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23 May 2018

Our Ref: D18/122699

Dear Mr Nixey,



Ivanhoe Estate Redevelopment Concept – development application (SSD 8707)

Reference is made to the concept for the redevelopment of the Ivanhoe Estate, Macquarie Park.

Please find enclosed comments from Council staff to assist the Department of Planning and Environment's determination of this application.

I note actual approval for physical works will be sort as part of future development applications.

A review by Council Officers of the concept raises the following key concerns:-

- Exceedance of the floor space ratio
- Significant loss of trees many of which have high retention value and belong to an endangered ecological community – Sydney Turpentine Ironbark Forest
- Inadequate building separation and issues with cross-ventilation
- Insufficient setbacks to streets and buffer zones to the creek
- Inadequate visitor parking and car share spaces
- Inadequate solar access to the Town Plaza, Forest Playground and communal open space
- Potential for significant wind effects
- Insufficient active recreation open space
- No certainty on delivery of required road infrastructure including traffic signals

Comments are also provided about the necessary civil works including roads, drainage, the bridge and public domain in terms of both design and delivery timing and conditions for your consideration recommended.

Finally, I have to advise that City of Ryde Council is yet to receive a formal offer for any public benefits that will form part of a Voluntary Planning Agreement.


Please also note our elected Councillors have a briefing session scheduled with the applicant on Tuesday 19 June 2018.

Further feedback maybe provided after this date or alternatively I invite you and relevant Department of Planning and Environment staff to attend this session and hear from our Councillors first hand.

City of Ryde staff are happy to meet with you to clarify any issues.

Should you wish to attend the Councillor Workshop and/or meet with relevant staff please contact Sandra Bailey, Acting Manager Assessment on 9952 8183 or myself on 9952 8190.

Yours sincerely



Liz Coad
Director City Planning and Development

23/5/2018

Attached: City of Ryde Submission – Ivanhoe Estate Redevelopment

CITY OF RYDE INITIAL SUBMISSION

IVANHOE ESTATE REDEVELOPMENT CONCEPT STATE SIGNIFICANT DEVELOPMENT (SSD 8707)



 The Site

 To facilitate road extension to Lyonpark Road

23 May 2018

REF: ENV/08/3/8/14/6/7

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Executive Summary

Thank you for inviting Council to comment on the concept proposed for Ivanhoe Estate redevelopment proposal.

This submission is being made in response to the State Significant Development (SSD 8707) lodged with the Department of Planning and Environment for the redevelopment of the Ivanhoe Estate, Macquarie Park. The application is a Concept Development Application (Staged Development) which seeks approval for a Master Plan for the redevelopment of the Ivanhoe Estate, Macquarie Park. The proposal includes:

- A mixed-use development with a maximum gross floor area of 283,500m² including building envelopes for:
 - residential flat buildings comprising private, social and affordable housing (3,500 dwellings including 1,000 social and 128 affordable housing dwellings, 120 aged care apartments, 132 seniors self-care units), and basement car parking;
 - a high school, child care centres, community and retail uses; and
- Maximum building heights (ranging from 45 m to 75 m) and gross floor areas for each development block.
- Vehicular and pedestrian access arrangements including:
 - new road and pedestrian connection from Herring Road to the Lyonpark Road through 2-4 Lyonpark Road including a new bridge across Shrimptons Creek;
 - intersection upgrades to Herring Road; and
 - new road and pedestrian connection to Epping Road.

Council officers have undertaken a review of the application placed on public exhibition. Council has concerns regarding the proposed development. These concerns relates to matters including significant loss of trees, location of building envelopes, inappropriate built form, inadequate building setbacks, inadequate building separations, streetscape, visual impacts, overshadowing, exceedance of floor space ratio and internal amenity such as cross-ventilation. These are typical signs of an overdevelopment of the site. The proposal has also departed from Council's "Design Guidelines for Ivanhoe Estate Redevelopment" in critical areas such as street setbacks, upper level setbacks and interface with Shrimptons Creek Parklands. In addition the applicant is seeking variation to the floor space ratio (FSR) control through Clause 4.6, it is Council's view that the proposed increase in FSR is not justified. All of these issues have been discussed in greater detail in this submission.

It is recommended that the application be amended to address these issues before any approval is granted.

1. General Issues with regards to the Master Plan

The Master Plan sets up a framework of 15 development blocks in four precincts comprising various stages of development. The development will comprise of 18 buildings. The following general issues have been identified which require further clarification or amendments to the proposal:

- a. **Lack of clarity in relation to staging of development:** The staging of the development is not clear. There are no clear indication of the logistics, sequence and completion timing of each stage. Also there are two stages of “Stage 02” and also separate “Stage A” and “Stage B”. It is not known also as to the construction and delivery of the roads and bridge whether it is anticipated under first stage of construction or subsequent stages. If the delivery of the roads and bridge is to be provided at a later stage, the applicant should demonstrate that the existing access point is adequate to accommodate the required vehicular movements. The matter of staging must be clarified.
- b. **Building Envelopes in the Master Plan is confusing.** The Envelope Control Plan (DA01.MP.100[3] shows that the building envelopes for B1.1, B1.2 and B2 are connected to each other without the required building separation and could be misread should such a plan be stamped approved. Similarly buildings A1, A2, A3 and D1 are all shown connected to each other without regards for building separation and setbacks. The building envelopes should be setting an appropriate scale for future development in terms of bulk and height relative to the streetscape, block and lot sizes. As proposed, this plan may result in future development having a massing that is inappropriate for the desired urban form and character of the locality. This is the plan submitted for approval and must provide adequate clarity in relation to building footprint, boundary setbacks and the building separation distances.
- c. **Unacceptable level of tree removal:** The development proposes the removal of 311 tree which are located within the site, adjoining street verge and Shrimptons Creek corridor. Forty-five (45) of these trees are of high retention value. It is noted that this is an estimate only as the details are not clearly presented in the application (see discussion under Section 6). It should be noted that 547 trees have already been approved for removal as part of the approval for demolition works by the Department of Housing under Part 5 of the EP&A Act. This results in a total loss of 858 trees. The tree removal will have a significant negative impact on a large tract of Sydney Turpentine Ironbark Forest as well as the landscape character of the area. This issue has been discussed in greater detail in Section 6 of the submission.
- d. **Road reference:** The roads are not numbered on all plans for ease of reference.

- e. **Lack of regard to the Urban Design Guide for Ivanhoe Estate Redevelopment.** Council has previously prepared a document entitled “*Design Guidelines for Ivanhoe Estate Redevelopment*”. (See attachment 1 for a copy of this document). This document was prepared in conjunction with the owner of the site and formed part of the tender documents issued to all interested parties. The Guidelines provide a design framework for the site in relation to matters such as built form, public domain, site planning, building design and transport. The proposed Master Plan is inconsistent with the objectives of this document as demonstrated throughout this submission.
- f. **Road Connection:** Future road for connection to Peach Tree Road on the northern side of the site has not been shown on the Master Plan. Although this road is not shown in the Access Network in Part 4.5 of Ryde DCP 2014, a future road connection has been discussed with the applicant. Such a road will increase the permeability throughout this area. Council seeks that a clear gap be provided between Building B2 and B1.2 to enable road connectivity to Peach Tree Road as demonstrated in Figure 1. This gap will need to accommodate a 14.5m wide road as well as the appropriate setback.

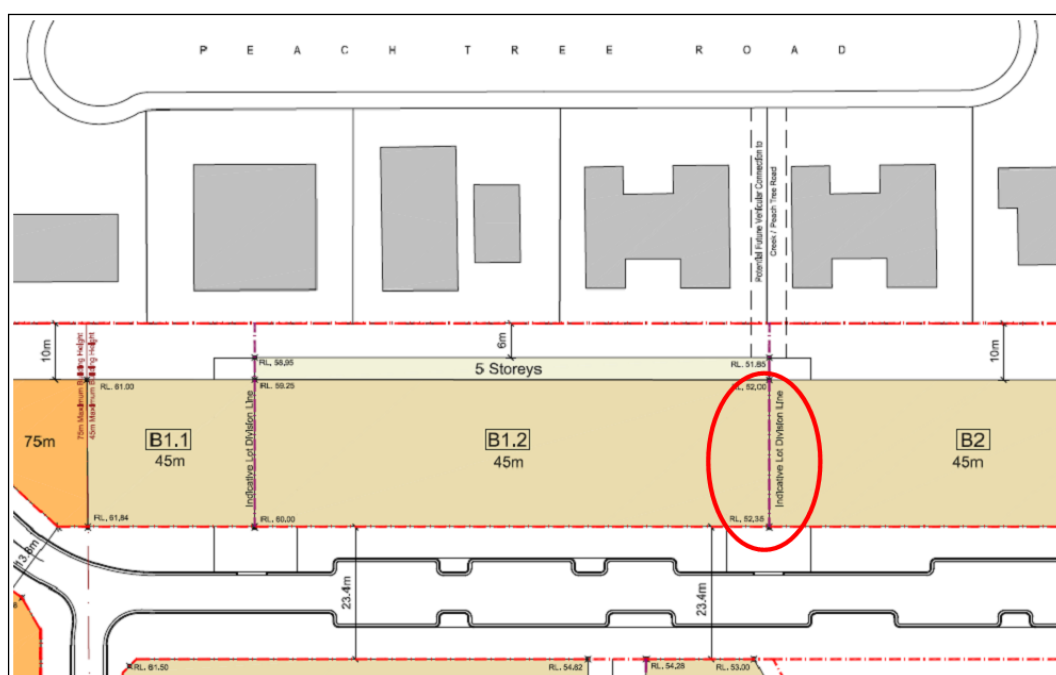


Figure 1. Plan showing the required road connection to Peach Tree Road.

- g. **Road width.** Council's DCP2014 Part 4.5 Figure 4.1.1 requires that main street on the Master Plan is to be 20m wide. This road provides connection through to Lyonpark Road. This road is shown as St 1 on plan DA.MP.004[3] and referred to as Road No. 3 on Ryde DCP2014. The Master Plan shows the proposed main street (St 1) as 23.4m wide along majority of its length. However the width of this road is narrowed down significantly adjacent to building B1.1, at the connection to the proposed

bridge and the bridge itself. This results in a road configuration that is different to the roads proposed under the DCP. The reduced width is likely to result in creating various pinch points and substandard infrastructure. A traffic bottleneck may also result especially given the narrow width within close proximity to the Herring Road intersection and alleviates all options for Council to ever widen that part of the road if the demand so requires in the long term. This also will have issues in relation to the provision of utilities, street car parking, street lighting, planting and shared pathway along the street to provide connectivity to Herring Road intersection. In addition this has serious implication in relation to traffic safety and will result in future constraints for Council. Council seeks that the width of Road no. 3 as identified on Ryde DCP2014 Part 4.5 be provided with a width of 20m throughout its length.

2. Height of Building

Council notes that the proposal development will comply with the maximum height restrictions under the Ryde Local Environmental Plan 2014.

3. Floor Space Ratio

The proposed Master Plan proposes a maximum GFA of 283,500m² comprising;

- a maximum total residential GFA of 270,313m², including:
 - a minimum social housing GFA of 70,488m² [1000 units];
 - a minimum affordable housing GFA of 7,184m² [128 units];
 - a minimum residential aged care facility GFA of 6,600m² [120 units];
 - a minimum seniors self-care units GFA of 9,048m² [132 units];
- a maximum retail GFA of 1,246m²; and
- a minimum community based land use GFA of 11,941m², including:
 - a maximum child care centre GFA of 1,345m²;
 - a maximum school GFA of 9,006m²;
 - Community hub, swimming pool etc. of 1590m².

The land is subject to a FSR restriction of 2.9:1 under the RLEP2014. Given the total site area of 78,680m² (excluding RE1 land) the maximum GFA allowable would be 228,172m². The development is also seeking to utilise the GFA bonus pursuant to clause 13(2)(b) of State Environmental Planning Policy (Affordable Rental Housing) 2009 (SEPP ARH). The GFA available under SEPP ARH results in a maximum allowable GFA of 261,217m² for the site which represents a FSR of 3.32:1.

Council is concerned that the floor space is exceeded at the expense of significant environmental impact and that the development constitutes an overdevelopment as a result of the following factors:

- Narrow and inadequate setbacks to boundaries and riparian corridor zone (due to the scale and the DCP objectives);
- Inadequate separation distances between buildings;

- A lack of street front setbacks to the internal new roads and the lack of setbacks to the residential tower to street boundaries;
- An encroachment to the existing Sydney Turpentine-Ironbark Forest zone (threatened ecological community) along Epping Road;
- Excessive number of trees proposed for removal from the site;
- Lack of adequate active and passive recreational space provided on site.

Council is of the view that the applicant's Clause 4.6 variation in respect of the floor space does not adequately demonstrate that there is sufficient environmental planning grounds to justify the variation or that compliance with the floor space ratio control would be unreasonable or unnecessary in the circumstances of the case.

4. Built Form and Urban Design

a. Built form – Bulk & Scale

The proposed built form in general lacks a sensitive response in its interface with open space and in creating a human-scale streetscape. Council's design guidelines for the site (Section 4.4.1 of Ivanhoe Estate Redevelopment – Urban Design Guidelines) anticipate lower-scale definition at street frontage, but the proposal has not delivered the intended outcome, for instance:

- The proposal contains some 60 to 70m long and 14 to 20 storey high built forms fronting the Shrimptons Creek Parklands without providing any upper level setbacks. Such an approach is very harsh and insensitive to the open space. Podium forms with a more fine-grained interface should be created to provide the transition to open space.
- Similar built form approach should be applied to the interface with the Village Green and the Forest Playground.
- The Guidelines restricts a maximum building length of 40m. The proposed long facades is a significant variation and unacceptable in this location. The tall and long building envelopes with an absence of variation in alignment, length and articulation result in bulky built forms that create monolithic, long towers and should be reconsidered.
- A number of the proposed envelopes encourage tower form without podiums or sufficient mass to create a human scale or sufficient amenity for ground floor apartments. This will contribute to excessive scale when perceived from the street level.
- No information is provided to demonstrate that the proposed school building envelope can meet its operational requirements and function properly.
- On the main street and some residential streets, the proposal provides 14 to 20-storey high towers to the streets without any upper level setbacks. This approach is very aggressive and might

potentially lead to wind washing to the public domain which would adversely affect the pedestrian environment.

- The proposed setbacks (5-10m) to the common boundaries with neighbouring properties should be reconsidered to ensure sufficient separation distance is provided as per the Apartment Design Guide (ADG). It is not reasonable to provide inadequate separation and burden adjacent lots with additional setback requirements.

b. Lack of adequate Building Separation

- i. Neighbouring properties:** The proposed setbacks (5-10m) to the common boundaries with neighbouring properties should be reconsidered to ensure sufficient separation distance is provided as per the ADG. The separation distances between buildings contribute to the urban form of the area and the amenity within apartments and open space areas. The reduced setbacks to the common boundaries with neighbouring properties will result in poor amenity between apartments and neighbouring sites as well as a lack of useable space with landscaping. It is not reasonable to provide inadequate separation and burden adjacent lots with additional setback requirements.
- ii. Separation at lower levels:** As shown in the Ground Level Interface diagram, the proposed separation distances between some lower levels of buildings are much narrower than the ADG requirements, that is, C1.5 & C1.3-1.4, C4.4 & C4.1. The narrow separation distance (3-4m) also creates overlooking and visual privacy issues for units with habitable rooms/private open spaces facing each other, that is, C4.4 & C4.1.
- iii. Town square:** The proposed Envelope Control Plan (DA01.MP.100[3]) shows only a 10m wide town square reserve (space between C1 and C2) as well as a serious constraint on street reserves by narrowing points of the street reserve to only 11.8-13.8m for the main street. This is not acceptable. As previously discussed, the road reserves should be a consistent width in accordance with Part 4.5 of DCP 2014. This also results in unacceptable building separation distances between various buildings. The town square reserve should encompass its full width to deliver certainty as well as improve solar access. . The solar access to the town square is quite constrained due to building scale, the proximity of the full tower height and orientation. Podium setbacks should be provided to reduce the building scale and increase access to sunlight.
- iv. Lack of separation distance Building B1.1:** With reference to setbacks shown on Plan Number DA01.MP.100[3] a 10m setback proposed along the northern boundary with respect to building B1.1 at northern corner is not sufficient. The function of building (B1.1) is

not clearly identified on the plans. However, it seems that it will be apartment building. This building will be built to 14 storeys high and will require a separation of 24m between habitable rooms with respect to adjoining future developments along Peach Tree Road. A 12m clear separation setback is required from the boundary along the northern boundary. In order to comply with the ADG the proposal must provide increased setback of at least 12m along its northern boundary.

- v. **Lack of separation distance Building B1.2 (RACF):** A 6m setback is proposed for the 5 storey component of building B1.2 (RACF) with a 10m setback for rest of the building. This building is proposed to be 12 – 14 storey in height. Again the setback must be increased for floor levels above the fourth storey to at least 12m to ensure adequate separation is achieved between the subject site and future apartment developments on Peach Tree Street. Lack of adequate separation distance will compromise sunlight access, visual and acoustic privacy.
- vi. **B2 – School:** A 10m setback from the northern boundary is proposed and given the function of the building and 9 storey height, this is considered unsatisfactory. The school building may not achieve adequate solar access in addition to a lack of acoustic and visual privacy with respect to other adjoining buildings.
- vii. **Building B3:** The building is proposed to be setback only 5m from the adjoining northern and eastern boundary. The building will be 14 storeys tall with child care centre provided on the lower floors. For the reasons mentioned above, the setback must be increased to at least 12m since the upper floors are likely to be apartments. Similarly the setback to the Shrimptons Creek is proposed at 5m which is considered inadequate. Council requires that a 30m setback be provided from the side of the creek comprising of a 20m riparian zone and 10m wide natural buffer.
- viii. **Building C4/D4 with respect to the Creek:** No clear dimensions have been shown on the envelope control plan to indicate the actual width of land along the creek. A survey plan needs to establish these dimensions with respect to the edge of the creek. If the edge of riparian zone as shown on the plan is taken to be accurate then a clear 10m setback for the buildings are required as a natural buffer from the riparian zone in accordance with Urban Design Guide for Ivanhoe Estate Redevelopment. This will also assist with a reasonable and meaningful separation of the built form and basement from the open space on the edge of the Creek.
- ix. **Lack of separation between Buildings C3, C4, D3 & D4.** The Master Plan submitted for approval (DA01.MP.100[3] indicates that

the building will be separated by a combined distance of 14.5m between buildings which range from 14 storeys to 20 storeys. Council seeks that the plans must clearly show that building envelopes comply with the separations distance as required under the NSW Apartment Design Guide or a condition be imposed requiring all future detailed approval to fully comply with the building separation requirement in accordance with the ADG.

x. Lack of separation between Buildings A2, A3, C1, C2, D1, D2.

