

*West Byron Urban Release Area*

**SUMMARY OF ISSUES and PROPOSED RESOLUTION**

of

**traffic noise, visual impact and urban design**

along Ewingsdale Road

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## **Purpose of this document**

Buffering treatments will be required to the West Byron Urban Release site to manage acoustic and visual impact issues along Ewingsdale Road.

This document summarises solutions identified by the sub-consultant team at an interdisciplinary collaborative workshop held on 1 March 2011.

The purpose of this document is to capture the rationale and broad intent of the proposed solutions, to ensure that development scenarios remain consistent with the principles adopted in the West Byron Development Design Workshop held in September 2010 as an integral part of the State Significant Site study.

## **Development Design Principles**

A series of overarching site-specific urban design principles were developed at the September 2010 West Byron Development Design Workshop. The principles are the basis for proposed urban structure and zoning system, and are intended as 'fixed strategies' to guide the master planning, development design, assessment and construction phases that follow rezoning.

These principles are:

1. The creation of two small complimentary, but functionally different, mixed-use centres at opposing ends of the site adjacent to site entry points, each with a main street environment;
2. The clustering of employment (showcase and service), and live-work uses adjoining the light industry uses in the western centre, as a transition between light industry and residential areas;
3. The clustering of a community and a mix of residential typologies uses around the eastern centre, capitalising on the retained vegetation on natural drainage corridors to Belongil Creek;
4. A primary loop road to connect the 2 centres and deliver bus services with 200m of the majority of residences;
5. A secondary road parallel to Ewingsdale Road to provide direct connection between centres, and provide for a range of residentially compatible home business activities close to Ewingsdale Road;
6. The provision of a range of landscaped and built form treatments along the Ewingsdale frontage to manage acoustic constraints and maximise variety and visual appeal to passers-by;
7. Provision of service road and adjoining home-based businesses with parallel frontage to Ewingsdale road around both entry points to help manage acoustic constraints and provide an entry statement to each main street;
8. The creation of an open space node central to the Ewingsdale Road frontage of the site, to allow views into the site and linkage to the Union Drain to provide open space amenity and access into and through the site;

9. The retention of a existing vegetation in (mostly linear) patches through, and at the edges of, the site to provide internal and external view lines and deliver local amenity and ecological connectivity;
10. Ensuring local access streets incorporate WSUD treatments and are located at the edge of vegetation corridors to maximise ESD outcomes and awareness, capitalise on view corridors and deliver high residential amenity.

Some of the Development Design principles directly relate to buffering and frontage solutions to Ewingsdale Road.

### **Acoustic Issues**

Various acoustic investigations were performed during 2010 to determine the expected noise impacts relating to development of the site. The primary acoustic impact was found to be the potential for noise ingress from traffic on Ewingsdale Rd and secondary issue of noise from Sunnybrand Chickens located to the west of the site.

As a result of the investigations, acoustic design principles were recommended. These included a combination of acoustic buffer zones and building treatments to address the noise issues. Following from the acoustic report, the preliminary urban design and zoning layout was revised to incorporate nominal 'noise buffer' areas that would require specialised treatment in the master planning and design stages.

In order to provide confidence that acoustic impacts and visual impacts can be successfully managed, it is necessary to provide some detail of design outcomes which integrate and simultaneously address the acoustic, visual and planning requirements.

It should also be noted that the impact of traffic noise is partly derived from the speed environment on Ewingsdale Road. Traffic noise levels increase with higher speed of vehicles, therefore traffic travelling at 80km/h will generate more noise than traffic travelling at 70km/h, which is greater than 60km/h and so on. The current speed limit on Ewingsdale Road is 80km/h, however it is likely that this speed limit will reduce into the future as the local areas become more developed.

The acoustic assessments and recommendations are based on the current speed limit of 80km/h, which is a worst case scenario. Other options of reduced speed limits to 70, 60 and 50km/h have also been assessed as one of these speed limits is likely to be applied to Ewingsdale Road in the future.

The scale and dimension of recommended acoustic treatment methods also diminishes with reduction of speed limits on Ewingsdale Road. If acoustic treatments for traffic noise are constructed at the site based on an 80km/h speed limit, then if the speed limit is reduced to 60km/h (for example) in the future,

the parts of the development affected by traffic noise would remain acoustically over-designed.

Therefore careful consideration should be given to likely speed limits with respect to design and construction of treatments for traffic noise.

With respect to acoustics, the main issues requiring further detail are as follows;

1. Traffic noise from Ewingsdale Road new roundabout (Belongil Fields, opposite SAE).
2. Traffic noise impact from Ewingsdale Road through the residential/ open space interface (opposite Banksia Drive).
3. Traffic noise from Ewingsdale Road to Residential zones adjacent to Ewingsdale Road.
4. Noise buffers adjacent to the Industrial and Commercial areas

These are addressed in the following sections.

