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Ku·ring·gai Council

5 December 2014

Attn: Mr Peter McManus
Department of Planning & Environment
Major Projects Assessment
GPO BOX 39
SYDNEY NSW 2001

Dear Mr McManus,

PROPERTY: WAHROONGA ADVENTIST SCHOOL, FOX VALLEY ROAD, WAHROONGA
APPLICATION NUMBER: SSD 12_5535
PROPOSED DEVELOPMENT: SCHOOL (Kindergarten to Year 12)

Reference is made to the Department's letter regarding the above application. Council has reviewed the information and documentation lodged in support of the application. There are significant issues associated with the development in terms of usability, amenity and lack of information/ detail that need to be resolved prior to any determination. The key concerns with the application are summarised below and are expanded on within the accompanying attachment.

KEY ISSUES:

- Failure to consider and assess compliance against the School Facilities Standards the under SEPP (Infrastructure) 2007;
- Poor student amenity, lack of suitable and sufficient usable outdoor play areas including inadequate connectivity between the outdoor playing fields and the school buildings;
- Poor internal accessibility for people with a disability;
- Deficiencies in information and incorrect 'final' location of the front boundary;
- Poor relationship between the school and future residential flat building that will result in significant amenity impacts and inappropriate separation;
- Poor landscaping within the site including between the school, future residential flat buildings and Fox Valley Road street frontage;
- Lack of information, unclear and inaccurate information to enable full consideration of the impacts of the proposed development;
- Poor traffic management including lack of sufficient research to determine the impacts of the development during and post construction;
- A bushfire evacuation plan should be provided;
- Management and impacts of the water course;
- Excessive cut and fill for the playing fields
- Nutrient runoff into the watercourse and lack of mitigation measures to minimise impacts to the watercourse during and post construction; and
- Flood impacts.

Some of the major concerns raised in the submission reflect those anticipated within Council's submission in relation to comments for the application to amend the concept approval MP07_0166. The continual modification to the Masterplan has resulted in significant deficiencies with the development of the SAN Hospital site and consequently the proposed school development, as detailed below.

If you require any further clarification in relation to this letter please do not hesitate to contact me on Council's general number 94240000 during normal business hours.

Yours faithfully

Shaun Garland
Acting Manager – Development Assessment

Attachment A:

Urban Design Comment

1 Context

Good design responds and contributes to its context. Context can be defined as the key natural and built features of an area. Responding to context involves identifying the desirable elements of a location's current character or, in the case of precincts undergoing a transition, the desired future character as stated in planning and design policies. New buildings will thereby contribute to the quality and identity of the area.

The overall architectural character of the proposed buildings can be supported as providing a positive architectural character along the broader Fox Valley Road streetscape and as providing a visual focus for its specific communal function within the Wahroonga Estate.

While the proposed school development is consistent with MP07_0166 MOD5 proposed context, Council's urban design review has found MOD5 context to be deficient in the following areas. It is important to note these points as it is the basis of the design outcome for the current application:

a) Concept Plans MP07_0166 and MP10_0070 building footprints had not accommodated GFA anomalies in the original Concept Plan approvals which has led to adverse outcomes as these become sought modifications that have significantly increased the size of building footprints and changed originally approved building typologies.
b) There is no public domain/open space strategy that creates a cohesive hierarchy of the Estate arrangement - instead there is a simplistic arrangement of built form placed in generic landscape, road placement with no clear hierarchical precinct strategy coordinated as a part of a whole Concept Plan. This is a consistent theme with all modifications that the proponent has not sought to address.
c) Current/as-built MP10_0070 needs to be included on MP07_0166 and all adjacent development applications.
d) Inconsistent and inaccurate base information on MP07_0166 relating to other precinct modifications was used in the MOD5 documents that did not enable cumulative impacts to be assessed.
e) Precinct B - Modifications retain inherent conflicts in site layout relating to functional relationships between church, school, playing fields and high-density residential buildings.
f) Precinct B - physical connection of the school to the playing fields is poor.
g) Precinct B – reduces proposed frontage of the internal road to proposed playing fields.
h) The amount of open space provision for the school appears inadequate to accommodate 800 students across the full K-12 spectrum (*Ku-ring-gai Schools Development Code 1983* stipulates a playground area of minimum 20.5sqm per student) – Lot 1 site area 7,383m2, (Lot 2 site area 7,165m2).
i) Significant cut and fill required to locate playing fields as proposed whereas further to the south-west topography appears flatter and better able to support the fields. This also relates to deficiencies to proposed site arrangement separating the school from the playing fields.
j) Precinct B - Areas appearing as deep soil on the School site are above basement car parking.
k) Precinct B - Lack of detail regarding vehicular and hard paving areas for the residential components in particular as well as school site.

l) Boundary adjustments are required to accommodate the extended playing fields that appear to encroach into other landscape area adjoining bushland.
m) Insufficient information as to building separations within the school site and to adjacent future RFBs.
n) Screening between proposed 6-storey residential development and the school is ambiguous as there appears insufficient deep soil within the school site to support large trees (outside the 100m APZ).
o) Proposed amendments to residential flat building footprints are not supported where bulk has been increased in particular the buildings immediately to the north-west and north-east of the school site. Further information is required to clarify this.
p) Insufficient information regarding pedestrian and vehicular network to residential buildings.
q) Precinct B - Inadequate development controls have been provided demonstrating compliance is achieved such as road reservations, setbacks to building lines, height of building information in plan, APZ requirements and their accurate location, what this means in terms of development, there is no sense of proposed 3-dimensional form.
r) Architectural Statement feasibility studies, APZ and setback information lack clarity.

The Department accepted the modifications as sought and, therefore, these deficiencies remain largely unresolved. The DGRs issued 6th September 2012 included specific urban design criteria be demonstrated amongst a total of 20 key issues to be addressed in the EIS:

In terms of greater urban context, it is clear that larger footprint, taller buildings impact significantly on the expression and definition of urban character just as they impact upon streetscape (positively or negatively), public domain interface, communal open space arrangement, pedestrian and vehicle networks.

The subject site is located within Precinct B, an education and residential precinct adjacent to the Central Hospital precinct. Precinct B is affected by a 100m Asset Protection Zone (APZ) across its north-western boundary interface with unmanaged bushland and two existing easements.

The development site for the proposed school comprises two separate allotments. Lot 1 is to accommodate the school buildings – three schools in one as a K-12 campus. Topography is gently sloping from south-east to north-west (short axis) with a cross-fall of approximately 3.5 metres while the fall across the Fox Valley Road boundary is very slight at approximately 1.5 metres and across the rear boundary of approximately 1 metre. Lot 2 has a more significant cross-fall ranging from 4.5 metres to 8 metres requiring significant cut and fill to accommodate the playing fields.