The Master Plan submitted for approval (DA01.MP.100[3]) indicates that the building will be separated by a combined distance of 14.5m between buildings which range from 14 storeys to 24 storeys. Council does not support built to line along the front boundary and therefore seeks the plans must clearly show that building envelopes comply with the separations distance as required under the NSW Apartment Design Guide or a condition be imposed requiring all future detailed approval to fully comply with the building separation requirement in accordance with the ADG.

xi. Lack of regard for the adjoining approved building: Recently a major development was approved by the Sydney North Planning Panel comprising multiple apartment buildings on 137-143 Herring Rd. Building footprint was partly dictated by the need to protect a number of trees on that site and also on the western side of the Ivanhoe site. The proposal does not seem to take into account the approved development on the adjoining property located at No. 137-143 Herring Road. The plans show a setback/ separation on only 10m from the adjoining site. This will have serious amenity impact on the proposed buildings A1, A2 & A3 if the required separation is not provided. Council seeks that:

- The design, setbacks, envelopes on the subject site should establish a positive relationship with this site;
- Separation between adjoining development at 137-143 Herring Rd and buildings A1, A2 & A3 is inadequate and should be increased to at least 12m from the boundary.

c. Lack of adequate and appropriate street setbacks

Council has concerns regarding the proposed building setbacks from the proposed new roads as it seems that the high rise buildings will be built to boundary as shown in the design guide submitted with the application. It seems that the application seeks to establish a street wall from ground level to the top most levels or provide an inadequate setback or reduced front setbacks of buildings without considering potential detrimental amenity, aesthetics and streetscape impacts.

The figures below shows the nature of building setbacks proposed from the various streets:

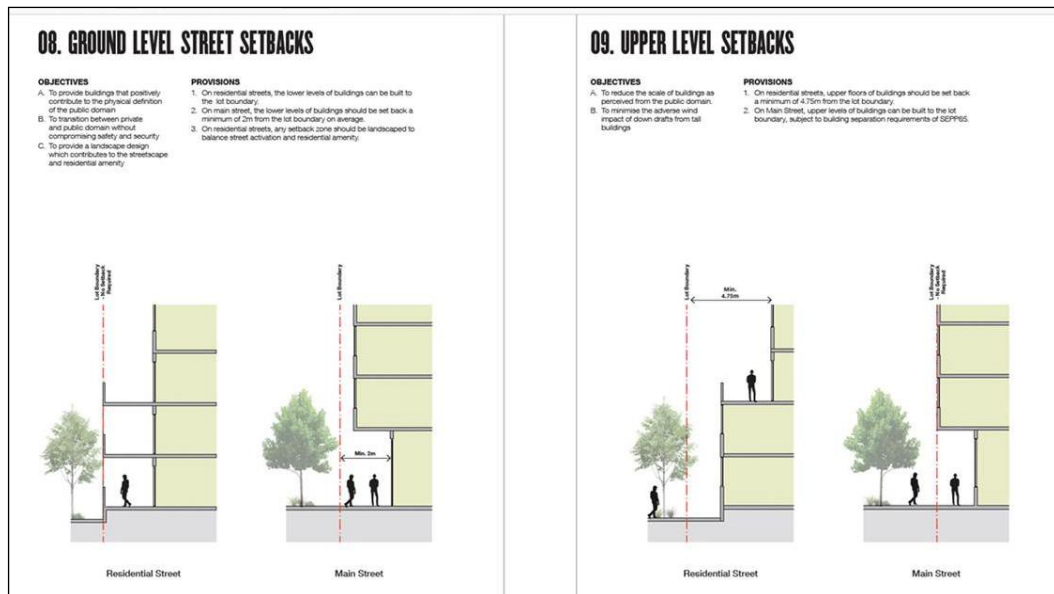


Figure 2. Plan showing the building setbacks to various streets.

The specific issues with the plans are discussed below:

- i. **Lack of adequate street setback:** The setbacks as proposed (zero setback along main street and a tokenistic setback along other street) is contrary to the general built form envisaged in Macquarie Park. It is also inconsistent with the requirements under Part 4.5 of RDCP2014 Part 4.5 and the Design Guideline that Council had prepared for this site. It would seem that the rationale for the setback is to create a street wall. However, given the height of the buildings (14 storeys to 24 storey towers) zero setback without any articulation and increased setback above the lower floor levels is likely to result in overwhelming presence of tall street walls without relief. Street walls may be appropriate for the retail precinct on lower floor levels, however, it is critical that the residential buildings provide a greater setback (minimum of 5m) from the street boundary. Whilst upper level setbacks may be appropriate in some locations, they are considered not appropriate for this site. It is recommended that a more detailed approach to the built form is adopted to address site specific issues.
- ii. **Building setback from road boundaries not shown on the plan.** The Envelope Control Plan (DA01.MP.100[3]) shows no setback of the building envelopes from the road boundaries. However, the indicative elevation plans on DA09.MP.102[2] seems to imply that there will be setbacks along the street with respect to Lots C1 & D1. The rest is not clear. Council seeks that the building envelope plan be amended to clearly indicate a minimum 5m front setback and rear/side setback plus additional building separation distances to fully comply with Part 2F of the Apartment Design Guide.

iii. **Zero setback from road frontage not supported** - the Master Plan does not clearly show setbacks of buildings from the proposed roads. Typical sections shown for the 23.4m wide road (Plan not numbered p54) shows the buildings built to the street boundary with zero setback and will not be supported by Council for the following reasons:

- The proposed street setbacks will compromise the residential privacy of the ground-floor units and will result in high front fence and or privacy screens being erected all along the street that will impact on the streetscape and will result in poor surveillance and design outcomes.

A minimum of 5m street setback should be provided as per Council's Design Guide for Ivanhoe Estate Redevelopment proposal.

iv. **Inconsistent details.** Typical sections shown for the 14.5m wide roads (Plan not numbered p57) shows the buildings' setback from the front boundary, this contradicts the building setback plans showing the buildings with zero setbacks with respect to the neighbourhood street. Built to line/ zero setback will not be supported by Council.

v. **Courtyard along the main street:** The proposed building and terrace/courtyards right up against the street boundary is likely to result in in high front fence and or privacy screens being erected all along the street that will impact on the streetscape and will result in poor surveillance and design outcomes.

vi. **Lack clarity:** The typical street section shows a 3m setback from the road reserve boundary. The reduction of street setback to 3m may only be acceptable if the ground-level units are elevated (by no more than 1m) above the footpath with screen planting along the frontage to increase privacy. The proposed minimum setback of 2m on average on main streets is ambiguous. Reduced setbacks are acceptable if non-residential uses are provided on the ground floor. For a residential interface, the street setback should be a minimum of 5m as per Council's Urban Design Guidelines (Section 4.4.2).

vii. **Building C4/D4 with respect to the Creek:** No clear dimensions have been shown on the envelope control plan to indicate the actual width of land along the creek. A survey plan needs to establish these dimensions with respect to the edge of the creek. If the edge of riparian zone as shown on the plan is taken to be accurate then a clear 10m setback for the buildings are required as a natural buffer from the riparian zone in accordance with Urban Design Guide for Ivanhoe Estate Redevelopment. This will also assist with a reasonable and meaningful separation of the built form and basement from the open space on the edge of the Creek.

viii. Setback from the Creek: The DCP requires a 20m setback from the side of the creek line plus a 10m buffer to protect the riparian corridor zone. However, the proposal only provides a 5m setback to the corridor. The proposed open space along the creek does not retain/improve some of the existing facilities i.e. skate park. The required setbacks should be provided as this is a major community asset.

ix. Lack of adequate setback along Epping Road frontage to protect trees. The proposed setback to Epping Road complies with the DCP controls; however, the proposed building envelopes will have an adverse impact on the existing Turpentine-Ironbark Forest. It is recommended that the setback be increased where necessary to protect this threatened ecological community.

x. Upper level setbacks:

- The proposed 4.75m upper level setback from the lot boundary on residential streets is inadequate. The proposed upper level setback is even less than Council's required street setback of 5m.
- The proposed nil upper level setback is not supported. Council's design guidelines (section 4.4.1) clearly specify that a lower-scale definition should be provided at street frontage.
- Due to the significant heights of future buildings within the site, it is essential to provide upper level setbacks to all towers to break up the verticality of the built form and articulate the façades. The upper level setback should be a minimum of 3m from the façade of the podium levels. This will also help create a human-scale streetscape character and visual relief. At corner locations, slender vertical forms without any upper level setback are encouraged to mark the street corners.

d. Building length

The proposed building lengths are substantially greater than the maximum (40m) specified in Council's design guidelines (Section 4.4.2). For example:

- Building A1 is over 60m long.
- Building B1.2 is over 75m long.
- Buildings B3, C3, D2, D3 and D4 are up to approximately 55m long.
- Building C4 is over 70m long.

Although some buildings show attempts to articulate the façades, the proposed measures are insufficient to break up the perceived bulk effectively. Buildings A1, B3, C3, D2, D3 and D4 are particularly concerning due to their excessive building dimensions, continuous massing and the lack of height variation; whereas Buildings C1, C2 and C4 appear more successful with a clear step-down of height from 20 storeys to 14 storeys.

A sketch is attached showing possible measures that can be applied to improve the built form outcomes. (See Attachment 2). This is to illustrate the principles of built form articulation only and not intended to be taken literally for building design and dimensions.

Furthermore, the majority of the proposed buildings contain 12 to 14 units off a circulation core on a single level, which is 50% to 75% over the recommended maximum number by the Apartment Design Guide (Objectives 4F-1).

The inappropriate built form dimensions will lead to a range of adverse outcomes such as visual impacts and overshadowing which are discussed below.

e. Visual Impacts

The proposal presents substantial bulk when viewed from important vantage points in the public domain (refer to VIA report), including:

- Buildings A1 and A3 in viewpoint 1
- Building B3 in viewpoint 3
- Building D4 in viewpoint 7

The view impacts are a consequence of the excessive bulk and scale of the proposal, which lacks physical breaks in the built form, creating a continuous 'wall' of developments. Council's design guidelines have specified that "slender built forms" should be provided and the proposal has clearly failed to deliver the intended outcome.

The proposal should reduce the length of each building to no more than 40m and allow for meaningful physical separation between tall towers to reduce the perceived bulk.

f. Solar Access and Overshadowing

- As drawing DA21.MP.100 and the Solar Access Study on page 157 of the design report show, the Town Plaza receives little direct sunlight on the winter solstice from 9am to 3pm. The Town Plaza is expected to be a vibrant retail spine with a high concentration of outdoor dining opportunities. The quality of such an important public space will be significantly compromised due to an unpleasant micro climate caused by overshadowing.
- The Shrimptons Creek Parklands corridor and the proposed Forest playground are overshadowed and has limited solar access on the winter solstice. Ground-level communal open spaces (e.g.C4 and D4) will also receive limited amount of sunlight.
- Council understands that the Department applies the ADG solar requirements to each building rather than the development as a whole. This means 70% of the total units in each building should

receive a minimum of 2 hours solar access in mid-winter. The presented solar access and shadow impact analysis diagrams demonstrate a non-compliance. In addition, it is questionable if the units marked as compliant with balconies in a deep configuration could even receive sufficient solar access during the day as the design seriously limits the opportunity of direct sunlight into the internal living space.

g. Cross-ventilation

- The 'natural ventilation' diagram on page 104 of the design report claims that "60% of dwellings within the first nine storeys of the building have dual or corner aspects and will be naturally cross ventilated". This is incorrect. Many apartments are labelled as "cross-ventilated" units, however, they are in fact single-aspect units which will not be able to achieve cross ventilation. The actual percentage of cross-ventilated units is much lower than 60% which means the proposal will not meet the ADG's minimum requirements for cross ventilation.
- It is also questioned whether the indicative proposal complies with the cross ventilation requirements as some of the units are single aspect and can't rely on small slots for ventilation.

h. Indicative internal layout and amenity

- iv. Residential entry points located adjacent to vehicular access points are to be avoided.
- v. Some units appear to have a depth of over 18m which is excessive.
- vi. Balconies in deep narrow configurations (4-6m) lead to poor internal amenity would not be supported in any future Stage 2 design.
- vii. It is noted that some of the indicative studio apartments have poor proportions, which will create poor amenity outcomes.
- viii. Many of the common corridors are excessively long, for example – Building C4 has an unarticulated corridor of approximately 55m. The buildings should generally have multiple cores to reduce the length of common corridors and allow for cross-through apartments.

i. Street interface

- i. The proposed street sections don't correlate to the design guidelines.
- ii. The lack of adequate street setbacks for residential ground level development will lead to an undesirable streetscape character and poor amenity for ground floor units. Greater street front setbacks should be introduced and implemented to achieve an acceptable level of amenity, generous terraces, courtyards and landscape space for ground floor units and to avoid high fencing to these units due to privacy issues.
- iii. The undercroft treatment and lack of setbacks to towers could lead to severe wind effects.

- iv. The proposal aims to achieve a human-scale street wall height of 2-4 storeys which is supported. However, the proposed design guidelines facilitate towers rising full height from the ground level with no podium or streetwall to moderate scale at all. A review of the proposed urban design guidelines is required to ensure this is provided.
- v. Podium design to the public domain spaces, in particular, is required to provide an appropriate scale transition to the main street, village green, etc.

j. Streetscape design and vehicle access;

- i. The proposed vehicular access points, with lengthy ramps accessed from the throat of the proposed Garden Mews, result in a poor streetscape character and creates safety concerns for pedestrians.
- ii. The vehicle entry points close to the proposed town square and major public open space should be relocated to give better separation.
- iii. Multiple vehicular access points seem to be provided with each block. This is excessive and seems unnecessarily intrusive in the public domain. These should be consolidated into fewer points to achieve an improved pedestrian environment and streetscape character i.e. C4.2-4.3, D4.1-4.2.
- iv. The proposed ramps built to the building edges create large blank wall facades and inactive edges to communal open spaces. It presents a poor design outcome and should be reconsidered.
- v. It appears that the basement design doesn't correlate to the accessing points proposed on the ground level.
- vi. It appears quite a number of the proposed vehicular entry points could be deleted due to the interlinked basement design.
- vii. The proposed segregation of new road and pedestrian bridge crossings over the creek creates a visual clutter and it is recommended to be consolidated into one if the levels permit.
- viii. One-side street parking is not an ideal outcome. Street parking on both sides of the street is recommended.

k. Landscape design, open space and deep soil

- i. The proposed landscape strategy "Forest to Neighbourhood" have the forest character permeate and integrate with the urban grid. Council supports and encourages this concept, however, this has not translated well into the concept Master Plan. The proposed configuration, length and proximity of towers on the edge of the Shrimptons Creek riparian corridor limits the opportunity to extend and integrate the forest into the precinct. It is recommended that the Master Plan is revisited to achieve this concept.
- ii. The proposed removal of the Sydney Turpentine-Ironbark Forest to facilitate the development is not supported. This identified threatened

ecological community (DA01.MP.200(3)) should be retained, enhanced and incorporated into the Master Plan design.

- iii. The DCP requires the subject site to provide a new park with active open space to the Shrimptons Creek Corridor with co-located community facilities and active frontages to the open space. The proposal fails to achieve the above strategy instead locating a new village green and main street in the centre of the site. This serves the development itself well but does not encourage support for the neighbouring areas or assist in integrating this development into the area as a whole. Council is of the view that this is not an acceptable offset for the required new park and activity adjacent to the creek.
- iv. The proposed basement car park built to the street/lot boundaries and part of side boundaries is not supported. This limits the opportunity for deep soil planting to site edges and within most of the open spaces. The reliance on planter boxes to achieve landscaped outcomes on site and for the communal open spaces is a poor outcome, particularly given the site size. The site will be developed by stages. It is Council's view that each proposed lot division (DA01.MP.100[3]) should achieve a min. 7% deep soil zone as per the ADG requirements and that this deep soil should coincide with site boundaries of public and communal open spaces.

5. Suggested Amendments to the proposed Development Design Guidelines:

Appendices L of the Environmental Impact Statement includes development design guidelines for the Ivanhoe Estate prepared by Bates Smart and Hassell. To ensure a good design outcome is achieved through the current Master Plan and in future DA's Council is of the view that these guidelines should be amended as follows:

- a. **Deep soil zone (Provision 03)**– Amend Provision 1 to “The area of deep soil within each lot (as per DA01.MP.100[3]) should be no less than 7%.
- b. **Active frontages (05)** – Amend Provision 2 to “Building C1 and C2 should accommodate retail uses at ground level fronting the Town Square. Communal uses should not occupy the majority of the frontages.”
- c. **Pedestrian and vehicular entry locations (06).**
 - Add a provision to state that “vehicular access should not be located adjacent to pedestrianised space or entries”.
 - Delete provision 5 to avoid potential garbage collection on streets as this is not supported by Council.
- d. **Issues with Street wall height and setbacks – Provisions (07, 08, 09)**
 - Street sections don't correlate with each other.

- The proposed undercroft areas have the potential for significant wind effects and wind testing is required.
- The sections suggest nil or narrow (2m) street front setback to lower levels of buildings even with residential ground level uses. This is not a sufficient setback and may result in towers being built to the front boundary when facing the main street and main open spaces as well as to other streets. These guidelines should be carefully reconsidered as they create a poor amenity for ground level units and leave no opportunity for deep soil/landscape on both sides of the residential streets within setback areas. This is inconsistent with Ryde DCP2014 Part 4.5 and also the Ivanhoe Estate Redevelopment Design Guideline prepared by Council.

e. Rooftops (10)

- **Change Objective A** - To maximise opportunities to use roof space for residential accommodation and open space to “To maximise opportunities to provide communal open space on podium level or ground level. On a site this size, reliance on roof terraces should not be required.”
- **Delete Provision 1** and add “roof levels are to provide interesting silhouettes with no residential accommodation allowed above the maximum height.”

f. Façade expression and materials (11)

- **Provision 2** – delete “white” so it reads “Render should be avoided as the primary façade material.”

g. Design excellence (12)

- Change Provision 2 – No architect can design more than five blocks to “No architect can design more than 2 buildings.”
- Add: Design of major open spaces is to undergo a design competition.

6. Impact on trees

Council has reviewed the proposed tree removal from the site and its potential cumulative ecological impacts on the STIF Community. The review has also looked at the negative impact to the established landscape character of the site and locality due to the extent of tree removal in critical locations and the failure to represent this appropriately within the documents provided to Council.

It is noted for reference that a large number of trees (547 trees) located on site within the central areas have already been approved for removal as part of the demolition works to remove existing structures, roadways and services under Part 5 of the EP& A Act by the NSW Land & Housing Corporation.

The proposal under the current Master Plan is to necessitate the removal of a total of 311 additional trees located within the site, including along the Epping Road frontage and Shrimptons Creek corridor. It should be noted however that this is an estimate only given a number of trees have been grouped together with no details of total numbers, species breakdown or technical data.

The primary concerns raised relate to the extensive building footprints resulting in a high level tree of removal on site. It is considered that a more sympathetic building arrangement could permit the retention of important groups of trees, particularly along the Epping Road corridor and site boundaries. Furthermore, concerns have been raised in relation to the limited areas of deep soil provided which will not accommodate a meaningful replacement planting strategy that compensates effectively for the loss of trees and associated amenity on site.

