



Brunswick Area Sewerage Augmentation Determination Report

Byron Shire Council
Department of Energy, Utilities and Sustainability
Department of Commerce

10 November 2006

21898-001-01

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Glossary / Abbreviations

ADWF	average dry weather flow
AMT	accepted modern technology
DEC	NSW Department of Environment and Conservation (incorporating the Environment Protection Authority (EPA) and NSW National Parks and Wildlife Service (NPWS))
DEUS	NSW Department of Energy, Utilities and Sustainability
DPI	NSW Department of Primary Industries (incorporating NSW Fisheries)
EMP	environmental management plan
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)
ESD	ecologically sustainable development
LEP	local environmental plan
LGA	local government area
NES	(matter of) national environmental significance (under the EPBC Act)
NPWS	NSW National Parks and Wildlife Service (now part of the Department of Environment and Conservation)
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
PWWF	peak wet weather flow
REF	review of environmental factors
SEPP	State environmental planning policy
STP	sewage treatment plant
TSC Act	<i>Threatened Species Conservation Act 1995</i>

1. Introduction

1.1 Background to project

The towns of Mullumbimby and Brunswick Heads are presently served by two sewage treatment plants (STPs), Mullumbimby STP and Brunswick Heads STP. Mullumbimby STP is located off Casuarina Street approximately 900 metres to the north of the central business district of Mullumbimby within the catchment of Brunswick River. Brunswick Heads STP is located off the Old Pacific Highway, approximately 1,250 metres south of the Brunswick Heads central business district adjacent to Simpsons Creek, a tributary of the Brunswick River.

Both STPs are presently subject to loadings that approach, and on occasions exceed, their design capacity due to continual population growth in the surrounding catchments. Mullumbimby STP was commissioned in 1963 and Brunswick Heads STP around 1970. Both STPs are approaching the end of their useful operational lives. There is a need, therefore, for either replacement or substantial refurbishments and upgrades to each of the STPs.

Modelling and assessment of the Brunswick River estuary undertaken by Manly Hydraulics Laboratory in 2004 confirmed that the estuary, particularly Simpsons Creek, have experienced environmental stress for some time. This is considered to be due to nutrient and pollutant loads from STP effluent releases and from urban and rural stormwater runoff. The investigations highlighted the need to upgrade wastewater management practices in the Brunswick area to achieve acceptable standards of treatment and improve water quality in the Brunswick River estuary.

Treated effluent from Mullumbimby STP is currently stored in an effluent pond prior to irrigation on farmland along Main Arm Road, approximately five kilometres to the west of the township. In wet weather, the demand for treated effluent is greatly reduced. Treated effluent that cannot be stored is released from the effluent pond to the Brunswick River estuary. Treated effluent from the Brunswick Heads STP is released to Simpsons Creek under all weather conditions. Both plants use modern ultra-violet disinfection prior to waterway discharges.

In 1998, Byron Shire Council facilitated the establishment of the Brunswick River Catchment Wastewater Steering Committee to address the identified performance shortfalls in the existing sewerage systems for the Brunswick area. Council, in conjunction with the Committee, subsequently commissioned a series of studies to determine the most appropriate and effective course of action to address the identified operational performance shortfalls and to meet future wastewater management demands in the Brunswick area.

A range of treatment options and configurations were developed to address the identified need for the Brunswick Area Sewerage Augmentation. These were documented in a strategic options study prepared by Gutteridge Haskens and Davey (GHD) in 2000. The studies have shown that the current STP sites are too restricted for further expansion and the technology is too outdated to achieve modern discharge requirements. Further work by GHD identified four options which would meet community requirements. All options incorporated treated effluent reuse.

On the basis of this additional work, Council and the Committee identified a preferred option. This comprised decommissioning the existing Mullumbimby and Brunswick Heads STPs and transfer of sewage flows from their respective catchments to a new STP at Vallances Road (to be known as the Mullumbimby-Brunswick Heads STP). The key features of this option are summarised in Section 2 of this report.

The preferred option (the Proposal) was assessed in an environmental impact statement (EIS)

prepared by Parsons Brinckerhoff in October 2005 on behalf of Council, its funding partner the NSW Department of Energy, Utilities and Sustainability (DEUS) and its project manager, the NSW Department of Commerce. The EIS identifies and assesses potential environmental impacts associated with construction and operation of the Proposal.

Subsequent to the exhibition of the EIS, Council and the DEUS undertook a review of the project costs. Evans and Peck was commissioned to undertake this work which comprised:

- Preparation of a procurement phase risk based cost estimate (documented in the Evans and Peck report *Brunswick Area Sewerage Augmentation Procurement Phase Risk Based Cost Estimate*, Rev B, 6 November 2006).
- A review of procurement options for delivery of the project (documented in the draft Evans and Peck report *Brunswick Area Sewerage Augmentation Procurement Strategy Options*, Rev B, 31 October 2006).

The review identified that due to various factors, the estimated cost of the project was substantially greater than originally estimated and would likely impose a significant financial impost on Council and its ratepayers. In view of this, Council is now proposing to defer construction of certain works. These are identified in Section 2.4 of this report together with consideration of whether the deferral of these works materially alters the conclusions drawn in the EIS with respect to the environmental impacts of the Proposal.

The EIS identified a number of components of the project as requiring development consent under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and as such were not assessed in the EIS. This included a proposed effluent polishing plant which would be located approximately 300 metres to the east of the existing Mullumbimby STP. Subsequently, Council determined that the plant did not require development consent and therefore should be assessed under Part 5. A review of environmental factors (REF) was prepared by Parsons Brinckerhoff in September 2006 to establish the statutory basis for the assessment and to assess the impacts associated with construction and operation of the plant. This REF is attached as Appendix B to this report.

Unless otherwise noted, any reference to the Proposal in this report refers to both the proposed works as described in the EIS and the proposed effluent polishing plant as described in the REF.

1.2 Purpose of this report

The majority of the Proposal is subject to assessment under Part 5 of the EP&A Act. Byron Shire Council is the proponent for the Proposal which was assessed as potentially having a significant impact on the environment. As such, an EIS has been prepared.

As required by the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation), Council placed the EIS on public exhibition from 21 November 2005 to 23 December 2005 (33 days).

The EIS was made available for public viewing at the following locations:

- Byron Shire Council Administration Centre (Mullumbimby);
- Pogel's Wood Café (Federal);
- Bangalow Post Office;
- Summerland Credit Union (Ocean Shores);
- BP Suffolk Park;
- Byron Bay Library;

- Brunswick Heads Library;
- Mullumbimby Library ;
- Government Information Services Bookshop (Sydney);
- Total Environment Centre (Sydney);
- Department of Planning Information Centre (Sydney); and
- Council's web site.

The REF for the proposed polishing plant was not placed on public display. There is no requirement under the EP&A Act for Council to exhibit the REF.

In addition to being the proponent, Council is also a determining authority for the Proposal due to its approval role under the *Local Government Act 1993* and in relation to providing funding for the project. Section 1.6 of the EIS identifies other determining authorities for the Proposal, these being:

- the Department of Environment and Conservation (DEC);
- the Department of Energy Utilities and Sustainability;
- the Department of Infrastructure, Planning and Natural Resources (since restructured into the Department of Planning and the Department of Natural Resources); and
- the Department of Primary Industries (Fisheries).

Table 4.1 in the EIS lists potential licensing and approval requirements for the Proposal. In addition to the above agencies, it also identifies the Waterways Authority as a possible determining authority in relation to its approval role (acting for the Minister for Ports) under Section 23 of the *Rivers and Foreshores Improvement Act 1948*.

While Council may make its determination prior to obtaining the necessary approvals, it cannot actually proceed (ie commence construction works) until it has obtained these approvals. It should be noted that 'determination' simply refers to the decision-making process in relation to the required approvals.

In order to maintain transparency in the determination process, Council engaged Connell Wagner to undertake an independent determination of the Proposal. This included developing recommendations as considered appropriate for the Proposal to proceed. This determination report will assist Council in its consideration of the Proposal, thereby fulfilling its obligations under the EP&A Act and the EP&A Regulation.

This determination report has the following specific objectives:

- to provide an overview of the statutory approvals process applicable to the determination of the Proposal (Section 1.3);
- to provide an overview of the Proposal as described in the EIS and the REF (Section 2);
- to consider the proposed modification (ie the deferral of specific components) to the Proposal both in relation to statutory requirements and to any potential change in conclusions drawn in the EIS regarding environmental impacts (Section 2.5);
- to provide consideration of the manner in which Council proposes to address the issues raised in representations (submissions) (Section 4);
- to document and consider additional information which has bearing on the determination of the Proposal (Section 4); and
- to make recommendations as considered appropriate for adoption by Council should it determine to proceed with the Proposal (Section 5).

1.3 Statutory approvals process

The statutory requirements relating to the proposed works are discussed in Chapter 4 of the EIS and Chapter 2 of the REF. These are summarised as follows.

1.3.1 *Byron Local Environmental Plan 1998*

The Proposal falls within the Byron local government area which is governed by the *Byron Local Environmental Plan 1998* (LEP). The EIS indicates that the majority of works related to the Proposal would not require development consent through the effect of clause 11(1) of State environmental planning policy 4—*Development Without Consent and Miscellaneous Exempt and Complying Development* (SEPP 4). This allows certain types of development comprising including water storage dams and sewage treatment works undertaken by or on behalf of a public authority (public utility undertakings) without the need to obtain consent.

The savings provision of the Byron LEP (clause 62) also provides for public utility undertakings to be undertaken without the need for consent.

Development consent would, however, be required for:

- the Mullumbimby Showgrounds reuse area; and
- irrigation on the golf course, playing fields and Council-owned land in south Mullumbimby.

As previously noted, the EIS identified that the proposed effluent polishing plant would require development consent but Council subsequently determined that it should be assessed under Part 5 of the EP&A Act. The plant would be located on land zoned 1(b1) *Agricultural Protection*. All permissible land uses other than agriculture, bushfire hazard protection and forestry require development consent. The plant would not be prohibited development.

The REF indicates that the proposed effluent polishing plant would comprise part of the sewage treatment works. As such, development consent would not be required through the effect of clause 11(1) of SEPP 4.

1.3.2 *Regional environmental plans*

The EIS identifies that the Proposal is located within the area covered by the *North Coast Regional Environmental Plan* (REP). The REP does not affect the statutory approval process applicable to the Proposal. The REP specifies a range of matters to be taken into consideration by a consent authority or by concurrence authorities with respect to the granting of development consent.

The REP provides guidance on a variety of issues that government agencies are required to consider when determining Development Applications or considering amending LEPs. The stated objectives of the REP relate to agricultural resources, catchment management, forestry, coastal development (including the provision of utility services), the natural environment, heritage and planning issues. The Proposal is consistent with the objectives of the REP.

1.3.3 *State environmental planning policies*

The EIS identifies a number of State environmental planning policies (SEPPs) applicable to the Proposal.

SEPP No 4—Development without Consent and Miscellaneous Exempt and Complying Development

For certain types of development and provided development consent would ordinarily be required, SEPP 4 provides for those types of development to be undertaken without the need to obtain consent. Clause 11(1) of SEPP 4 states:

Where, in the absence of this clause, development, being the construction of water storage dams, sewage treatment works or electricity transmission lines by or on behalf of a public authority may be carried out only with development consent being obtained therefore, that development may be carried out without that consent.

The majority of the proposed works fall under the category of 'sewage treatment works'. Accordingly, development consent is not required, notwithstanding the provisions of any other planning instrument.

SEPP No 14–Coastal Wetlands

SEPP 14 applies to lands mapped as Coastal Wetlands (SEPP 14 wetlands). This SEPP provides a range of measures aimed at ensuring that coastal wetlands are preserved and protected in the environmental and economic interests of the State.

The EIS indicates that the Proposal would involve construction of a pipeline in close proximity to a SEPP 14 wetland and that this would also involve directional drilling under another SEPP 14 wetland. The Proposal would not, however, involve any works within a SEPP 14 wetland as defined in clause 7 of SEPP 14.

SEPP No 26–Littoral Rainforest

SEPP 26 aims to protect littoral rainforests. The policy requires that the likely effects of proposed activities in these rainforest areas are thoroughly considered in an EIS. The policy applies to the 'core' areas of littoral rainforest as well as 100 m wide 'buffer' areas surrounding those core areas except for residential land and areas to which SEPP 14 applies.

The EIS identifies a small area of SEPP 26 rainforest adjacent to Ocean Shores. This would not be affected by the Proposal.

SEPP No 33–Hazardous and Offensive Development

SEPP 33 provides definitions for 'hazardous industry', 'hazardous storage establishment', 'offensive industry' and 'offensive storage establishment'. Any application to carry out a potentially hazardous or potentially offensive development must be advertised for public comment, and applications to carry out potentially hazardous development must be supported by a screening level hazard analysis.

The EIS indicates that the new STP would require the use of chemicals in the treatment process. It indicates that in view of the small quantities of chemicals and the safety features incorporated into the plant's design, preparation of a preliminary hazard analysis under the SEPP would not be required.

1.3.4 Assessment Under Part 5 of the EP&A Act 1979

Development consent is not required for the Proposal (with the exceptions noted) through the effect of clause 2 of Schedule 1 to the EP&A Model Provisions and the Byron LEP. As such, the provisions of Part 5 of the EP&A Act are applicable. Under Part 5, the Proposal is defined as an 'activity'. The statutory basis for the assessment being conducted under Part 5 of the Act has been reviewed in preparation of this report.

Pursuant to Section 111 of the EP&A Act, a determining authority must 'examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity'. The proposed activity was assessed as having a potentially significant impact. Accordingly, it was determined that pursuant to Section 112 of the EP&A Act, an EIS was required to be prepared.

The EIS assessed the impact of the proposed activity and found that the activity would not have a major negative impact on the environment subject to the incorporation of the appropriate

mitigation measures. Rather, there would be an enhancement of environmental values notably on the ecological values and health of the Brunswick River estuary.

The EIS also indicates that there would not be a significant impact on threatened species, ecological communities, populations or their habitats and as such, a species impact statement (SIS) was not required. It is also noted that the DEC representation concurred with the EIS in this regard. Accordingly, it is accepted that the Proposal would not significantly affect threatened flora and/or fauna species and that an SIS would not be required.

Clause 228 of the EP&A regulation identifies certain matters which a proponent of an activity must take into account when considering the impact of the activity on the environment. Clause 228 has effect where an EIS has been prepared for a proposed activity and where no guidelines are in force in relation to the activity. The relevant guideline in this case is the EIS Guideline *Sewerage Systems* published by the then Department of Urban Affairs and Planning in September 1996.

As part of the determination process, Council invited public comment on the proposed activity, including its environmental impacts. It is noted that the EIS provides an account of the development of the Proposal including consultation undertaken with stakeholders. Council's response to issues raised is documented in a representations report prepared by Council's EIS consultant Parsons Brinckerhoff.

