STRUCTURE PLAN
FOR THE
FORMER BELLEVUE PRIMARY SCHOOL SITE
AND
ADJOINING LAND

Prepared by Landvision

in association with

Strategic Planning Institute, Project Managers

Mackay Urban Design

Serling Consulting, Engineers

TARSC, Transport Consultants

Lloyd George, Acoustic Consultants

for

Morefield Holdings

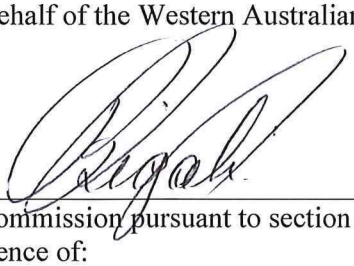
August 2019

Endorsement page

This structure plan is prepared under the provisions of the City of Swan Local Planning Scheme Number 17.

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON: 8 OCTOBER 2019

Signed for and on behalf of the Western Australian Planning Commission:



an officer of the Commission duly authorised by the Commission pursuant to section 16 of the Planning and Development Act 2005 for that purpose, in the presence of:

M. Wreclaw

Witness

8 OCTOBER 2019

Date

8 OCTOBER 2029

Date of expiry

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EXECUTIVE SUMMARY

1. Council resolved on October 1, 2014 to reclassify Lot 3 and Lot 15597, Clayton Street, Bellevue (the subject land) to a Residential Development zone.

2. It is a requirement of the Residential Development zone that development is to accord with a Structure Plan (Clause 4.2.14) approved by the City of Swan.

3. This Structure Plan has been prepared for the subject land as a guide to its future development and to accord with the City of Swan's requirements. The Structure Plan is attached as PLAN 1.

4. The total site area is 1.6716 ha from which a widening to Pascoe Street (1251m²) and an extension to Wilkins Street (2390m²) are to be excised leaving a net area of 1.3075 ha (See Figures 1 and 2, and Appendix 1).

5. A 10 metre wide drainage easement traverses the property and is to remain in situ. No buildings are proposed over the drainage easement.

6. The former Bellevue Primary School is located on the subject land and is to be retained and converted into multiple dwellings (See Appendix 2 and Figure 7).

7. A detailed site assessment and design process has been carried out by McKay Urban Design consultants. The proposed development comprises a mix of multiple dwellings and grouped dwellings. This type of development accords with the City's Bellevue East Land Use Study (BELUS) (See Appendix 3 and Figures 3 - 6).

8. An R-Code of R40 has been assigned to the structure plan which will yield approximately 70 dwellings.

9. An area of approximately 800m2 is proposed to be located centrally as a communal open space.

10. A traffic assessment was carried out by TARSC, Transport Consultants which demonstrates that the proposed intersection of Pascoe Street and Clayton Street and its widening will be able to comfortably accommodate the estimated traffic generation from the site (See Appendix 5).

11. Pascoe Street will be widened at its intersection with Clayton Street and landscaped to provide an attractive entry to the development (See Figure 9). No direct vehicular access is proposed from the development to Pascoe Street.

12. A stormwater management strategy has been prepared by Serling Consulting and agreed to by the Water Corporation. Stormwater will be retained on site where possible but excessive stormwater will be directed to a temporary stormwater basin to be sited on the proponents land to the south (See Appendix 6). This has been supplemented by a Geotechnical Investigation by Douglas Partners (See Appendix 7).

13. All other services can be extended to accommodate the development. A temporary pump station for sewerage disposal will be sited on the proponent's land to the south. This has been agreed to by the Water Corporation (See Appendix 8).

14. As the lot abuts Roe Highway and Clayton Street, a noise assessment has been carried out by Lloyd George Acoustic Consultants As a result, an acoustic barrier is proposed along the western boundary of the site and part of the northern boundary in accordance with the consultant's recommendations (See Appendix 9). Some houses will need to incorporate noise insulation.

    Noise design guidelines for individual grouped dwellings will accompany the development application.

Table 2: Structure Plan Summary Table

Item	Data	Section number referenced within the structure plan report
Total area covered by the structure plan	1.6716 hectares	
Area of each land use proposed: - Residential - Industrial - Commercial	 1.3075 hectares - hectares - hectares Roads 0.3641 hectares	
Estimated lot yield	1 lot	
Estimated number of dwellings	70 dwellings	
Estimated residential site density	42 dwellings per site hectare	
Estimated population	105 people	
Number of high schools	- high schools	
Number of primary schools	- primary schools	
Estimated commercial floor space (for activity centres if appropriate)	- net lettable area	
Employment self sufficiency targets	78 workers = 75%	
Estimated number and % of public open space: - Regional open space - District open space	 0 hectares 0% 0 hectares 0%	
Estimated area and number: - Neighbourhood parks - Local parks	 0 hectares 0 parks 0 hectares 0 parks	
Estimated number and area of natural area and biodiversity assets	0 hectares 0 sites	

PART ONE: IMPLEMENTATION

1.0 STRUCTURE PLAN AREA

This structure plan shall apply to Lot 3 and Lot 15597 being the land contained within the inner edge of the line denoting the structure plan boundary on the structure plan map (See PLAN 1).

2.0 STRUCTURE PLAN CONTENT

This structure plan comprises:

a) Part One - Implementation

   This section contains the structure plan map and planning provisions and requirements.

b) Part Two – Explanatory section

   This section to be used as a reference guide to interpret and justify the implementation of Part One.

c) Appendices – Technical reports and supporting plans and maps.

3.0 OPERATION

The date the Structure Plan comes into effect is the date the Structure Plan is approved by the WAPC.

4.0 LAND USE AND SUBDIVISION

4.1 Land Use Permissibility

Land uses permissibility within the structure plan area shall be in accordance with the corresponding zone or reserve under the Scheme. The land is proposed as Resedential R40

4.2 Subdivision Requirements

Other than the excision of road reserves, no subdivision is proposed.

4.3 Residential

4.3.1 Dwelling Target

The structure plan will yield approximately 70 dwellings consisting of grouped and multiple dwellings.

5.0 DEVELOPMENT REQUIREMENTS

- Former Bellevue School to be retained and redeveloped for residential dwellings
- Footpath to be extended along the southern side of Clayton Street with a minimum width of 2.3m where located at the back of kerb or 2m if located against the property boundary
- Drainage easements through the site to be retained
- Pathway installed alone Pascoe Street shall be a minimum width of 1.8m
- Pascoe Street widened to create a boulevard street
- Roundabout installed at the intersection of Pascoe and Wilkins Streets
- Noise wall, Quiet House Design and notification requirements

5.1 Public open space

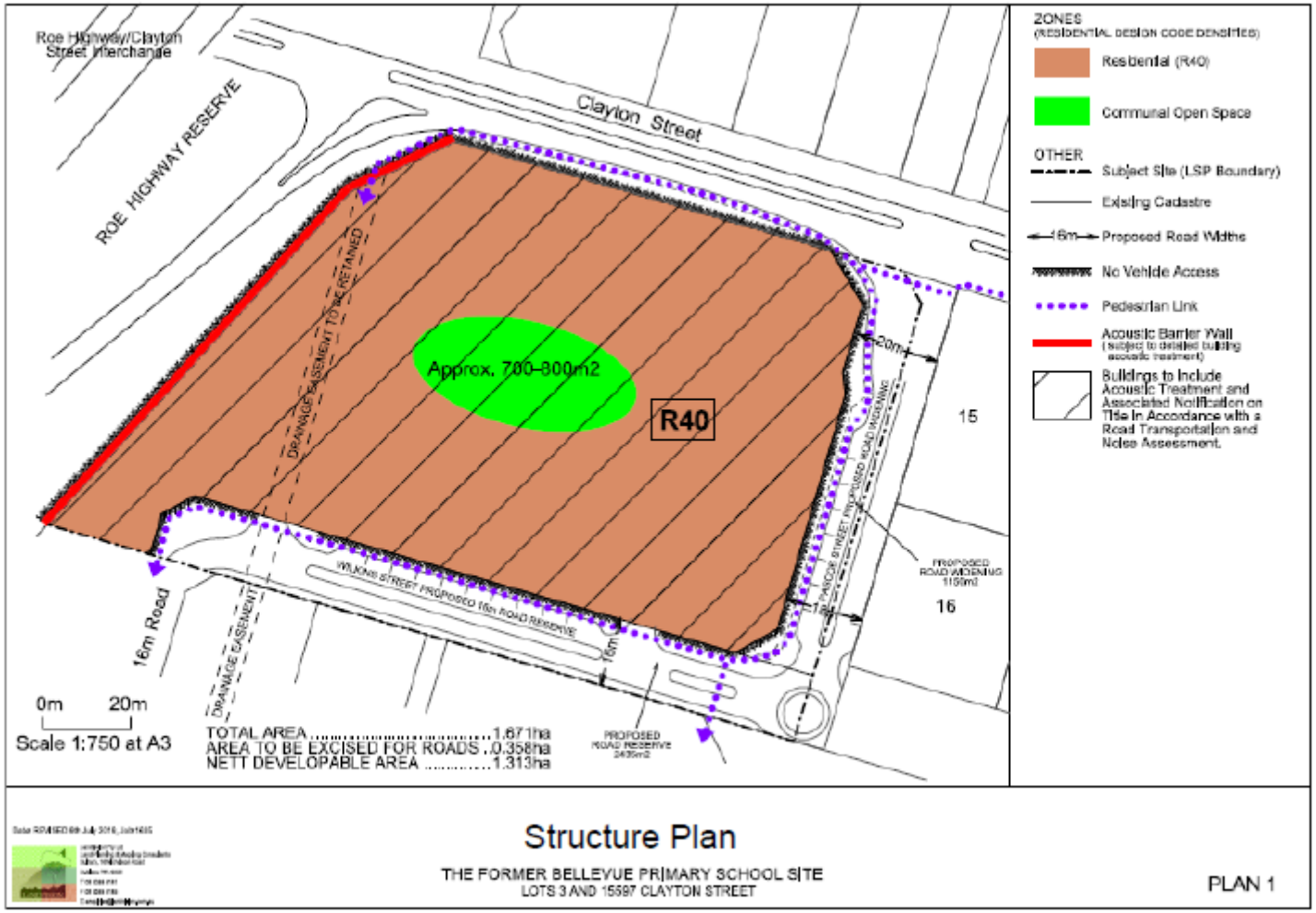
At the time of development approval or strata approval being sought across the subject site, provision must be made for a minimum 5% communal open space in accordance with Clause 3.3.3 of Development Control Policy 1.3 – Strata Titles. A cash-in-lieu contribution for the remaining 5% may be provided, in accordance with clause 153 of the Planning and Development Act 2005.

