

ANNEXURE 7

PART A

**PROPOSED REZONING TO PERMIT SENIORS
LIVING, RETAIL, AGED CARE AND
MEDICAL FACILITIES**

AT

LOT 101 DP 1140936

EWINGSDALE ROAD, EWINGSDALE

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1.0 INTRODUCTION

Greg Alderson & Associates have been requested to undertake a study in connection with a planning proposal to be lodged by Belbeck Investments Pty Ltd to allow additional permissible uses on Lot 101 in D1140936 (**Subject Land**). Specifically, this report considers the provision of potable water and sewerage to Lot 101 DP 1140936 Ewingsdale Road, Ewingsdale, which is seeking additional permissible uses to allow a development including seniors living, aged care, retail and medical facilities ancillary to the hospital proposed for Lot 100 adjoining, or central to the two parts of Lot 101.

It is understood that Lot 100 has been successfully rezoned to permit the hospital use, though a development application for the hospital is yet to be lodged. We have made contact, by phone and email, with Byron Shire Council Water & Sewerage Section and Rous Water for the provision of sewer and water services to the Subject Land as part of an earlier assessment in 2011 and again this year. A site inspection of the Subject Land was undertaken on the 17th May 2011.

The Subject Land and Lot 100 were originally part of the one land parcel. The lots were recently subdivided and the central allotment, Lot 100, has been identified for the proposed Byron Shire Hospital. Because of this subdivision the Subject Land is now in two parts. The area of the eastern portion is 6.99ha and the area of the western portion 8.09ha.

It is understood that the planning proposal seeks to allow additional permissible uses on the Subject Land in order to facilitate a proposed development on the Subject Land comprising approximately 160 dwellings of seniors living, plus 60 to 65 aged care places, a retail facility and a medical centre.

The adjoining land to the south of the Subject Land is the McGettigans Lane rural residential subdivision of approximately 150 allotments. These lots are not sewered but many do have reticulated water supplied by Rous Water. The size of these lots is in the range of 2000 to 5000m².

The site is situated about 5km from the Byron Bay town centre.

2.0 DETAILS OF PROPOSED DEVELOPMENT

It is understood that the planning proposal seeks the additional permissible uses to facilitate the following uses at the property:

- Seniors living consisting of 160 dwellings
- Aged persons hostel containing 60 to 65beds
- Retail shopping area covering a floor area of 3000 m²
- Medical area containing a floor area of 600m²

It is assumed that there would be good water efficiency devices used in the development, with water reduction devices installed.

2.1 Expected Equivalent Tenement

The expected volume of sewer and water generated from the development is determined from Council's Policy 12/001 *Water and Sewer Equivalent Tenements Policy (#1199090)*. The equivalent tenement expected to be generated for the proposed development is described in Tables 1 and 2.

Table 1: Water ET Requirement

Description	Number/Area	Rate	Water ET
Seniors living dwellings+	160	1 ET/dwelling	160
Aged persons accommodation	65 beds	0.5 ET/bed	32.5
Retail shops (office)*	1000 m ²	0.01 ET/m ²	10
Retail shops (Supermarket)*	2000 m ²	0.003 ET/m ²	6
Medical centre	600 m ²	0.4 ET/room Assume 30 rooms	12
		Total	220.5 ET

Conservative assumption based on individual dwelling with ≥ 450 m² available for dwelling

* Used assumption of offices and supermarket of 50% each

Table 2: Sewer ET Generation

Description	Number/Area	Rate	Sewer ET
Seniors living dwellings+	160	1 ET/dwelling	160
Aged persons accommodation	65 beds	0.75 ET/bed	48.75
Retail shops (office)*	1000 m ²	0.004 ET/m ²	4
Retail shops (Supermarket)*	2000 m ²	0.003 ET/m ²	6
Medical centre	600 m ²	0.63 ET/room Assume 30 rooms	18.9
		Total	237.7 ET

+Conservative assumption based on individual dwelling with ≥ 450 m² available for dwelling

* Used assumption of offices and supermarket of 50% each

An Equivalent Tenement (ET) is a standard measure equivalent to a single dwelling. Water and sewerage loads are often broken down into ET to allow calculations of flow rates against a standard unit.

For the purposes of this report an ET is defined numerically as the average residential Town Water usage of **630 L/day** and Sewerage Loading of **590 L/day** in accordance with Council's Policy 12/001 *Water and Sewer Equivalent Tenements Policy*.

