SUBMISSION ON RIVERSTONE EAST DRAFT PRECINCT PLAN

67 TALLAWONG ROAD, ROUSE HILL
PREPARED BY URBAN CITY PLANNING
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INTRODUCTION

This submission is made on behalf of the owner of 67 Tallawong Road, Rouse Hill (subject land) in response to the Riverstone East Draft Precinct Plan, located within the North West Growth Centre.

This submission and supporting studies examine in detail the acoustic planning, open space framework and stormwater management proposed in the exhibition material supporting the Indicative Layout Plan. This submission provides alternative watercourse realignments and demonstrates that despite the proposed zoning the subject land is highly suitable for medium density residential development.

SUBMISSION OBJECTIVES

This submission seeks to:

- Assess the need for an ‘acoustic buffer’ from the North West Rail Link Rapid Transit Facility (RTRF).
- Examine the proposed stormwater management specifically the construction of an engineered watercourse that traverses the subject land and provide alternative options.
- Review the proposed open space framework and identify and evaluate potential alternative sites for open space, based on best practice open space planning principles.
- Outline the benefits of a medium density residential zoning on the subject land, particularly given its location within 800m from the future Cudgegong Road Railway Station.

SUBJECT LAND AND SURROUNDS

The subject land to which this submission relates is 67 Tallawong Road, Rouse Hill with a legal description of Lot 30 in Deposited Plan 30186. An aerial photograph of the subject land is provided at Figure 1. The land is located within Stage 1 of the Riverstone East Precinct (refer to Figure 2).

The subject land is approximately 2ha in area and is rectangular in shape. The frontage to Tallawong Road is approximately 70m and the depth is approximately 290m. The north eastern corner has an RL of 49m AHD and the southern side has an RL of 42m AHD. The subject land currently contains a single storey dwelling and an outbuilding. It is largely cleared with some trees scattered in the north western corner and some concentrated in the eastern corner. A first order creek traverses the land and drains to First Ponds Creek.
The subject land and adjoining land to the north east being Lots, 31, 32 and 33 are identified for future sports fields, local open space and water management as illustrated in Figure 2.
NORTH WEST RAIL LINK RAPID TRANSIT FACILITY (RTRF)

The North West Rail Link Rapid Transit Facility (RTRF) will provide a train stabling and maintenance facility for the North West Rail Link. The RTRF will be located on the north west corner of Tallawong Road and Schofields Road. The approved design of the facility is provided at Figures 3 and 4. The facility will have capacity for 20 automated, metro trains, providing stabling for up to 45 trains and maintenance facilities for 76 trains. Trains would be stored in the stabling facility outside peak periods and between the last service and the first service the next day. Track and crossovers would connect the eastern end of the stabling yard with the main running lines near Cudgegong Road Station. The stabling area will operate 24 hours per day, seven days a week.

FIGURE 3 Stabling Yards Facility - artist impression illustrating interface with proposed open space (Source: North West Rail website)

FIGURE 4 Location of Stabling Yards Facility (Source: North West Rail website)
ACOUSTIC PLANNING

Atkins Acoustics has reviewed the acoustic assessments undertaken for the Sydney Metro Northwest Rapid Transit Rail Facility (RTRF) (refer to Attachment 1). The review identifies that:

1. The approval granted on 15 January 2014 for the RTRF under Section 115ZB of the Environmental Assessment Act 1979 requires noise compliance to be satisfied for surrounding existing and future residential development, including the subject land at 67 Tallawong Road.
2. The Noise Assessment for RTRF prepared by SLR Consulting Australia Pty Ltd dated 20 June 2013 did not address or assess the noise impacts from the RTRF on surrounding existing properties or the acoustic benefit of the site layout of the RTRF with respect to finished site levels and the location of the administration, training and support buildings at the north eastern corner of the RTRF.
3. The Noise Assessment for RTRF prepared by SLR Consulting Australia Pty Ltd dated 20 June 2013 and Riverstone East Precinct Noise and Odour Assessment prepared by Renzo Tonin and Associates dated 24 March 2015 recommend that less sensitive land uses such as commercial and industrial uses be located adjacent to the RTRF. The site layout of the RTRF addresses this recommendation with the location of the administration, training and support buildings at the north eastern corner of the RTRF providing effective acoustic shielding and distance separation for future residential development to the north, which includes the subject land.