In addition to the above, concerns have also been raised in relation to the negative impact to the established landscape character of the site and locality due to the extent of tree removal in critical locations and the failure to represent this appropriately within the visual impact assessments. Commentary has also been provided in relation to the importance of detailed and well considered replacement planting on site to offset and mitigate tree loss and landscape impacts.

Issues have also been raised with the Arboricultural Impact Assessment submitted which is not considered sufficient for assessment purposes and should not be relied upon to approve the concept Master Plan due to inadequacies.

The total number of trees to be removed is an estimate only with actual numbers unable to be determined given the AIA has grouped large numbers of trees together with no individual breakdown of tree numbers, species or technical data etc.

The following specific issues are identified:

a. Concept Master Plan Proposal:

311 trees to be removed located within the site, adjoining street verge and Shrimptons Creek corridor, forty-five (45) of which are of high retention value. It is noted that this is an estimate only, see note below for further details. A total of 858 trees would be removed from the site including 547 trees approved under the demolition approval by the Department of Housing.

b. Building Footprints and trees along Epping Road:

Concern is raised in relation to the extent of the building footprints and the lack of regard for the existing trees located to the periphery of the site. Extensive basement car parking is to result in the removal of a significant number of trees across the site due to excavations necessary for

construction. This is clearly demonstrated visually below whereby the extent of basement car parking is illustrated.

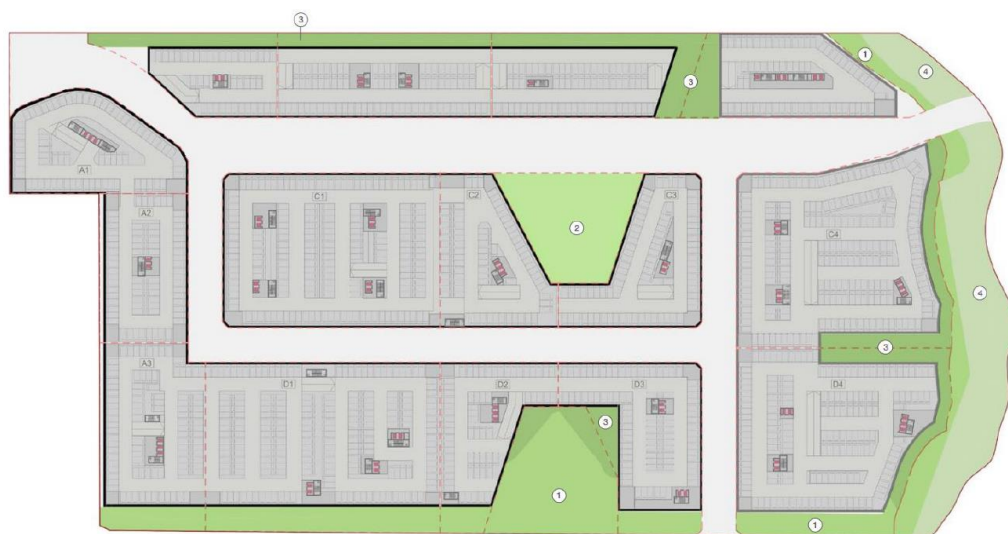


Figure 3. Plan showing the extent of the basement over whole site

Of particular importance are the stands of trees located along the Epping Road frontage and north-eastern boundaries. These stretches of buffer planting are considered to be a high priority for retention due to their contribution to the landscape character of the site and locality and its ability to provide screening and softening to the proposed built form along the corridor of Epping Road and other site boundaries. It is considered that these tracts of vegetation should be strengthened as part of the proposal rather than diminished as is currently the case.

The building footprints are not sympathetic to the existing vegetation on site and it is considered a more sensitive approach which considers trees as an important asset would result in a reduced level of tree loss. Given there appears opportunity to modify building envelopes, increased setbacks to Epping Road and the north-eastern boundaries are recommended.

c. Additional Tree Impact not taken into account:

The Arboricultural Impact Assessment prepared by Eco Logical Australia dated 30th November 2017 does not appear to have taken into consideration the full extent of basement excavations necessary for construction nor the extent of works associated with civil roadway construction. Based on the concept plans submitted, it is considered likely that a number of additional trees along the Epping Road frontage and adjoining the proposed buildings will require removal due to unsustainable levels of incursion to the Tree Protection Zones. Accordingly, the extent of tree removal required is likely to be increased over that stated.

d. Arboricultural Assessment inadequate

The Arboricultural Impact Assessment (AIA) prepared by Eco Logical Australia dated 29th November 2018 is considered to contain a number of errors and anomalies which does not allow a proper understanding of the extent and impact of the proposal in relation to those trees to be removed. The following concerns are raised with regards to the AIA submitted:

- No details have been provided anywhere within the AIA with relation to the assessed trees form, structure, condition, age class or landscape significance. Additionally, no assessment or recording has been provided relating to the Useful Life Expectancy (ULE), Safe Useful life Expectancy (SULE) or estimated life expectancy. Given this information is the primary indicator to determine retention value, it is unclear how retention values have been attributed to trees across the site.
- The majority of trees identified within Table 2 of Section 3 do not have appropriate retention values based upon the applied methodology (*Institute of Australian Consulting Arboriculturists (IACA) Significance of a Tree, Assessment Rating System*) stated within Section 2.2. Accordingly, the retention values attributed within the AIA are not considered relevant.
- Two groups of trees identified within the assessment as 'Polygon A' and 'Polygon B' have been described as being subject to a high impact (>20% of the TPZ) and unable to be retained. Whilst the primary species within these groups have been noted, there is no breakdown provided within the AIA to identify the exact number of trees to be removed nor their location or technical details to determine their potential for retention. Given a number of those species noted within these Polygons form part of Endangered Ecological Communities within the City of Ryde, it is considered inappropriate to group these trees together as the full extent tree removal impact is not clear.

Based on the above omissions and errors, the Arboricultural Impact Assessment cannot be relied upon and there is insufficient information available to determine the level of impact of the proposal in relation to trees.

e. Epping Road Access

The location of the proposed roadway access on the Epping Road frontage will significantly interrupt and disconnect the important corridor of existing trees which form a strong buffer and defined edge to the Epping Road

frontage. As demonstrated in the photo below, the north-eastern edge of Epping Road is characterised by a strong alignment of mature vegetation. The proposed roadway and access will not only result in a large number of trees requiring removal but also dissect the vegetation corridor diminishing its avenue-like continuity and resulting the proposed development being more highly visible from the streetscape of Epping Road.



Photo indicating strong vegetation corridor along Epping Road frontage of the site

f. Ecological Impact

As identified within the Biodiversity Assessment Report and Offset Strategy prepared by Eco Logical Australia dated March 2018 and shown in the figure below, the site contains a large tract of Sydney Turpentine-Ironbark Forest located along the Epping Road frontage. This vegetation community is listed as a threatened ecological community under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and should therefore be treated as a priority for tree retention on site. As discussed previously, the location of the proposed building footprints will require the removal of significant portions of this tract of vegetation to enable construction.

The reports state *“A key focus of Ivanhoe Estate is to reduce the negative impacts on the sites’ ecological value as a result of the development. We aim to minimise harm and enhance the quality of local ecology, particularly around the Turpentine Ironbark Forest along Shrimptons Creek. Initiatives to enable this currently include: - Protecting the existing Turpentine Ironbark Forest”* The proposed tree removal of STIF contradicts this outcome. The large scale removal of this threatened community that exists along this corridor will significantly impact the ecological integrity within the area from its removal along Epping Road. The Master Plan’s ‘offset’ plan as a priority will do zero to assist the local bushland lost and ecological survival of species in this area who rely upon these links to connect to the Lane Cove National Park for survival. Mapping provided by Ecological in the Arboriculture Report demonstrate the tiny amount of remaining STIF

community in the local government area and developments with footprints this size contribute to significant loss. It is not supported that Aspire/ Frasers are genuinely 'protecting and enhancing' this STIF community. Despite stating that they will rehabilitate the Shrimptons Creek area and promote native vegetation this has been inadequately demonstrated in this Master Plan.

Accordingly, given the importance of this vegetation community within the City of Ryde local government area, further consideration should be given to increasing the setback of the proposed building form and basement car park along the Epping Road frontage to reduce the level of impact and prioritise the retention of an increased area of this threatened ecological community.



Figure 4. Diagram indicating Threatened Ecological Community - Sydney Turpentine-Ironbark Forest – located on site in green (Source: Eco Logical Australia 2018)

g. Biodiversity offsets

- As referenced in the 'Sustainability Report' under the NSW SEARS for 'Intergenerational equity and conservation of biological diversity and ecological integrity' should prioritise ensuring minimal tree removal and avoidance where possible to ensure compliance of this principle as stated by Aspire/ Frasers on the development site.
- 2:1 offset planting for those species that are unavoidable in being removed and not just bought up in 'offset credits'. Location should be sort locally as a priority before offset to a location that will not benefit local environment. The intent should be to support green corridor prioritisation links that are aligned with the Cities outcome under the Greater Sydney Commission and corridor links and support Council's outcome under the Ivanhoe Estate Urban Design Guidelines to strengthen and rehabilitate the Shrimptons Creek corridor (inclusive of the surrounding site);
- Retention of Sydney Turpentine Ironbark forest as a priority along Epping Road. Trees within this corridor and bushland provide a critical link to Shrimptons Creek and adjoining green pockets for Ryde. Large scale removal of this community will have significant impacts detrimental to the long term survival of this critical link. These species are identified as being 'good to moderate' in health and size.
- Calculations on the actual retention numbers and those proposed for removal is conflicting in various sections of the arboricultural and biodiversity reports.
- An accredited ecologist should be on site prior to removal is to occur to assess all hollow bearing species and stop works should a hollow be identified as active habitat. No works to commence until after assessment has been conducted and species identified as linked to endangered and listed communities.
- An accredited assessor should visit the site to confirm species and credit species prior to any works, removal or disturbance
- Retiring and offsetting of credits – as the project will be undertaken in stages, when will Aspire/ Frasers register to purchase the credits? Will this be staged over the life of the project or cumulatively at the end delivery of the project? If at the end, this will be years without the credits purchased and retired. Concerns over this duration resulting in further net loss of biodiversity support impacted on by this project. There is no stipulated timing for this and it should be provided up front with a preference to offset as soon as project commencement.

h. Landscape Character

As demonstrated in the picture below, Ivanhoe Estate currently contains a moderate-high level of canopy cover across the site when viewed in context of the surrounding locality. This is strengthened by the adjoining

Shrimptons Creek corridor, Epping Road corridor and extensive internal streetscape and open space plantings. With a significant proportion of the existing tree population site requiring removal to accommodate the current proposal, canopy cover and associated amenity is likely to be diminished.

Given the overall impact to existing trees and the inability of the site to accommodate large tracts of deep soil planting or provide a 1:1 replacement planting ratio, the proposal is considered likely to have a negative impact to the landscape character of the site and locality. This will be particularly evident during the short-medium term following construction whereby existing mature vegetation will be replaced with juvenile trees of low visual prominence resulting in a high visual impact.



Figure 5. Aerial image with site outlined red indicating moderate-high canopy cover (Source: Google Map 2018)

It is also considered important to note that the photomontages of the indicative building massing within the Visual Impact Assessment prepared by Virtual Ideas dated 12th December 2017 & Ethos Urban dated 14th December 2017 include significant stands of existing tree and vegetation cover which provide a high level of screening and softening of the built forms. Given the majority of these trees are to be removed as part of the proposal, it is not considered the photomontages are an accurate reflection of the proposed development when constructed (refer to Figure below).





Figure 6. Photomontage of site as viewed from Herring Road (Source: Virtual Ideas 2018)

i. Deep Soil Zones

Relating to the concerns of extensive building footprints and the associated impact on trees, the building layouts, basements footprints and internal roadway networks result in a very limited scope for the provision of meaningful deep soil zones across the site. The lack of deep soil provided on site effectively reduces the potential for a significant compensatory planting strategy to offset the tree removal taking place. Whilst the concept plans give the appearance of a highly vegetated site, a review of the basement envelopes indicates that a high percentage of the landscaped area will be provided on podium. Accordingly it is considered likely that the proposal will result in a significant nett loss of large scale mature canopy trees on site and thus see a negative impact to the landscape character of the Ivanhoe Estate and locality.

j. Replacement Planting

Given the significant level of tree removal to take place on site and some already approved under the demolition works, it is considered critical that consideration and a high priority be given to the provision of an extensive compensatory and replacement planting scheme within site and adjoining Shrimptons Creek corridor. This is to ensure the effective management of trees as a natural resource within the City of Ryde to maintain the benefits of the collective tree population and mitigate impacts to the established urban forest canopy and landscape character of Macquarie Park. This

should include further rehabilitation and restoration works within Shrimptons Creek corridor as well as strengthening the remnant patches of Threatened Ecological Communities identified on and adjacent the site.

7. Need for more active recreational open space

Considering the site's proximity to the university and business zone as well as the social housing component and a school within the site, there are needs for more substantial active recreational facilities on the site.

It is noted that existing sports fields in the Macquarie Park area are already being used to capacity and have limited ability to absorb the additional demand likely to be generated by the Ivanhoe development. Council's preference is that this development is to meet its own needs for active open space, rather than rely on facilities in the surrounding area.

Council recommends the applicant to explore opportunities to accommodate active recreational spaces by reconfiguring and redistributing the built form. Ideally, it should directly connect or integrate with other open space such as the Shrimptons Creek Parklands.

It would seem that the demand for open space have been under estimated in the reports accompanying the application. The report from Elton Consulting uses a projected occupancy figure of 6,885 people. However, it would seem that this is an underestimation given that the development proposes 3,500 residential apartments and a school for 1,000 students. Using the occupancy rate per apartment of 2.6 (2016 Census data), the derived total population is projected to be over 9,000 people, in addition to the school population that will serve a greater catchment. It would also seem that the school will be without any dedicated large playground. In light of the above Council seeks that a full sized sports field be provided within the Ivanhoe Estate site.

The Aspire Consortium has signalled that it is willing to make financial contributions to improve local sports fields such as Wilga Reserve and ELS Hall Reserve and intensify their use. Council has indicated there is very limited opportunity to meet the demand for the proposed development by relying on other nearby smaller pockets of open space.

Educational facilities also need to incorporate open space for student play and recreation generally at a rate of 10m² per student. The application states that some of these needs will be satisfied by local open space and facilities to be provided within the Ivanhoe site, while others will be addressed by accessing facilities in the wider district and more broadly in the region. This is not a satisfactory outcome.

The Town Plaza and the Village Green are two important public spaces in the neighbourhood, yet they lack visual and physical connections with each other. It is

recommended to provide a through connection in Building C2 to link the two spaces together.

8. Contaminated Land

A number of contamination investigations have been carried out by DLA Environmental Services Pty Ltd (DLA). These include:

- Summary of In-Ground Contamination – Ivanhoe Estate, Cnr Herring and Epping Roads, Macquarie Park (Report No. DL3531_S0055491 dated 11 October 2016)
- Supplementary Site Investigation – New Property Acquisition - Ivanhoe Estate – 2 Lyon Park Road, Macquarie Pak (Report No. DL3953_S007076 dated July 2017)
- Supplementary Site Investigation – Ivanhoe Estate, Corner of Herring Road and Epping Road, Macquarie Road (Report No. DL3953_S008115 dated February 2018)

The October 2016 report reviewed the results of a previous detailed site investigation carried out by JBS & G in 2016 ('the DSI'). According to this report there was limited evidence of historical contaminating activities on the site and soil sampling found that all contaminants of potential concern were at levels less than the assessment criteria, with the exception of benzo(a)pyrene which exceeded the ecological criteria at one sample location. However, this was not considered to present an unacceptable ecological risk.

It was also noted that the 26 sample locations used was less than the minimum number specified in the Sampling Design Guidelines (NSW EPA, 1995) for site characterisation, but according to the review the number was considered adequate given the past history of the site and the targeted nature of the sampling program.

The review also identified a number of areas of 'altered topography' that required further investigation.

The July 2017 report considered the suitability of a narrow corridor of land at 2 Lyonpark Road for re-development as a road reserve. The report concludes that the site is suitable for the proposed use from a contamination perspective.

The February 2018 report examined the areas of 'altered topography' that were identified in the October 2016 report and found elevated levels of total recoverable hydrocarbons (TRH) in the vicinity of borehole BH8.

The report concludes that:

- The combined data presented in the DSI and this supplementary report is considered sufficient to allow assessment of the suitability of the site for future land use in accordance with the general requirements of SEPP 55.

- Based on the results of the current investigation data, DLA concludes that the area of the site in the vicinity of borehole BH8 is not currently suitable for the proposed redevelopment from a contamination perspective due to the presence of TRH in soil.
- Although the site is not considered suitable for the proposed land use in its current condition, DLA considers that the site can be made suitable with further assessment and the implementation of an appropriate remediation strategy.

Should the Department be of a mind to approve this application, Council is of the view that the following condition should be imposed:

- A detailed Environmental Site Assessment must be submitted with any subsequent application. This assessment must comply with the Guidelines for Consultants Reporting on Contaminated Sites (EPA, 1997) and demonstrate that the site is suitable for the proposed use, or that the site can be remediated to the extent necessary for the proposed use.

If remediation is required the report should also set out the remediation options available for the site and whether the work is considered to be category 1 or category 2 remediation work.

9. Noise Issues

An acoustic assessment report has been prepared by Acoustic Logic. The report concludes that the potential impacts can be appropriately managed. However, further analysis of noise must be addressed as part of each stage of development.

10. Stormwater Management

The stormwater aspect of the proposal has been reviewed by Council Engineers and the following comments are provided:

- The trunk drainage system will need to be implemented at the initial stage of works to provide a trunk drainage system to service the development in the upper reaches of the site. The implementation of the trunk drainage infrastructure which is to be dedicated to Council under public roads, will require conceptual road alignment plans to ensure the nominated levels of these services are consistent with the satisfactory road levels.
- The nominated OSD design rational is supported as the adopted approach (elected to achieve a Green Star Credit Rating) is considered conservative in comparison to Council's requirements.
- Each of the stages will warrant on-site detention which ideally should be provided at the lowest point of the site prior to the point of discharge. The

OSD storage (whether it be comprised of a tank or basin) must be designed in accordance with Council's DCP part 8.2 (Stormwater and Floodplain Management).