It is noted that some of the dwellings are only 2 bedroom, thus generating a lower water and sewerage load. However, as the final amount of usable land has not been determined at this early stage in the planning process, it is likely that the final load will be less than the estimated load figures mentioned above. For example the provision of an onsite storage dam to collect and detain stormwater will result in the loss of about 10 allotments. Furthermore, the steep rocky land, on the eastern portion of the land, may also see the number of dwellings reduced.

The predicted sewage generation is conservatively determined to be:

236.4 ET x 590 L

139476 L/day

The predicted water consumption is conservatively determined to be:

220.75 ET x 630 L

139072.5 L/day

With the addition of water conservation and reuse of grey water, the sewage flow rate may be further reduced. By way of example only, the pre-treatment of grey water (in accordance with relevant policies and guidelines) on the Subject Land before pumping to the West Byron Sewerage Treatment Plant (WBSTP), could take the form of collection of grey water and its reuse in areas such as garden watering, and toilet flushing. This may reduce the water usage at the development by up to 30%. In this way the water and sewerage system could be regarded as being more sustainable and environmentally responsible. Approval would be required through Council for this type of wastewater management system which would require on-going monitoring and testing to ensure the system is working adequately.

It is appropriate that details of the reuse systems and water conservation measures be provided on the Subject Land post rezoning, would be developed as part of the detail supplied to the Council and Government Departments after the land is rezoned in a detailed development application. In this regard the NSW Department of Health have a guideline for the reuse of Grey Water, see Management of Private Recycled Water Schemes.

3.0 THEORETICAL TRANSPORTATION OF SEWAGE GENERATED BY THE PROPOSED DEVELOPMENT

3.1 Sewer Reticulation on the Land

The expected theoretical hydraulic loading of the Subject Land if it were developed as proposed in Section 2.0 was estimated using equivalent sewage generation rates, see section 2 above.

In accordance with Council's Policy 12/001 *Water and Sewer Equivalent Tenements Policy* the expected sewage loading is 237.7 kL/day.

This represents full sewage generation and does not take into account possible greywater reuse at the site, nor lower occupancy rates.

The detailed design of any sewage system should be considered at the time a development application is lodged for the proposed development (following the approval of this planning proposal). However, it is likely that sewage generated by the proposed development will need to be transferred to the West Byron Sewerage Treatment Plant (WBSTP). The sewage pump station or stations, to serve the proposed development on the Subject Land, are notionally shown on the attached plans. The reticulated sewer mains through the proposed development would collect and transport sewerage to the pump stations. These pump stations would then pump the sewage to a main pump station, and from there it would be pumped via a rising main along Ewingsdale Road, then north up Bayshore Drive to the access road to the WBSTP.

Once at the access road to the WBSTP the sewer rising main would turn and run north west to the WBSTP and outlet directly at the headworks to the STP. This rising main route is also shown on the attached plans. This route is subject to Council's approval, for example Council may not want an additional outlet from a new rising main directly into the WBSTP, but rather have a connection to one of the existing rising mains, with non-return valves etc. These finer details would be worked out with Council when the detailed plans are being drawn. However, at this stage, in our view, there are suitable options available for the transportation of sewage to the WBSTP.

It is also appropriate that the type of pump station to be installed on the land be the subject of

further detailed survey plans and further discussions with Council following the additional uses being made permissible on the Subject Land. It may be feasible to use a low pressure reticulation system on the land, and this may save some costs of installing gravity sewer mains. There are some areas that are difficult to sewer, requiring extra sewer pump stations. More detailed survey information would be required to finalise these details, after the land is rezoned.

We have prepared an indicative plan of the potential sewer main layout for the proposed development, based on plans supplied by Regional Design Architects dated November 2010. This plan indicates that the proposed development, as described in the Regional Design Plans, can be sewered. Based on these plans, there will need to be four (4) sewerage pump stations on the total land, based on the layout provided and the contours provided with those plans. This indicative plan is preliminary and further survey, design and calculations may change the concept design once greater certainty regarding the permissibility of the development is achieved.

In addition, if the planning proposal is approved, there will be opportunities to consider the sewerage system requirements in conjunction with those systems to be provided for the proposed Byron Shire Hospital on Lot 100 at the detailed design phase.

It is noted that in the Newton Denny Chapelle (NDC) report for the Gateway Planning Proposal for the proposed hospital site at Lot 100 DP 1140936 (reference number 10/515, November 2010) the report refers to the sewer being pumped to the Sunny Brand Chicken Pump Station along Ewingsdale Road which was proposed to be constructed by Council.