5.2 Iconic Development Sites

The site is recorded on the City's Municipal Inventory (No. 562) as a site of "Considerable Significance". The State Heritage Office Register of Heritage Places (Place No. 03512) assesses the site as being "Below the Threshold" of listing.

The layout and elevations of the former school buildings are attached as Appendix 1.

The former Bellevue Primary School is to be retained and refurbished as indicated in the Structure Plan and will be subject to more detailed design at the time of a development application (See also Figure 7).



Structure Plan

THE FORMER BELLEVUE PRIMARY SCHOOL SITE
LOTS 3 AND 15597 CLAYTON STREET

PLAN 1

PART TWO: EXPLANATORY SECTION

1.0 BACKGROUND

1.1 Introduction and purpose

This structure plan has been prepared for a parcel of land comprising Lot 3 and Lot 15597, at the corner of Clayton and Pascoe Streets in Bellevue (See PLAN 1).

Lot 3 is commonly referred to as the "Bellevue Primary School" site. The school buildings are shown in Appendix 1. The site has not been used as a school since 2004. In recent years the school site has been used as a nursery.

1.2 Land Description

Lot 3 includes a closed road which was the western most portion of Wilkins Street, but has since been amalgamated with the Primary School Site. Lot 15597 is a remnant land parcel from the construction of the Roe Highway which is to the west of Lot 3.

1.2.1 Location

The subject land is situated 16.5 km north east of the Perth Central Business District and approximately 3 kilometres south east of the Midland Town Centre. It is 7 kilometres north east of the Perth International Airport (See Figure 1).

As such it is considered an inner urban area of Perth and is ideally sited for infill development as envisaged in successive Government urban growth policies; the latest being Perth and Peel @ 3.5 million.

The Bellevue precinct in which the subject land is situated is on the east side of the Roe Highway and offers a significant opportunity as a dormitory residential suburb for the Midland sub regional centre and particularly the future workforce for the Midland Redevelopment Area.

The precinct is currently fragmented by Roe Highway, railway reserves and the river and comprises a mixture of residential, industrial and rural zoned land. To the east is the residential area of Koongamia. The existing residential catchment is estimated at approximately 450 dwellings.

1.2.2 Area and land use

Lot 3 is 1.4436 ha in area and Lot 15597 is 0.2280 ha in area. A 10 m wide drainage easement crosses Lot 15597 along its eastern boundary.

It is proposed to amalgamate the two sites providing a total area of 1.6716 ha (See Figure 2).

1.2.3 Legal description and ownership

A copy of the Certificate of Titles and Survey Diagram/Plans are attached as Appendix 2.

1.3 Planning Framework

This part of Bellevue comprises a mix of residential and industrial uses. It is separated from the Midland Redevelopment Area by the Roe Highway to the west.

Between the Roe Highway and the Industrial land to the east is a pocket of residential land to the north and east. To the south of the site is the Belle View estate, a large rural holding in the Shire of Mundaring. The Belle View estate is owned by the owner of the subject land.

It is proposed that the development of the subject land will serve as an entry statement to the wider development of the Belle View Estate which has recently been included in the Urban zone in the Metropolitan Region Scheme.

1.3.1 Zoning and Reservations

Lot 3 was, until recently, reserved as a Local Reserve – Public Purpose and Lot 15597 was zoned Residential. The former Wilkins Street road reserve was reserved as Local Reserve – Local Road.

At its Council meeting of March 26, 2014 the City of Swan resolved to rezone the whole of the area to "Residential Development". The amendment was granted final approval by the City on October 1, 2014 and by the Minister and was gazetted on January 30, 2015.

Under the provisions of the City's Local Planning Scheme No. 17, a structure plan is required to be prepared and approved by the City prior to development in a Residential Development zone.

1.3.2 Regional and sub-regional structure plan

As the subject site abuts the existing Bellevue residential area it is frontal to essential urban services. In this respect the residential development of the land represents a logical expansion of Metropolitan Perth and promotes the "Infill" objectives of the Bellevue East Land Use Study (BELUS), Urban Housing Strategy.

1.3.3 Planning Strategies

The subject land is in Precinct 7 – Southern Residential Precinct of the Bellevue East Land Use Study (BELUS) (See Appendix 3) in which the relevant recommendations are:

(1) The Public Purpose Reserve be rezoned to Residential Development;
(2) Road improvements be made to Clayton Street;
(3) Noise attenuating measures be required for affected development;
(4) Pascoe Street, south of Clayton Street be widened to an ultimate road reserve width of at least 10.0 metres;
(5) Infill residential development to be in accordance with the City's Urban Housing Strategy

1.3.4 Policies

WAPC's Direction 2031.

Midland will continue to be the principal centre for the region. It is directly connected to the Perth Central Area with the passenger rail network which prior to transport rationalisation extended to Bellevue and Koongamia adjacent the subject land. Directions 2031 indicates the extension to the rail service will be considered to service urban growth areas in the foot hills of the Darling Escarpment.

The subject land is identified as a future urban area in Directions 2031 and more recently, Perth and Peel @ 3.5 million.

The concept of Network City, carried on in Directions 2031, was designed to optimise land use and transport linkages between centres and for public transport to be supported by a range of activities at the selected centres as well as the land uses along the corridors linking the centres.

Strong centres at each end of the 'activity corridors' were seen as necessary to support an effective public transport system in both directions along the corridor. The major elements of both concepts are the activity corridors and activity centres.

Perth to Midland is one such activity corridor and Midland is a Strategic City Centre.

Directions 2031, as Network City's successor, describes itself as a spatial framework, a high level strategic plan that establishes a vision for future growth of the Perth and Peel region, and provides a framework to guide the detailed planning and delivery of housing, infrastructure and services necessary to accommodate that growth.

The Directions 2031 Planning Framework for the North East Sub region envisages an additional 3700 ha (up from 2200 ha in the draft version) of urban development, a population increase of 69 000 and an increase of 43 000 (business as usual) – 55 000 (connected city scenario) dwellings surrounding the Strategic City of Midland which has been recognised as a growth centre with significant investment by the Government in the Midland Redevelopment Authority.

The north east sub region enjoys a relatively high level of employment self sufficiency at 63%. Directions 2031 has identified a target of 75% employment self sufficiency. To achieve this, it is estimated that the sub region will need to attract another 53 000 – 64 000 additional jobs by 2031.

2.0 SITE CONDITIONS AND CONSTRAINTS

The land slopes gently from north east to south west.

Noise generated from Roe Highway to the west of the site will need to be attenuated to acceptable levels.

The main entry point is to be the Clayton Street/Pascoe Street intersection. Currently Pascoe Street is an under width road and will need to be widened.

The existing Bellevue area drains through the site and the City has an easement over Lot 15597 to secure storm water flow. Further south the easement links with a drainage channel in the Shire of Mundaring which is owned by the City of Swan in freehold and which discharges into the Helena River (See Figure 3).

2.1 Biodiversity and natural area assets

The site has been significantly modified as a result of its use as a school for almost 100 years. On its periphery are a substantial number of good species of native trees intermixed with a few exotics. A notable example is the mature Platanus Acerifolia (London Plane tree) located along Pascoe St. Retention of this specimen will be achieved by widening the entry road to accommodate the tree within the median strip.

The exotics are to be removed and the natives retained as far as practicable. Under storey vegetation is largely absent throughout the site.