Within the context of the proposed site arrangement, Council acknowledges that the proposed design for the school is generally consistent with the arrangement approved under MP07_0166 MOD5. However, as has been repeatedly identified, there remain flaws in the site arrangement of Precinct B that appear will not be addressed.

The desire to relocate the school to better engage with the church is supported on urban design grounds. However, the combination of a constrained site area, subsequent proposed site coverage across the school development site (Lot 1) and remotely locating the playing fields, separated by future high density residential development cannot be supported on sound urban design grounds.

The interface of the school with future 6-storey RFB adjacent to the north-west likewise presents conflicts of visual and acoustic amenity that are a direct result of precinct arrangement of built form and proposed development site subdivision. Therefore unless amendments to site arrangement are proposed, these inherent and unsatisfactory conflicts will not be resolved.

The proposed outdoor spaces for the school are inadequate for a K-12 school, which again will not be resolved unless significant modifications to the Concept Plan are proposed. It is

noted that the *Architectural Design Report (September 2014), 3.10 Constraints and Opportunities* prepared by Stanton Dahl & Associates states the following constraints:

School Lot 1 [main school site]:

Constraints:

- *The 100m APZ line at the north-western corner of the Lot has influenced a modification to the boundary set-out.*
- *The north-western edge of the Lot will potentially be impacted by shadows from future residential developments.*
- *Potential for noise and privacy issues from Fox Valley Road, the northern end of the Lot, and from the adjoining future residential development sites.*

Opportunities:

- *The southern end of the Lot provides the opportunity for the most amount of floor space due to the tapering of the Lot from the impacts of the APZ line.*
- *The southern end of the Lot has best connectivity to the existing church building (desirable).*
- *The south-eastern edge of the Lot yields greatest opportunity for the School to have a strong street presence and streetscape expression to Fox Valley Road.*
- *The northern end of the Lot affords the most direct opportunity for access by staff and students to the remote School Lot 2 - Playing Fields area.*
- *The fall of the site terrain away from Fox Valley Road allows potential for basement parking to be accommodated partially below ground and out of view along the streetscape.*

School Lot 2 [playing fields]:

Constraints:

- *The Lot is within the 100m APZ line.*
- *The Lot is restricted in width between the existing protected native vegetation to the north and the existing easement to the south.*
- *Access to the Lot from School Lot 1 is separated.*
- *Proximity to adjoining neighbours at the eastern end of the Lot.*
- *Site terrain falling to the north towards the native vegetation will require levels to be addressed.*

Opportunities:

- *The Lot is removed from the noise issues of Fox Valley Road. • Proximity to natural surrounds enhances the recreational environment of this area used by students.*
- *Location within the context of future residential development sites has potential for the Playing Fields to become a 'community space'.*
- *Access between School Lot 1 and School Lot 2 via a future internal access road safer than Fox Valley Road.*

https://majorprojects.affinitylive.com/public/0571bbc458bda782a40775d56baa096d/2014-10-23%20SSD%205535%20EIS_%20Wahroonga%20Adventist%20School.pdf

However, the proposal locates the primary outdoor playing areas for the junior school within the setback zone between the 3 and 4-storey school buildings and the noise source of Fox Valley Road. These inherent design conflicts cannot be resolved under the current site arrangement and site area committed for Lot 1 where the three schools (Junior, Middle and Senior) are to be located on the one site.

It cannot be emphasised enough that the quality and engagement of the public domain is critical to achieving a positive outcome for the future character of the Estate. This will be

further discussed in several other sections throughout this submission as it impacts on most urban design principles.

Insufficient information has been provided regarding the relationship of the school to approved building envelopes of adjacent RFB development. This is necessary in order to review the overall precinct character as it relates within the Estate and will be visible from Fox Valley Road and the church grounds.

It is noted that an extensive network of bicycle paths are to be provided under MP07_0166 and MOD5, however, none appear on the subject application and how future paths engage beyond the site or within the Estate.

Proposed architectural character can be supported as providing a positive urban outcome for the surrounding urban fabric.

Proposed outdoor space, relationship of the playing fields to the school, relationship of Lot 1 to adjacent future RFBs and site coverage is not supported. This does not achieve a satisfactory future urban context as envisaged in MP07_0166 and performance criteria of modifications.

1.1 Scale

Good design provides an appropriate scale in terms of the bulk and height that suits the scale of the street and the surrounding buildings. Establishing an appropriate scale requires a considered response to the scale of existing development. In precincts undergoing transition proposed bulk and height needs to achieve the scale identified for the desired future character of the area.

MP07_0166 MOD5 approved modifications to previously approved building typology and existing LEP height controls. It is noted that the subject application seeks further variations for the Middle and Senior School buildings.

These breaches of permitted height will not be visible from Fox Valley Road and can be supported. However, the building separation between the senior school and future RFBs appears to be in conflict with the landscape character that has been approved for the Wahroonga Estate and is related to the impact of the proposed height variations. Further information is required to better describe this relationship and how landscape can be supported on Lot 1 to adequately screen from the future 6-storey RFBs.

Again, it appears that the open space and landscape quality has been adversely impacted through Concept Plan modifications that reduce site areas (Lot 1) while retaining GFA and general height. This appears likely to persist with each development application.

1.2 Built Form

Good design achieves an appropriate built form for a site and the building's purpose, in terms of building alignments, proportions, building type and the manipulation of building elements. Appropriate built form defines the public domain, contributes to the character of streetscapes and parks, including their views and vistas, and provides internal amenity and outlook.

Being a precinct in transition, there is a significant shift in urban form across the Estate expressed through building type, scale, architectural language and aesthetic. The proposed built form is consistent with MP07_0166 MOD5 notwithstanding the comments above. The articulation and manipulation of materials provides a positive architectural character that is cohesive and is supported as presenting a point of visual interest along the Fox Valley Road streetscape.

The definition of the public domain through the built form interface along Fox Valley Road is positive and the general principles of the Lot 1 site arrangement demonstrate an intent to provide a primary outdoor space that is defined by the built form. However, as is identified in

this submission, the proposed site area of Lot 1 is inadequate to accommodate the outdoor spaces in direct relationship to the school required by the proposed number of students and their age range.

1.3 Density

Good design has a density appropriate for a site and its context, in terms of floor space yields (or number of units or residents). Appropriate densities are sustainable and consistent with the existing density in an area or, in precincts undergoing a transition, are consistent with the stated desired future density. Sustainable densities respond to the regional context, availability of infrastructure, public transport, community facilities and environmental quality.