As previously discussed with Council, and since the date of the NDC report, Sunnybrand chickens is now owned by Inghams. Currently they have not connected to the Council's sewer system, although an order from EPA may require this to occur in the foreseeable future for disconnection from the on-site management system to the Council's sewer. We are not privy to any further details of the requirement to actually connect to the sewer.

As a pump station is not yet being proposed to be installed to service Inghams, we would allow for the same type of pumped sewer system but with the option of pumping directly to the West Byron Sewerage Treatment Plant rather than along to the Inghams site. If the Inghams pump station is installed then Council may allow the sewerage from the subject site (Lot 101) into this pump station. There would only need to be one pump station pumping from Lot 100 and Lot 101 along Ewingsdale Road. The option of one pump station for each lot (100 and the Subject Land), or one pump station for both lots, allows flexibility post rezoning to allow the two development to be not totally dependent on a joint sewer pump station. The option of a joint sewer rising main and non-return valves to allow either site to pump through the same rising main in Ewingsdale Road, would be a further option. Contributions would be required to be payable on any of the options, however a reduction of costs would be expected if infrastructure is shared with various developments.

3.2 Rising Transportation Route to WBSTP

As mentioned above the rising main is essentially along Ewingsdale Road, Bayshore Road and then the treatment works road to the WBSTP. The main pump station on the Subject Land would be the point from which the sewerage would exit the site. This pump station would need to be sufficiently large to pump the distance to the WBSTP.

The issue of ownership of this pump station, the rising main to the WBSTP and the entire sewer system on the Subject Land will need to be discussed with Byron Shire Council as part of any development application, following the approval of the planning proposal.

3.3 Transportation Sewer Contributions

It is appropriate that any sewerage transportation developer contribution be considered at the time a development application is lodged, following approval of the planning proposal.

3.4 Summary, Sewer Transportation

The collection and transportation of sewerage from the Subject Land is feasible. It is likely that the Subject Land would require pump stations and rising mains, to move the sewerage around the site and a pump station to move it to the West Byron STP.

It may be beneficial to consider a low pressure pumping sewerage system on the land, this could be examined more closely with better survey information and the agreement of Council, post rezoning.

3.5 Sewer Treatment Capacities

Advice has been sought from Byron Shire Council, who own and operate the sewerage treatment plant at West Byron, in relation to the capacity of the WBSTP to accommodate the proposed development on the Subject Land.

Mr Phil Warner Executive Manager Water and Recycling at Byron Shire Council, has advised by email in (on May 2011) in a response to a request by our office, concerning the capacity of the WBSTP, see copy attached, that there are three options Council may consider. These options are expanded by our office in the following sections.

3.5.1 Progressive Take up of Sewerage Load

Council may consider the spare capacity in the WBSTP, as a result of developments that were allowed for but have not taken up that allowance. In designing the size of the WBSTP augmentation Council calculated existing loads, committed loads and foreshadowed loads. The plant was constructed accordingly. Not all of these loads have presented in the form of sewage to the WBSTP. This has occurred for various reasons, one of which being the Global Financial Crisis, which slowed development in the WBSTP catchment.

Mr Warner has not advised specifically whether there is sufficient spare capacity for the proposed rezoning, (which we have assessed could be in the order of 250ET), as a result of spare capacity, not taken up by developments that were previously allowed for by Council. As such, further discussion with Council would be required in relation to this issue at the detailed design phase.

3.5.2 Upgrading of the WBSTP

Council may consider the further augmentation of the WBSTP, particularly due to the expected increased load caused by other developments, such as the neighbouring Byron Shire Hospital on Lot 100 and the Subject Land post rezoning. Given that the proposed rezoning will increase the sewerage load at the WBSTP by in the order of 240ET and the proposed Byron Shire Hospital is also likely to add load, there could be sufficient incentive to carry out augmentation at the WBSTP. It would be premature of our office to try and anticipate the form any augmentation at the WBSTP to increase its capacity to cater for the proposed rezoning plus the hospital. The Council may also consider the opportunity to extend the sewer service to the Ewingsdale Rural Residential estate. In 2011, we were informed that Council had no intention at that time of considering this option for the Ewingsdale Estate, but a holistic approach mentioned by Mr Warner could in our opinion include this type of consideration.