The typical range of urban dwelling avian wildlife is relatively abundant which variously inhabits or transverses the site. Due to the urbanisation of the site and surrounding area it is highly unlikely that any large mammalian species persist on the site.

The landscaping plan seeks to retain as many of the existing trees as possible.

2.2 Landform and soils

The landform is a part of the elevated plain on the northern side of the Helena River floodplain. It is generally flat at 16.1 to 16.4m AHD grading from east downwards to west.

The soil is characterised as pebbly silts with some fine to medium-grained laterite quartz sands which display moderate to strong PRI fixation properties.

2.3 Groundwater and surface water

Preliminary groundwater monitoring within the upland areas of the site indicate that the development area will have clearance to recorded MGLs in the order of 6.0 m. As such the development is not anticipated to require subsoil drainage to artificially control groundwater levels. There is no evidence of permanent or intermittent surface water occurring on the site.

2.4 Bushfire hazard

The City's Bushfire Assessment maps categorise the site as Low Risk.

2.5 Heritage

The site is recorded on the City's Municipal Inventory (No. 562) as a site of "Considerable Significance". The State Heritage Office Register of Heritage Places (Place No. 03512) assesses the site as being "Below the Threshold" of listing.

The layout and elevations of the former school buildings are attached as Appendix 1.

The former Bellevue Primary School is to be retained and refurbished for residential use as indicated in the Structure Plan and will be subject to more detailed design at the time of a development application (See also Figure 7).

2.6 Coast and foreshores

Not applicable.

2.7 Context and other land use constraints

The site opportunities and constraints are illustrated in Figure 3.

3.0 LAND USE AND SUBDIVISION REQUIREMENTS

3.1 Land Use

The "Residential Development" zone for the subject land facilitates the landowner's intention to develop the site for grouped and multiple dwellings in accordance with this structure plan. With an R-code of R40, the site will yield approximately 70 dwellings.

This type of development is also in accordance with the City's Bellevue East Land Use Study (BELUS) which recommends that the site which is precinct 7 in the study, be zoned "Residential Development".

While the Residential Development zone provides the statutory background to allow multiple dwellings, this structure plan addresses residential density, design layout, guidelines and service infrastructure for the site.

3.2 Residential

It is not intended to subdivide the site. Indeed it is proposed that the two lots be amalgamated and that built strata lots be created for each of the multiple dwellings. The development concept intends to incorporate the heritage values of the old primary school building which will yield 5 apartments.

The concept provides for 20 grouped dwellings and 50 multiple dwellings. The multiple dwellings are in four groupings. The first grouping is proposed to refurbish the old Bellevue Primary School buildings with a central communal open space area (See Figures 4 - 7 and Appendix 4).

At the time of development approval or strata approval being sought across the subject site, provision must be made for a minimum 5% communal open space in accordance with Clause 3.3.3 of Development Control Policy 1.3 – Strata Titles. A cash-in-lieu contribution for the remaining 5% may be provided, in accordance with clause 153 of the Planning and Development Act 2005.

The grouped dwellings front Pascoe Street and an extended Wilkins Street. Rear vehicle access is proposed for these dwellings.

3.3 Landscaping

No public open space is to be provided. However a central area of communal open space together with landscaping for public areas will provide amenity for the residents.

In the preparation of the landscape plans the design intent has been to "Provide a landscape that recognizes the history of the old school site, retains as many existing trees as possible whilst prviding an attractive and functional setting for the future users of the site".

The sense of arrival to the development will be significantly enhanced by the adoption of the proposed modifications and soft landscaping to Pascoe Street including the retention of the mature and significant London Plane Tree and the creation of a landscaped median strip to the western end of Wilkins Street.

Within the school site significant areas have been allocated for both passive and active use and these areas will be landscaped to a high level of finish using advanced plantings and high quality hard landscape finishes.

The use of appropriate advanced tree species for the streetscape areas, internal courtyards for each unit, for shade and traffic noise reduction throughout the site is included in the proposed landscape design.

A range of hardy exotic shrubs and ground covers reflecting the history of the site will be planted throughout the site.

The landscape proposal will include soft landscaping to all verges and the eastern side of the Roe Freeway entry ramp as shown on the landscape plan (See Figure 8).

Irrigation for the landscape will be sourced from the existing on site bore which produces good quality non staining water suitable for irrigation.

3.4 Movement Networks

In June 2013, Tarsc, consultants in Transport Engineering prepared a Transport Assessment report for the proponents for the adjoining Belle View Estate as well as the subject land.

The Belleview Estate is to be developed as a residential estate comprising approximately 300 – 350 lots. The main access roads are Pascoe Street adjoining the eastern boundary of the subject land and Henkin Street 260 metres to the east.

Both connect to Clayton Street which bounds the subject site on the north and is the main distributor road for the Bellevue/Koongamia area connecting to the Roe Highway and to the Midland Regional Centre. Pascoe Street is within 130 metres of the Roe Highway on/off ramps. This interchange is controlled by traffic control signals.

Clayton Street is classified as a "Distributor B" under the Functional Road Hierarchy, but is not reserved in the Metropolitan Region Scheme.

It is estimated that approximately 7500 vehicles/day (vpd) use this section of Clayton Street (Source City of Swan).

Traffic volumes have not changed significantly since 2001 when they were approximately 7220 vpd. The Clayton Street road reserves includes bike lanes either side and a 1.5 m partitioned median. Clayton Street is part of the SE4 bike route from Midland train station to Mundaring and beyond.

Footpaths are on both sides of Clayton Street but the footpath on the south side terminates at the subject site.

Bus stops are located on Clayton Street approximately 50 metres either side of Pascoe Street. The bus stop services route 322.

Vehicular access to the site is to be from the extension of Wilkins Street west of Pascoe Street. As the intersection of Pascoe Street and Wilkins Street is to be controlled by a roundabout, a safe and efficient means of access to and from a lowly trafficked section of Wilkins Street can be attained.

The built form will present the front of properties to Pascoe Street, Wilkins and Clayton Street. Accordingly, access to individual lots within the site is to be via an internal road network to the rear of lots.

Pedestrian access will be via the minor road network or a series of short paths that connect to Clayton Street and Pascoe Street. Shared paths are to be provided both sides of Pascoe Street whilst the connection to Wilkins Street will require about 30m of footpath to connect onto the current footpath on the southern side of Clayton Street near a bus stop.

A proposed island opposite the proposed connection to Clayton Street will have a break in it with ramps either side of Clayton Street, thus allowing good connectivity to the footpath on the north side of Clayton Street.

The short connection to Clayton Street allows direct access to on-road cycle lanes. Pascoe Street will be upgraded to allow access onto the off road shared paths and then to the Clayton Street on-road cycle lanes.

Widening of Pascoe Street

Pascoe Street is currently classified as an Access Road under the Functional Road Hierarchy. It is currently a one way movement from south to north. The intersection at Clayton Street allows both left and right turn movement.

A boulevard treatment is proposed for Pascoe Street with a 5 metre wide verge on the west side to allow for 2.1m embayed parking on the west side, 3.5m wide carriageways and a 2m wide median strip in its southern section. It is proposed that the reserve be widened to 20m where it approaches Clayton Street to allow for the left turn sweeps in and out of Clayton Street.

The widening of the Pascoe Street reserve from 7.5 metres to 18 metres widening to 20 metres at its intersection with Clayton Street is to be excised from the subject site.

Modification to the intersection of Wilkins Street and Pascoe Street

Currently Wilkins Street terminates at Pascoe Street at the south east corner of the subject land. Wilkins Street is to be extended westwards to the south of the site and a roundabout constructed at its intersection with Pascoe Street. The Wilkins Street reserve is 16 metres wide with a

footpath on the north side of the reserve.

Modification of the intersection of Pascoe and Clayton Streets

A left in/left out intersection design is proposed with provision for a right turn movement from Clayton Street to Pascoe Street (See Figure 9).

The modified design provides for queues and delays within acceptable levels. Queue lengths are expected to be contained within the pocket lengths proposed for the intersection.

Trip Generation

The Transport Assessment prepared for the Belle View Estate estimated that the Estate would generate 3650 vehicle trips/day with approximately 90% entering and exiting via Pascoe Street to Clayton Street.

Using a trip generation model of 10 trips per day per dwelling the proportion generated from the subject land would be in the order of 700 trips/day generated with 350 entering and 350 exiting over a day. For the AM peak there should be about 52 trips per hour with about 39 entering and 13 exiting. In the PM peak there should be about 70 trips (10% of daily trips) with 47 entering (67%) and 23 exiting.

Some of the above trips from and to the east (say 10%) are expected to use Henkin Street for access.

When the whole of the Belle View Estate is developed a total of 3500 – 4000 trips maybe generated utilising Pascoe and Henkin Streets. The proposed road modifications have been modelled on these wider figures. The full transport assessment is attached as Appendix 5.

3.5 Water management

Stormwater Management

It is a requirement of Local Planning Scheme No. 17 that a Local Water Management Strategy be submitted and approved concurrently with a structure plan.

Serling Consulting has prepared a stormwater management strategy for the site (See Appendix No. 6).

