMENITY [redacted] TO FACILITATE DEVELOPMENT
12	*Magnolia x soulangiana* Soulangiana Magnolia	Category B MEDIUM [redacted]
13	3X *Ulmus* spp. Deciduous elm Hard to ID Street trees	Category B MEDIUM [redacted] These street trees look appalling and should be shaped. They can be retained and protected if council prefers or replaced see discussion regarding main roads policy issues
14	5X *Magnolia grandiflora* Bull Bay Magnolia Along southern site boundary in Hayes Reserve	CATEGORY A HIGH [redacted] unless park up-graded for more pedestrian traffic
15	DEAD *Eucalyptus nicholii*	CATEGORY R [redacted]
16	*Jacaranda mimosifolia* Jacaranda In Hayes reserve	CATEGORY A HIGH [redacted]
17	*Jacaranda mimosifolia* Jacaranda In Hayes reserve	CATEGORY B MEDIUM [redacted] unless park up-graded for more pedestrian traffic
18	*Liriodendron chinense* Chinese Tulip Tree In Hayes reserve	CATEGORY A HIGH [redacted]
19	*Murraya paniculata* and *Melaleuca bracteata* Tree stands – in corner of Hayes reserve on Church street	CATEGORY B Medium [redacted] unless park up-graded for more pedestrian traffic Good screen at present – but could sacrifice for better park entrance

LEGEND

COS Communal Open Space
POS Private Open Space

NOTES

A DEVELOPMENT APPLICATION
ISSUE AMENDMENT DATE

LANDSCAPE ARCHITECT
melissa wilson

ARCHITECT
aleksander design group pty ltd
45 Albion Avenue
Paddington NSW 2021

CLIENT
Eastern Pearl Pty Ltd

PROJECT
115-117 Church Street
13-15 Porter Street, Ryde

DRAWING TITLE
LANDSCAPE + PUBLIC DOMAIN PLAN
TREE ASSESSMENT AND PROTECTION

SCALE@ A1: 1:200
DRAWN: Victor HRC
ISSUE: A
PROJECT NO: 1411
SHEET: 1 OF 1

NOT ISSUED FOR CONSTRUCTION

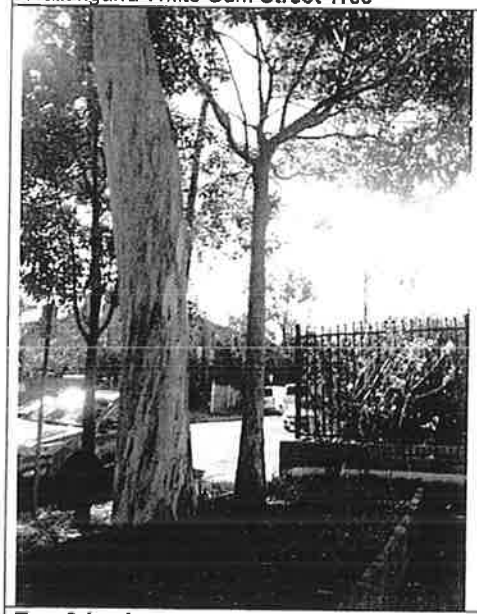
APPENDIX 1

Arboricultural Implication Assessment and Arboricultural Method Statement

APPENDIX 2 Photographs of each tree and shrub

Tree 1 ***Eucalyptus scoparia***,
Wallangarra White Gum **Street Tree**

Tree 2 ***Eucalyptus scoparia***,
Wallangarra White Gum



Tree 3 ***Lophostemon confertus***
Brush Box

Tree 4 Flindersia australis
Crow's Ash Street tree outside 13 Porter St

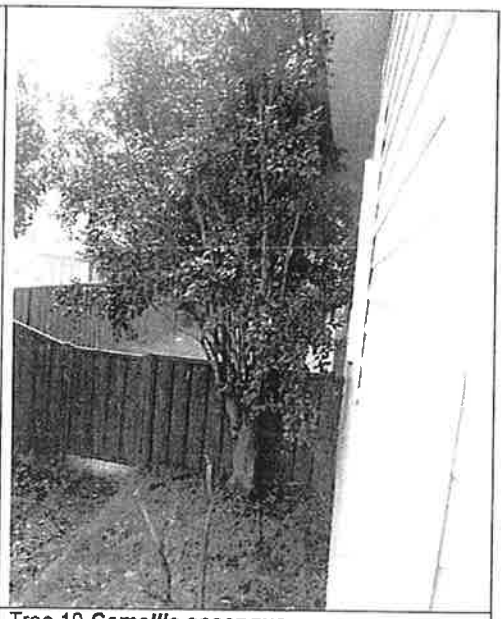
Tree 5 ***Liquidambar styraciflua***
Liquidambar In front yard of No. 11 Porter close to proposed driveway