3.5.3 On site Sewerage Treatment Plant

Mr Warner suggests that it may prove more cost effective to consider an onsite sewerage treatment plant (STP) and utilise effluent reuse, west of the highway. Any such STP would

need further consideration in conjunction with proponents for other development in the area, such as the Byron Shire Hospital on Lot 100, to determine whether this is feasible and where it could be located, having regard to the following issues that we identify for preliminary consideration:

- Set back for development, to the onsite STP. There will be some odours at any STP, even though these can be controlled and be very minimal. Set backs are likely to be required, which could be as much as 400m from residential development, existing or proposed. This issue may mean that the STP is not a suitable solution for Lot 100 and the Subject Land.
- Any new STP would need to be able to treat sewage to produce an effluent of a high quality, such a plant could include micro filtration, to allow reuse of the treated sewage water. The technology for such a plant is available, and reuse on the site in toilet flushing and garden watering are options for more detailed consideration.
- The reuse of treated sewerage water on paddock irrigation, local industrial uses, or for irrigation of farm plantations is also an option. If this irrigation method were undertaken easements would be required over the land to be irrigated. Suitable land would need to be identified for this purpose.
- Operation and maintenance of the STP. The final owner and operator of the new STP would need to be explored, and this would be based on the lands that benefit from the sewerage that is treated at the proposed STP. If it is a privately operated STP, which collects some sewerage from other lands, then a structured payment method must be developed. It is likely that a combined lands STP would be better owned and operated by Council.

3.5.4 Alternative Sewerage Treatment Option

As an alternative option, the Subject Land and Byron Shire Hospital could consider constructing an onsite pre-treatment plant that provides some initial treatment providing an effluent that could be used for recycling, and any surplus treated effluent then pumped to the WBSTP.

3.6 Summary of Sewerage Treatment Capacities

Based on the attached responses received from Byron Shire Council, it would seem that the sewage produced from the proposed development, could likely be treated by Byron Shire Council. Further discussions with Council and with the proponents of other development in the vicinity (such as Byron Shire Hospital) to enable the design of an effective solution should be carried out following approval of the planning proposal.

4.0 WATER SUPPLY

4.1 Comments by Water Supply Authority

Our office wrote to Rous Water, the local bulk water supply authority, in May 2011. A response was received from Mr David Patch, see attached, who indicated that some preliminary work was undertaken in 2007 by Rous Water, in relation to the hospital proposal. Rous Water has indicated that there are two water supply mains, that transport water from Saint Helena reservoir to Ocean Shores Brunswick Heads. It would seem that there was an intention to make a dual connection to the two existing Rous water mains.

Rous Water indicated that a new water main was to be constructed along McGettigans Lane and then along Ewingsdale Road to the hospital site, being the neighbouring site of Lot 100. The Rous Water mains are located adjacent to the land. In fact the 300mm water main traverses the eastern side of the land. Rous advises that the 375mm water main is "opposite" the land.

Based on the information supplied by Rous Water, as above, it is likely that connection to these water mains will be available for the Subject Land.

4.2 Water Reticulation

We have prepared an indicative concept design, based on the architectural plans supplied by Regional Design Architects dated November 2010. To improve the water supply performance on the Subject Land, loop water mains may be utilised. It would be advantageous to avoid dead ends to the water mains, to keep water quality high.

4.3 Potential Water Savings

Potential areas for water savings on the supply and usage of water and subsequent wastewater generation may be achieved by installing low flow shower roses in the bathrooms, installing water efficient glass washers and installing water efficient dish washers in the kitchens, water efficient laundries (washing machines).

The use of water saving throughout the development can make a substantial difference to the amount of water used in the overall development. Such water savings should be detailed in any development application lodged for the proposed development, following the approval of the planning proposal. However, we have supplied some general information that we believe should be incorporated in the proposed development, thus providing a sustainable development, while still providing a high level of service and reliability. For example:

Low Flow Shower Roses

A "normal" shower rose typically uses 12L/minute and a "low flow" shower rose uses about 7L/minute. From this rate and assuming that a person takes one 5 minute shower each day, the saving in sewage generation from installing low flow shower roses is likely to be in the order of:

$$246 \times 3 \times (12-7)\text{L/min} \times 5\text{min/day} = 18.5\text{kL/day}$$

4.3 Water Supply Summary

It would seem that based on the information received from Rous Water that reticulated water can be provided to the proposed development. It is also feasible to reticulate that water throughout the Subject Land using water mains generally located in the proposed road reserves shown by the indicative architect plans for the Subject Land.

5.0 STORMWATER

5.1 General Site Drainage

The two sections of the Subject Land mostly drains stormwater to two identified water ways . This means that any development within 40m of the banks of these waterways, will require approval from the Office of Water.