A District Water Management Strategy (DWMS) for Lots 800 and 239 Wilkins Street Bellevue to the immediate south of the subject land has been completed by RPS, (Report No D12146, Rev 1, March 2013) and has been previously submitted to the City of Swan Planning Department.

The RPS Stormwater Management Strategy describes Geology, Acid Sulfate Soils, Flora and Fauna, Heritage, Environmental issues, Groundwater Hydrology, Water Supply Planning or monitoring requirements, which are covered in the DWMS.

This previously submitted DWMS has included review and comments on Lots 3 and 15597 and this Stormwater Drainage Strategy should be read in conjunction with the DWMS.

The design criteria for stormwater management for the site is to:

- Ensure pre-development and post development flows are maintained;
- Ensure that the 1 year ARI event is contained, as this may impact on desirable environmental flows; and
- Ensure that the 1:100 year ARI post development flows are contained on site similar to the pre-development flows as part of flood management.

A drainage easement traverses the property which contains a number of large diameter pipes. It conveys stormwater from external catchments to the north and north west of the site. As this is a closed section of the drain, site run off will need to be redirected to the open section to the south of the site. This downstream section of the drain is in a narrow freehold lot in the ownership of the City of Swan.

Water Quality Management

The objective is to maintain surface water and ground water quality at pre-development levels and, if possible, improve the quality of water leaving the development area.

The design criteria is for the development to meet relevant water quality guidelines stipulated in the "National water quality management strategy, 1994".

A qualitative assessment of the stormwater shows Total Nitrogen (TN) exceeding ANZECC guidelines for lowland rivers. The other water quality parameters are within the guidelines. It is assumed that this is due to the large flows from the wider catchment rather than the small proportion derived from the subject land.

To meet water quantity and quality management objectives the following measures are proposed:

- All lots will have direct connection to the piped road drainage network and all flows will be directed towards a discharge point on the south western side of the site;

- The piped road drainage network shall be sized to convey up to the 5 year ARI rainfall event. Rainfall events larger than the 5 year ARI event, will be contained within the road reserve and discharge to the lower areas on the south western side of the proposed development site;

- The long term drainage strategy for the area downstream of Lots 3 and 15597 is described in the DWMS prepared by RPS for the Belle View Estate. A key part of the long term strategy is the conversion of the existing Bellevue open drain section into a natural living stream. It will become a central urban design feature. The aesthetic and biological function of the proposed living stream will have to be maintained and in addition to that, consistent flows through the system will have to be provided to reduce water stratification in the downstream wetlands and increase dissolved oxygen levels in the water bodies;

- Pending the development of the living stream concept, it is proposed to excavate a temporary drainage basin directly south west of Lots 3 and 15597 and next to the open section of the Bellevue drain, as shown in Appendix D (Noted as "Basin 1"*). The proposed basin will have a small diameter (150mm diameter in the current model) low

flow outlet to make sure predevelopment flows are maintained and at the same time prevent water from ponding in the basin for extended periods of time.

- Prior to discharging to the proposed drainage basin, stormwater will be treated in passing through a pollutant trap. As the stormwater drainage system will be designed to convey the 5 year ARI rainfall event, all first flush runoff will pass through the pollutant trap prior to discharging into the temporary drainage basin and the Bellevue drain.

Retention and detention treatments will be designed to ensure that between the months of November and May, detained immobile stormwater is fully infiltrated within a time period not exceeding 96 hours.

Groundwater Management

Existing site levels have a groundwater clearance of 6 metres. Although there is no evidence of localised perched groundwater in the clay environment, if warranted it may be necessary to install a subsurface drainage system along one side of all the internal roads to improve the flow of groundwater away from buildings.

The subsurface drainage system will be connected to the upstream side of drainage pits and discharge to the last drainage manhole directly upstream of the pollutant trap.

Douglas Partners were commissioned to complete more detailed geotechnical investigations including groundwater clearance and site classification (See Appendix 7).

3.6 Education Facilities

Not applicable.

3.7 Activity centres and employment

Not applicable.

3.8 Infrastructure coordination, servicing and staging (See Appendix 8)

Sewerage

Currently there is no existing sewer connection servicing the subject landholding nor is it within a catchment that has a permanent wastewater pumping station. Therefore headworks infrastructure will need to be constructed or a private wastewater pumping station and pressure main to provide a connection to the proposed development as part of the development process.

Water Supply

There is an existing water connection to the subject landholding of the existing water mains in Clayton Street however it is expected that as part of the redevelopment this connection will need to be upgraded to a larger meter to cater for the additional flow requirements which will form part of the headworks arrangement with the Water Corporation.

Gas Supply

There is an existing connection off the 155mm diameter gas pipeline is available in the fronting road reserve of Clayton Street. This main should be sufficient to service the subject landholding. This will need to be conformed with ATCO Gas during detailed design.

Power

It is proposed that the existing overhead connection to the site will need to be converted to an underground connection. Underground Power Development have done a quick assessment of this area and believe that the proposed development will require an MPS Transformer (Tx) and Switchgear (SG) and a contiguous Site Main Switchboard.

Previous Site Uses

There are no expected contaminated site issues due to the previous site uses however this will need to be confirmed with a suitably qualified consultant.

3.9 Developer contribution arrangements

Not applicable.

3.10 Noise Management

Immediately east of the site is the Roe Highway and it will be necessary for the development concept to incorporate measures to ameliorate the noise generated by passing traffic. A Traffic Noise Assessment prepared by Lloyd George Acoustic recommends:

- The construction of a solid masonry wall (or earth bund);
- Higher building standard for noise insulation; and
- Notification on title advising prospective purchasers of the potential noise impact.

The criteria relevant to this assessment is the *State Planning Policy 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning* produced by the Western Australian Planning Commission (WAPC).

In the application of these outdoor noise criteria to new noise sensitive developments, the objectives of this Policy are to achieve:

- Acceptable indoor noise levels in noise – sensitive areas (eg. bedrooms and living rooms of houses); and
- A ‘reasonable’ degree of acoustic amenity in at least one outdoor living area on each residential block.

If a noise sensitive development takes place in an area where outdoor noise levels will meet the *target*, no further measures are required under this policy.

In areas where the *target* is exceeded, mitigation measures are to be implemented with a view to achieving acceptable internal noise levels and ‘reasonable’ levels in at least one outdoor living area where ‘reasonable’ is considered to be no more than the *limit*.

Lloyd George carried out noise monitoring at two locations near the Roe Highway and it's on ramp.

They assumed that buildings on the site would be two storey with a height of 7.0 metres. Predictions were made at heights of 1.4 metres above an assumed floor level and at 1.0 metres for a building façade.

Estimated traffic flows for the Roe Highway and its ramps for 2014 and 2031 were obtained from MRWA.

To achieve acceptable noise levels, Lloyd George recommended a noise buffer wall as indicated on the structure plan.

The proposed wall results in noise levels being no more than the *limit* at the closest houses. Thus the requirement of achieving a reasonable acoustic amenity in an outdoor area will be achieved.

Backing houses onto the Roe Highway is considered an appropriate layout. This will allow the front row of houses to provide noise mitigation to houses further away.

With the wall and buildings in place, noise levels will be above the *target* and therefore dwellings within the *margin* will need to implement architectural packages in order to achieve acceptable internal noise levels (See Figure 10).

The Guidelines to the Policy provide 'deemed-to-satisfy' construction packages, referred to as Packages A & B and provided in *Appendix A*. A third package, referred to as Package C has been developed to accommodate scenarios where noise levels are above 63 dB LAeq(Day).

A typical scenario of when Package C is available is for the upper floor of dwellings, which obtains negligible attenuation from the noise wall (See Appendix A in Appendix 9). Figures 5-1 and 5-2 show the architectural treatment requirements based on the proposed structure plan.

To summarise the noise mitigation requirements, the following is necessary:

- Noise wall is to be constructed of a material having a minimum surface mass of 15kg/m2, solid and free of gaps.

- Where residences are predicted to experience future noise levels between, and including, 64 dB and 66 dB LAeq(Day), Package C is to be incorporated (refer Appendix A in Appendix 9). Note that Package C has been developed by Lloyd George Acoustics as an extension to the deemed to comply packages of the Policy as a result of other developments not being able to reduce levels to within 3 dB of the limit. Alternative constructions may be acceptable if supported by a report undertaken by a suitably qualified acoustical consultant (member of the Association of Australian Acoustical Consultants (AAAC)), once the lot's specific building plans are available.

- Where residences are predicted to experience future noise levels between, and including, 61 dB and 63 dB LAeq(Day), Package B is to be incorporated (refer Appendix A in Appendix 9). Alternative constructions may be acceptable if supported by a report undertaken by a suitably qualified acoustical consultant once the lot's specific building plans are available.

- Where residences are predicted to experience future noise levels between, and including, 56 dB and 60 dB LAeq(Day), Package A is to be incorporated (refer Appendix A in Appendix 9). Alternative constructions may be acceptable if supported by a report undertaken by a suitably qualified acoustical consultant once the lot's specific building plans are available.

