Coffs Infrastructure Alliance

Coffs Harbour City Council
Water Treatment Plant
Submissions Report

August 2007

Coffs Infrastructure Alliance

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Date 3rd August 2007
On Behalf of the Coffs Infrastructure Alliance

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Contents

Glossary and Abbreviations List

ADWG	Australian Drinking Water Guidelines, 2004	LEP	Coffs Harbour City Council Local Environmental Plan 2002
DAFF	Dissolved Air Floatation Filtration	MHU	Major Hazard Unit
DECC	Department of Environment and Climate Change	NTU	Nephelometric Turbidity Unit
DGR	Director General Requirements	PAC	Powdered Activated Carbon
EA	Environmental Assessment	P&ID	Process and Instrumentation Diagrams
EP&A Act	Environmental Planning and Assessment Act 1979	PHA	Preliminary Hazard Analysis
GAC	Granular Activated Carbon	RFS	Rural Fire Service
HAZID	Hazard Identification Workshop	SEPP	State Environmental Protection Policy
LALC	Local Aboriginal Land Council	UV	Ultraviolet light

1. Introduction

1.1 Overview

Coffs Harbour City Council (Council) proposes to develop a Water Treatment Plant (WTP) facility at 140 Upper Orara Road, near Karangi in NSW. The location of the site is shown in ***Figure 1.1***. The proposed facility would initially be developed in a single stage involving the construction of the WTP and associated infrastructure and its necessary connection to other existing water supply infrastructure in the local vicinity. Provision has also been made in the current design of the WTP for areas that would allow for the future expansion of the plant's capacity, if required, via the addition of further process units.

The proposed WTP facility would treat all reticulated water supplies flowing to Coffs Harbour consumers from the existing Karangi Dam. Inflows to the Karangi Dam currently come from both the Orara and Nymboida River catchments, however in the future the inflows to this Dam will be augmented with supplies from Shannon Creek Dam (currently being constructed 9km west of Coutts Crossing, south-west of Grafton, NSW). The quality of the raw water to be supplied from these combined sources, in the future, is expected to fall below an acceptable standard for consumption, from time to time. A catchment-to-tap water quality risk assessment was therefore undertaken in 2006 on both the current and future raw water sources. A preferred treatment process was selected to appropriately manage any potential water quality risks, as reflected in the design of the proposed WTP facility.

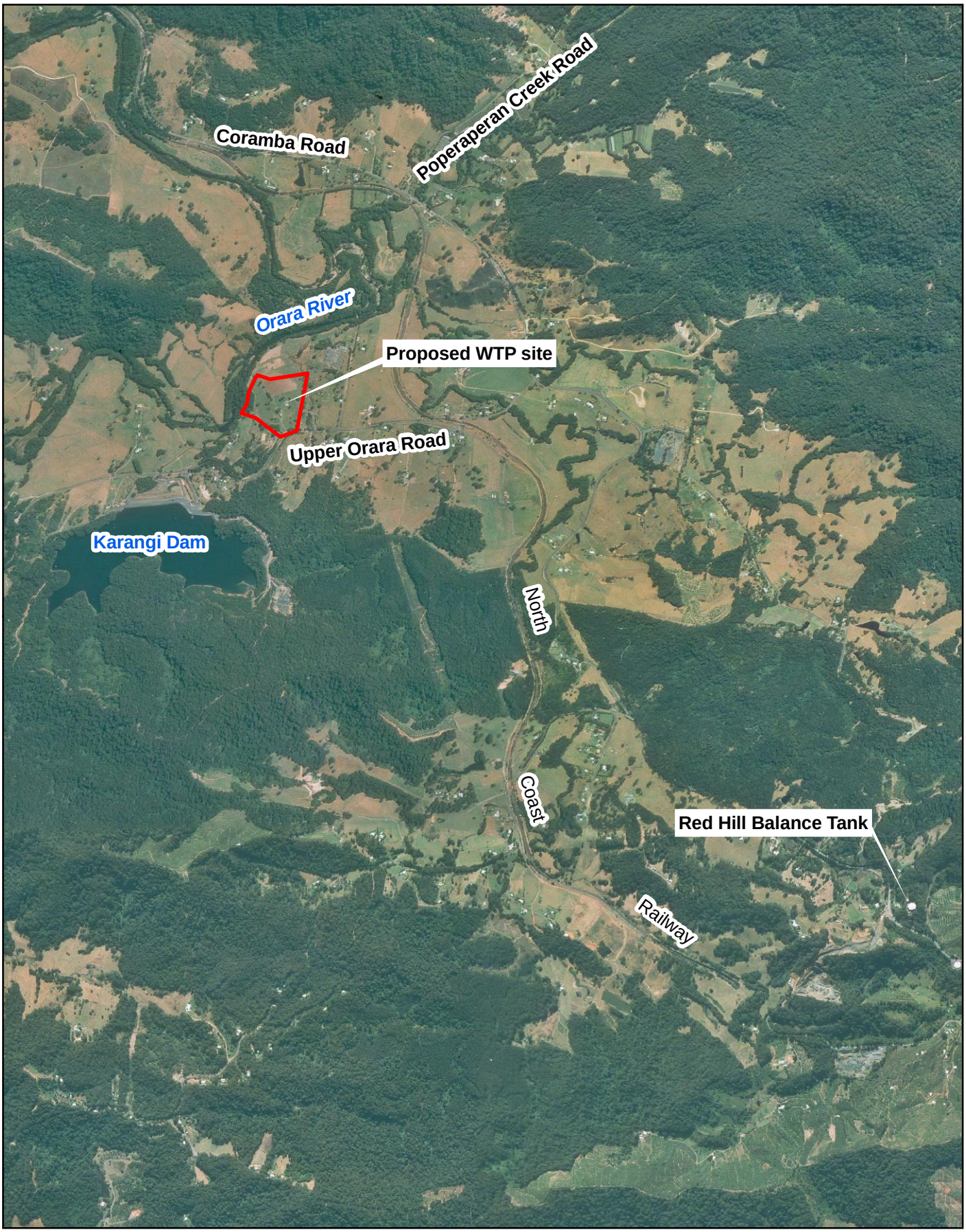
The proposal is classified as a Major Project under State Environmental Planning Policy (Major Projects) 2005 as it is a type of development listed in Schedule 1, Clause 25 of this Policy, namely development for the purpose of water treatment works for drinking water supply, that has a capital investment value of more than $30 million, and has been declared to be a project to which Part 3A of the Environmental Planning and Assessment Act (EP&A Act) 1979 applies.

An Environmental Assessment (EA) was completed in June 2007 in accordance with the Director General's Requirements issued in December 2006. The EA was then placed on public exhibition from the 21st June 2007 to 23rd July 2007 in accordance with Section 75H(3) of the EP&A Act. During this period submissions were invited from members of the public, government agencies and stakeholders.

1.2 Objectives

Under Section 75H(6) of the EP&A Act, the Department of Planning require Council to prepare and submit a response to submissions made during the public exhibition period. The objective of this Submissions Report is to provide the necessary detail on:

- how submissions have been considered and addressed;
- specialist reports that have been updated;
- aspects of the proposal that have been modified; and
- how the Statement of Commitments has been revised to reflect the recent community consultation.



GRID N

LEGEND

Proposed WTP site

1:30,000

0 125 250 500 750 1,000

Metres

Geographic Coordinate System
Horizontal Datum: Geodetic Datum of Australia 1994

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Coffs Harbour City Council
Water Treatment Plant

Site Location

job no. 31-18991-11
rev no.

Figure 1.1

15 | May 2007

Gis File No: G\31\18991-11\GIS\MAPS\Figure1.2 2/115 West High Street Coffs Harbour NSW 2450 Australia T 61 2 6650 5600 F 61 2 6652 6021 E cfsmail@ghd.com.au W www.ghd.com.au

1.3 Need for the WTP

A new water treatment plant is required for the Coffs Harbour region due to, the existing drinking water supply to Coffs Harbour not being able to meet the requirements of the *Australian Drinking Water Guidelines* (ADWG, 2004) at all times, in that:

- A formal water quality risk assessment identified a number of potential water quality hazards that are considered to pose a high risk to consumers; and
- The current treated water supply to Coffs Harbour does not always comply with the aesthetic ADWG requirements.

Further, these water quality risks are considered to be increased as the following occur:

- As further development occurs within the Orara River catchment;
- As increased use is made of the Nymboida River water resource, and
- As the potential poorer quality water from the future Shannon Creek Dam becomes progressively relied on in the near future, due to increasing demand and tighter environmental flows on the Orara river abstractions.

1.4 Key Features of the Proposal

The key features of the proposed facility and construction activities are provided below and the general site layout, including the location of pipelines is shown in ***Figure 1.2*** and the indicative location of ancillary construction facilities are shown in ***Figure 1.3***.

- The proposed WTP facility would be constructed on a parcel of Council owned land located at 140 Upper Orara Road, Karangi;
- The WTP is proposed to have a design output capacity of up to 42 megalitres (ML) per day of treated water;
- The actual output of the WTP would be dependant on the daily water demand (as is the existing system). It is not proposed to change the volume of water being extracted from the various water sources.
- The plant has been designed to operate for 22 hours per day at 42 ML per day during peak demand periods in 2030 and would operate for shorter periods during present and immediate future, lower demand periods. Presently, the average daily demand is approximately 15 ML per day and peak day demands approximately 25 ML per day.
- Provision would also be made for a future expansion in the plant's capacity, via the addition of additional process units, that would also be located within the grounds of the new WTP site;
- The existing lime dosing facilities at the Karangi Dam site are ultimately intended to be de-commissioned, however these may be retained in-situ and in operation at the Dam site until a later time, when economic circumstances allow for the new lime dosing facilities to be constructed at the proposed WTP site;
- The existing carbon dioxide (CO_2) dosing facilities at the Karangi Dam site would be re-located to the new WTP site;

- The Karangi Dam outlet pumping station would be modified to enable pumping of raw water at a controlled rate to the proposed WTP inlet, about 700 to 800 metres north-east of the Karangi Dam site as well as maintaining the ability to pump straight to the Red Hill balance tanks in an emergency;
- The existing Karangi Dam to Red Hill balance tanks' trunk main would be cut into and appropriate supply / return pipe branches would be constructed from and to the proposed WTP site. These works would occur up to approximately 90 metres from the south eastern boundary;
- A dissolved air floatation filtration (DAFF) treatment plant would be constructed within the proposed above-ground concrete water retaining structures at the new WTP site;
- All the following chemical storage and dosing facilities would be provided at the new WTP site:
    - lime (when and if relocation of the lime plant is adopted) and carbon dioxide (as mentioned above) for corrosion control and for pH correction;
    - potassium permanganate dosing for oxidation of dissolved iron and manganese;
    - powdered activated carbon (PAC) for control of any intermittent taste or odour problems;
    - aluminium sulphate (alum) dosing for coagulation and flocculation of colloidal material;
    - polymer dosing as a coagulation aid;
    - polymer dosing as a flocculant aid;
    - sodium hydroxide (caustic soda) dosing for post filtration pH correction;
    - The existing chlorine dosing system at the Red Hill Balance Tank may be relocated to the proposed WTP, for chlorine gas dosing, to provide a post filtration chlorine residual for disinfection purposes (and also for pre-chlorination) ;
    - fluoride dosing to meet the requirements of NSW Health;
    - polymer dosing for washwater thickening; and
    - polymer dosing for sludge dewatering.
- Ultra-violet disinfection would also be provided for the filtered water;
- Pumps, pipework valves and washwater storage / water supply would be provided for backwashing of the WTP's filters;
- Washwater recycling, sludge thickening and sludge dewatering facilities would be constructed. Supernatant water separated from the wash water and sludge would be routinely returned to Karangi Dam via the existing 600 mm regional pipeline, or would otherwise be recycled back to the WTP inlet main, if the return pipeline to Karangi Dam is unavailable for operational reasons;
- Dewatered sludge would be temporally stored within enclosed bins within the sludge holding building (also enclosed) until it can be removed and taken off site for disposal at the Coffs Harbour resource recovery centre.
- Above-ground storage tanks would be constructed at the new WTP site for:
    - treated water storage (approximately 5.8 megalitres); and
    - washwater holding tank (approximately 1.5 megalitres).
- An earth walled emergency storage containment lagoon would be constructed at the new WTP site to provide for the (unlikely) event of either a plant overflow or sludge dewatering system failure;