Following an inspection of the lands and examination of the contours supplied from Newton

Denny Chapelle, we make the following comments:

Western portion — Lot 101

- The western section of Lot 101, has a gully that directs water in an easterly direction onto the rural residential allotments, such as 66 Parkway Drive.
- The north western corner of Lot 101, drains a small section of the land towards William Flick Lane and the corner of the Country Energy substation.
- The north eastern section of the western portion of Lot 101, drains onto Lot 100.
- The southern section of the western portion of Lot 101, drains south back onto other lands off Avocado Lane, a cul de sac which also adjoins the subject land in the south eastern corner of the western portion of Lot 101.

Eastern portion — Lot 101

- The south eastern section of the eastern portion of Lot 101 drains into the waterway located on neighbouring lands.
- A section of the south western corner of the eastern portion of Lot 101 drains to the Parkway Drive and the corner of neighbouring lands.

All of these drainage issues will need to be catered for in any stormwater drainage design. We believe this can be done and the attached indicative plan, prepared by this office gives a stormwater concept design for the land addressing these issues.

5.1 On site Stormwater Detention

Byron Shire Council requires that stormwater should be contained on the land being developed, to a degree that the discharge rate from the land post development, shall not be greater than the discharge pre-development for all storm events up to and including the 100 year ARI. Part N of Council's DCP 2010 specifies the methodology for calculating the amount of detention required and management of stormwater for proposed developments.

In our indicative concept stormwater design plan, attached to this report, we have identified potential locations for stormwater detention ponds. In the western portion of Lot 101 this means that some of the notional allotments shown, in the plan by Regional Design Architects, will need to be relocated to allow stormwater detention ponds and this pond would need to be about 1000 m³. An environmental flow would need to be provided from the pond. It is likely that this pond could be sized to give a benefit to the downstream properties. Some of these properties to our knowledge have stormwater problems now and a well sized detention pond could be of benefit to these properties. Due to such considerations, the detailed design of stormwater detention ponds should be undertaken during the detail design phase and incorporated into any development application lodged for the proposed development, following approval of the planning proposal.

We note that the overflow of the subject land onto the Parkway Drive land, in the vicinity of Number 66 Parkway Drive, can be controlled to predevelopment rates by a detention pond, however there will be a concentrated discharge, from the spillway from the pond and the repairing flow pipe, which would require an easement through the downstream properties.

Inter-allotment drainage will also be required to allow individual allotments to drain to the appropriate discharge point.

It is also a requirement that each dwelling have a rainwater storage tank, for reuse of water and for onsite stormwater detention. The overflow from these tanks will need to be collected and then directed to the inter-allotment drainage lines. We would suggest that these rainwater storage tanks be increased in size, above that required for BASIX, to allow onsite stormwater detention at each dwelling site. Typically the BASIX storage requirements would be about 3000L and the OSD tank 2500L for the 1:20year storm. This could be scaled back to the 1:5year storm for a 300m² land size and a 200m² impervious area on each allotment. That is a total tank size on each allotment of 5500L. The larger roof buildings should also have roof water collection tanks, and clearly these would be bigger but the same calculation methodology would be employed.

With the subdivision of the land and the construction of roads, parking areas for the retail development, the medical centre and the community centre, there will be large sections of land that will be covered with impervious roofs, bitumen or concrete. Currently the land is grassed and the runoff from grasslands is lower than that from impervious surfaces, such as would be provided in the final development after rezoning. An opportunity to control stormwater discharge, could be to shape the carparking areas, to cause them to act as onsite storage basins. This method of design of car parks is often employed to help control the developed site stormwater discharge to the pre-development levels. This will need to be considered at the detailed design phase.

There will be a need for gross pollutant traps on all roads and parking areas.

There will also be a need for treatment system such as bioretention at outlets to ensure the stormwater discharge achieves Council's stormwater quality standards. The MUSIC software program would be used to calculate the size of these facilities.

The stormwater controls required to the eastern portion of the Subject Land, are likely to be different to the western side of the Subject Land1. This is because of the steeper land on the eastern side of this portion. We envisage that there could be some smaller storage ponds, with controlled discharges, or even storage in the bio retention basins in the eastern portion of the land.

5.2 The Stormwater Interrelationship between Lot 101 and the Subject Land

The report by Black Earth, dated March 2007 for the stormwater management on Lot 100, follows similar principles that would be appropriate for the proposed development of the Subject Land. Black Earth have also suggested a detention pond on Lot 100 which has a size of 1385m². They have also suggested tanks be used to collect rainwater, again similar to our suggestions above.