Tree 6 Jacaranda mimosifolia
Jacaranda
Rear yard of 115 Church St

Tree 7 ***Callistemon viminalis***
Weeping Bottlebrush

Tree 8 Sapium sebiferum now called ***Triadica sebifera*** Chinese Tallowood

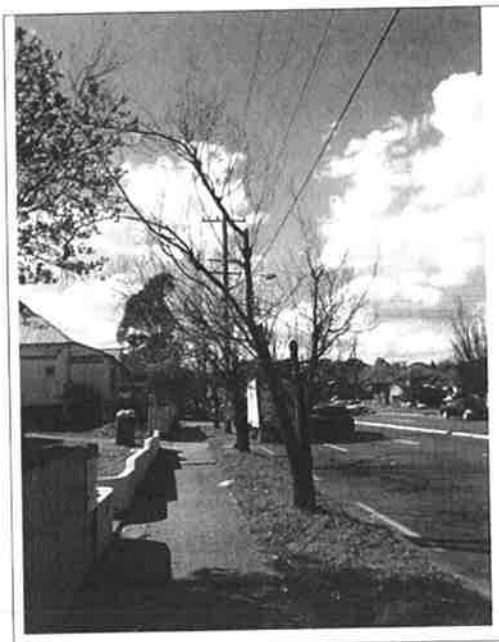
Tree 9 ***Lagerstroemia indica***
Crepe Myrtle



Tree 10 ***Camellia sasanqua***
Sasanqua

Tree 11 Camellia japonica
Camellia

Tree 12 Magnolia x soulangiana
Soulangiana Magnolia,

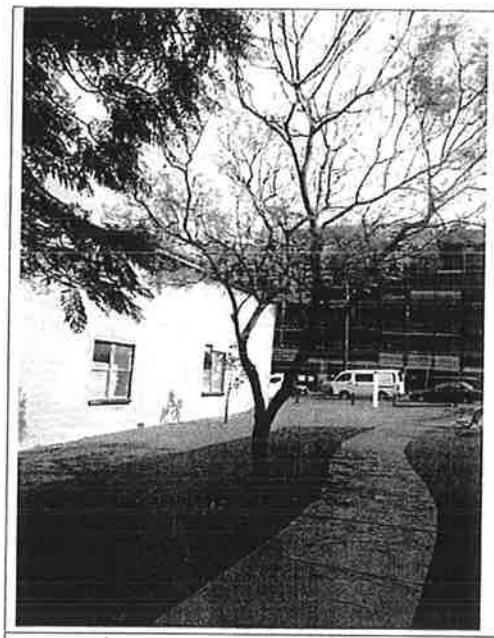


Tree 13 2X ***Ulmus spp.***
Deciduous elm

9X Magnolia grandiflora
Bull Bay Magnolia
Along southern site boundary in Hayes Reserve

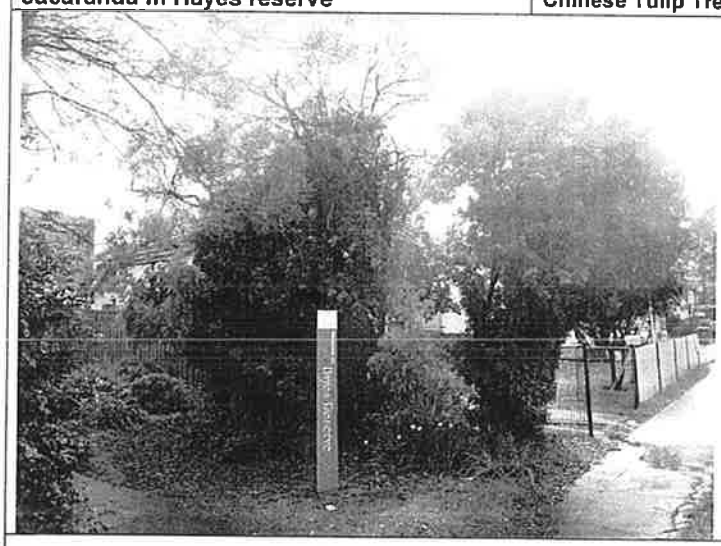
Tree 15 DEAD
Eucalyptus trunk

Tree 16 ***Jacaranda mimosifolia***
Jacaranda In Hayes reserve



Tree 17 ***Jacaranda mimosifolia***
Jacaranda In Hayes reserve

Tree 18 ***Liriodendron chinense***
Chinese Tulip Tree In Hayes reserve



Tree Stand 19 Murraya paniculata and Melaleuca bracteata
Tree stands - In corner of Hayes reserve on Church street

STRICTLY ENFORCED

TREE PROTECTION ZONE

Magnolia x soulangiana - Soulangiana Magnolia

NO MATERIALS TO BE STORED WITHIN 3.6 METRES OF THIS TREE

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PROHIBITED ACTIVITIES

in TREE PROTECTION ZONES

No entry of machinery or people. No Storage of building materials.

No Parking of any kind. Erection or placement of site facilities.

Removal or stockpiling of soil or site debris.

Disposal of liquid waste including paint and concrete wash.

Excavation or trenching of any kind.

Attaching any signs or any other objects to the tree

Placement of waste disposal or skip bins.

Strictly Enforced call Victor on 0410 755 338