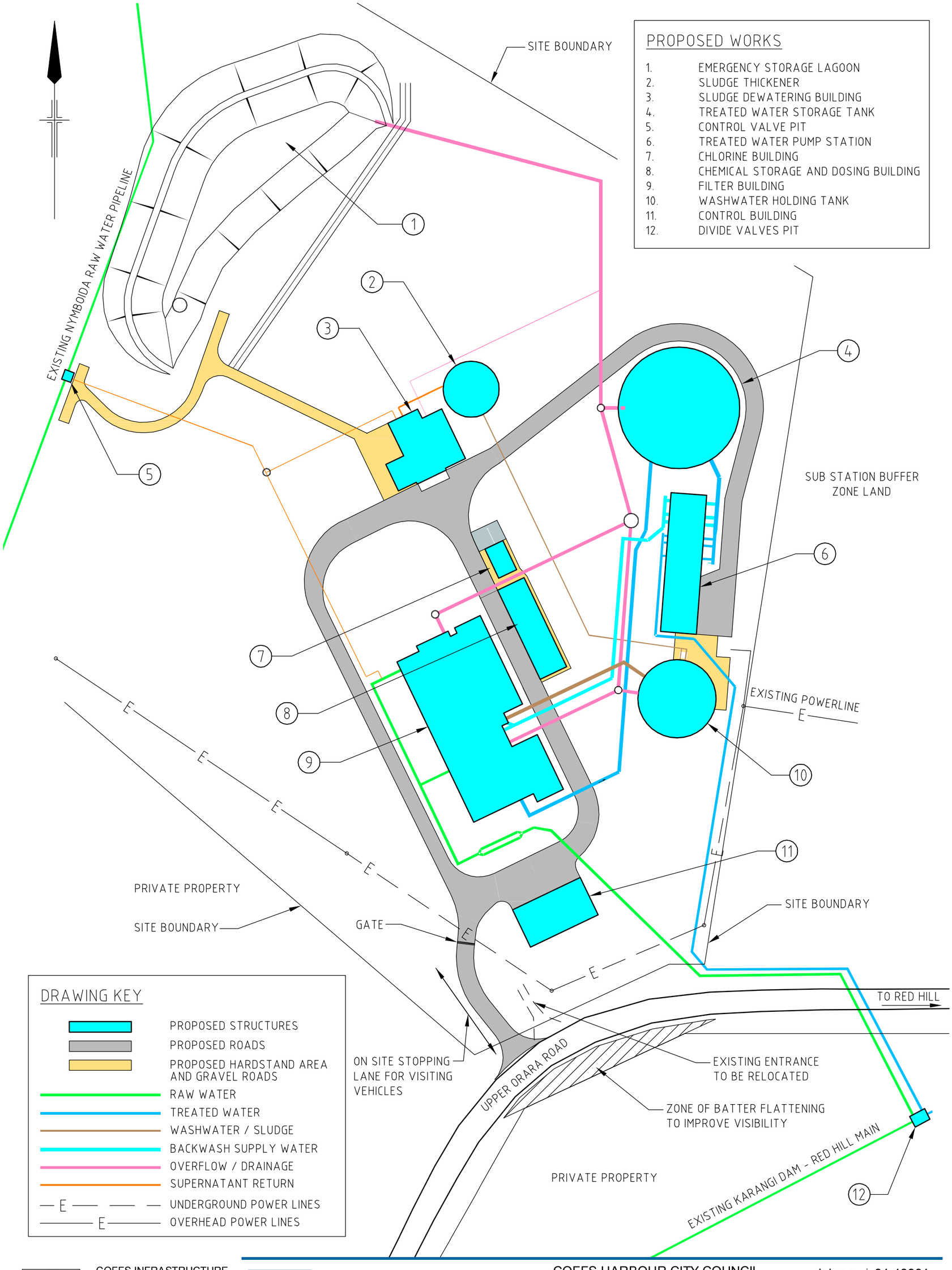
- Construction of a combined control building, testing laboratory and meeting room at the new WTP site;
- Construction of a treated water pump station at the new WTP site to transfer treated water to the existing Red Hill Balance tanks for distribution into the existing Coffs Harbour water supply system;
- A kiosk-style power supply transformer would be installed at the new WTP site to provide electrical power to the various plant at the site;
- A backup diesel generator would be provided;
- A paved access road would be constructed around the new WTP site;
- The general building layout is proposed to be architecturally co-ordinated with consideration to the rural setting. The architectural detail includes options for rainwater tanks, however these details have not been finalised; and
- Extensive landscaping would also be undertaken around the new WTP site.
- Allowance (i.e. space on the site) has been made for possible future ozone and granular activated carbon (GAC) treatment process downstream of the DAFF process, if water quality deteriorates further due to future development in the catchments.

Council is also proposing to modify the road alignment at the entrance to the site in order to facilitate safe entry and exit from the Upper Orara Road access point. Proposed adjustments to the road alignment would be completed prior to the commencement of construction activities and would also facilitate future, ongoing chemical and other deliveries to the WTP site, as well as all other construction and operational site traffic.

Ancillary Construction Facilities

The indicative location of ancillary construction facilities are shown in Figure 1.3 and would likely involve the following:

- An initial 740 m^2 and future 600 m^2 car parking areas;
- A 220 m^2 project site office
- A 40 m^2 meeting room;
- Two 18 m^2 toilet blocks; and
- 150m^2 area for the workforce lunchroom, change rooms and toilets.



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COFFS HARBOUR CITY COUNCIL
WATER TREATMENT PLANT

OVERALL SITE LAYOUT

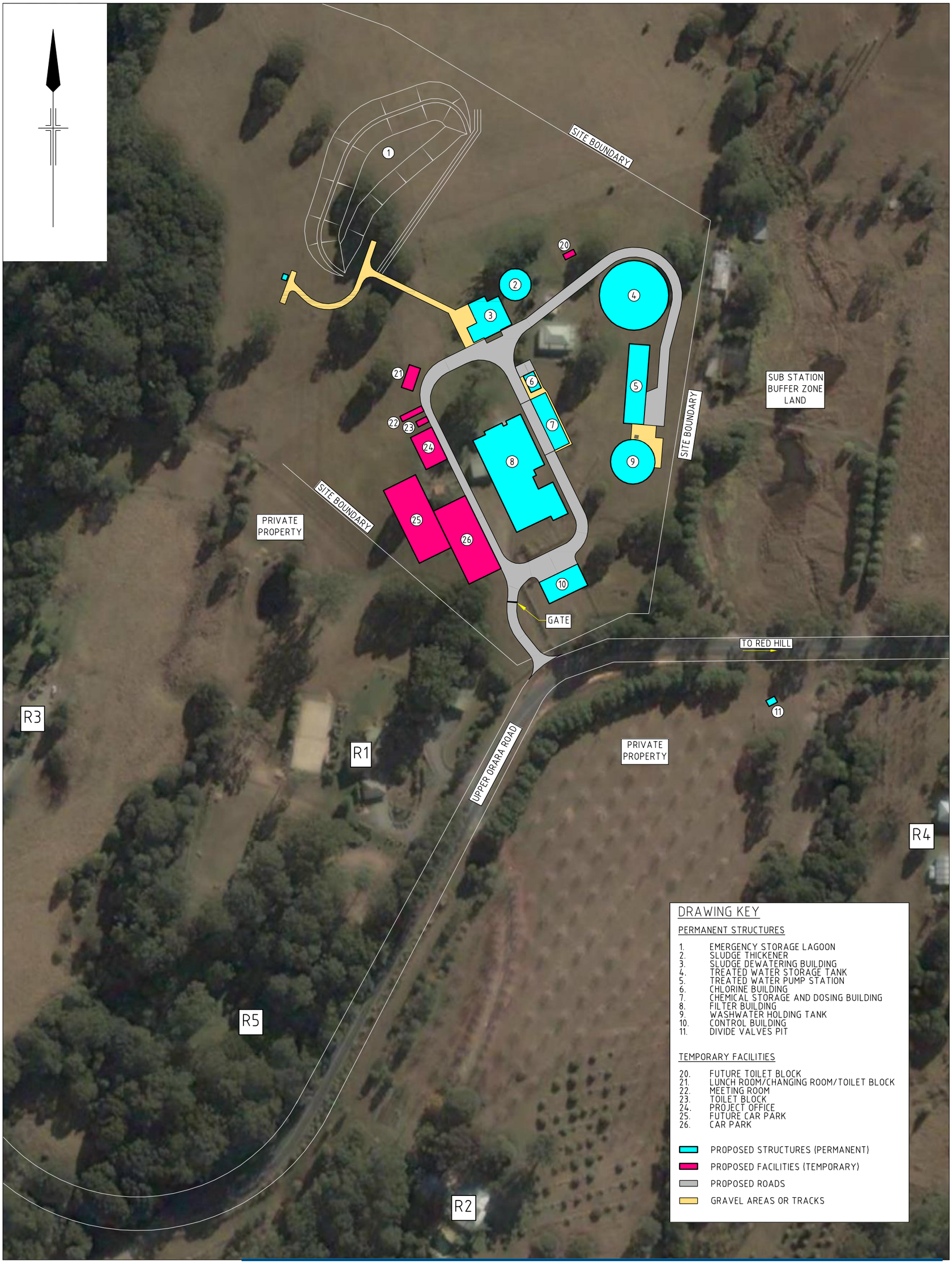
job no. | 31-18991
rev no. | A

scale | N.T.S. for A4 date | MAY 2007

Figure 1.2

Level 8, 180 Lonsdale Street Melbourne VIC 3000 Australia **T** 61 3 8687 8000 **F** 61 3 8687 8111 **E** melmail@ghd.com.au **W** www.ghd.com.au

Plot Date: 12 June, 2007 - 1:58 PM Cad File No: FIGURE-EA-1.5.dwg



DRAWING KEY

PERMANENT STRUCTURES

1. EMERGENCY STORAGE LAGOON
2. SLUDGE THICKENER
3. SLUDGE DEWATERING BUILDING
4. TREATED WATER STORAGE TANK
5. TREATED WATER PUMP STATION
6. CHLORINE BUILDING
7. CHEMICAL STORAGE AND DOSING BUILDING
8. FILTER BUILDING
9. WASHWATER HOLDING TANK
10. CONTROL BUILDING
11. DIVIDE VALVES PIT

TEMPORARY FACILITIES

20. FUTURE TOILET BLOCK
21. LUNCH ROOM/CHANGING ROOM/TOILET BLOCK
22. MEETING ROOM
23. TOILET BLOCK
24. PROJECT OFFICE
25. FUTURE CAR PARK
26. CAR PARK

PROPOSED STRUCTURES (PERMANENT)

PROPOSED FACILITIES (TEMPORARY)

PROPOSED ROADS

GRAVEL AREAS OR TRACKS

COFFS INFRASTRUCTURE ALLIANCE

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COFFS HARBOUR CITY COUNCIL WATER TREATMENT PLANT

INDICATIVE LOACTION OF ANCILLARY CONSTRUCTION FACILITIES

scale | 2500m for A4 date | JUNE 2007

job no. | 31-18991
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Figure 1.3

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1.5 Assessment and Determination

Following the lodgment of this submissions report, the Department will, on behalf of the Minister, review the environmental assessment, all submissions received and the submissions report. Once the Department has completed its assessment, a draft assessment report will be prepared for the consideration of the Director-General. This report may include recommended Conditions of Approval for the project.

Any recommended Conditions will also refer to the Statement of Commitments and may modify these, and/or may impose some additional provisions.

The assessment report will then be submitted to the Minister for formal determination. The Minister may then approve the project with any appropriate Conditions imposed, or may also choose to refuse the project.

Immediately following the Minister's determination, copies of the determination and assessment reports will be published on the Department of Planning's web site.

2. Consideration of the Environmental Assessment

2.1 Statutory Compliance

The Coffs Harbour WTP was confirmed as a project to which Part 3A of the EP&A Act 1979 applies through a letter to Council from the Department of Planning dated 28th November 2006. A copy of the department's letter is provided in Appendix 1 of the EA.

The Director Generals Requirements (DGRs) were issued to Council in accordance with clause 75F of the EP&A Act 1979 on 18th December 2006. A full copy of the DGRs are provided in Appendix 1 of the EA. The EA was prepared to address the DGRs with the Department of Planning confirming that the EA had adequately addressed the requirements within a letter dated 17th June 2007 and the EA has subsequently been placed on public exhibition from 21st June 2007 to the 23rd July 2007.