- All affected lots are to have notifications on lot titles as per the Policy requirements. Refer Appendix A in Appendix 9.

TECHNICAL APPENDICES

Table 3: Technical Appendices Index (Attached as CD at rear of document)

Appendix No.	Document title	Nature of document	Referral/approval agency	Summary of document modifications
1	Former School Buildings	As indicated in List of Appendices	N/A	
2	Certificates of Title		N/A	
3	BELUS – Precinct 7 – Southern Residential Precinct		N/A	
4	The Development Concept (McKay Urban Design)		City of Swan	
5	Traffic Assessment (Rodney Ding/Tarsc)		City of Swan	
6	Stormwater Management (Serling Consulting)		Water Corporation	
7	Geotechnical Investigation (Douglas Partners)		Water Corporation	
8	Service Infrastructure Availability (Serling Consulting)		N/A	
9	Noise Assessment (Lloyd George)		City of Swan	

The Amendment incorporating the Structure Plan, was publicly advertised for a period of 42 days between 28 May 2014 and 9 July 2014. During the advertising period a public meeting was held with the Bellevue Ratepayers Association. This Structure Plan was publicly advertised between 9 October 2015 and 3 November 2015.

Table 4: Pre Lodgement Consultation

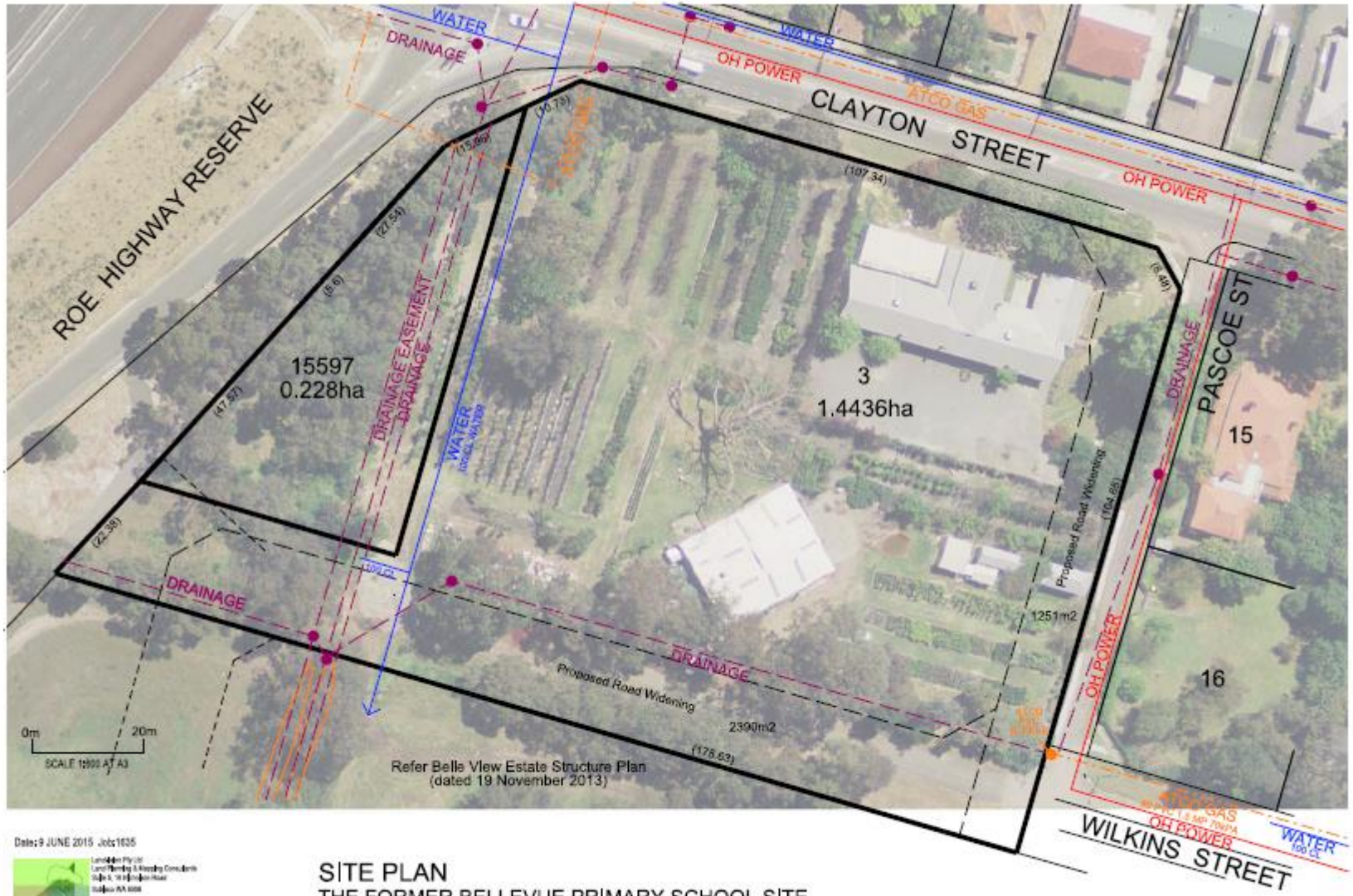
Agency	**Date of Consultation**	**Method of Consultation**	**Summary of Outcome**
Landowners within and adjacent to the structure plan area			
Relevant community groups in the area	Subject to future advertising period		
Local government			
Department of Planning			
Department of Water			
Department of Environment and Conservation		Referral during advertising period	
Department of Education			
Department of Indigenous Affairs			
Main Roads Western Australia			
Heritage Council			
Department of Transport			
Department of Health			

Public Transport Authority			
Environmental Protection Authority			
Western Power			
Alinta Gas			
Water Corporation			
Telstra			
Non – government school providers			
Department for Community Development		Referral during advertising period	
Department of Sports and Recreation			
Department of Agriculture and Food Western Australia			
Fire and Emergency Services Authority			
Any other relevant government agency as required			

