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General Manager,
Clarence Valley Council,
Locked Bag 23,
Grafton NSW 2460

Attention James Hamilton

Development application No: 2023/0759
Proposed subdivision and childcare centre at James Creek Road, James Creek
Response to Additional Information required.

Dear Sir

We refer to Councils Additional Information Request dated 24 April 2024. This is a full response to Councils request. This information is provided as an addendum to the submitted Statement of Environmental Effects and other documents incorporated in the application.
Councils letter has raised a number of matters relating to stormwater and the traffic impact assessment. This response combines comments from Geolink on stormwater and traffic issues where they are noted.

1. Stormwater

In item 1 of the letter Council asks for demonstration that the downstream receiving coastal wetland is not being adversely affected. This response by Geolink is incorporated in the comments below.

The Council letter also raises the question of the lawful point of discharge and if that location is within a Crown road. The point has been made that the Geolink plans show stormwater infrastructure within the Crown road and this triggers a need to redesign the discharge or to seek owners consent from Crown Lands.

In accordance with Item 2[a] of Councils letter we have elected to amend the engineering drawings by redesigning the discharge from the basin so that there is no incursion onto Crown roads. In making these changes we note the following.

- The discharge point including the level spreader has been moved to the east and redesigned to discharge within the subject land.
- The application includes a proposed 5.0m wide dedication to Council for landscape buffering purposes adjacent to Austons Lane and the stormwater will flow across this land before it reached Austons Lane. The point of discharge will not be Austons Lane.
- The stormwater basin in the SW corner has been enlarged to increase its effectiveness.

Further, Crown Lands have raised the question of the impact of the discharge on its

land. Based upon the redesign the stormwater will not discharge onto Crown land.

Regarding the question about the discharge from the south-western catchment Geolink have provided the following advice.

Geolink

The stormwater management strategy for the proposed residential development is described in the *Stormwater Management Report: Lot 104 DP 751388, James Creek Road* (ref: 3204-1125 dated 24/11/2023) prepared by Geolink.[attached]

As described in the Stormwater Management Report (SMP), the proposed stormwater management strategy will result in:

- Lower peak flows being discharged from the south-west catchment 4 compared to the existing situation (refer to Section 3.2.1.1 and Table 3.7 of the SMP); and
- Lower pollutant loads being discharged from the development compared to the existing situation (refer to Section 3.2.2.2 and Table 3.9 of the SMP).

With regard to potential stormwater impacts, peak flows and pollutant loads are the key risks. As per the above, both of these will be reduced. Therefore, it is unclear why Council's letter states that the SMP *"indicates that post-development stormwater discharge levels will exceed pre-development levels"* and suggests that *"there is a possibility of adverse effects on the condition of the Crown road asset over time"*.
The attenuation of peak flows provided by the south-west Bioretention Basin 4 goes over-and-above standard requirements, with the post-development peak flows being substantially lower than the pre-development peak flows for all of the assessed design storm events.

The post-development peak flow ranges from 66% to 88% of the magnitude of the pre-development peak flow for these design storm events. This will reduce the risk and likelihood of scour and erosion within downstream drainage infrastructure compared to the existing situation.

With regard to potential water quality impacts on James Creek and the Yaegl Nature Reserve, the proposal results in lower pollutant loads compared to the existing situation. Furthermore, as described in Section 3.2.3.2 of the SMP, the potential impacts of increased frequency of stormwater runoff will be appropriately managed by the rainwater tanks and bioretention basins. To further illustrate this point, the 200 mm of extended detention depth in Basin 4 will capture 155 m^3 of stormwater runoff, which will be subsequently lost to evapotranspiration or infiltrate into the basin soil (rather than discharge from the site as a pulse of surface water runoff).

Across the south-west catchment 4, a runoff volume of 155 m^3 represents approximately 8 mm of rainfall onto the impervious surfaces (~50% of the catchment area). So, the bioretention basin will appropriately manage the potential impacts of increased frequency of surface runoff in smaller rain events.