Density is consistent with permitted GFA under MP07_0166 MOD5. However, the impact upon Lot 1 of the extent of site coverage upon outdoor space and area available for deep soil is significant and indicative that density is inappropriate to Lot 1 in context of existing height controls.

1.4 Resources, Energy and Water Efficiency

Good design makes efficient use of natural resources, energy and water throughout its full life cycle, including construction. Sustainability is integral to the design process. Aspects include demolition of existing structures, recycling of materials, selection of appropriate and sustainable materials, adaptability and reuse of buildings, layouts and built form, passive solar design principles, efficient appliances and mechanical services, soil zones for vegetation and reuse of water.

Open galleries of walkways providing horizontal and vertical movement around the school are supported. They achieve high levels of natural light and are protected from adverse weather coming from the south and south-west.

Building forms are generally slender and are supported as optimizing natural ventilation and good natural light.

Substation requirement has been identified. There appears to have been no provision made on architectural drawings for anticipated spatial/separation requirements. This is likely to eat further into already inadequate outdoor space. Spatial provision is to be demonstrated on architectural documents coordinated with information identifying all outdoor spatial allocations and rate/child on Lot 1 separate from Lot 2.

Solar access to the outdoor spaces in winter is inadequate. Shadow diagrams are inaccurate as covered walkways appear to be in sunlight and do not indicate overshadowing from future RFB development.

If we cross reference the solar diagram contained within section 3.8 Solar Access (*Architectural Design Report, Sept 2014,* p12*)* it appears that minimal areas of sunlight will be achieved due to overshadowing from future development and by buildings within the site. This is unacceptable on a greenfields site.

Shadows from approved building envelopes for RFBs within Precinct B are to be indicated so an accurate representation of the Precinct can be assessed and impacts of site layout can be understood.

Deep soil area around Lot 1 is scarce and it is questioned whether it is adequate to enable tall trees for screening from the future RFBs, however, this is beyond the scope of urban design expertise and requires more detailed comment by Council's landscape officers. Please refer to the *Landscape* section within this submission for further discussion in this regard. In principle, the north-western boundary requires significant tall screen planting due to the close proximity of the future RFBs.

Provision of retention and detention tanks likewise requires consideration by Council's engineers particularly with resolution of pit relocations to allow for future RFB development.

1.5 Landscape

Good design recognises that together landscape and buildings operate as an integrated and sustainable system, resulting in greater aesthetic quality and amenity for both occupants and the adjoining public domain. Landscape design builds on the existing site's natural and cultural features in responsible and creative ways. It enhances the development's natural environmental performance by coordinating water and soil management, solar access, micro-climate, tree canopy and habitat values. It contributes to the positive image and contextual fit of development through respect for streetscape and neighbourhood character, or desired future character. Landscape design should optimise usability, privacy and social opportunity, equitable access and respect for neighbours' amenity, and provide for practical establishment and long term management.

We've referenced the below in relation to the *Healthy Urban Development Checklist, NSW Health* which also references the *Sydney Metropolitan Strategy* as it is relevant to the Wahroonga Estate:

> *As identified in a Health Impact Assessment of the Sydney Metropolitan Strategy[27]: "New development has the potential to do things better in terms of urban design, amenity and environmental conditions. But if these improvements are made without any benefit to existing communities, then geographic inequities in health will be worsened."*
>
> *(27 Western Sydney Regional Organisation of Councils Ltd (WSROC) and Anni Gethin (AGA Consulting P/L). Greater Western Sydney Urban Development Health Impact Assessment: Final Report. Western Sydney Regional Organisation of Councils Ltd; 2007. http://www.wsroc.com.au/page.aspx?pid=287&vid=5)*

The Checklist requires the following to be considered regarding open space with regard to children's health:

> *Access to the natural environment is considered to be of particular importance in the healthy development of children with concerns that 'nature deficit disorder' is having an adverse impact on children's physical and social development[161].*
>
> *Beyond natural areas, children also need opportunities for unstructured, imaginative and adventurous outdoor play in their local neighbourhoods, and not just via fixed equipment playgrounds.*
>
> *These spaces allow for the type of creative play and participation in "communal games, which in turn create a sense of belonging and attachment to local places"[162].*
>
> *(P97-98, 159 Worpole K, Knox K. The Social Value of Public Spaces. York: Joseph Rowntree Foundation; 2007. http://www.jrf.org.uk/sites/files/jrf/2050-public-space-community.pdf, 161 Louv R. Last Child in the Woods: Saving our children from nature deficit disorder. Chapel Hill, NC: Algonquin Books of Chapel Hill; 2006. http://richardlouv.com/ 162 See footnote 159 http://www0.health.nsw.gov.au/pubs/2010/pdf/hud_checklist.pdf)*

Open space within a school environment focuses the need to achieve these outcomes particularly where the full K-12 age groups are concerned as the demand for outdoor spaces of high quality and varying character are necessary to accommodate their differing and often conflicting needs.

Our urban design review recognizes the proximity of bushland to Precinct B which is supported within the context of health only if it can be viewed and experienced by the students. This seems unlikely given the separation of the two allotments, and the height (20.5m) of future RFBs and the overall lack of available outdoor space within Lot 1 of the school grounds.

The checklist also states:

> *3. Quality of public space*
> *While much urban planning concentrates on the size of public space, relative to the size of the population, recent Australian research has shown that it is not only the size but also the quality of public space that influences people's use.*
>
> *It has been found that "The quality of the public realm appears to be important for both mental and physical health. Access to large, attractive public open space increases the odds of higher levels of walking, but is said to be restorative, reducing mental fatigue and improving wellbeing"[186].*
>
> > *(185 Giles-Corti B. The impact of urban form on public health. Paper prepared for the 2006 Australian State of the Environment Committee. Canberra: Department of the Environment and Heritage; 2006. http://www.environment.gov.au/soe/2006/ publications/emerging/public-health/pubs/public-health.pdf 186 See footnote 185)*

The Wahroonga Estate is a regional development precinct that is well underway in realising a significant change of character expected over the next several years. Precinct B proposes a Prep/K-12 school that relocates the existing primary school (at the corner of Fox Valley Road and The Comenarra Parkway) to the Central Church precinct along Fox Valley Road and incorporates a full K-12 campus with the redevelopment. Relocating the school enables a more direct connection to the existing church, and also freed up viable land on the existing school site to accommodate lucrative high-density residential and mixed use development.