- The analysis has nominated that public road and driveway areas are 80% impervious (Section 3.1.1 of the report). Further justification is warranted for these figures, particularly road pavements which are considered as 100% impervious. It is understood these areas may comprise of (or partially be comprised of) permeable pavers however should be clarified.
- The WSUD measures nominated include “end-of-line” treatments (ie implemented at the point of discharge) as well as implementation of pit baskets in each of the kerb inlet pits. Such measures will significantly increase the level of Council resources required to maintain such devices. It is advised that the WSUD treatments of public domain areas be undertaken in accordance with Council's public domain/ sustainability section and suggested any such treatment be consolidated. Ideally the WSUD targets should be addressed by devices/ measures internal to the development themselves and such measures be implemented at the discharge point of
- It is understood that the applicant is in the process of formalising the drainage system servicing the corner property (137 to 143 Herring Road). It is understood the developer of this site is currently seeking to formalise an easement through the Ivanhoe Estate and this matter is currently being considered by the Courts. It is advised that this development should make provision for a an accessible, unobstructed flowpath and drainage services to be located between Stages 1 and 2 to the proposed new road and there does not appear to be any imposition on the applicant to provide this.
- The portion of land along the northern boundary are anticipated to be below the public trunk drainage system accommodated by Road 1. Accordingly a private drainage easement will be required to be formed along the northern boundary to service Stages 7, A & B (in the anticipation these stages will be subdivided in separate lots). The land currently accommodates an easement and overland flowpath and this should be replicated in similar form through this region.

11. Parking and Vehicle Access

It is noted that parking will be provided in accordance with the DCP Part 9.3 (Parking Controls) for the Macquarie Park corridor. This is to be strictly complied to align with the transportation principles and objectives outlined in Council's RLEP2014 and the RDCP2014. However, the following issues are raised in relation to the variations proposed with respect to car parking:

a. Variation to visitor parking numbers not supported by Council:

The car parking rate as provided in the RDCP2014 is already at a reduced rate as part of the most recent revisions of the parking rate in Macquarie Park. It is expected that additional parking is provided on the site in accordance with the DCP requirement.

It has been noted that the number of visitor parking required for the development is being varied by 50%. This in real terms means approximately over 150 visitor car parking spaces not being provided on the site. Given that the development proposes 3,500 residential units, a variation of this scale is likely to result in major car parking storage for visitors.

The variation is likely to result in a significant parking undersupply that would impact on-street parking availability in the area and would also place pressure on Council to alter parking restrictions in the surrounding area or potentially implement a permit parking scheme. These ramifications are unacceptable.

Council seeks that a condition be imposed to ensure that the car parking requirement, including the number of visitor parking spaces is fully complied with and provided within the site distributed throughout the site in the basement. Visitor parking must be counted for any spaces provided on the proposed roads.

b. Variations to Car Share

City of Ryde Council strongly advocates the provision of car share parking on such major development sites as part of a commitment to sustainability and reducing private vehicle use for the journey-to-work.

It is also noted that the number of car share spaces is being varied by 50%. Given that the development proposed 3,500 residential units, a variation of this scale is likely to result in more pressure on existing car parking and street parking spaces. Council seeks that a condition be imposed to ensure that the car share spaces be provided in accordance with RDCP2014 and that these spaces are:

- Publicly accessible 24 hours a day seven days per week;
- Located together in the most convenient locations;
- Located near and with access from a public road and integrated with the streetscape through appropriate landscaping where the space is external;
- Designated for use only by car share vehicles by signage;
- Parking spaces for car share schemes located on private land are to be retained as common property by the Owners Corporation of the site.

c. Loading/ service facilities

Any loading / service facilities must be located on the site itself. In this respect, resident services are to be accommodated by an appropriate number of loading bays accommodating SRV vehicles and waste services are to accommodate Council waste vehicles. This will require a swept path to accommodate a 11m long vehicle with 4.5m height clearances.

d. Pickup-drop off services for the proposed school

It is considered crucial that the pick up-drop off services for the proposed school be provided internal to the school site, clear of the public domain. Often such facilities are implemented from the street frontage however come at cost of traffic congestion and jeopardising pedestrian safety. Accordingly such a service must be provided off the public road and within the site.

e. Pickup-drop off services for the proposed child care facility

Similarly the child care centre to be implemented is to provide a circulatory parking area to facilitate safe and efficient pickup-drop off activities clear of the public domain.

f. Proposal does not comply with AS2890 .1

The proposed driveway servicing Stages 6 & 8 is noted to be located on an intersection of the new Roads No. 2 & 3. The location of the driveway is not in accordance with AS2890 .1 and will potentially complicate intersection movements thereby creating an unsafe traffic environment. It is suggested that the driveway entry be relocated clear of the intersection (as per AS 2890.1) or otherwise subsequent DA recommend traffic controls to be implemented in this location to address the situation.

12. Traffic Issues

Council's Traffic Department has reviewed Transport Management and Accessibility Plan (TMAP), April 2018 and provides comments and conditions below.

a. Intersection Configuration along Road No. 1

On Page 17 - Transport Management and Accessibility Plan – The applicant has indicated that the series of connecting streets will serve as the “U-Turn” facility for vehicles on Herring Road heading northbound. This coupled with the inclusion of the school and shopping precinct will promote large traffic movements for those circulating the village centre. This can be attributed to people searching for parking spaces, as well as during the pick-up/drop-off school peak for those trying to locate spaces to safely pick-up/drop-off their children. The current configuration proposed does not allow for suitable opportunities to circulate the main road and hence

promotes an unsafe environment that may result in drivers undertaking erratic movements.

To address this issue, the inclusion of roundabouts at the major intersections along the Road 1 must be provided to assist with internal traffic circulation during peak movement times.

Council seeks that a condition be imposed requiring the applicant/developer to construct a roundabout at the intersection of Street No. 1/Street No. 2 and Street No. 1/Street No. 3. This must be incorporated as part of the appropriate stages of construction. Suitably prepared civil plans shall be submitted to and approved by the Certifying Authority (City of Ryde) prior to the determination of any detailed application relevant to the particular stage.

b. School Drop-off/Pick-up Facilities

The new school being proposed relies heavily on the availability of parking within the local street and also is based on the assumption that majority of the attendees will be from the local vicinity or attend the school via public transport. The proposed school is likely to generate major trips in the morning and afternoon peak periods, especially considering the school is anticipated to accommodate 1,000 students.

The design should be reconfigured to provide a drop-off/pick-up zone within the school boundary.

Council seeks that a condition be imposed requiring an internal drop-off/pick-up zone within the school boundary to accommodate private vehicles and buses. If this is not possible with the Master Plan then this requirement must be complied with as part of future detailed application.

c. Herring Road/Ivanhoe Estate Traffic Signals

The applicant consistently makes references to undertaking the installation of the traffic signals at the intersection of Herring Road/Ivanhoe Estate. However, no details have been provided to indicate the stage of development this is going to occur.

Council seeks that this be imposed as a condition and the applicant/developer must confirm the status of these signals; who will be delivering the project, when the installation is to occur and where the funding will be provided (i.e. the applicant or Roads and Maritime Services and Transport for NSW).

d. Lyonpark Road/Road No. 1 Intersection Treatment

The report marginally addresses the intersection treatment of Lyonpark Road and proposed Street No. 1. It then dismisses the option to install a traffic signal at this location.

The applicant must propose an alternative traffic management measure (e.g. a roundabout) as the circulation demand on this intersection is anticipated to be considerably high.

The applicant shall construct, as a minimum, a roundabout at the intersection of Road No. 1 and Lyonpark Road, should the subsequent detailed intersection analysis confirm that traffic signals are unsuitable. Suitably prepared civil plans shall be submitted to and approved by the Certifying Authority (City of Ryde) prior to the release of any bonds associated with the civil infrastructure.

Council seeks that the Master Plan be amended to indicate this roundabout at the location and a condition be imposed requiring details to be submitted as part of Stage 2 for approval by Council.

e. Lyonpark Road/Epping Road Intersection Treatment

The report discusses the intersection treatment of Lyonpark Road and Epping Road. It then dismisses the option to upgrade the intersection to a traffic signal. No supporting modelling has been demonstrated within the report.

This link has been modelled by Council and showed some benefits as a two-way road but its benefits would be strengthened by the signalisation of the Lyon Park Road/Epping Road intersection with full movements allowed. The inclusion of the signalisation upgrade of Lyonpark Road and Epping Road provides access for regional traffic to Macquarie Park, but also direct access to the Ivanhoe Estate precinct. In this regard, a “contribution” from the developer is expected to facilitate the future construction of the traffic signals, in the similar manner to the RMS signal plan (Reference No.: 0373.387.SP.0001, Sheet No.: 001)

f. Completion of Shared User Path (SUP) along Epping Road

The report does not provide details regarding the required SUP along Epping Road, connecting the existing SUP, east of the site frontage, to Herring Road.

This connection will provide a critical link in the pedestrian and cycle network and is required to be delivered as part of the public domain upgrades of the Epping Road frontage of the site.

Mandatory Condition:

Council seeks that the applicant construct a Shared User Path (SUP) link along the Epping Road frontage of the development site, connecting to the existing SUP on-ramp to Shrimptons Creek (southern boundary of the site) to the Herring Road signalised intersection, to a minimum width of 3.0 metres. This should be shown on the Master Plan.

g. Traffic Generation

The applicant's consultant has stated the following volumes to be generated from the site (as per the table below). The values indicated, in particular the generation of the school, is considered significantly underestimated. The consultant has assumed a rate of 95 vehicles in the peak AM for a school servicing approximately 1,000 students. Council's assessment, as per the RMS Trip Generation Surveys Schools, Analysis Report, would consider the school to produce 510 vehicle trips in the AM peak hour, based on average trip generation rate of 0.51 vehicle trips per student.

Additionally, the child care centres are documented as producing 30 vehicles in the peak periods. RMS Guide stipulates a rate of 0.8 trips per child for AM peak hour and 0.7 trips per child for PM peak hour. Therefore based on 150 children, traffic generation for the child care centre could be 120 and 105 vehicle trips during the AM and PM peak hours, respectively. This changes the overall generation of the site from the consultant's figure of 538 vehicle trips during the AM peak hour, to the Council's assessed figure of 1,043 vehicle trips per hour in the AM peak periods. Applying trip reduction factor of 20 to 25 percent for internal trips within the Ivanhoe Estate precinct, the external traffic generation due to the development is still in the order of 800 vehicle trips during the AM peak hour.

This level of difference is expected to have a major impact on the serviceability of the local streets and the operation of Macquarie Park.

Table 20: Adopted Trip Generation

Land Use	Approximate Yield	AM Trip Rate	PM Trip Rate	AM Generation (veh/hr)	PM Generation (veh/hr)
<i>Residential Land Uses</i>					
Market Dwellings ¹	2,324	0.14 / unit	0.12 / unit	325	282
Social Dwellings	875	0.03 / unit	0.05 / unit	26	44
Market Independent Living Units	132	0.10 / unit	0.10 / unit	13	13
Social Independent Living Units	141	0.03 / unit	0.05 / unit	4	7
Affordable Units	128	0.12 / unit	0.10 / unit	15	13
Residential Aged Care Facility ²	120	0.10 / unit	0.10 / unit	12	12
Residential Sub-total				395	371
<i>Non-Residential Land Uses</i>					
High School	1000 students	survey	survey	95	15
Child Care	150 children	0.1 per child +15 staff	0.1 per child + 15 staff	30	30
Office	571m ²	1 / 100m ²	1 / 100m ²	6	6
Ancillary Retail	1,246m ²	1 / 100m ²	1 / 100m ²	12	12
Non-Residential Sub-total				144	63
Total Estate Generation				538	434

1) Approximated market dwelling yield has been increased by 100 to allow a contingency in the traffic trip generation rates.

2) Beds not included in indicative yield.

Prior to further consideration of this application, Council is of the view that the Transport Management and Accessibility Plan (TMAP) must be updated to reflect the impact of 800 vehicle trips during the AM peak hour.

h. Internal Road Assessment

TMAP does not address the mid-block and intersection capacity of the proposed internal roads within the Ivanhoe Estate development.

It is recommended that the TMAP be updated to include an assessment of the internal roads within the Ivanhoe Estate development taking account of Council's comments on traffic generation estimate. In particular, a single lane street may not be adequate to cater for 510 vehicle trips during the AM peak hour, attempting to utilise school drop-off/pick-up facilities.

i. Pedestrian Crossings

There are plan inconsistencies between Figure 5 (page 15) and Figure 9 (page 18) of the Transport Management and Accessibility Plan.

Council supports, in principle the current plan illustrating three raised pedestrian crossings on Road No. 1 (location to be confirmed during detailed design).

Road No. 2 showing a single raised pedestrian crossing, Council requires an additional raised pedestrian crossing (location to be confirmed during detailed design).

Road No. 3, east of Road No. 2 requires a raised pedestrian crossing.

Further pedestrian facilities are likely to be required under a 40km/h High Pedestrian Activity Area.

The applicant is to undertake necessary actions to obtain approval from RMS for the implementation of a 40km/h HPAA zone throughout the Ivanhoe Estate to ensure maximum safety for all road user types.

Council is of the opinion that any approval should be conditioned to require the applicant to construct raised pedestrian crossings at the following locations.

- a. three crossings on Road No. 1, consist with Figure 5 of Transport Management and Accessibility Plan;
- b. two crossings on Road No. 2, including an additional crossing
- c. an additional crossing on Road No. 3, east of Road No. 2.

Exact locations must be confirmed with City of Ryde during detailed design stage.

j. Footpath/Shared User Path (SUP)

The applicant has identified on Page 4 Transport Management and Accessibility Plan – “A high quality active network will be provided throughout Ivanhoe Estate through continuous shared paths and crossing facilities at key locations”.

The SUP cross section provided along all internal networks and connections appear to be lacking. Also, the applicant is to address the pedestrian desire lines and provide appropriate pedestrian crossings. There is also the requirement to provide connecting pathways to link to Epping Road.

Footpath clear widths shall be amended in line with the NSW Bicycle Guidelines for shared paths:

- 2.0m where pedestrian access is only intended
- 4.0m where a shared user path or cyclist access is anticipated.

k. Developer Bus Services

The applicant has identified on Page 4 of the Transport Management and Accessibility Plan – “Implementation of a new developer funded community bus connecting the development with Macquarie Park employment zones and other local services”

TMAP does not however address this item. Further emphasis needs to be provided and details of how this is anticipated to be implemented and operated, on an ongoing basis. Council requests the applicant to amend the TMAP with further details as to how this bus service is expected to operate within the business park with details on bus stop amenity provisions et cetera.

l. Level of Service Results

Page 106 of the Transport Management and Accessibility Plan – The author has used AM and PM numbers from the 2016 RMS model for the 2021 situation (Epping Road and Herring Road LoS – E). The Macquarie Park Bus Priority and Capacity Improvements Program, however indicates LoS – F for PM peak periods.

The consultant has identified that the upgrade of the intersection of Epping Road and Herring Road (to be delivered as part of the Macquarie Park Bus Priority and Capacity Improvement Project) results in a significant improvement in the operation of the intersection in the medium term.

The information provided by the consultant is deemed misleading in that the Level of Service (LoS) of the intersection continues to operate at ‘F’ being that the operation of the intersection fails in accordance with the RMS LoS Guidelines.

In general, the values used by the consultant are not in accordance with the Macquarie Park Bus Priority and Capacity Improvements Program values. Council requests the applicant to amend the TMAP to reflect accurate results in accordance with the 2016 RMS model for the 2021 proposed scenario.

m. Bus Serviceability

It is stated on Page 70 of the Transport Management and Accessibility Plan –in order to develop and protect bus corridors within Ivanhoe Estate to facilitate bus permeability the site has been designed to accommodate bus movement.

There is no indication of how this has been incorporated into the proposed layout. Council requests the applicant to update the TMAP to identify how the bus movement can be accommodated within the Ivanhoe Estate corridor.

n. School Parking Requirements

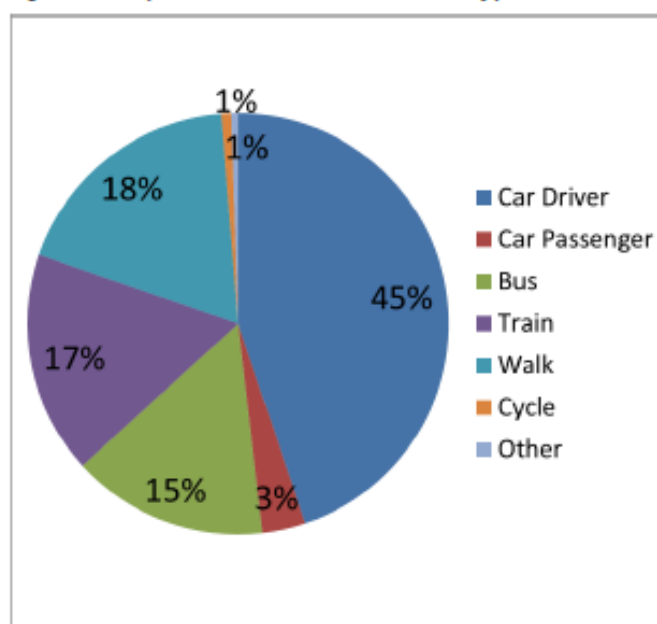
The School appears to have provided inadequate parking facilities for teachers.

As part of Council's DCP requirements, the School is required to provide at least 30 parking spaces for the teachers. Further, the teacher's numbers have not been appropriately addressed. It appears as though there is a great reliance that attendees will be using Public Transport. Council requests the applicant to revise the TMAP to properly address the requirements of the school including teacher numbers, parking provisions, etc.

o. Journey to Work Mode Share

The applicant has compiled a Journey to Work (JTW) profile of the proposed development. This has been compared with the Macquarie Park Bus Priority and Capacity Improvements Program. Whilst it is noted that both reports are using the same JTW stats from 2011, the values are significantly different without adequate justification.

Figure 18 Macquarie Park travel to work mode share by place of enumeration



Source: ABS Census 2011

	MPBPICP	Ivanhoe AM
Car driver	45	27
Car Passenger	3	14
Bus	15	11
Train	17	21
Walk	18	25
Cycle /Other	2	2

Council is of the view that the applicant is to validate the difference between JTW statistics adopted in the TMAP and Macquarie Park Bus Priority and Capacity Improvements Program and the TMAP must be updated accordingly.

p. Road Infrastructure Hand-Over Staging

Based on the length of construction activity anticipated, it is envisaged that a large volume of construction traffic will be required to travel over the newly constructed roads and infrastructures.

Council seeks that the developer/ applicant dedicate to the Council Road No.1, Road No. 2 and Road No.3 prior to issue any Occupation Certificate for Stage 8. This matter can be negotiated as part of the Voluntary Planning Agreement that the applicant has offered to enter into with Council.

q. Indented Parking Bays on Road No. 3

The indented parking bays on Road No. 3 close to the Epping Road slip lane are considered high risk due to its proximity to the deceleration lane. There is a high chance of rear end collisions for those exiting off Epping Road and those attempting to park.

The applicant should relocate the indented parking bays closer to the Road No. 2. If no suitable location can be accommodated, the deletion of this space would be recommended.

r. Ivanhoe Estate Redevelopment (Urban Design Guide) – Deficiencies

The Ivanhoe Estate Redevelopment – Urban Design Guide requests the installation of a section of Shared User Path to join the link from the proposed bridge, along Lyonpark Road, connecting to the section already constructed at the intersection of Lyonpark Road and Giffnock Avenue.