Section 112(4) of the EP&A Act provides for a determining authority, where it is also the proponent of the activity, to either:

- modify the activity so as to eliminate or reduce the detrimental effects of the activity on the environment; or
- refrain from undertaking the activity.

This section of the Act applies where the approval of the Minister for Planning is not required, which is the case for this project.

Section 112(5) of the EP&A Act precludes Council attaching any conditions to the approval should it determine to proceed with the activity. As such, all necessary requirements which would otherwise be addressed through such conditions should be explicitly incorporated into the description of the activity.

In making its determination (ie its decision on whether to approve the project in terms of its decision-making role under Part 5 of the EP&A Act), it is therefore anticipated that Council would make its decision based on:

- the assessment undertaken for the EIS and REF together with the identified impact mitigation measures;
- consideration of the substantive issues raised in representations and as documented in the representations report; and
- recommendations made in this determination report.

Should Council approve the project, it would be required to comply with all commitments made in the EIS, REF and representations report. The recommendations made in this determination report would also have effect and be binding on Council with respect to compliance. These would have a similar effect to conditions attached to a development consent.

1.3.5 Commonwealth legislative requirements

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) specifies that approval from the Commonwealth Minister for the Environment and Heritage

is required if a proposal is likely to have a significant effect on a matter of national environmental significance (an NES matter). The EPBC Act currently identifies the following NES matters:

- World Heritage properties;
- National Heritage places;
- Ramsar wetlands
- listed threatened species and ecological communities;
- listed migratory species;
- Commonwealth marine areas; and
- nuclear actions.

The Act also provides that approval from the Commonwealth Minister for the Environment and Heritage is required for:

- an action on Commonwealth land that has, will have, or is likely to have a significant impact on the environment;
- an action outside Commonwealth land that has, will have or is likely to have a significant impact on the environment on Commonwealth land; or
- an action undertaken by the Commonwealth which has, will have or is likely to have a significant impact on the environment anywhere in the world.

Section 4.2.1 of the EIS considers the requirements of the EPBC Act by way of undertaking a review of NES matters. The EIS identifies that there would be no effect on any NES matter as a result of the proposed works. As such, the approval of the Minister for the Environment and Heritage would not be required.

1.4 Structure of the determination report

This determination report has been structured as follows:

- Section 1 provides a discussion of the purpose of the report and the applicable statutory approvals process.
- Section 2 provides a description of the Proposal as provided in the EIS and REF. This includes clarification of some information provided in an EIS table. This section also considers the proposed modifications to the Proposal (the deferral of certain components) and whether these materially alter the conclusions drawn in the EIS with respect to the environmental impacts of the Proposal.
- Section 3 summarises the representations received following the public exhibition of the EIS and identifies the key issues for consideration in this determination report.
- Section 4 contains a detailed consideration of the substantive issues associated with the Proposal.
- Section 5 provides the conclusions and recommendations arising from the consideration of the assessment undertaken for the Proposal.

2. Description of the Proposal

2.1 Need and objectives

The need for the Proposal as stated in the EIS is based upon:

- both Mullumbimby and Brunswick Heads STPs being subject to loadings that approach, and on occasions exceed, their design capacity due to population growth in their respective sewerage catchments;
- both STPs nearing the end of their useful operational lives; and
- nutrient and pollutant loads from both STPs contributing to environmental stress on the Brunswick River estuary.

The objectives of the Proposal as stated in the EIS are to:

- Minimise the environmental impacts of effluent releases on the Brunswick River estuary. The Proposal must accommodate growth in the area and simultaneously reduce the quantity and effect of effluent releases to the Brunswick River estuary, thereby improving the long term ecological health of the estuary.
- Maximise effluent and biosolids reuse opportunities including commitment to the development of a sustainable effluent and biosolids reuse schemes.
- Develop a sewage management scheme to cope with projected population growth and increased tourism in the area until 2025 including the development of sewage transfer system and treatment plant capacity that is able to provide reliable sewerage services to the permanent and tourism-based populations of Mullumbimby and Brunswick Heads.

2.2 Consequences of not proceeding

The EIS indicates that if the works are not undertaken, the following is likely to occur:

- a continuing decline in operational reliability with consequent impacts on receiving water quality;
- further deterioration in the health of the Brunswick River estuary;
- an increased risk to public health; and
- continuation of the moratorium on development in the Brunswick area.

The EIS concludes that given that current effluent discharges are having an adverse and unsustainable environmental impact, particularly on the ecology of the Brunswick River estuary, the 'do nothing' option is not acceptable.

2.3 Proposed works as described in the EIS

The preferred option comprises the following main components:

Sewage transfer system

A sewage transfer system for the transfer of flows from the Mullumbimby and Brunswick Heads sewerage catchments to the proposed Mullumbimby-Brunswick Heads STP. Works would involve the installation of two major sewage transfer pipelines, two minor sewerage connection pipelines, sewage pumping station emergency storage upgrades and pump capacity upgrades.

Sewage treatment facilities

Provision of a new physical, chemical and biological treatment plant, known as Mullumbimby-Brunswick Heads STP, with tertiary treatment including disinfection and a 10 hectare constructed wetland located adjacent to the new STP and accessed from Vallances Road.

Treated effluent would be reused for irrigation with any surplus effluent released to the Brunswick River estuary via a dedicated pipeline and diffuser arrangement. Biosolids produced at the new STP would be stabilised to Grade B and trucked from the site to nearby tea-tree, cane or dairy farms.

The proposed decommissioning of the existing Mullumbimby and Brunswick Heads STPs would include the following tasks:

- disconnection of the STPs from the sewerage systems;
- shutdown of the treatment processes;
- removal of all sludge, chemical stores and other materials from the STPs;
- disconnection of power from the plants and making all parts of the STPs safe; and
- securing the sites against unauthorised entry.

The Proposal excludes any works related to demolition or remediation of the existing STP sites. These works would be subject to a separate assessment following determination of the ultimate use of these sites.

Stage 1 effluent reuse scheme

This would comprise effluent transfer mains from Mullumbimby-Brunswick Heads STP to effluent storage dams and proposed reuse sites at Main Arm, south Mullumbimby, Mullumbimby Showground (treated effluent would also be reused at the STP site). A small effluent polishing plant would treat effluent that would be used to irrigate the golf course and playing fields in south Mullumbimby. The proposed quality of this effluent would meet urban non-potable water quality standards. The Proposal also includes an effluent transfer pipeline from Ocean Shores STP to Mullumbimby-Brunswick Heads STP to provide additional effluent during peak demand.

2.4 Clarification to EIS – amended effluent quality parameters

Table 3.7 in the EIS details the expected effluent quality from the proposed Mullumbimby-Brunswick Heads STP which would be designed to meet the Accepted Modern Technology (AMT) standard stipulated by the DEC with the exception of total phosphorus which would be achieved downstream of the proposed constructed wetland at the point of release to the Brunswick River.

Subsequent to the exhibition of the EIS, Council requested its EIS consultant Parsons Brinckerhoff provide clarification on the specific effluent quality objectives that Mullumbimby-Brunswick Heads STP and effluent release point at the Brunswick River would need to achieve to comply with the objectives and conclusions of the EIS. The response provided is attached to this report as Appendix A. Tables 3.7(a) and 3.7(b) which replace Table 3.7 in the EIS have been reproduced in this report as Tables 1 and 2 respectively (on following page).

The revision of Table 3.7 also addresses an error related to the value provided for total nitrogen with regard to the expected effluent quality from the proposed STP and constructed wetland.

Table 1 Expected effluent quality from proposed Mullumbimby-Brunswick Heads STP (excluding constructed wetland)

Parameter	Accepted Modern Technology standard (90 th percentile)	Proposed Mullumbimby-Brunswick Heads STP (90 th percentile)
Biological oxygen demand (mg/L)	10	<10
Suspended solids (mg/L)	15	<15
Total nitrogen (mg/L)	10	<10
Ammonia (mg/L)	2	<2
Total phosphorus (mg/L)	0.3	<0.5
Oil and grease (mg/L)	2	<2
pH	6.5 – 8.5	6.5 – 8.5
Faecal coliforms (cfu/100 mL)	200	<150

Table 2 Expected effluent quality at point of release to the Brunswick River

Parameter	Accepted Modern Technology standard (90 th percentile)	Effluent release point at Brunswick River (90 th percentile)
Biological oxygen demand (mg/L)	10	<10
Suspended solids (mg/L)	15	<15
Total nitrogen (mg/L)	10	<10
Ammonia (mg/L)	2	<2
Dissolved inorganic nitrogen (mg/L)	Not specified	<3
Total phosphorus (mg/L)	0.3	<0.3
Oil and grease (mg/L)	2	<2
pH	6.5 – 8.5	6.5 – 8.5
Faecal coliforms (cfu/100 mL)	200	<14

2.5 Proposed modifications to the Proposal

Subsequent to exhibition of the EIS, Council now proposes to make the following modifications to the Proposal:

- Alteration of pipeline routes to minimise impacts on the property 'Laurel Park'.
- Inclusion of the treated effluent polishing plant (in the location known locally as the 'horse paddock') as part of the Proposal subject to assessment under Part 5 of the EP&A Act.
- Deferral of certain components relating to upgrading of pumping stations and to the Stage 1 effluent reuse scheme.

These modifications are considered as follows.

2.5.1 Pipeline route change

During exhibition of the EIS, Council received a representation objecting to the routes of pipelines 1B and 1C which would have affected property currently classified as 'Regionally

Significant Farmland' under the *Northern Rivers Farmland Protection and Mapping Project*. Several alternative routes (designated 1C/1D and 2C/2D) were investigated.

Routes 1C and 2C were subsequently selected as the preferred routes on the basis that they seemed to address the affected landowner's concerns without significantly altering the environmental impacts of the two pipelines when compared to pipeline routes 1B and 2B.

This evaluation process is documented in the representations report which includes consideration of the altered environmental impacts. It was concluded that there would be an incremental positive impact in relation to terrestrial ecology (removal of some camphor laurels) and avoidance of impacts on the previously affected property. The conclusions provided in this regard are considered reasonable.

2.5.2 Inclusion of treated effluent polishing plant under Part 5 approval process

The EIS indicates that an integral component of the Proposal is reuse of treated effluent, principally for irrigation. The collective works related to reuse are termed the 'Stage 1 effluent reuse scheme. One component is an effluent polishing plant which forms part of the proposed South Mullumbimby effluent reuse scheme, in turn part of the Brunswick Area Sewerage Augmentation Project. As noted previously in this report, the EIS indicated that this would be subject to assessment under Part 4 of the EP&A Act but subsequently Council determined it that development consent would not be required and it should be assessed under Part 5.

An REF has been prepared by Parsons Brinckerhoff on behalf of Council, DEUS and the Department of Commerce to establish the statutory basis for determination under Part 5 and to assess the impacts associated with construction and operation of the plant. This REF has been examined and considered in preparation of this determination report.

It is noted that the REF includes consideration of:

- statutory matters including relevant State and Commonwealth legislation;
- the need for the plant;
- alternatives including the 'do nothing' option;
- impacts associated with construction and operation of the plant, including cumulative effects of operation in conjunction with the overall Brunswick Area Sewerage Augmentation Project; and
- mitigation and management of environmental impacts.

A copy of the REF is provided as Appendix B to this report.

2.5.3 Deferral of certain works to future date

Subsequent to the exhibition of the EIS, Council and DEUS undertook a review of the project costs which identified a significant increase in project costs (refer Section 1.1). On the basis of this review, Council proposes to defer construction of the following works:

- capacity upgrades and/or emergency storage additions to SPS 2002, 2003, 2004, 2005, 2007, 2008 and 2010;
- Vallances Road effluent storage (60 ML);
- South Mullumbimby effluent pipeline (pipeline No. 5);
- Vallances Road irrigation area;
- South Mullumbimby effluent polishing plant;
- Ocean Shores effluent transfer pipeline (pipeline No. 3);

- South Mullumbimby effluent storage; and
- South Mullumbimby irrigation area.

This represents a departure from the Proposal as described and assessed in the EIS. As was noted in Section 1.3.4 of this report, Section 112(4) of the EP&A Act makes provision for a determining authority where it is the proponent of an activity to modify the proposed activity to eliminate or reduce detrimental effects of the activity on the environment. It is noted that 'environment' as defined in Section 4 of the EP&A Act

includes all aspects of the surroundings of humans, whether affecting and humans as an individual or in his or her social groupings.

This is taken to include economic and social dimensions as well as the biophysical environment. Council is of the view that construction of the Proposal in its entirety would have a significant detrimental impact on ratepayers. The basis for the proposed modification is considered to be consistent with Section 112(4) of the EP&A Act.

The above notwithstanding, the deferral of certain works has the potential to alter conclusions drawn in the EIS regarding the nature and magnitude of impacts associated with the development. Of particular concern is whether the proposed deferral of works would result in impacts greater or significantly different from those identified and assessed in the EIS.

In preparing this determination report, Connell Wagner therefore requested Council provide suitable documentary evidence that the proposed deferral of the identified works would not materially affect:

- the stated objectives of the Proposal;
- the conclusions drawn in the EIS regarding the nature of the environmental impacts; and
- the identified impact mitigation measures.

In this regard, Council has provided the following:

- A letter from Council's Manager Strategic Planning Water to its EIS consultant Parsons Brinckerhoff, dated 17 October 2006, outlining how the deferral of works would be consistent with the objectives and conclusions of the EIS. The letter also requested Parsons Brinckerhoff review the Proposal's implementation program and provide confirmation that the objectives and conclusions of the EIS would still be achieved.
- A response from Parsons Brinckerhoff confirming that the objectives and conclusions of the EIS would still be achieved. The response also identified a number of matters for periodic review to ensure satisfactory ongoing performance of the Proposal.

Copies of these responses are provided in Appendix C to this report.

This information has been reviewed and it is considered that, on balance, the identified works could be deferred without compromising the stated objectives of the Proposal and without significant detrimental environmental impacts.

The matters raised in Parsons Brinckerhoff's response with regard to maintaining satisfactory ongoing performance of the scheme have been incorporated into specific recommendations for the Proposal (refer Section 5 of this report).

In October 2006, Council consulted with various public authorities in relation to the matter of deferral of certain scheme components. At the time of finalisation of this report, only one response had been received, this being from the DEC. The response indicated that the DEC acknowledged the financial constraints Council was facing.

It also indicated that of the deferred components, Council should give priority to the Ocean Shores effluent transfer pipeline and to the Vallances Road storage as the DEC considered these would give the greatest benefit to improving water quality in the Brunswick River estuary. In regard to this matter, the DEC recommended that in addition to inviting tenders for the STP, Council also invite tenders for the Ocean Shores effluent transfer pipeline and the Vallances Road storage. In the event that there sufficient funds were available following letting of the contract for the STP, Council should consider proceeding with construction of either or both of these works. This is supported and is reflected in Recommendation 4 (refer Chapter 5).

The DEC response also indicated support for Council's plan to prepare an effluent management strategy for the Brunswick area. It further noted the DEC's intention to incorporate preparation and implementation of the strategy into the scheme's environment protection licence. The preparation and implementation of the strategy is reflected in Recommendations 22 and 23.