2.2 Need for the Proposal

The current level of treatment is regarded as being insufficient to guarantee a quality that meets the Australian Drinking Water Guidelines all the time, in terms of water quality risk management and for achieving all water quality guideline limits.

The two existing sources of supply (the Nymboida and Orara Rivers) and new source (Shannon Creek Dam presently under construction) together with their water quality risks are summarised in ***Figure 2.1*** (as shown, water from all these sources of supply is / will be transferred to Coffs Harbour consumers via the existing Karangi Dam).

Extraction of water from the Orara and Nymboida Rivers is currently limited due to licence requirements from the DWE that ensures environmental flows are preserved before extraction is permitted. The license requirement becomes more stringent (that is the environmental flows are to be increased) once the Shannon Creek Dam becomes fully operational. The options available to Council with respect to the selective extraction (noted as being integral to the existing treatment process) are therefore limited as a result of these environmental flow requirements. As the Coffs Harbour area becomes increasingly reliant on waters supplied from the Shannon Creek Dam in drier years, the requirement for water treatment is expected to increase due to the expected poorer raw water quality from this source.

Raw Water Supply System

All water is currently, and would continue to be transferred through the Karangi Dam storage to the proposed WTP facility. By-passing of the Dam, to cater for any emergencies, would remain an operational option at all times, however under these circumstances an important water quality protection 'barrier', namely Karangi Dam, would be removed. This will further heighten water quality risks. The future raw water supply feeding Karangi Dam would be received from three sources (currently the first two, only):

- Orara River at Cochran's Pool (current supply)
- Nymboida River weir (current supply)
- Shannon Creek Dam (currently under construction)

The main system characteristics and water quality parameters are summarised in ***Figure 2.1***.

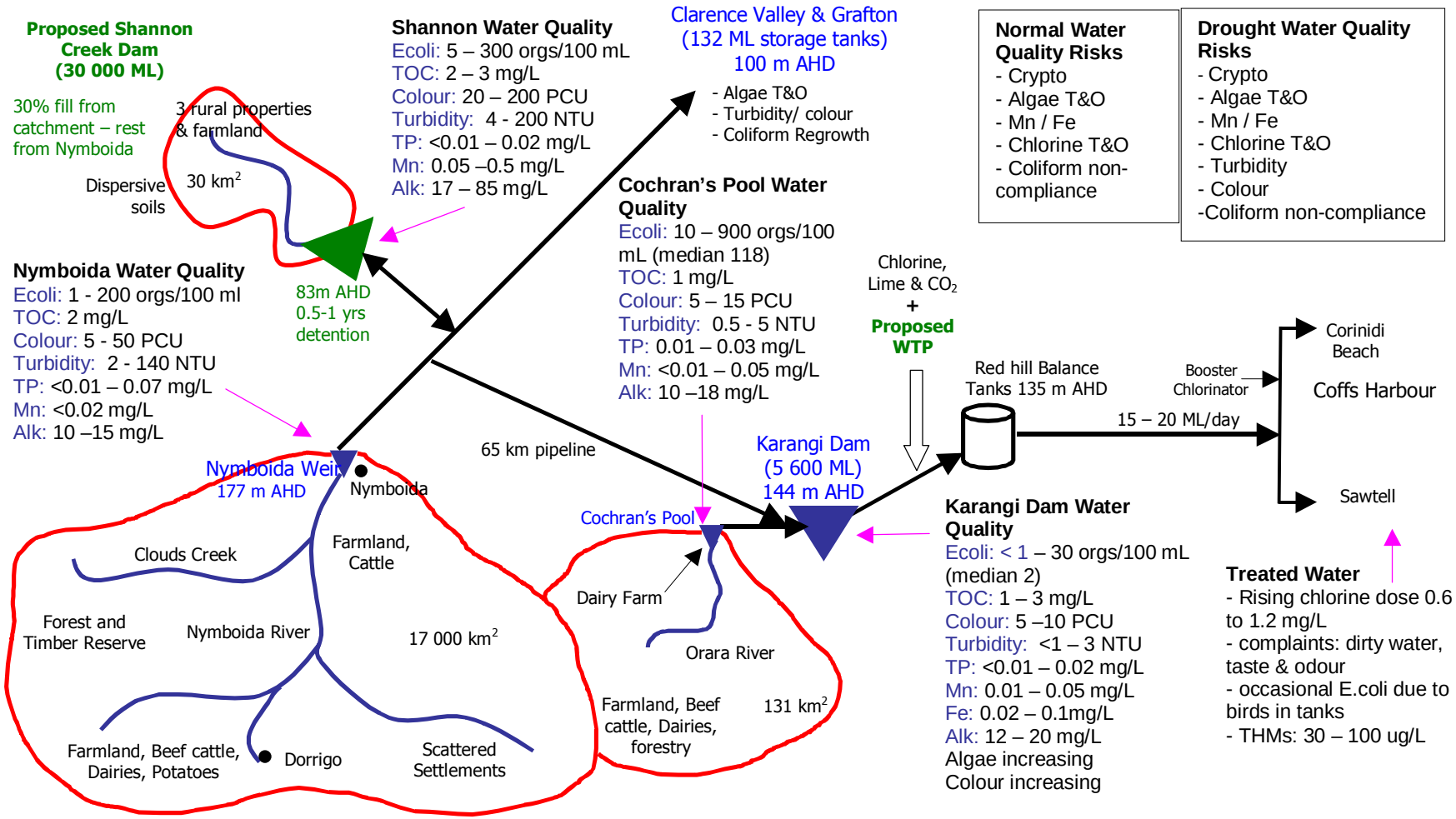

Figure 2.1 – System Schematic, Typical Water Quality and Risks

The Orara and Nymboida sources are soft (low alkalinity) water, with relatively low colour and turbidity, but can have spikes of higher colour/turbidity and micro-organisms in storm events.

The Shannon Creek Dam water is expected to be a higher alkalinity and generally be a more turbid, coloured and manganese rich water.

Karangi Dam sediments can generate iron/manganese and based on recent water quality data, algae levels appear to be increasing. The relatively high micro-organism levels in the source waters are reduced by storage and detention in Karangi Dam and then chlorination prior to entry into the closed distribution pipe network.

Selective extraction based on turbidity (less than 2 NTU, whenever possible) occurs at present for diversion of Nymboida or Orara River water into Karangi Dam. The selective extraction process is subject to the provision of environmental flows that are set to increase once the Shannon Creek Dam becomes operational and therefore reduces the water available to Council from these sources. This will tend to increase the need to extract water with a higher turbidity from the Nymboida and Orara Rivers. A near surface outlet is used at Karangi Dam to minimise iron and manganese levels in the water that is withdrawn. An aeration system operating all year round (on night rate electrical power) in the dam, also minimises iron and manganese, blue-green algae risks, and short-circuiting of Karangi Dam. In future, Shannon Creek Dam will also incorporate these controls.

In general, the Orara and Nymboida sources will be the dominant sources of supply in wet and average years. In drier years, the Shannon Creek Dam will be the main source of supply.

2.3 Summary of Options Considered

Process Options

Following the water quality risk assessment, suitable process options were identified for control of the identified water quality hazards. The preferred process selected was a dissolved air flotation-filtration (DAFF) plant followed by ultra violet (UV) and then chlorine disinfection. Also, powdered activated carbon dosing (PAC) at the plant inlet for control of algae related water quality hazards was selected in conjunction with the DAFF process.

The other main process option considered was micro-filtration (without pre-clarification). This option was estimated to be approximately 40% more costly than the DAFF option to construct, with ongoing operation and maintenance costs estimated to be 50% more per year than the DAFF option. The main reasons for this higher capital cost were due to PAC dosing at the plant inlet and the presence of manganese in the raw water. These factors meant that a larger membrane area would be required and more frequent changes of the membranes would be expected due to fouling and more frequent clean-in-place cycles. This process option was rejected early on in the project on the basis of its higher capital and operating costs.

Sub-options considered for control of algae related water quality hazards consisted of:

- PAC dosing at the plant inlet (the preferred option)
- Separate granular activated carbon (GAC) filters after the DAFF process
- Separate GAC filters with ozonation
- Advanced oxidation (i.e. hydrogen peroxide dosing with much higher UV dose rates)

The latter three options would have added capital costs in the range of $1 million to $7 million and commensurate higher operating costs for no proven additional benefit over the preferred option. That is, blue-green algae levels are relatively low; hence toxins were not considered to be a significant risk to justify these options. On this basis, these options were rejected in favour of the PAC dosing option. However, it should be noted that the plant will be designed to allow space on the site for future retrofitting of any of these more advanced processes if possible future water quality standards require a higher level of treatment.

Alternative Sites

The key selection criteria used to identify potentially useful sites for consideration for the proposed WTP facility were as follows:

- Proximity to existing relevant and important infrastructure;
- Proximity to the water supply;
- Topographic characteristics of the site; and
- Environmental constraints.

Other characteristics considered to be desirable included:

- Availability of existing easements/corridors for water distribution;
- Distance from built up areas;
- Ease of access to the site (for chemical deliveries and other operational purposes);
- The existing land use zoning permits the site to be used for a water treatment facility;
- Development would not require significant amounts of large scale clearing (for on site uses or transmission); and
- Whether the overall size of the site would permit the proposed WTP facility to be adequately buffered from sensitive surrounding land uses.

Eight potential sites were considered and are referred to below as the “Karangi Dam site” and sites “A1, A2, A3, B, C1, C2 and C3”. The relative locations of all these sites are shown on ***Figure 2.2***.

The assessment of each sites suitability determined sites A1 and Karangi Dam as being the most appropriate. A secondary detailed assessment was then undertaken to select whether either site A1 or Karangi Dam was the most appropriate. The Essential siting criteria were as follows

- filters at a high level to conserve energy under normal gravity flow;
- gravity feed from plant to treated water storage to avoid double pumping;
- space for future augmentation of additional processes and increased capacity;
- building set back from boundaries to reduce impact on neighbours;
- onsite interconnection and access to ensure operational safety and ease of operation; and
- all chemicals located near the dosing points to minimise lag times, away from site boundaries, grouped in common area for truck delivery and truck delivery road flat at the delivery point for spill containment.

Preferred siting criteria used in the detailed assessment included:

- reuse of existing infrastructure;
- buildings located on cut (not filled) sections of the site;
- keep existing vegetation to reduce visual impact;
- mechanical dewatering away from neighbours and entrance to reduce noise and visual impacts;
- not impairing existing natural drainage;
- not located in a flood prone area; and
- space for emergency storage lagoon.

The detailed assessment of both sites (using a 'triple bottom line' approach) determined that site A1 (140 Upper Orara Road) was preferred due to its immediate availability to Council, available space, proximity to existing pipelines, topography, minimal impacts on neighbours and minimal clearing.