Council requests the applicant to update the TMAP to include the shared path connection between the proposed overbridge and Giffnock Avenue along the western side of Lyonpark Road as detailed in the Ivanhoe Estate Redevelopment – Urban Design Guide.

s. Serviceability of All Sites

The applicant has not addressed the serviceability of the site. Waste and removalist vehicles are to be considered as part of the road network and access to sites.

Council seeks that the applicant shall provide swept path diagrams of Council's 11.0m waste vehicle.

t. SEARS

The SEARS response previously prepared by Council raised a concern regarding the Mitigation Measures in the assessment.

The applicant has not addressed this request to provide a sensitivity assessment for all infrastructures being delivered by third parties. Council requests the applicant to provide a sensitivity assessment to identify the impact of traffic in the instance that external infrastructures are delayed or not delivered.

13. Public Domain

With regards to the public domain areas to be delivered under this proposal, Council already has predetermined standards for the public domain. These are contained within Council's Public Domain Technical Manual. These standards do not appear to have been recognised. These standards must be used to ensure consistency with the rest of Macquarie Park.

a. General requirements for Public Domain

Public Domain Requirements: The development is subject to the standards and requirements of the City of Ryde Development Control Plan DCP 2014 Part 4.5 Macquarie Park Corridor, and the City of Ryde Public Domain Technical Manual (PDTM) Section 6 – Macquarie Park Corridor.

New Roads layout: The pavement of the footway is to be designed according to the requirements of the Public Domain Technical Manual, Section 6 - Macquarie Park Corridor. The new public roads Road No.1, 3 must be in accordance with figure 6.1.1 and Road No. 2 must be in accordance with figure 6.3.1.

b. Required road widths, layout and alignment

According to Figure 4.1.1 Access Network in the City of Ryde Council DCP 2014 Part 4.5 Macquarie Park Corridor, the new public roads identified on the submission as Road No. 1 and Road No. 3, shall be 20m wide, and Road No. 2 shall be 14.5m wide. The layout is to be in accordance with Part 4.5 of DCP 2014.

c. Alignment and Adjustment to Council infrastructures

The new public roads shall be constructed by the Developer in accordance with Council's public domain standards and specifications. The alignments of the new roads, Road No.1 and Road No.3, shall connect with the existing levels of Herring Road, Lyon Park Road and Epping Road. The existing

kerb and gutter associated with any necessary road pavement in Herring Road, Epping Road and Lyon Park Road shall be reconstructed. The applicant shall redesign the finished levels for all Council's infrastructures elements in order to ensure a smooth transition will be achieved.

d. Access from Epping Road

RMS New Access: The main vehicles access from Epping Road to the proposed development through Road No. 3 shall be designed in accordance with Road and Maritime Services (RMS) specifications and requirements.

e. Engineering Design Requirements

Full Design Engineering plans: The applicant shall provide Council's City Works & Infrastructure Directorate suitably prepared engineering plans providing details of the new roads including the smooth connections to existing infrastructure along Herring Road, Epping Road and Lyon Park Road. Council seeks that this be done for all stages of development.

f. Underground Utility and Services

Underground Utility Services: The relocation/adjustment of all public utility services affected by the proposed works shall be clearly indicated in proposed design. Written approval from the applicable Public Authority shall be submitted to Council along with the public domain plans submission. All of the requirements of the Public Authority shall be complied with.

Underground Utility Services: All telecommunication and utility services are to be placed underground along the new Roads.

g. Street Lighting

Streets lighting: Street lighting shall be provided along all new roads and pedestrian links in accordance with the City of Ryde Public Domain Technical Manual Section 6 – Macquarie Park Corridor. Reference shall also be made to Council's Street Lighting Schema for Macquarie Park and Design Guide for Council-owned Street Lighting

h. Shared Pathways/ bike path

Share Path: According to Section 3.3 Access Network – Cycleway Strategy of the City of Ryde Public Domain Technical Manual - Section 6 Macquarie Park Corridor, the bicycle network is to be implemented as off-street shared cycleway along Regional Bicycle Route in Epping Road and Shrimpton's Creek pathways. Cycleways are to be located, as per approved concept plan from Council's Traffic Transport and Development Department adjacent to the property, to minimise conflict with street trees, lighting,

signage and other public domain elements. The Local Bicycle Network is to be implemented as off-street shared cycleway in accordance with the Ryde Bicycle Strategy 2014 refer Figure 4.3.1 Cycleways.

i. Structural Details for Lyon Park Road Bridge and Barriers

The Applicant should submit structural design details from a Chartered qualified and experienced structural engineer for the proposed suspended bridge and any required balustrade/barriers. The following information is to be addressed by the consulting engineer:

- The minimum overall width of the bridge is to be 14 metres in order to accommodate two laneways (3.5mX2), a shared path on the northern side (4.0m), a footpath on the southern side (2.0m) and the required barriers on both edges (0.5m X2).
- To prevent structural damage from flooding, the proposed structure must be designed to withstand inundation and overland flows, including debris and buoyancy forces as appropriate.
- The provision of a suitable guardrail along both edges of the bridging structure that complies with Section 2.4.5.3 of AS2890.1-2004 and RMS requirements.

In this regard the Master Plan is to be amended to reflect the width of the bridge.

j. Public Trunk Drainage System

If the Department are of the mind to approve the application, the following conditions are recommended:

- Electronic copies of the input and output files of the RAFTS and DRAINS models shall be submitted to Council in a form compatible with Council's computer software along with the plan and a hard copy of the input and output data.
- Drainage system in Public Roads that will be handed over to the Council of City of Ryde must be designed in accordance with Council's Stormwater and Floodplain Management DCP 2014 Part 8, Stormwater and Floodplain Management Technical Manual, NSW Floodplain Management Manual, Australian Rainfall and Runoff 2016 and any other relevant Australian Guidelines.
- Longitudinal sections for proposed public drainage systems shall be drawn preferably at a scale of 1:100 or 1:200 horizontally and 1:10 or 1:20 vertically and shall show all crossing services, pipe size, class and type, pipe support type in accordance with AS 3725 or AS 2032 as appropriate, pipeline road chainages, pipeline grade, hydraulic grade line and any other information necessary for the construction of the

drainage system. Detailed design drawings shall be submitted to Council for approval.

- Scour protection works at the proposed outlets to the creek are to be designed and constructed in accordance with the principles found in the publication “Guidelines for Outlet Structures on Waterfront Land”, published by the NSW Office of Water, while having regard to the requirements of the publication “Managing Urban Stormwater – Soils and Construction (4th Edition, 2004). Detailed design drawings shall be submitted to Council for approval.
- The applicant shall comply with the recommendations within the stormwater and drainage assessment report prepared by ADW Johnson Pty Ltd dated 27 February 2018. A certificate from a suitably qualified Engineer shall be submitted to the Certifying Authority stating compliance with these recommendations prior to the issue of the Subdivision Certificate.

14. Overland flow path and flooding

The extension of Road No. 1 bridging of Shrimptons Creek will need to be mindful of flooding occurring along the Shrimptons Creek flowpath. It appears the concept design has nominated bridge soffit levels to be elevated above the PMF flowpath and this is appropriate, so as to maintain safe and effective public accessibility through the road network during extreme storm events, though will warrant detailed modelling at later stages and possibly require the abutment to incorporate culverts allowing the conveyance of flow through this area.

Additional issues are:

- There appears to be a discrepancy in Table 5.1 “Peak Flood Levels Results” within the Flood Impact Assessment for Ivanhoe Estate Master Plan. This will need to be amended.
- An electronic copy of the input and output files of the Tuflow model shall be submitted to Council in a form compatible with Council’s computer software along with the plan and a hard copy of the input and output data.
- It would appear that the proposed child care centre to be constructed as part of Stage 7 has been located within the area identified as H5. Section 5.3.1 “Emergency Planning and Evacuation Considerations” of the report does not provide an evacuation strategy for minors and elderly who may be entering and leaving the child care centre. The applicant shall consider all possible options of relocating the child care centre to an area that is not affected by H3, H4, H5, or H6 hazard classification thresholds. The flood maps provided within the report for various storm events in particular for peak flood depths, $v \cdot d$ product and hazard classifications for both pre and

post development conditions shall be amended to show the study area at a narrower scale in other words zoomed in to the targeted area.

- The applicant shall comply with the flood recommendations provided in the Flood Impact Statement prepared Rev 03 by BMT WBM dated December 2017. A certificate from a suitably qualified Engineer shall be submitted to the Certifying Authority stating compliance with these recommendations prior to the issue of the Subdivision Certificate.

Detailed design drawings and a report shall be submitted to Council for the proposed bridge structure to be built across Shrimptons Creek connecting the proposed development to Lyon Park Road, and to include, but not limited to, the following details:

- Provide the minimum height of the trafficable, including vehicle & pedestrian, areas of the bridge. From a stormwater perspective, the report shall clearly demonstrate the impact of the proposed bridge including but not limited to abutments, piers, wing walls etc.
- Maintain the height of the lowest structural element of the bridge at the 100 YR ARI flood level + 500mm freeboard as a minimum.
- The report shall assess the impact of embankment works on both north-western and north-eastern sides of the bridge on the proposed approach roads and the surrounding properties to ensure any adverse impact from ponding of water (if any) is alleviated.
- The report shall recommend treatments to minimise any adverse impact of the bridge on the riparian corridor of Shrimptons Creek.
- The submitted cross section for the proposed bridge shows the left side of the embankment is likely to partially block the floodway.
- Concept drawings, correspondence and approvals from utility authorities shall be provided to Council with regards to any utility services that will need to be installed in the proposed bridge.

15. Water Sensitive Urban Design Requirements

The WSUD assessment approach incorporating a number of stormwater quality treatment devices as detailed within the Stormwater and Drainage Assessment report Issue E dated 27/02/2018 prepared by ADW Johnson Pty Ltd is acceptable to City of Ryde, in principle. An electronic copy of the input and output files of the MUSIC model shall be submitted to Council in a form compatible with Council's computer software along with the plan and a hard copy of the input and output data.

Detailed design for the WSUD components including but not limited to batters, levels, underdrains, high flow bypass details, clean out points, filter media details, mulching details, material specification, planting details, inlet scour protection areas, maintenance access ramps and maintenance schedule(s) shall be prepared by a suitably qualified professional engineer experienced in Water Sensitive Urban Design in accordance with the approved plans, approval conditions, Council DCP 2014 and relevant Australian Standards and submitted to Council for approval prior to the issue of a Construction Certificate.

An Operational Management and Maintenance Report is required to be submitted to Council prior to the issue of a Subdivision Certificate to provide an outline of the proposed long term operational management and maintenance requirements of the stormwater quality management system on the site. A schedule or timetable for the proposed regular inspection and monitoring of the devices, maintenance techniques, reporting and record keeping requirements and associated rectification procedure shall be included in the report. Council recommends a visual inspection at least 2 times per year. Inspection should be made not less than 24 hours and not more than 72 hours after the cessation of rainfall if the total rainfall on any day exceeds 30mm.

16. Soil and Water Management measures

Any approval should be conditioned as follows:

- A Soil and Water Management Strategy should be provided with any subsequent application. This should address the potential flood impacts and an understanding of the potential flood heights and velocities for a range of flood events should be provided.

17. Infrastructure Contribution and Voluntary Planning Agreement

Council received a letter from Frasers Property on 26 February 2018 outlining Public Benefit items that could be the basis of a Voluntary Planning Agreement with Council. Those items included:

Within Development

- Construction and dedication to council of internal road network including bridge across Shrimpton's Creek with vehicular connection to Lyon Park Road;
- Multipurpose hall facility (i.e. basketball/futsal courts, gymnasium) within the proposed vertical high school with shared access arrangement in place with school provider;
- Community Centre;
- Public Swimming Pool (25m) and associated facilities with reduced cost for use by Ivanhoe Estate residents;
- Village green – open space area to remain in private ownership with public access easements in place; and

- Forest Park – open space area to remain in private ownership with public access easements place.

Beyond Development

- Upgrade/rehabilitation of Shrimpton's Creek Reserve area in line with dedication plan issued to Council 17 October 2017;
- Dedication of Shrimpton's Creek to Council;
- Upgrade and improve connection of Shared user path under Epping Road, focus on safety for pedestrians;
- Skate Park area under Shrimpton's Creek Bridge;
- ELS Hall Park Upgrade works; and
- Quandong + Wilga + Cottonwood Reserve Upgrade works

Council responded on 19 March 2018 stating its interest in the above items, however no formal offer has been forthcoming to date. Nevertheless Council officers met with Frasers on 26 April 2018. It is anticipated a Draft Offer will be made prior to the formalisation of the Master Plan or approval of the Concept Plan.

As such it is difficult to provide any further information on a potential Planning Agreement until such time a formal offer is made. Such an offer is expected to contain the nature and extent of the public benefits offered, timing of their delivery and evidenced with valuations/Quantity reports.

Once the formal offer is accepted by Council prior to the approval of the Concept Plan, Council understands that the details of the terms of such VPA will be resolved as part of the detailed design of the proposal during the Development Application stage when that is submitted to Council.

Council makes no agreement in advance of any determination for the project. Negotiations for any future VPA and works-in-kind will be in accordance with Council's policy and procedures for Voluntary Planning Agreements. It must be noted that works considered necessary and consequential for the functioning of the proposed development will not be supported within any forthcoming Voluntary Planning Agreement offer. Any determination made for the Concept Plan should ensure that all applicable contribution levies will be paid.

Council seeks that:

- a. The applicant make a formal offer (letter of offer – detailing the contribution items that will form part of the VPA);
- b. The Concept Approval be subject to a condition requiring the following:
 - i. Prior to the determination of the first detailed development application for the site pursuant to this Concept Plan, the Proponent shall provide written evidence to the Secretary that it has executed a Voluntary Planning Agreement with Council, with terms outlined in the offer letter and as agreed with Council to include the following items:

- Construction and dedication to council of internal road network including bridge across Shrimpton's Creek with vehicular connection to Lyon Park Road;
 - Multipurpose hall facility (i.e. basketball/futsal courts, gymnasium) within the proposed vertical high school with shared access arrangement in place with school provider;
 - Community Centre;
 - Public Swimming Pool (25m) and associated facilities with reduced cost for use by Ivanhoe Estate residents;
 - Village green – open space area to remain in private ownership with public access easements in place; and
 - Forest Park – open space area to remain in private ownership with public access easements place.
 - Upgrade/rehabilitation of Shrimpton's Creek Reserve area in line with dedication plan issued to Council 17 October 2017;
 - Dedication of Shrimpton's Creek to Council;
 - Upgrade and improve connection of Shared user path under Epping Road, focus on safety for pedestrians;
 - Skate Park area under Shrimpton's Creek Bridge;
 - ELS Hall Park Upgrade works; and
 - Quandong + Wilga + Cottonwood Reserve Upgrade works
 -
- ii. The VPA to include and outline the process for, and timing of, the payment of the Development Contribution and that part of the contribution may be made in the form of works in kind or dedication of land.

18. Waste Management Issues

Waste General

Evaluation of the Ivanhoe Estate Redevelopment has been made on the Concept Plans provided to Council on 17/4/18. As these are only concept plans most of the evaluation is based on the Waste Management Plan provided by Elephants Foot dated 23rd February 2018.

The development states that there will be approx 3,500 dwelling, however the Waste Management Plan shows 3,474 units across 14 buildings over 8 stages.

All domestic rated properties are to be serviced by Council's waste contractor and no private contractors are permitted. There will be no compaction of waste or recycling.

Waste Services

Dual chutes are to be installed in each core, one for waste and a separate one for recycling. These will be discharged into 1100L waste bins and 660L recycling bins.

The plans do not show the number of cores in each building, so unsure of the number of chutes.

The 1100L waste bins will be serviced 3 times per week and 660L recycling bins will be serviced twice per week. The bins will need to be transferred to a collection point adjacent to the loading bay in each building.

A bulky waste storage room is required in the basement of each building for the storage of unwanted household items awaiting the Household Cleanup Collection. The size of each bulky waste room should be based on the below sliding scale cubic metres.

The bulky waste room is required to be adjacent to the loading bay, or a separate area should be allocated for the building caretaker to take the items to the area prior to the booked collection.

Residents should have easy access to the bulky waste storage rooms.

All doorways to bin storage rooms need to be wide enough to allow the bins to fit through the openings including the door.

- 1100L Bins – width 1.4m, depth 1.1m, height 1.4m
- 660L Bins – width 1.3m, depth 0.8m, height 1.3m

Bin numbers and bulky waste storage areas are demonstrated in the following table.



Stage	Building	No of Units	No of 1100L Waste service 3 times per week	No of 660L recycle bins serviced 2 times per week	Bulky Waste Storage Area
Stage 1	A1	269	10	16	25 cubic m
	C1	467	17	28	45 cubic m
			27	45	
Stage 2	A2	109	4	7	10 cubic m
	C2	183	7	11	15 cubic m
	C3	165	6	10	15 cubic m
			17	28	
Stage 3	A3	244	9	15	25 cubic m
	D1	362	13	22	35 cubic m
			22	37	
Stage 4	D2	218	8	13	20 cubic m
Stage 5	D3	260	9	16	25 cubic m
Stage 6	D4	438	16	27	45 cubic m
Stage 7	B1	86	3	5	10 cubic m
	B3	156	6	9	15 cubic m
			9	15	
Stage 8	C4	415	15	25	40 cubic m
Stage A	B1 3/4	102	4	6	10 cubic m
TOTAL		3474	118	197	

Waste & Recycling Collection Vehicles and Access

The waste and recycling will be serviced within the building to ensure that the amenity of the building is not compromised and the residents are not affected by the noise.

The height clearance required will be 4.5m for an 11m long truck. The trucks will service the bins utilising a rear load vehicle. Swept paths for the above truck sizes are required to ensure that they can enter and exit the loading bay in a forward direction.

As trucks will be entering the building to service the bins, a Positive Covenant will be required for Onsite Waste Collection.

19. Clarification Required

a. Number of Dwellings

The applicant's consultant has varied the expected number of dwellings to be provided. Early pages indicate 3,600 dwellings, whereas other pages indicate 3,500.

b. Page 23 – Proposed Transport Targets

The applicant is required to provide a table comparing the proposed transport targets against Council's Integrated Transport Strategies.

c. Page 39 – Walking Distance to/from Macquarie University Train Station

It is indicated on Page 39 – Macquarie University Train Station is approx. 400m from the site. Distance between Ivanhoe Place at Herring Road is 400m from Macquarie University train station. However, the actual school facilities are approximately 720m from the nearest train station. TMAP should be amended to reflect the mean walking distances between the development and the nearest train station.

d. Page 80 – Forecast AM Peak Hour Mode Share

Table 17 appears to be inaccurate. Please re-check the values.
Table 17 does not identify which year forecast it relates to.

e. Construction Traffic Management Plan (CTMP)

Page 6 of CTMP states that the typical construction day will be 16 hours. Council's conditions generally approve construction activities between 7.00am and 7.00pm. The applicant is required to clarify how the construction traffic will be managed to coincide with these hours.