3. Summary of Representations

3.1 Synopsis of representations received

A representations report was prepared by Parsons Brinckerhoff on behalf of Council, DEUS and the Department of Commerce. This outlines all written representations (submissions) received (16 in total) from government agencies and other interested parties in relation to the public exhibition of the EIS. Five representations were made by government agencies, three by other public authorities, one each from an interest group and an industry association, and the remainder from individual community members.

It is noted that a number of representations were received outside of the exhibition period. While Council is not obliged to consider these in its determination of the Proposal, it has chosen to do so, presumably in order to consider as wide a range of interests as possible.

Table 2.1 of the report summarises the issues raised by each respondent in their representation and identifies the section of the EIS where the issue was considered together with the section of the representations report where the response to the issue is given.

The representations report also included a review of the draft *Brunswick Estuary Management Plan*. The purpose of the review was to identify whether the draft plan had any implications for Council's determination of the Proposal.

3.2 Issues raised in representations

Representations were received from:

- Department of Lands
- Department of Natural Resources
- Department of Primary Industries
- Australian Rail Track Corporation
- Ocean Watch Australia
- Country Energy
- North Coast Area Health Service
- Department of Environment and Conservation
- Brunswick River Oyster Growers
- Duncan Dey
- Susanne and John Holmes
- Phil and JoAnn Johnson
- Marc and Angie Heyning
- Gary Scott
- Rex Harris (Retera Pty Ltd)
- Department of Energy, Utilities and Sustainability

Issues have been summarised and addressed on an individual basis rather than by issue type in view of the relatively small number of representations received. These have been reviewed as part of this determination report to ensure that all issues provided within representations

have been identified and documented. The following is a summary of the issues raised in each representation. It should be noted that this does not necessarily match exactly with the list of issues provided in Council's representations report.

3.2.1 Department of Lands

- All six preferred and non-preferred pipeline routes identified in the EIS affect Crown land (public roads and waterways including the Brunswick River and all of its tributaries) under the administration of DPI. The Department would require Council to acquire easements over the affected Crown land under Section 88b of the *Conveyancing Act 1919*.
- Although situated on freehold land, the diffuser pipe outlet will also require authorisation via acquisition of an easement over the bed of the Brunswick River.
- The interim effluent transfer pipeline will need to be authorised via an easement or licence before construction commences.

3.2.2 Department of Natural Resources

- Licenses will be required prior to drilling including groundwater monitoring bore licences at each major effluent irrigation site under the *Water Act 1912* and groundwater dewatering licences under Part V of the *Water Act 1912*.
- Department concurs with the proposed groundwater monitoring program as part of the Operational Environmental Management Plan. The plan should include contingency procedures that relate to groundwater quality trigger levels to allow problems to be rectified quickly if they occur.
- At least one monitoring bore(s) should be installed down gradient of each of the effluent storage dams and the constructed wetland.
- Specific details (as listed in the DNR representation) are to be provided with any dewatering license application.
- A groundwater management plan should be developed for each major reuse site.
- Any wet weather storage should be sealed so that it does not impact on the underlying aquifer (in accordance with DEC guidelines).

3.2.3 Department of Primary Industries

- EIS does not make reference to the *Northern Rivers Farmland Protection and Mapping Project*.
- No obvious discussion of non-potable domestic reuse of treated effluent as part of an integrated water management strategy.
- Reuse of treated effluent within agricultural and recreational land uses is supported.
- A survey of the pipeline route and work sites for the presence of weeds, particularly noxious weeds, should be carried out prior to commencement of work (minimise weeds spreading via seed distribution on machinery). Depending on the findings of the survey, consultation with the local weeds officer should occur with regard to minimising weed spread.
- Soil and groundwater quality monitoring programs are supported.
- DPI has an interest in any works through or immediately adjacent to current or former dip sites.
- The Proposal raises no notable or obvious issues for the mineral resource and extractive industries interests of NSW DPI.

Issues raised by DPI's Aquatic Habitat Protection Unit

- Need for the augmentation and appreciate the subsequent improvements in fish habitat

likely to result from the proposal recognised.

- Clarification required to distinguish between rehabilitation of the two oxbow lakes on the Brunswick River and removal of Mullumbimby Weir No. 1 as confusion exists within the text of the EIS.
- The two oxbow lakes at the Vallances Road site are quite degraded but have high recovery potential. The AHPU is very supportive of Council's efforts to incorporate rehabilitation of these important areas of fish habitat as a component of the development. Preparation and adherence to a plan, endorsed by AHPU for appropriate management of fish habitat values of the site is an important part of the future management of the site.
- Council recently submitted a funding application to the Recreational Fishing Saltwater Trust and is likely to facilitate removal of a barrier to tidal inundation depicted in photo 6 of the Flora and Fauna Assessment Report within the Appendix, a key part of rehabilitating the western oxbow lake. Another component of improving the ecologically functioning of these important fish habitat areas will be the development and appropriate management of a suitable buffer of endemic native vegetation between the site and Brunswick.
- To best ensure connectivity of the system to the Brunswick River, reduce the incidents of weed incursion and potentially pugging of wetland vegetation by stock; the natural wetland area of the eastern oxbow should extend to the naturally vegetated buffer on both sides of the lake Figure 3.5.
- Mullumbimby Weir No. 1 is located on Mullumbimby Creek and is positioned approximately adjacent to the Mullumbimby Golf Course. The dilapidated weir will become redundant once a secure supply of treated effluent for irrigation is supplied to the Mullumbimby Golf Course. Consequently removal of the weir will be able to commence, making available kilometres of upstream habitat for fish. Some approvals for the weir removal are already in place.
- DPI does not support the decision to trench the watercourse crossing through the minor embayment as part of Route 3. If it is not possible to take the preferred 3C option and avoid crossing waters of the Cape Byron Marine Park and adjacent aquatic habitats, underboring from a suitable distance will avoid complications associated with timing the works for neap tides. Finally, the trenching option presently proposed within the EIS would require concurrence from the Ministers responsible for management of the Cape Byron Marine Park and hence a more detailed assessment of the potential impacts.
- Permits under Sections 198-202 (dredge and reclamation activities) and Section 205 (harm to marine vegetation) of the *Fisheries Management Act 1994* would need to be obtained prior to commencement of the works associated with installation of pipelines and diffusers or other components that require digging or filling activities on waterland or harm to marine vegetation.
- The watercourse crossing on Route 3 that intersects part of an embayment on the Brunswick River near the Ocean Shores STP be completed using underboring techniques so as to avoid damaging aquatic habitats within and adjacent to the Cape Byron Marine Park.
- A plan detailing aquatic habitat rehabilitation works at the Vallances Road site, including removal of the road crossing depicted in photo 6 of the Flora and Fauna Assessment Report within the Appendix should be developed to the satisfaction of the Senior Fisheries Conservation Manager (North).
- Removal of the unlicensed weir on Mullumbimby Creek adjacent to the Golf Course be undertaken within three months of the Mullumbimby Golf Course being connected to effluent reuse so as to improve fish passage in Mullumbimby Creek.
- A soil and water management plan should be developed to the satisfaction of the Senior Fisheries Conservation Manager (North) for aspects of the development to minimise impacts on aquatic habitats during the construction phases of the development.

3.2.4 Australian Rail Track Corporation

- A Site Management Plan should be lodged with the ARTC that contains reference to removal of acid sulphate/potential acid sulphate soils.
- The ARTC does not grant consent for the storage or temporary store of any contaminated material on rail relevant areas.

3.2.5 Ocean Watch Australia

- Commends the Council on the proposal, specifically the development of an effluent reuse scheme to maximise the opportunity for beneficial reuse of effluent and ensuring sufficient capacity of the STP for peak tourists loads and future development.
- Sees benefits including the improvement of water quality potentially to the point where commercial fishing and oyster farming may be permitted in the Brunswick River estuary.
- Is concerned about the 4007, 4009 and 4010 pumping stations where the capacity for storage is 'unknown'. Adequate storage is required in the event of a power outage and should be investigated.
- Is encouraged to see the Proposal includes the installation of telemetry systems to monitor the status of each pump station. However, it is crucial that Council has an adequate emergency response routine and asset maintenance to prevent raw sewage spills into the receiving waters.
- The potential for wet weather storage facility needs to be investigated. The facility would store any wet weather overflows and then pump these back to the STP for proper treatment before discharge into the constructed wetland. This would result in superior protection of aquatic environment opposing the current Proposal to simply discharge wet weather flows directly into the constructed wetland.
- A communication system between the Council, DPI's AHPU, DEC and possibly NSW Health needs to be established for the advent of any system failure.
- DPI needs to be consulted regarding mitigation measures and contingency plans for the construction and operation of the STP which has potential to impact on aquatic habitat, fish, shell fish and recreational fishing.
- Alum will be added to the bioreactor . The resulting by-product, if it is in the form of a biosolid, is considered a hazardous waste. Correct disposal measure therefore needs to be put in place.
- The total phosphorus (TP) following treatment through the constructed wetland will meet the DEC Accepted Modern Technology standard (AMTS) but all other effluent AMTS are met upon discharge. OWA recommends further investigation of additional or alternative means of treatment such that the standards for TP are met upon discharge of effluent to the wetlands as opposed to hoping that the wetland treatment will suffice. This is particularly important as the nature of the dispersion and dilution of the effluent plume has not been accurately modeled.
- Modeling of the dispersion and dilution of the plume has not been completed (Concept design for the diffuser has not been finalised). Accurate modeling of the dispersion and dilution of the plume is required to determine the nature of dispersion or potential accumulation of pathogens, faecal coliform or nutrients.

3.2.6 Country Energy

- Electrical infrastructure and electrical easements to supply the new sewage treatment plant are not required at this stage.
- Further information is required on the expected electrical connected capacity at the new plant.

3.2.7 North Coast Area Health Service

- Council needs to ensure adequate planning controls are in place to ensure that dwellings are not to be erected closer than the existing 850 m to the plant or minimum 400 m as per Government policy.
- A management plan in respect to the commencement and operation of irrigation of effluent should ensure that occupational health and safety issues are outlined. The plan should also designate who will be responsible for deciding when it is appropriate or otherwise to commence irrigation and monitoring of the irrigation.
- The arrangement for the long-term disposal of biosolids needs to be addressed.
- Reuse percentage for parklands should be clarified as should the impact of release of effluent to the river system if efficient reuse opportunities are not available.
- Clear statements should be incorporated in the document outlining responses and including time lines to be given to the various stakeholders eg oyster growers, fishers and public should water quality not meet the required standards.

3.2.8 Department of Environment and Conservation

- Design flows have been based on assumed gains from decreases in flow volume to be achieved by the sewer rehabilitation program currently being undertaken by Council. This should be reviewed against actual gains achieved by this program and modified if necessary.
- Note that no final decision on whether to construct a continuous or intermittent process STP. With a continuous STP, wet weather flows greater than $3 \times \text{ADWF}$ will bypass the main reactor receiving full treatment in the primary treatment infrastructure and the final clarifiers. This effluent will then be stored before passing through the wetlands, while an intermittent STP will fully treat flows up to $7 \times \text{ADWF}$.
- Note that the EIS indicates that the STP may not be able to consistently deliver effluent quality compliant with AMTS phosphorus levels although the EIS predicts it should be achieved before discharge to river after the effluent has passed through the wetland system.
- In line with Council's request, DEC will apply the approach adopted for West Byron to the new STP, ie discharge limits for TP will apply upstream of the wetland (0.5 mg/L) and downstream (0.3 mg/L).
- Note that the EIS has allowed for the contingency of incorporating tertiary filtration if the current proposal fails to comply with the discharge limits or does not achieve the projected environmental gains. Council will need to ensure that there is a clear decision making process including relevant timeframes and monitoring requirements/results which will trigger the construction of the tertiary filtration system.
- EIS predicts that up to an annual average of 80% effluent reuse will be achieved as a result of the Stage 1 effluent reuse proposal. It is unclear from the EIS as to the relative percentages of reuse that will be replacing existing extractions and those that will be used for 'new' activities eg irrigation land not previously under irrigation.
- DEC considers it important that Council consider a preferred reuse hierarchy which places higher priority on reuse options which replace demand on potable water supplies.
- Council should consider how the proposed Stage 2 reuse can move progressively up the hierarchy.
- Construction of a pipeline to transfer treated effluent from Ocean Shores STP during dry times along with significant storages will assist in ensuring the consistency of supply of treated effluent to users.
- To ensure ongoing sustainability of reuse it is critical that this is subject to suitable controls.

Council will need to ensure that appropriate mechanisms are in place to ensure sustainable use of treated effluent on private lands.

- Adequacy of mitigation of environmental impacts will rely heavily on the development and implementation of a range of environmental management plans and sub-plans. The plans will need to reflect the needs of the various user groups and are both robust and flexible enough to achieve acceptable environmental performance. The use of an adaptive management model to achieve this is supported.
- Council should take whatever steps necessary to ensure that an 800 metre separation distance between the STP and residences buffer is retained or that it is demonstrated that and lesser buffer will be adequate to protect receivers.
- Information proposed in relation to construction noise should be reflected in a Construction Noise Management Protocol to be submitted to the DEC prior to the commencement of works. The Protocol should address, as a minimum, the matters listed in the DEC representation.
- Predicted operational noise levels will be reflected in the Environment Protection Licence for the premises. We note and agree with the comment that pumping stations noise should be considered further during the detailed design stage, especially with regard to ensuring that potential night time noise impacts are satisfactorily mitigated.
- DEC interests with respect to flora and fauna appear to have been adequately addressed in the EIS. Prior to determining the Proposal, Council should be satisfied that the matters listed in the DEC representation relating to flora and fauna and to Aboriginal heritage have been adequately considered.
- Approval may be required under the EPBC Act if the Proposal affects any species requiring consideration under this Act.
- Mitigation and safeguard measures outlined in Section 12.10 of the EIS relating to Aboriginal heritage are generally supported.
- Should sub-surface excavation be required then a licence under Section 87 of the *National Parks and Wildlife Act 1974* will be required.

3.2.9 Brunswick River Oyster Growers

- Due to effluent and raw sewage releases into the Brunswick River, selling of oysters for human consumption has been prohibited for seven years which adversely affects livelihoods and living standards of oyster farmers.
- Working on a river should not be an occupational health and safety issue.
- Heritage aspect of oyster farming on the river should be protected.
- Propose that an ocean outfall be adopted as the preferred option instead of releasing effluent into the river.
- Concerned that in times of emergency, effluent and raw sewage would impact on river health.

3.2.10 Duncan Dey

- Unable to find commitment by Council to ensure the Mullumbimby catchment system will have a PWWF:ADWF no greater than 7.
- Concerned with adoption of 7 × ADWF for sewage transport and 5 × ADWF for STP treatment. Steering Committee believes higher figures should be adopted.
- Information gaps from data logger used for evaluation of short term options.
- Committee stresses that rectification of inflow/infiltration must be a high priority.