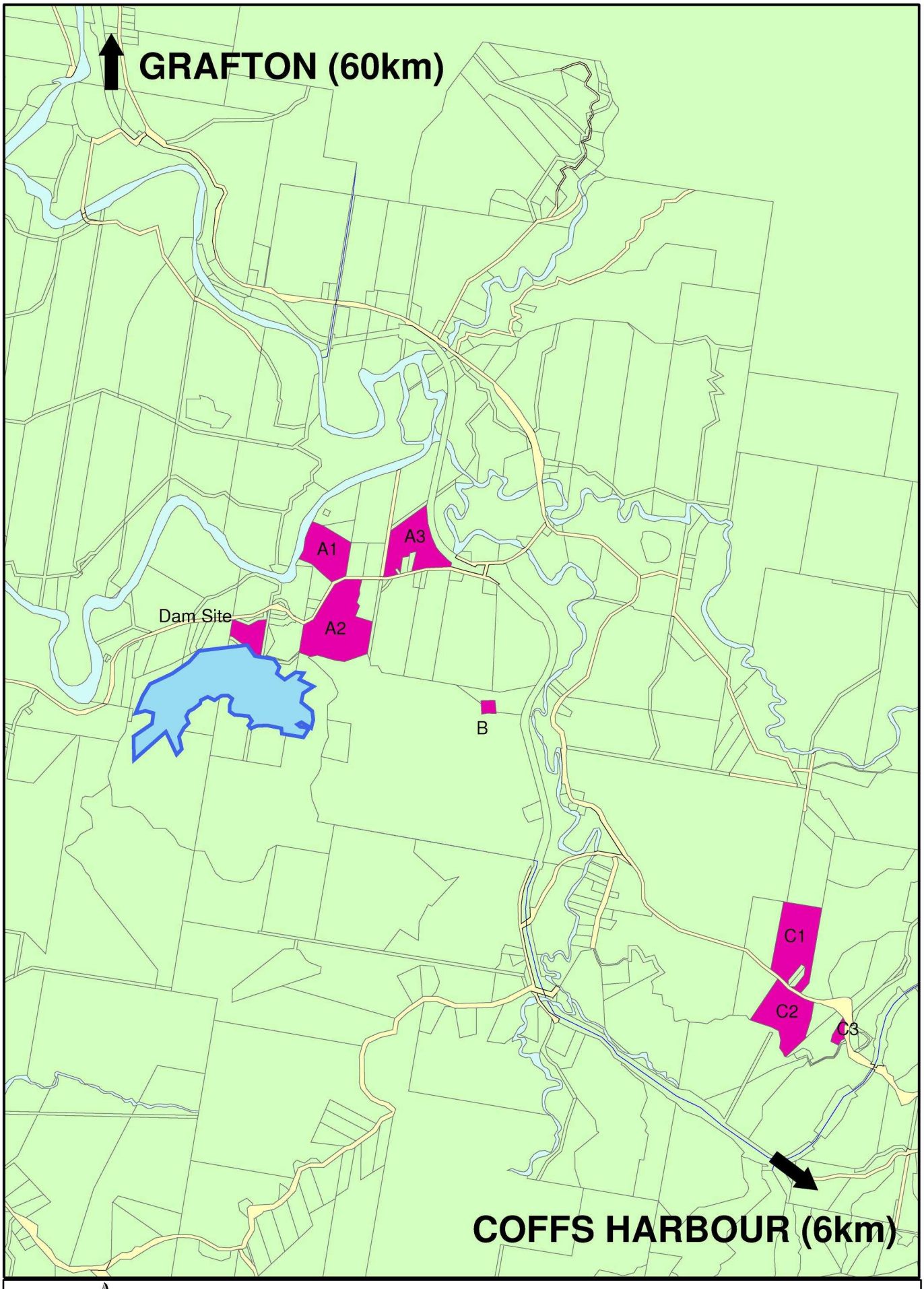

Figure 2.2

Coffs Harbour City Council
Possible Alternative Sites for Water Treatment Plant

2.4 Overview of Environmental Issues

Odour impact

An investigation has been conducted to determine an appropriate buffer distance from the identified potential odour causing elements of the proposed WTP facility (i.e., sludge storage facilities) to ensure that potential for odour nuisance impacts within the local area would be successfully avoided. Due to the absence of recognised guidelines to recommend appropriate buffer distances, the investigation used values from other existing WTP's to calculate an appropriate distance for the proposed WTP.

The investigation concluded that the buffer distances required to minimise off-site odour impacts from the proposed sludge dewatering activities would be readily achievable within the proposed site layout and design.

Flora and fauna

The Flora and Fauna Assessment found that no areas of remnant vegetation would be affected by the water treatment plant proposal, however a number of isolated trees would still require removal from the site, with these trees not being locally indigenous species. The only locally indigenous tree requiring removal is a Flooded Gum located adjacent to the existing residence on the site.

An Assessment of Significance assessment was conducted and found the following:

- The removal of an individual Koala food tree is not considered likely to place any extant local Koala population at risk of extinction, especially as replacement of potential habitat for the Koala (and various other threatened species) is proposed through planting of locally indigenous trees;
- Whilst the action proposed to remove a native tree specimen would otherwise constitute part of a "Key Threatening Process" (i.e., clearing of native vegetation), the proposed mitigation planting would serve to replace the original native vegetation on the site; and
- No critical habitat, endangered population, Endangered Ecological Community or Critically Endangered Ecological Community is likely to be affected by the proposed development.

Bushfire risk assessment

A bushfire risk assessment was undertaken, based on the Bush Fire Prone Land mapping carried out by Coffs Harbour City Council, in liaison with the Rural Fire Service (RFS).

Council mapping indicates that the area of vegetation to the southeast of the proposed WTP is considered Category 1 Bushfire Prone Land and includes a buffer of approximately 100 metres in width. Most of the rest of the site is cleared with scattered trees. The current development footprint does not fall directly within the bushfire prone land or even the buffer zone and it is considered that no other mitigation measures would therefore be required. No further consultation with the local officers of the RFS is considered necessary with respect to this issue.

Noise

A noise impact assessment was undertaken, providing details of existing noise levels at nearby receivers, calculating noise impact assessment criteria and predicting noise levels that would be expected to result from the construction and operation of the proposed WTP facility.

Results of the modelling suggest noise emanating from the operation of the WTP is unlikely to exceed project specific noise levels. A worst case assessment of noise from the proposed construction activities indicates that construction noise would exceed the project specific noise criteria.

The following measures have been recommended to mitigate the impact of construction noise:

- During construction activities, Council should keep affected residents appropriately informed;
- All construction activities (including deliveries and haul trucks) would be limited to normal business days between 7 am and 6 pm and on Saturdays, between 8 am and 1 pm;
- All site workers would be sensitised to the potential for noise impacts on the local residents and encouraged to take all practical and reasonable measures to minimise noise during the course of their activities;
- All construction equipment would be maintained in good condition.
- All combustion engine plant will be checked to ensure they produce minimal noise and fitted with residential grade exhaust silencers;
- Whenever practical, machines would be operated at low speed or power and switched off when not being used; and
- Machines found to produce excessive noise should be removed from site or stood down until repairs or modifications can be made.

Based on the results of the operational noise assessment it is believed that the proposed WTP would meet project specific noise goals during general day and night time operations.

Soil and Water Quality

Surface Water

The proposed WTP construction works (including pipelines) would be located approximately 300 metres to the south of the Orara River with runoff from the construction areas likely to flow either northeast into the gully between the WTP site and Casuarina Lane or northwest into the adjacent gully before flowing north into the Orara River.

Erosion and sedimentation control measures will be required for the WTP construction and the pipeline construction and connection activities. The operational drainage systems will also require consideration to the quality and volume of runoff being generated following rainfall.

All construction works (including the pipeline works that would extend up to 90 metres from the south east boundary of the WTP required to connect with the existing distribution pipeline) would be undertaken in accordance with an Erosion and Sedimentation Control Plan, prepared in accordance with *Managing Urban Stormwater* (NSW Department of Housing 2004). These measures are likely to involve the use of a sedimentation pond on the WTP site

and stabilisation of excavations and stockpiles through sealing, replanting and seeding of vegetation as soon as possible.

Operational stormwater would be collected and discharged through flow spreading and velocity reducing devices such as grass swales to promote infiltration and minimise scouring.

Appropriate bunding for chemical storage as well as spill response kits would also be required to be maintained on site during construction and operation.

Contaminated Land Issues

A Preliminary Phase 1 Site Investigation has been conducted and found that the proposed WTP site has been used in the past for rural agricultural uses, with the primarily use during this time being dairy farming. In 1986 the site was subdivided and it has been assumed that at this stage the agricultural use changed to a rural residential use before being purchased by Council for the construction of the proposed WTP facility.

Indications are that certain site structures have been demolished and that the current residence has been transported onto the site. These activities are considered to have the potential for onsite asbestos impact and observations that were made during the site inspection indicated that cement fibre sheeting (potentially containing asbestos) is present on the site. No intrusive investigations (such as sampling) were undertaken to confirm any impacts, however, the potential for impact is considered to be fairly typical for agricultural land use and this is therefore not considered to be a constraint to the construction and operation of the proposed WTP facility.

It is recommended that appropriate remedial activities for all material potentially containing asbestos should be carried out, in accordance with the relevant requirements of the *Occupational Health and Safety Regulations 2001* and the *Code of Practice for the Safe Removal of Asbestos*.

To validate this remediation process, surface soil samples should also be collected from around the location of the former sheds and houses for further asbestos analysis and for additional hydrocarbon analysis (where appropriate).

Visual amenity

The Visual Impact Assessment investigated whether any potential visual impacts would be imposed on the surrounding environment from the development of the proposed WTP facility. The assessment reviews the existing visual character of the site and surrounding area, the expected impacts of the development on the existing, nearby residential development and other publicly accessible locations, such as Upper Orara Road. A set of recommendations has been made to reduce visual impact for affected properties and public locations. These recommendations relate to the installation of screening plants, retaining existing vegetation and recommended colours and material of the WTP buildings.

In addition to the recommendations made in the EA the following measures have been agreed to by Council to further minimise visual impacts:

- Security fence along the western boundary will be offset three metres from the boundary fence and screen plantings undertaken between the two.
- The power pole on the north western side of the site is to be installed on the eastern side of an existing tree to minimise visual impacts from properties on the western side.

- Council have agreed to retain certain camphor laurels that are currently providing a visual screen of the Transgrid infrastructure for neighbouring properties.

Aboriginal and European Cultural Heritage

Aboriginal and European historic cultural heritage assessments were undertaken.

Advice from aboriginal stakeholders and other individuals consulted during the course of the aboriginal assessment indicates that the proposed development would have no direct or indirect impacts on any known sites or places of cultural heritage significance, although the various stakeholder groups considered the study area to have the potential to contain undetected evidence of past Aboriginal occupation. This potential could only be reliably assessed on the basis of further, subsurface archaeological investigation.

The subsurface investigation had been undertaken at the time of the EA exhibition, however the final report had not been finalised and only a summary report available for inclusion in the EA (although the summary had been verbally approved for issue by the registered Aboriginal stakeholders). The final report has since been issued and has been included in ***Appendix 1*** of this Submissions Report with a summary of the report and its findings presented in ***Section 5.1***.

A structure with potential European cultural significance was identified at the site, this being the original "Dairy Bails" building, representing an "illustration" of the historical dairy industry within the Orara Valley. However, it was found that the proposal is unlikely to impact on the Dairy Bails building, as the development footprint will not impact the shed itself. Mitigation measures have been recommended to preserve the structure for future historical interest groups.

Hazards and risk

A Preliminary Hazard Analysis report (PHA) was prepared by the Coffs Infrastructure Alliance for the proposed Coffs Harbour WTP to determine the hazardous nature of the WTP, in accordance with NSW land use planning regulations.

A hazard identification workshop (HAZID) was conducted on the proposed WTP, qualitatively reviewing the hazards associated with all the dangerous goods on site. It was determined that only an incident involving the release of a toxic cloud of chlorine could generate public safety hazards extending beyond the site boundary.

Chlorine release scenarios were subject to a full quantitative risk assessment and it was found that the risk posed by the WTP is considered acceptable under the NSW land use planning regulations. It is noted that the risk posed by chlorine is substantially reduced due to the control measures (chlorination building, automatic shut-off valves and extraction system) that are to be installed as part of the chlorination system. The PHA demonstrates that the storage and usage of dangerous goods can be safely and effectively managed at the Coffs Harbour WTP.

The Department of Planning's Major Hazard Unit (MHU) requested some additional specific technical information required for the MHU to fully assess the potential hazards associated with the chlorination system. The memorandum sent to the MHU addressing the requested additional information has been included as ***Appendix 2*** and summarised in Section 5.2.

Traffic and access

A Traffic Impact Assessment report has been prepared to investigate the impacts that the construction and operation of the proposed WTP facility may potentially have on the local traffic network. Even though it is not required to carry out any major road works at the WTP's proposed access point, the report identified that the current entrance to the proposed WTP site is situated near to the apex of a corner and therefore the following recommendations have been made:

- General visibility for traffic approaching the site would be improved by reshaping the embankment;
- The site's entry gate should be relocated a further 20 metres west from its current position; and
- Traffic control to be used, as required, during construction.

Emergency Storage Lagoon

An emergency storage lagoon would be established, but would remain empty nearly all of the time, so that the lagoon would be able to accept and store the effluent from any system or plant overflow events. Keeping it empty would also prevent it from becoming a breeding ground for mosquitoes. The lagoon would be located within the fenced site area and would not be readily accessible by the general public or by feral, native or domestic animals, other than birds.