It is acknowledged that there will be an increase in the average annual volume of surface water discharge from the south-west catchment 4 (refer to Table 3.13 of the SMP). But, this is not anticipated to have significant detrimental impacts on downstream waterways, wetlands, properties, infrastructure or assets. The area of south-west catchment 4 is less than 1% of the overall catchment area of the Yaegl Nature Reserve. So, even a significant increase in the average annual volume of surface water discharge

from the south-west catchment 4 (e.g. +50%) would represent a negligible increase in the total surface water discharge to the Yaegl Nature Reserve from the overall catchment.

On the basis of the above, we suggest that the proposed design is appropriate and meets, or exceeds, the relevant requirements of the DCP. Notwithstanding this, in an effort to further address any potential concerns regarding stormwater management for the south-west catchment 4, we propose the inclusion of an additional bioretention basin into the design (refer Geolink drawing 3204/C164 Rev D). This additional bioretention basin (Basin 5) will have a base surface area at least as large as the original south-west Basin 4 (i.e. >= 780 m²).

Given time constraints associated with responding to Council's Additional Information Request, a full design of Basin 5 has not been prepared. However, there is sufficient space immediately north of Basin 4 to incorporate the proposed Basin 5. [refer plans] The purpose of Basin 5 will be to provide additional evapotranspiration, infiltration and treatment of stormwater, to further improve water quality and water balance outcomes. Basin 5 would not be designed to provide detention of stormwater, because Basin 4 already provides attenuation of peak flows that goes over-and-above the requirements. Therefore, Basin 5 will be shallower than the other basins with an extended detention depth of 200 mm and overflows will be directed to Basin 4. It is likely that Basin 5 will be constructed with several terraces due to the existing sloping ground.

The inclusion of Basin 5 will increase the combined area of bioretention basin surface area from 4,542 m² (refer to Tables 3.2 to 3.4 of the SMP) to 5,319 m², which is an increase of 17%. This will significantly improve the stormwater treatment outcomes presented in Tables 3.8 and 3.9 of the SMP. With regard to the Catchment 4 water balance presented in Table 3.13 of the SMP, the basin evapotranspiration losses and infiltration would be expected to double, due to Basin 5 being at least the same size as Basin 4. Therefore, the surface water discharge from the site for the post-development scenario would be expected to reduce to be within 10% of the pre-development surface water discharge.

Geolink comments on DCP objectives/principles

Section J10

Stormwater management and drainage systems should be an integral part of the subdivision design

Management of stormwater and the layout of the drainage system were key considerations in the design of the subdivision layout. The bulk earthworks design broadly maintains the existing topography of the site and the surface water flowpaths. Refer to Section 3.1.1 of the SMP.

Stormwater should be managed so there is minimal or no impact on the natural environment

With regard to water quality, the SMP demonstrates that the pollutant loads discharged from the site in the post-development situation meet Council's targets (refer to Table 3.8) and are lower than the pre-development situation (refer to Table 3.9). With regard to hydrology, peak flows are also reduced (refer to Section 3.2.1.1) and the potential impacts of increased frequency of stormwater runoff will be appropriately managed by the rainwater tanks and bioretention basins (refer to Section 3.2.3.2).

Treatment of stormwater as close to the source as possible

Rainwater tanks on each residential allotment are incorporated into the stormwater management strategy. These are close to the source as they collect stormwater directly off the roof. As discussed in Section 3.1.2.1 of the SMP, several options were considered for stormwater treatment. Based on this assessment, bioretention basins located at the outlet of each catchment were determined to be the optimal approach based on the site characteristics and other factors.

Retention and restoration of natural drainage systems

There are no significant natural drainage systems located within the site.

The hydrological conditions (both quality and quantity) of stormwater runoff after development being approximately the same as predevelopment conditions, for the 20% ARI storm event

With regard to stormwater quality, the SMP demonstrates that the pollutant loads discharged from the site in the post-development situation are lower than the pre-development situation (refer to Table 3.9). With regard to stormwater quantity, the standard requirement is to assess and manage peak flows. The design ensures that peak flows are reduced below pre-development levels (refer to Section 3.2.1.1) and the results for the 20% ARI storm event (5yr ARI) comply with this requirement, along with other design storm events.

On-site storage or infiltration being maximised

On-site storage of stormwater is provided by the rainwater tanks. Temporary storage (buffering) of stormwater is also provided in the bioretention basins. A key function of the bioretention basins is to retain stormwater within an 'extended detention depth', so that this stormwater then infiltrates down through the soil in the basin. Refer to Section 3.2.2 of the SMP.