Date: 21 JULY 2014 Job: 1535

LOCATION PLAN
THE FORMER BELLEVUE PRIMARY SCHOOL SITE
LOTS 3 AND 15597 CLAYTON STREET

FIGURE 1



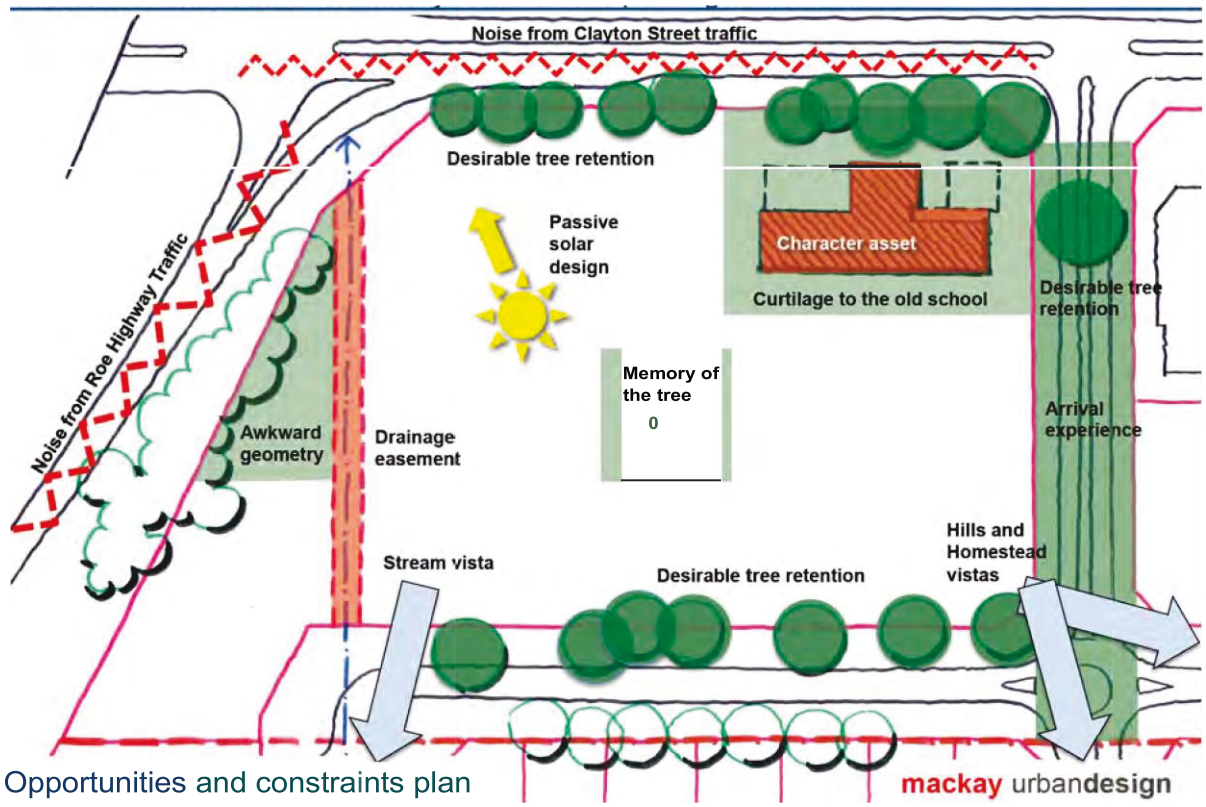
Date: 9 JUNE 2015 Job:1635

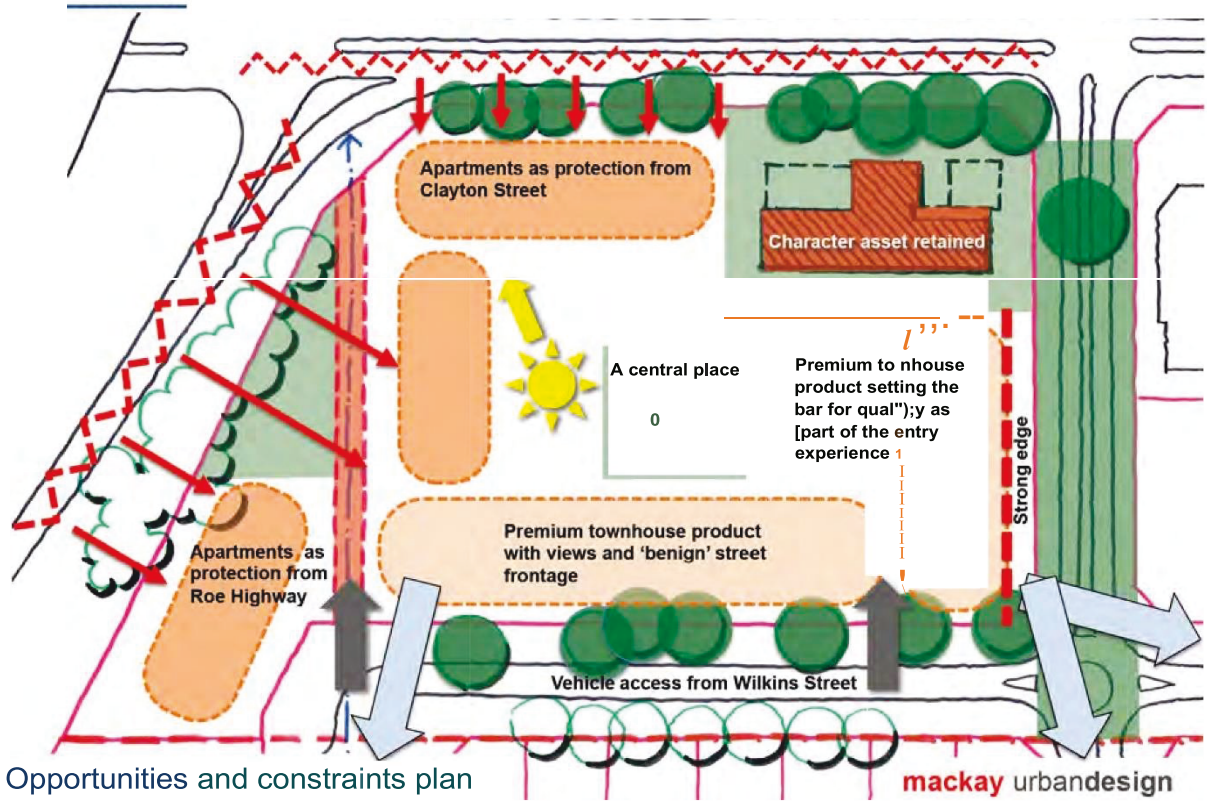
SITE PLAN

THE FORMER BELLEVUE PRIMARY SCHOOL SITE

LOTS 3 AND 15597 CLAYTON STREET

FIGURE 2





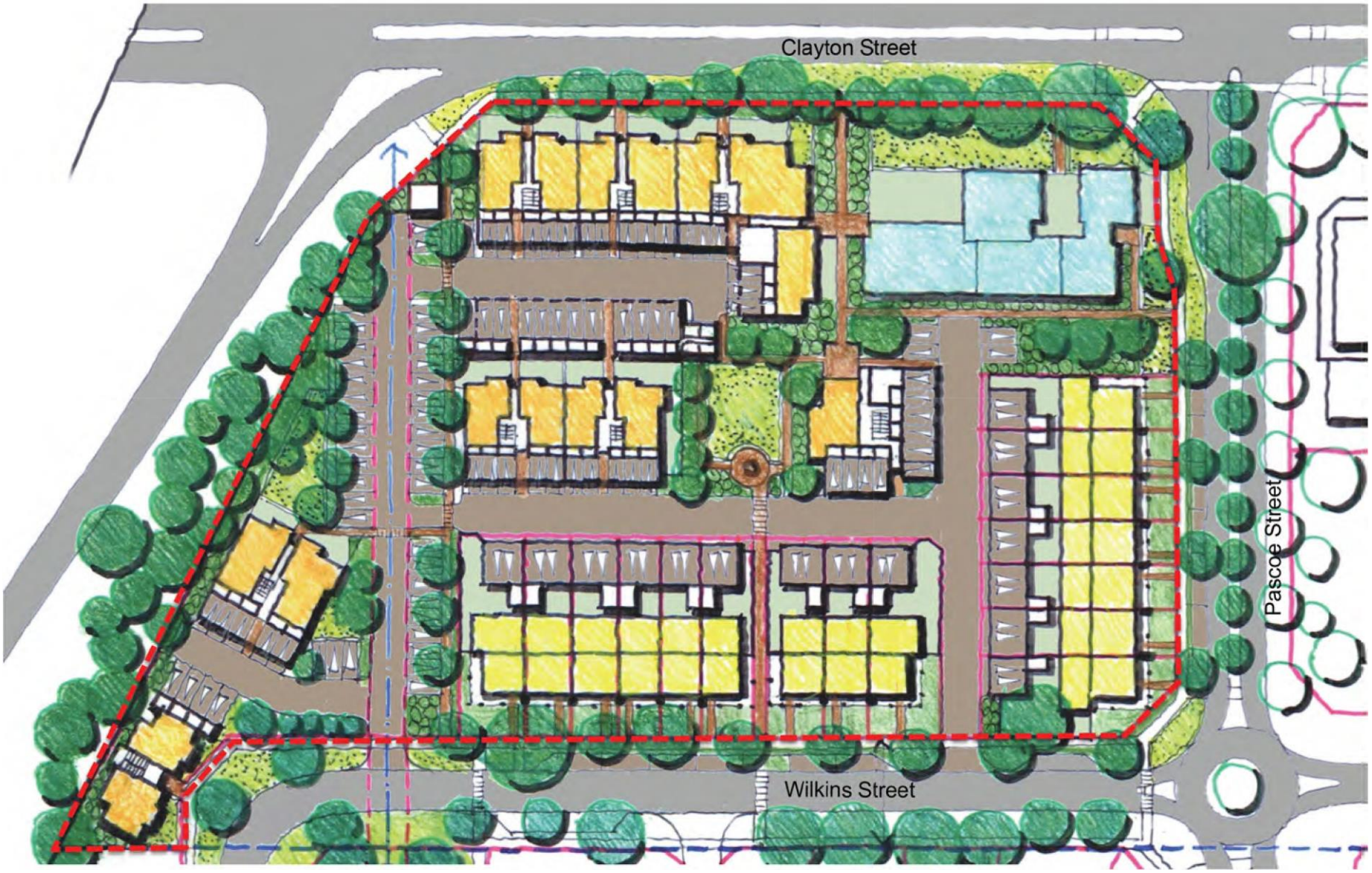
OPPORTUNITIES AND CONSTRAINTS

THE FORMER BELLEVUE PRIMARY SCHOOL SITE

LOTS 3 AND 15597 CLAYTON STREET

FIGURE 3

Date: 2JUNE2015 Job: 1635



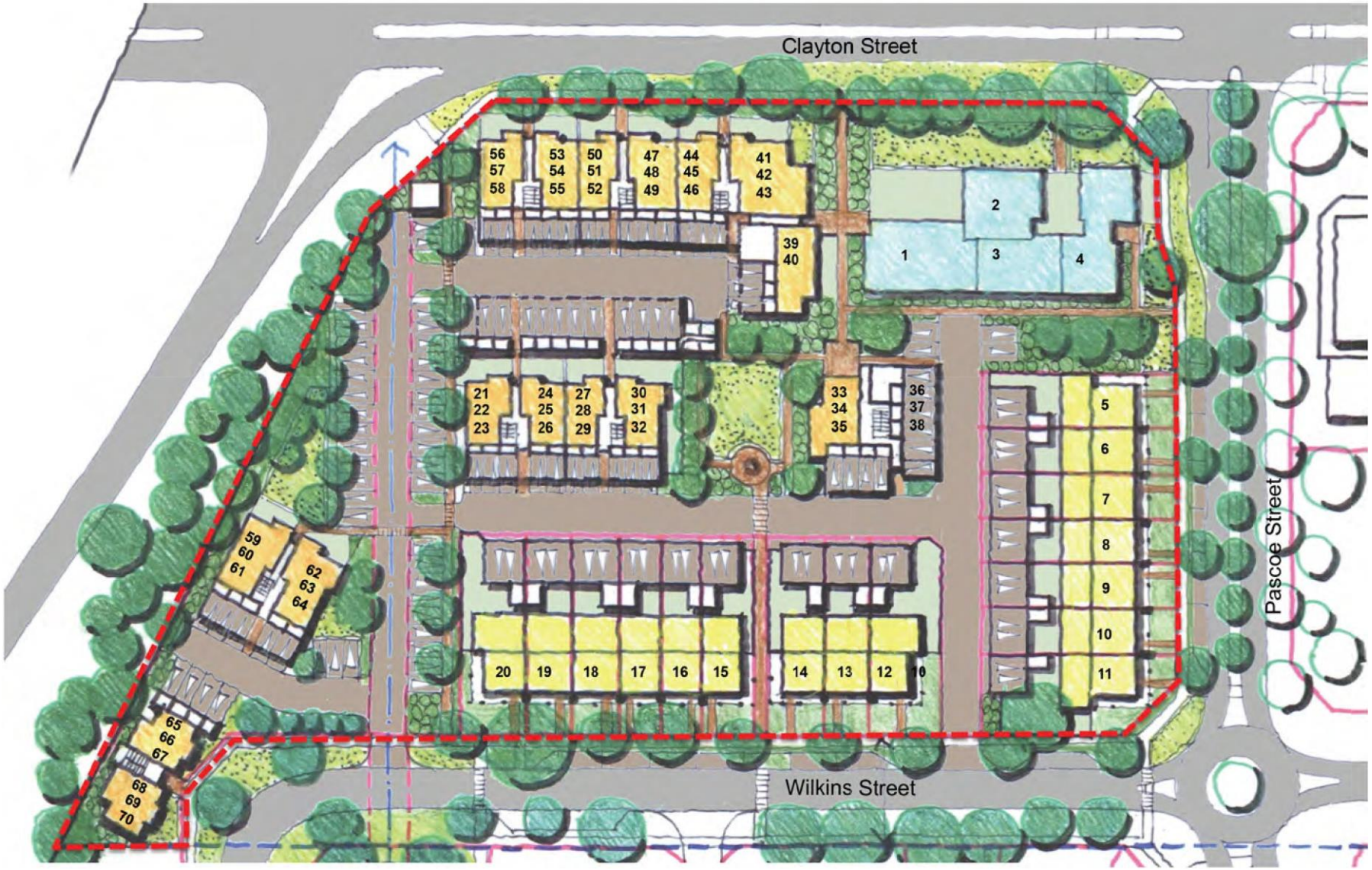
Concept plan

mackay urbandesign

Date: 2 JUNE 2015 Job:1635

CONCEPT PLAN
THE FORMER BELLEVUE PRIMARY SCHOOL SITE