In the unlikely event that a plant overflow does occur, captured water would then be gradually fed back into the plant washwater system for further treatment and recycling. The lagoon would not contain any significant amount of water for any period exceeding about one week.

An earthen cut-off drain would also be constructed on the high side of the lagoon to prevent any surface run-off waters from the site collecting in the lagoon.

A low-permeability lining for the lagoon would also be employed and the proposed lagoon would not have a significant impact on groundwater flows in the surrounding areas, nor any significant impact on the base flows to the Orara River.

Waste Water Management

The principal solid waste expected from the proposed WTP facility would be dewatered "alum" sludge, produced from the thickening and centrifugation of filter washwater and Dissolved Air Floatation Filtration (DAFF) "float" material. Due to the available site area constraints and the local climatic conditions, sludge drying beds (i.e., for the dewatering and drying of alum sludge) are not preferred for this proposal. It is proposed that any wastewater produced at the plant would not be discharged to any receiving waters and as such any option that did not involve the re-use or recycling of washwater / wastewater was not considered.

As mentioned above, emergency WTP overflows and any overflows arising from failures of the sludge dewatering system would be directed to the emergency storage lagoon and these waters would normally then be recycled through the washwater system, which would separate contained sludge material and direct this to the sludge thickener. Only the "supernatant" (i.e.

the clearer water that lies on top of any settled material) rising to the top from the thickener would then be sent back to Karangi Dam for re-incorporation with the raw water supply and hence for subsequent recycling into the inlet supply.

On some, rare occasions this supernatant water may also be recycled directly back to the WTP inlet, at a controlled rate of less than 10% of the total inflow rate.

Chemical storage areas will be fully bunded to meet regulatory requirements. Liquid chemical unloading areas will have a spill apron and valved drainage sump.

Site stormwater run-off will be collected and directed off site to existing table drains and natural drainage paths.

3. Consultation

3.1 Public Exhibition

The EA was publicly displayed from Thursday 21st June 2007 to Monday 23rd July 2007 at the following locations:

- Department of Planning Head Office – Sydney;
- Department of Planning North Coast Regional Office;
- Department of Planning website;
- Coffs Harbour City Council Administration Building;
- Coffs Harbour Library
- Toormina Library; and
- Woolgoolga Library.

The exhibition of the EA was advertised in the following newspapers on the 21st and 28th June 2007:

- The Coffs Coast Advocate; and
- The Coffs Harbour and District Independent.

The advertisements and public exhibition venues invited public submissions to be sent to the Department of Planning. Submissions were then forwarded to the Coffs Infrastructure Alliance for consideration and inclusion in this submissions report.

3.2 Affected Landowners

Landowners that could potentially be directly affected by the proposed WTP are shown in Figure 3.1.

Indicates WTP site.

Indicates Property Boundary

Indicates Pipelines (Raw Water Pipeline to the north of WTP site, Karangi Dam to Red Hill balance tank trunk main to the south of the WTP site).

Figure 3.1: Locality of Adjacent Residences

Each of the potentially affected landowners was notified individually by the Department of Planning through letter correspondence. Council representatives have additionally attempted to talk with those residents highlighted in Figure 3.1. The outcomes of the Council consultation were as follows:

Property 1:

Council have agreed to offset the proposed security fence three metres from the existing boundary and plant trees and / or shrubs in-between to screen the fence from the property. Council will consult with their landscapers to ensure landscape plan includes these plantings.

Council has agreed to move the front security fence back from the boundary I order to allow for the planting of shrubs (landscaping) of the area and provide better visual amenity from the main road.

Council agreed to move the proposed location of a power pole (on the northwestern side of the site) to a location that would be screened by the existing gum tree.

Landowners have requested that the sludge dewatering building be painted green. Council advised that this was unlikely due to the cost implications. It is proposed to consider painting the control building with various shades of green. The potential noise impacts during construction was discussed and understood by the property owner that the construction is only temporary and that the operation of the plant is not likely to have any adverse noise impacts. It was again highlighted at this stage that their main concerns were associated with the visual impacts.

Property 2:

Landowners advised Council that they would look at the EA on the web.

Council is to consult with the landowners further once the design for the road realignment and widening has been drafted.

Property 3:

Camphor laurel trees at the northern side of the site provide the landowners with a visual screen of the high voltage electricity tower and a portion of the Transgrid substation. Council agreed to retain the trees and the earthworks design is to be modified accordingly.

The property owner had an understanding of the other issues and did not communicate any objections.

Property 4:

The landowners have been on holiday and were not available for consultation. Further attempts to consult with the property owner will be made as soon as possible.

Property 5:

The landowner did not communicate any issues / concerns to Council about the proposed WTP.

3.3 Consultation Following the Exhibition Period

The operators of the main Council telephone switch will be informed as to where enquires regarding the proposed WTP can be directed.

4. Consideration of Submissions

4.1 Overview

The Department of Planning received a total of 9 submissions. A copy of each submission was forwarded by the Department of Planning to the CIA for consideration and response. The submissions were recorded as being from the following sections of the community:

- 5 submissions from individuals or local residences;
- 4 submissions from government agencies; and
- 1 submission from a community group.

4.2 List of Issues and Submissions

A breakdown of the key issues raised within the submissions is presented in Table 3.1 and a summary of the relevant issues raised in submissions that the Department of Planning require a response to and where these issues have been addressed in the EA and this Submissions Report is provided in Table 3.2. Copies of the government agency submissions is provided in ***Appendix 3***.

Table 3.1: Break Down of Key Issues Raised

Issue	Number of Submissions[1]
Storage of chemicals and creation of hazardous industry	4
Noise and Vibration	3
Property Impacts	2
Land use conflict	2
Assessment of alternative sites	2
Aboriginal heritage	2
Fluoridation	2
Traffic	1
Ecologically sustainable development	1
Erosion and sediment control	1
Flora and fauna	1
Inadequate community consultation	1
[1] – The number of submissions represents the number of submissions that raised the listed issue	

Table 3.2 Analysis of Submissions and Issues Raised

Issue Number	Issue Raised	Where Addressed in EA	Where Addressed in Submissions Report
Site Suitability and Ecologically Sustainable Development (ESD)			
1	The proposed site is unsuitable for the Water Treatment Plant (WTP) and fails to satisfy key planning principles necessary for development approval namely: – proposed location constitutes a severe land use conflict; – proposed facility does not comply with standards for Ecologically Sustainable Development; – proposed WTP is considered a hazardous and/or offensive development under SEPP 33 and prohibited under the Rural 1A Agriculture zoning of the site.	Sections 3.1.1, 7.8, 7.9, 7.11 and 7.12 Section 9.1 Section 3.1.1	Section 4.3.1
2	The land use conflict arises due to the incompatibility of a major industrial facility interfacing with land zoned Rural 1A Agriculture, and the Orara River, a key natural resource protected by an Environmental Protection 7A – Habitat and Catchment zoning. Proposed WTP will adversely impact the rural character of the area, and also the future agricultural and tourism value of the Coffs Harbour hinterland area. The WTP site also has an inadequate buffer zone interfacing with the Orara River.	Section 3.1.1 7.4, 7.5, 7.8, 7.9, 7.11 and 7.12	Section 4.3.2
3	The proposed WTP would pose an environmental threat from its intensive use and storage of chemicals, with volumes exceeding the SEPP 33 storage screening thresholds. It also produces substantial quantities of liquid waste. The potential to contaminate the local environment, including the Orara River presents a significant and/or irreversible impact on the environment.	Section 7.8, Appendix 10.	Section 4.3.3

Issue Number	Issue Raised	Where Addressed in EA	Where Addressed in Submissions Report
4	The environmental footprint of the project is excessive due to the incompatibility of the site for use as a WTP. Risk mitigation and the topographical characteristics of the site would result in additional life cycle costs and energy usage of the proposed facility. An alternate site with lower risk of environmental impacts would reduce the life cycle costs of the proposed facility.	Section 6.3	Section 4.3.1, 4.3.4
5	The proposed site is constrained by limited areas of relatively level land that is above flood levels. The restrictive site prohibits the use of sludge drying beds, and the plant has therefore been designed with mechanical dewatering of wash water by centrifuge. Mechanical dewatering is a capital and energy intensive design option with significantly higher life-cycle costs and greenhouse emissions than sludge drying beds using current evaporative filter bed technology.	Section 5.4	Section 4.3.5
Project justification			
6	Questions the justification for the scale of the project – 15 megalitres of water currently services Coffs Harbour's 67,000 population. The new WTP will process 42 megalitres which could conceivably cater for 188,000 people. The current DoP population projected for Coffs Harbour in 2031 is 91,800.	Section 5.2	Sections 4.3.6
7	Questions the justification of the need for the project – are the potential water quality hazards serious enough to warrant an immediate health warning for Coffs Harbour residents? How are the key objectives of the WTP proposal met? In what areas does the current drinking water supply fall below the Australian Drinking Water Guidelines (ADWG)? Where is the proof that water from Shannon Creek will deliver inferior quality?	Section 5.2, 5.3 and Appendix 12.	Section 4.3.7

Issue Number	Issue Raised	Where Addressed in EA	Where Addressed in Submissions Report
Hazards and Risks			
8	The high volume of chemical use and storage by the proposed WTP is deemed to pose a sufficient risk to the surrounding environment. It is also deemed to be an offensive development if mitigation and management measures for handling chemicals and waste fail to meet the standards specified in the proposal during operations. There are no guarantees given in the EA that a chemical mishap will never happen.	Section 7.8, 7.9, 7.11, 7.12 and Appendix 10	Section 4.3.8
Noise impact			
9	Concerns regarding the prospect of construction noise for 18 months, and also with ongoing noise during operation of the WTP	Section 7.4 and Appendix 8	Section 4.3.9
Visual impact			
10	Concerns about the cumulative visual impact of the proposed WTP and the adjoining TransGrid Substation (completed in 2006) directly opposite a landowner's property, including the potential impact of these industrial installations on property values	Section 7.5 and Appendix 3.	Section 4.3.10
11	Although the TransGrid Substation is mentioned in the EA, Council has omitted any visual documentation as to the impact the substation has had on its neighbours. Affected residents have recently had to endure the construction of this substation.	Section 2.2, 7.5 and Appendix 3.	Section 4.3.11
12	What was once an outlook of rolling hills to Mount Coramba is now dominated by the substation, a scar on the landscape. Adding another industrial type development (WTP) in a rural valley known for its scenery and peaceful lifestyle seems unjust and unfair	Section 7.5 and Appendix 3.	Section 4.3.12

Issue Number	Issue Raised	Where Addressed in EA	Where Addressed in Submissions Report
Traffic impact			
13	The access point to the site sits on the apex of a notoriously dangerous blind corner that has been the site of many accidents. This corner should be upgraded before commencing the project, if approved. Council's intention of reshaping the embankment on the southern side of Upper Orara Road is a limited measure	Section 1.3, 7.10 and Appendix 6.	Section 4.3.13
14	The estimated 120 vehicle movements, increasing to 200 vehicle movements in a worst case scenario, equates to an increase of over one third in traffic flow during construction. The traffic increase will impact greatly on the people who regularly use this road	Section 7.10, 8.2 and Appendix 6.	Section 4.3.14
Heritage			
15	The cultural heritage assessment as it stands is totally inadequate. The initial report recommendations seem to contradict the recommendations in the final version of the summary report. There seems to be no real attempt to try and preserve heritage, with no conservation options being put forward. Currently, there are inadequate conservation measures and offsets to ensure the preservation of the current natural values of the site. Both natural and cultural values should be properly assessed before any approval is given, particularly as there are no appeal rights for both the community and Aboriginal people for this Part 3A project	Section 2.2.2, 7.6 and Appendix 4	Section 4.3.15, 5.1 and Appendix 1.
Flora and Fauna			
16	A neighbouring land owner seeks assurance that none of the trees (Cadagi gums) lining Upper Orara Road opposite the site will be damaged in the reshaping of the road embankment	Section 8.2	Section 4.3.16, 3.2 Appendix 4

