JRPP No	2010NTH027
DA Number	2010/234
Local Government Area	Nambucca Shire Council
Proposed Development	Proposed new primary school
Street Address	Lot 11 DP 805157, Dudley Street, Macksville
Applicant	Simon Waterworth, GeoLINK Pty Ltd.
Number of Submissions	1
Recommendation	Refusal
Report by	Arthur Tsembis, Manager Planning & Assessment, Nambucca Shire Council

Assessment Report and Recommendation

1.0 SUMMARY:

The proposed development is to erect a new primary school on rural land comprising an area of approximately 3 ha. The proposal is defined as an *'educational establishment'* and the capital investment value is in excess of $5 million. Therefore, in accordance with Part 3 of State Environmental Planning Policy (Major Development) 2005, the development application is required to be determined by the Northern Joint Regional Planning Panel (JRPP).

The original application included the subdivision of part of the subject land to accommodate the proposed school. Nambucca Local Environmental Plan (NLEP) 2010 does not allow the subdivision of the subject land below the minimum 40ha lot size. The subdivision component of the development application was subsequently withdrawn by the applicant, letter dated 25 January 2011. A copy of this letter is attached to this report as **Appendix A.**

There are some concerns about the likely impacts of the proposed development on traffic, stormwater management and to a lesser extent, noise impacts and fragmentation of rural lands. However, the major impediment to the proposed development is the potential flood impacts, particularly relating to evacuation and safety of children during an extreme flood event.

Having particular regard to the flooding advice from WMAwater, it is not considered that the proposed school should be allowed in a flood prone area which has an unacceptably high level of flood risk.

2.0 RECOMMENDATION:

That the development application 2010/234 be refused for the following reasons:

1 Pursuant to Section 79C(1)(b) of the Environmental Planning and Assessment Act, 1979 (EP&A Act), the proposed development will likely result in unacceptable flooding impacts.

2 Pursuant to Section 79C(1)(c) of the Environmental Planning and Assessment Act, 1979 (EP&A Act), it is not considered that the site is a suitable location for the proposed school due to the likely difficulties in implementing a flood evacuation plan and the likely additional pressure put on existing emergency services during an extreme flood event.

3 Pursuant to Section 79C(1)(e) of the Environmental Planning and Assessment Act, 1979 (EP&A Act), it is considered that the proposed development is not in the public interest due to the potential flooding impacts.

3.0 OPTIONS:

In accordance with Section 80(1) of the EP&A Act, the JRPP has the option to grant consent to the application, either unconditionally or subject to conditions.

Should the JRPP consider that approval is warranted it is suggested that appropriate conditions should be included in the development consent, including a *'Grampian'* condition (see section 6.0 of this report) that requires the 5 tonne load limit to be amended or removed before the development is carried out.

A copy of the suggested conditions is attached to this report as **Appendix H**.

4.0 BACKGROUND:

The application was lodged on 27 September 2010. The application states that the existing school site at 78 Wallace Street is no longer suitable for the needs of the school as the site:

- *is of insufficient size to accommodate necessary upgrades and additions to school buildings to cater for current and predicted pupil numbers*
- *contains insufficient open space for the recreational needs of students; and*
- *is segregates/divided by Wallace Street severely reducing its functionality as a school and increasing safety risk to students and teachers.*

4.1 The site and locality:

The subject property is located at the eastern end of Dudley Street and is described as Lot 11 DP 805157. The proposed school site comprises an area of approximately 3ha (150m x 200m). It is situated within a rural property located on the fringe of Macksville, approximately 730m east of the Pacific Highway, which runs through the centre of town.

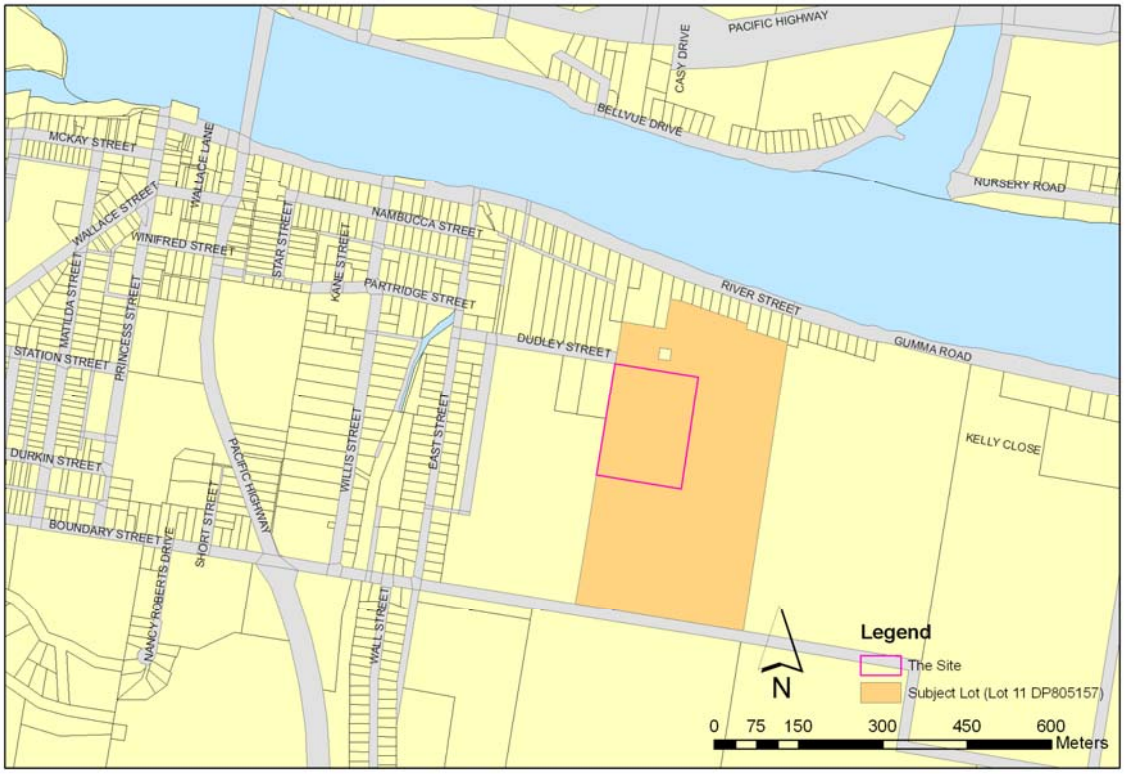


Figure 1 is a site locality plan which identifies the subject land.

Figure 2 is an aerial photo of the subject land and surrounding area.

4.2 Proposal:

The proposed school comprises seven free standing buildings, under cover outdoor learning areas, play grounds, car parking and a bus bay. The proposed development also includes the construction of a 150m extension of Dudley Street.

The subject land is zoned RU1 – Primary Production under Nambucca Local Environmental Plan (NLEP) 2010 (see Figure 3). The proposed school is defined as an *'educational establishment,* which is not a prohibited land use in the RU1 zone.

The application includes a Statement of Environmental Effects (SEE) dated September 2010 prepared by GeoLINK (planning and environmental consultants). The SEE includes the following appendices which address the various environmental aspects of the proposed development:

- Acoustic Assessment dated 22 July 2010, prepared by Wilkinson Murray (Sydney) Pty Ltd (Appendix B).
- Flood Assessment dated 15 February 2010, prepared by de Groot & Benson Pty Ltd (Appendix C).
- Stormwater Management Plan, prepared by Northrop Engineers, Drawing Number CO2DA & CO3DA, dated 26.08.10 (Appendix D).
- Erosion and Sediment Control Plan prepared by Northrop Engineers, Drawing Number CO1DA, dated 26.08.10 (Appendix E).
- Geotechnical Assessment dated 14 September 2007, prepared by Coffey Geotechnics Pty Ltd and review of the geotechnical report by de Groot & Benson Pty Ltd, 18 October 2007, and by Northrop Engineers, 20 April 2010 (Appendix F).
- Acid Sulfate Soil Supporting Documents submitted by GeoLink Pty Ltd (Appendix G).
- Traffic Assessment dated August 2010, prepared by de Groot & Benson Pty Ltd (Appendix H).

A copy of the SEE, including the Appendices, has been **circulated** to all the members of the JRPP.

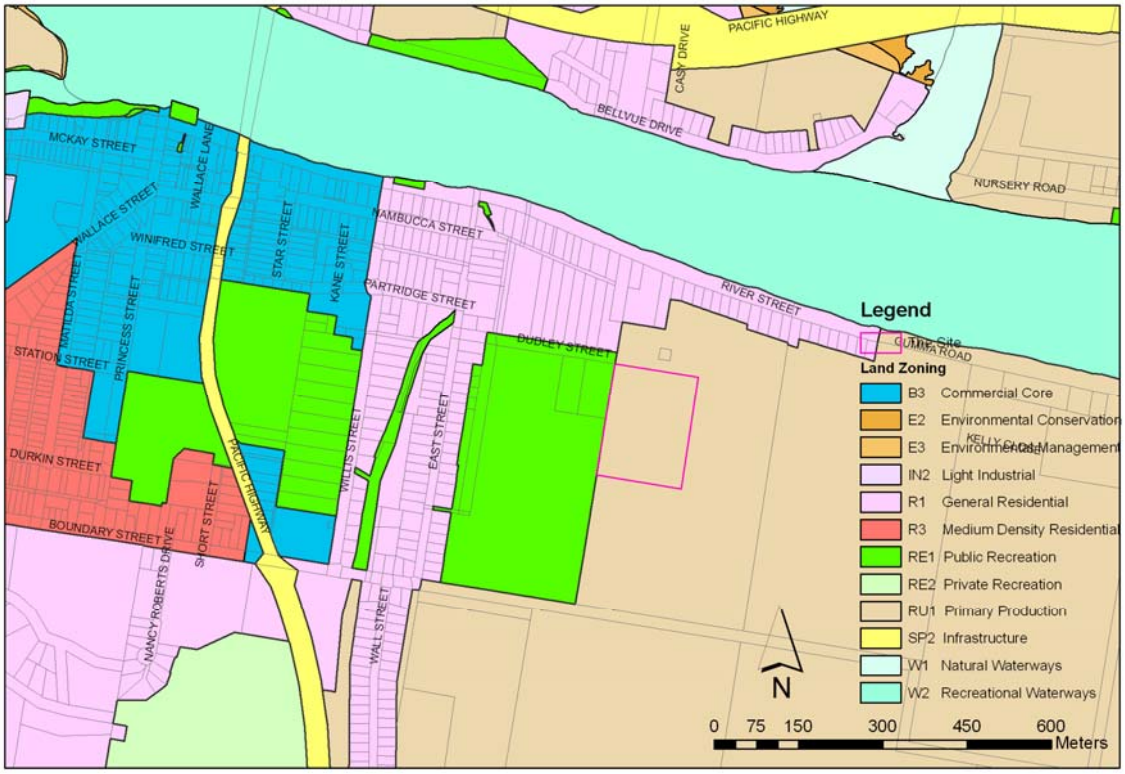


Figure 3 is an extract from the NLEP 2010 zoning map.

4.3 Advertising and Notification:

The application was advertised and notified for a period of 28 days from 7 October 2010 to 5 November 2010. As a result of such action one submission via e-mail was received from the Planning and Infrastructure Officer of Busways Group Pty Ltd. A copy of the submission is attached to this report as **Appendix B**.

4.4 Consultation:

Internal Referrals

The application was referred to Council's Engineering and Health & Building Departments.

The Manager Technical Services (MTS) raised concerns about traffic and stormwater drainage issues. However, following consideration of additional information it was his opinion that if the application was recommended for approval, the engineering aspects of the proposal relating to upgrading roads/intersections and stormwater drainage could be addressed by including appropriate conditions to any development consent granted by the JRPP.

A 5 tonne load limit applies to Dudley Street and other adjoining local roads. This would prevent access to the subject site by buses and heavy construction vehicles. The Manager Civil Works (MCW) has provided the following advice regarding the 5 tonne load limit:

> *'Following discussion with Councils Senior Overseer I believe that the 5 tonne load limit was imposed for the following reasons:-*
>
> *1 Benkleman beam testing identified a deficiency in the road pavement. Subsequent cement stabilizing failed to rectify the problem.*
> *2 Residents were concerned at the use by heavy vehicles.*
> *3 The road width was considered insufficient to allow use by heavy vehicles.*
>
> *In relation to the current development proposal any consideration for the removal of the load limit would require:-*

1 *A structural analysis of the existing pavement design and reconstruction, as required, to current standards for use by heavy vehicles.*
2 *Geometric design of the section of road to provide adequate width, turning and passing movements.*
3 *Community consultation to advise residents of the anticipated traffic implications and possible parking restrictions.'*

Any approval for the proposed school would depend on Council lifting or amending the load limit before the consent became operational.

The Manager Health & Building (MH&B) raised concerns about the noise impacts and the potential for large shallow ponding to occur, which can attract mosquito breeding. However, in the event that the application is recommended for approval the MH&B has provided conditions for inclusion in any development consent that may be granted by the JRPP.

Roads and Traffic Authority

Council received comments from the RTA on 1 November 2010 and 18 November 2010. The RTA raised a number of traffic related matters, however, it advised that:

> *'The RTA has no objection in principle to the proposed school although it should be noted that the building of the new school has inherent implications for the surrounding road network.*

The site is located within 400m of the future Pacific Highway bypass. In this regard the RTA advised that it would be appropriate to impose a condition to comply with the Environmental Criteria for Road Traffic Noise (EPA 1999).