3.2.11 Susanne and John Holmes

- Project will impact adversely on our land in several ways and will certainly devalue it. The pipe to be laid across the land to create an access easement, will severely burden the property and result in property value decrease. The easement will transect the land alienating one side from the other.
- Disturbance will be caused and loss of vegetation especially large mature trees. The proposed revegetation process is unlikely to be truly remedial as the access easement will need to be kept clear and the trees take many years to mature and the cattle will eat/trample planted seedlings. Aesthetically disturbing for many years.
- Privacy, noise, operational impact and all future use of the easement will be an invasion of privacy and amenity of our land. Once the easement is created, the owners feel they will have no control of the frequency or use of the easement. Loss of privacy as a result of this control loss as Council can come and go as they please. Unlikely to agree to Council as this is a burden to residents title.
- Impact on land use. Currently it is cattle grazing, however, the pipeline easement across a substantial portion of land will affect future use of land, namely a house site, internal road works, dams, agriculture, forestry, etc. Again a loss of land value.
- The project will negatively affect the land and result in substantial loss of value due to its impact on land use, private enjoyment, amenity, visual effect, noise and future potential.

3.2.12 Phil and JoAnn Johnson

- Oppose the pipeline crossing their property. The grassy track in EIS photograph that crosses their property is not an 'easement' as it is referred to.
- Their property is peaceful, quiet and this area of their property where the pipeline will be constructed will be disrupted from trucks and workers and will be an intrusion.
- Expect Council to offer compensation for access to construct the pipeline. The residents want the proposed route and written offer in writing.

3.2.13 Marc and Angle Heyning

- Agree with the preferred option as it would create the least disruption to existing properties, especially since much of the route is via railway easement or across property already owned by Council.

3.2.14 Gary Scott

- Value of telemetry system to provide useful information on overflows from the sewerage system.
- Inconsistencies between information provided by telemetry system and personal observations in relation to overflows from the sewerage system.
- Inadequacy of existing sewerage system to transport sewage to STP even in moderate wet weather periods.
- Lack of quantitative information regarding overflow volumes and utility of telemetry system to provide useful information on this.

3.2.15 Rex Harris (Retera Pty Ltd)

- Property would be impacted by pipeline 1B and 2B. Impacts regionally significant land Laurel Park is property classified by Northern Rivers Farmland Protection Project as Regionally Significant Land.
- Council has already identified optional routes identified as 1A and 2A, therefore, Council is obliged to use the alternative pipeline route 1A and 2A.

- The pipeline routes run directly through productive sugar cane crops.
- The pipeline routes run through the most valuable section of the whole property. This particular section is adjacent to the Brunswick River and considered to be 'Waterfront' or 'Riverfront'. A pipeline along this section of the property will completely destroy future development potential.
- No allowance has been made for the cost of easements through the property (representation identifies specific costs for consideration in relation to issue).
- The Brunswick Sewerage Augmentation Scheme can save \$438,000 plus the cost of easements of taxpayer's money by not routing the pipelines through the property.
- If route 1A and 2A are chosen then Council or Council contractors will not have to enter onto private agricultural cropping land to carry out maintenance works (eg fixing leaking pipes etc).
- The property is growing sugar cane crops in annual rotation and under quota with the NSW Sugar Milling Co-Operative Limited (Co-op). Any loss of supply to the Co-op would be detrimental to the future viability of the Co-op's mill at Condong and thus the future viability of other sugar cane growers in the Byron Shire.

3.2.16 Department of Energy, Utilities and Sustainability

- The EIS for the Brunswick Area Sewerage Augmentation has reviewed and all issues of concern to DEUS are considered to have been addressed.
- An approval in accordance with Section 60 of the *Local Government Act 1993* should be obtained from DEUS before construction commences.

4. Assessment of Issues

This section provides consideration of the issues raised in representations. This includes consideration of Council's proposed response as documented in its representations report. Recommendations are made for subsequent addressing of issues where it is considered Council's response to an issue(s) requires strengthening. These are provided at the end of each section following consideration of the issues raised in the respective representation. The number following each recommendation is a cross reference to the consolidated list of recommendations provided in Section 5 of this report.

4.1 Department of Lands

Issue

Affectation of Crown land and the need to obtain easements.

Consideration of issue

The representations report indicates that:

Council will acquire easements over any affected Crown road or waterways under Section 88b of the Conveyancing Act 1919. Once the actual pipeline routes have been finalised, Council will seek concurrence to the acquisition of easements for relevant pipeline route sections

It is considered that the response provided in the representations report is adequate. No specific recommendation is considered necessary in relation to this issue.

Issue

Need for authorisation for the diffuser pipe outlet through acquisition of an easement over the bed of the Brunswick River.

Consideration of issue

The representations report indicates that:

Council will obtain authorisation for the diffuser pipe outlet via acquisition of an easement over the bed of the Brunswick River prior to the commencement of the works.

It is considered that the response provided in the representations report is adequate. No specific recommendation is considered necessary in relation to this issue.

Issue

Authorisation for the interim effluent transfer pipeline through application for an easement or licence before construction commences.

Consideration of issue

The representations report indicates that:

The environmental impact assessment and determination of the proposed interim effluent transfer pipeline from Brunswick Heads STP to the effluent storage dam at Mullumbimby STP, ... is being undertaken by Council as a separate proposal and is not part of the scope of this EIS. As outlined in Table 3.10 of the EIS, this project is currently undergoing a separate planning approval process. Council would be seeking the necessary authorisations as part of the future implementation of this project.

It is considered that the response provided in the representations report is adequate. No specific recommendation is considered necessary in relation to this issue.

4.2 Department of Natural Resources

Issue

Licenses will be required prior to drilling including groundwater monitoring bore licences at each major effluent irrigation site under the *Water Act 1912* and groundwater dewatering licences under Part V of the *Water Act 1912*.

Consideration of issue:

This is considered to be principally advisory in nature. It is noted that there is already a statutory obligation on Council to obtain all required licences, permits and approvals for construction and operation of the Proposal. Accordingly, no specific recommendation is considered necessary in relation to this issue.

Issue

Department concurs with the proposed groundwater monitoring program as part of the operational environmental management plan. The plan should include contingency procedures that relate to groundwater quality trigger levels to allow problems to be rectified quickly if they occur.

Consideration of issue:

The representations report indicates that

Council confirms that the groundwater management plan which will be developed to manage the effluent re-use scheme will include appropriate trigger levels and contingency procedures to ensure potential issues associated with groundwater quality are identified and rectified promptly. It is proposed that these trigger levels would be developed in consultation with DNR.

The consultation with DNR in relation to identification of appropriate triggers to implement contingency procedures is supported. It is noted that this is only 'proposed' in the representations report. It is considered that a more definite commitment would be appropriate.

Issue

At least one monitoring bore(s) should be installed down gradient of each of the effluent storage dams and the constructed wetland.

Consideration of issue:

The representations report provides the following response:

... a total of twelve monitoring groundwater bores were installed at the Mullumbimby-Brunswick Heads STP site, golf course and Council-owned land adjacent to the playing fields for the purpose of establishing baseline groundwater conditions at each of these sites prior to the commencement of effluent irrigation activities.

The location of these bores was based on monitoring up-gradient and down-gradient groundwater conditions where possible. At this stage, no detailed information about groundwater gradients at each site is available to accurately ascertain whether additional bores are required to monitor up-gradient and down-gradient flows. Once final locations of dams and wetlands are known, a review of the existing groundwater monitoring network would be undertaken to ascertain whether additional groundwater monitoring bores are necessary. This review would likely occur during the development of the groundwater management plan for each re-use site, in consultation with DNR.

This response is considered adequate. The commitment to consultation with DNR in relation to this issue is supported. No specific recommendation is considered necessary in relation to this issue.

Issue

Specific details (as listed in the DNR representation) are to be provided with any dewatering license application.

Consideration of issue:

This issue is considered largely advisory in nature. The representations report indicates that if dewatering work is required, the construction contractor would be responsible for obtaining the necessary licences. While the transfer of this responsibility is accepted, it is considered, however, that there is an opportunity to minimise potential impacts on both the project program and the environment through the inclusion of this information (ie details to accompany a dewatering licence application) in the tender documentation.

Issue

A groundwater management plan should be developed for each major reuse site.

Consideration of issue:

The representations report reiterates information provided in the EIS that

... Council is committed to developing a groundwater management plan for each effluent re-use site as part of the operation environment management plan for Stage 1 of the proposed effluent re-use scheme. Each plan will include a site-specific groundwater monitoring program which would monitor groundwater conditions at each re-use site.

This response is considered adequate. No specific recommendation is considered necessary in relation to this issue.

Issue

Any wet weather storage should be sealed so that it does not impact on the underlying aquifer (in accordance with DEC guidelines).

Consideration of issue:

The representations report reiterates information provided in the EIS that

all proposed effluent storage dams would be lined with either a plastic membrane, clay liner or compacted in situ with locally sourced material to prevent or minimise leakage. The design and construction methods used would be in accordance with relevant Australian Standards and the DEC's Environmental guidelines: Use of effluent by irrigation (2004).

This response is considered adequate. No specific recommendation is considered necessary in relation to this issue. It is noted that these storages would comprise part of the overall sewerage system which would be operated under an environment protection licence administered by the DEC.

Recommendations

- Council should consult with DNR with regard to identification of appropriate triggers for inclusion in the groundwater management plan in relation to implementation of contingency procedures. (26)
- The tender documentation should include all relevant advisory information related to applications for any licences, permits and approvals required for construction of the Proposal. (2)

4.3 Department of Primary Industries

Issue

EIS does not make reference to the *Northern Rivers Farmland Protection and Mapping Project*.

Consideration of issue:

The representations report provides additional comment on this project including the following

The provisions and objective of the NRFPP have been considered and incorporated, in principle, into the proposal where possible. A modification to the proposal to further minimise potential impacts on regionally significant agricultural land has also been proposed and assessed as part of this report.

It also notes that

Although the proposed effluent storage pond associated with the Main Arm re-use site would be located within land that is identified by the NRFPP as regionally significant farmland, the proposed location of the storage would avoid or minimise the impact on the continued agricultural use of the rest of the land.

This response is considered adequate. No specific recommendation is considered necessary in relation to this issue.

Issue

No obvious discussion of non-potable domestic reuse of treated effluent as part of an integrated water management strategy.

Consideration of issue:

The representations report notes that the potential use of treated effluent for non-potable domestic reuse activities was considered as part of the Proposal presented in the EIS. It indicates that while

... no reticulation infrastructure would be provided as part of this proposal, the option of supplying existing and/or future residential developments in the area with effluent suitable for non-potable domestic purposes will be assessed and considered by Council following the implementation of the effluent re-use scheme at South Mullumbimby.

This response is considered adequate particularly in light of the proposed deferral of specific works (refer Section 2.5.3) due to significantly increased costs. No specific recommendation is considered necessary in relation to this issue.

Issue

A survey of the pipeline route and work sites for the presence of weeds, particularly noxious weeds, should be carried out prior to commencement of work (minimise weeds spreading via seed distribution on machinery). Depending on the findings of the survey, consultation with the local weeds officer should occur with regard to minimising weed spread.

Consideration of issue:

The representations report supports both these actions noting that while the EIS addressed the issue of ensuring that backfill soil was free of weeds, no specific reference was made to the removal of identified weeds. It indicates that

The nominated construction contractor will be required to develop a weed management plan prior to the commencement of all construction activities, particularly along pipeline routes. The development of the plan would include consultation with the local weeds officer to ensure appropriate measures are developed and implemented.

The requirement to develop this plan will be incorporated into the flora and fauna management section of the construction environmental management plan to be developed by the construction

contractor prior to the commencement of construction activities

This is considered adequate as the construction contractor would have the greatest control with regard to management of this issue. No specific recommendation is considered necessary in relation to this issue.

Issue

DPI has an interest in any works through or immediately adjacent to current or former dip sites.

Consideration of issue:

The representations report indicates that during preparation of the EIS, it was determined that some sections of the interim effluent transfer pipeline and an area which comprises part of the South Mullumbimby effluent reuse scheme could be located adjacent to former cattle dip sites. It also noted that while the interim effluent transfer pipeline was the subject of a separate assessment, it confirmed that matters relating to dip sites had been considered in this assessment.

With regard to the Proposal, the representations report indicates that

Council would consider the location of the former cattle dip sites during the detailed design phase of the project to ensure impacts on these sites are minimised or avoided.

and that

The construction environmental management plan would also contain specific management procedures that would ensure appropriate measures and procedures are followed in the event that other unknown cattle dip sites are encountered during the construction period (at any other work area).

It is considered that the response provided in the representations report is adequate. No specific recommendation is considered necessary in relation to this issue.

Issue

Clarification required to distinguish between rehabilitation of the two oxbow lakes on the Brunswick River and removal of Mullumbimby Weir No. 1 as confusion exists within the text of the EIS.

Consideration of issue:

It is noted that the representations report provides clarification on the two rehabilitation projects. No specific recommendation is considered necessary in relation to this issue.

Issue

Council recently submitted a funding application to the Recreational Fishing Saltwater Trust and is likely to facilitate removal of a barrier to tidal inundation depicted in photo 6 of the Flora and Fauna Assessment Report within the Appendix, a key part of rehabilitating the western oxbow lake. Another component of improving the ecologically functioning of these important fish habitat areas will be the development and appropriate management of a suitable buffer of endemic native vegetation between the site and Brunswick.

Consideration of issue:

The representations report indicates agreement with this view and states that

Council would develop and implement a comprehensive long-term management plan to improve the water quality of the oxbow lagoons. Measures to be considered in the development of such a plan would include the exclusion of cattle grazing from the area, the undertaking of significant earth works to improve the flushing of the lagoons during tidal cycles and the implementation of a weed management program to

eradicate the noxious weeds that are currently present on these lagoons.

In addition to these measures, Council would also establish a buffer of endemic native vegetation between the proposed STP site and the Brunswick River. This buffer would constitute the 50-metre wide, non-irrigated buffer zone that is required to meet DEC's effluent irrigation guidelines

It is considered that the response provided in the representations report is adequate. No specific recommendation is considered necessary in relation to this issue.

Issue

To best ensure connectivity of the system to the Brunswick River, reduce the incidents of weed incursion and potentially pugging of wetland vegetation by stock; the natural wetland area of the eastern oxbow should extend to the naturally vegetated buffer on both sides of the lake.

Consideration of issue:

The representations reports indicates agreement with this view and states

The aspect of enhancing the connectivity of the system will be considered and reviewed by Council in consultation with the AHPU during the development of the long-term management plan for both oxbow lagoons.

It is considered that the response provided in the representations report is adequate. No specific recommendation is considered necessary in relation to this issue.

Issue

DPI does not support the decision to trench the watercourse crossing through the minor embayment as part of Route 3. If it is not possible to take the preferred 3C option and avoid crossing waters of the Cape Byron Marine Park and adjacent aquatic habitats, underboring from a suitable distance will avoid complications associated with timing the works for neap tides. Finally, the trenching option presently proposed within the EIS would require concurrence from the Ministers responsible for management of the Cape Byron Marine Park and hence a more detailed assessment of the potential impacts.