Atkins Acoustics concludes that the subject land is suitable for residential purposes from an acoustic perspective and is not required as a noise buffer for the future residential development further to the north of the RTRF site.

FLOODING AND ENGINEERING ADVICE

The Flooding and Engineering Advice by Barker Ryan Stewart dated September 2015 is Attachment 2 to this submission. This report examines the proposed stormwater management specifically the construction of an engineered watercourse that traverses the subject land.

The Biodiversity and Riparian Corridors Assessment prepared by Ecological Australia dated 17 April 2015 identifies a limited amount of vegetation (Cumberland Plain Woodland) on the subject land that is considered to be in moderate to good condition (illustrated in Figure 5). This assessment also identifies that the first order creek that traversers the subject land (system F) is within “a more urbanised and agricultural area and hence disturbed sub-catchment, impacted heavily by past broad scale native vegetation removal and establishment of exotic species and modified drainage regimes” (page 30). It continues to state that it is in a degraded condition as it has been severely modified (pages 30 and 34). The report concludes that “the conservation and recovery priorities for most streams is considered to be low, particularly those that are located within more urbanised and modified landscapes (System B, C, D, E and F)” (page 38). This report identifies that while the watercourse is to continue upstream to the subject land that it is considered that this stretch of the depression is not a suitable section to rehabilitate with an engineered creek system.
The flood cycle management strategies proposed in the Water Cycle Management Report prepared by Mott MacDonald April 2015 illustrates that post-stormwater works would contain future flood affectation within the proposed engineered channel (refer to Figure 6).
The Biodiversity and Riparian Corridors Assessment prepared by Ecological Australia identifies that there is a low conservation and recovery priority to rehabilitate the watercourse that traverses the subject land. Any new watercourse within the subject land will be comprised of a new engineered channel which will require a significant amount of disturbance to the landform and construction works, including the removal of a number of trees. This would impact upon the preservation of the existing and native vegetation in Figure 5. Barker Ryan Stewart advice has concluded that the length of the proposed engineered watercourse between Tallawong Road and the confluence of a depression originating from the RTRF is of limited engineering and flooding value. Therefore there is scope to realign the watercourse. Two options have been prepared by Barker Ryan Stewart that incorporate a drainage solution in accordance with Council requirements,

- Option 1 shortened watercourse,
- Option 2 realigned watercourse.

**Option 1 (Shortened Watercourse)**

An estimate of flows from the above catchment reveals that there is no hydraulic need for a channel to be brought up to Tallawong Road on the subject land as flows originating from the upstream catchment could be easily accommodated in a pit and pipe and overland street system as per standard engineering design. The channel in this option starts at the confluence of the catchment above Tallawong Road and the RTRF with the street drainage system conveying stormwater runoff down a road constructed along the eastern boundary of the subject land which comes off Tallawong Road. The road could run along the entire length of the eastern boundary and allow road access to the remaining land of the subject site. A preliminary layout of the street pattern and reduced watercourse is illustrated at Figure 7.

Barker Ryan Stewart’s assessment identifies that a more appropriate starting point for the riparian channel would be at the junction of the depression that originates within the RTRF and the main watercourse. At this point stormwater runoff could be conveyed to the start of an engineered channel in a standard pit and pipe and overland flow system in a way that would not be excessive. At this location it is estimated that a 100 year rainfall event would generate approximately 5 cubic metres per second, with some from the RTRF. It is traditionally at this flow that a street drainage system is considered to be at its capacity.