A copy of the RTA letters is attached to this report as **Appendix C**.

Local Development (Traffic) Committee:

The application was referred to the Local Development (Traffic) Committee to review and consider the traffic aspects of the proposed development. This committee is an advisory group that includes representatives from Council, RTA and Police.

The Committee considered the traffic related matters at a meeting on 2 November 2010. The committee raised a number of concerns and advised that *'it is unable to provide a full and proper assessment until the issues have been addressed.'*

Details of the concerns raised by the Committee are included in the minutes of the meeting, a copy of which is attached to this report as **Appendix D**. It should be noted that the Local Development (Traffic) Committee is not a committee of Council, nor have the recommendations been endorsed by Council.

Local Emergency Management Committee:

The proposal was discussed at the Local Emergency Management Committee (LEMC) meeting on 15 February 2010. Advice was sought from the committee regarding flood evacuation procedures that may affect the proposed development. This committee is an advisory group that includes representatives from Council, State Emergency Service (SES), Ambulance Service, Fire Brigade and the Police. The LEMC provided the following advice:

> *'That the Nambucca Local Emergency Management Committee has expressed some significant concerns about this proposed development within a flood plain and the evacuation procedures and recommends that this be referred to the State Emergency Services at Regional and State level as the combat agency and body responsible for flood emergency planning and flood rescue.'*

It should be noted that there is no statutory obligation to refer the application to the regional or State office of the SES. The purpose of the consultation with the LEMC was to obtain local input from representatives of local emergency services, rather than seek approval from another government agency.

4.5 Preliminary Assessment:

A preliminary assessment of the application indicated that the Statement of Environmental Effects (SEE) did not adequately address the potential impacts of the proposed development relating to traffic, flooding, stormwater management, and acoustic assessment. The applicant was therefore requested to submit additional information by letter dated 15 November 2010.

Traffic:

A traffic assessment report (Appendix H of the SEE) dated August 2010 was prepared by de Groot & Benson, Consulting Engineers & Planners.

As noted above, traffic aspects of the proposed development were considered by the Local Development (Traffic) Committee and referred to the RTA for comment. The Planning and Infrastructure Officer of Busways Group Pty Ltd also lodged a submission and raised several traffic related concerns.

Following a review of all the traffic related matters the applicant was requested to address the concerns raised by the Local Development (Traffic) Committee, the RTA and Busways Group Pty Ltd.

A response to the traffic issues was provided by de Groot & Benson, letter dated 23 December 2010. A copy of the additional traffic information has been **circulated** to members of the JRPP

Flooding:

The subject site is located in a flood prone area. It is considered that any assessment of flooding, particularly relating to a school should ensure that a 'precautionary' approach is adopted.

A flood assessment report (Appendix C of the SEE) dated 15 February 2010 was prepared by de Groot & Benson, Consulting Engineers & Planners. Following a review of this report it was considered that inadequate information was provided to support the conclusions that the development will not affect the flood plain storage capacity or not unduly affect flood flow behaviour.

A response to the flooding issues was provided by de Groot & Benson, letter dated 16 December 2010. A copy of the additional flooding information has been **circulated** to members of the JRPP

Stormwater Management

A stormwater management plan (Appendix D of the SEE) was prepared by Northrop Engineers (Plan No C02DA). Council's Manager Technical Services (MTS) reviewed this plan and assessed the proposed method of stormwater disposal. The MTS provided the following advice:

- *Having regard to water ponding in adjacent open drains, the expectation that stormwater will be absorbed into the ground is probably unrealistic.*
- *The open drain has virtually no fall and ponding will likely occur.*
- *On-site detention/retention is required to limit the peak discharge from all stormwater to pre-development flows or better.*

Council's Manager Health and Building also raised concerns that large shallow surface ponding of water in the area will attract mosquito breeding.

With respect to Dudley Street, the MTS provided the following advice:

- *There are no details of drainage for the proposed upgrade and extension of Dudley Street.*
- *Parts of Dudley Street regularly floods and additional paved areas and a substantial increase in traffic can only exacerbate the existing situation.*
- *Stormwater/drainage infrastructure will need to be installed as part of the road upgrade to provide the best chance of flood free access to the school site.*

A response to the stormwater drainage issues was provided by Northrop Consulting Engineers Pty Ltd. Comments were also provided by de Groot & Benson, letter dated 14 January 2010. A copy of the additional stormwater drainage information has been **circulated** to members of the JRPP.

Acoustic Assessment

An acoustic assessment report (Appendix B of the SEE) dated 22 July 2010 was prepared by Wilkinson Murray to assess traffic noise impacts. Following a review of this report it was considered that inadequate information was provided to adequately identify the likely extent of noise from the future highway upgrade or provide any mitigation measures to limit potential noise impacts on the proposed school. The report did not address any likely noise impacts from the proposed school on residents in the locality.

A response to the acoustic issues was provided by Wilkinson Murray Pty Ltd, report dated January 2010. A copy of the additional acoustic information has been **circulated** to members of the JRPP.

4.6 Peer review of flooding:

Notwithstanding the additional flooding information provided by the applicant, there still remained doubts about the likely impacts of flooding. Due to the lack of flooding expertise within Council it was decided to seek advice from a suitably qualified independent consultant. WMAwater (Water & Environmental Engineers) were engaged to undertake a peer review of the flooding information prepared by de Groot & Benson.

WMAwater provided its written response by letter dated 11 February 2011. The details of this advice are further discussed in the following section of this report. A copy of this advice has been circulated to members of the JRPP. However, a copy is also attached to the report as **Appendix E**.

The applicant was provided with a copy of the independent consultant's advice and having regard to such advice the applicant was advised that it is likely the development application will be recommended for refusal. The applicant was requested to advise his clients accordingly and provide them an opportunity to withdraw the application and receive a 50% refund on the application fees (this is in keeping with Council's normal policy).

4.7 Further consideration of the application:

Meeting held with the proponents on 21 February 2011

Following the advice provided to the applicant that the application was likely to be recommended for refusal, a meeting was convened with the applicant, representatives of the school, Council's General Manager and the Manager Planning and Assessment (author of this report).

At the meeting the applicant and his clients were advised that in addition to the concerns raised in the independent consultant's advice, the Local Emergency Management Committee (LEMC) had expressed some significant concerns about this proposed development within a flood plain and the evacuation procedures. However, the LEMC advised that it had no statutory powers to comment on or assess the application. The LEMC therefore recommended that the application should be referred to the State Emergency Services at regional and State level as the combat agency and body responsible for flood emergency planning and flood rescue.

As noted above, there is no statutory obligation to refer the application to the regional or State office of the SES. Having regard to the concerns already raised about flooding it was not considered necessary to further delay the process and make formal representation to the regional or State Office of the SES.

The proponents advised that they had already looked at 23 other sites and only proceeded with the proposed development on the basis of previous advice from Council that the subject site was in a flood plain and the application could be considered on its merits. Council's advice also stated that the proposal would need to *'demonstrate that flood risks have been considered and mitigated by the design, siting and construction of the development*'.

At the meeting the proponents requested that they be given a further opportunity to address the concerns raised by WMAwater. They also advised that they would prepare a comprehensive flood evacuation plan. It was agreed that an extension of time would be sought to allow the submission of further additional information. Having regard to the advice from the LEMC, the proponents were also requested to consult with the regional and/or State office of the SES, and if possible, submit a copy of the flood evacuation plan to the SEE for their comments.

Submission of further additional information

The applicant by letter dated 14 March 2011 provided further additional information in support of the proposed development. The submission included the following documentation:

- *'Review of Flood Issues'* prepared by ADW Johnson Pty Ltd dated 14 March 2011.
- Letters from de Groot & Benson Pty Ltd dated 14 March 2011 and 14 January 2011 (should have been dated 14 March 2011).
- *'Flood Emergency Management Overview'* prepared by de Groot & Benson Pty Ltd dated February 2011.

All of the above documents, including Appendices, have been **circulated** to members of the JRPP.

The report prepared by ADW Johnson recommended the following changes to the proposed development:

- *The floor level of the hall to be raised to 4.35m AHD so that it can act as a flood refuge to accommodate students in times of emergency if needed;*
- *Provision of a small platform at or above 6.3 AHD so that the School has an area above the PMF;*
- *Raise the height of Dudley Street at the lowest point which is currently 2.2m to 2.5m AHD (an increase of 0.3m) to significantly reduce School closures; and*
- *Raise the access from the School to the evacuation route (Dudley Street) so that it is at or above 2.5m AHD.*

The applicant advised that *'These recommendations have been considered by the proponent who has agreed to adopt them in their entirety and amend the Development Application accordingly.'*

Further Engineering comments

With respect to the proposal to raise the height of Dudley Street, Council's Manager Technical Services provided the following advice:

> *'The implications of raising the low point of Dudley Street at the entry to the proposed school site would be interference with the overland flow path from the Christian School, Thistle Park and possibly houses fronting River Street, as such creating a mini dam.*
>
> *I have no issues with if lifting the low point of Dudley Street if this solution provides for a greater chance of flood free access to the proposed school site and that caters for a greater storm/flooding events, subject to the installation of appropriate drainage infrastructure that discharges flows from all stormwater events from the the lots north of Dudley Street.'*

Council's Manager Civil Works provided the following additional advice:

> *'Any proposal to lift the road should be accompanied by a flood study to identify the impacts on flow paths and surrounding properties.*
>
> *Consideration also needs to be given to the impact of raising the road and the additional width required for fill batters to determine if there is sufficient space in the existing road reserve.'*

Further peer review of flooding

The additional information submitted by the applicant was referred to Mr Mark Babister of WMAwater. Mr Babister was requested to review the additional flooding information and provide *'some clear direction to determine if the applicant has fully addressed and overcome the concerns raised in you previous advice'*.

In conclusion WMAwater states:

> *'The proposed school site presents an unacceptably high flood risk, which will get worse with time due to climate change. While our earlier raised concerns regarding floor level have been addressed, we do not believe the risk profile concerns and evacuation route issues have been fully addressed. We would not recommend the development be approved unless:*

- *a detailed two dimensional model is established to evaluate the flood evacuation risk and long term sustainability of the school*
- *The proponent using 2D hydraulic modelling demonstrates that the evacuation route in a 100 yr flood is below the Project 10 hazard curve for children.*
- *The development and any improvement to access results in no increased flood risk for existing properties in a 100yr event using a 2D model.'*

A copy of the advice from WMAwater dated 21 March 2011 is attached to this report as **Appendix F.**

5.0 79C EVALUATION:

79(C)(1) Matters for Consideration

Assessment of a development application requires the following matters to be taken into consideration:

79(C)(1)(a)(i) the provisions of any environmental planning instruments

Nambucca Local Environmental Plan 2010:

The subject site is zoned RU1 – Primary Production under Nambucca Local Environmental Plan (NLEP) 2010. The proposed development is defined as an *'educational establishment'* which is not a prohibited land use.

The proposed development does not satisfy the objectives of the RU1 zone. In particular, the proposed development does not *'encourage sustainable primary production'* and it is considered that the proposed school may result in *'fragmentation of resource lands'* and possibly create *'conflict between land uses within the zone'*. However, it is considered that fragmentation of rural land and likely conflict are only minor impacts and not sufficient justification to refuse the development application.

Clause 5.5 (Development within the coastal zone) of NLEP 2010 applies. In accordance with Clause 5.5(1)(b)(iv), it is not considered that the application adequately addresses climate change for a proposed school building which if approved is likely to remain on the site until 2100.

Clause 7.1 (Acid sulfate soils) of NLEP 2010 applies. The objectives of this clause have been satisfactorily addressed by the applicant in accordance with Section 4.4 (Soils) of the SEE and Appendices F & G of the SEE.

Clause 7.3 (Flood planning) of NLEP 2010 applies. In accordance with Clause 7.3(3)(a) it is not considered that the proposed development is *'compatible with the flood hazard of the land'*

State Environmental Planning Policies (SEPP)

It is considered that the following SEPPs are relevant to the proposed development.

SEPP No 44 – Koala Habitat Protection

The land has an area of more than 1 hectare and therefore this policy applies. The proposed school site is within a cleared rural property used for cattle grazing. The property does not contain any koala feed trees listed under Schedule 2 and therefore does not comprise potential koala habitat.

SEPP No 55 – Remediation of Land

The applicant has undertaken a potential land contamination assessment. The SEE adequately demonstrated that the land is not contaminated and therefore does not require any remediation works to be carried out in accordance with this Policy.

SEPP No 71 – Coastal Protection

The matters for consideration set out in Clause 8 have been taken into account in accordance with Clause 7(b) and the proposed development is not inconsistent with the aims of the Policy set out in Clause 2.

SEPP (Major Development) 2005

The proposal is defined as an *'educational establishment'* and the capital investment value is in excess of $5 million. Therefore, in accordance with Part 3 (regional development), the development application is required to be determined by the Northern Joint Regional Planning Panel (JRPP).

SEPP (Infrastructure) 2007

The proposed development is an *'educational establishment'* comprising more than 50 students. It is therefore traffic generating development under Schedule 3 of the Policy. The RTA comments were taken into consideration in accordance with Clause 104(3) of the Policy.