Stormwater management to include vegetation management, in particular the planting of local indigenous plant species and minimising land disturbance

As noted in Section 3.2.2 of the SMP and shown on the design drawings, the surface of the bioretention basins will be densely planted with locally occurring native ground cover species.

Stormwater design shall be in accordance with Section D5 of NR Design Manuals

The stormwater design has been undertaken in accordance with the relevant requirements of the *Northern Rivers Local Government Development Design Manual*. Refer to Section 2.1 of the SMP.

Section H1

To maintain water quality and hydrology to predevelopment flows

With regard to water quality, the SMP demonstrates that the pollutant loads discharged from the site in the post-development situation are lower than the pre-development situation (refer to Table 3.9). With regard to hydrology, the standard requirement is to assess and manage peak flows. The design ensures that peak flows are reduced below pre-development levels (refer to Section 3.2.1.1).

Prevent or minimise pollutants entering stormwater and treat stormwater on the site of the development

The minimisation of pollutants entering the stormwater system will be achieved via appropriate design of subdivision infrastructure and also suitable erosion and sediment control during the construction phase. The treatment of stormwater will occur on the site of the development via the bioretention basins, which are located within the site boundary.

To enable a more efficient use of potable water

The rainwater tanks will provide water for reuse within houses and gardens, thereby reducing demand for potable water. The incorporation of suitable native vegetation

species into the landscaping design of public spaces will minimise the need for irrigation with potable water.

To reduce stormwater runoff volumes and peaks and to mimic natural tail water flows

With regard to water quality, the SMP demonstrates that the pollutant loads discharged from the site in the post-development situation meet Council's targets (refer to Table 3.8) and are lower than the pre-development situation (refer to Table 3.9). With regard to hydrology, peak flows are also reduced (refer to Section 3.2.1.1) and the potential impacts of increased frequency of stormwater runoff will be appropriately managed by the rainwater tanks and bioretention basins (refer to Section 3.2.3.2).

To incorporate 'sustainable water' management options into development to decrease demands on infrastructure and on the environment

The rainwater tanks will provide water for reuse within houses and gardens, thereby reducing demand for potable water. The bioretention basins are natural, vegetation-based stormwater treatment systems that are more sustainable than proprietary stormwater treatment systems that are constructed from concrete, plastic, steel etc.

Facilities must be designed to minimise maintenance

The bioretention basins are considered to be a relatively low maintenance option for achieving the relevant DCP targets. As noted in Section 3.1.2.1 of the SMP, some of the other options (e.g. swales, distributed pods) would be more costly and onerous to maintain. Similarly, proprietary stormwater treatment systems typically require more intensive and costly maintenance.

Therefore, the stormwater design meets and exceeds the requirements of the DCP.

2. Traffic Impact Assessment

In the first instance the question of the use of Austons lane for the emergency access has been raised in the context of owner's consent. As a result, the emergency access has been moved to adjacent to the commercial site in the location of a previously planned pathway. This path will be widened and strengthened with crossovers at each end to allow for emergency access.

This is for the very limited purpose of providing access mainly for emergency vehicles when the main entrance is blocked for whatever reason. Note that the application has one lane entering the site and two lanes leaving the site so there will be three trafficable lanes into the property. Its only in the event of a catastrophic emergency that the alternate access would be required and if that were to happen, we have located this point within the development where access can occur without using Austons Lane. Therefore, an owners consent is not required for this purpose.

Councils letter has raised a number of traffic design issues which are addressed by Geolink below. In the context of Councils comments we note that the James Creek Urban Growth Area Road Infrastructure Developer Contributions Plan was adopted by Council on 25 February 2020. This plan [attached] sets out the road and intersection upgrades identified by Council s being relevant to this site. The plan allows for the payment of a contribution to Council for road upgrading with the spending priorities to be at Councils discretion.

Therefore, we do not see a need to design all intersections in full detail as this is a function of the existing Council contributions plan. The plan does require the developer to contribute the full cost of the design process at the appropriate time.