Consideration of issue:

The representations report indicates that

option 3C was chosen as a preferred route as it utilises existing disturbed areas and an existing creek crossing, thus avoiding mangrove habitat discovered during detailed flora surveys. The proposed route does not require the trenching of this watercourse, as the pipeline would be attached to an existing structure that crosses the creek.

It also notes that

... the potential relocation of the proposed route further to the north-west ... would likely impose significant impacts on threatened species which were observed during the detailed flora and fauna surveys and would therefore not be desirable.

Council envisages that the most appropriate construction methods will be determined during the detailed design phase of the proposal. Council will be consulting with the AHPU during this phase of the project to ensure potential impacts on the aquatic habitats in this area are minimised or avoided.

The commitment to further consultation with the AHPU during detailed design is noted and supported. It is also noted that the reference to the possible for requirement for concurrence is largely advisory in nature and that Council would need to undertake an appropriate level of assessment to obtain this concurrence.

It is considered that the response provided in the representations report is appropriate. No specific recommendation is considered necessary in relation to this issue.

Issue

Permits under Sections 198-202 (dredge and reclamation activities) and Section 205 (harm to marine vegetation) of the *Fisheries Management Act 1994* would need to be obtained prior to commencement of the works associated with installation of pipelines and diffusers or other components that require digging or filling activities on waterland or harm to marine vegetation.

Consideration of issue:

This issue is considered largely advisory in nature. As has been noted elsewhere in this report, Council is required to obtain all necessary licences, permits and approvals before proceeding with the Proposal. No specific recommendation is considered necessary in relation to this issue.

Issue

A plan detailing aquatic habitat rehabilitation works at the Vallances Road site, including removal of the road crossing depicted in photo 6 of the Flora and Fauna Assessment Report within the Appendix should be developed to the satisfaction of the Senior Fisheries Conservation Manager (North).

Consideration of issue:

The representations report indicates Council's consideration of this issue has been provided in its response to the issue relating to the management of the oxbow lakes and its commitment to prepare and implement a long term management plan to improve water quality in the lakes. It is noted, however, that discussion of the plan does not make specific reference to this particular issue. It is also noted that there is no reference to consultation with the AHPU in relation to preparation of the plan.

It is considered appropriate that plan should address this particular issue and that the AHPU be consulted in this regard.

Issue

Removal of the unlicensed weir on Mullumbimby Creek adjacent to the Golf Course be undertaken within three months of the Mullumbimby Golf Course being connected to effluent reuse so as to improve fish passage in Mullumbimby Creek.

Consideration of issue:

The representations report indicates that

Council supports the removal of the Mullumbimby Weir No 1 during the establishment of the effluent re-use scheme in the South Mullumbimby area. Council will consult with the AHPU on this matter during the early stages of implementing the re-use scheme at the golf course.

It is noted that there could be specific matters impinging on the actual timing of removal of the weir. It is further noted that Council supports the removal of the weir and has committed to consulting with the AHPU in this regard. It is considered appropriate that the issue of timing be a matter for negotiation between Council and the AHPU. No specific recommendation is considered necessary in relation to this issue.

Issue

A soil and water management plan should be developed to the satisfaction of the Senior Fisheries Conservation Manager (North) for aspects of the development to minimise impacts on aquatic habitats during the construction phases of the development.

Consideration of issue:

The representations report notes that the EIS addresses the issue of preparation of a soil and

water management plan. It indicates that

The Plan would be developed in consultation with senior officers from the Department of Primary Industries (Fisheries) and the Department of Environment and Conservation (Marine Park Authority) to ensure the appropriate ... mitigating measures and safeguards are incorporated into this plan.

This requirement will be clearly stipulated in the construction environmental management plan that would be developed by the construction contractor prior to the commencement of construction activities.

As with preparation of other plans, the commitment to consult with relevant agencies is noted and supported. It is considered that the response provided in the representations report is appropriate. No specific recommendation is considered necessary in relation to this issue.

Recommendation

- The AHPU should be consulted in relation to the preparation of the long term management for the oxbow lakes. Additionally, the plan should make suitable provision for aquatic habitat rehabilitation works at the Vallances Road site. (25)

4.4 Australian Rail Track Corporation

Issue

A Site Management Plan should be lodged with the ARTC that contains reference to removal of acid sulphate/potential acid sulphate soils.

Consideration of Issue

The representations report indicates that:

... an acid sulfate soils management plan would be developed for this project. The nominated construction contractor will lodge a copy of this plan with the ARTC for review and comment. The plan will contain appropriate measure to manage these types of soils, including the total removal of acid sulfate/potential acid sulfate soils from any construction site. This requirement will be clearly stipulated in the construction environmental management plan that would be developed by the construction contractor prior to the commencement of construction activities.

The provision of the plan to ARTC for review and comment is supported. No specific recommendation is considered necessary in relation to this issue.

Issue

The ARTC does not grant consent for the storage or temporary store of any contaminated material on rail relevant areas.

Consideration of Issue

The representations report indicates that:

Council confirms that any materials or spoil that is found to be contaminated or unsuitable for backfill will be removed by the nominated construction contractor from any site and disposed of in accordance with DEC standards and regulations. This requirement will be clearly stipulated in the construction environmental management plan that would be developed by the construction contractor prior to the commencement of construction activities.

It is considered that the response provided in the representations report is appropriate. No specific recommendation is considered necessary in relation to this issue.

4.5 Ocean Watch Australia

Issue

Is concerned about the 4007, 4009 and 4010 pumping stations where the capacity for storage is 'unknown'. Adequate storage is required in the event of a power outage and should be investigated.

Consideration of issue:

The representations report indicates that

Council has investigated the storage capacity of pumping stations 4007, 4009 and 4010. The investigations found that all pump stations have adequate storage.

This response is considered adequate. It is also noted that this issue would also likely be considered by the DEC in relation to the environment protection licence for the sewerage system. No specific recommendation is considered necessary in relation to this issue.

Issue

Is encouraged to see the Proposal includes the installation of telemetry systems to monitor the status of each pump station. However, it is crucial that Council has an adequate emergency response routine and asset maintenance to prevent raw sewage spills into the receiving waters.

Consideration of issue:

The representations report provides a detailed response to this issue. This includes reference to incorporation of an emergency response plan into Council's existing Water and Recycling Management Services Incident Management Protocol. It is also noted that consultation with relevant stakeholders would be undertaken in development of the emergency response plan. This is supported. No specific recommendation is considered necessary in relation to this issue.

Issue

The potential for a wet weather storage facility needs to be investigated. The facility would store any wet weather overflows and then pump these back to the STP for proper treatment before discharge into the constructed wetland. This would result in superior protection of aquatic environment opposing the current Proposal to simply discharge wet weather flows directly into the constructed wetland.

Consideration of issue:

The representations report indicates that

The use of a wet weather storage pond was considered during the concept development phase of the project but was not included in the proposal being presented in the EIS due to the inherent capital and operational costs and operational issues associated with cleaning out these ponds after each use.

It also notes that

Council considers that the proposal to treat all raw sewage flows, either fully or partially, with full disinfection, prior to reaching the constructed wetland is considered to be a superior approach for managing wet weather flows. This approach is supported by wetland designers and is consistent with the approach that was adopted for the West Byron Bay STP and endorsed by DEC.

It is considered that the response provided in the representations report is appropriate. No specific recommendation is considered necessary in relation to this issue.

Issue

A communication system between the Council, DPI's AHPU, DEC and possibly NSW Health

needs to be established for the advent of any system failure.

Consideration of issue:

The representations report supports this and notes that the issue of communication would be effectively addressed through the preparation and implementation of the previously noted emergency response plan. It also provides comment on management of this issue during construction and, in particular, notes that the construction contractor would be required to obtain all necessary approvals and permits from DPI (and the AHPU) prior to the commencement of construction works that could affect aquatic habitats.

It is considered that the response provided in the representations report is appropriate. No specific recommendation is considered necessary in relation to this issue.

Issue

DPI needs to be consulted regarding mitigation measures and contingency plans for the construction and operation of the STP which has potential to impact on aquatic habitat, fish, shell fish and recreational fishing.

Consideration of issue:

The representations report indicates that this issue is addressed in Council's responses to the two preceding issues. It is noted that this has also been considered in relation to issues raised in the DPI representation.

It is considered that the response provided in the representations report is appropriate. No specific recommendation is considered necessary in relation to this issue.

Issue

Alum will be added to the bioreactor. The resulting by-product, if it is in the form of a biosolid, is considered a hazardous waste. Correct disposal measure therefore needs to be put in place.

Consideration of issue:

The representations report notes that the issue of biosolids and their disposal is addressed in the EIS, specifically that

all biosolids produced at the new STP would be stabilised to meet the Grade B stabilisation category that is stipulated in the DEC's biosolids guidelines ... prior to being trucked from the site to nearby local tea-tree, cane or dairy farms.

It also indicates that

All other wastes [and] by-products that may be produced by the new STP will be classified in accordance with the DEC's waste guidelines ... and disposed of in accordance with the provisions of these guidelines. Council confirms that no liquid or solid wastes will be disposed [of] at the sewage treatment plant or elsewhere within the proposed STP site.

It is considered that the response provided in the representations report is appropriate. No specific recommendation is considered necessary in relation to this issue.

Issue

Recommends further investigation of additional or alternative means of treatment such that the standards for TP are met upon discharge of effluent to the wetlands as opposed to hoping that the wetland treatment will suffice. This is particularly important as the nature of the dispersion and dilution of the effluent plume has not been accurately modeled.

Consideration of issue:

The representations report indicates that

The modelling undertaken during the concept design phase of the proposal to predict the performance of the constructed wetland under a range of inflow conditions shows that the constructed wetland design being proposed as part of this proposal should be able to produce effluent that meets the total phosphorus concentration set by the AMTS, which is 0.3 mg/L (90th percentile).

The wetland will form part of the overall sewerage system covered by the environment protection licence. The representations report notes that

Council is committed to ensuring the proposed STP complies with all environmental standards and regulations set by the DEC and other relevant authorities.

Under the adaptive management model which Council would implement for operation of the system, further consideration would be given to contingency measures to mitigate STP performance issues which could have the potential for detrimental impacts on the estuary. In this regard, the representations report notes that

One measure that has been proposed is the provision of conventional means of phosphorus removal, such as tertiary filtration, upstream of the constructed wetland.

It is considered that the response provided in the representations report is appropriate. No specific recommendation is considered necessary in relation to this issue.

Issue

Modelling of the dispersion and dilution of the plume has not been completed (concept design for the diffuser has not been finalised). Accurate modelling of the dispersion and dilution of the plume is required to determine the nature of dispersion or potential accumulation of pathogens, faecal coliform or nutrients.

Consideration of issue:

The representations report indicates that

... modelling efforts were concentrated on assessing the potential impacts of nutrient releases (in the form of dissolved inorganic nitrogen) into the estuary, which was considered to be the limiting plant nutrient in estuarine and marine water bodies, and is shown to have a significant relationship to algal growth and concentrations.

It further notes that

... the proposed diffuser arrangement was optimised to achieve maximum dispersion by using estuary modelling during the concept design phase of the proposal. Council envisages that further modelling may be conducted by the nominated design contractor during the detailed design phase of this project to ensure the final plant design and effluent flow characteristics achieve the performance criteria prescribed in Section 3.3.3 of the EIS.

It is accepted that sufficient modeling was undertaken to characterise the general nature of the dispersion plume for the EIS. It is noted that an EIS is not required to undertake exhaustive analysis to provide definitive answers, rather the effort is required only to be reasonable and practicable.

It is also noted that further modeling may be undertaken during detailed design. In this regard, it is presumed that the designer would be required to demonstrate with a reasonable degree of certainty that the plant would meet the specified performance requirements. It is considered appropriate that this be reflected in the contract documentation for the provision of these services.

Recommendation

- The tender documentation for the detailed design should incorporate specific performance requirements with respect to operation of the STP and the designer should be required to demonstrate with a reasonable degree of certainty that the plant would meet the specified performance requirements. (1)

4.6 Country Energy

Issue

Works required in relation to the provision of electrical supply to the Vallances Road site.

Consideration of issue

The representations report indicates that:

In relation to the provision of power to the site, Section 3.3.15 of EIS states that power to the site would be supplied via overhead power lines installed alongside the proposed STP access road which would connect Vallances Road to the proposed STP site. The design and location of the substation being proposed by Country Energy would be confirmed during the detailed design phase of the project and would be subject to a separate environmental approval process.

It is considered that the response provided in the representations report is appropriate. No specific recommendation is considered necessary in relation to this issue.

4.7 North Coast Area Health Service

Issue

Council needs to ensure adequate planning controls are in place to ensure that dwellings are not to be erected closer than the existing 850 m to the plant or minimum 400 m as per Government policy.

Consideration of issue

The representations report indicates that:

Council's Development Control Plan for this area requires a minimum buffer zone of 400 metres to the proposed STP site. Council will ensure that no new dwellings encroach on this buffer zone.

It is considered that the response provided in the representations report is adequate. No specific recommendation is considered necessary in relation to this issue.

Issue

A management plan with respect to the commencement and operation of irrigation of effluent should ensure that occupational health and safety issues are outlined. The plan should also designate who will be responsible for deciding when it is appropriate or otherwise to commence irrigation and monitoring of the irrigation.

Consideration of issue

The representations report indicates that:

The operational management plan that would be developed by Council for each effluent re-use site will incorporate OH&S management procedures to be followed by all relevant personnel prior to, during and following the completion of effluent irrigation activities.

It is considered that the response provided in the representations report is appropriate. No specific recommendation is considered necessary in relation to this issue. It is also noted that compliance with applicable OH&S management practices is already required under other

legislation.

Issue

Arrangements for the long-term disposal of biosolids.

Consideration of issue

This issue has been addressed through consideration of Council's response to the same issue raised in the Ocean Watch Australia representation. No further recommendations are considered necessary in relation to this issue.

Issue

Reuse percentage for parklands should be clarified as should the impact of release of effluent to the river system if efficient reuse opportunities are not available.

Consideration of issue

The response provided in the representations report indicates that there is a number of existing reuse sites currently owned or managed by Council and that these would ensure that the estimated 80% reuse level would be achieved. It further notes that as the Stage 1 effluent reuse scheme is established, further uptake of effluent reuse would increase the rate close to 100%.

It is considered important that the uptake of effluent reuse be monitored, particularly in light of the proposed deferral of the works listed in Section 2.5.3 of this report. This should be undertaken as part of the overall monitoring of scheme performance. It is considered this would be best undertaken within the context of a formal effluent management strategy as is done in the Byron Bay sewerage catchment through the *Byron Bay Effluent Management Strategy*.