The original approved Concept Plan MP07_0166 was a flawed document, but did provide a clear framework for the performance criteria of approved building types and was quite clear in the landscape and open space provision and character. The latter being singled out by the PAC in its report considering the MOD4 variations. Indeed the 'Campus' character approved for the educational components in the PPR states:

> *The landscape treatment across [these] areas will help to create a 'campus' feel with high levels of pedestrian accessibility. Retention of existing vegetation together with avenue tree planting and larger areas of open lawn will provide a strong green structure within the wider forest setting. A number of key focal spaces related to the hospital, church and residential communities will be inter-linked by a strong network of paths and cycleways placing an emphasis on pedestrian movement.*
>
> > *(Source: MP07_0166 Final Preferred Project Report and Concept Plan 2010 p 56https://majorprojects.affinitylive.com/public/9cb9791229df230a0b64623e6beb5429/ FINAL%20Preferred%20Project%20Report%20Part%202%2 0Jan%202010.pdf)*

This landscape performance objective for the educational precincts remains valid. Figure 1 (over page), demonstrates the incremental impact of the site arrangement and spatial allocation to the school site over the course of the Wahroonga Estate design.

Council requested details of spatial allocations of useable outdoor space in submissions during the MOD5 application. This was not provided in the proponent's response to submissions and has not been provided in the project application. Proposed useable outdoor space provision is to be demonstrated both graphically and as a per/child spatial allocation on Lot 1.

Our comparisons of both public and private primary and secondary schools of comparable size within the Ku-ring-gai LGA demonstrate in all cases that open space forms a significantly larger percentage of available site area than is proposed in the subject application. Indeed, the existing primary school provides approximately 2000m^2 more site area than is proposed for the new school. This reinforces the need for further amendments to the proposed developments as the existing school on a larger site is meeting the needs only of primary school children whereas the new school needs to address outdoor spaces for the complete range of school ages while being proposed on a significantly smaller site. This is not supported.

As a primarily 'greenfield' site within a low density surrounding urban context characterised by bushland, tall trees and large gardens, the deficiencies in open space/accessible outdoor playing areas for the school both in site arrangement and allocation cannot be supported.

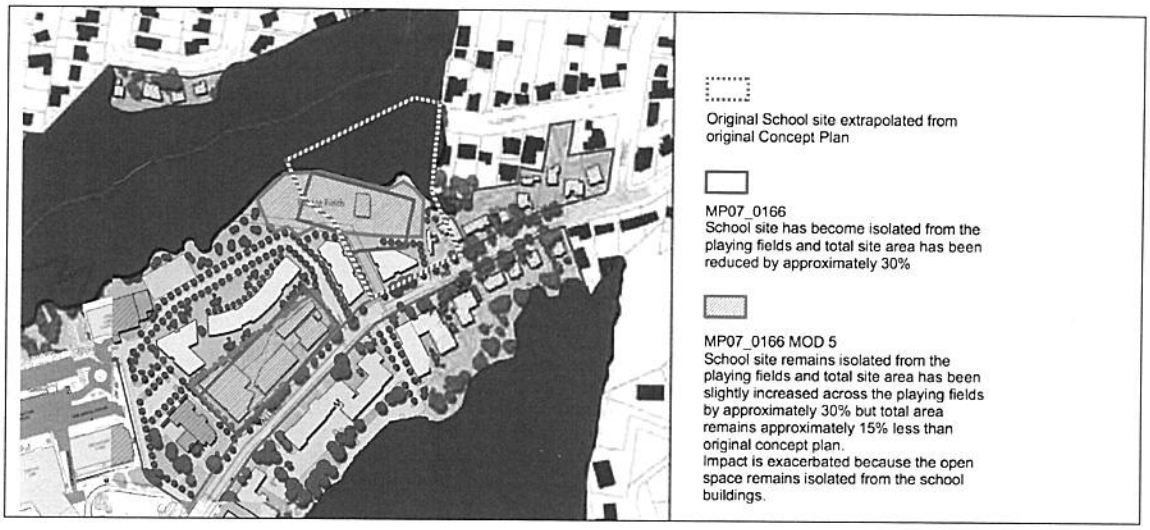

Figure 1: Incremental impacts to the open space provision and relationship to school showing extrapolated overlay information:

- *Top - Environment Assessment and Concept Plan Wahroonga Estate Redevelopment 2009 Figure 33 - Precinct Plan p43.*
- *Middle – MP07_0166 Concept Plan as approved.*
- *Bottom – MP07_0166 MOD 5 as approved.*

Landscape and architectural drawings do not provide sufficient ground RLs to fully review the application. These are required to assess the internal/external relationship between buildings and landscape as well as clearly describing the landscape spaces themselves. All retaining and other landscape walls are to identify top-of-wall RLs. It is noted however, that there appear to be no changes in level between the FFL of the top of RWT and OSD tanks at RL166.95 and the entire ground floor of the middle school. This needs to be clarified and amended to ensure no storm event flooding impacts upon internal spaces or covered walkway areas. It is also noted that the central space to the north-west described as "the Heart" of the school, appears to be inaccessible to people with disabilities. There does not appear to be ramped access from the lift to this space. As the primary outdoor space, it is a requirement that this area be accessible.

Solar access to the open spaces will be discussed in 1.6 Amenity.

1.6 Amenity

Good design provides amenity through the physical, spatial and environmental quality of a development. Optimising amenity requires appropriate room dimensions and shapes, access to sunlight, natural ventilation, visual and acoustic privacy, storage, indoor and outdoor space, efficient layouts, and service areas, outlook and ease of access for all age groups and degrees of mobility.

Following on from *1.5 Landscape*, concern is raised as to the solar amenity of all outdoor spaces within Lot 1. Future RFBs to the north-west will overshadow all outdoor spaces during winter along the north-western side and in the case of outdoor space within the front setback zone, these will be overshadowed by school buildings within the site. This further exemplifies the deficiencies in the quality of proposed outdoor areas.

Acoustic amenity appears to be unresolved for outdoor spaces within the front setback zone with Fox Valley Road. On the one hand, this area has been identified as a constraint (*Architectural Design Report (September 2014), 3.10 Constraints and Opportunities)* yet on the other, it is proposed as the primary outdoor area for the junior and middle schools. This is unsatisfactory.

The proposed tiered seating within this setback zone adjacent to the junior school is supported in principle but its proposed location is not supported as it will be highly affected by traffic noise, receives very little to no sunlight and unlikely to be functional.