**FIGURE 7** Option 1 – shortened watercourse (Source: Barker Ryan Stewart 2015)

**Option 2 (Realigned Watercourse)**

Consistent with the Indicative Layout Plan, this option sees the channel being taken through to Tallawong Road, but with the channel running along the eastern boundary. The channel would be 25m wide (inclusive a 10m riparian setback on either side). A road would run alongside the channel, which will take up another 13.5m in width. This will leave the subject land with approximately 29.5m of
developable land. A preliminary layout of the street pattern and realigned watercourse is illustrated at Figure 8.

![FIGURE 8 Option 2 – realigned watercourse (Source: Barker Ryan Stewart 2015)](image)

Both options, as presented above and in Figures 7 and 8, would address engineering and flooding matters whilst allowing for part of the land to be developed for residential purposes.
OPEN SPACE FRAMEWORK

A review of the proposed open space framework in the Indicative Layout Plan for the subject land has identified the following shortfalls:

1. The proposed re-construction and channelisation of the watercourse offers limited aesthetic and recreation benefit. The proposed channel profile including steep embankment slopes and channel depth have the potential to create a safety hazard - refer Figure 9. Risk management measures such as fencing may result in poor integration with surrounding development.

   ![Figure 9](image)

   **FIGURE 9** Proposed watercourse reconstruction (Source: Mott MacDonald 2015)

2. The majority of local open space is concentrated along the edges of the Precinct, and peripheral relative to residential areas. The majority of residents would have to cross major roads to access open space including the sub-arterial Clarke Street and the local collector Tallawong Road. With a width of 35m and 20m respectively, these roads would provide a major barrier to pedestrian movement - refer Figures 10 and 11.

   ![Figure 10](image)  ![Figure 11](image)

   **FIGURE 10** Cross section of proposed Clarke Street  **FIGURE 11** Cross section of proposed Tallawong Road

3. There is limited diversity of local open space, with the vast majority of open space associated with riparian corridors. Conversely, much of the open space is linear in character, limiting its flexibility to accommodate different uses.

4. The location of the major open space and local sports fields adjoining the stabling yard facility reduces the potential catchment of the park. Better land use and recreation planning outcomes would be achieved if the park where surrounded by a predominantly residential catchment.
5. The proposed location of the local open space linking Oak Street and Tallawong Road and adjoin
ning the RTRF would result in poor integration with the surrounding urban structure. The
RTRF is substantially elevated above the open space - refer Figures 3 and 4. The building along
the interface between the two land uses will be a substation. This building will generate
limited activity. The building is substantially set back from the site boundary. Together with
the significant level change between the RTRF and the proposed local open space, little
passive surveillance of the open space will be achieved. This will result in the park feeling
unsafe and failing to attract users, therefore falling short of realising its recreational potential.
Open space with poor passive surveillance also has the potential to attract undesirable
behaviour.

A detailed analysis of the distribution of open space as shown on the Indicative Layout Plan as well as
of open space already planned for in adjoining precincts, namely Riverstone, Alex Avenue and Area 20
was conducted by Clouston Associates in an Open Space Planning Report dated 16 September 2015.
Inclusion of adjoining precincts in the analysis provides an overview of the degree of equity of open
space distribution not just within the precinct, but within the context of the surrounding area.

The site analysis was founded on the open space principles of integration and co-location; multi-use;
access and equity of access; timely delivery; quality and quantity; and safety and security. The
distribution reviews the location of open space against generally accepted distances from open space
to most residences, namely 400m from local open space and 1km from playing fields.