Page 9 of CTMP – A plan showing the allocation of parking spaces within the site boundary should be provided. At no time during any stage of works will construction workers be permitted to use on-street parking.

20. Environmental Sustainability

Council seeks that the following requirement be incorporated in any future detailed design of the project:

a. Green Star Accreditation

- Ensure that 6 Star Green Star will be registered and certified by the GBCA.

- Passive designs can minimise the need of these through provision of trees, double glazing and sustainable design and these user groups on site should be considered.
- Many of these can be achieved through thoughtful design and will ensure a resilient community is achieved once the proponent vacates the site in perpetuity. This is especially relevant where by social housing occupants will only have access to ceiling fans to ensure reduced costs. Ensuring adequate ventilation for heating and cooling should be design considerate. Similarly in winter social housing residents are to be provided with 'radiant heaters' – sufficient insulation, draft proofing mechanisms, curtains and flooring to maximise thermal comfort and reduce reliance on appliance based heating/ cooling. This will reduce GHG production from the site.
- Pg; 8 "*As part of Aspire's Sustainability Benchmark 1 we will 'look' to incorporate the following initiatives;*" this statement is too broad with no firm commitment to undertake these however refers to these sustainability outcomes in other EIS documentation. Many of the Greenstar accreditation, sustainability report and even EIS are conflicting in what is proposed and what is aimed for. This provides minimal clarity in what will be achieved with many of the Greenstar certification outcomes achieved for a financial/ economic benefit rather than long term community sustainability and resilience considering the environment. The documents should be consistent in outcomes.

b. Building envelope/ Footprint:

Council requests that the applicant consider potentially any solar deficiencies impacting on the neighbouring creek corridor and negative impacts on flora from the proposed building footprint adjoining the creek. This should be confirmed via a flora and fauna assessment.

c. Solar Systems:

There are no details provided anywhere on the provision of a 1.5mWh Solar system on 50% of rooftops in the plans but mentioned throughout various documents. This will contribute to site GHG reductions.

d. Transport:

Council seeks that bike and bike share parking provisions to be included on the site. Also the completion of a TMAP, Green Travel Plan to demonstrate commitment of reduction in private car use and options for occupants on the site to utilise other transportation means and submission to Council for a Travel Plan as per Council's requirements for new developments submitted as part of the development Application.

e. Water:

- Seek landscaping design that promotes permeable surface inclusion in passive areas over impervious, hard surface to maximise water capture on site and minimise urban heat impacts for the community on site;

- ii. Utilise on site real-time data monitoring to minimise water and energy waste;
- iii. Blackwater recycling system for the site. Given the increase in sewer volume and footprint of the new development and occupancy level expected.
- iv. Refer to Sydney Water's Best practice guidelines for cooling towers in commercial buildings (where relevant),
- v. Consider greywater reuse for toilet flushing;
- vi. Include BMS Monitoring and submetering for all major equipment and achieve at a minimum the following WELS ratings (in accordance with NSW Government Resource Efficiency Policy, July 2014);
- vii. Automatic Pool Cover system for pool to reduce energy;
- viii. Backwash Reuse System and UV Treatment system on site (where suitable and volume dependant);
- ix. Under Section 9 Ecologically Sustainable Development (ESD) for "The Residential Flat Building/Retail Development/Seniors Living and High School Components of the development to comply with Ryde's Energy Smart Water Wise DCP requirements"

f. Energy use on site:

Offsetting energy consumption from the site should not be prioritised via purchasing of carbon credits. Under the Green Star Communities Scorecard there is no provision noted by Aspire/Frasers to obtain any energy efficiency from; infrastructure lighting, renewable energy production or heating and cooling. This should be explored before carbon credit purchase.

g. Materials:

- Comply with Green Star recommendations for recycling and reuse of materials on site to minimise waste from demolition of the existing site.
- Consider production and life cycle of materials procured and used on the site.
- Use permeable materials in passive locations towards cooling the site against the impacts of urban heat island from paved and impermeable surfaces.

21. Affordable Housing

The Environmental Impact Statement on page 75 and 81 identified that the affordable housing will be used for a minimum of 10 years under the management of a community housing provider. While it is acknowledged that this is consistent with SEPP ARH, Council had the understanding that the affordable housing would be provided in perpetuity. Clarification is sought in respect of this aspect.

END OF SUBMISSION



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City of Ryde Urban Design Guide

Ivanhoe Estate Redevelopment

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1.0 INTRODUCTION

1.1 Purpose

This document has been prepared to provide a consistent urban design framework to guide the redevelopment of the Ivanhoe Estate. It provides an outline of the desired open space, community facilities, transport infrastructure, built form, and private and public domain treatment desired to support growth.

1.2 Land to which these Guidelines Apply

These Guidelines apply to the Ivanhoe Estate land as identified (outlined in red) in Figure 1.2.1.

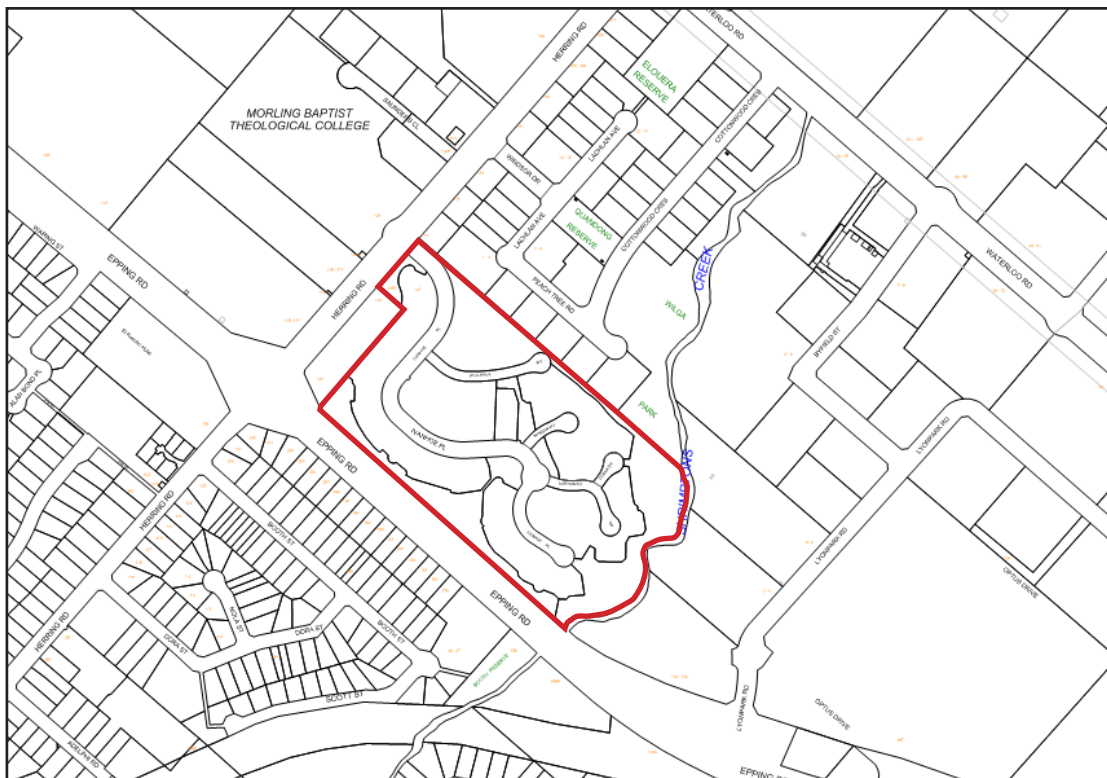


Figure 1.2.1 Subject site - Ivanhoe Estate land, Macquarie Park

1.3 Objectives

These Guidelines aim to achieve the following objectives:

- Ensure that the future development within the Ivanhoe Estate will result in the revitalisation of the site and its surrounds by establishing an urban design framework that promotes excellence in community-based placemaking and architectural and urban design;
- Promote a variation in built form characteristics that responds to the site's unique landscape attributes;
- Protect the existing natural characteristics of the site by promoting the revitalisation of Shrimptons Creek and the protection of significant trees along Epping Road;
- Create an inclusive and vibrant integrated community by providing well-designed places that encourage social gatherings, social enterprises, and provide opportunities for small businesses;
- Guide the delivery of integrated and interconnected community facilities and public open spaces that cater for all age groups;
- Promote a legible and integrated urban structure focused on providing access throughout the site and connecting public spaces and other areas of interest; and
- Foster the delivery of social infrastructure and community facilities that address the social needs of future residents and the City.

1.4 Relationship to Planning Controls and Other Documents

These Guidelines should be read in conjunction with the Ryde Local Environmental Plan (LEP) 2014, Part 4.5 Macquarie Park Corridor Development Control Plan (DCP) 2014, and other relevant State Environmental Planning Policies (SEPPs).

If there is any inconsistency between these draft Guidelines and existing SEPPs, LEPs, or adopted DCPs, the SEPP, LEP, and/or DCP will prevail.

2.0 CHARACTER AND IDENTITY

Existing Character

The Ivanhoe Estate site is characterised by its unique natural landscape character being bordered by Shrimptons Creek to the east and Epping Road with significant mature trees to the south.

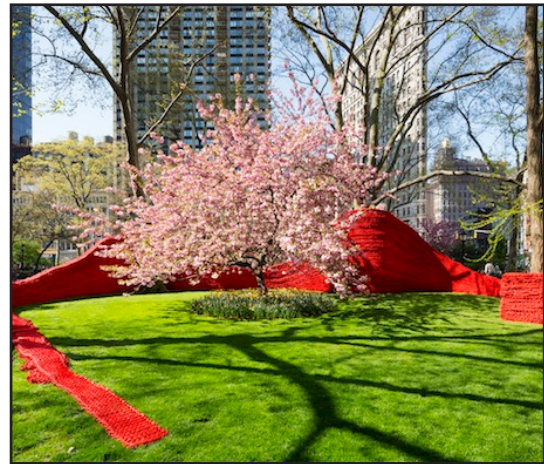
The Ivanhoe Estate is an integral asset in the NSW Social Housing system, which has served as an affordable place of refuge and safety since its establishment in 1990.

Desired Future Character

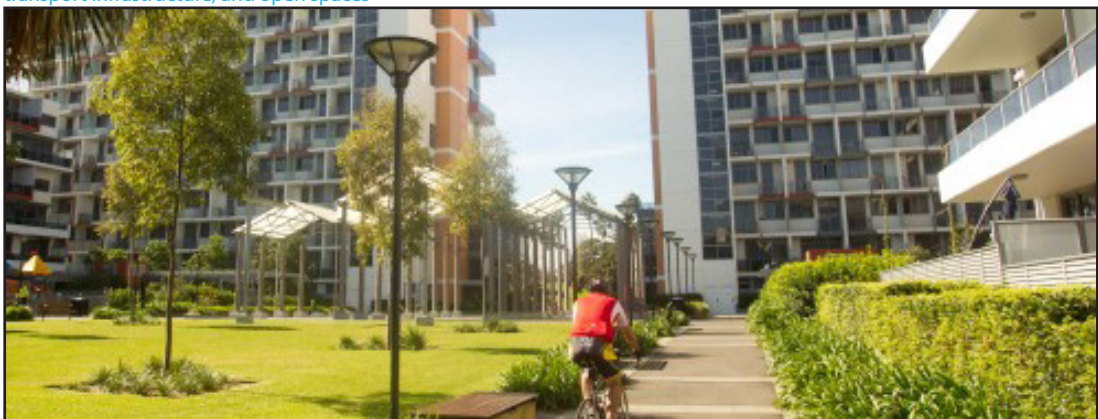
The Ivanhoe Estate is envisioned to be a vibrant and inclusive integrated community that defines a new approach to the delivery of social housing supported by excellent community-based placemaking and architectural and urban design. The desired future character for the redevelopment of the site responds to the unique context of the site while maintaining the Estate's contribution to the City's social fabric through the seamless integration of private, affordable, and social housing across the development with access to opportunities for small business, high-quality community facilities and support social infrastructure, transport infrastructure, and interconnected active and passive recreation areas that encourage social gathering and cohesion.



****An inclusive community that seamlessly integrates private, affordable, and social housing supported by world class placemaking and high-quality community facilities, transport infrastructure, and open spaces**



****Art that are seamlessly incorporated into the public and private domains**



****Balance between high-density living and residential amenity**

3.0 DESIGN PRINCIPLES

Promoting a balance between high-density living and residential amenity by promoting excellence in building design and the public domain and increasing opportunities for social interaction and cohesion for the new community is central to the desired outcomes for the redevelopment of the Ivanhoe Estate.

The following key principles guide the design and development of the site, including the delivery of adequate social infrastructure, open space, and transport infrastructure:

Liveability

- Create an urban environment that provide a desirable setting and backdrop to live and work
- Encourage social interaction to establish a community that is cohesive, vibrant, and inclusive
- Provide a range of housing types, sizes, and prices (it is encouraged to exceed the targets indicated in the *City of Ryde Affordable Housing Policy 2016-2031*)
- Provide opportunities for small business to support an integrated community and promote place activation and safety
- Maintain a connection to the rich history of the social housing estate through public art and social enterprises and initiatives to create a sense of community for all residents

Urban Structure and Public Domain

- Provide unified streetscapes that are high-quality, durable, timeless in design, and that complements the landscape heritage and surrounding public domain elements within the locality
- Create public artworks that provide visual interest, aid legibility, and define a sense of place and identity
- Integrate tree and landscape treatments to reduce the extent of hard surfaces and ensure that all streets within the development site have adequate shade and amenity
- Ensure a consistent public domain treatment for the whole development site and overcome level changes to promote a desirable urban environment for future residents and workers
- Enhance and expand the public domain to provide safe, attractive, and well-lit pathways that connect public open spaces that support passive and active recreation and active transport

Open Space

- Ensure the provision of adequate public open space that cater to all age groups
- Co-locate and integrate public active and passive recreation areas with community facilities to enable activation
- Facilitate green corridors and linkages that link public and private open spaces
- Deliver public open spaces and public domain elements commensurate with the level of development (desirably early in the timeline of the development) and maintain linkages to existing open space areas throughout the development of the site

Social Infrastructure

- Ensure the provision of adequate and multi-purpose community facilities that cater to the needs of all future residents
- Co-locate and integrate community facilities with public active and passive recreation areas to enable formal and informal opportunities for social interaction
- Facilitate the delivery of adequate social infrastructure and community facilities that is commensurate with the development of the site (desirably early in the timeline of the development) to address the needs of future residents and the greater Ryde community

3.0 DESIGN PRINCIPLES (continuation)

Building Design

- Ensure a built form that is sensitive to the unique characteristics of the site and its surrounding context
- Promote architecture that respects human scale at the street level and public domain interface
- Create architectural interest through the built form by providing building articulation and utilising a variety of durable, timeless, and aesthetically interesting materials
- Encourage innovative, creative, and high-quality building design that positively contributes to the public domain and enables a strong definition of streets and public places
- Achieve a high-level of sustainable development baseline targets for buildings within the development site

Active Transport and Connectivity

- Promote permeability and pedestrian connectivity by providing through site links, pedestrian ways, and shared user paths that link public open spaces, community facilities, and other areas of interest within the site and its surrounding locality
- Develop a safe and pleasant streetscape that enables equitable access for people of all ages and abilities (refer to the *Macquarie Park Public Domain Technical Manual*)
- Deliver a legible street grid network to ensure that pedestrian, cycle, and vehicular conflicts are minimised and to reduce car dependency
- Provide amenities such as seats, shelter, and bicycle racks to support pedestrian activity and bicycle use
- Encourage pedestrian friendly street design (design of footpaths, buildings close to street; tree-lined streets; on street parking; underground parking; hidden garage entries, slow speed streets)

4.0 DESIGN GUIDELINES

4.1 Urban Structure and Public Domain

Design Guidance

- Revitalise Shrimptons Creek as a safe and activated place for recreation and social gathering. This could be achieved by potentially co-locating public open spaces, community facilities, and neighbourhood shops for social enterprises around the Shrimptons Creek Parklands.
- Incorporate a variety of neighbourhood shops (e.g. cafes, takeaway shops, small restaurants, etc.) towards public open spaces to facilitate its activation and contribute to the creation of an active and vibrant community.
- Promote housing choice and diversity by providing a range of housing typologies. The development should explore the provision of opportunities for small businesses and have a unit mix that gives consideration to the demographic trend of the area.



****Revitalise Shrimptons Creek as an activated place for recreation and social gathering**



****Integration and co-location of community facilities, open space, and neighbourhood shops for social enterprises**

4.1 Urban Structure and Public Domain (continuation)

Design Guidance

- Provide tree planting and landscaping to complement existing character of surrounding area and maintain the site's landscape character by protecting the significant mature trees along Epping Road. Refer to *Part 3.4 Access Network – Street Trees* and *Part 4.0 Open Space Network of the Macquarie Park Public Domain Technical Manual*.
- Expand the public domain by providing footpath widths and additional public open space and connections.
- Deliver a consistent public domain treatment (paving, street lighting, street tree planting, etc.) in accordance with the provisions of the *Macquarie Park Public Domain Technical Manual*.
- Encourage public art that is seamlessly incorporated with the public domain and open space to create a distinct identity for the development site and acknowledge Ivanhoe's history and the site's landscape heritage. Refer to *Part 5.0 Art in Public Spaces of the Macquarie Park Public Domain Technical Manual*.

Note: All public domain works (including the provision of new streets, open space, and community facilities) should be delivered commensurate to the level of development on the site (desirably early in the project timeline).



**Mature Trees along Epping Road



**Activated public spaces

4.2 Public Open Space

Design Guidance

- Increase the provision of public open space from approximately 11,000 square metres to a minimum of approximately 18,500 square metres, which should include, but is not limited to the following:
 - Approximately 6,300 square metres for the natural corridor, which includes the Shrimptons Creek Core Riparian Corridor (20 metres from the side of the creek) and a natural buffer (approximately 10 metres) for the protection of the riparian corridor and to reduce nutrient loads entering the creek;
 - Approximately 4,500 square metres for the extension of the Shrimptons Creek Park (Lot 9 DP 861433), based on the quantum recommended in the *Finalisation Report for the Macquarie University Station Urban Activation Precinct*;
 - Informal play areas and fitness stations (two approximately 100-square metre areas); and
 - Retention of the protected mature trees (Sydney Turpentine Ironbark Forest) along Epping Road (approximately 7,500 square metres).
- Revitalise Shrimptons Creek by delivering Shrimptons Creek Park (refer to Figure 4.4.2.2 for indicative measurements) and restoring the Shrimptons Creek Core Riparian Corridor. The Shrimptons Creek Park is envisioned to be a linear park for informal active and passive recreation designed in consultation with Council's Open Space and Development section and complement the Shrimptons Creek concept design prepared by Council.
- Provide adequate lighting and upgrade the existing Epping Road pedestrian underpass.
- Expand and activate the Shrimptons Creek Parklands by co-locating public meeting spaces, social infrastructure, active and passive recreation areas to promote safety and enable social gatherings, high-pedestrian activity, and interface with Shrimptons Creek.
- Provide a range of public open spaces with adequate furnishings (preferably with wireless internet access) that cater to all age groups (e.g. passive and active open spaces such as basketball courts, outdoor youth spaces, etc.).
- Increase the provision for a dedicated outdoor youth recreation space to address the deficiency identified in the *City of Ryde Integrated Open Space Plan 2012*. This could be achieved through the delivery of an outdoor youth recreation space and an integrated skate facility designed in consultation with Council's Open Space and Development Section.