With regard to the potential impact of release of treated effluent on the river, the representations report indicates that

The estuary modelling ... assessed the potential impacts of effluent releases under a range of river flow conditions. The assessment concluded that due to the high quality of the effluent that would be released and timing of any release to only occur during ebb-tide conditions in the river, the potential water quality impacts of the release on the Brunswick estuary would be low and comply with relevant water quality guidelines.

It is considered that the response provided in the representations report is adequate. No specific recommendation is considered necessary in relation to this issue.

Issue

Clear statements should be incorporated into management documents outlining responses and including time lines to be given to stakeholders should water quality not meet the required standards.

Consideration of issue

The representations report indicates that:

Council will develop a contingency and incident response plan which will include clear communication protocols to be followed by Council officers in the event of a major incident associated with the operation of the proposal which may have direct implications on the Brunswick estuary and its users. The plan will be developed in direct consultation with the DPI AHPU, DEC, NSW Health and the Brunswick River Oyster Growers Association.

It is considered that the response provided in the representations report is adequate. The commitment to consultation with the identified stakeholders is supported. No specific recommendation is considered necessary in relation to this issue.

Recommendations

- Council should prepare a formal effluent management strategy for the Brunswick Area Sewerage Augmentation Project. This should be finalised within 12 months of commissioning of Mullumbimby-Brunswick Heads STP. The strategy should identify the priority of the deferred elements of the Stage 1 reuse scheme. (22)
- As part of the effluent management strategy, scheme performance should be reviewed on a regular basis. This should include consideration of the uptake of effluent reuse and the timing for provision of deferred elements of the Stage 1 reuse scheme. (23)

4.8 Department of Environment and Conservation

Issue

Design flows have been based on assumed gains from decreases in flow volume to be achieved by the sewer rehabilitation program currently being undertaken by Council. This should be reviewed against actual gains achieved by this program and modified if necessary.

Consideration of issue:

The representations report indicates that

Council would review the current proposal against the actual (measured) gains achieved by the inflow-infiltration program and modify the proposal (if required) to ensure the performance outcomes specified by the EIS are achieved. If major variations between the actual and expected gains are noted, then further assessment may be required to ascertain the potential impacts of the variation on the approved project definition.

It is considered that the response provided in the representations report is adequate. No specific recommendation is considered necessary in relation to this issue.

Issue

Note that no final decision on whether to construct a continuous or intermittent process STP.

Consideration of issue:

The representations report indicates that Council would determine the actual treatment technology during the detailed design phase to ensure the performance outcomes specified by the EIS are achieved.

This approach would allow Council to keep its options open with respect to the preferred treatment process. It is noted that which ever process is adopted, it will be required to meet specific performance requirements to provide an adequate level of environmental protection. As has been noted elsewhere in this report, the operation of the STP will be required to meet certain performance requirements which will be defined in the environmental protection licence for the sewerage system.

It is considered that the response provided in the representations report is adequate. No specific recommendation is considered necessary in relation to this issue.

Issues

Note that the EIS indicates that the STP may not be able to consistently deliver effluent quality compliant with AMTS phosphorus levels although the EIS predicts it should be achieved before discharge to river after the effluent has passed through the wetland system. In line with Council's request, DEC will apply the approach adopted for West Byron to the new STP, ie discharge limits for TP will apply upstream of the wetland (0.5 mg/L) and downstream (0.3 mg/L).

Note that the EIS has allowed for the contingency of incorporating tertiary filtration if the current proposal fails to comply with the discharge limits or does not achieve the projected environmental gains. Council will need to ensure that there is a clear decision making process including relevant timeframes and monitoring requirements/results which will trigger the construction of the tertiary filtration system.

Consideration of issues:

The representations report acknowledges the DEC approach to the establishment of discharge limits for TP. It also notes that

The operational management plan ... for the proposed Mullumbimby-Brunswick Heads STP would include a decision making process, which Council will adopt should the current proposal fail to comply with the discharge limits specified in the Environment Protection Licence or does not achieve the performance outcomes stipulated in the EIS. The process will include relevant timeframes and monitoring requirements/results which will trigger the review of existing operation and development of appropriate mitigation measures, such as the construction of the tertiary filtration system.

The proposed response is considered to be consistent with an adaptive management system which would allow Council significant scope in responding to any performance shortfalls if and when they are identified.

It is considered that the response provided in the representations report is adequate. No specific recommendation is considered necessary in relation to this issue.

Issues

The EIS predicts that up to an annual average of 80% effluent reuse will be achieved as a result of the Stage 1 effluent reuse proposal. It is unclear from the EIS as to the relative percentages of reuse that will be replacing existing extractions and those that will be used for 'new' activities eg irrigation land not previously under irrigation.

DEC considers it important that Council consider a preferred reuse hierarchy which places higher priority on reuse options which replace demand on potable water supplies.

Consideration of issue:

The representations report indicates that the Stage 1 effluent reuse scheme

... would supplement the volume of treated effluent currently being used by the existing Main Arm re-use scheme. The scheme would also replace the use of potable water to irrigate the south Mullumbimby sporting fields and Mullumbimby showground with high quality treated effluent. The proposed STP site is currently not irrigated with potable water, so this site would not provide a reduction in the volume of potable water currently being used in the Brunswick area for irrigation purposes.

It is considered that these sites would utilise approximately 30-40% of the irrigated effluent being produced by the Mullumbimby-Brunswick Heads STP.

With regard to a preferred reuse hierarchy, the representations report indicates that this would be addressed through the Stage 2 effluent reuse scheme which would build upon the Stage 1 scheme. This would provide for

the inclusion of additional lands to be irrigated with treated effluent (if available) and the provision of high quality effluent for non-potable domestic purposes on existing and/or new housing developments in the Mullumbimby/South Mullumbimby area.

It is noted that this is essentially consistent with the *Byron Bay Effluent Management Strategy* which seeks to manage sewage in an ecologically sustainable manner and which, amongst other matters, seeks to maximise reuse of treated effluent.

It is considered that the response provided in the representations report is adequate. No specific recommendation is considered necessary in relation to this issue.

Issue

Council should consider how the proposed Stage 2 reuse can move progressively up the hierarchy.

Consideration of issue:

The representations report considers this issue to be addressed through the response provided in relation to the preceding issue. This response is considered adequate. It is noted that this issue would also be addressed in the effluent management strategy.

Issue

To ensure ongoing sustainability of reuse it is critical that this is subject to suitable controls. Council will need to ensure that appropriate mechanisms are in place to ensure sustainable use of treated effluent on private lands.

Consideration of issue:

The representations report reiterates the discussion provided in Section 22.6 of the EIS which commits Council to

... developing site-specific operational management plans for each effluent re-use site. Each plan would include management responsibilities, irrigation scheduling procedures and an environmental monitoring program that has been tailored to the individual sites on which effluent irrigation is to occur. Each plan would also include procedures to be followed by Council staff responsible for the environmental management of the site in the event that adverse trends are noted on any of the results obtained by the environmental monitoring program. The implementation of site-specific environmental management plans should ensure the long-term sustainability of the effluent re-use scheme.

It is noted that this response does not specifically mention sustainable use of treated effluent on private lands other than to note that the Main Arm reuse scheme, which would be included in the Stage 1 effluent reuse scheme, is owned and operated by a private enterprise.

From the above response it is noted that there would be procedures to be followed in the event that adverse trends were identified. This, however, only makes reference to Council staff and it is unclear as to what would happen on privately-owned lands irrigating using treated effluent supplied from Council's sewerage system.

It is presumed that treated effluent would be supplied to private users under some form of formal agreement. It is considered appropriate that this should also make provision for similar procedures to be followed in the event that adverse trends were identified.

Issue

Council should take whatever steps necessary to ensure that an 800 metre separation distance between the STP and residences buffer is retained or that it is demonstrated that a lesser buffer will be adequate to protect receivers.

Consideration of issue:

This issue has previously been addressed in relation to a similar issue raised in the representation from the North Coast Area Health Service. No additional comment is considered necessary.

Issue

Information proposed in relation to construction noise should be reflected in a Construction Noise Management Protocol to be submitted to the DEC prior to the commencement of works. The Protocol should address, as a minimum, the matters listed in the DEC representation.

Consideration of issue:

The representations report indicates that

The nominated construction contractor would develop a noise management plan, which would form an integral component of the construction environmental management plan that will be prepared by the nominated construction contractor prior to the commencement of construction activities. The construction environmental management plan would be submitted to the DEC for review and approval prior to the commencement of construction activities.

As has been noted elsewhere in this report, given that the construction contractor is likely to have the greatest degree of control in relation to management of this issue, it is appropriate that this responsibility be assigned to the contractor. Also, given that construction of the Proposal would comprise scheduled development works, it is appropriate that the DEC be provided with the opportunity to assess the likely adequacy of the management measures proposed to be implemented for construction.

It is considered that the response provided in the representations report is adequate. No specific recommendation is considered necessary in relation to this issue.

Issue

DEC interests with respect to flora and fauna appear to have been adequately addressed in the EIS. Prior to determining the Proposal, Council should be satisfied that the matters listed in the DEC representation relating to flora and fauna and to Aboriginal heritage have been adequately considered.

Consideration of issue:

The matters referred to in the DEC representation relate to:

- threatened or regionally significant flora and fauna species, populations and ecological communities;
- consistency of the Proposal with the relevant provisions of relevant provisions of the *Threatened Species Conservation Act 1995*, SEPP 44–*Koala habitat protection*, SEPP 71–*Coastal protection* and the *Native Vegetation Conservation Act 1997*.
- the adequacy of the level of assessment conducted for Aboriginal heritage impacts, particularly in relation to areas of cultural heritage significance to the Aboriginal community; and
- adequate consideration of direct and indirect impacts on DEC estate, wilderness areas and recognised areas of high conservation value.

The representations report indicates that

- The flora and fauna impact assessment concluded that impacts on the ecological integrity of the study area have been largely avoided through the pipeline route selection process and implementation of the identified mitigation measures, and that the Proposal is unlikely to have a significant impact on threatened species, populations or communities. It also considers the assessment to have adequately addressed the matter of impacts on DEC estate, wilderness areas and recognised areas of high conservation value.
- The Proposal is considered to be consistent with relevant provisions of the two Acts and two SEPPs referred to.

- Assessment of potential impacts on Aboriginal heritage included extensive consultation with local Aboriginal groups. Implementation of a subsurface monitoring program for identified sensitive areas together with ongoing monitoring of excavations would avoid or minimise impacts on local cultural heritage values.

The DEC comments are considered mainly advisory in nature. It is noted there is already an obligation on Council to consider these matters (and others) through Section 111 of the EP&A Act. It is considered that the responses provided are adequate and that no specific recommendations are required in relation to this issue.

Issue

Approval may be required under the EPBC Act if the Proposal affects any species requiring consideration under this Act.

Consideration of issue:

The representations report reiterates that the consideration of the EPBC Act was addressed in the EIS following DEH guidelines and that it was concluded

... the proposal is unlikely to have a significant impact on the threatened species, populations or communities listed under the Environment Protection and Biodiversity Conservation Act 1999. The proposal is also unlikely to significantly affect any matters of national environmental significance or any Commonwealth land. Hence, a referral to, or approval from the Commonwealth Minister for the Environment is not required.

This issue is mainly advisory in nature. It is considered that the response provided is adequate and that no specific recommendation is required in relation to this issue.

Issue

Should sub-surface excavation be required then a licence under Section 87 of the *National Parks and Wildlife Act 1974* will be required.

Consideration of issue:

This issue is considered advisory in nature. It is noted that the EIS is aware of this and includes specific reference (in Table 22.1) to the need to make the appropriate application to the DEC if required. No specific recommendation is considered necessary in relation to this issue.

Recommendation

- The formal arrangements with private operators irrigating using treated effluent supplied by Council should include provision for appropriate procedures to be followed in the event that adverse trends were identified and that these should be generally consistent with those Council staff would follow in relation to treated effluent irrigation areas managed by Council.
(24)

4.9 Brunswick River Oyster Growers

Issues

- Due to effluent and raw sewage releases into the Brunswick River, selling of oysters for human consumption has been prohibited for seven years which adversely affects livelihoods and living standards of oyster farmers.
- Working on a river should not be an occupational health and safety issue.
- Heritage aspect of oyster farming on the river should be protected.

Consideration of issue

The representations report provides the following response to these issues:

... the improved wet weather performance of the Mullumbimby sewerage system which is expected to result from the sewer rehabilitation and augmentation works currently being undertaken by Council should ensure the probability of raw sewage overflows occurring in the Mullumbimby section of the Brunswick River during wet weather events has been significantly reduced or eliminated and comply with best practice performance standards.

... the proposed decommissioning of Mullumbimby STP and the significantly improved performance of the sewage pumping stations associated with the Mullumbimby sewerage catchment, via the provision of 8-hour emergency storages on specific pump stations and status monitoring on all pump stations, would result in a significant improvement in the water quality of the upper and middle reaches of the Brunswick River estuary.

The water quality assessment that was conducted during the preparation of the EIS ... concluded that effluent releases to the river would not have an adverse impact on the Brunswick River estuary and would comply with the water quality assessment criteria proposed for this proposal, which prescribes a faecal coliform level of less than 21 faecal coliform forming units per 100 millilitres (90th percentile), in accordance with ANZECC 2000 and Australian Shellfish Quality Assurance Program water quality guidelines.

The two key factors that determined this outcome were the high quality of the effluent that would be produced by the proposed Mullumbimby-Brunswick Heads STP (with low nutrient levels and high levels of disinfection) and the condition that all effluent releases would only occur during ebb-tide conditions in the river.

The water quality improvements that would arise as a result of the proposal would significantly reduce the risks associated with shellfish harvesting and enhance opportunities to re-establish the oyster industry in the estuary. Recent correspondence from the NSW Food Authority to Council ... indicates the Authority's support for the proposal and provides the framework under which the Authority would consider re-opening of the estuary for oyster harvesting and human consumption.

As a general comment it is noted that the existing sewerage system is only one of a number of activities within the catchment which influence receiving water quality and others, such as agricultural activities, would likely also have a significant effect on water quality. The need for the Proposal is clearly documented in the EIS and there is considered to be reasonable certainty that it would contribute to a material improvement in receiving water quality, notably through the reduction in volumes discharged (diverted to reuse schemes) and from a higher level of treatment for discharges which are made to the river.

Improvements in estuary water quality which would facilitate reopening of the estuary for oyster harvesting would also contribute positively to the heritage aspect of oyster farming.

No specific recommendations are considered necessary in relation to these issues.

Issue

Propose that an ocean outfall be adopted as the preferred option instead of releasing effluent into the river.

Consideration of issue

The representations report indicates that

There are no provisions in the EIS to relocate the effluent release point at Ocean Shores or as part of an ocean outfall arrangement. The options assessment conducted during the concept development process ... resulted in the development of the proposed effluent release location, which was also endorsed by the BRCWSC.

It is noted that the Proposal has a substantial history extending back nearly 10 years. On the

basis of experience with similar sewerage schemes, it is anticipated that significant effort would have been invested in identification and evaluation of feasible and practicable options and that this would have include consideration of a wide range of factors. The preferred option is effectively the one that best meets competing environmental, social and economic objectives.