The open space principles have identified that the following opportunities exist to address the
shortfalls of the proposed open space network in the Indicative Layout Plan on the subject land:

1. Provide significant open space in locations easily accessed from residential areas.
2. Locate open space to maximise the residential population within the 400m walking catchment.
3. Locate open space to eliminate the need to cross major roads, to maximise safety and ease of
   access for future residents. This is consistent with the planning principles of providing play spaces
   that are safe and convenient, to assist childhood development.
4. Locate open space to maximise passive surveillance from surrounding residential and other
   suitable land uses.
5. Integrate facilities for broader community use in the design of the major local open space. These
   include the potential to include a multi-use community room in the design of any club house or
   change rooms associated with the sports fields. This would enable activities or events to be held
   in or spill over into the parklands.
6. Realise greater integration with other community infrastructure such as community centres and
   services offered by the Village Centre on Guntawong Road.
7. Provide a larger open space area in proximity to the high density residential areas in the
   Guntawong Road Village Centre. Integrate or co-locate a major park with the proposed public
   school adjoining the Precinct on Guntawong Road, in the Riverstone Precinct. This would enable
   shared use of recreation facilities consistent with the planning principles.

The analysis shows that all residents in the precinct are located within 400m of open space (refer to
Figure 12). However, many residents would have to cross major roads to access major open space,
namely Tallawong Road and Clarke Street. As a collector and sub-arterial road respectively, they are
likely to represent a significant barrier to accessing open space. This is inconsistent with the principles
of safe access. Enlarging the currently proposed small park at 131 and 135 Tallawong Road to provide
a more significant local open space would address this concern. Alternatively, a large open space in or
near the centre of the area bound by the RTRF, Tallawong Road, Guntawong Road and Clarke Street
would provide a flexible open space resource that would be centrally located within the precinct,
offering equity of access, maximising surveillance by being completely surrounded by residential dwellings, while eliminating the need to cross major roads.

FIGURE 12 Distribution of open space (Source: Clouston Associates 2015)
Further, Clouston Associates conclude after an extensive analysis that there is an area in the centre of the Riverstone East Precinct (outlined dashed red at Figure 13) which will not be within 1km of planned active sports fields. There is an opportunity to address this deficit for future residents of the Riverstone precinct by the appropriate siting of new sports fields within this dashed red outline.

**FIGURE 13** Map illustrating areas within 1km of active open space (in green) (Source: Clouston Associates 2015)

Clouston Associates identify alternative sites within this area which are more suited to the provision of sports fields than Tallawong Road. All potential sites are located within the Stage 1 release area of the Riverstone East, in order to maintain the quantum and timing of open space delivered as part of Stage 1. **Figure 14** shows the location of the alternative sites overlayed on the Indicative Layout Plan.

**FIGURE 14** Alternative sites for sports fields overlaid with Indicative Layout Plan (Source: Clouston Associates 2015)
The following provides an overview of the identified potential alternative sites, as well as their respective benefits.

**Site 1**
Site 1 is 25 hectares of Government-owned land in Guntawong Road, near the corner of Clarke Street (Lot D in DP 407863, Lot F in DP 407863).

**Site 1a and 1b**

**Benefits**
- Two potential sports field locations have been identified within this area
- Government owned land – this means eliminating or reducing open space acquisition costs, making the limited section 94 contribution funds available to embellish open space areas
- Gentle topography with an average fall of less than 1 in 30
- Passive surveillance maximised with no large industrial structure nearby, like the stabling yards
- Addresses significant gap in sports fields provision in the eastern part of the Riverstone Precinct
- Provides open space in close proximity to the Village Centre and high density residential development
- Co-location with riparian corridors and stormwater management system/drainage system
- Locates open space in areas of moderate to high archaeological potential

**Site 1a – additional benefits**
- Offers the opportunity for integration of open space with remnants of moderate to high conservation value
- Located between Tallawong Road and Clarke Street, making it easily and safely accessible from residential neighbourhoods

**Site 1b – additional benefits**
- May hold potential for shared use with the public school on the opposite side of First Ponds Creek, in the Riverstone East Precinct