79(C)(1)(a)(ii) the provisions of any draft environmental planning instruments

There are no draft environmental planning instruments that apply to the subject land.

79(C)(1)(a)(iii) the provisions of any development control plan

The following Parts of Nambucca Development Control Plan (NDCP) 2010 apply to the subject land:

Part A3.0 – Notification and public participation:

The application was advertised and notified to adjoining and nearby residents for a period of 28 days. The Unkya Local Aboriginal Land Council was also notified of the proposed development. As a result of such action one submission was received from the Planning & Infrastructure Officer of the Busways Group Pty Ltd. A copy of this submission is attached to this report (Appendix B).

Part A4.0 – Contributions.

Any approval granted would include a condition for the payment of S64 contributions towards water and sewer augmentation.

Part A5.0 – Environmental Context

The SEE has addressed the environmental context of the proposed development. Any approval granted would include conditions to comply with environmental management of the site in respect to: acid sulfate soils; flood levels; Aboriginal cultural heritage; noise; etc.

Part C – Car Parking and Traffic

The SEE has addressed the car parking and traffic requirements of the proposed development. Any approval granted would include conditions to comply with car parking and traffic requirements of the DCP.

Part D – Sediment and Erosion Control

The SEE includes a sediment and erosion control plan (Appendix E). Any approval granted would include a condition to ensure appropriate measures are put in place in accordance with the sediment and erosion control requirements of the DCP.

Part F1.3.2 – Buffers

The required buffers generally apply to dwellings to ensure there is adequate separation from rural land uses. These buffers can equally apply to other permissible land uses such as the proposed school. The proposal does not comply with the minimum buffer distance of 60m. It is considered that the lack of any separation between the open play area and the adjoining grazing land may result in conflicts between the respective land uses. However, it is considered that any likely impacts would only be minor and therefore not sufficient justification to refuse the development application.

79(C)(1)(a)(iiia) the provisions of any planning agreement

There is no planning agreement or draft planning agreement that apply to the proposed development.

79(C)(1)(a)(iv) the regulations

The *NSW Coastal Policy 1997* has been considered in accordance with Clause 92(1)(a) of the *Environmental Planning & Assessment Regulations 2000*.

79(C)(1)(b) the likely impacts

There are some concerns about the likely impact of the proposed development in respect to traffic, stormwater management and to a lesser extent, noise impacts and fragmentation of rural lands. However, the major concern relating to the proposed development is the likely impact of flooding. Each of these issues is discussed below:

Traffic

Council's MTS has advised that whilst it may come at a considerable cost, the required works to upgrade Dudley Street and the intersections of Dudley Street/East Street and East Street/Partridge Street could be a condition of consent and specific details submitted for approval before a Construction Certificate is issued.

As noted above, a 5 tonne load limit currently applies to Dudley Street and other adjoining local roads. This matter would need to be resolved before any development is carried out (see section 6.0 of this report). Without pre-empting the outcome of any consultation process or Council's determination of this matter, it is considered that there is a high probability that Council would amend the load limit and support the use the local road network by buses if development consent was granted for the proposed school. An amendment would also be required to allow heavy vehicles to use the affected local roads during construction of the proposed school. Any such approval would be subject to a condition to reinstate and upgrade the affected roads to Council's satisfaction.

Stormwater

Council's MTS has advised that the required works to upgrade stormwater drainage infrastructure to an acceptable standard could be a condition of consent and specific details submitted for approval before a Construction Certificate is issued.

Noise

Council's MH&B has advised that whilst traffic noise at the intersection of Dudley Street and East Street and noise levels associated with the school operation may be exceeded, the impacts are expected to be for short periods and they will not exceed acceptable standards. The MH&B has also advised if development consent is granted, the noise measures recommended by the consultant should be adopted to reduce construction noise impacts.

Rural lands

The land is identified as regionally significant farmland in the Mid North Coast Farmland Mapping Project. The proposed development would cause the loss of 3ha of prime crop or pasture land.

The subject site is located on the fringe of Macksville and the rural zone has been applied due to the flooding character of the land and not necessarily because of the agricultural value of the subject land. It is therefore not considered that fragmentation of the rural zoned land in the particular location is a major issue.

Flooding

By far the major impediment to the proposed development is the potential flood impacts, particularly relating to evacuation and safety of children during an extreme flood event.

Council has an adopted *Flood Risk Management Plan* (February 2001) which is based on the *Lower Nambucca Floodplain Management Study* (November 1999) undertaken by Resource Design & Management (RDM) Pty Ltd. In accordance with the *Flood Risk Management Plan* (FRMP) the subject land is identified as being 'High Hazard – Flood Fringe'.

In accordance with the *Lower Nambucca Floodplain Management Study* (LNFPMS) the subject site is located in East Macksville – Area B. With respect to this area the LNFPMS states:

> *'East Macksville, from east of the Town Drain along the natural levee on the bank of the Nambucca River, is considered to be Flood Fringe. For the 1% AEP flood event, the river bank area would not be flooded but would be surrounded by low velocity floodwaters of up to 1.0 metre depth.*
>
> *In extreme events, the entire area could be covered by up to 2.5 metres of medium velocity floodwaters creating a high risk situation. There is no high ground to retreat to in these circumstances, and there would be difficulty in evacuating people from the area across the Town Drain. Because of the problems of evacuation during rising floodwaters, East Macksville has been defined as High Hazard.'*

In accordance with the FRMP the subject land is described as being in a 'Medium Risk Area'. Certain developments are either unsuitable or required to implement appropriate controls relating to; floor level, building materials, structural soundness, flood affection, evacuation/access, flood awareness, and, management and design.

The FRMP has a definition for *'critical facilities'* which includes SES HQ, Police Stations, Hospitals, Nursing Homes, etc, but does not include schools. Schools are included in the definition for *'special purpose facilities'*. There is no definition in the FRMP for *'essential community facilities'*. However, this term is used in the Flood Risk Planning Matrix.

Before the DA was lodged the applicant was provided with the following preliminary advice:

> *'For the purpose of defining the use and considering its (the proposed school) suitability against the Flood Risk Planning Matrix we would apply the same controls listed under New Commercial or Industrial.'*

This advice is somewhat qualified by also advising the applicant that this category (New Commercial or Industrial) *'allows for a merit based assessment'* and *'we would be relying on the information submitted in your application to demonstrate that flood risks have been considered and mitigated by the design, siting and construction of the development'.*

A copy of the e-mail advice dated February 2010 is attached to this report as **Appendix G.**

With respect to determining the appropriate controls based on development type and the flood risk category, WMAwater provided the following advice:

> *'The proposed development is located in a Medium Risk area. A school does not fit easily in the development type categories. The school cannot be considered an essential community facility (which is not permitted in a medium risk area) as this applies to services needed during a flood such as a hospital. de Groot and Benson (15 Feb 2010) have classified the development as a "New Commercial or Industrial" development, which is permitted within a medium risk area, if the floor level is equal to or greater than the 1% AEP. However, a commercial or industrial development would be occupied by adults, generally only from 9 to 5, who can make informed decision about flood risks and take appropriate action if water is rising. Commercial and industrial developments are often located in flood prone areas as some uses are flood compatible or willing to accept the risk. In contrast a school will be occupied by young children (before, after and during school hours) who are less able to negotiate flood waters, self evacuate or make decisions about risk.'*

WMAwater has advised that *'Given the proposed development is a school which is likely to remain on site till 2100 it is necessary to include the estimated impact of climate change in the calculated floor level'*. Therefore WMAwater has recommended that the floor level should be 3.4m AHD, which is the 1% AEP, plus 0.50m freeboard and 0.55m to account for the predicted raise in sea levels by 2070. That would result in a finished floor level of 4.45m AHD.

The major concern relating to the proposed development is the evacuation and/or isolation of school children during a flood event. This aspect has been addressed by WMAwater and in conclusion WMAwater states:

'The proposed school site presents an unacceptably high flood risk, which will get worse with time due to climate change. Elevating the floor levels of the school will address much of the flood risk but it will not remove the evacuation risk. We would not recommend the development be approved unless the flood evacuation risk and long term sustainability are addressed.'

Notwithstanding the above the applicant was given an opportunity to review and provide further additional information in support of the application and address the concerns raised by WMAwater.

The additional information submitted by the applicant made several recommendations to amend the design of the proposed building and implement certain measures to limit the impacts of flooding and improve evacuation from the school. However, these additional measures have not been modelled to determine the effects of such measures, including any likely impacts on existing properties in the locality.

WMAwater acknowledges that their previous concerns regarding floor levels have been addressed. However, they also state:

'we do not believe the risk profile concerns and evacuation route issues have been fully addressed.'

Having particular regard to the previous and most recent flooding advice from WMAwater, it is not considered that the proposed school should be allowed in a flood prone area which, in accordance with their independent advice, has an unacceptably high level of flood risk.

79(C)(1)(c) suitability of the site

It is considered that concerns relating to traffic, stormwater drainage, and noise can be overcome, albeit at considerable cost to upgrade the road and stormwater infrastructure. However, it is considered that it would be more difficult to mitigate the potential flooding impacts due to the location of the subject site. In this regard WMAwater has provided the following advice:

'While there is likely to be considerable warning time to evacuate this assumes that the warning gets through and that they act quickly and efficiently to evacuate the children. No details of the proposed evacuation route have been provided. The most likely evacuation route appears to be via Dudley and Partridge Streets to Macksville High School (approximately 1.8km) which crosses the Town Drain. The lowest point on the most likely evacuation route based on the drawings provided is 2.23mAHD. Approximately 1.2km of the 1.8km evacuation route is flooded in a 20 year event. Approximately 1.35km evacuation route is below the 1% AEP flood level.

If the road were to be raised to provide flood free access in a 1% AEP event it would have an unacceptable impact on existing development. Low sections of the road could be raised with a bank of culverts installed underneath however it is likely the cost of this would be prohibitive.'

With respect to evacuation the additional advice from WMAwater states:

'No consideration has been given to flash flooding which occurs with little to no warning and has no significant effect on the Nambucca River levels. This can cause flooding on minor creeks and surcharging of drainage systems.

Floods are generally of short duration but water can pond in low lying areas and roads can be cut for several days. Water could potentially pond on the low lying areas of the site for days.

The Flood Emergency Management Overview by DGB states that if people are caught at the site they could be rescued by boat. However, the Nambucca Shire Local Flood Plan notes that there is no high ground in the area to retreat to and in an extreme event it would be difficult to evacuate people from the area across the town drain.'

Having regard to the likely difficulties in implementing a flood evacuation plan and the likely additional pressure put on existing emergency services during an extreme flood event, it is not considered that the site is a suitable location for the proposed school.

79(C)(1)(d) submissions

Submissions were received from the RTA. However, only one submission was received as a result of the public notification process. The RTA and the public submission raised concerns about traffic related matters. A copy of the submissions are attached to this report

79(C)(1)(e) public interest

Whilst there was a lack of response to the notification process, it is not considered that the proposed development is in the public interest due to the potential flood impacts.

6.0 CONDITIONS:

As noted above, the JRPP has the option to grant consent to the application. However, any such approval should be subject to Council lifting or amending the 5 tonne load limit that applies to Dudley Street and adjoining local roads.

It is not considered that a *'deferred commencement'* consent would be appropriate as the condition to amend the 5 tonne load limit relies on a process/action undertaken by another party which is beyond the control of the applicant.

In accordance with previous legal advice (not related to this application) there appears to be an option to include a *'Grampion'* condition to require an amendment to the 5 tonne load limit prior to the development being carried out. Without attempting to provide a legal analysis, it is understood that this type of condition would satisfy the *'Newbury'* test, ie *'for a planning purpose'* and *'fairly and reasonably relate to the development'.*

7.0 CONCLUSION:

It was considered that the initial and subsequent flooding information provided by the applicant was deficient and did not adequately demonstrate the proposed school was an appropriate development in a flood prone area. As such, it was decided to obtain independent expert advice from a suitably qualified consultant to comment on the information submitted by the applicant and assess the potential flood impacts of the proposed development.

There are many positive aspects to the proposed school locating to the subject site, such as; proximity to the town centre and adjoining playing fields, flat level land; and, availability of services. However, based on the information and advice provided by WMAwater, it is not considered that a favourable recommendation could be made for the proposed development.

In addition to the conclusion that the *'proposed school presents an unacceptable high flood risk'*, WMAwater also states:

> *'We would not recommend the development be approved unless:*
>
> - *a detailed two dimensional model is established to evaluate the flood evacuation risk and long term sustainability of the school*
> - *The proponent using 2D hydraulic modelling demonstrates that the evacuation route in a 100 yr flood is below the Project 10 hazard curve for children.*
> - *The development and any improvement to access results in no increased flood risk for existing properties in a 100yr event using a 2D model'*

It is considered that the applicant has been given every opportunity to fully address the flooding issues but has failed to overcome all the concerns raised by the independent expert consultant. It is therefore not considered good planning practice to allow a new school to be developed in a flood prone area where there is likely to be difficulty with evacuation and potential safety issues during an extreme flood event.