Issue Number	Issue Raised	Where Addressed in EA	Where Addressed in Submissions Report
17	Concerns about damage to flora and fauna arising from potential chloride or chemical spill to Orara River as there are many bush turkeys and livestock that drink from the river as well as native fish and turtles	Section 7.2, 7.8, 7.9, 7.11, 7.12 and Appendices 7 and 10	Section 4.3.17
Fluoridation and Community Consultation			
18	There is lack of transparency and inadequate community consultation. The lack of promotion of the project by the Council and the lack of appropriate reporting from the local media have made it extremely difficult for the residents of Coffs Harbour to find out about the project	Section 4.1	Sections 3.2 and 4.3.18
19	Fluoridation goes against existing community views and the precautionary principle. Council has not carried out an adequate consultation process on the introduction of fluoride to the Coffs Harbour water supply. Fluoridation is an unsafe, unproven and unethical practice	Section 1.3	Section 4.3.19
20	The cost of the fluoridation units which form part of the WTP have not been made available. Coffs Harbour's ratepayers are entitled to know that not one cent of ratepayer funds will be spent contributing to the capital costs of the fluoridation plant	NA	Section 4.3.20
21	Concerns about the additional costs from ongoing fluoridation – additional costs over 5 years may equate to $300,000 or $400,000 which would be of concern to the ratepayers	NA	Section 4.3.21

Issue Number	Issue Raised	Where Addressed in EA	Where Addressed in Submissions Report
Monitoring			
22	The EA should describe the period of time the plant would be operated during validation and verification, and where the water will be directed to during this time	Section 8.4.2	Section 4.3.22
23	Monitoring for water quality should describe the parameters to be tested, the testing frequency, and the laboratories to be used during verification and validation monitoring of the treatment process	Section 8.4.2	Section 4.3.23

4.3 Response to Issues Raised in Submissions

4.3.1 Issue 1

The proposed site is unsuitable for the Water Treatment Plant (WTP) and fails to satisfy key planning principles necessary for development approval namely:

- ***Proposed location constitutes a severe land use conflict;***
- ***Proposed facility does not comply with standards for Ecologically Sustainable Development;***
- ***Proposed WTP is considered a hazardous and/or offensive development under SEPP 33 and prohibited under the Rural 1A Agriculture zoning of the site.***

Land Use Conflict:

Part of the concern regarding land use conflict refers to potentially hazardous and / or offensive nature of the proposed WTP. This concern has been addressed below within the concern specifically raised by the resident regarding SEPP 33 and hazardous and offensive development.

The resident has raised the concern that the proposed WTP is not compatible within the rural 1A zone and that the site is quality agricultural land not suitable for the proposed 'industrial' development that will adversely impact the rural character of the area.

The Coffs Harbour LEP permits the use of land zoned Rural 1A for the purposes of constructing and operating a utility installation. A utility installation is defined in the LEP as follows (emphasis added):

*"utility installation" means a building, work or **undertaking** carried out under the authority of any Government authority (**including the Council**), or in pursuance of any Commonwealth or State Act, for the purpose of:*

(a) railways or roads or

(b) railway, road, water or air transport, or wharf or river undertakings, or

(c) the provision of sewage or drainage services, or

*(d) the **supply of water**, hydraulic power, electricity or gas, or*

(e) telecommunications facilities.

It is therefore considered that the proposed WTP consistent with the Rural 1A zone. Additionally, the definitions within the LEP limit duplication of land use definitions such that a use of land defined as being a utility installation within the LEP cannot also be defined as being an industrial development (or industrial installation / facility or hazardous industry).

The concern was also raised regarding the land use conflict with respect to the northern portion of the site being zoned Environmental Protection 7A. The proposal does not involve any works within the area zoned Environmental Protection 7A and the type of landscaping proposed to provide a visual screen will also be designed to extend the vegetative corridor from the riparian area up the slope providing a partial link to the state forest area to the south of the site.

The proposed WTP would operate on a zero discharge basis with all chemicals stored in accordance with the relevant standards to contain any spill. The follow on concern for the potential pollution of the Orara River from the proposed WTP has been addressed in more detail within the response to Issue 3.

It is considered that that the proposed WTP and the buffer is a compatible land use as the construction and operation of the proposed WTP (being a utility installation) is permissible within an Environmental Protection 7A zone with development consent and a distance of approximately 50 metres between the WTP and the Environmental Protection 7A zone (at the closest point) would be maintained. Considering the proposed zero discharge design philosophy and capture / containment of any spill, the proposed WTP would represent a reduced risk to the Orara River system than other uses in the catchment such as agriculture, cattle grazing and residential use.

Proposed facility does not comply with standards for Ecologically Sustainable Development:

Section 9.1 of the EA provides an assessment of the proposal against the principals of ecologically sustainable development as listed in the *Environmental Planning and Assessment Regulation 2000*. The investigations undertaken for the EA found that there would not be any long term impacts associated with the construction or operation of the WTP that would lead to the degradation of the environment. All of the proposed construction and operational processes are well established and recognised and any spills likely to contaminate the local environment can be more than adequately managed through established methods. It is therefore considered that the proposal would be consistent with the precautionary principal.

The residents' other concerns for the proposed WTP not being able to meet the requirements of ecological sustainable development refer to the environmental footprint of the proposal with respect to the site constraints adding life cycle and energy usage costs. The additional constraints have been listed as the additional mitigation and management of adverse environmental impacts, the required mechanical dewatering of sludge and the hydraulic energy losses.

The proposed mitigation and management of environmental impacts such as zero discharge of wastewater, storage and containment of chemicals in accordance with Australian Standards, erosion and sediment control in accordance with the NSW Department of Housing's *Managing Urban Stormwater 2004* and management of construction waste are associated with best management practice and would be implemented at any alternative site. The site selection process took into account the environmental constraints such as the amount of clearing, proximity to residential areas and the elevation above flood prone areas. Other sites were also considered to have a high environmental risk and this was duly considered during the selection process.

It is important to note that the nature of WTPs being close to sensitive waterways is very difficult to avoid considering that dams are likely to be situated in or next to pristine waterways to supply the raw water and the WTP is then likely to be situated in an area close to the dam (and thus close to a 'pristine' waterway) for operational convenience.

The use of sludge drying beds is obviously preferred over mechanical dewatering due to the higher construction, installation and operating costs and green house gas emissions of the mechanical dewatering option. The decision not to utilise sludge drying beds was not based specifically on the site constraints, but rather the regional constraint of high humidity. Design

advice has suggested that the high humidity levels in the Coffs Harbour region have the potential to increase the time required to adequately dry sludge from hours or days to years and would not be an operational alternative.

The potential hydraulic energy loss was an important factor when selecting the most appropriate site. Water is currently required to be pumped to the Red Hill balance tanks from Karangi Dam, due to static and frictional losses in water head. The proposed option of gravity feeding water to the 140 Upper Orara Road site and then pumping to the Red Hill balance tanks is not significantly different to the exiting situation and represents a relative percent difference between the two required pumping head of less than 12%. The slight difference in energy consumption between the Dam site and 140 Upper Orara Road was more than outweighed in the triple bottom line analysis by the other selection criteria.

Proposed WTP is considered a hazardous and/or offensive development under SEPP 33 and prohibited under the Rural 1A Agriculture zoning of the site:

The proposed storage of certain chemicals (chlorine, PAC, sodium hydroxide, lime and fluorosilic acid) would classify the WTP as being a potentially hazardous industry through the SEPP 33 definition of a hazardous storage establishment. The storage and use of these chemicals is not a separate and independent use and is an integral part of the proposed water treatment method and thus part of the "utility installation". The LEP does not allow for a development defined as a utility installation to also be defined as a hazardous industry.

Under the provisions contained in Chapter 6 Part 3 Division 6 of the *Local Government Act 1993*, the Council has the statutory power to provide a supply of water and construct water treatment works and as such Clause 2 Schedule 1 of the LEP has been incorporated into the LEP to permit utility installations without development consent. The LEP therefore does not prohibit the construction and operation of the proposed WTP (being a "utility installation").

SEPP 33 does not operate to prohibit development within the definitions of "potentially hazardous industry" as there is no clause within SEPP 33 to that effect. Clause 12 of SEPP 33 imposes requirements on a person who makes a development application for a potentially hazardous industry, as there is no development application required this clause is not relevant (an application under Part 3A of the EP&A Act 1979 is not a development application as defined in the EP&A Act 1979). Clause 13 of SEPP 33 imposes matters for consideration by consent authorities but does not prohibit or operate to the effect that a potentially hazardous industry cannot be carried out.

The relevant information required to be considered by the consent authority was provided (as required by Clause 13 of SEPP 33) within the EA, in the form of the PHA. The information within the PHA has been assessed by the MHU of the Department of Planning as providing the appropriate information for the Department of Planning (being the consent authority) for consideration during the project assessment and approval process.

4.3.2 Issue 2

The land use conflict arises due to the incompatibility of a major industrial facility interfacing with land zoned Rural 1A Agriculture, and the Orara River, a key natural resource protected by an Environmental Protection 7A – Habitat and Catchment zoning. Proposed WTP will adversely impact the rural character of the area, and also the future agricultural and tourism value of the Coffs Harbour hinterland area. The WTP site also has an inadequate buffer zone interfacing with the Orara River.

As described in Issue 1, the proposed WTP is a Utility Installation as defined in the LEP and is permissible within both the Rural 1A and Environmental Protection 7A zonings. For the reasons provided in Issue 1 it is considered that the proposed WTP is compatible with the surrounding land zones.

Any impacts to the rural character of the area are proposed to be mitigated through the architectural design, landscape plantings and so on. Although there will be some construction noise and traffic impacts, the operation of the plant is not likely to raise or effect the ambient levels of noise, air quality or impact on light and heavy vehicle traffic. All reasonable and practical measure would be implemented during the construction phase to minimise any potential impacts to the rural character of the area. These measures have been detailed in the EA and considered sufficient to appropriately mitigate any potential impacts to the rural character of the area.

Considering the proposed WTP is a utility installation as defined in the LEP, the construction and operation does not introduce a precedent for any development contrary to the objectives of the Rural 1A zone. Based on the size of the site and the available evidencing suggesting the site has not been used for any substantial agricultural use since being subdivided in 1986, the removal of the site from being used for grazing / dairy cattle use would not result in a significant reduction in the Orara Valley's ability to provide agricultural services.

It is expected that there would not be any impact on the areas tourism potential considering the proposed landscaping, the ability to contain any spills and the low operational noise, air quality and traffic impacts. Additionally the site is located away from the local National Parks and the majority of people accessing these parks from Coffs Harbour would more than likely travel along Coramba Road and turn off at Mount Browne Road. It is therefore considered that the WTP would have a negligible impact on the agricultural and tourism value of the Coffs Harbour Hinterland.

All construction and operational activities are proposed to be undertaken above the level of the probable maximum flood (PMF). There would always be undeveloped land between the WTP and the riparian vegetation of the Orara River (of greater than 50 metres) and the riparian strip would be bolstered and the koala habitat extended up the slope to form a strip of vegetation that improves the connection between the Orara River and the nearby State Forest. Considering the available 'buffer', the proposed landscaping works, the compatibility of the WTP with the surrounding landuse, the proven construction and operational processes and the proposed mitigation measures, it is the opinion of Council that buffer zone interfacing with the Orara River is adequate.

4.3.3 Issue 3

The proposed WTP would pose an environmental threat from its intensive use and storage of chemicals, with volumes exceeding the SEPP 33 storage screening thresholds. It also produces substantial quantities of liquid waste. The potential to contaminate the local environment, including the Orara River presents a significant and/or irreversible impact on the environment.

The EA has recognised that the Orara River is an extremely important and ecologically sensitive system that needs to be protected. The proposed WTP will utilise established technology and processes not only in the physical water treatment, but also for the storage and containment of those chemicals required in the treatment process. These chemicals were recognised in the PHA (along with the 'liquid waste' from the emergency storage lagoon and

washwater tank and even the treated water storage due to the volume of water) as being potentially hazardous to the environment.

The PHA included a hazard identification workshop (HAZID) to identify the possible causes of potential incidents, their consequences and the proposed operational control measures that would reduce the likelihood of an incident. A chlorine gas release was the only scenario that had the potential to impact beyond the site boundary due to the established methods for containing liquid spills.

The proposed presence of automatic shutoff valves and chlorine extraction system significantly reduces the impact of chlorine releases on the surrounding populations. The automatic shut off valves reduce the amount of chlorine to be released (through isolation), the building contains small releases and the chlorine extraction system aids dispersion of small contained releases due to the dilution and release from height with momentum.

The chlorine release scenarios were subject to a quantitative risk assessment, which determined that the risk generated by the proposed WTP meets the Department of Planning criteria.