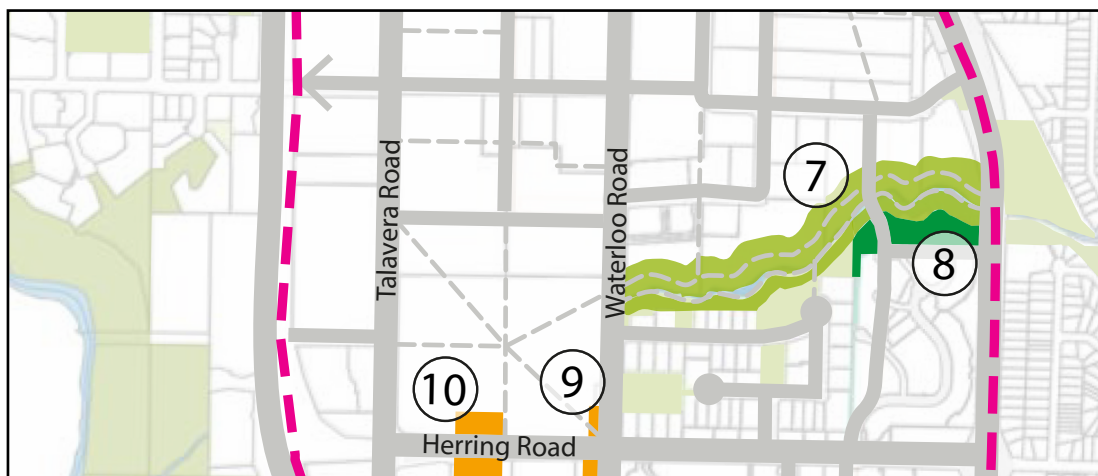


Figure 4.2.1 Shrimptons Creek Core Riparian Corridor (7) and Shrimptons Creek Park (8).

Note: Reference should be made to *Part 4.0 Open Space Network of the Macquarie Park Public Domain Technical Manual*.

4.3 Social Infrastructure

Design Guidance

- Co-locate community facilities with public open spaces to support place activation (e.g. community facilities may be co-located near the Shrimptons Creek parklands to promote safety and activation of the area).
- Provide commercial spaces for cafes and/or neighbourhood shops around public open spaces that could be utilised for social enterprises to provide local employment for residents and encourage community involvement and social responsibility.
- Provide a multi-purpose community space (up to 500 square metres) preferably with wireless internet access and adequate furnishings, which include, but are not limited to:
 - community hall
 - meeting and office spaces
- Explore the continuation of child care facilities within the development site
- Consider the provision of transitional housing as part of the overall strategy in delivering the social housing component of the development through flexible design and floor plan layouts.



****Revitalise Shrimptons Creek by potentially locating neighbourhood shops for social enterprises to encourage place activation, social cohesion and interaction, and promote safety.**

4.4 Built Form

Design Guidance

4.4.1 Site Planning

- Maximise direct solar access to adjoining properties.
- Locate height to take advantage of views and open space proximity.
- Create low scale definition at street frontage and orientate taller components at street corners to define street edge and address the public domain.
- Orientate taller elements north-south and manage the height of east-west buildings to allow to minimise overshadowing.
- For development near Shrimptons Creek, orientate building entries towards the creek to encourage activation and passive surveillance.
- Building separations are to be consistent with *Part 2F of the Apartment Design Guide* to ensure residential amenity including natural ventilation, solar access, and visual and acoustic privacy and to provide suitable areas for communal open spaces, deep soil zones, and landscaping.
- Provide variation in built form and heights to ensure appropriate interface with adjacent development sites (e.g. Cottonwood Crescent/Peachtree Road and 137-143 Herring Road)

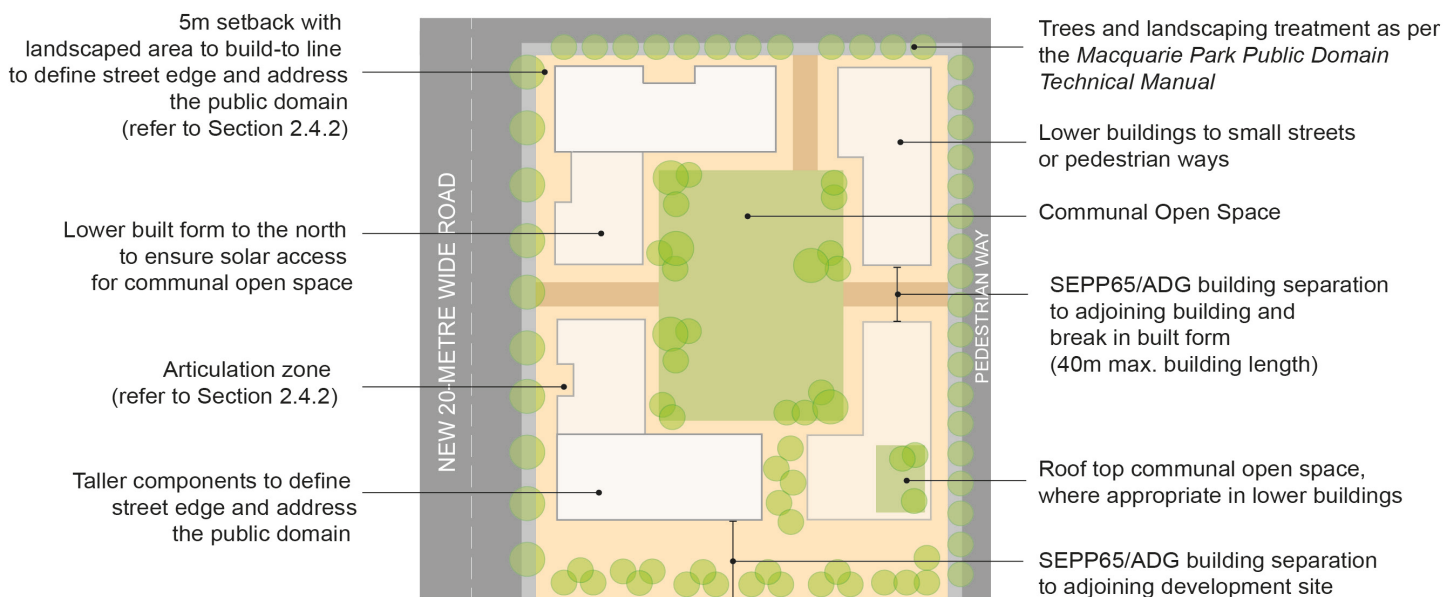


Figure 4.4.1.1 Indicative Typical Block Layout

4.4 Built Form (continuation)

Design Guidance

4.4.2 Building Design

- Use changes in scale and built form to create architectural interest and diversity and enhance relationship with the public domain.
- Façade treatment should create variety and interest while contributing to the continuity of the streetscape. Fenestration and entries are to be integrated in the façade design, if located on the street frontage of the development.
- Create slender building forms by ensuring that the maximum building length is ideally 40 metres and that the maximum building depths are consistent with Part 2E of the *Apartment Design Guide*.
- Articulate building facades in plan and elevation to reduce the appearance of building bulk at the street level. The maximum wall length without articulation should be 25 metres to avoid unrelieved walls that are susceptible to vandalism and to create visual interest in the streetscape.
- Define street edge through the built form by addressing the public domain at street corners and perimeter of blocks.
- Driveways should not be located along the primary street frontage and should not constitute more than 20 per cent (maximum 8 metres) of the secondary street frontage.
- Avoid blank facades and car parking vents that are visible from the street level, particularly on primary street frontage.
- Where possible, provide landscaped communal open space at the rooftop level of lower buildings to improve amenity and contribute towards the provision of useable spaces for residents.

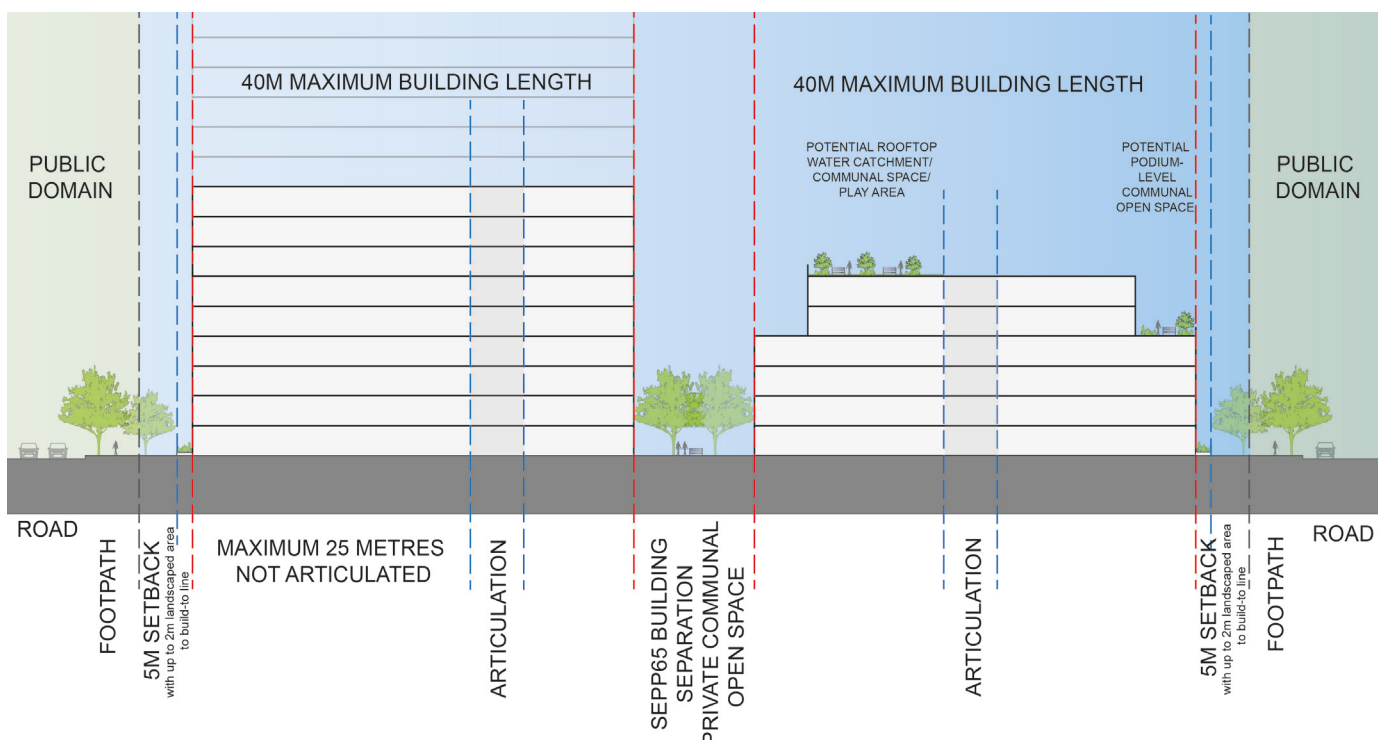


Figure 4.4.2.1 Section Illustration - Building Design Guidelines

4.4 Built Form (continuation)

Design Guidance

4.4.2 Building Design (continuation)

- Establish a built form edge to Shrimptons Creek Parklands to provide opportunities for outdoor dining, public domain treatment, and ensure that the public open space has adequate solar access between 10am to 3pm mid-winter. This could be achieved by establishing a transition zone with lower buildings (10 metres) that could potentially accommodate community facilities and/or social enterprises and contribute to the activation of the public domain.
- Built form above the transition zone is to be setback to minimise overshadowing impacts to the public domain and public open space.

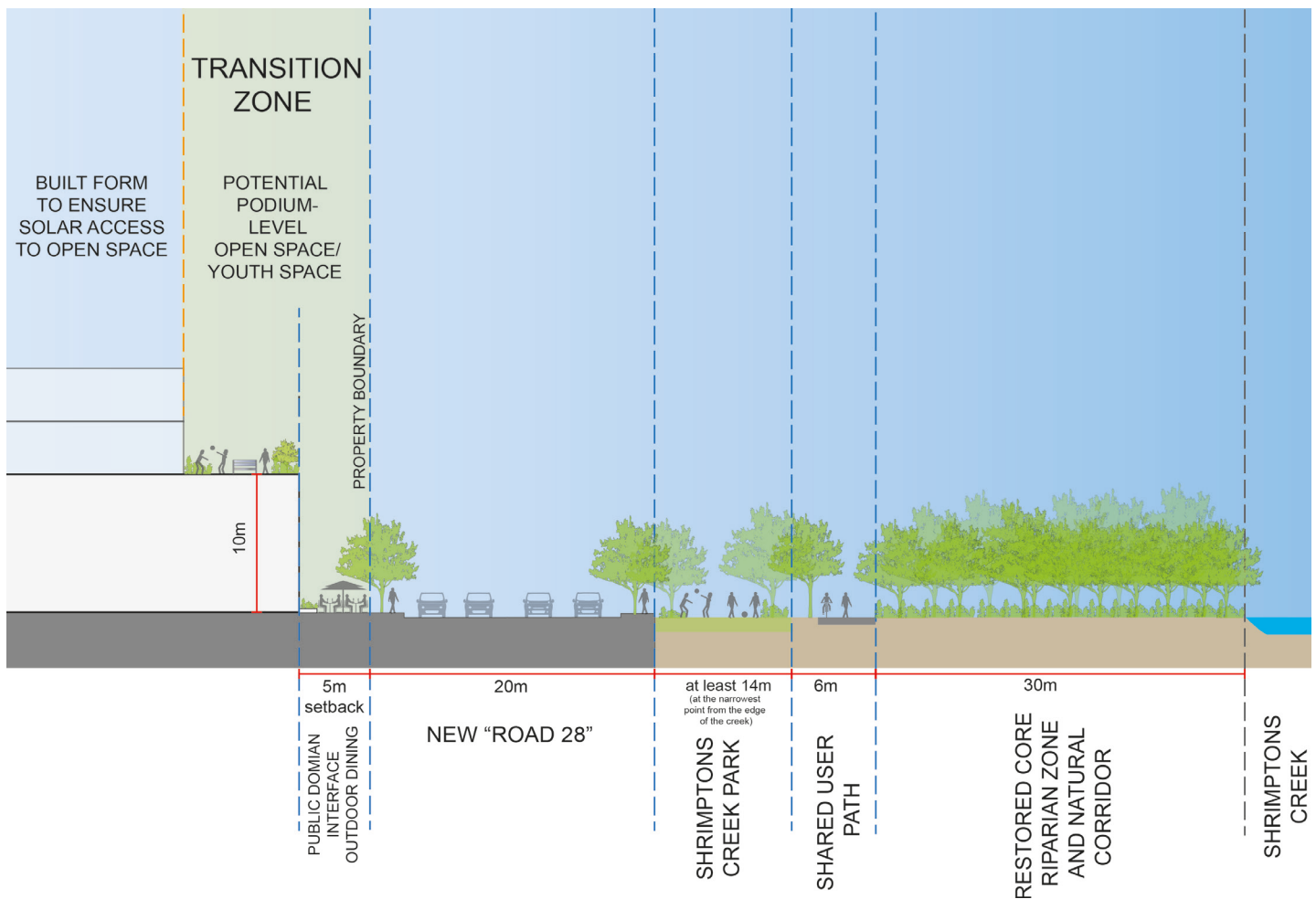


Figure 4.4.2.2 Indicative Section - Shrimptons Creek Interface

4.4 Built Form (continuation)

Design Guidance

4.4.2 Building Design (continuation)

- Establish a 5-metre street frontage setback to allow for street planting and where required, a widened footpath (minimum 2.5-metre wide footpath).
- Establish a consistent building façade line with landscape treatment to the street frontage (up to 2m within the front setback).
- Provide tree planting (within 1.5 metres of the front setback) to establish a green tree-lined streetscape. Refer to the Tree Selection Palette in *Part 3.4 Access Network – Street Trees of the Macquarie Park Public Domain Manual*.

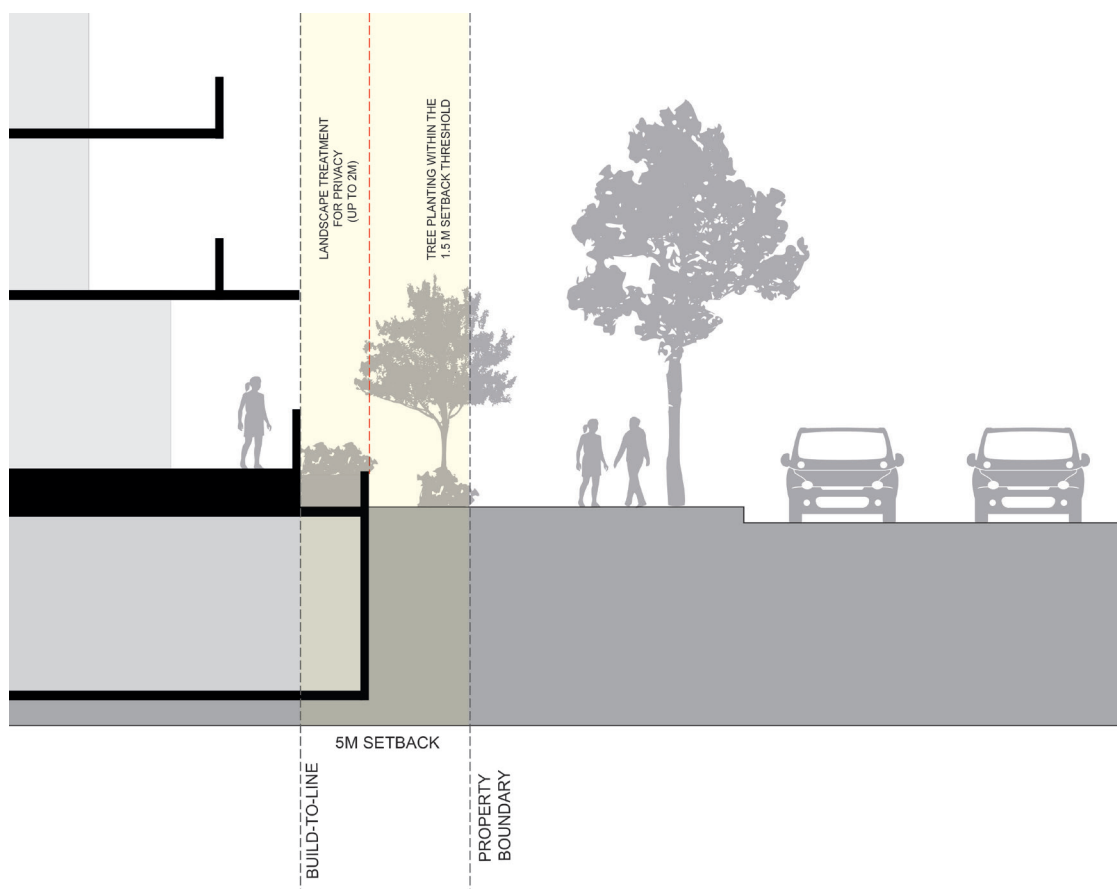


Figure 4.4.2.3 Build-to Line and Front Setback Treatment

4.4.3 Safer by Design

- Provide primary street addresses that are oriented to the public domain to encourage street activation and provide passive surveillance to the public domain and open spaces.
- Building designs should avoid elements that provide opportunities for concealment and that create natural ladders to minimise the risk of trespassing and unwanted entry.
- Provide adequate street lighting and clear sightlines in the public domain (refer to the *Macquarie Park Public Domain Technical Manual*).