The following section, *1.7 Safety and Security*, discusses the proposed location and traffic movement of the kiss-and-ride area as a safety concern. However, concern is also raised under amenity regarding the functionality of the basement as a combined parking and drop-off/pick-up area catering for hundreds of vehicle movements within concentrated time frames. Safety and comfort issues will arise due to the fact that parents will leave children through cars queued in the aisles to get to car spaces. These are consistent issues witnessed every day at all at-grade school zones let alone being concentrated within a confined basement space where visibility of small children is an issue. Further information is required to demonstrate the lift has the capacity to cater for anticipated use. The hall/ gymnasium/ basketball court being located on the top floor may need to cater for larger numbers of older users who are likely to be involved with school (grandparents) or church functions and unable to walk multiple stair flights.

Generally, amenity within individual buildings and their individual spatial relationships is supported.

1.7 Safety and Security

Good design optimises safety and security, both internal to the development and for the public domain. This is achieved by maximising overlooking of public and communal spaces while maintaining internal privacy, avoiding dark and non-visible areas, maximising activity on streets, providing clear, safe access points, providing quality public spaces that cater for desired recreational uses, providing lighting appropriate to the location and desired activities, and clear definition between public and private spaces.

The proposed use of the site as a school immediately raises the street activation as there will be high levels of pedestrian activity during those peak drop-off and pick-up times. Sightlines are generally direct and clear with intuitive wayfinding generally achieved. The availability and accessibility of outdoor space needs to be addressed as previously discussed.

The proposed layout of the basement appears to present conflicts between the location of the kiss-and-ride and longer term car parking spaces. The proposed layout requires all kiss-and-ride users to traverse the full extent of the car park to get to the designated area. In a school context this appears to present safety issues around the unpredictable reality of children, in combination with the confined space of a basement, the reality of delays caused with cars entering and leaving spaces while others are queuing for the drop-off/pick-up zone, and the realities of the peak traffic loads at school drop-off and pick-up times that will see the basement area clogged and air quality a concern. This needs to be further resolved.

1.8 Social dimensions

Good design responds to the social context and needs of the local community in terms of lifestyles, affordability and access to social facilities. New developments should optimise the provision of housing to suit the social mix and needs in the neighbourhood, or, in the case of precincts undergoing transition, provide for the desired future community.

Proposed social dimensions in terms of providing future educational services to the Estate that can also benefit the wider community are supported. Likewise the provision of employment both during construction and within the staffing of the proposed school is supported. However, deficiencies in open space provision within Lot 1 is a significant issue that may affect the success of the school where these spaces are perceived to have been unacceptably compromised, particularly where there are no real constraints to the school site other than those imposed by the proponents given it is a largely greenfield site.

As identified in documents submitted under the MOD5 application, more information is required around the relationship of ground levels between the external and internal spaces

and within the school's outdoor spaces to ensure disabled access is achieved throughout the development.

1.9 Aesthetics

Quality aesthetics require the appropriate composition of building elements, textures, materials and colours and reflect the use, internal design and structure of the development. Aesthetics should respond to the environment and context, particularly to desirable elements of the existing streetscape or, in precincts undergoing transition, contribute to the desired future character of the area.

Proposed aesthetics are supported. There is a strong language of built form that communicates a clear design strategy in the treatment of building elements. There is a sense of activity communicated that gives a clear legibility to the built form and its functions. There is an expression of building base and middle that achieves a satisfactory architectural character.

The selection and composition of materials achieves specific building characters for each school integrated with the materials palette and hierarchy of frontage, degree of desired transparency and consideration of noise sources (although this has not been achieved with the outdoor spaces).

The aesthetic is contemporary, clean and provides a positive expression consistent with the educational building typology using a materials palette that sits comfortably with the scale of proposed built form and an identity for the future school.

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6158

Engineering Comment

Further information is required:.

Condition B7 of the Concept Plan Approval requires that Fox Valley Road be widened along the site frontage. As far as Council is concerned, the plans for these works are as approved by the Ku-ring-gai Traffic Committee, including Northrop Drawing 09112-04 KC-05 and KC-06 Revision 1 (Ultimate). The front boundary of the school site will be shifted into the site but the plans do not indicate by how much. The architectural and other plans for the new school should show the ultimate location of the site boundary.

Subdivision

Both sheets of the Insites subdivision plan are labelled Sheet 1 of 2 – one of these should be Sheet 2.

The proposed lots 811 and 810 shown on the subdivision plan are different in area to those shown on the subdivision plan submitted with DA0453/12 for the student and key worker accommodation in Precinct C. Approval of both plans would lead to confusion with linen plan assessment. Lots other than the two school lots and any residual lot(s) should not be included on the subdivision plan for the school.

Water management

The Report states that the minor system stormwater drainage has been designed for the 1 in 20 year ARI storm event. Council's DCP 47 *Water management* requires property drainage to be designed for the 50 year ARI storm event.

Stormwater discharged from the school is shown as being connected to an existing detention basin to the rear (north) of the school site. This basin will be removed when the residential development proceeds. The school will still be providing detention of its runoff and it will just be the outlet which will need to be adjusted. There will have to be some sort of dispersal/ bioretention system provided to achieve the objectives for the residential development and it is considered that the school may share in this system as long as the appropriate easement(s) are in place.

The new PE courts are shown as being adjacent to or possibly over the Category 2 watercourse which flows in a north westerly direction from Fox Valley Road. The Flora and Fauna Assessment refers to this as an ephemeral drainage line. The Stormwater and Water Quality Engineering Report does not state whether the new courts will block any flow or obstruct the water course and none of the documentation addresses the likely effect on the mapped riparian zone.

Discharge from the playing field and PE courts is shown as being conveyed to a series of dispersal trenches located just within the R4 zone. However, the section on the architectural plans shows that there is not much space in the relatively steep area below the retaining walls. The geotechnical report does not specifically address the stormwater management proposal, although the information sheet attached to the report shows that soakaways for stormwater discharge are classified as poor hillside practice.

The PE courts are to be of an impervious surface. No detention is proposed for these courts, however the Flora and Fauna Assessment states that rainwater storage is provided on the hardstand areas. This should be clarified.

Traffic and parking

This has been addressed within the Traffic comments.

Waste management

The Waste Management Plan does not refer to the Phase 2 Environmental Site Assessment. The architectural plans do not seem to show a suitable area within the site for storage or collection of waste.

Geotechnical investigation

The report is based on a desktop study only. It does address the stability of filled areas, as required under Condition B12 of the Concept Plan approval, however the stormwater management plans do not appear to have been reviewed. The proposed dispersal trenches in the filled banks do not seem to be consistent with good hillside practice.