APPENDIX A

GeoLINK environmental management and design

25 January 2011
Ref No: 1535157

The General Manager
Nambucca Shire Council
PO Box 177
MACKSVILLE NSW 2447

Attention: Arthur Tsembis

RE: Development Application 2010/234 Proposed new primary school and subdivision of 3 hectare portion of rural land on land described as Lot 11 DP 805157, 21 Dudley St Macksville

ABN 79 896 839 729
ACN 101 084 557

Return address:
PO Box 1446
COFFS HARBOUR
NSW 2450

COFFS HARBOUR
T 02 6651 7666
F 02 6651 7733

LENNOX HEAD
T 02 6687 7666
F 02 6687 7782

www.geolink.net.au

Dear Sir,

I refer to our recent discussions in regard to the abovementioned development application. As you are aware subdivision of the site for the proposed use is currently not permissible under Nambucca Local Environmental Plan (LEP) 2010 and a planning proposal has been submitted to council to progress an amendment to the LEP to allow for the proposed subdivision.

Council has advised that in order for the school component of the development application to be determined, the subdivision component needs to be withdrawn. The purpose of this letter is to advise that GeoLINK, as applicant of the development application, would like to amend the development application by withdrawing the subdivision component of the development application. GeoLINK requests that Council now assess the development application for determination by the joint regional planning panel.

Should you require any further clarification please feel free to contact me on 6651 7666 or simonw@geolink.net.au.

Yours sincerely
GeoLINK

Simon Waterworth
Senior Planner | Principal

APPENDIX B

Hi Keith,

Thank you for sending the details of the proposed development of the new St Patrick's School. The CD arrived and I have had time to review it.

Unfortunately I cannot attend the Development Committee next Tuesday and would like to submit a number of questions/issues that need to be addressed about bus operations to the school. I have also attached a number of photos which show some of our concerns, particularly at the Dudley St/East St intersection.

Currently Busways operates 11 buses to the school, AM and PM. There are also some buses operated by other operators. As the school expands the number of buses could increase.

Matters of concern are as follows:

1. The narrowness of East Street and Dudley Street, given that there will be 15 buses coming and going, passing each other and negotiating the intersection. It is inevitable that as buses pass each other in Dudley Street their wheels will move off the pavement resulting in badly broken and boggy shoulders along the roadway, which in turn could increase the possibility of collisions between passing vehicles. Buses exiting Dudley Street will require the full width of East Street for both left and right turns. With the increase in traffic during the peak times at this corner there is the potential for blockages and the possibility of vehicles needing to reverse to allow a bus to complete its turn. There could also be the need for some No Stopping regulatory signage to keep this intersection clear. The difficulty of buses negotiating this intersection can be seen in the accompanying photos. The traffic modelling studies show reasonable levels of traffic movement at this intersection but don't adequately allow for the tight nature of the intersection and the large size of buses negotiating this corner.

2. The dip in the road at the intersection of East and Dudley Streets requires buses to straddle this intersection at an angle. While at the moment one bus to the SDA school operates across this dip, the long term operation of 11 buses through this intersection could impact on our capacity to maintain a service to this school. At a minimum, for the most effective operation of this intersection this dip should be removed

3. Can you confirm that the swept path of a 12.5 metre bus will be able to access the bus bay from the roadway without reversing? It would seem almost certainly that from the details shown on the plans, that a bus will not be able to access bus bay No.6.

4. The centre island between the bus bay and Dudley Street should be much narrower and shorter. If the inside edge of the island was close to the boundary line as shown on the plans, it would allow better manoeuvrability of buses. Buses don't always depart in the same order that they arrive. There should be capacity for buses to pull out around the bus parked in front of it. A shorter island will also allow better turning into and out of the facility. It should not be forgotten that all buses will need to perform a U turn manoeuvre to access the bus bay.

5. No Stopping provisions should be made opposite the bus bay to allow for buses to turn into the bay.

6. I note that cars, exiting the general car park and drop off and pick up zone, will be turning onto the road only a short distance from where buses are turning. Adequate signage should be provided to cater for this potential conflict.

7. Some aspects of the traffic study are general in nature and lacking some accuracy. Eg in the Traffic Study, section 2.1.2 states "the intersection grade is level, and the approach from both East St and Dudley St is level as well." Attached photos clearly show the significant dip at this intersection. The report also stated that there are only cars transporting students to the SDA school. Enclosed photos are of the bus that services this school.

8. It should also be noted that the bus servicing the SDA school often needs to make a three point turn at the bay at the entrance to that property. Whilst this can be accommodated at the moment, with increase of traffic passing this location, adequate facilities would need to be provided to eliminate this three point turn.

Busways believe these access issues are important and would need to be adequately addressed before we could support this application.

Whilst I am unable to attend the meeting on Tuesday 2nd November, I remain ready to work with council in any way possible to achieve a workable outcome in regard to this school. Please don't hesitate to contact me if you have any further questions.

Kind regards,

[redacted]

[redacted]
Planning & Infrastructure Officer
Busways Group Pty Ltd
[redacted]
www.busways.com.au

APPENDIX C

File No: 317NTH10/00219
Your reference: DA 2010/234
Mr Gregory Sciffer

RTA

The General Manager
Nambucca Shire Council
PO Box 177
MACKSVILLE NSW 2447

Nambucca Shire Council. DA 2010/234. Lot 11 DP 805157. Proposed School and Subdivision. Dudley Street. Macksville.

Dear Sir

Reference is made to your letter dated October 13, 2010 which relates to the above development.

The RTA has no objection in principle to the proposed school although it should be noted that the building of a new school has inherent implications for the surrounding road network.

The following comments are provided for Council consideration:

i. Most of the traffic impacts will coincide with the morning and afternoon peaks. The cumulative impact of all traffic on the existing junctions of East Street with Partridge, Dudley and Boundary Streets needs to be assessed to consider if any improvements or facilities are required to safely manage pedestrians, cyclists, through, right and left-turning traffic.
ii. No consideration has been given to pedestrian and bicycle connections to the school. This should include an off-road shared path and blisters/refuges for road crossings.
iii. The extension of Dudley Street and design of the school accesses should be constructed to maintain the integrity and legislative requirements of the public road.
iv. Dudley Street should be constructed with a cul-de-sac to allow u-turns.
v. Both the car parks should be consolidated to maximise the use of the facilities and provision made for overspill parking for major events.
vi. Six new accesses are proposed to the school. Consideration should be given to consolidating some of them such as combining both car parks and the access road.
vii. The combination of the limited frontage and numerous accesses restricts the ability to increase the capacity of the bus bay in the future. This will result in queuing and other unsafe activities on Dudley Street.
viii. Consideration will need to be given to the installation of regulatory controls along Dudley Street to discourage unsafe on-street activities. This should also include the provision of school zone facilities. These will need to be included in the determination and regulated through the local authorities.

For any further enquiries please contact Mr Greg Sciffer (Ph: 02 66401344) or by email at land_use_northern@rta.nsw.gov.au for advice.

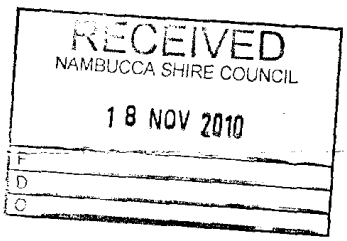
Roads and Traffic Authority

31 Victoria Street Grafton NSW 2460
Post Office Box 576 Grafton NSW 2460 DX7816
www.rta.nsw.gov.au | 02 66401300

File No: 317NTH10/00219 10/2231
Your reference: DA 2010/234
Gregory Sciffer

RTA

The General Manager
Nambucca Shire Council
PO Box 177
MACKSVILLE NSW 2447



Nambucca Shire Council. DA 2010/234. Lot 11 DP 805157. Proposed School and Subdivision. Dudley Street. Macksville.

Dear Sir

Reference is made to your letter dated October 13, 2010 and the RTA's previous reply for the above development.

The proposed school is located adjacent the proposed upgrade of the Pacific Highway between Warrell Creek and Urunga. The preferred route for the Macksville to Urunga section was identified in 2005. The environmental assessment has been displayed and the assessment submissions report is nearing completion. The approval under Part 3A of the EP & A Act is anticipated in the near future.

It would be appropriate to impose a condition that requires that consideration is given the predicted noise levels that were identified in the Warrell Creek to Urunga Environmental Assessment (RTA 2010) and ensure that the proposed development is fully compliant with the Environmental Criteria for Road Traffic Noise (EPA 1999). The proposed site is also likely to be exposed to construction noise during the time the highway will be under construction.

Several aspects of the Noise Impact Assessment (NIA) for the Warrell Creek to Urunga Upgrade have been reproduced without consultation, discussion or the agreement of the RTA. The RTA assumes no responsibility for the interpretation of the NIA or how it has been applied in relation to the proposed development.

For any further enquiries please contact Greg Sciffer (Ph: 02 66401344) or by email at land_use_northern@rta.nsw.gov.au for advice.

Yours faithfully

16 NOV 2010

David Bell
Regional Manager, Northern Region

Roads and Traffic Authority

31 Victoria Street Grafton NSW 2460
Post Office Box 576 Grafton NSW 2460 DX76
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APPENDIX D

PRESENT

Arthur Tsembis	(Nambucca Shire Council)
Noel Chapman	(Nambucca Shire Council)
Keith Williams	(Nambucca Shire Council)
Sergeant Jarrod Langan	(NSW Police)
Ms Tara McAuley	(Roads and Traffic Authority)

DEVELOPMENT APPLICATION

DA 2010/234 - New School

An on-site meeting was held starting at 12.30 pm, at Dudley Street, inspecting the site and the east and west ends of the street.

The Committee looked at the location of the proposed development and discussed issues relating to the upgrade of the road and also stormwater drainage issues related to road construction as well as looking at the intersection of East/Dudley Streets, and Partridge/East Streets.

Note: This matter will not be dealt with by Council – it is a JRPP matter. Council is providing the necessary notification and consultation processes and is preparing a report for the JRPP's consideration.

1:15 met back at Council's Administration Centre for further discussions.

Issues from the Statement of Environmental Effects

Traffic Assessment by de Groot Benson

Section 3.1 – Traffic Generation from development

Report states 82% of students will travel by bus. Bus Company indicates current usage is 50% - requires clarification by the applicant. Traffic analysis is to be adjusted accordingly.

Existing traffic on Dudley Street – report indicates students are all driven to and from the SDA school by family members. It is understood that at least one and possibly two buses service the SDA School.

Traffic analysis needs to identify existing load limit on East Street of 5 tonnes as this will impact on traffic movements of school buses, including construction traffic.

Validation is required of assumptions regarding traffic movements out of Dudley Street turning right instead of left. The majority of development in Macksville is in the southern area and this would indicate a left turn movement.

A summary of all traffic numbers and percentages need to be reconsidered and validated.

Traffic make-up car/buses will have an impact on intersections Boundary Street/Pacific Highway, Partridge Street/Pacific Highway, Partridge/East Streets, East/Dudley Streets. Concept layouts for intersection upgrades including the need for any swept paths for buses are to be provided prior to further assessment of the application.

Section 5 – Road Upgradings

Report indicates no proposed works in East Street. Concern over levels of road pavement in East Street being suitable for use by buses accessing Dudley Street.

Redesign of horizontal and vertical alignment of East/Dudley Streets intersection needs consideration to facilitate bus access through the existing open drain across Dudley Street. This is likely to require major road upgrading with provision of splay corners and relocation of existing services and the reconstruction of sections of East Street.

Concept layout for proposed improvement to Dudley Street should be provided and include: table drain and footpath layouts; consideration of shared footway; and, the impact on the adjoining Public Reserve.

To make traffic movements functional, "No Stopping" signs may be required along the northern side of Dudley Street, opposite bus turning area. This requirement could be a condition of any consent granted. A detailed sign schedule and layout to Australian Standards should be submitted to Council with the Construction Certificate Application.

The Committee has concerns that buses are unable to adequately access the turning bay. A concept plan should be provided that demonstrates buses can practically access the bus lane and the parking/stopping spaces. A cul-de-sac should be considered at the end of Dudley Street.

The Committee has concerns that the bus bay does not allow for buses to enter and depart from designated parking bays and maintain an efficient flow of traffic.

The applicant needs to demonstrate that buses can pass one another and move in and out of the bus zone in all directions. There is a need to ensure the constant bus flow can be achieved, and that buses can access and depart the parking bay without disruption to traffic flow.

The application should be referred back to the Local Development (Traffic) Committee following receipt of additional information.

Recommendation

As the Development Committee (Traffic) has concerns relating to the access arrangements for buses and the expected number of vehicular movements onto the local road network and the extent of road upgrading required at the various intersections referred to above, it is unable to provide a full and proper assessment until the issues have been addressed. It is therefore recommended the applicant address these matters prior to any further assessment of the application.

Having regard to the above, the main issues to be addressed are:

1 Number of students travelling by bus which is inconsistent with the information supplied by the bus company.

2 Report indicates only parents drop off students at the SDA School, however at least one school bus taken students to the school each day.

3 A revised traffic analysis of East Street, including intersections with Partridge and Dudley Streets and Boundary/Pacific Highway, Partridge Street/Pacific Highway, is required.

4 Validation of traffic numbers and movements.

5 Concept layouts for intersection upgrades including swept paths for buses.

6 East Street road works required for bus access and use.

7 Bus turning and movement without disruption to flow of traffic. Applicant needs to demonstrate buses can park in the bays shown in one continuous movement, can pass buses already parked in one continuous movement, from Dudley Street and sufficient room is available for buses to pull out and around a bus parked in front of it.