It is considered that the response provided in the representations report is adequate. No specific recommendation is considered necessary in relation to this issue.

Issue

Concerned that in times of emergency, effluent and raw sewage would impact on river health.

Consideration of issue

The representation report indicates that

There will be no raw sewage overflows from the new STP as the plant will be designed to cater for peak wet weather flows ie fully treat all flows up to three times the average dry weather flow and partially treat all flows above three times the average dry weather flow prior to release to the constructed wetland for further polishing prior to release to Brunswick River. All effluent flows would be disinfected to a high quality before reaching the constructed wetland.

Under normal operation, the primary effluent release pathway would be via effluent storage and re-use. When storages are full and re-use is not possible, effluent releases would be timed to occur during ebb or outgoing tide conditions, which have been shown using estuary modelling techniques to minimise water quality impacts in estuary.

It is considered that the response provided in the representations report is adequate. No specific recommendation is considered necessary in relation to this issue.

4.10 Duncan Dey

Issue

- Unable to find commitment by Council to ensure the Mullumbimby catchment system will have a PWWF:ADWF no greater than 7.
- Concerned with adoption of 7×ADWF for sewage transport and 5×ADWF for STP treatment. Steering Committee believes higher figures should be adopted.
- Committee stresses that rectification of inflow/infiltration must be a high priority.

These are considered collectively as follows.

Consideration of issue

The response provided to these comments in the representations report is as follows:

As outlined in Section 2.1 of EIS, Council is committed to upgrading the sewerage system for the Mullumbimby catchment to reduce the effects of wet weather on this system and prevent or eliminate the occurrence of raw sewage overflows in this catchment.

In response to this commitment, Council is currently undertaking a comprehensive sewer rehabilitation program for the Mullumbimby sewerage catchment area. The program was commenced in 2003 and is expected to be ongoing for some time.

Council is committed to continuing works on the town's reticulation system to reduce infiltration and inflow, with the objective of having completed most if not all of the major repair works before the Brunswick Sewerage Augmentation proposal is up and running.

Once the repairs to the Mullumbimby sewerage catchment are complete, it is anticipated that wet weather flows to the current Mullumbimby STP will be reduced from present levels of up to 12 times the average dry weather flow to a factor of close to seven times the average dry weather flow, which is considered satisfactory system performance. The anticipated reduction in inflow and infiltration flow would be verified once repairs have been completed and the area

receives an extended heavy rainfall event.

Council's resource and financial commitments to rectifying the inflow/infiltration issue at Mullumbimby can be found in the following documents:

BSC 2005–2008 Management Plan, page 45, Reference No 8.11, provides for the implementation of "...a dedicated Infiltration/Inflow works crew" by September 2005. The crew was established by December 2005.

BSC 2005 –2008 Budget, page 116, provides the capital works expenditure of \$145,000 during 2005/06 for Mullumbimby Infiltration/Inflow.

BSC 2006–2009 Management Plan and Budget will similarly provide for infiltration/inflow works for Mullumbimby to reduce wet weather flows in Mullumbimby to a maximum of seven times the average dry weather flow and eliminate wet weather overflows.

The response provided by Council is considered to adequately address these issues. It is noted that system performance would be monitored on an ongoing basis as repairs are undertaken. It is considered that prior to the calling of tenders for the Proposal, it would be appropriate for Council to review whether the 7×ADWF performance criterion is still considered valid for system operation.

Issue

Information gaps from data logger used for evaluation of short term options.

Consideration of issue

The representations report provides the following comment on this issue:

... a gauging study was carried out by Council to examine the quantity of inflow and infiltration that occurs within the sewerage serviced areas of Mullumbimby. The study indicated that a number of the sewage pumping station catchments within the township of Mullumbimby experience high levels of wet weather flows with respect to the normal dry weather flows for the same catchments.

Council advises that a flow measuring device was installed in early January 2006 to measure flows from the current overflow point at Mill Street, Mullumbimby. This device has been linked to Council's telemetry system for remote monitoring and logging.

The response provided is not considered to adequately address the issue which relates to missing data. It would be appropriate for Council to provide a response which addresses this issue, however, it is not considered that this needs to be through a formal recommendation. It is noted that the representation author is a member of the Steering Committee and would be able to seek clarification via this forum.

Recommendation

- Prior to the calling of tenders for the Proposal, Council should review whether the 7×ADWF performance criterion is still considered valid for system operation. (3)

4.11 Susanne and John Holmes

Issue

Project will impact adversely on property and would devalue it.

Consideration of issue

The representations report indicates that

The proposed pipeline route (3C) was chosen after careful consideration of a number of factors, in particular minimising the need for vegetation clearing during construction by maintaining the pipeline through existing tracks as much as possible. The rehabilitation of land affected by the construction of the pipeline would ensure that prior land use activities would be re-established as

early as possible after completion of construction work. It is considered that the proposed approach would not have a significant effect on land value or land use.

Two pipeline route options (3A and 3B) were considered during the initial stages of the concept design process (refer Figure 2.8 of EIS). However, following a detailed assessment of both options, it was considered that both of these options would require significant vegetation clearing which was unacceptable. A third option (3C) was identified during the field surveys conducted in November 2004 which followed an existing cleared track starting from Synotts Lane and ended close to the western side of Ocean Shores STP. This option was selected as it presented the option with the least impacts on the flora and fauna of the local area.

Pipeline easements will be created during the implementation phase of the project and will address issues raised by landowners such as access for maintenance and use of land by owners for agricultural purposes. Compensation will be discussed and will reflect any positive or negative impacts as a result of the pipeline easement.

The concerns of the property owners are acknowledged. As noted in the above response, a thorough assessment of route options was conducted in the EIS and the preferred option is considered to have the least impact on the flora and fauna of the local area. It is accepted that identification of preferred pipeline routes has considered all relevant factors to the greatest extent practicable and reasonable. It is also noted that Council has undertaken additional investigation in regard to pipeline route options (though not specifically in relation to this property).

The commitments made in the EIS and representations report in relation to consultation with affected property owners are noted and supported. It is considered that the response provided in the representations report is adequate. No specific recommendation is considered necessary in relation to this issue.

Issue

Disturbance to and loss of vegetation especially large mature trees. Associated long term visual impact.

Consideration of issue

The representations report indicates that

The clearing of native vegetation, including mature trees, has largely been avoided in the route selection process, as the proposed pipeline route (3C) would generally follow a formed track to Synotts Lane and traverses through open paddocks toward the proposed Mullumbimby-Brunswick Heads STP. The selection of this route should minimise the disturbance to existing native vegetation near the route.

It is noted that the EIS commits to preparation of a landscape management plan which would be the appropriate mechanism for mitigation of loss of visual amenity from removal of vegetation. It is accepted, however, that there will need to be constraints placed on the type of vegetation allowed on easements together with control of growth.

It is considered that the response provided in the representations report is adequate. No specific recommendation is considered necessary in relation to this issue.

Issue

Loss of privacy and amenity arising from establishment of easement and owners' considered lack of control over access to the easement.

Consideration of issue

The representations report indicates that

The nominated construction contractor would be sensitive to the amenity of the community in

areas impacted by construction activities. Where access to private property is required, consultation with the affected land owners would be undertaken by Council well in advance of commencing any such activities.

During the construction of the pipeline, there will be increased noise in the local area for a short period of time (less than 12 weeks). Construction staging (daytime operation only), noise mitigation and safeguard measures would be implemented to manage noise impacts within acceptable levels and minimise the duration of works within any one location.

... easements will be created during the implementation phase and will address issues raised by landowners such as access for maintenance and use of land by owners for agricultural purposes.

The EIS considers impacts associated with construction including those on receptors in relative close proximity to construction activities. It also outlines the framework for the management of these via a construction EMP. This is appropriate and accepted practice for an EIS.

The commitment to addressing issues raised by property owners is noted and supported. It is also noted that there is a commitment by Council to consulting with affected property owners well in advance of construction. It is presumed that similar consultation would be undertaken with regard to addressing issues relating to the establishment of easements as is implied in the response provided in the representations report.

No specific recommendation is considered necessary in relation to this issue.

Issue

Impacts on existing and planned future land use.

Consideration of issue

The representations report indicates that

The proposed effluent pipeline would be located underground for the entire route, so existing land uses such as cattle grazing and other agricultural activities should not be affected, except during the construction phase. The rehabilitation of all lands affected by pipeline trenches following construction would be undertaken to ensure the re-establishment of activities occurs as soon as possible, such as grazing of animals.

... a negotiated agreement between Council and respective landowners would be established along the final pipeline route, whereby access conditions to the pipeline trench in the event of future maintenance requirements, would be clearly detailed and confirmed in the agreement.

The establishment of an easement is not considered likely to significantly impact land use across the entire property as stated in the representation. It is accepted that there will be a need to impose certain restrictions on land use within the easement, however, it is considered that these would not completely 'sterilise' this land.

The matter of the considered decline in value of the property is noted as is Council's response. It is noted that there may be recourse under the *Land Acquisition (Just Terms Compensation) Act 1991* for a property owner who suffers demonstrated hardship to apply for their property to be compulsorily acquired.

No specific recommendation is considered necessary in relation to this issue.

4.12 Phil and JoAnn Johnson

Issue

Reference in EIS to easement on property.

Consideration of issue

The representations report indicates that

The tracks shown in Photographs 1, 8, and 10 in Technical Paper 1 of EIS, which relate to the proposed pipeline route (3C), should be referred to as 'existing cleared access tracks' and not easements.

This clarification is considered adequate. No specific recommendation is considered necessary in relation to this issue.

Issue

Disruption during construction.

Consideration of issue

The representations report indicates that

There may be some short-term disruption to the peace and quiet of the area during the construction phase of the project. This disruption would however, be temporary in nature (no more than 20 working days along a particular pipeline location) and will be subjected to strict management controls that will be monitored and enforced by Council.

The nominated construction contractor, in consultation with Council, will be required to undertake construction activities, such as trench excavation works, in a manner that minimise the generation of noise and dust.

Construction activities that are likely to affect nearby properties will be conducted in direct consultation with these properties to make sure the impacts are as low as possible. Measures such as scheduling excavations when people are not at home or the installation of acoustic shielding on particularly noisy equipment will be considered and implemented by the construction contractor to minimise impacts.

In the construction of any infrastructure, all reasonable and practicable steps should be undertaken to minimise impacts but it is inevitable that it will not be possible to entirely eliminate them. It is also noted that the identified impacts would not be unique to the owners of this property and that other receptors within proximity to construction activities would also experience a temporary decline in environmental quality.

This is recognised in the EIS and specific mitigation and management measures have been identified to ameliorate these impacts as far as practicable. These measures would be implemented through a formal management framework in the form of a construction EMP.

The EIS commitment to management of environmental impacts related to construction is noted. It is considered that the response provided in the representations report is consistent with this. No specific recommendations are considered necessary in relation to this issue. It should be noted, however, that Recommendations 5 and 6 in Section 5 of this report identify specific matters to be addressed in development and implementation of the construction EMP.

Issue

Compensation for access to property for pipeline (and establishment of easement).

Consideration of issue

The representations report indicates that

Pipeline easements will be created during the implementation phase of the project and will address issues raised by landowners such as access for maintenance and use of land by owners for agricultural purposes. Compensation will be discussed and will reflect any positive or negative impacts as a result of the pipeline easement.

It is considered that the response provided in the representations report is adequate. No specific recommendation is considered necessary in relation to this issue.

4.13 Marc and Angie Heyning

Issue

Agree with the preferred option as it would create the least disruption to existing properties, especially since much of the route is via railway easement or across property already owned by Council.

Consideration of issue

It is noted that this comment was made prior to Council's identification of the new pipeline route options (1C and 2C) which occurred subsequent to exhibition of the EIS. The representations report indicates that

Although Pipeline routes 1C and 2C may have an impact on a small section of the Heyning's property, discussions held between Council officers and owners of this property indicated that they had no concerns with placing the pipeline at this location within their property, as it would not affect current land uses (cattle grazing).

Council has advised that this response is not correct. Pipeline routes 1C and 2C do not enter the Heyning's property (the other suggested routes 1D and 2D did pass through this property). No specific recommendation is considered necessary in relation to this issue.

4.14 Gary Scott

Issues

- Value of telemetry system to provide useful information on overflows from the sewerage system.
- Inconsistencies between information provided by telemetry system and personal observations in relation to overflows from the sewerage system.
- Inadequacy of existing sewerage system to transport sewage to STP even in moderate wet weather periods.
- Lack of quantitative information regarding overflow volumes and utility of telemetry system to provide useful information on this.

Consideration of issues:

The representations report indicates that responses to these issues are provided through the responses to the issues raised in the representation from Duncan Dey. Consideration of Council's response is provided in Section 4.10 of this report.

It is noted that the above comments relate principally to the operational performance of the Mullumbimby sewerage system, particularly the recognised infiltration/inflow issue. This has been commented on in Section 4.10 in relation to the Proposal. No additional comment is considered necessary and no further recommendations are considered necessary.

4.15 Rex Harris (Retera Pty Ltd)

Issue

The issues raised relate to the originally proposed routes of pipeline as follows:

- Property would be impacted by pipeline routes 1B and 2B. Impacts regionally significant land Laurel Park is property classified by Northern Rivers Farmland Protection Project as Regionally Significant Land.

- Council has already identified optional routes identified as 1A and 2A, therefore, Council is obliged to use the alternative pipeline routes 1A and 2A.
- The pipeline routes run directly through productive sugar cane crops.
- The property is growing sugar cane crops in annual rotation and under quota with the NSW Sugar Milling Co-Operative Limited (Co-op). Any loss of supply to the Co-op would be detrimental to the future viability of the Co-op's mill at Condong and thus the future viability of other sugar cane growers in the Byron Shire.
- The pipeline routes run through the most valuable section of the whole property. This particular section is adjacent to the Brunswick River and considered to be 'Waterfront' or 'Riverfront'. A pipeline along this section of the property will completely destroy future development potential.

These are considered collectively as follows.

Consideration of issue

The representations report indicates that further investigation was undertaken in relation to other possible route options for the pipeline with two additional options (1C and 2C) being identified which avoided crossing land currently used for sugar cane cropping. It notes that while there would be an impact on the northern riverbank, discussions held between Council and the property owners indicated that there would not be any significant concerns with these routes. The representations report indicates that these are now the preferred pipeline route options.

It is considered that the response provided in the representations report is adequate. No specific recommendation is considered necessary in relation to this issue.

Issue

No allowance has been made for the cost of easements through the property (representation identifies specific costs for consideration in relation to issue). The Brunswick Sewerage Augmentation Scheme can save \$438,000 plus the cost of easements of taxpayer's money by not routing the pipelines through the property.

The representations report indicates that this issue has been substantively addressed through the response provided in relation to the new pipeline route options. This response is considered appropriate. No specific recommendation is considered necessary in relation to this issue.