It is important to note that for the purpose of their report, Black Earth have assumed the Subject Land remains as grazing land, as they have used a roughness coefficient of 0.035 in their calculations, which is for a grassed paddock, not a paved and roofed subdivision, with large sections of impervious surfaces materials. A detailed stormwater management assessment would be required to take into account any developments, including rezoning proposals on neighbouring land within the upper catchment. Notwithstanding that comment, the development of the Subject Land would be required not to cause impacts on the neighbouring land and detain stormwater flows from the 5 minute 20 year event post development to that of the 5 minute 5 year event pre-development. It would appear from the plans that have been forwarded to us for the hospital development that it would have a much lower density ratio than the plans we have seen for the proposed development of the Subject Land from 2011.

Black Earth also have shown a catchment diagram, Exhibit 2.1, which shows the stormwater

drainage from the western portion of Lot 101, being drained 4 to 5m up hill. While this is technically possible with the correct machinery, an alternative shown on the attached plans, is for a detention pond. The Black Earth option may still be a good one for the proposed development of Lot 101, if easements are not available through Lot 2 DP 806855 (number 66 Parkway Drive), but it is suggested this is a second option, due to the amount of earthworks, and works in Council's road reserve (Parkway Drive).

It is noted that the hospital land also has included the option of Bio Retention Swales, which were also suggested in our draft plan, see attached.

In summary with respect to stormwater for the proposed development of Lot 101, we still maintain that the Subject Land can be rezoned and developed generally as proposed in the documents supplied, subject to the installation of stormwater drainage as per Councils DCP Part N and the Northern Rivers Local Government Specifications, without adverse impact on Lot 100. There may be opportunities for the Byron Shire Hospital site (Lot 100) and the Subject Land to develop a stormwater management system together, appropriate easements for interallotment drainage would also be required.

6.0 GENERAL COMMENTS

The Subject Land is in our opinion suitable for rezoning, from a water, sewerage and stormwater perspective.

Sewer and water services can be provided to the Subject Land in conjunction with the local Byron Shire Council and the Rous Water supply authority.

With respect to stormwater, the land can be suitably developed and drainage techniques installed to give a satisfactory stormwater solution for the land such that the post development discharge is at or below the predevelopment discharge. There would be no stormwater discharges from the developed site that are not able to be accommodated in the existing natural water courses or a stormwater easement.

Stormwater discharges could be controlled and treated in such a way as to ensure the discharge does not pollute the waterways.

It is appropriate that detailed design of all systems is provided at the time a development application is lodged, following approval of the planning proposal. There may also be opportunities for discussions to be held with the proponents of the Byron Shire Hospital to design a effective solution for both developments.

OTES
mwater detention pond.
er of 1000m³ in
N. A roofwater tank will be
roximate size of 5000L is
o provide the BASIX and
inements. Overflow to an
d through the neighbouring

capping on the site and
w to maintain storage
BSC and the Department
flow from the pond may be

Lot 100
DP 1140936

carriage way

Parkway

Drive

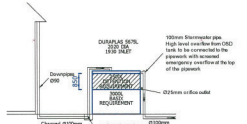
The proposed dwellings in these
locations are more difficult to
accommodate to the sewerage
system due to the slope of the land
and the proximity to the road reserve.

SITE PLAN - EAST LOT
1:750 @ A1

POSSIBLE
BIORETENTION AREA
AND STORMWATER
OUTLET TO CREEK.
DESIGN TO ENSURE
NO EROSION OF
THE CREEK BANKS.

Piped road stormwater
drainage system directed to
the WSUD system prior to
connection to the creek.

Piped stormwater drainage
system connecting to the
creek and directing runoff
clear of the neighbouring land.



TYPICAL OSD/BASIX Tank Detail
Scale 1:200

1. Outlet pipe to be 150mm diameter to the street drainage system.
2. Inlet pipe to be 150mm diameter to the street drainage system.
3. Tank depth to be 1.2m to the top of the tank.
4. Flushing pipe to remain in place except for storm flushing performed as needed.
5. Connect all flushing pipes with 150mm pipe to the 150mm discharge to existing drainage pipe.