LOTS 3 AND 15597 CLAYTON STREET

FIGURE 4



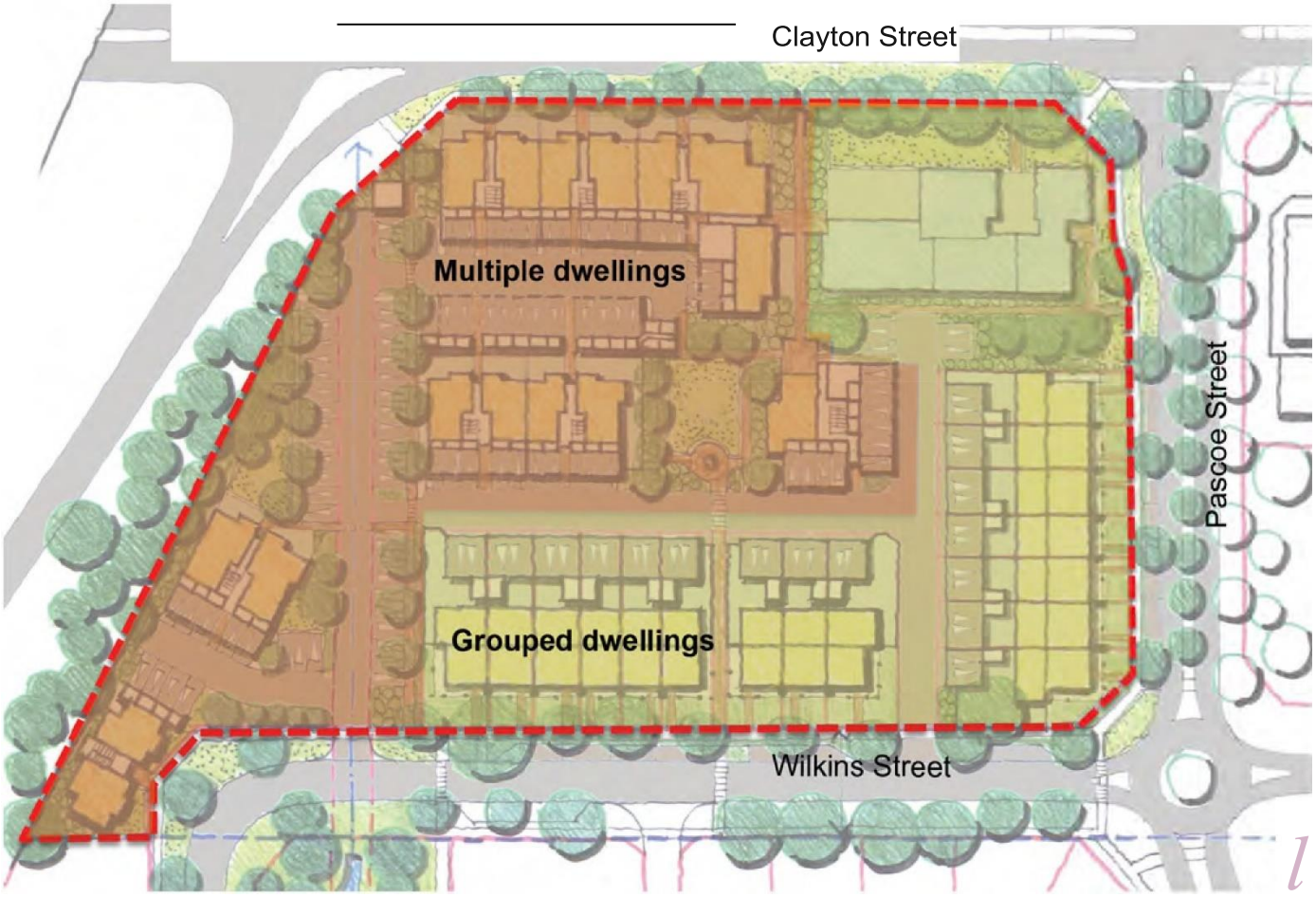
Concept plan - indicative yield

mackay urbandesign

LANDVISION
Date: 2 JUNE 2015 Job:1635

INDICATIVE YIELD
THE FORMER BELLEVUE PRIMARY SCHOOL SITE
LOTS 3 AND 15597 CLAYTON STREET

FIGURE 5



Grouped Dwellings
Grouped dwelling site area: 6,020sqm
Residential yiel d: 20 dwellings
Average site area per dwelling : 301sqm
R-code minimum average: 220sqm
COMPLIANT

Multiple Dwellings
Multiple dwelling site area: 6,755sqm
Residential yiel d: 50 dwellings

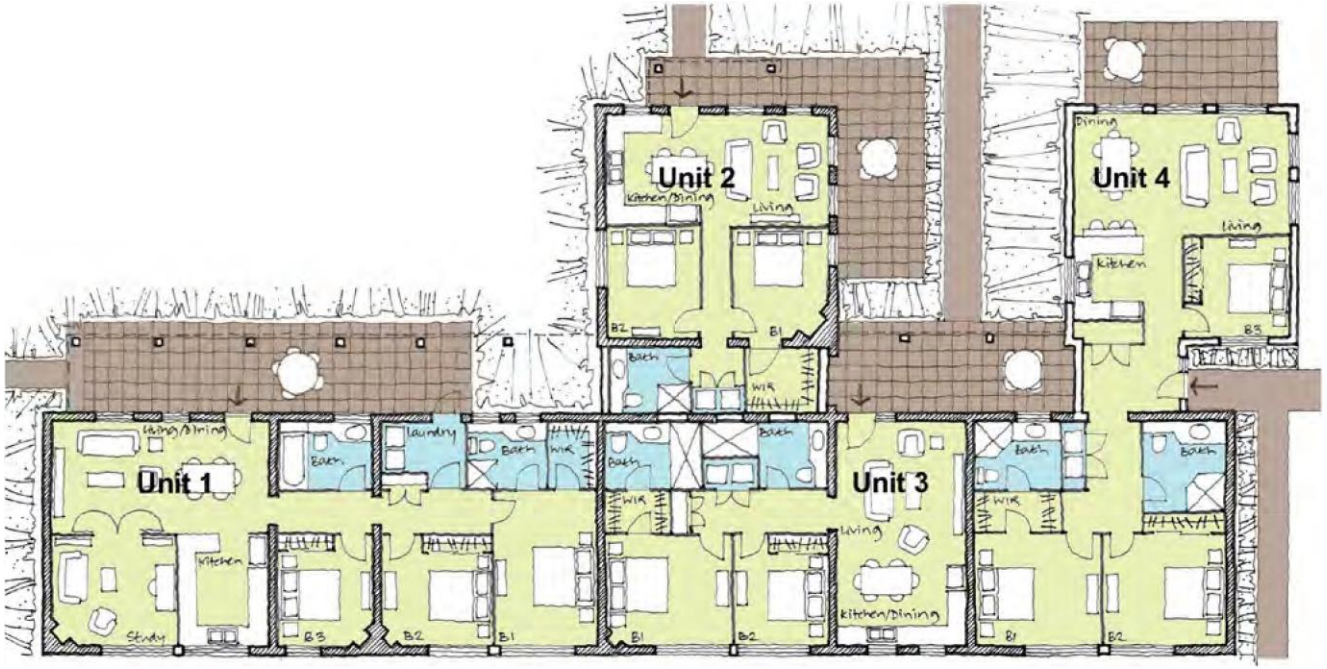
15x 1-bed apts@ 64sqm: 960sqm
35x 2-bed apts@ 74sqm: 2,590sqm