Note:

Dudley Street reconstruction should address flood issues and provide flood-free access to the school. Council's Manager Traffic Services will address this issue separately.

CLOSURE

There being no further business the Chairperson then closed the meeting the time being 2.28 pm.

……..
Arthur Tsembis
Manager Planning and Assessment
(CHAIRPERSON)

APPENDIX E

Arthur Tsembis
Nambucca Shire Council
PO BOX 177
MACKSVILLE NSW 2447

L110204_ DA2010_234

11 February 2011

Attention: Mr A Tsembis

Dear Arthur,

Re: Advice re DA 2010 /234 Dudley St

INTRODUCTION

WMAwater has been engaged by Nambucca Shire Council to provide advice on flooding relating to DA 2010/234 – St Patrick's Primary School Macksville. In particular to provide advice on

Is the information, in your opinion, sufficient to make a reasonable assessment of the potential flood impacts on the proposed development and on adjoining and nearby properties.

Are you satisfied that the information demonstrates the conclusions reached.

Having regard to the available information, is the location of the proposed school acceptable from a flood safety point of view.

Having regard to Council's FRMP and current best flood management practice, what is, in your opinion, an acceptable finished flood level to ensure the school building will not be unduly affected by a 1% flood event.

BACKGROUND

It is proposed to build St Patrick's Primary School Macksville on a flood prone site in Dudley Street. The proposed school will contain 14 classrooms, a library, administration building, hall, canteen and out of school care facility. The school is designed to cater for 400 students and 30 staff.

A flooding assessment on the impact of the school on flood behaviour was conducted by de Groot and Benson Pty Ltd (dated 15 Feb 2010).

Ground levels across the site vary from 1.3 to 1.7m AHD at the southern end of the property to 2.3 to 2.6 m AHD at the northern end. The average ground level at the site according to de Groot and Benson is 2m AHD. The proposed floor level for the school is 3.85mAHD. The rationale for this level is that it is (DRA Architects, 2011):

60mm higher than the RTA 100yr flood level plus 20mm increase due to the highway construction

450mm higher than current Council Flood level

An estimated 20, 000 m3 of fill will be used to construct mounds for the school buildings to be constructed on.

KEY ASPECTS

Key issues for consideration are with regard to development are:

1/ Appropriate Floor Level/Flood level
2/ Evacuation route for the students and staff
3/ Obstruction to flood flow by the development
4/ The fact that the development is a School and the associated risk

AVAILABLE DATA
The following data was considered as part of this advice:

Lower Nambucca Flood Study – PWD 1994
Warrell Creek to Urunga Environmental Assessment
Nambucca Shire Council Floodplain Risk Management Plan
de Groot & Benson Pty Ltd – Flood Assessment (dated 15 Feb 2010)
de Groot & Benson Pty Ltd – Response to Flooding Issues (dated 16 Dec 2010)
DRA Architects – St Patrick's Primary School Macksville (Dated 18 Jan 2011)
Detail and Contour Survey –Donnelly Welsh Park Macksville (provided by Council)
2m contour plot provided by Council.
Statement of environmental effects, St Patrick's school Macksville –Geolink 2010

FLOOD LEVEL

Council currently uses the 100 year ARI Flood levels from the Lower Nambucca Flood Study (PWD, 1994) for planning purposes. The recently completed Environmental Assessment and Hydrology technical studies for the Warrell Creek to Urunga Bypass (carried out by SKM) has caused some confusion with regards to the flood level. The *Lower Nambucca Flood Study* 100 year flood level at the site of the proposed new highway bridge is 3.4mAHD whereas the SKM study determined the level to be 3.77mAHD (under existing conditions). The aim of the SKM study was not to set 100 year flood levels for planning purposes. A detailed process is outlined in the NSW Floodplain Development Manual for setting flood levels in NSW.

The *Lower Nambucca Flood Study* 100 year flood levels are Council's best estimate of flood risk but the SKM study raises a number of questions. It is a prudent exercise to consider the impact the SKM higher flood level would have on the decision to approve development and whether it results in a substantial change in risk.

OBSTRUCTION OF FLOW

An assessment of the flooding impacts for the proposed development was conducted by de Groot and Benson Pty Ltd. The assessment is simplistic in nature and contains a number of inconsistencies.

The 1% AEP flood level used in the calculations is inconsistent with the level quoted in the accompanying letter.

	1% AEP Flood Level (m)
Flood level at site within letter, and used to set proposed floor level of school	3.4-3.45
Flood level used in conveyance calculations:	
Floodplain	3.55
Channel	4.25

The average elevation of the main channel is also inconsistent (-3m (in text) and -4m (in calculations)). The levels used in the calculations would increase the conveyance compared to the levels in the text.

The assessment would normally be considered insufficient for assessing the impact of the school. However it is unlikely the school would have a significant impact on flooding.

FLOOR LEVEL AND PLANNING CONTROLS

Council's Floodplain Risk Management Plan includes a Flood Risk Planning Matrix (Table A1) where development controls are placed on proposed developments based on the development type and the Flood risk categories. The proposed development is located in a Medium Risk area. A school does not fit easily in the development type categories. The school cannot be considered an essential community facility (which is not permitted in a medium risk area) as this applies to services needed during a flood such as a hospital. de Groot and Benson (15 Feb 2010) have classified the development as a "New Commercial or Industrial" development, which is permitted within a medium risk area, if the floor level is equal to or greater than the 1% AEP. However, a commercial or industrial development would be occupied by adults, generally only from 9 to 5, who can make informed decision about flood risks and take appropriate action if water is rising. Commercial and industrial developments are often located in flood prone areas as some uses are flood compatible or willing to accept the risk. In contrast a school will be occupied by young children (before, after and during school hours) who are less able to negotiate flood waters, self evacuate or make decisions about risk.

It is well documented that young children are unable to negotiate flood waters to as great a depth or velocity as adults. Australian Rainfall and Runoff revision project 10 (Engineers Australia, 2010) has looked at the appropriate safety criteria for people in flood waters. The study found that young children of the same size cannot necessarily negotiate the same floodwaters due to differences in muscle development and how safe they perceive the situation. Hazard (velocity times depth) values of 0.6 are considered to present significant hazard to most children with a height mass product of between 25 and 50 (for a primary school child 1.27m tall with a mass of 25kg would have a height mass ratio of 32), with a limiting depth of 0.5m and velocity of 3m/s (at shallow depths). Infants and young children with a height mass product less than 25 are considered unsafe in any flow without adult assistance.

Given the risk profile of a school it would be more appropriately considered as a "new residential" of about 100 houses with 4 children per house. In which case the floor level required would be the 1% AEP plus 0.5m (Freeboard).

The NSW Floodplain Development Manual (NSW Government, 2005) recommended floor level is the 1% AEP flood level plus a free board of 0.5m. Freeboard is used to account for uncertainty in the estimate, wind waves etc.

Climate change will result in an increase in rainfall and sea level rise and therefore an impact on flood levels. When making land use planning decisions consideration of the length of time the approved development will remain on site is essential. Given the proposed development is a school which is likely to remain on the site till 2100 it is necessary to include the estimated impact of climate change in the calculated floor level.

If a school was to be built then key classrooms and buildings (such as the library) will need to be elevated with enough space for the 400 children plus 30 staff should they be stranded at the school during a 1% AEP flood. The recommended floor level should therefore be the 1% AEP flood level 3.4mAHD plus an allowance for climate change (the SKM study considered a 0.55m sea level rise which corresponds to 2070, and 390mm-430mm increase at the site) plus a 0.5m freeboard. The long term viability of the school with climate change should be considered given some parts of the site are at 1.3mAHD.

EVACUATION

While there is likely to be considerable warning time to evacuate this assumes that the warning gets through and that they act quickly and efficiently to evacuate the children. No details of the proposed evacuation route have been provided. The most likely evacuation route appears to be via Dudley and Partridge Streets to Macksville High School (approximately 1.8km) which crosses the Town Drain. The lowest point on the most likely evacuation route based on the drawings provided is 2.23mAHD. Approximately 1.2km of the 1.8km evacuation route is flooded in a 20 year event. Approximately 1.35km evacuation route is below the 1% AEP flood level.

If the road were to be raised to provide flood free access in a 1% AEP event it would have an unacceptable impact on existing development. Low sections of the road could be raised with a bank of culverts installed underneath however it is likely the cost of this would be prohibitive.

Insufficient information is available to calculate the hazard at the site however it would easily exceed 0.6 making self evacuation impossible for much of the school population. The SKM flood levels and flood levels with climate change would result in a higher hazard value.

CLIMATE CHANGE

Climate change will cause long term sustainability issues with the site. Climate change is predicted to raise sea levels by 0.9m by 2100. This would mean king tides will come close to cutting off evacuation routes and small freshes would easily cut off access to the site.

CONCLUSIONS

The proposed school site presents an unacceptably high flood risk, which will get worse with time due to climate change. Elevating the floor levels of the school will address much of the flood risk but it will not remove the evacuation risk. We would not recommend the development be approved unless the flood evacuation risk and long term sustainability are addressed.

Yours faithfully,
WMAwater

Mark Babister
Director

APPENDIX F

Memorandum

TO: Arthur Tsembis
FROM: Mark Babister
DATE: 21 March 2011
SUBJECT: Advice re DA 2010 /234 Dudley St
PROJECT NUMBER: 111006

INTRODUCTION

WMAwater has been engaged by Nambucca Shire Council to provide advice on flooding relating to DA 2010/234 – St Patrick's Primary School Macksville.

This memorandum is in response to the *provision of additional information in relation to flooding* provided by Geolink (dated 14 March 2011) which includes *A review of flood issues* by ADW Johnson and *Estimation of realistic Flood warning times for Macksville and Flood Emergency Management Overview* by de Groot and Benson (DGB). Comment has been restricted to the key issues where the respondent's comments or responses on our initial review is in error or in my opinion has minimal information, or where the proponent has questioned the reasoning for statements in my earlier review.

BACKGROUND

This review is based on my 25 years experience in hydraulic modelling and conducting "Flood studies". I am the managing director of WMAwater which specialises in Flood studies and has over 20 staff. My credentials and suitability to review the flooding aspects of the proposed development is detailed in Attachment A.

ISSUES

Flood warning

DGB have undertaken an assessment of flood warning times at Macksville, comparing the time between the flood level reaching moderate at Bowraville or Utungun and reaching moderate at Macksville. This method is flawed. The minor, moderate and major levels for each gauge are set depending on a number of local considerations including whether the gauge is in a rural (Bowraville) or urban (Macksville) location. Therefore moderate level at Bowraville and Macksville are unlikely to have the same size event. Only recent events have been considered all of which are less than 10 yrs ARI and no large floods have been considered. It is worthwhile noting that access to the school would have been cut 3 times during 2009 (based on recorded peak levels). Events appear to have been carefully selected by DGB to match their proposed plan. A brief investigation of events post 2001 (ie. not considering large events such as the 1974) by our firm found 7 events where Bowraville or Utungun exceeded moderate but Macksville did not exceed moderate. Following this formula the school would have been evacuated 6 times in 2009 (of which only 3 would have exceeded moderate at Macksville).

Table 1. Recent events (post 2001) that exceed moderate at Bowraville and Utungun but not Macksville

Event Date	Recorded Level (m)			Moderate Exceeded
	Bowraville	Utungun	Macksville	
Jan 01	8.94	3.08	1.9	B and U
Jan 04	6.74	1.53	1.17	B and U
Feb 06	7.63	1.43	1.23	only exceeded at Bowraville
Jun 09	5.29	1.89	1.73	only exceeded at Utungun
Oct 09	9.39	2.93	1.67	B and U
Nov 09	7.14	2.66	1.54	B and U
Jan 11	7.71	2.75	1.29	B and U

No consideration has been given to the spatial pattern of rainfall across the catchment which may lead to variations in the hydrograph including a faster rate of rise.

There is considerable variation in the shape of the hydrograph even in the small events considered which affects flood response differently at locations down the river. It is also possible that the rate of rise of larger events may differ significantly from smaller events. A good nearby example is at Urunga during the 2009 event when people were caught out because the flood rose faster than expected. This incorrect expectation of how fast a flood event rises was based on experience of minor floods.

No consideration has been given to flash flooding which occurs with little to no warning and has no significant effect on the Nambucca River levels. This can cause flooding on minor creeks and surcharging of drainage systems.

Floods are generally of short duration but water can pond in low lying areas and roads can be cut for several days. Water could potentially pond on the low lying areas of the site for days.

The *Flood Emergency Management Overview* by DGB states that if people are caught at the site they could be rescued by boat. However, the *Nambucca Shire Local Flood Plan* notes that there is no high ground in the area to retreat to and in an extreme event it would be difficult to evacuate people from the area across the town drain.

Evacuation of East Macksville in the Local flood plan is linked to the Macksville gauge. It is recommended the school adopt the Macksville gauge and that they evacuate the school during any flood watch/flood warning or on advice from the SES.

Velocities and Road Raising

ADW Johnson states that:

> *"No evidence has been presented by WMA Water to support the view that raising the road to a minimum 100 yr ARI (1% AEP) level would have an unacceptable impact on the existing development."*

I have carried out numerous Flood Studies and Floodplain Risk Management Studies under the NSW floodplain management process that have involved assessing the impact of options to providing better flood access and am the editor of national guidelines in Hydraulic modelling. Fundamental hydraulics indicates that raising the road will either obstruct and divert flow raising flood levels upstream or will result in higher velocities that would increase the hazard downstream. The proponent should be required using a 2D hydraulic model to show that raising the road will not impact on other properties.