The following information should be requested from the applicant:

a) The future front boundary of the site as a result of the widening of Fox Valley Road should be shown on the architectural plans. The subdivision would be a suitable stage for this widening to be dedicated.
b) Amended subdivision plan showing only the two school lots and any residual lot(s) (and Sheet 2 to be so labelled in the title block).
c) The Stormwater and Water Quality Engineering Report and plans are to be amended to show whether the new PE courts will obstruct or be affected by flow in the watercourse which is mapped on Council's map as Category 2.
d) Stormwater and Water Quality Engineering Report and plans are to be amended to show how the dispersal trenches will be located, given the small steep setback below the retaining wall as shown on Stanton Dahl Drawing DA26/1.
e) Plans which were not included with the Stormwater and Water Quality Engineering Report, such as sections through the detention tanks, should also be submitted.
f) The geotechnical report should address the proposed dispersal trenches in the filled banks downslope of the playing field and PE courts, as they do not appear to be consistent with good hillside practice.
g) Stormwater and Water Quality Engineering Report and plans are to be amended to show how the headwall and rock scour protection relates to the dispersal trench for the PE courts, given that a headwall would discharge the runoff at the surface but runoff should enter a trench below-ground.
h) Detention should be provided on the PE court surface, as the Flora and Fauna Assessment states that rainwater storage is provided on the hardstand areas.
i) The architectural plans should show a waste storage/ collection area.
j) The Waste Management Plan should refer to the Phase 2 Environmental Site Assessment with regard to disposal of excavated and demolition material.

Landscaping Comment

Road widening to Fox Valley Road

The proposed site boundary to Fox Valley Road on all proposed plans is the existing street boundary. This is not the site boundary as shown on the 'ultimate' road works layout which requires an additional lane for Fox Valley Road and the resumption of a strip of land along the Wahroonga Estate frontage.

The proposed building setbacks including the resumption of land for the 'ultimate' road widening proposal will result in a reduced building setback. The reduced setback will be insufficient for the retention of the existing street tree planting for the development along Fox Valley Road and will be likely to structurally compromise Trees 17,18 and 19 that are proposed to be retained within the front setback. The proposal provides minimal provision for tree planting within the front setback. This outcome is inconsistent with the concept approval and is not consistent with the landscape character of the local area.

Front setback to Fox Valley Road

The landscape design of the school building site provides little street address and landscape amenity. Spaces are dominated by excessive areas of paving and provide little opportunity for shade or scale provided by small to medium trees within on slab planters. Of the 13 existing trees within the front setback of the proposed school only four (4) are to be retained. The following trees are in good health and are visually prominent within the landscape and are worthy of design modifications that enable them to be retained within the building setback.

Tree 6 *Chamaecyparis obtusa* (Hinoki False Cypress)
Tree 7 *Chamaecyparis obtusa* (Hinoki False Cypress)
Tree 27 *Liquidambar styraciflua* (Liquidambar)
Tree 33 *Cedrus deodara* (Himalayan Cedar) south east corner of the site. Shown as retained on the Precinct B concept plan amendment

Basement setbacks to Fox Valley Road

The proposed modification to the basements has resulted in the loss of sufficient curtilage between the school buildings and residential buildings that are required in the concept approval to achieve adequate landscape amenity as well as compatibility with the local landscape character *(refer p 4, Diagram 4, Architectural Design Report – Issue B, Stanton Dahl, 2013).*

The proposed basement encroachment within the front setback to Fox Valley Road is inconsistent with the landscaped frontage proposed in the concept approval *(refer p 70, Figure 65, Section 4, Wahroonga Estate Redevelopment Concept Plan dated January 2010).* The proposed OSD and rainwater tanks encroach within the front setback and compromise the ability to achieve the landscape objective in this part of the development. To preserve landscape setting in keeping with the local landscape character, the basement should not encroach within front, side and rear setbacks of the school lots.

Setback of school buildings to residential building lots.

The setbacks of the school buildings to the boundary to the adjoining residential buildings are considered insufficient to achieve the appropriate landscape outcome *(refer p 71, Figure 69, Section 7, Wahroonga Estate Redevelopment Concept Plan dated January 2010).*

The proposed basement setbacks to the northern boundary of approximately 1.5 to 2m metres provides insufficient setback for effective screen planting to the residential flat building to the north of the site. All proposed tree planting of *Pyrus ussuriensis (Manchurian Pear)*

and *Jacaranda mimosifolia* (Jacaranda) will not be viable for the long term as they will be structurally compromised due to basement restriction on the root plate. The proposed planting of Photinia 'Red Robin' has a mature height of 5m and responds well to pruning however the proposed setbacks provide insufficient area for maintenance.

Much of the proposed 3-6m building setback of the school buildings where adjoining the residential buildings, is taken up with hard surface areas, steps and ramps that will restrict the establishment of suitable planting in scale with the building. Additional on-slab planting should be included along the northern side of the podium.

Playing fields

The landscape design of the playing fields in terms of proposed levels and planting is poorly integrated into the existing topography and provides poor landscape amenity. The proposed access between the road entry and the facilities is poor.

Proposed batters at 1:2 and 1:3 are considered too steep for turf or garden beds. To enable turf to be mown a maximum 1:8 grade batter is recommended and maximum 1:4 for garden beds. Pedestrian access is to be provided by way of steps and ramps to ensure facilities are accessible.

Site survey inadequate

A large area of the southern end of the playing fields has not been included in the survey. Insufficient information is provided to enable assessment of cut and fill.

Landscape Plan inadequate

The landscape plan is considered unsatisfactory for the following reasons,

- All existing trees within the site and adjoining sites are to be numbered in accordance with the arborist report.
- Plant quantities and sizes have not been provided to the landscape plan for school buildings or playing fields
- Proposed and existing levels have not been provided on landscape plan for school buildings or playing fields particularly on site boundaries.
- Existing levels have not been provided to the corners of the PE Courts to enable assessment of height of retaining walls. The extent of cut and fill cannot be assessed.
- Legends on plans provide insufficient legibility of graphic symbols for proposed landscape treatments
- Monoculture planting along side boundaries to playing fields is not supported and should be replaced with assorted locally occurring species. Continuous hedge planting along the boundary with a future residential flat building is inconsistent with RFS guidelines.

Amended Landscape Plan to be provided

The landscape plan is to be amended to include the following,

- All existing trees within the site and adjoining sites are to be numbered in accordance with the arborist report.
- Plant quantities and sizes are to be provided for the school buildings and playing fields
- Proposed and existing levels are to be provided on the landscape plan for the school buildings and playing fields particularly along site boundaries. Existing levels are to be provided to the corners of the PE Courts to enable assessment of height of retaining walls.
- Legends on plans are to clearly include sufficient interpretation of all graphic symbols of the proposed landscape treatments

- Monoculture plantings of *Hakea* along the side boundaries to the playing fields is to be replaced with assorted locally occurring species.
- Proposed batters at 1:2 and 1:3 are considered too steep for turf or garden beds. To enable turf to be mown maximum 1:8 grade batter is to be shown and maximum 1:4 for garden beds. Pedestrian access is to be provided by way of steps and ramps to ensure facilities are accessible.