### **1. New roundabout and entry road (Belongil Fields)**

In the absence of any other mitigating measures, the areas marked as residential near the roundabout would require noise buffers to extend around the entrance roadway to the development. Without these buffers, a noise barrier of up to 4.9m height would be required along the property boundary to Ewingsdale Road and the entrance roadway (likely to be an unacceptable visual outcome).

To reduce the noise barrier height by inclusion of a noise buffer zone, the available area for residential will reduce accordingly, possibly to the point where the available residential area has been reduced to impractical proportions or layout.

A better solution would be to incorporate a service roadway and extend the mixed-use commercial/residential zoning towards the roundabout in lieu of the purely residential component. In this case the service road would provide beneficial setback, while the commercial component would provide some acoustic shielding to the residential components.

### **2. Residential/open space interface**

If residential zones immediately abut the green park zone, significant acoustic barriers may be required to return along the east and west edges of the park and taper down towards the southern end of the triangular park zone.

It is expected that a more appropriate solution would be to provide a local access street positioned between dwellings and the green area. The dwellings could then be designed with frontages to the street and a private outdoor recreation area located at the rear, away from the traffic noise. In this case, any noise affected dwelling facades would be designed to incorporate acoustic façade

treatments to reduce noise ingress in accordance with relevant codes and regulations.

### **3. Traffic noise from Ewingsdale Road to Residential zones**

In order to avoid substantial acoustic barriers along the Ewingsdale Road residential boundary, acoustic buffer zones have been recommended. The inclusion of buffer zones provides traffic noise reduction through distance attenuation and allows for the use of lower height barriers at the setback position.

It is anticipated that a variety of setback distances, earthmound/noise barrier combinations and range of materials would be used in order to avoid homogenous treatment of the entire residential boundary length. Noise barriers would generally have to return (and taper down in height) at the ends to reduce the degree of noise transfer around the ends of the barriers.

An alternative to substantial acoustic barriers along Ewingsdale Road would be to provide separation by a service access roadway parallel with Ewingsdale Rd in conjunction with home offices or home-based businesses facing the road(s). In accordance with the relevant noise policies there would be no specific external noise criteria for the business component, although internal noise levels would normally be assessed with respect to the recommended maximum noise levels contained in AS2107.

Therefore, the physical setback from Ewingsdale Rd and the design of the non-residential component would combine to satisfy the noise guidelines for traffic noise within the non-residential component. Non-residential building mass would then provide physical screening and noise attenuation for the residential component. In the case of any two-storey buildings where the upper floor is residential, the building facade would be acoustically designed such that the internal noise levels comply with the recommended guidelines.

### **4. Commercial and Industrial area noise buffers**

The acoustic buffers shown on the preliminary development design are not necessarily required for Industrial and Commercial areas. Theoretically, the industrial and commercial buildings could extend up to the property boundaries (north and east) if they are appropriately designed, however this may not be a desirable aesthetic outcome. Therefore the noise buffers currently nominated on the development design could more appropriately be thought of as 'visual buffer' or similar.

### **Urban Design Issues**

As identified in the September 2010 workshop and as articulated above, the key urban design issues revolve around ensuring a high quality visual and built

environment presentation to Ewingsdale Road. In any solution the following outcomes must be achieved:

- A variety of differing frontage uses and treatments to Ewingsdale Road including informal drainage corridors, formal open space, landscaped buffers, remnant vegetation, streets, active business, employment and residential uses. This includes a range of long and short view lines;
- Frontage types are consistent with the function and emerging character of Ewingsdale Road as a key entry corridor into Byron Bay;
- Frontage treatments should be used to conceal less presentable light-industrial uses and service areas at the western end;
- Frontage treatments highlight the two entry points, and facilitate views to each of the 'main streets';
- Frontage types maximise pedestrian and cycling accessibility and CPTED outcomes, principally by minimising concealment opportunities and maximising opportunities for casual surveillance to ped/cycle network from within the site;
- Frontage treatments help integrate and connect the West Byron site to the existing commercial, employment and residential community to the north, by providing numerous access points across Ewingsdale Road, and by 'opening' the site and its uses/activities up to external views;
- Frontage types manage acoustic impacts on the site from traffic on Ewingsdale.

The major constraint to achieving all of these outcomes is managing the acoustic issues emanating from traffic on Ewingsdale Road. The following section outlines the intended design solutions to deliver the above.

### **Proposed Design Solutions**

A suite of treatments are proposed to ensure that acoustic impacts from the Ewingsdale Road frontage are well managed without compromising the urban design qualities outlined above. These solutions are broadly described as:

1. Landscaped Buffer treatments
2. Business frontage treatments
3. Main street entry treatments
4. Open space edge treatments

When applied in combination, this series of treatments provides a holistic solution to the challenges of the West Byron sites frontage. An explanation of each frontage treatment follows. Refer to attached plans at the end of this report.

## Landscape Buffer Treatments

Given that an acoustic barrier of up to 4.7m is required along Ewingsdale Road, a variety of landscape treatments need to be considered to address visual sensitivity.