ADW Johnson indicates that the average velocity using a very simple approach is 0.38m/s and uses this for hazard calculations yet never explains that being an average the velocity will be higher in some locations and lower in others and that the higher velocities will occur in the main flow conveying sections which includes the area it is proposed to raise. On this basis the average velocity using a simplified method is not good practice and will lead to an underestimation of hazard.

"Average" velocities as calculated by simple hand calculations are not sufficient to assess the risk for the situation. It is recommended (which is standard practice) that a detailed two dimensional (2D) hydraulic model of the situation be established to properly assess the impact of the proposed development on

surrounding properties, the velocities at the site, the impact of raising the road on flood levels, velocities and surrounding properties.

Hazard

ADW Johnson have misunderstood the Australian Rainfall and Runoff (ARR) Project 10 hazard categories. Figure 1 below shows the hazard as calculated by ADW Johnson using "average" velocities before and after the road is raised. Table 2 is the ARR Project 10 hazards as a table. Note that 0.5m is a limiting depth for children. This would place the before raising case as extreme hazard for adults and the after raised case as Low hazard for adults (and therefore significant hazard to children, dangerous to most).

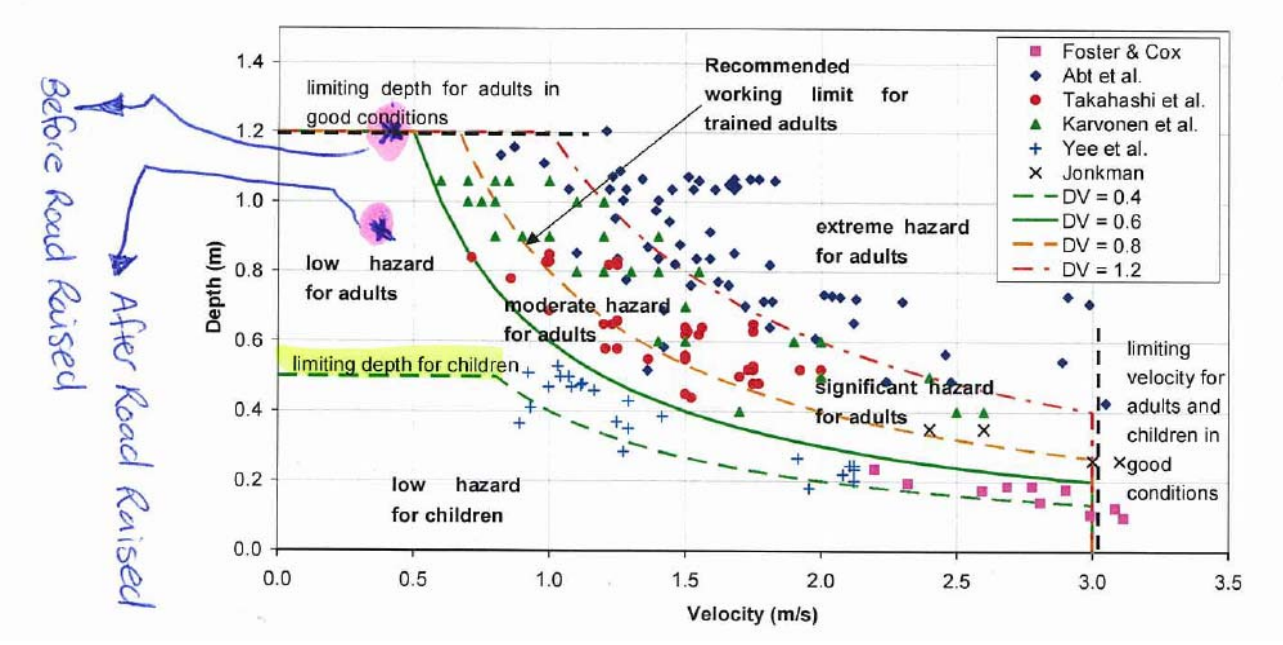

Figure 1. ARR Project 10 Hazard with hazard values for St Patricks as calculated by ADW Johnson

Table 2. ARR Project 10 Hazard Table

DV (m^2s^{-1})	Infants, small children (H.M ≤ 25) and frail/older persons	Children (H.M = 25 to 50)	Adults (H.M > 50)
0	Safe	Safe	Safe
0 – 0.4	Extreme Hazard; Dangerous to all	Low Hazard[1]	Low Hazard[1]
0.4 – 0.6		Significant Hazard; Dangerous to most	
0.6 – 0.8		Extreme Hazard; Dangerous to all	Moderate Hazard; Dangerous to some[2]
0.8 – 1.2			Significant Hazard; Dangerous to most[3]
> 1.2			Extreme Hazard; Dangerous to all

[1] Stability uncompromised for persons within laboratory testing program at these flows (to maximum flow depth of 0.5 m for children and 1.2 m for adults and a maximum velocity of 3.0 ms^{-1} at shallow depths).
[2] Working limit for trained safety workers or experienced and well equipped persons (D.V < 0.8 m^2s^{-1})
[3] Upper limit of stability observed during most investigations (D.V > 1.2 m^2s^{-1})

Climate Change

ADW Johnson claims that "climate change impacts are by no means certain and to provide a 0.9m on top of 100 yr ARI flood level for all school buildings is considered overly conservative". I currently chair a national working group including CSIRO, BOM, Engineers Australia and many universities that is looking at how climate change will affect flood levels and current research suggests that predicted increases in sea level are not conservative. Many Councils have adopted the NSW Government 2100 ocean level (0.9m) on top of a standard freeboard (0.5m) which results in a total of 1.4m for low lying coast area. An example

Council is Pittwater. Similarly the NSW RTA has enforced that no part of the Pacific highway upgrade should be below 4m AHD to address elevated ocean levels from climate change.

King tides

ADW Johnson states that

> *"There is no evidence to provided in the WMA Water Report to support the contention regarding king tides and small freshes."*

and has misunderstood the climate change impact from the RTA reports which they have not read even though the reports are publicly available on the RTA website. The 0.35-0.43m impact of climate change referred to relates to how:

- A 10 yr ARI Flood with a 100yr ARI Ocean level (peak 2.6mAHD) and sea level rise of 0.55m, and
- A 100yr ARI Flood with a 10% increase in rainfall with a normal tide (peak of 0.55mAHD),

respectively, will increase flood levels at the site and not how tides will change. Therefore the average of these can not just be added to the tidal level.

ADW Johnson correctly shows that tidal levels are lower (attenuated) away from the ocean, with a king tide of 1.2m AHD at the ocean resulting in an 1.0m AHD king tide at the site (0.979m AHD in the DPWS (1995). However then tries to add the flood impact to the tidal analysis. Elevated ocean levels will increase the conveyance of the incoming tide and therefore reduce the amount of attenuation this is discussed in McLuckie et al (2011) and McLuckie et al (2010) both of which I am a co-author. King tides in 2100 will reach a level of approximately 2.0-2.1m AHD if sea level increases by 0.9m.

Classification of the School as Commercial

The proponent's advisers suggest that the school should be considered as "new commercial or industrial" based on Council correspondence, yet the correspondence only states for a school to be allowed in this area of the floodplain it would need to be considered under this category as the alternative is it to be an unsuitable use in this location. Council correspondence then puts the onus on the proponent to demonstrate that it has suitably addressed the flood risk. It is wrong to argue that the development is simply "new commercial or industrial" and that the specific flood risk that comes from a primary school can simply be ignored. The NSW Floodplain Development Manual is based on a merits approach that considers risk for which that land is used. The flood risk to peoples lives from a school is much greater than from "new commercial or industrial" use and arguably more than residential.

CONCLUSIONS

The proposed school site presents an unacceptably high flood risk, which will get worse with time due to climate change. While our earlier raised concerns regarding floor level have been addressed, we do not believe the risk profile concerns and evacuation route issues have been fully addressed. We would not recommend the development be approved unless:

- a detailed two dimensional model is established to evaluate the flood evacuation risk and long term sustainability of the school
- The proponent using 2D hydraulic modelling demonstrates that the evacuation route in a 100 yr flood is below the Project 10 hazard curve for children.
- The development and any improvement to access results in no increased flood risk for existing properties in a 100yr event using a 2D model

Yours faithfully,
WMAwater

Mark Babister
Director

References

de Groot and Benson, Dated Feb 2011, Flood Emergency Management Overview

de Groot and Benson, Dated 14 January 2011, Estimation of realistic Flood warning times for Macksville

DPWS, 1995, *The Harmonic Analysis of NSW Tide Gauge Network Volume 1- Tidal Planes*

Engineers Australia, 2010, Australian Rainfall and Runoff revision Project 10- Appropriate safety criteria for people.

Geolink, (dated 14 March 2011), *Provision of additional information in relation to flooding*
ADW Johnson, (dated 14 March 2011), Proposed Development of St Patricks Primary School at Dudley Street Macksville, R*eview of flood issues*

McLuckie D, Babister M and Dewar R, 2010, Considering the impacts of Climate Change on flood risk, Practical Responses to Climate Change National Conference, 2010

McLuckie D, Watson P and Babister M., 2011, Consideration of Sea Level Rise in Flood and Coastal Risk Assessments, 51st Annual Floodplain Management Authorities Conference

NSC, July 2007, Nambucca Shire Local Flood Plan

ATTACHMENT A:

Mark Babister

- Completed over 40 flood studies,
- Managing director of WMAwater (a firm specialising in flood studies and floodplain management, with over 20 staff),
- Over 16 journal and conference papers on hydraulic modelling, Climate Change, hazard and flood estimation
- Deputy Chair of the Technical Committee overseeing the revision of Australian Rainfall and Runoff
- Member of the Steering Committee overseeing the revision of Australian Rainfall and Runoff
- Chair of Engineers Australia's National Committee on Water Engineering
- Member of the Sydney Water Panel (and past chair)
- Project Manager and Editor of Australian Rainfall and Runoff Project 15: Two dimensional Modelling (National guidelines on two dimensional hydraulic modelling)

APPENDIX G

ATTACHMENT B2 – Email from Council:

Council's advice – Email from Ben Oliver to Simon Waterworth dated February 2010:

The site is classified within a Medium Risk Area (High Hazard - Flood Fringe) with a 1% AEP of RL 3.4 AHD. I've attached 2 PDF files showing contours and flooding.

A school is a special purpose facility. For the purpose of defining the use and considering its suitability against the Food Risk Planning Matrix we would apply the same controls listed under New Commercial or Industrial. This is clearly preferable to classifying the use as unsuitable because it acknowledges the context of the area (flat/level site close to town, services available, adjoining playing fields, neighboring school site, etc) and allows for merit based assessment. To a large extent we would be relying on the information submitted in your application to demonstrate that flood risks have been considered and mitigated by the design, siting and construction of the development. Refer to CONTROLS in the Matrix.

As you would appreciate Flood Modelling and Planning tends to be pretty dynamic and Council has adopted the draft sea level rise guidelines and we are also part way through preparing a new flood risk management plan based on on-going flood studies which incorporate predicted sea level rise.

The current FRMP recommends floor levels equal to or greater than 1% (if practical). Alternatively storage areas to be provided at the 1% AEP level. 0.5m free board is not suggested as it would appear to apply to habitable floor levels only.

It would be reasonable to assume that the new FRMP will strengthen current controls and increase flood levels to accommodate the risks posed by sea level rise – unfortunately I'm not in a position to comment on by how much.

Extract from Council's Flood Plain Maps:

Plan shows the estimated 100 year level for the site is RL 3.4m AHD

APPENDIX H

GENERAL CONDITIONS OF THIS CONSENT

5 Tonne load limit

1 The approved school shall not be erected unless and until satisfactory arrangements have been put in place by Nambucca Shire Council to amend or lift the 5 tonne load limit that applies to Dudley Street and adjoining local roads to enable buses, service vehicles and construction vehicles to access the subject site.

Development is to be in accordance with approved plans

2 The development is to be implemented generally in accordance with the plans and supporting documents set out in the following table, except where modified by any conditions of this consent.

Plan No/Supporting Document	Reference	Prepared by	Dated
Statement of Environmental Effects (SEE)	1535804	GeoLINK Pty Ltd	20/09/2010
Architectural Drawings (Appendix A): DA01, DA02A, DA02B, DA03, DA04, DA05, DA06, DA07, DA08, DA09, DA10, DA11, DA12.	Job No 07009	DRA architects Pty Ltd	13/09/2010
Acoustic Assessment (Appendix B)	DRA220710 NG eltr – traffic noise	Wilkinson Murray (Sydney) Pty Ltd	22 July 2010
Flood Assessment Appendix C)	Job No: 09105	de Groot & Benson Pty Ltd	15 February 2010
Stormwater Management Plan (Appendix D) Drawing No: C02DA, C09DA	Job No: NL 100116	Northrop	26.08.10
Erosion and Sediment Control Plan (Appendix E). Drawing No C01DA	Job No: NL 100116	Northrop	26.08.10
Preliminary Geotechnical Investigation (Appendix F)	GEOTCOFH0223AA-AB	Coffey Geotechnics Pty Ltd	14 September 2007
Traffic Assessment (Appendix H)	Job No: 09105	de Groot & Benson Pty Ltd	12 August 2010
Additional information relating to: traffic; flooding; stormwater management; and, acoustic assessment.	07009	DRA architects Pty Ltd	18 January 2011
Flood Emergency Management Overview	Job No: 09105	de Groot & Benson Pty Ltd	27 February 2011
Review of flood issues	140003 GM/KP	ADW Johnson Pty Ltd	14 March 2011

In the event of any inconsistency between conditions of this development consent and the plans/ supporting documents referred to above, the conditions of this development consent prevail.