4.3.4 Issue 4

The environmental footprint of the project is excessive due to the incompatibility of the site for use as a WTP. Risk mitigation and the topographical characteristics of the site would result in additional life cycle costs and energy usage of the proposed facility. An alternate site with lower risk of environmental impacts would reduce the life cycle costs of the proposed facility.

This issue has been addressed within Issue 1 - Proposed facility does not comply with standards for Ecologically Sustainable Development.

4.3.5 Issue 5

The proposed site is constrained by limited areas of relatively level land that is above flood levels. The restrictive site prohibits the use of sludge drying beds, and the plant has therefore been designed with mechanical dewatering of wash water by centrifuge. Mechanical dewatering is a capital and energy intensive design option with significantly higher life-cycle costs and greenhouse emissions than sludge drying beds using current evaporative filter bed technology.

This issue has been addressed within Issue 1 - Proposed facility does not comply with standards for Ecologically Sustainable Development.

4.3.6 Issue 6

Questions the justification for the scale of the project – 15 megalitres of water currently services Coffs Harbour's 67,000 population. The new WTP will process 42 megalitres which could conceivably cater for 188,000 people. The current DoP population projected for Coffs Harbour in 2031 is 91,800.

The numbers quoted by the resident are not correct. Although the current population of Coffs Harbour has been quoted as being 67,000, the amount of people currently connected to the drinking water distribution system is approximately 61,050 people, who use approximately 15 ML/day up to 25 ML/day. The WTP needs to be sized to cater for the peak daily demand times and not the average daily demand. The plant is designed to cater for the expected

population in 2031. Whilst it is the residents opinion that the future population growth may be an overestimate, it is the opinion of Council that it would be more beneficial to over estimate the future capacity than be required to prematurely expand the WTP capacity, especially considering the capital cost associated with the installation of extra capacity at this stage would be significantly less than having to mobilise a second construction team at a latter date.

4.3.7 Issue 7

Questions the justification of the need for the project – are the potential water quality hazards serious enough to warrant an immediate health warning for Coffs Harbour residents? How are the key objectives of the WTP proposal met? In what areas does the current drinking water supply fall below the Australian Drinking Water Guidelines (ADWG)? Where is the proof that water from Shannon Creek will deliver inferior quality?

The justification of the project with respect to the water quality risks has been addressed in detail within the EA. In summary these risks relate to the land use within each of the catchments being cattle grazing, agriculture, residential areas, sewage treatment plants and so on. The catchment with the most water quality risk has been identified to be the catchment that will provide the Shannon Creek Dam with water. Currently these risks have not affected the water quality of Karangi Dam, partly due to the practice of selective extraction (not sourcing water after heavy rainfall when the water is turbid and containing contaminates from runoff) and partly due to no water being drawn from Shannon Creek Dam.

As detailed in the EA, once Shannon Creek Dam becomes operational the options for when water extraction from the cleaner (existing) sources are reduced with the application of more stringent environmental flow requirements, the risk of poor water quality increases. The construction of a WTP now will mean that Council have been able to plan in advance and avoid issuing the Coffs Harbour residents with a health warning. It is the opinion of Council that with good planning the issuing of such a warning should never happen.

The question referring to “how are the key objectives of WTP proposal met?” refers to the key objective that the “proposed WTP facility has therefore been designed to treat these raw waters to a standard that is generally acceptable for all consumers of drinking water within the Coffs Harbour area.”. It was the opinion of the resident that this objective can not be met if the people from Coffs Harbour have not been made aware of the treatment method and in particular the specific chemicals involved in the treatment. However, the statement that the water would be “generally acceptable for all consumers” was intended to refer to the water being acceptable with respect to no adverse heath effects and no colour, taste or odour (aesthetic) issues. The consumers can be assured that any chemical additive would not be of such a concentration as to exceed the ADWG and / or cause any adverse health, taste or odour issues. The proposed treatment process is an established process that would produce a quality of water that meets the ADWG.

The current water quality supply does not meet the ADWG due to the water quality risk assessment identifying potential hazards within the existing catchments and future Shannon Creek Dam catchment that can not be removed from the water using the existing treatment methods. The exiting water supply, at times, falls below the aesthetic ADWG requirements (colour, taste and odour), primarily due to high iron and managanese levels. The water quality risks are expected to increase when Shannon Creek comes on line for the reasons detailed above and in the EA.

As there is no water in Shannon Creek Dam to test, the 'proof' that Shannon Creek Dam will deliver a poorer quality of water is the results of the risk assessment and in particular the identification of dispersive soils and land uses in the catchment. Dispersive soils would have the effect of increasing turbidity and increasing the likelihood that pathogens could be shielded from the existing disinfection process. Further detail is provided in the EA.

4.3.8 Issue 8

The high volume of chemical use and storage by the proposed WTP is deemed to pose a sufficient risk to the surrounding environment. It is also deemed to be an offensive development if mitigation and management measures for handling chemicals and waste fail to meet the standards specified in the proposal during operations. There are no guarantees given in the EA that a chemical mishap will never happen.

This issue has been addressed within Issue 3.

4.3.9 Issue 9

Concerns regarding the prospect of construction noise for 18 months, and also with ongoing noise during operation of the WTP

Noise modeling undertaken for the EA has indicated that there would be a construction noise impact that exceeds the relevant DECC construction noise criteria. The site is located in an area that typically has very little background noise (as stated in the submissions) and this is reflected in the noise criteria established for the project with the criteria being calculated as the background noise level plus five decibels. The low background noise level has therefore set the criteria at a level that can be difficult for construction equipment to stay within. The EA has then recommended a series of mitigation measures to reduce the impact that these exceedances would have on potentially affected properties. The implementation of these mitigation measures is considered sufficient to manage the construction noise impacts.

The modeling was undertaken using data from the noisiest activities (equipment to be used during the earthworks stages) operating in those areas closest to the residential receivers. It is expected that the modeling results therefore represent a worst case situation that is unlikely to occur for extended periods. All reasonable and practical measures would be implemented to minimise the construction noise impact. Mitigation measures have been outlined in the EA and Statement of Commitments to ensure these measures are incorporated into the environmental management plan.

Results of the operational noise modeling indicate that the operational noise is unlikely to exceed the project specific noise levels during the day, evening or night time periods.

4.3.10 Issue 10

Concerns about the cumulative visual impact of the proposed WTP and the adjoining TransGrid Substation (completed in 2006) directly opposite a landowner's property, including the potential impact of these industrial installations on property values

There appears to be some concern with how the construction and operation of Transgrid substation has impacted on the neighbours with specific mention of failed promises from Transgrid to paint fences and plant trees. It is therefore understandable that they would have concerns over the addition of another "industrial type" development. As with issue 1, the residents have not differentiated the difference between an "industrial development" and

"utility installation" as defined in the LEP and the consequences of permissibility in the land use zones.

The proposed landscape planting would provide screening for not only the WTP but also in some instances the Transgrid Substation. Council has committed to retaining certain trees (including some of the camphor laurels and hoop pines) such that a view towards the substation site (and some of the electricity poles and towers) would not be opened.

Some of the proposed plantings would be able to be undertaken straight away following approval; unfortunately with the required construction footprint this would not extend to all of the landscaping. All reasonable and practical efforts would be made to ensure screen plantings are undertaken in a timely manner. The WTP design team has been utilising the services of an architect to design a WTP that suits the existing rural environment and is sensitive to the rural context.

Ongoing consultation with the neighbouring properties will continue so that individual needs can be incorporated into the design as much as practical and the concerns of the resident regarding cumulative impacts and property prices are not realised.

4.3.11 Issue 11

Although the TransGrid Substation is mentioned in the EA, Council has omitted any visual documentation as to the impact the substation has had on its neighbours. Affected residents have recently had to endure the construction of this substation.

The visual assessment contained within the EA focused on what impacts the WTP would have on the surrounding landscape. The Transgrid Substation was addressed as being another 'built element' that provides an appropriate setting for the WTP. Unfortunaetly this goes against the opinion of the resident that the cumulative impacts from the two should have been addressed. As stated in Issue 10, ongoing consultation with the neighbouring properties will continue so that individual needs can be incorporated into the design as much as practical and the concerns of the resident regarding cumulative impacts are not realised. The proposed management and mitigation measures should prevent the realisation of the residents concern of having another development and construction process to deal with.

4.3.12 Issue 12

What was once an outlook of rolling hills to Mount Coramba is now dominated by the substation, a scar on the landscape. Adding another industrial type development (WTP) in a rural valley known for its scenery and peaceful lifestyle seems unjust and unfair

As discussed in Issue 10, the proposed landscaping will consider the Transgrid substation and all reasonable efforts will be made to prevent views of the substation being opened up by retaining some of the camphor laurels and hoop pines and the landscape plantings should additionally help provide screening of the substation as well as the WTP (although the focus will be on screening the WTP).

Although the neighbours consider the location to be unjust and unfair, the site was chosen because of the relatively few neighbours (only three properties will be able to see the WTP) when compared to the other alternative sites.

4.3.13 Issue 13

The access point to the site sits on the apex of a notoriously dangerous blind corner that has been the site of many accidents. This corner should be upgraded before commencing the project, if approved. Council's intention of reshaping the embankment on the southern side of Upper Orara Road is a limited measure.

The traffic impacts have been assessed in the EA and it was recognised that the turning point would be hazardous. The entrance to the site is proposed to be moved west up the hill to give a clear line of sight for traffic entering the site from the east and traffic traveling from the west (down the hill). The southern batter is also proposed to be reshaped so the traffic approaching the site from the east will have a clear line of sight towards any traffic entering the site and help prevent a rear end type collision. This upgrading works is proposed to occur before the start of construction.

4.3.14 Issue 14

The estimated 120 vehicle movements, increasing to 200 vehicle movements in a worst case scenario, equates to an increase of over one third in traffic flow during construction. The traffic increase will impact greatly on the people who regularly use this road

The EA recognised that construction traffic could impact on the local traffic movements and as such provided a recommendation that signage and traffic control be used as appropriate during construction. The recommended mitigation measures detailed in the EA are considered sufficient to manage these traffic construction related impacts.

4.3.15 Issue 15

The cultural heritage assessment as it stands is totally inadequate. The initial report recommendations seem to contradict the recommendations in the final version of the summary report. There seems to be no real attempt to try and preserve heritage, with no conservation options being put forward. Currently, there are inadequate conservation measures and offsets to ensure the preservation of the current natural values of the site. Both natural and cultural values should be properly assessed before any approval is given, particularly as there are no appeal rights for both the community and Aboriginal people for this Part 3A project.

The Aboriginal Heritage Assessment report included within the EA was issued as a draft due to the circumstances for which it was originally prepared. The report was originally intended to be used for an application under section 87 of the *National Parks and Wildlife Act 1974*. Following the lodging of the report with DECC it was identified that projects subject to Part 3A of the EP&A Act 1979 do not require a section 87 permit and that a subsurface investigation can proceed. Although the report was still labeled as being a draft, the report had been reviewed and approved by the relevant aboriginal stakeholders for issue to DECC as required for a section 87 permit. The report recommendations and methodologies for undertaking further subsurface investigations had therefore also been approved by the aboriginal stakeholders.

Ideally the final report following the subsurface investigation would have been ready for inclusion within the EA for public exhibition, however time restraints dictated otherwise.

The 'draft' Aboriginal Heritage Assessment report drew on available information to provide the background into how the area was used by Aboriginals in the past, whether there are any previous records of artefacts at the site or in the surrounding area and then interpolate as to whether there could be any chance that the site could contain some significant historical artefacts. It was determined (through consultation with the aboriginal stakeholders) there was the potential for the site to have been previously used by aboriginal people, primarily due to the spur crest on the site. A method for subsurface investigation was therefore recommended. At the time the EA was exhibited the recommended subsurface testing had been undertaken, however the report had not been finished (although a summary of findings had been issued and included in the EA).

It was always the intention of Council and the Department of Planning that any findings and recommendations of the subsurface investigation additional to the summary would be incorporated into the approval, design, construction and operation of the WTP. Considering all the stakeholders were involved in the review and finalisation of the report, this method was considered to be satisfactory.

"Concerned that the recommendations of the final report contradict the draft report and wishes of the aboriginal people".

The final report is based on the subsurface investigation recommended in the 'draft' report. Additionally, the recommendations of the final report were made in consultation with the aboriginal stakeholders and those recommendations were then reviewed and agreed to by those same aboriginal stakeholders (refer to full report provided in ***Appendix 2***). This concern is not supported by Council.