4.4.4 Water Sensitive Urban Design

- Incorporate Water Sensitive Urban Design principles, in accordance with Part 8.2 of the *Ryde Development Control Plan 2014* and the City of Ryde's *Water Sensitive Urban Design Guidelines*.

4.5 Transport

Design Guidance

- Ensure permeability by providing new public roads and pedestrian connections to connect the development site to its surrounds and improve accessibility within the site, in accordance with the Part 4.5 Macquarie Park Corridor of the RDCP and *Public Domain Technical Manual* (refer to Figure 4.5.1). This will involve the delivery of:
 - a. “Road 3” (20-metre wide road), which includes a vehicular bridge over Shrimptons Creek to link Herring Road and Lyonpark Road (the intersection of Herring Road and Road 28 is to be upgraded to a signalised intersection);
 - b. “Road 28” (20-metre wide road) to link Road 3 to Epping Road; and
 - c. Pedestrian/bicycle connection along Shrimptons Creek.

Note: New Roads “3” and “28” are to be dedicated to Council upon completion through a Planning Agreement under Section 93F of the EP&A Act and in accordance with Part 4.5 Macquarie Park of the RDCP and *Part 3.0 Access Network of the Macquarie Park Public Domain Technical Manual*.

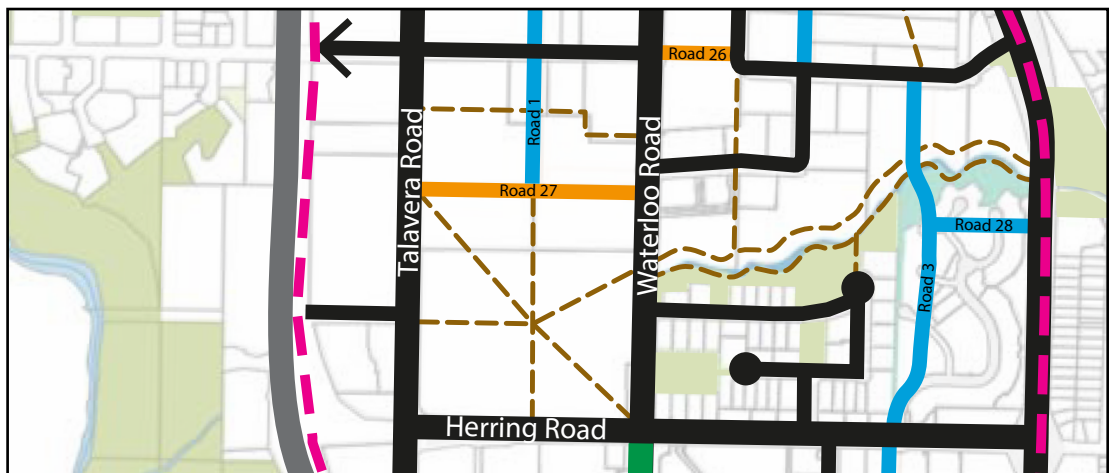


Figure 4.5.1 Excerpt from the Macquarie Park Public Domain Technical Manual showing New 20-metre wide roads (blue) within the development site and pedestrian ways (dashed brown) along Shrimptons Creek

- Variations to the Access Structure Plan must demonstrate adequate levels of pedestrian amenity and accessibility and must be done in consultation with City of Ryde and Roads and Maritime Services. Please refer to Section 8.1 of the Macquarie Park DCP.

4.5 Transport (continuation)

Design Guidance

- Address existing traffic issues and contribute towards alleviating existing infrastructure deficiencies (e.g upgrade the Herring Road/"Road 3" intersection to a signalised intersection, contribute towards the upgrade and installation of traffic lights at the Epping Road/Lyonpark Road intersection, etc.);
- Provide a legible access network with sufficient pedestrian ways, bicycle paths, and shared user paths to promote active transport. This will involve:
 - a. The completion of the following shared user path connections to ensure the seamless integration of new connections to Council's Shared User Path Network:
 - Shared user path from the subject site to the points marked 'A' in Figure 4.5.2 below
 - Continuation of the shared user path from Shrimptons Creek along the Epping Road property boundary of the subject site (refer to Figure 4.5.2 below)
 - Link the new shared user path through the subject site to the existing shared user path adjoining Lyonpark Road (refer to Figure 4.5.2 below);
 - b. As indicated in Part 4.2 of this document, upgrade existing Epping Road pedestrian underpass and provide adequate lighting to improve access from Shrimptons Creek to Booth Reserve;
 - c. The delivery of the shared bicycle and pedestrian pathway along Shrimptons Creek in accordance with the provisions of Part 4.2.1 of the Macquarie Park DCP and the *Public Domain Technical Manual*.
- A Traffic Needs Assessment, which may involve a mesoscopic traffic model for the Macquarie Park Precinct, should be undertaken to confirm any gaps and address the deficiencies in the transport network within the locality and on a regional scale. The assessment should also adopt the recommendations identified in this document as part of the future base case.

Note: The scope of the Traffic Needs Assessment is subject to RMS and Council's satisfaction (refer to Appendix 1).

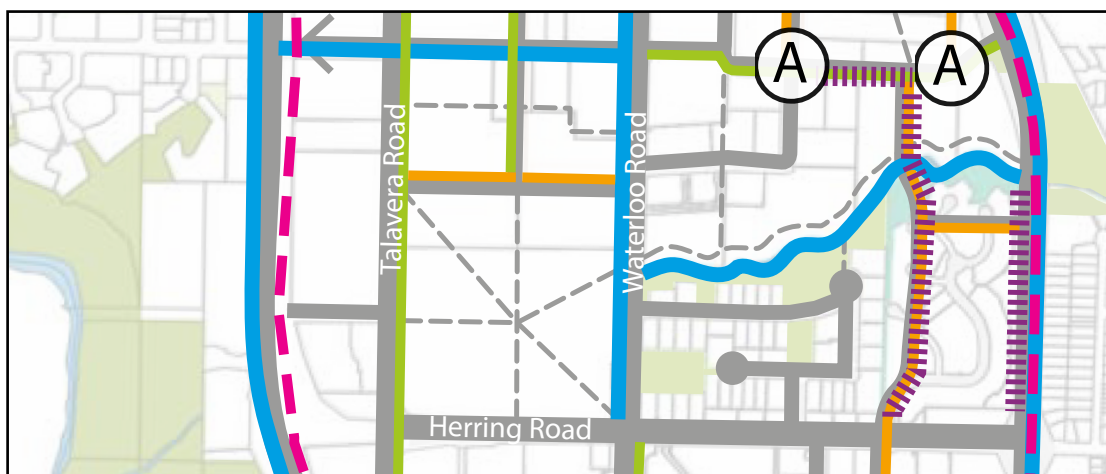


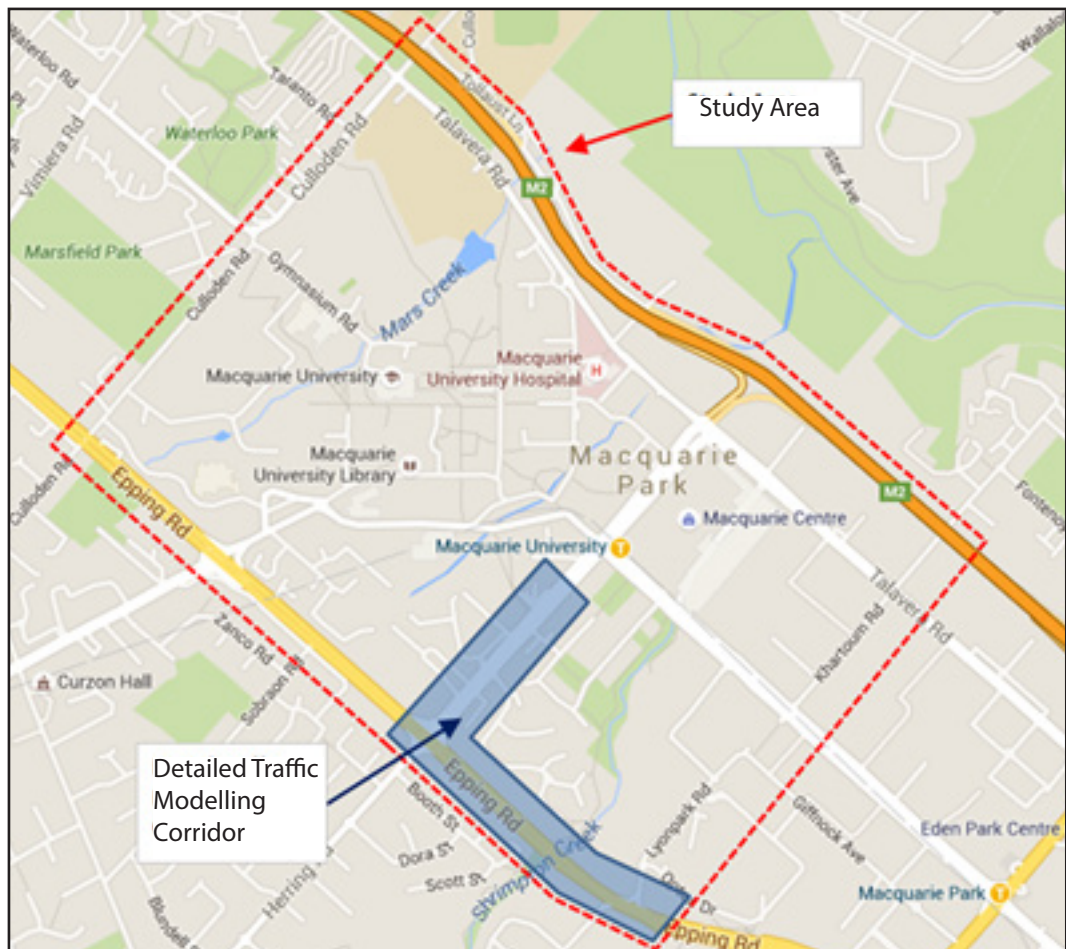
Figure 4.5.2 Excerpt from the Macquarie Park Public Domain Technical Manual showing Regional (blue) and Local Bicycle links (orange) within the subject site with additional recommended shared user path connections (dashed purple line)

APPENDIX 1: Indicative Scope for Transport Needs Assessment

Indicative draft Terms of Reference and Scope

1. Determine study area boundary. It is recommended the assessment be bounded by Khartoum Road to the east, the M2 to the north, Culloden Road to the west and Epping Road to the south. This area would be for assessing public transport, pedestrian and cycling accessibility.

This area shown in blue (see below) would be for calculation of traffic generation and distribution for the various scenarios to input volumes into the detail traffic corridor models.



2. Develop a corridor model which includes traffic and buses and calibrate/validate it to current conditions. Council's preferred model is using Linsig to obtain optimum signal timings and using SIDRA for intersection assessment.
3. Develop and quantify strategies to minimise private vehicle usage including parking provision strategies, car share strategies, green travel plans etc. depending on the nature of the development.
4. Determine the development's modal split, trip generation and traffic distribution. This should be based on strategic models (i.e. PTPM, Public Transport Project Model), which can be obtained from TfNSW.

APPENDIX 1: Indicative Scope for Transport Needs Assessment

Indicative draft Terms of Reference and Scope (continuation)

- Determine (and model) the 2031 base case peak period traffic and transport conditions under the following scenarios. There is likely to be a need to develop a broader model/calculations to estimate future Herring Road corridor demands under these scenarios as there will be influences outside the corridor that affect corridor volumes:

Future Base Case Scenario ID	Demand				Infrastructure	
	Macquarie Park developed to likely LEP take-up*	Macquarie Centre expansion	Macquarie University student targets realisation	Herring Road UAP realisation	Macquarie Interchange Underground Bus Station	Waterloo Road Bus Boulevard
1. Demand and Infrastructure Maximum	Yes	Yes	Yes	Yes	Yes	Yes
2. Demand Minimum	Yes	No	No	No	Yes	Yes
3. Infrastructure Minimum	Yes	Yes	Yes	Yes	No	No
4. Infrastructure and Demand Minimum	Yes	No	No	No	No	No

* to be advised by Council

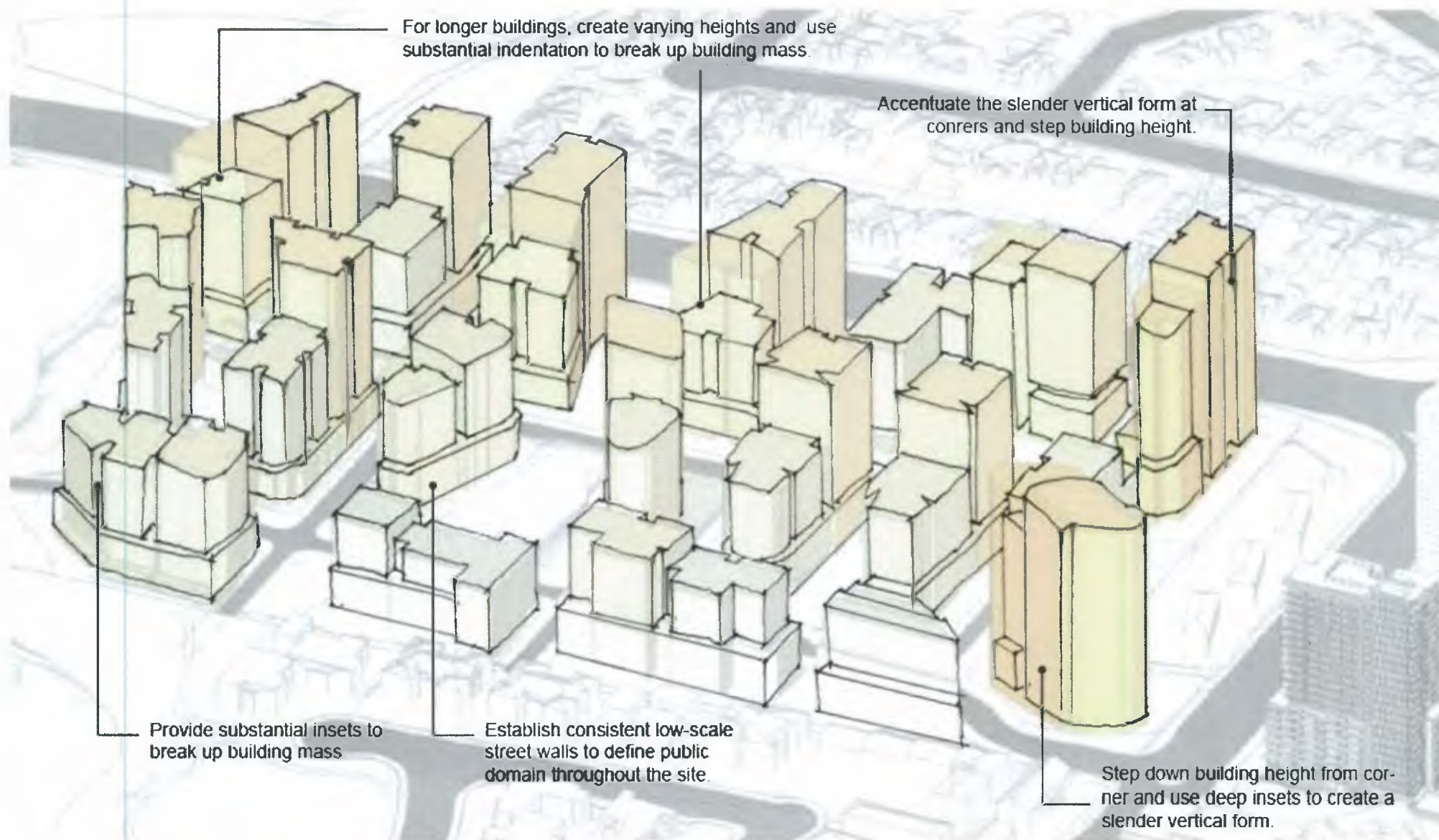
Note: It is expected as a minimum, Future Base Case Scenarios 1 and 3 (i.e. Demand and Infrastructure Maximum and Infrastructure Minimum) should be tested. Further discussion with Council would be required to determine the future baseline scenario(s).

- Model/assess the development's traffic impact on top of each of the above base case scenarios and determine what traffic upgrades are required in the corridor for each scenario. Consider the potential for local road links to mitigate impacts on the major road system.
- In particular, identify controlled intersection upgrade needs for the "Road 28"/Epping Road intersection.
- Run a "year of opening" model scenario to determine immediate impacts and needs.
- Develop a traffic infrastructure upgrade, including policy and service improvement strategies for each scenario and highlight differences, trigger points and responsibilities in close consultation with the project reference group. This will also need to take into consideration the Top 10 Transport Infrastructure Priority Projects as prepared by Bitzios as part of Council's Integrated Transport Strategy. In particular, the applicant will need to include the at grade signalisation of the Lyonpark Road/Epping Road intersection and the Herring Road/Epping Road grade separation.
- Identify the potential for bus routes and stops through the development in consultation with TfNSW, should local road connections be provided. Also the impact of the proposed Bus Boulevard along Waterloo Road shall be taken into consideration in regards to modal split, trip generation and traffic distribution.
- Determine a pedestrian management strategy to facilitate the movement of pedestrians to/from the Macquarie Interchange, Macquarie Centre, and Macquarie University.
- Develop a cycling management strategy to facilitate connections to Herring Road, Epping Road, and Lyonpark Road and to provide on-site bicycle storage facilities.
- Prepare a detailed Traffic and Transport Impact Assessment report detailing the above and articulating exactly what the development will do to manage its traffic and transport impacts and when (i.e. in an implementation schedule).



City of Ryde
Civic Centre
1 Devlin Street
Ryde NSW 2112

www.ryde.nsw.gov.au



Recommended built form changes (Adapted from built form massing by Bates Smart)