Geolink traffic comments

1. *The TIA must consider the re-routing for the no right-turn for peak hour traffic exiting James Creek Road onto Yamba Road to consider impacts on the road network, specifically Yamba Road and Palmers Channel South Bank Road. Other parts of the road network that could be utilised for a right turn movement onto Yamba Road should also be considered i.e. the Harwood Bridge interchange.*

The TIA suggests that right turns out of James Creek Road onto Yamba Road may become too difficult (i.e. delays unacceptably length) approximately 9 or 10 years after the development commences. However, this is based on assumptions regarding background traffic growth. Prohibiting right turns out of James Creek Road during peak hours is a suggestion to be considered by Council in the future, once actual traffic patterns are known.

If right turns from James Creek were prohibited during peak hours, it is expected that traffic wishing to turn right would take the shortest and simplest alternative route, which would be to turn left onto James Creek Road and use the Harwood Bridge interchange to turn back onto Yamba Road and head east. These intersections are to a higher standard, although the traffic volumes would likely still make turning right onto Yamba Road difficult during peak times.

Modelling of these intersections has not been undertaken and is considered beyond the scope of the assessment, given that the possibility of the deterioration of the right turn movement from James Creek Road is uncertain and unlikely to occur until 9 or 10 years following commencement of the development. The recommendation within the TIA is for the local roads authority to monitor traffic at this intersection for the 5-10 years after the James Creek Road subdivision has been commenced.

2. *The TIA references the existing intersection of James Creek Road/Gardiners Road as providing BAL/BAR turning treatments, however aerial imagery of the intersection suggests that this treatment is not available on-site. Additionally, the included Level of Service diagrams for the intersection suggest that a short left turn lane from James Creek Road is currently available. Further information is required to demonstrate that the traffic analysis accurately represents the existing road geometry.*

Without survey data, it is difficult to measure the available widening outside the westbound travel lane on Gardiners Road and on the eastbound approach to James Creek Road. It may be that there is insufficient width to meet the requirements for a BAR and BAL under the Austroads Guide to Road Design Part 4A, which specifies a total width from the centreline of 6.5 m plus curve widening for a BAR, and 6.0 m plus curve widening for the BAL. If there is insufficient width, this intersection will require minor upgrades to achieve a BAR.

Although there is no dedicated left turn lane for traffic exiting James Creek Road onto Yamba Road, the large radius on the kerb return (approx. 15 m) allows ample width at the intersection for two cars to sit side by side. Thus, one or two cars waiting to turn right will not impact motorists wanting to turn left. To account for this in the model, a short left turn lane has been included, with a set length of 15 m. The actual length over which two cars can comfortably sit side by side is realistically closer to 10 m. However,

the rural edges (i.e. no kerb or gutter) easily allow a car to pass on the left of a queue of up to 3 passenger vehicles that may be waiting for a gap to turn right. To be conservative, the model was updated to reflect a 10 m turn lane. This does not affect the outcome for the expected Level of Service, and has a no change to the expected delays.

3. *The submitted Level of Service diagram for the existing Yamba Road/James Creek Road intersection indicates that a short left turn lane is available in James Creek Road. Further information is required to demonstrate that the traffic analysis accurately represents the existing road geometry.*

Similar to the James Creek / Yamba Road intersection, there is no dedicated left turn lane for traffic exiting James Creek Road onto Gardiners Road. However, the large radius on the kerb return (approx. 15 m) allows ample width at the intersection for two cars to sit side by side. Thus, one or two cars waiting to turn right will not impact motorists wanting to turn left. To account for this in the model, a short left turn lane has been included, with a set length of 20 m. The actual length over which two cars can comfortably sit side by side is realistically closer to 12 m or 13 m. However, the rural edges (i.e. no kerb or gutter) easily allow a car to pass on the left of a queue of up to 3 passenger vehicles that may be waiting for a gap to turn right. To be conservative, the model was updated to reflect a 10 m turn lane. This does not affect the outcome for the expected Level of Service, and has a negligible (<0.5 second) impact on the expected delays.

Place Design comments

4. A shared pedestrian/cyclist path should be provided from the site to the existing pedestrian network in Townsend, as previously proposed and requested by Council. Following discussions; and acknowledging geometrical constraints with providing a separate off-road shared path connection, Council is supportive of an on-road network from the site to the existing shared path network in Townsend. Revised plans shall be submitted to include this, with sufficient delineation between active travel lanes. Delineation shall be consistent with one (or multiple) of the cross section diagrams below.