*"Concerned that there is inadequate conservation measures and offsets to ensure the preservation of the current natural values on site"***.**

Only one tree originally native to the area is proposed to be removed (a single non hollow bearing Flooded Gum). The removal of this tree is being off set through extensive plantings required to minimise the visual impacts. The vegetation selected would primarily consist of vegetation native to the area. This concern is therefore not shared by Council.

*"Requests assurance that natural and cultural values are properly assessed before any approval is given"***.**

All natural and cultural values have been assessed. The aboriginal stakeholders have been involved in the process from the start and the report was not finalised until they had been allowed to comment and agreed with all of the outcomes. A copy of the letter obtained from the Coffs Harbour and District LALC detailing that they are satisfied with the assessment process is included in ***Appendix 2***. Measures would be implemented to ensure that any significant aboriginal objects would not be destroyed prior to the appropriate consultation with relevant stakeholders (refer to Statement of Commitments reproduced in ***Appendix 4***).

4.3.16 Issue 16

A neighbouring land owner seeks assurance that none of the trees (Cadagi gums) lining Upper Orara Road opposite the site will be damaged in the reshaping of the road embankment

Any reshaping works would not damage any of the Gadagi Gums on the southern embankment and this has been reflected in the Statement of Commitments (refer to ***Appendix 4***).

4.3.17 Issue 17

Concerns about damage to flora and fauna arising from potential chloride or chemical spill to Orara River as there are many bush turkeys and livestock that drink from the river as well as native fish and turtles

The potential for chemical spills has been addressed within Issue 3. The environmental consequences of spills was assessed in the EA as with the social consequences.

4.3.18 Issue 18

There is lack of transparency and inadequate community consultation. The lack of promotion of the project by the Council and the lack of appropriate reporting from the local media have made it extremely difficult for the residents of Coffs Harbour to find out about the project.

The Council provided a media release in the Coffs Coast Advocate on 26th August 2006 and has had a section of the Coffs Harbour City Council website dedicated to informing the public about the intention of Council to construct and operate a WTP since October 2006. Council has also undertaken consultation with the neighbouring residents since July 2006 and undertaken the required consultation and exhibition with respect to the EA process. It would therefore be difficult to justify the residents concerns that the proposal has seen a lack of promotion by Council.

In addition to the Council promotion, the local media have highlighted people's opinions on the proposal through letters to the editor and an article in the Coffs Harbour and District Independent additionally requested people write to the editor with their opinion on the proposal.

4.3.19 Issue 19

Fluoridation goes against existing community views and the precautionary principle. Council has not carried out an adequate consultation process on the introduction of fluoride to the Coffs Harbour water supply. Fluoridation is an unsafe, unproven and unethical practice

The fluoridation of the water supply and the concentration of dosing is a requirement of the Department of Health and only one part of the water treatment process.

The *Fluoridation of Public Water Supplies Act 1957* gives councils who are Water Supply Authorities the power to fluoridate the water supply in the locality with the approval of, or at the direction of NSW Health. In the latter case after a council has referred the matter to NSW Health and the Minister has received the advice of the Fluoridation of Public Water Supplies Advisory Committee he will give a directive. Coffs Harbour City Council has received a directive from NSW Health to fluoridate the Coffs Harbour Water Supply.

4.3.20 Issue 20

The cost of the fluoridation units which form part of the WTP have not been made available. Coffs Harbour's ratepayers are entitled to know that not one cent of ratepayer funds will be spent contributing to the capital costs of the fluoridation plant.

The costs for the fluoridation units have not yet been finialised and are not expected to be finialised until mid August 2007. Council will approach the Department of Health to apply for funding once the costs of the fluoridation units have been determined.

4.3.21 Issue 21

Concerns about the additional costs from ongoing fluoridation – additional costs over 5 years may equate to $300,000 or $400,000 which would be of concern to the ratepayers.

The costs quoted above relate to the money that can be saved by reducing the fluoride dose from 1 mg/L to 0.8 mg/L and is quoted from Hunter Water data. The required dosing rate is set by the Department of Health and is currently expected to be 1 mg/L, any change to the dosing rate would have to be approved by the Department of Health. The first two years of dosing, however, are expected to be funded by the Department of Health.

4.3.22 Issue 22

The EA should describe the period of time the plant would be operated during validation and verification, and where the water will be directed to during this time

The validation and verification stages are incorporated into the 'commissioning' phase. The commissioning process would begin to be implemented as individual structures and process units have been finalised. Commissioning as a whole is expected to take approximately seven months, which would extend approximately 1.5 months past the completion of all construction.

The water from the validation and verification would likely be directed to the Nymboida Pipeline to be pumped back to Karangi Dam. If water quality does not permit the reuse of the water then it can be directed into the emergency storage lagoon for disposal to sewer or taken away directly from the area being validated.

4.3.23 Issue 23

Monitoring for water quality should describe the parameters to be tested, the testing frequency, and the laboratories to be used during verification and validation monitoring of the treatment process

Prior to the delivery of water from the WTP to consumers an extensive program of testing would be undertaken to ensure that the water meets the Department of Health requirements. The parameters to be tested, the frequency of testing and the laboratories to be used would all be included within the Commissioning Plan. A copy of the plan can be provided to the North Coast Area Health Service for review if required.

An application would also be lodged with the Department of health to approve the fluoride dosing system. The approval is expected to contain performance criteria and guidelines for the verification and validation of the fluoride dosing system.

5. Additional Investigations

5.1 Aboriginal Cultural Heritage Assessment

The EA was exhibited using the information from the Aboriginal Cultural Heritage Assessment Report prepared by Jacqueline Collins in December 2006. The report recommended that a subsurface investigation be undertaken to further investigate the possibility that the site may contain previously undetected evidence of past Aboriginal occupation. It was advised by the stakeholders that the existence and significance of any site could only be reliably assessed on the basis of the results from a subsurface investigation. Although the report on the subsurface investigation was not finalised prior to public exhibition, a summary of the findings was available and included within the EA.

The subsurface investigation report has since been finalised and formally approved for distribution by the Coffs Harbour and District Local Aboriginal Land Council (LALC) and Gumbula Julipi Elders. The finalised report has been included in ***Appendix 1***.

Considering the past results of field surveys, it was resolved in consultation with Aboriginal Stakeholders that the subsurface investigation could be appropriately confined to the potentially sensitive spur crest and upper slopes. It was anticipated that any artefacts would be of low density and thus a small number of large test pits was advocated as the most effective means of detecting a potentially low density distribution. Two square metre test pits at 15 metre spacings were then used with a grid of 44 test pits to achieve adequate and systematic coverage.

Surface soil material was removed from each test pit to the base of the surface soil (A) horizon in 0.1 metre spits (down to 0.1 – 0.3 metres below the ground level). The soil material was then dry sieved through a mechanically agitated six millimetre mesh screen. The sieve residuals were carefully examined for Aboriginal cultural material, with each find individually bagged and labeled for later analysis.

40 artefacts were recovered, representing an average of 0.45 arefacts for every square metre excavated. Of the recovered artefacts, 77.5% were flakes and flake fragments, 17.5% were cores and 0.5% were flaked pieces.

The archaeological test excavations revealed a sparse distribution of Aboriginal stone artefacts, all which occurred within the topsoil. The vertical distribution of the artefacts in the topsoil suggests disturbance from natural bio-turbation and cattle trampling and possibly also through cultivation and land leveling. All 40 recovered artefacts represent waste material with no modified arefacts or tools being discovered. The absence of small flakes suggests that the arefacts were not habitually reduced in the study area, but were usually brought to the site in an already reduced state.

The results of the investigation are considered to represent a ‘background’ scatter of artefacts that has accumulated as a result of repeated low level use of the spur crest and its upper slopes, rather than a campsite proper.

The Aboriginal consultation undertaken in conjunction with this assessment revealed that the proposed WTP would not have an adverse impact on any known sites of mythological, ceremonial or otherwise spiritual significance, nor would it affect any resource or unmodified sites/places of historical or contemporary attachment. Although the Aboriginal stakeholders

consider all sites within their territory to have at least some cultural value, they have assessed the investigation site to have a low level of cultural / social significance.

The test pit results indicate that the investigation site is highly disturbed, and that the arefacts are restricted to a low density of stone flaking debitage mixed within the topsoil. The site is not culturally stratified and has no potential for dating. Due to its lack of integrity and structure and low diversity of cultural material the site has very little further research potential.

Considering all of these factors, the investigation site is assessed to have a low level of scientific / archaeological significance.

The recommendations following the finalisation of the subsurface investigation is as follows:

- The Coffs Harbour and District LALC and Gumbula Julipi Elders be given an opportunity to re – deposit artefacts recovered during the test pit investigation. The re-deposition location should be agreed with by Council and take place once all development related works have been completed. Formal permission from DECC is additional required prior to re-deposition.
- In the unlikely event that any material evidence of potentially high cultural significance, especially any evidence of Aboriginal burial(s) is uncovered during any stage of the WTP construction all disturbance work must cease in the vicinity of the find. The DECC, Coffs Harbour and District LALC and the Gumbula Julipi Elders should be immediately contacted for management advice.
- Council should continue to liaise closely with Coffs Harbour and District LALC and the Gumbula Julipi Elders in relation to cultural matters to maintain the positive relationship. To this end, these groups should be kept informed of the timetable for the WTP construction works.

The statement of commitments reflects these recommendations (refer to ***Appendix 3***).

5.2 Preliminary Hazard Analysis

The Department of Planning's Major Hazard Unit (MHU) requested some additional specific technical information required for the MHU to fully assess the potential hazards associated with the chlorination system. The questions raised by the MHU were addressed within a memorandum dated the 5th of July 2007 as is included in full in ***Appendix 2***.

In summary the memorandum addressed the following issues:

- Clarified the proposed material and method for the connection and mounting of the 'Chlorguard' unit and vacuum regulator to the drum.
- Method proposed to be used when changing over the drums and how many of the drums would be connected at one time.
- Clarified the emergency response procedure to justify the assumption that any leak would not continue for greater than one hour.
- Further justification of the chlorine release scenarios used in the consequence modeling.
- Clarification of the gas detection system.
- Justification of the 'drop' frequency used for the drums in the frequency analysis.

- Clarification that the ‘Chlorguard’ system was inadvertently not shown in the preliminary P&ID and that ‘pigtails’ connections to each drum are not proposed to be used.
- Description and function of valves indicated in the preliminary P&ID.

The clarifications provided in the memorandum were accepted by the MHU as adequately addressing the issues raised.

6. Preferred Project Report

6.1 Modifications to the Proposal

The proposed WTP has not changed significantly since the exhibition of the EA. The latest architectural drawings are provided in ***Appendix 5***. Minor changes to the proposal include:

- Moving the sludge thickening tank from the eastern side of the sludge dewatering building to the western side so that a couple of the hoop pines will not need to be removed.
- The existing large shed is to be relocated to the eastern side of the sludge dewatering building.
- All recommended changes made following correspondence with the Department of Planning's MHU will be incorporated into the plant design and operation. Section 5.2 provides a summary of the recommendations and the full memorandum outlining the recommendations is provided in ***Appendix 2***.
- The security fence proposed to run down the western boundary would be relocated three metres inside the property boundary to allow for screening plantings between the boundary and the security fence.
- Some of the camphor laurel trees that are currently providing the neighbouring properties with a visual screen of the Transgrid substation and associated electricity poles and towers are to be retained until native plantings grow to a sufficient height. This would involve some modification to the earthworks design to retain these trees.
- The mitigation measures contained in Table 8.1 of the EA have been updated to reflect the recent community consultation undertaken by Council. Table 8.1 of the EA has been reproduced and included in ***Appendix 4*** with updates to the EA included in red italics (mitigation measures 1.1.2, 10.1.10 and 10.1.11).

6.2 Environmental Assessment of Proposed Modifications

The proposed modifications have been proposed to reduce the projects environmental impacts. With the exception of relocating the shed, each of the proposed modifications is the result of community and stakeholder consultation and it is not considered that any further environmental assessment of these impacts is required.

7. Conclusion

This submissions report has addressed the issues and concerns arising from the consultative processes initiated by Council and the public exhibition of the Coffs Harbour WTP Environmental Assessment.