Visual sensitivity is addressed through vegetated screening that interprets existing plant communities in the area. Successful vegetated screening of acoustic walls requires adequate depth and landscaped earth.

Visual sensitivity is addressed through the quality of the design of acoustic walls where transparency articulation and materiality are addressed in contiguity with proximity to the road boundary.

Essentially the closer the acoustic walls are to Ewingsdale Road the more constrained are the options to successfully address visual sensitivity.

Where minimal acoustic buffers are proposed and the built form is proposed as providing noise attenuation to residential areas, visual sensitivity is addressed in the quality of the landscape treatments, the built form and through providing visual links through the proposed development.

### RESIDENTIAL A

**Landscaped Earth (Berm) incorporating a constructed acoustic wall where the height of the constructed acoustic wall is minimised.** This is an acceptable outcome for visual sensitivity. The degree to which visual sensitivity is addressed is determined by the degree of naturalness achieved through appropriate plant selection, sustainable gradient and corresponding depth of the vegetated area.

### RESIDENTIAL B

**Landscaped Earth (Berm) incorporating a constructed acoustic wall where the height of the constructed acoustic wall is dominant due to constraints in berm construction.** This is an acceptable outcome for visual sensitivity. The degree to which visual sensitivity is addressed is determined by the quality of the design and construction of the constructed acoustic wall, the degree of screen density achieved through appropriate plant selection, sustainable gradient and corresponding depth of the vegetated area.

### RESIDENTIAL C

**Constructed acoustic wall on the development boundary.** Sub optimal outcome for visual sensitivity where landtake is highly constrained. The degree to which visual sensitivity is addressed is through the quality of the design and construction of the constructed acoustic wall where consideration is given to materiality and design detail, transparency and articulation.

#### RESIDENTIAL D

**Constructed acoustic wall set back from the development boundary incorporating an acoustic buffer of screening and open space.** This is an acceptable outcome for visual sensitivity. The degree to which visual sensitivity is addressed is determined by the degree of naturalness achieved through appropriate plant selection and design of passive open space, sustainable storm water treatments and corresponding depth of the vegetated area.

#### RESIDENTIAL E

**Building facade treatments providing acoustic buffering to residential areas.** This is an acceptable outcome for visual sensitivity. The degree to which visual sensitivity is addressed is determined by the quality of the landscape treatments and the quality of the design of the built form.

#### RESIDENTIAL F

**Building facade treatments providing acoustic buffering to residential areas.** This is an acceptable outcome for visual sensitivity. The degree to which visual sensitivity is addressed is determined by the quality of the landscape treatments and the quality of the design of the built form.

#### MIXED USE A

**Built form noise attenuation with pedestrian access only.** This is an acceptable outcome for visual sensitivity. The degree to which visual sensitivity is addressed is determined by the quality of the landscape treatments and the quality of the design of the built form.

#### MIXED USE B

**Built form noise attenuation with service road and pedestrian uses.** This is an acceptable outcome for visual sensitivity. The degree to which visual sensitivity is addressed is determined by the quality of the landscape treatments and the quality of the design of the built form.

#### LIGHT INDUSTRIAL A

**Landscaped Earth (Berm) constructed with retaining structures.** This is an acceptable outcome for visual sensitivity. Visual Sensitivity is addressed by heavily screening the built form. A berm created using retaining structures provides the opportunity for profiling ground levels and creating a softer more naturalised setting. The degree to which visual sensitivity is addressed is



determined by the degree of naturalness achieved through appropriate plant selection, sustainable gradient and corresponding depth of the vegetated area.

#### LIGHT INDUSTRIAL B

**Vegetated buffer.** This is an acceptable outcome for visual sensitivity. Visual Sensitivity is addressed by heavily screening the built form. The degree to which visual sensitivity is addressed is determined by the degree of naturalness achieved through appropriate plant selection and corresponding depth of the vegetated area.

#### LIGHT INDUSTRIAL C

**Landscape treatments in a commercial setting.** The degree to which visual sensitivity is addressed is determined by the quality of the landscape treatments and the quality of the design of the built form.

### **Conclusion**

The sub-consultant design team has identified buffering treatment solutions to satisfy the acoustic and visual impact issues along Ewingsdale Road. The intent of the solutions is to meet the relevant acoustic criteria whilst achieving an acceptable outcome with respect to visual amenity. The proposed solutions will provide flexibility, should the detailed siting of the development scenarios vary during the master planning and design development process, and will remain consistent with the principles adopted throughout the State Significant Site study.

### **Attached plans:**

- Sections A, B, C, D (Residential)
- Sections E, F (Residential)
- Sections A, B, C (Light Industry)
- Sections A, B (Mixed Use)
- Acoustic Strategy Plan UD05b “mixed use 2” (eastern intersection)
- Acoustic Strategy Plan UD06b “central open space frontage”