The applicant has held extensive discussions with Council officers regarding the proposed pathway to Townsend. Throughout these discussions it was recognised and agreed that there are several challenging issues to work through to design a safe and effective pathway connection which will also serve the broader community. Central to these issues are constraints such as existing vegetation, infrastructure, road location within the road reserve, driveways, and possible road widening.

Therefore, it was agreed that an appropriate approach will be to provide a pathway connection from the site to the corner of James Creek Road and Gardiners Road, a distance of 1200m. [refer Drawing C131 D]

This has been the agreed position with Council. Councils letter is now asking for a design of revised plans to do this work. This is a substantial area of work and as proposed with the earlier application the applicant was prepared to work with Council as part of the delivery of the subdivision to design a pathway to Townsend.

In response to Councils letter we have also reviewed our design of the flood affected section of Gardiners Road. In doing so Geolink have altered the proposed cross section of the new road construction by incorporating a pathway within the verge. [refer Drawing C132 D] This section of road is 700m long. The applicant is prepared to incorporate this arrangement.

This will mean that construction works resulting from the development will comprise of 1900m of the distance between the site and Townsend. Given that the distance from the site to Townsend is 3700m, the construction of 1900m represents 50% of the length of the connection.

Council on 25 February 2020 adopted the James Creek Urban Growth Area Road Infrastructure Developer Contributions Plan. This plan identifies several upgrades in the area which needed to be funded. Council has accepted [refer Appendix A - Work Schedule] an apportionment factor of 50% for the development and 50% for Council to fund. This was deemed by Council to be equitable [refer 4.1.6]. Although the offer to engage on a discussion regarding a pathway to Townsend is in excess of the Contributions Plan, we have been prepared to work with Council to achieve a suitable outcome in addition to the Contributions Plan.

Regarding the Gardiners Road upgrades it is part of the Contributions plan that the upgrade to a Q20 level would be funded 50/50. The applicant has offered to increase this to Q100 plus climate change level and to bear the additional cost of increasing these levels. This offer will now include the extra width for a pathway.

In summary the response to the Council request regarding the provision of the pathway is that the applicant will accept conditions which call for the following.

1. The construction of a pathway from the James Creek entry to the subject land to the Gardiners Road intersection as shown on Geolink drawing C131 D. The approximate length is 1200m.
2. The construction of a pathway as part of Gardiners Road flood immunity upgrade by incorporating a pathway adjacent to the trafficable lanes as shown on Geolink Drawing 132 D. Approximate length is 700m.
3. To work with Council to design the remaining areas of pathway to complete the link between the subject land and Townsend.

Summary

With respect to Councils letter of 24 April 2024 requesting additional information we have provided the following response

1. Owner's consent – as indicated by Councils letter all infrastructure has been removed from Austons Lane. Specifically, the stormwater discharge is now within the subject land and will also discharge over land to be dedicated as a landscape buffer before it passes onto Austons lane. Additionally, the emergency vehicle access has been removed from Austons Lane. There is therefore no infrastructure proposed for Austons Lane.
2. Stormwater – an analysis of the stormwater design has been provided in addition to the Stormwater Management Plan provided with the application. As discussed in the advice from Geolink the stormwater basin in the SW corner has

been further enlarged to provide a level of treatment well in excess of Council standards. This will provide the level of certainty that Crown Land have requested for flows onto their land and the nature reserve is of the highest quality.

3. Traffic – comments have been provided in relation to the intersections identified by Council however we note that because of the James Creek Urban Growth Area Road Infrastructure Developer Contributions Plan detailed design and funding will occur in accordance with the plan.
4. Pathway – As outlined above the applicant is prepared to work with Council to deliver the pathway including assistance with design. Additionally, the applicant is prepared to deliver approximately half of the distance of the pathway as outlined.

This response includes the following attachments.

- Revised set of Geolink plans
- Revised Statement of Landscape Intent
- Revised RAD Architecture Masterplan
- Geolink Stormwater Management Plan dated 24/11/2023.
- James Creek Urban Growth Area Road Infrastructure Developer Contributions Plan

Could you please contact the writer with any questions.

Yours faithfully,
Place Design Group

Peter Bell
Planning Principal (Gold Coast)