Compliance with Building Code of Australia

3 All building work must be carried out in accordance with the requirements of the Building Code of Australia as in force on the date the application for the relevant construction certificate or complying development certificate was made. This condition does not apply:

a to the extent to which an exemption is in force under clause 187 or 188, subject to the terms of any condition or requirement referred to in clause 187 (6) or 188 (4), or
b to the erection of a temporary building.

THE FOLLOWING CONDITIONS ARE TO BE COMPLIED WITH PRIOR TO ISSUE OF A CONSTRUCTION CERTIFICATE FOR BUILDING WORKS

Engineering Construction Plans

4 Three (3) copies of engineering construction plans and specifications must accompany the construction certificate application. Such plans are to provide for the works in the following table in accordance with Council's current Design and Construction Manuals and Specifications.

Required work	Specification of work
Kerb & Gutter, Road Shoulder Construction **(Kerb and gutter, road shoulder and associated piped drainage construction, footpath formation and turfing including any necessary relocation of services across the frontage of the road and any property acquisition)**	Kerb and gutter for East Street Intersections of Dudley Street and Partridge Street shall be constructed in such a way that buses can carry out turning manoeuvres while staying within their own traffic lane, this will require pavement widening and kerb returns of a minimum 12m radius where buses turn into the adjacent roads: Turning paths are required at the proposed school bus bay to demonstrate buses can safely overtake the bus parked in front in a single manoeuvre. Applicants are to provide a stormwater drainage system in accordance with the major/minor system set out in Chapter 14 of Australian Rainfall & Runoff. Dudley Street stormwater drainage shall be in the form of a piped underground drainage system to transfer and control flows from frequent events beyond the adjacent playing field and towards the southern wetland. The major drainage system shall provide safe well defined overland flow paths for rare and extreme storm run off events.
Full Width Road Construction	Full width road and drainage construction for all proposed roads on the approved plan. Prior to removal of the 5 tonne load limit on East Street, the following details should be submitted for Council's approval- 1. A qualified practicing Civil Engineer to carry out a structural analysis of the existing road pavement and provide a detailed report recommending a design for reconstruction, as required, to current standards for use by heavy vehicles and for the recommended construction works to be completed prior to the issue of the Occupation Certificate. 2. Geometric design of the section of road to provide adequate width for, turning and passing movements. East Street, at Dudley Street shall be reconstructed to provide sufficient under body clearance for a fully laden bus and shall be constructed in accordance the recommendations of the structural analysis report required for the removal of the 5 tonne load limit. The design for Dudley Street to incorporate drainage to ensure no adverse impact on adjoining sports fields. Dudley Street pavement design shall be based on a minimum 50 year design life, incorporate kerb and gutter both sides of the road with a minimum 8m carriageway width. An upgrade of the adjacent roads damaged during construction will be required prior to release of the Occupation Certificate. A single manoeuvre turning area for buses shall be provided at the entry to the Christian school on Dudley Street and a cul-de-sac turning circle shall be provided at the eastern end.
Footpath Construction	A 2.5 metre wide concrete footpath/cycleway along one side of Dudley Street.

Required work	Specification of work
Service Conduits	Service conduits to the proposed school site shall be laid in strict accordance with the service authorities' requirements.
Street Lighting	Street lighting being provided to the requirements of Country Energy.
Piping of Watercourse *Where health or other hazard*	The watercourse traversing the school site shall be piped to suit a 1 in 5 year storm event beyond the adjoining sports field. An overland flow path is to be provided above the constructed pipeline to accommodate the pipe exceedance for all storm events, up to and including the 1 in 100 year storm event.
Stormwater Outlets	An energy dissipating pit with a suitably installed locked grated outlet to all pipes or any other drainage structures. Grates must be of galvanised weldlock construction.
Stormwater Quality	Stormwater quality must be suitable for discharge in accordance with Department of Land and Water Conservation NSW (1998) The Constructed Wetlands Manual and NSW Department of Housing Manual (2004), Managing Urban Stormwater, - Soils and Construction Vol. 1, 4th Edition prepared by Landcom**.** Stormwater discharge from the car park shall be treated for the removal of oil and sediments by a method approved by Council.
Road signage	A plan showing proposed signage within the road reserve shall be designed to up to date standards and submitted for council approval.
Construction of mound and imported fill material	The application for a Construction Certificate shall include plans and specifications for the proposed mound. The mound is to be designed in accordance with Council's Flood Plain Management Policy. Information shall be submitted to Council with the engineering plans detailing the location/source of imported fill material, together with documentary evidence that confirms the extraction of the fill material will be lawfully obtained and suitable under the *Protection of the Environment Operations (Waste) Regulation 2005.* The only waste-derived fill material that may be received at the development site is: (a) virgin excavated natural material (within the meaning of the *Protection of the Environment Operations Act 1997)* (b) any other waste-derived material the subject of a resource recovery exemption under cl.51A of the *Protection of the Environment Operations (Waste) Regulation 2005* that is permitted to be used as fill material. Any waste-derived material the subject of a resource recovery exemption received at the development site must be accompanied by documentation as to the material's compliance with the exceptions conditions and must be provided to the Principal Certifying Authority before the material is deposited on the development site.
Flood planning level for road construction and evacuation route	Details shall be submitted with the engineering plans for any proposal to raise the height of Dudley Street and/or any part of the flood evacuation route, including the installation of appropriate drainage infrastructure that discharges flows from all storm water events. Such details shall include a flood study to identify the impacts of flow paths and surrounding properties.

Sediment and erosion measures required

5 The application for a Construction Certificate is to include plans and specifications that indicate the measures to be employed to control erosion and loss of sediment from the site. Control over discharge of stormwater and containment of run-off and pollutants leaving the site/premises must be undertaken through the installation of erosion control devices such as catch drains, energy dissipaters, level spreaders and sediment control devices such as hay bale barriers, filter fences, filter dams, and sedimentation basins. The sediment and erosion control plan is to be designed in accordance with the requirements of the NSW Department of Housing Manual, "Managing Urban Stormwater, Soils and Construction".

The sediment and erosion control plan is to be prepared by a qualified practising Civil Engineer. The Civil Engineer is to be a corporate member of the Institution of Engineers Australia or is to be eligible to become a corporate member and have appropriate experience and competence in the related field.

The plans must be in compliance with Council's Adopted Engineering Standard. Such plans and specifications must be approved as part of the Construction Certificate.

Water and Sewerage Section 68 approval required

6 An approval is to be obtained under Section 68 of the Local Government Act 1993 to carry out water supply and sewerage works. Sewerage and water mains are to be extended to service the school.

Trade Waste Section 68 approval required

7 An approval under Section 68 of the Local Government Act 1993 to discharge trade waste into Council's sewer must be obtained.

Backflow prevention devices shall be installed appropriate to the hazard rating for the approved landuse, in accordance with the current edition of AS/NZS 3500.1 and the NSW Code of Practice for Plumbing & Drainage.

Details of the proposed backflow prevention devices shall be provided to Council for approval with a Section 68 Application and prior to connecting to the water supply.

On-site stormwater detention approval required

8 Stormwater drainage is to be designed to direct all water to a Council approved drainage system to prevent discharge runoff onto adjoining land. The drainage system is to be designed for 1 in 20 year storm event. On-site stormwater detention is required, restricting stormwater discharge to the pre-development runoff rate, for a 1 in 5 year storm event. This system must be designed in accordance with AS/NZS 3500.3:2003 - Plumbing and drainage, Part 3: Stormwater drainage. All piped drainage lines over adjoining land are to be located within drainage easements. All costs are the responsibility of the proponent.

The design needs to demonstrate how the tanks can be sufficiently drained to provide the required capacity for detention.

Note: During weekends and school holidays the tanks are less likely to be drained for the purpose of flushing toilets etc.

An approval is to be obtained under Section 68 of the Local Government Act 1993 to *carry out stormwater drainage work.*

The engineering plans and specifications are to be designed by a qualified practising Civil Engineer. The Civil Engineer is to be a corporate member of the Institution of Engineers Australia or is to be eligible to become a corporate member and have appropriate experience and competence in the related field.

Engineering plans and specifications are to be submitted in triplicate and must include details in accordance with Appendix C of AS/NZS 3500.3:2003 - Plumbing and drainage, Part 3: Stormwater drainage.

The plans must be in compliance with Council's Adopted Engineering Standard.

Construction Traffic Management Plan

9 Consent from Council must be obtained for a traffic management plan pursuant to Section 138 of the Roads Act 1993. The plans and specifications are to include the measures to be employed to control traffic (inclusive of construction vehicles) during construction of the development. The traffic control plan is to be designed in accordance with the requirements of the Roads and Traffic Authority's Manual, *Traffic Control at Work Sites Version 2*, and Australian Standard 1742.3 - 1985, *Manual of Uniform Traffic Control Devices Part 3, 'Traffic Control Devices for Works on Roads*'.

The plan must incorporate measures to ensure that motorists using roads adjacent to the development, residents and pedestrians in the vicinity of the development are subjected to minimal time delays due to construction on the site or adjacent to the site.

The traffic control plan must be prepared by a suitably qualified and RTA accredited Work Site Traffic Controller.

Access and facilities for disabled

10 The application for a Construction Certificate is to include plans and specifications that indicate access and facilities for persons with access disabilities to and within the development in accordance with AS 1428.1 - *Design for Access and Mobility* and Part D3 of the *Building Code of Australia*.

Such plans and specifications must be approved as part of the Construction Certificate.

Car parking plans required

11 The application for a Construction Certificate is to include plans and specification that indicate access, parking and manoeuvring details in accordance with the plans approved by this consent. The access, parking and manoeuvring for the site is to comply with the requirements of Council's Development Control Plan for Car Parking. Plans are to include, but not be limited to, the following items:

a pavement description;
b site conditions affecting the access;
c existing and design levels;
d longitudinal section from the road centreline to the car space(s);
e cross sections every 15 metres;
f drainage (pipes, pits, on-site detention, etc.);
g a physical barrier across the full road frontage of the property suitable to prevent vehicular access at locations other than the approved driveways;
h a clearance height 2.2m for all internal car parking areas. Where disabled parking is to be provided a minimum clearance height of 2.5m is required. Building elements such as pipes, ducts, conduits and beams are not to encroach below the specified clearance height;
i turning paths; and
j linemarking and signs.

The engineering plans and specifications are to be designed by a qualified practising Civil Engineer. The Civil Engineer is to be a corporate member of the Institution of Engineers Australia or is to be eligible to become a corporate member and have appropriate experience and competence in the related field.

The plans must be in compliance with Council's Adopted Engineering Standard. Such plans and specifications must be approved as part of the Construction Certificate.

Bond required to guarantee against damage to public land

12 A bond of $100,000 or 10% of the road construction and storm water drainage works, which ever is the greater, shall be paid to Council as guarantee against damage to surrounding public land and infrastructure during construction of the proposed development. Evidence is to be provided to Council indicating the pre development condition of the surrounding public land and infrastructure. Such evidence must include photographs and an engineers report. The proponent will be held responsible for the repair of any damage to roads, kerb and gutters, footpaths, driveway crossovers or other assets caused as a result of construction works under this consent.

This bond will be held for at least 12 months or until Council is satisfied that the infrastructure is maintained/repaired to pre development conditions and that no further work is to be carried out that may result in damage to Council's roads, footpaths etc. The maintenance period will commence from the date of issue of the final Compliance Certificate. The security may be provided by way of cash bond or a satisfactory bank guarantee. An application in writing for the release of the bond must be made at the satisfactory completion of the maintenance period.

Contributions for Water and Sewer Services

13 Contributions set out in the following table are to be paid to Council. The contributions payable will be adjusted in accordance with relevant plan and the amount payable will be calculated on the basis of the contribution rates that are applicable at the time of payment.

The Certificate of Compliance under Section 306 of the Water Management Act 2000, identifying payment of the contributions, is to be provided to the Principal Certifying Authority.

Public service	No of Equivalent Tenements	Contribution Rate (Amount per ET)	Contribution Levied	Date until which Contribution rate is applicable
Water	12.9 (0.03 x 430)	$4398.00/ET	$56,734.20	30 June 2011
Sewer	21.5 (0.05 x 430)	$4077.00/ET	$87,655.50	30 June 2011
TOTAL			**$144,389.70**	

Long Service Levy to be paid

14 A Long Service Levy must be paid to the Long Service Payments Corporation. This amount payable is currently based on 0.35% of the cost of the work. This is a State Government Levy and is subject to change.

These payments may be made at Council's Administration Office. Cheques are to be made payable Council.

Flood Planning Level for new buildings

15 The flood planning level for this development is RL 3.4m AHD which is the estimated 1% AEP in accordance with Council's adopted Flood Risk Management Plan. The plans and specifications to accompany the construction certificate application are to indicate a minimum floor level of 3.95m AHD for all buildings except for a floor level of 4.45m AHD for the communal hall (including toilets), with enough space for 400 children and 30 staff. This floor level includes 500mm freeboard to account for uncertainty in the 1% AEP estimate, plus an allowance for climate change of 550mm.