DISSEMINATION NOTES

1. The stormwater drainage system shall be designed to direct all roof water to the Detention Pond for use (BSC) and retention. Overflow from the tank and the stormwater shall be directed to the stormwater drainage system through a series of pits and pipes. The system is designed to ensure that the development itself acts as a retention or detention of the stormwater runoff.
2. The stormwater drainage system shall be designed to direct all roof water to the Detention Pond for use (BSC) and retention. Overflow from the tank and the stormwater shall be directed to the stormwater drainage system through a series of pits and pipes. The system is designed to ensure that the development itself acts as a retention or detention of the stormwater runoff.
3. The stormwater drainage system shall be designed to direct all roof water to the Detention Pond for use (BSC) and retention. Overflow from the tank and the stormwater shall be directed to the stormwater drainage system through a series of pits and pipes. The system is designed to ensure that the development itself acts as a retention or detention of the stormwater runoff.
4. The stormwater drainage system shall be designed to direct all roof water to the Detention Pond for use (BSC) and retention. Overflow from the tank and the stormwater shall be directed to the stormwater drainage system through a series of pits and pipes. The system is designed to ensure that the development itself acts as a retention or detention of the stormwater runoff.
5. The stormwater drainage system shall be designed to direct all roof water to the Detention Pond for use (BSC) and retention. Overflow from the tank and the stormwater shall be directed to the stormwater drainage system through a series of pits and pipes. The system is designed to ensure that the development itself acts as a retention or detention of the stormwater runoff.
6. The stormwater drainage system shall be designed to direct all roof water to the Detention Pond for use (BSC) and retention. Overflow from the tank and the stormwater shall be directed to the stormwater drainage system through a series of pits and pipes. The system is designed to ensure that the development itself acts as a retention or detention of the stormwater runoff.

- (C) - Right of Carriageway 7' Wide (DP 1140936)
- (D) - Easement for Water Pipes 5.03' Wide (1:149775)
- (E) - Easement for Water Supply 10' Wide and Variable Width (2316931)
- (F) - Land excludes Minerals and Reservations and Conditions
- In Favour of the Crown - See Memorandum S7000054

Scale: As Shown @ A1 Date: Source: Western Downs Council & Regional Design Drawing No. 11180 - stormwater	GREG ALDERSON & ASSOCIATES PTY LTD 0800 000 000 www.gregalderson.com.au 100 Stirling Ave, Stirling NSW 2777 Email: g.a.alderson@gregalderson.com.au	CONCEPT STORMWATER PLAN PROPOSED AGED CARE & RETAIL DEVELOPMENT Lot 101 01/14/2016, Campbell Road, Stirling For: Jacobson Pty Ltd	Job No. 11180 01 / 02
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Subject: RE: Ewingsdale rezoning
From: "Warner, Phil" <phil.warner@byron.nsw.gov.au>
Date: Thu, 19 May 2011 16:05:47 +1000
To: <g_alderson@bigpond.com>
CC: "Baulch, Dean" <Dean.Baulch@byron.nsw.gov.au>

Greg,

nice to speak the other day

re the load. As discussed, there was no provision made in the Byron Bay sewerage augmentation scheme for any load from this area as it was not part of the planning documents and associated settlement strategy. However, it is also true that other areas factored in may not progress.

in this context I think there are two pathways for Council. The first is that capacity is progressively taken up by approved developments ie first in first served even if not included in the original concept design. The second pathway is that Council seeks advice regarding an infrastructure upgrade that maybe brought on by a large rezoning proposal and seek a specific contribution towards that upgrade. I am not a planner but would think this area/ hospital precinct must be considered in a holistic manner. It may prove more cost effective to build a small treatment plant for the area and utilize effluent reuse west of the highway (there may also need to be more broad discussion regarding the potential sewerage of Ewingsdale).

I think the proposed transport route is reasonable at this stage. Re the option of a low pressure pumping system, I suspect it will still be necessary to have a pumping station to drive the flow to the STP. Whether LPPS is more cost effective than gravity would need to be calculated. Again I suspect in this location with the topography etc gravity and a SPS would prove most cost effective.

Regards

Phil Warner
Executive Manager, Water & Recycling
Byron Shire Council
ph (02) 6626 7165, fax (02) 6684 3018
PO Box 219 Mullumbimby NSW 2482

From: Greg Alderson [mailto:g_alderson@bigpond.com]
Sent: Thursday, 19 May 2011 8:06 AM
To: Warner, Phil
Subject: Fwd: Ewingsdale rezoning

Phil,

thanks for the Phone call a few days ago.

I have done some calculations, based on the architects and town planners reports and plans.

It would seem to me that this proposed rezoning would generate in the order of 250ET and at Councils rate of 630L/d (policy 07/100) that would yield about 150kLper day of sewerage.