Total Plot Ratio floorspace : 3,550sqm
Plot Ratio: 0.53
R-Code maximum PR: 0.6
COMPLIANT

DENSITY COMPLIANCE
THE FORMER BELLEVUE PRIMARY SCHOOL SITE
LOTS 3 AND 15597 CLAYTON STREET

Date:2 JUNE 2015 Job:1635

FIGURE 6



Indicative street elevations of former primary school

Conversion of the former school house

mackay urbandesign

POSSIBLE SCHOOL CONVERSION
THE FORMER BELLEVUE PRIMARY SCHOOL SITE
LOTS 3 AND 15597 CLAYTON STREET

FIGURE 7

Date: 2 JUNE2015 Job:1635

CONSULTANTS CONTRACTORS PROJECT MANAGEMENT

Date: 8 SEPTEMBER 2014 Job:1635

OVERALL LANDSCAPING PLAN

THE FORMER BELLEVUE PRIMARY SCHOOL SITE

LOTS 3 AND 15597 CLAYTON STREET

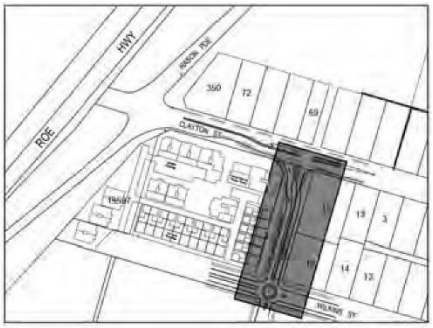
FIGURE 8

TREE LEGEND

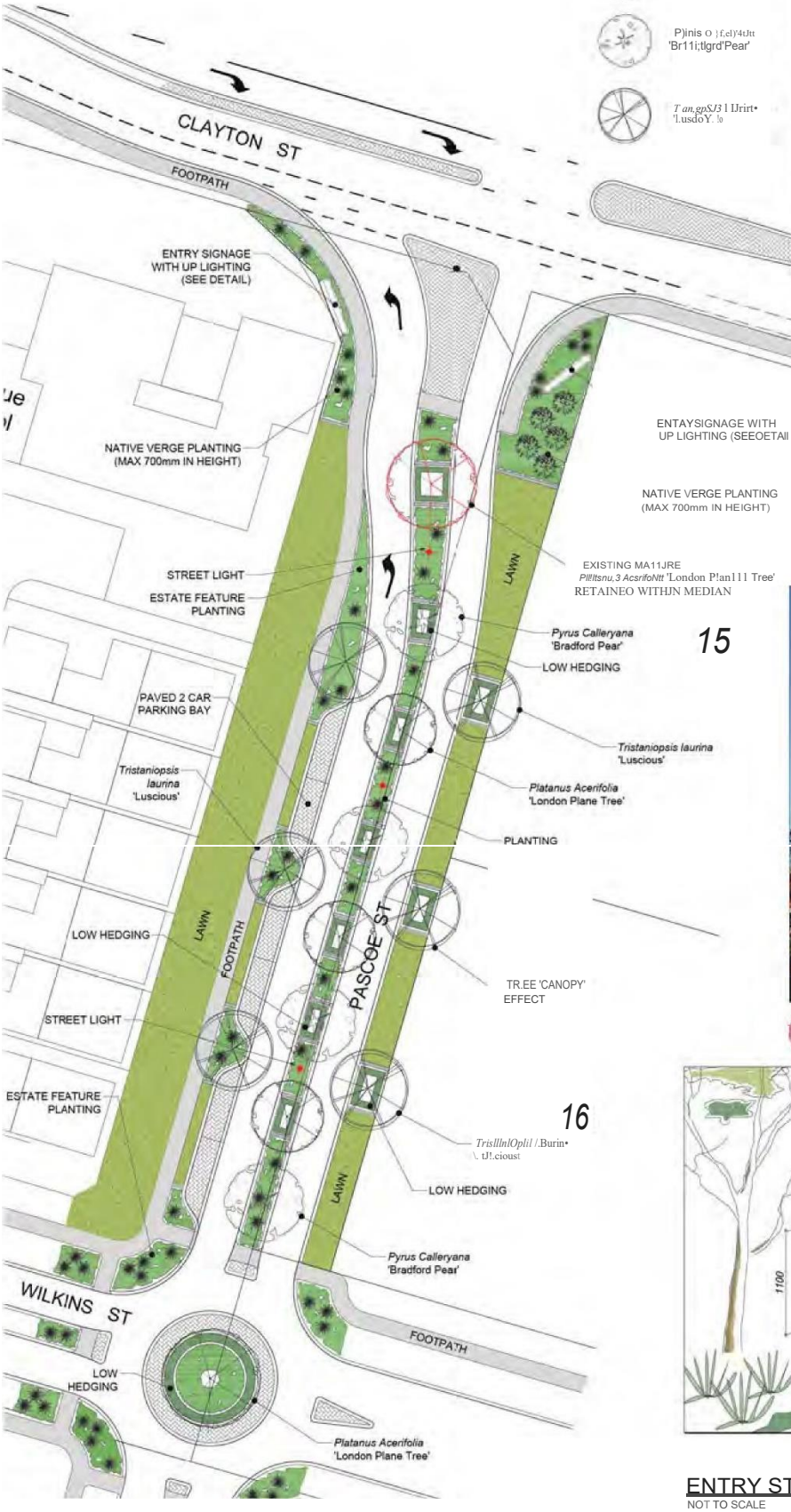
PlatArru.sAC1JrifoJia
'London Piane Tru "

P)inis O ;f.el)'4tJtt
'Br11i;tlgrd'Pear'

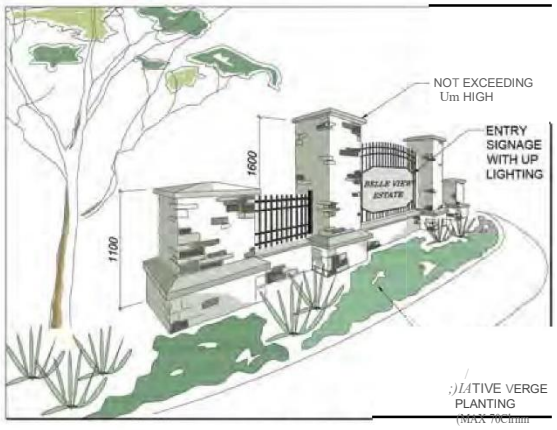
T an.gpSJ3 l IJrirt•
'l.usdoY. ;o



LOCATION PLAN
SCALE 1:2000 @ A1



EXISTING LONDON PLANE TREE
(Platanus Acerifolia)



ENTRY STATEMENT CONCEPT DETAIL
NOT TO SCALE

ENTRY RD LANDSCAPE CONCEPT - OPTION ONE
SCALE 1:200@A1

0 2 4 6 8 10 12 14 16 18 20
Sal& I:200@A1

CONSULTANTS CONTRACTORS PROJECT MANAGEMENT

Date:8SEPTEMBER 2014 Job:1635

THE FORMER BELLEVUE PRIMARY SCHOOL SITE
LOTS 3 AND 15597 CLAYTON STREET

FIGURE 9

PASCOE STREET/ CLAYTON STREET TREATMENT

THE FORMER BELLEVUE PRIMARY SCHOOL SITE
LOTS 3 AND 15597 CLAYTON STREET

FIGURE 9

Date: 8 SEPTEMBER 2014 Job:1635

Required packages to ground floor

Required packages to upper floor

NOISE SENSITIVE BUILDING DESIGN
- REQUIRED PACKAGES
THE FORMER BELLEVUE PRIMARY SCHOOL SITE
LOTS 3 AND 15597 CLAYTON STREET

FIGURE 10

Date: 21 JULY 2014 Job:1635