The plans and specifications to accompany the construction certificate application are to indicate the use of flood compatible materials, fixtures and power outlets where used in the building below the flood planning level. The flood compatible materials, fixtures and power outlets must be those components listed in the Australian Department of Housing and Construction "Housing in Flood Prone Areas 1975".

Flood evacuation plan required

16 A comprehensive flood evacuation plan is to be submitted to and approved by Council. Such a plan is to include the following components:

a **Flood Characteristics -** A description of how a flood event occurs in the area and its impact on the proposed development.
b **Flood Warnings -** Provide detail as to the warnings the school can expect in relation to flooding and how they are received. These warnings include expected flood peak, road closures, long term weather forecasts and emergency advice.
c **Preparations –** All staff of the school must have clear direction on the various activities that need to be undertaken when preparing for an expected flood event. Such activities include switching off electrical equipment, storing water and moving goods, machinery, etc above flood level.
d **Evacuation** - Programming the evacuation process must ensure all activities are undertaken in a safe and timely manner providing safe unassisted evacuation for all children from the school to a safe flood fee location.
e **Responsible persons** - Nominate by position title, those persons responsible for implementation actions for individual plan elements. Identify a hierarchy of alternate controllers with the persons potentially responsible identified by position title, not their individual names. Useful contact numbers for flood advice must be included in any flood contingency plan.

Waste Management Plan required

17 A waste management plan is to be submitted to and approved by Council to ensure all waste is collected, stored and disposed of to the satisfaction of Council. The plan must incorporate measures to separate recyclable materials and describe the methods for collection of waste containers from the site.

Garbage storage area required

18 The application for a Construction Certificate is to include details indicating the construction of a garbage storage area on-site. The garbage storage area is to be designed and constructed so as to conceal its contents from view from public places and adjacent properties and is to be blended into the landscaping layout. The storage area is to be located so as to be readily accessible from within the site and serviceable by the waste collector from the adjoining road.

Specifically the garbage storage area is to contain the following design elements:

a Bunded with a minimum volume of the bund being capable of containing 110% of the capacity of the largest container stored, or 25% of the total storage volume, whichever is the greatest;
b Provided with a hose tape connected to the water supply;
c Paved with impervious material;
d Graded and drained to the sewer system; and
e Roofed to prevent the entry rainwater.

Such plans must be approved as part of the Construction Certificate.

Acid sulfate soil assessment

19 A geotechnical report identifying any acid sulfate soils shall be submitted with the construction certificate. Works involving excavations beyond the determined level of acid sulfate soils below the natural ground surface must not commence until the assessment has been submitted to Council for approval and Council has approved any measures needed for the management of those soils. This assessment must be in accordance with the *Acid Sulfate Soil Manual (NSW ASSMAC 1998)*.

THE FOLLOWING CONDITIONS ARE TO BE COMPLIED WITH PRIOR TO ANY BUILDING OR CONSTRUCTION WORKS COMMENCING

Traffic Management Plan

20 The approved Construction Traffic Management Plan is to be implemented.

Erosion & Sediment Control Plan

21 Erosion and sedimentation controls are to be in place in accordance with the approved Erosion and Sediment Control Plan.

Additionally a sign, to promote the awareness of the importance of maintenance of sediment and erosion controls, is to be clearly displayed on the most prominent sediment fence or erosion control device for the duration of the project.

Note: Council may impose on-the-spot fines of up to $600 for non-compliance with this condition.

Toilet facilities

22 Toilet facilities are to be provided, at or in the vicinity of the work site at the rate of one toilet for every 20 persons or part of 20 persons employed at the site. Each toilet provided must be a standard flushing toilet connected to a public sewer.

Site construction sign required

23 A sign or signs must be erected before the commencement of the work in a prominent position at the frontage to the site:

a showing the name, address and telephone number of the principal certifying authority for the work, and
b showing the name of the principal contractor (if any) for any building work and a telephone number on which that person may be contacted outside working hours, and
c stating that unauthorised entry to the work site is prohibited.

The sign is to be maintained while the building work is being carried out, but must be removed when the work has been completed. No sign is to have an area in excess of one (1) m^2.

THE FOLLOWING CONDITIONS ARE TO BE COMPLIED WITH DURING CONSTRUCTION

Construction times

24 Construction works must not unreasonably interfere with the amenity of the neighbourhood. In particular construction noise, when audible on adjoining residential premises, can only occur:

a Monday to Friday, from 7.00 am to 6.00 pm.
b Saturday, from 8.00 am to 1.00 pm.

No construction work is to take place on Saturdays and Sundays adjacent to Public Holidays and Public Holidays and the Construction Industry Awarded Rostered Days Off (RDO) adjacent to Public Holidays.

Limiting construction noise

25 Construction noise is to be limited as follows:

a For construction periods of four (4) weeks and under, the L10 noise level measured over a period of not less than fifteen (15) minutes when the construction site is in operation must not exceed the background level by more than 20 dB(A).
b For construction periods greater than four (4) weeks and not exceeding twenty-six (26) weeks, the L10 noise level measured over a period of not less than fifteen (15) minutes when the construction site is in operation must not exceed the background level by more than 10 dB(A).

Construction dust suppression

26 All necessary works are to be undertaken to control dust pollution from the site.

These works must include, but not limited to:

a restricting topsoil removal;
b regularly and lightly watering dust prone areas (note: prevent excess watering as it can cause damage and erosion;
c alter or cease construction work during periods of high wind;
d erect green or black shadecloth mesh or similar products 1.8m high around the perimeter of the site and around every level of the building under construction.

Maintenance of fencing to protect trees

27 All existing trees within Donnelly Welsh Park shall be retained. Fencing to protect these trees shall be provided and maintained for the duration of the site clearing, preparation and construction works. During site works and construction (including road construction) all measures are to be taken to prevent damage to trees and other vegetation (including root systems) to be retained. Where any damage is caused to trees to be retained, remedial action must be carried out to the specifications of a tree surgeon.

No building materials or other items are to be placed or stored within the fenced off areas.

Builders rubbish to be contained on site

28 All builders rubbish is to be contained on the site in a 'Builders Skips' or an enclosure. Building materials are to be delivered directly onto the property. Footpaths, road reserves and public reserves are to be maintained clear of rubbish, building materials and all other items.

Maintenance of sediment and erosion control measures

29 Sediment and erosion control measures must be maintained at all times until the site has been stabilised by permanent vegetation cover or hard surface.

Survey of building floor height required

30 A survey certificate prepared by a registered surveyor is to be submitted to the Principal Certifier upon completion of the floor formwork to ensure all building, except the communal hall, will be constructed above 3.95 metres AHD. The floor level of the communal hall shall be constructed above 4.45 metre AHD In accordance with the development consent.

Food premises fit-out

31 The food premises (canteen area) is to be fitted out to comply with the *National Code for the Construction and Fitout of Food Premises.*

Wiring in flood prone buildings

32 All wiring, power outlets, switches, etc., must to the maximum extent possible, be located above the flood planning level. All electrical wiring installed below the flood planning level must be suitable for continuous submergence in water and must contain no fibrous components. Only submersible-type splices are to be used below flood planning level. All conduits located below flood planning level are to be so installed that they will be self-draining if subjected to flooding.

Sewers on flood prone land

33 Sewer gullies must terminate at:

a a level not less than the general flood planning level; or
b are to be sealed with a removable watertight cover with a vent of the same size as the gully, terminating at a level not less than the general flood planning level and must have a minimum height of 150mm maintained between the top of the overflow gully riser and the lowest fixture connected to the drain.

Responsibilities under the National Parks and Wildlife Act 1974

34 All earthmoving contractors and operators must be instructed that, in the event of any bone, or stone artefacts, or discrete distributions of shell, being unearthed during earthmoving, work must cease immediately in the affected area, and the Local Aboriginal Land Council and officers of the National Parks and Wildlife Service, informed of the discovery. Work must not recommence until the material has been inspected by those officials and permission has been given to proceed. Those failing to report a discovery and those responsible for the damage or destruction occasioned by unauthorised removal or alteration to a site or to archaeological material may be prosecuted under the National Parks and Wildlife Act 1974, as amended.

Consent required for works within the road reserve

35 Consent from Council must be obtained for all works within the road reserve pursuant to Section 138 of the Roads Act 1993. Three (3) copies of engineering construction plans must accompany the application for consent for works within the road reserve. Such plans are to be in accordance with Council's Adopted Engineering Standard.

Sewer and water to be connected

36 Sewer and water supply is to be connected to the school in accordance with an approval granted under Section 68 of the Local Government Act 1993.

Filling to be compacted

37 The development site subject to filling must be compacted to the recommendations of the applicant's Geotechnical Engineer. The applicant's Geotechnical Engineer must supervise the placing of fill material and certify the work has been carried out to level 1 responsibility in accordance with Appendix B of AS 3798-1990.

Filling must be undertaken in accordance with the approved plans and in such a manner that the drainage pattern on the site and on adjoining properties is not altered.

THE FOLLOWING CONDITIONS ARE TO BE COMPLIED WITH PRIOR TO OCCUPATION OF THE BUILDING

Completion of all engineering works

38 All roads, drainage and civil works, required by this development consent and associated Construction Certificate, are to be completed.

Certificates for Engineering Works

39 The submission of all test certificates, owners manuals, warranties and operating instructions for civil works, mechanical and/or electrical plant, together with a certificate from a suitably qualified engineer certifying that all works have been constructed in accordance with the approved plans and Council's Adopted Engineering Standard.

Works-As-Executed Plans

40 Works-as-executed plans, certified by a suitably qualified engineer, are to be submitted with the application for an occupation certificate. Where the design is carried out utilising computer aided design CAD, all cad computer files are required to be provided on CD (Compact Disc) with the final drawings. The CAD files must include all road boundaries and easements.
In the case where development involves filling of flood prone land, an additional copy of the works-as-executed plan relating to earthworks must be submitted detailing the 1% flooding contour.

Record of Infrastructure

41 A record of infrastructure coming into Council ownership shall be submitted to Council with the application for a occupation certificate.

Works to be completed.

42 All of the building works indicated on the plans and granted by this consent, including any other consents that are necessary for the completion of this development, are to be completed and approved by the relevant consent authority/s prior to the issue of an Occupation Certificate.

Noise attenuation to be effectively implemented

43 The proposed development shall be fully compliant with the Environmental Criteria for Road Traffic Noise (EPA 1999).

Noise attenuation methods required by the acoustical engineer (Wilkinson Murray Pty Ltd) are to be implemented and the completed works subsequently certified by the acoustical engineer, prior to occupation.

One month after the use has commenced a report is to be submitted to the Principal Certifying Authority. This report is to assess noise emission from the development, the effectiveness of the noise attenuation methods and compliance or otherwise with the appropriate maximum noise level.

The noise control measures during construction shall be implemented in accordance with the recommendations on page 18 of the Noise Assessment report prepared by Wilkinson Murray Pty dated January 2011.

New fire hydrant required

44 As the proposed structure is greater than 70 metres from the nearest hydrant, a new hydrant is required to be installed as per AS2419. Locations of fire hydrants are to be delineated by blue pavement markers in the centre of the road. An approval under Section 68 of the Local Government Act 1993 to carry out water supply work must be obtained prior to installing the hydrant.

Erection of Street Signs

45 The developer is to supply and erect approved street signs in accordance with this development consent and the Construction Certificate approval.

THE FOLLOWING CONDITIONS MUST BE COMPLIED WITH AT ALL TIMES

Equipment in flood prone buildings

46 All equipment installed below or partially below flood planning level must be capable of disconnection by a single plug and socket assembly.

Reconnection of electrical equipment in flood prone buildings

47 Any electrical device and/or part of the wiring subjected to flooding must be thoroughly cleaned or replaced and checked by an approved electrical contractor before reconnection.

Flood Evacuation Plan

48 A copy of the approved Flood Evacuation Plan is to be laminated in clear plastic and displayed in a prominent location within the development (eg Kitchen, office, car park entrance).

Maintenance of gross pollutant trap

49 The outflow control pit and the debris screen must be cleaned of debris and sediment on a regular basis.

NOTES:

Disability Discrimination Act
Council has assessed this application under the provisions of the Environmental Planning and Assessment Act 1979. It is the responsibility of applicants for BCA Class 3, 5, 6, 7, 8, 9 and 10a development (generally all commercial, industrial and professional offices) to make themselves aware of the provisions of the Disability Discrimination Act 1992 under which civil action may be taken if access for people with disabilities is denied or provide in a discriminatory way.

Penalties apply for failure to comply with development consents
Failure to comply with conditions of this development consent may lead to an on the spot fine (generally $600) being issued pursuant to Section 127A of the Environmental Planning & Assessment Act 1979 or prosecution pursuant to Section 125 of the Environmental Planning & Assessment Act 1979.

Protection of the Environment Operations Act 1997
It is an offence under the provisions of the Protection of the Environment Operations Act 1997 to act in a manner causing, or likely to cause, harm to the environment. Anyone allowing material to enter a waterway or leaving material where it can be washed off-site may be subject to a penalty infringement notice ("on-the-spot fine") or prosecution.