**Site 2**
Site 2 is located at 131 and 135 Tallawong Road, in the centre of Stage 1.

**Benefits**
- Would enlarge open space already planned for in the Indicative Layout Plan to create a more significant open space with a wide range of local recreation facilities and infrastructure
- Gentle topography with an average fall of less than 1 in 30
- Opportunity to integrate with remnants of moderate to high conservation value
- Centrally located in the residential precinct, given maximum access
- Located between Tallawong Road and Clarke Street, making it easily and safely accessible from residential neighbourhoods
- Adds variety to the open space system by providing a ridge top park - a park/landscape typology not currently provided for in the ILP

**Site 3**
Site 3 is located at 14-28 Oak Street.

**Benefits**
- Gentle topography with an average fall of less than 1 in 30
- Opportunity to integrate with remnants of moderate to high conservation value
co-location with riparian corridors and stormwater management system/ drainage system
not flood affected as a result of the local basin works on the other side of First Ponds Road
located between Tallawong Road and Clarke Street, making it easily and safely accessible from residential neighbourhoods

SITE SUITABILITY FOR MEDIUM DENSITY RESIDENTIAL DEVELOPMENT

There are minimal constraints to the subject land which would preclude the site being used medium density residential developments.

As stated above and demonstrated in Attachment 1 the acoustic environment and proximity to the RTRF does not impose constraints to future residential use and development of the land.

As outlined above and in Attachment 2 the stormwater management outcomes to be implemented will remove flooding constraints from the majority of the site by containing stormwater runoff and floodwaters to the constructed channel. This will ensure that the majority of the site is above the 1% AEP and suitable for residential use. In addition, Barker Ryan Stewart (refer to Attachment 2) has concluded that the length of the proposed engineered watercourse between Tallawong Road and the confluence of a depression originating from the RTRF is of limited engineering and flooding value. Further, Ecological Australia states that there is low conservation and recovery priority to rehabilitate the watercourse. Therefore there is scope to realign the watercourse. Two options have been prepared by Barker Ryan Stewart that incorporate drainage solutions in accordance with Council requirements, one being a shortened watercourse (option 1) and the other being an altered watercourse (option 2). Remaining vegetation can be effectively protected and enhanced as part of the future residential redevelopment of the subject land.

Adjoining land and land on the eastern side of Tallawong Road has been identified as suitable for residential densities of 25 dwellings per hectare and 45 dwellings per hectare respectively. Better planning outcomes can be achieved by selecting a centrally located site for local open space as illustrated in Figure 12 and playing fields as illustrated in Figure 13 and to utilise the subject land for medium density residential development. The land is within 800m radius of employment lands, the proposed railway station and the new town centre (all located within Area 20) as shown in Figure 15. For these reasons the future use of the site partly for medium density housing whilst accommodating for drainage needs as described in the submission is a more efficient and provides a sound planning outcome.
CONCLUSION

The subject land is not the most appropriate location for open space for the reasons outlined in the submission. Residential development on the subject land is not precluded on acoustic, flooding and engineering grounds. An improved land use planning outcome would be achieved if one of the drainage options presented in this submission is adopted and the remaining land is utilised for low rise apartments (via the R3 Medium Density Residential zone) as this would:

1. provide a residential land use interface that would remove passive surveillance concerns that would exist with open space on the subject land;
2. respond to the low conservation and recovery priority to rehabilitate the watercourse and the impact of a new engineered channel on the landform and existing trees by realigning the watercourse in accordance with Council requirements (two options presented in this submission);
3. allow the management of the remaining native vegetation as part of the redevelopment of the subject land;
4. provide a residential built form outcome where 3-4 storey apartments would counterbalance the elevated platform created for the RTRF; and
5. maximise use of prime land within 800m of the future Cudgegong Railway Station.
REFERENCES


Clouston Associates, Open Space Planning Report, September 2015

Mott MacDonald, Water Cycle Management Report Riverstone East, prepared for the Department of Planning and Environment, April 2015