Traffic Comment

Road Improvements and Staging

There is a requirement to upgrade the intersection of Fox Valley Road and The Comenarra Parkway, and these upgrades are expected to cater for the additional traffic flows in the area (as a result of the redevelopment of the Wahroonga Estate) and improve safety for vehicles and pedestrians. Other works include upgrades to intersections along Fox Valley Road (Ada Avenue and Lucinda Avenue) as well as intersection of Pacific Highway and Fox Valley Road. The timing of these works has been subject to an approved modification by the NSW Department of Planning and Environment.

In terms of the staging of the installation of the proposed traffic signals (with pedestrian provision) at the intersection of Fox Valley Road and the proposed access road to the school/residential area, it is proposed to install the signals at Stage 2 of the school project. However, given that the middle school will be constructed and operating prior to Stage 2, it is strongly recommended that the traffic signals (along with footpath and bus stop upgrades) be installed at Stage 1, to provide safe pedestrian access to bus services on the opposite side of Fox Valley Road.

Parking

According to DCP43 (Car parking), with the proposal for 57 full time employees, and 90 year 12 students, the parking requirement would be 57 + (90/8) = 69 spaces. Additional spaces for set down and pick up are required. Parking provision is for 124 spaces and 7 set down/pick up spaces, which satisfies Council's requirements for schools, however this is a significant number of additional spaces and should be justified.

Notwithstanding the above, the hall in the Senior School Building (Stage 3) is also intended to be used for whole-of-school events (with students and staff in attendance), as well as by the Church for various activities during the week. The type, scale and timing of these activities may result in the parking provision being inadequate. Clarification is required on this, particularly if there are large events during school hours that attract visitors (other than teachers and students) to the hall. The notional number of seats that could be accommodated in the hall for such events should be specified.

Car park dimensions (space width/length, aisle/ramp widths etc) have not been provided on the architectural plans, making assessment difficult. Due to the presence of a lift encroaching into the parking aisle near space 12 in the basement car park, turning paths should be provided to demonstrate accessibility to this space. The shared are between accessible spaces 56 and 57 requires a bollard in accordance with AS2890.6

Public Transport

The traffic report outlines the 2 bus services that currently travel past the site, and the associated bus timetables, but does not indicate what the current mode share is for school students travelling to/from school by bus.

The Transdev/Shorelink website indicates only 1 dedicated school service for the Sydney Adventist School in the morning and 1 in the evening, between Turramurra railway station and the hospital entrance. However, the Statement of Environmental Effects indicates that the current school serves the local Wahroonga community as well as a wider catchment extending to Berowra, Cherry Hills (unknown suburb appears to be an error), Epping and Turramurra. With the expected increase in number of students from 200 to 800, and the expansion into high school education, the number of students from wider catchments could conceivably increase. There is an opportunity here to provide additional school buses to cater

for additional students from the abovementioned catchment areas, and the Sydney Adventist School should be engaging with service providers to cater for this need.

Additional bus services would be an important part of the transport task in moving children to and from school on a daily basis, and would reduce traffic volumes on Fox Valley Road, The Comenarra Parkway and other surrounding roads. For a school that will accommodate up to 800 students from Kindergarten – Year 12, more evidence should be provided demonstrating that the school is planning to secure additional dedicated school bus services.

Improvements should be made to the footpath and bus stop on the western side of Fox Valley Road. This should include widening the footpath to 2.5m to accommodate flow of students between the bus stop and the school, as well as a bus shelter of sufficient size to cater for waiting students. It is also expected that a new bus stop would need to be installed on the eastern side of Fox Valley Road, with similar footpath and shelter upgrades as the western side (noting that the Deed of Agreement with Roads and Maritime Services requires the widening of the eastern side Fox Valley Road between Pacific Highway and the Hospital entrance). Details of these facilities should be provided.

Pedestrian and Bicycle Facilities

The proposed traffic signals (with pedestrian provision) at the intersection of Fox Valley Road and the proposed access road to the school/residential area would provide satisfactory crossing facilities to access bus services on the opposite side of the road.

It is noted that as part of the Sustainable Transport Initiative (GTA Consultants, 2010) in support of the original concept plan for the Wahroonga Estate, there was to be provision of a perimeter shared pathway/recreational trail. This would incorporate the existing access road between the existing Church and the proposed Senior School Building. Provision should be made to upgrade the length of access road adjacent to the Church to 4m wide, to incorporate shared pedestrian/bicycle use. Furthermore, the Sustainable Transport Initiative suggests an expansion of the Shared Zone facilities in the hospital grounds. This access road would be an appropriate candidate for treatment as a Shared Zone in accordance with the Roads and Maritime Services Technical Direction 2014/003 (Design and implementation of shared zones including provision for parking) and would further enhance the pedestrian connection between the existing Church and the proposed school. A continuous footpath treatment is also warranted where the access road meets Fox Valley Road, to maximise pedestrian amenity.

There is provision for 15 bicycle parking spaces for staff, located on the western side of the basement, with showers and lockers located nearby. This is appropriate for staff. However, the Cycling Aspects of Austroads Guides (*Austroads, 2014*) suggests that bicycle parking for schools should be provided at a rate of 1 space per 5 pupils over Year 4. It is estimated that there would be approximately 300 students in Years 5 and over, and this would result in the requirement for 60 spaces. With 15 already provided for staff, an additional 45 should be provided for students. These can be in the form of rails where students could lock both wheels of their bicycle, and should be located on the ground floor in public view, and preferably in close proximity to a cycle route/facility (which ideally would be the perimeter shared pathway/recreational trail mentioned above). There should also be a bicycle connection between the staff parking and the cycle route/facility

Management Plans

Consideration should also be given to staggering the start and finish times of the Junior, Middle and Senior Schools, so as to minimise the impact on the surrounding road network. This should be set out in a Student Set Down and Pick Up Management Plan.