There would be a desire to have some grey water reuse on the site for garden and toilet

flushing, to meet the requirements of the sustainable system, but in the event of wet weather and as stated by the department of Health we need to be able to cater for the full sewerage load at the STP.

Thus the question is does the STP have the capacity for this type of load, bearing in mind that the proposed hospital would also be connected, I dont know the load for the hospital, thought you may know that.

We are drawing up a concept plant of the transportation and have assumed that Sunnybrand chickens may not connect and that the rising main would have to run along Ewingsdale Road and then up Bayshore drive to the STP road, then into the headworks of the STP via the STP road. Is this a reasonable transportation route for this concept stage.

I presume that Council would take over the pumpstation on the site and the rising main, and that the PS would need to be a standard PWD design. Or do you now consider E One (the New Brighton contractors) as an alternative?

Thanks for your help.

Regards

Greg

----- Original Message -----

Subject:Ewingsdale rezoning

Date:Tue, 17 May 2011 08:24:24 +1000

From:Greg Alderson <g_alderon@bigpond.com>

Reply-To:g_alderon@bigpond.com

To:Terry Gobbe <terry.gobbe@rouswater.nsw.gov.au>

Terry,

I am not sure if you are the right person to talk to about this project I have been asked to look at but if not could you direct me accordingly.

We have been asked to look at proposed rezoning on Ewingsdale Road, next to the land recently purchased by the Department of Health for a new Byron Hospital being Lot 101 DP1140936.

The land is proposed to be developed for seniors living, aged care, retail and medical.

I am working out the expected loads now and could give you that sort of information shortly. I understand that Byron Shire can provide sewer services at West Byron STP but they dont reticulate water at Ewingsdale as you know.

We would have expected that the Depart of Health would have approached Rous with respect to the provision of water to their land which is next to the land we are examining and that you may therefore have thought about the provision of water supply to this land.

Any help would be appreciated

Subject: RE: Proposed rezoning Ewingsdale
From: David Patch <David.Patch@rouswater.nsw.gov.au>
Date: Thu, 19 May 2011 16:35:26 +1000
To: "g_alderson@bigpond.com" <g_alderson@bigpond.com>
CC: Belinda Fayle <Belinda.Fayle@rouswater.nsw.gov.au>, Michael McKenzie <Michael.McKenzie@rouswater.nsw.gov.au>

Hello Greg - re your email below and to your phone call with Belinda Fayle - Rous Water (Terry Gobbe) did some very preliminary work for the Byron Hospital in 2007 for Bill Payne but nothing since - we were going to have dual connection (to give some continuity of supply) to the 300mm bulk main and the 375mm bulk main (with this one normally closed off). A main would be constructed along McGettigans and up Ewingsdale Rd to the boundary of Lot 100. I don't there was any actual sizing done as we had no real demands etc supplied by Bill. We also had enquiry re an ambulance station next to proposed hospital.

In regard to your proposed development on Lot 101 - a connection could be provided off either the 300 or 375mm pipelines with a direct connection off the main as the 300mm traverses the property and the new 375mm is opposite. These trunk mains service reservoirs in Brunswick and Ocean Shores and as such residual pressures will fluctuate depending on reservoir demand. Given the numbers below, headworks charges would be fairly substantial (depending on how Byron would apply) as Rous' current Headwork charge is \$7491 per ET and rising to \$8377 after the 30/6.

Hope this helps out - also Terry has retired recently and has been replaced by Michael McKenzie in the role of Distribution Asset Manager - tar dp

-----Original Message-----

From: Greg Alderson [mailto:g_alderson@bigpond.com]
Sent: Thursday, 19 May 2011 8:13 AM
To: David Patch
Subject: Proposed rezoning Ewingsdale

Daivd,

I hope you can help me re a proposed rezoning at Ewingsdale Road Ewingsdale, next to the proposed hospital site. Lot 101 DP1140936. the land is on the corner of Megetigans Lane and Ewingsdale Raod and a second part of the land is of Flick Drive (the old Pacific Highway).

I have done some preliminary calculations and there would seem to be a load of about 250ET, proposed to be generated from a seniors living complex, age care facilities, retail centre and medical centre. Using Byron Shires figures of 630L/ET per day this gives in the order of 150kL/day. there would be some recycling of grey water and likely some roof water harvesting to comply with the sustainable guidelines.

Do Rous have the ability to supply 150kL/day to this land, bearing in mind that the land is next to the proposed hospital site and would likely share the same supply main???

Regards

Greg

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