As part of wider travel management, the school should be required to prepare a Sustainable Travel Plan. These plans typically contain the following components:

Introduction

Major Objectives: e.g. reduce reliance cars, promote travel alternatives, reduce number of vehicle trips for journeys to work for staff and students, to manage demand for car parking, to encourage the use of public transport, walking and cycling etc;

Anticipated Outcomes e.g. reduced school carbon footprint through reduced car trips for students, staff and visitors, reduction in local traffic congestion and resulting air pollution, enhancing the economic efficiency of the school's operations, creating opportunities for the school to demonstrate strong leadership in the area of sustainability;

Key Initiatives and Strategies: outline the initiatives and strategies to be implemented to achieve the major objectives;

Measuring Performance: e.g. changes in the number of staff and students travelling to the school by car, range of activities conducted on school site which may have necessitated travel previously;

Benchmarking: e.g. To reduce by X% the number of staff members travelling to work by car by target date, to increase by X% the number of staff members and students involved in a car pooling arrangement by target date, to increase by X% the number of staff members and students cycling to work by target date etc…

Links to other School policies and initiatives

Bushfire Comment

Bush fire separation distances and Asset Protection Zones

The Wahroonga Estate Master Plan identified the Asset Protection Zone setback distance for core and non-core Hospital and other land-uses. The pre-requisite for the location of the Adventist School, being determined to be a 'Special Fire Protection Purpose Development', was that a 100 metre wide Asset Protection Zone be provided between the school buildings and the bush fire prone vegetation. It is noted that the school precinct is located beyond the established Asset Protection Zone widths for a *'Special Fire Protection Purpose Development'*.

It is also noted that building footprints and concept plans for buildings, including residential flat buildings, surrounding any part of the school site have been provided to give a clear and fair indication of the actual relationship that will exist between the school buildings and the open space. However, the placement of high density development between the proposed school precinct and bushland contradict the necessary 100m wide APZ buffer. Other buildings can act like fuel in proximity to neighbouring buildings. More research should be given to demonstrate whether the proposed residential flat buildings will shield the school or potentially become a fuel source in extreme conditions.

Bushfire and evacuation safety.

It is noted that the school facilities (Stage 1, 2 and 4) occur outside the 100m bush fire prone lands buffer. However, the area is identified as an evacuation risk area. The Bush Fire Protection Assessment Report suggests that the proposed development provides a safe location from which it will not be necessary to relocate students, staff and visitors, during a bushfire event. However, as bushfires can occur unexpectedly and threaten in a variety of ways (embers, smoke, radiant heat) timely relocation should always remain as a planned option for the school. The proposal should demonstrate how it complies with the Bushfire Protection Measures for the site through proposed evacuation measures that include addressing access and egress. The numbers of people using the facility (employees, students) should be stipulated in order to determine whether the onsite/ evacuation provision is satisfactory.

The proposal suggests the school will utilise a bus stop with shelter that will be located on the Fox Valley Road frontage for normal route and school special services. Purpose built bus lay-bys should be indicated for school buses. This is important for day to day arrangements and emergency relocations so as to avoid disruption to traffic flows. The EIS should provide full details of numbers of school buses that will operate for this size school, and how they will be accommodated without disruption to the road network and traffic flow on Fox Valley Road during their stopping to drop/pick up students and in their routes.

The proposal suggests that the:

> *"re-development of the Hospital Precinct [and the Estate] will provide off-street car parking which will enable Fox Valley Road to be extended to four traffic lanes with an improved intersection at The Comenarra Parkway."*

These new traffic arrangements will improve emergency access and evacuation routes but require commitment from RMS and should be completed prior to the completion of the school precinct. The EIS should address these matters with plans and reports clearly showing the 'intersection improvements' that will be incorporated as part of this new site access roadway into the school. The flow of traffic from the new access road will be considerable and given the basement parking is located close to the intersection, a traffic study needs to be conducted to indicate how this proposal will avoid traffic congestion in the access road spilling out and blocking traffic on Fox Valley Road.

The preliminary plans give no indication of the required road widening of Fox Valley. This is critical to show in the EIS plans and report as it will reduce the depth of footpath areas and hence the ability to provide bus lay-bys on the street.

Water Supply

There needs to be assurance that adequate mains pressure to protect both the hospital and school can be maintained by connecting to the existing mains supply.

Water Management and Riparian Corridors Comment

Water Management and Riparian Concerns.

The EIS and associated documentation has addressed to some extent the riparian and water management issues previously raised by Council. These issues were centred around the direct and indirect impacts of the cut and fill associated with the playing fields and onsite runoff. The indirect impacts are related to the riparian corridor containing critically endangered ecological communities.

Flora and Fauna

Both Appendix 11 the Stormwater and Water Quality Report and Appendix 14 of the Flora and Fauna Report address the issue of water quality and runoff on the riparian vegetation and propose mitigation measures to reduce nutrients and runoff especially point source discharges. The music modelling indicates at least 45% nutrient removal (which I would think to be in excess of that which could be obtained in clay soils) and only addresses the surface water flows. Groundwater flows from the playing fields will contain high levels of nutrients (especially if fertilisers are used) and could be discharged at the interface between the fill and natural ground level. This together with surface runoff, even after treatment, will produce relatively high levels of nutrient input to the watercourse and riparian area. The issue of nutrients encouraging weed growth was mitigated through the BMP (Cumberland Ecology, 2010) which is the only document addressing weed management in this area. However, neither document mentioned the potential impact of increased nutrients reaching the watercourse which can promote eutrophication and algal growth. This must be addressed.

The Flora and Fauna Assessment mentioned other edge effects such as human disturbance, litter intrusion and weed migration from the developed site but did not develop any mitigation measures. This will need to be provided.

Riparian Land

Similar to above, some aspects were addressed in the documentation. Omissions included addressing the issue of the fill immediately adjacent to the bushland with very little buffer to construct appropriate erosion and sedimentation control measures during construction. Similarly, there were no plans for remediation and rehabilitation of riparian areas in the event of potential adverse impacts.

Treatment of fill batters and transition to riparian

Whilst erosion and sedimentation measures are said to be implemented during construction (Douglas and Partners), there is no mention of the long term treatment to the batter at the edge of the fill for the playing fields. Both short term (during construction) and long term treatment will be required. Whilst construction impacts may be mitigated by erosion and sedimentation control measures, long term treatments should include a planting plan to help stabilise the slope. This plan should include endemic native plants suitable for erosion control which can also form a transition to the understory in the riparian corridor.

Flooding

Requirements for the EIS included an assessment for on-site flood risk, and consideration of any relevant provisions of the NSW Floodplain Development Manual (2005) including climate change and an increase in rainfall intensity.

The EIS indicated that the site is not on a floodplain nor is it at risk of coastal flooding. However the fill for the playing fields does intrude into the valley associated with the

watercourse. Whilst this may or may not impact on the levels of flood flows, the issue has not been addressed and it is a provision of the NSW Floodplain Development Manual.

Similarly, the potential impacts of climate change especially an increase in rainfall intensity, has not been addressed. This has the potential to impact on the quantity and quality of stormwater discharge thereby having potential long term impacts on the riparian land and vegetation.