Consideration of issue

This issue is considered to have effectively been addressed through Council's response to the overall issue of the original pipeline route options. No specific recommendation is considered necessary in relation to this issue.

Issue

If routes 1A and 2A are chosen then Council or council contractors will not have to enter onto private agricultural cropping land to carry out maintenance works (eg fixing leaking pipes etc).

Consideration of issue

The representations report indicates that

... pipeline easements will be created during the implementation phase of the project and will address issues raised by landowners such as access for maintenance and use of land by owners for agricultural purposes.

Establishments of easements for the purpose of access to this type of infrastructure is

commonplace. As has been noted previously, the issue of the pipeline route has been revisited by Council and this issue is considered to have been satisfactorily addressed. No further recommendations are considered necessary in relation to this issue.

4.16 Department of Energy, Utilities and Sustainability

Issue

An approval in accordance with Section 60 of the *Local Government Act 1993* should be obtained from DEUS before construction commences.

Consideration of issue

The representations report indicates that:

This requirement would be stipulated in the construction environmental management plan that would be prepared prior to the commencement of construction activities.

It is noted that this issue is largely advisory in nature. It is considered that the response provided in the representations report is adequate. No specific recommendation is considered necessary in relation to this issue.

5. Recommendations

5.1 General recommendation

On the basis of the assessment undertaken in the EIS and REF, and additional information provided in the representations report, it is considered that subject to the recommendations identified in the preceding section and additional recommendations presented in this section, the modified Proposal would not result in unacceptable or unsustainable impacts on the biophysical and socio-economic environments.

It is therefore recommended that the modified Proposal be approved in accordance with:

- the EIS *Brunswick Area Sewerage Augmentation*, dated October 2005, prepared for Byron Shire Council and the DEUS by Parsons Brinckerhoff;
- the REF *Brunswick Area Sewerage Augmentation–Effluent Polishing Plant*, dated September 2006, prepared for Byron Shire Council and the DEUS by Parsons Brinckerhoff;
- all identified procedures, safeguards and mitigation measures identified in the EIS and REF except where modified in the representations report or this determination report;
- the proposed modifications as described in this determination report; and
- the recommendations presented in this determination report.

5.2 Specific recommendations

This section of the report details recommendations for the Proposal. These are based on Connell Wagner's assessment of the EIS and REF, representations made to Byron Shire Council during the public exhibition of the EIS, and information provided by Council subsequent to the exhibition of the EIS.

It is noted that the EIS and REF contain information on impact mitigation measures and management strategies to be implemented to ameliorate the potential impacts of the Proposal. It is intended that the recommendations be implemented in accordance with those impact mitigation measures and management strategies.

The following acronyms and abbreviations are used in this section:

AHPU	Aquatic Habitat Protection Unit (of DPI)
CEMP	construction environmental management plan
Council	Byron Shire Council (or its authorised agent)
DoP	NSW Department of Planning
DEC	NSW Department of Environment and Conservation
DEUS	NSW Department of Energy, Utilities and Sustainability
DNR	NSW Department of Natural Resources
DPI	NSW Department of Primary Industries
EIS	environmental impact statement
EMP	environmental management plan
OEMP	operational environmental management plan
STP	sewage treatment plant

Procurement

1. The tender documentation for the detailed design should incorporate specific performance requirements with respect to operation of the STP and the designer should be required to demonstrate with a reasonable degree of certainty that the plant would meet the specified performance requirements.
2. The tender documentation should include all relevant advisory information related to applications for any licences, permits and approvals required for construction of the project.
3. Prior to the calling of tenders for the project, Council should review whether the 7×ADWF performance criterion is still considered valid for system operation.
4. In calling tenders for the project, Council should invite tenders for the Ocean Shores effluent transfer pipeline and Vallances Road storage as separate packages of work to be constructed, subject to availability of adequate funding, concurrently with the STP.

Environmental management plans

5. Prior to the commencement of construction works (including site establishment works preceding commencement of substantial construction), Council should prepare a construction environmental management plan (CEMP). The plan should be prepared in consultation with DEUS, DEC, DNR, DPI, and any other relevant party. The plan should be prepared in accordance with these recommendations, mitigation measures listed in Table 22.1 of the EIS, all relevant Acts and Regulations, and accepted environmental management best practice.
6. The CEMP should address, but not be limited to, the following matters:
 - (i) consultation requirements with relevant government agencies, community and other stakeholders;
 - (ii) specific environmental management objectives and strategies for the main environmental management elements and include, but not be limited to: water quality; noise and vibration; air quality/odours; erosion and sedimentation; heritage and archaeology; groundwater; contamination; waste/resource management; flora and fauna; weed control; hydrology and flooding; geotechnical issues; visual screening, landscaping and rehabilitation; hazards and risks; energy use, resource use and recycling; and utilities;
 - (iii) identification of the statutory and other obligations which Council is required to fulfil during project construction including all approvals and consultation required from authorities and other stakeholders, and key legislation and policies which control construction of the project;
 - (iv) definition of the role, responsibility, authority, accountability and reporting of personnel relevant to the CEMP;
 - (v) measures to avoid and/or control the occurrence of environmental impacts;
 - (vi) measures (where practicable and cost effective) to provide positive environmental offsets to unavoidable environmental impacts;
 - (vii) environmental management procedures for all construction processes which are important for the quality of the environment in respect of permanent and/or temporary works;
 - (viii) monitoring, inspection, and test plans for activities and environmental qualities which are important to the environmental management of the project including performance criteria, specific tests, protocols (eg frequency and location) and procedures to follow;

and

- (ix) steps Council intends to take to ensure that all plans and procedures are being complied with.
7. The CEMP should be made publicly available.
 8. Site establishment works should be permitted to commence prior to finalisation of the CEMP provided all matters relating to these works are explicitly identified in the CEMP and implemented strictly in accordance with the management measures specified in the CEMP. Under no circumstances should substantial construction works commence until the CEMP is finalised.
 9. Prior to commissioning of the sewerage scheme, Council should, in consultation with the DEUS, DNR, DPI, DEC and any other relevant party, review existing operational environmental management procedures and develop new procedures that would be consolidated into an operational environmental management plan (OEMP) for the STP, sewerage reticulation and effluent management system. The OEMP should be prepared in accordance with these recommendations, mitigation measures outlined in Table 22.2 of the EIS, all relevant Acts and Regulations, and accepted best practice management procedures.

Additionally, the OEMP should address, but not be limited to:

- (i) identification of the statutory and other obligations which Council is required to fulfil including all licences/approvals and consultations/agreements required from authorities and other stakeholders, and key legislation and policies which control Council's operation of the STP;
- (ii) requirements of and compliance with relevant DEC and DoP guidelines;
- (iii) sampling strategies and protocols to ensure the quality of the monitoring program including specific requirements of the DEC;
- (iv) monitoring, inspection and test plans for all activities and environmental qualities which are important to the environmental performance of the STP, sewerage reticulation and effluent management system during operation, including description of performance criteria, specific tests and monitoring requirements, protocols (eg frequency and location) and procedures to follow;
- (v) steps Council intends to take to ensure that all plans and procedures are being complied with;
- (vi) detailed contingency procedures for dealing with incidents with potential to materially affect performance of the STP and/or the sewerage reticulation scheme and effluent management system; and
- (vii) management strategies employed for: surface and ground water quality; chemical handling; hazards and risks and emergency response plans; energy use and measures for minimisation.

All sampling strategies and protocols undertaken as part of the OEMP should include sampling and analytical strategies in accordance with DEC approved analytical methods to ensure the effectiveness and quality of the monitoring program. All laboratories undertaking the analysis of samples for the purpose of compliance with the sewerage system's environment protection licence should be accredited by the National Association of Testing Authorities, Australia.

10. The OEMP should be made publicly available.
11. Formal arrangements with private operators irrigating using treated effluent supplied by Council should include provision for appropriate procedures to be followed in the event that adverse

trends were identified and that these should be generally consistent with those Council staff would follow in relation to treated effluent irrigation areas managed by Council.

Community notification

12. Throughout the construction phase, Council should keep the local community informed of the progress of the project including any traffic disruptions and controls, construction of temporary detours, changes to local access, and any work required outside normal construction hours.
13. Council should make available, via its web site and/or other appropriate avenues, any reports required under the environment protection licence for the sewerage system. This recommendation applies to finalised reports only and not to draft versions.

Contact telephone number and complaints register

14. Prior to the commencement of construction works, Council should establish and publicly advertise a contact telephone number to operate for the duration of the construction period, to allow any member of the public to make a complaint or comment about the construction works. The contact telephone number should be staffed during normal business hours. An initial response to any complaints received should be provided within two working days and, where required, a more detailed response within ten working days.
15. Details of any complaints received in relation to the proposed augmentation should be recorded on Council's complaints register.

Noise

16. Council should prepare a construction noise management plan for inclusion in the CEMP which identifies practical and cost-effective noise abatement measures to be implemented with the objective of meeting the following the construction noise level criteria as applicable:
 - (i) for construction periods of four weeks or less, the L_{10} noise level, when measured over a period of not less than 15 minutes when the construction site is in operation, must not exceed the background level by more than 20 dB(A);
 - (ii) for construction periods of greater than four weeks and not exceeding 26 weeks, the L_{10} level, measured over a period of not less than 15 minutes when the construction site is in operation, must not exceed the background level by more than 10 dB(A); and
 - (iii) for construction periods greater than 26 weeks, the L_{10} level, measured over a period of not less than 15 minutes when the construction site is in operation, must not exceed the existing background noise level by more than 5 dB(A).

A value of 5 dB(A) should be added to the sound pressure levels recorded from the construction activities if the noise is substantially tonal or impulsive in character.

Construction hours

17. All construction activities should be undertaken between 7.00 am to 6.00 pm Monday to Friday, 8.00 am to 1.00 pm Saturdays with no work on Sundays or public holidays except for construction work which fulfils the following:
 - (i) any works which do not cause noise emissions to be audible at any nearby residential property; or
 - (ii) emergency work to avoid the loss of lives and/or property, and/or to prevent environmental harm.

18. No Sunday or public holiday work should be permitted unless the predicted noise level is below the Rated Background Level plus 5 dB(A_{eq}).
19. Where work is required to be undertaken outside of the above hours, Council should, where practicable, provide prior notification to the DEC and to affected residents. In the event of emergencies where this is not possible, notification should be provided as soon as practicable.

Geology and soils

20. As part of the CEMP, Council should prepare a comprehensive soil and water management plan in accordance with the Department of Housing (and others) guideline *Managing Urban Stormwater–Soils and Construction* (4th edition). The plan should be prepared in consultation with relevant stakeholders, provide full details of all pollution control measures to be undertaken during construction, and satisfy all requirements for all necessary pollution control approvals and/or licences.
21. During construction, regular inspections of erosion and sedimentation control devices should be undertaken to ensure that the most appropriate controls are being implemented and that they are being maintained in an efficient condition at all times.

Scheme management

22. Council should prepare a formal effluent management strategy for the Brunswick Area Sewerage Augmentation Project. This should be finalised within 12 months of commissioning of Mullumbimby-Brunswick Heads STP. The strategy should identify the priority of the deferred elements of the Stage 1 reuse scheme.
23. As part of the effluent management strategy, scheme performance should be reviewed on a regular basis. This should include consideration of the uptake of effluent reuse and the timing for provision of deferred elements of the Stage 1 reuse scheme.
24. The formal arrangements with private operators irrigating using treated effluent supplied by Council should include provision for appropriate procedures to be followed in the event that adverse trends were identified and that these should be generally consistent with those Council staff would follow in relation to treated effluent irrigation areas managed by Council.

Flora and fauna

25. The AHPU should be consulted in relation to the preparation of the long term management for the oxbow lakes. Additionally, the plan should make suitable provision for aquatic habitat rehabilitation works at the Vallances Road site.

Groundwater management

26. Council should consult with DNR with regard to identification of appropriate triggers for inclusion in the groundwater management plan in relation to implementation of contingency procedures.

Appendix A

Amended effluent quality parameters



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Your reference: 04000142

12 October 2006

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MULLUMBIMBY NSW 2482

Ian

**Re: Brunswick Area Sewerage Augmentation Project –
Amended effluent quality parameters**

As per conversations held on 28 September 2006, find attached the amended effluent quality parameters to be specified for the proposed Mullumbimby-Brunswick Heads STP and effluent release point at the Brunswick River.

Background

Council requires clear identification of the specific effluent quality objectives that the Mullumbimby-Brunswick Heads STP and effluent release point at the Brunswick River need to achieve to comply with the objectives and conclusions of the EIS. To meet this requirement, the effluent quality objectives stated in Table 3.7 and Table 7.8 of the EIS have been amended and split into the following two tables:

- **Table 3.7(a):** This table specifies the effluent quality objectives to be achieved by the Mullumbimby-Brunswick Heads STP (without the constructed wetland); and
- **Table 3.7(b):** This table specifies the effluent quality objectives to be achieved at the effluent release point to the Brunswick River (after the constructed wetland).

The effluent quality parameters specified in Table 3.7 of the Environmental Impact Statement (EIS) were presented on the basis of the expected effluent quality that would be produced by the combination of the proposed Mullumbimby-Brunswick Heads STP and constructed wetland, as presented in Table 6.3 of the Concept Design Report (GHD 2003).

Effluent quality for proposed Mullumbimby-Brunswick Heads STP

As indicated in Section 3.3.3 of EIS, the proposed STP would be designed on the basis of meeting the Accepted Modern Technology Standard (AMTS) stipulated by the Department of Environment and Conservation, except for total phosphorus (TP), which would be achieved downstream of the proposed constructed wetland at the point of release to the Brunswick River.

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The amended effluent quality objectives for the Mullumbimby-Brunswick Heads STP are presented in Table 3.7(a).

Table 3.7(a) Expected effluent quality from proposed Mullumbimby-Brunswick Heads STP (excluding constructed wetland)

Parameter	Accepted Modern Technology Standard (90 th percentile)	Proposed Mullumbimby-Brunswick Heads STP ¹ (90 th percentile)
Biological oxygen demand (mg/L)	10	<10
Suspended solids as non-filterable residue (mg/L)	15	<15
Total nitrogen (mg/L)	10	<10
Ammonia (mg/L)	2	<2
Total phosphorus (mg/L)	0.3	<0.5
Oil and grease (mg/L)	2	<2
pH	6.5 - 8.5	6.5-8.5
Faecal coliforms (cfu/100mL)	200	<150

Notes 1 Adapted from Table 5-7 of GHD 2003.
mg/L = milligrams per litre
cfu/100mL = colony forming units per 100 millilitres

The TP concentration target of 0.5 mg/L (90th percentile) specified in Table 3.7(a) has been selected on the basis that the constructed wetland would be able to reduce the TP concentration produced by the STP to 0.3 mg/L (90th percentile), as prescribed by the AMTS. It is considered reasonable to expect modern secondary sewage treatment processes to readily achieve the proposed TP concentration target of 0.5 mg/L without the need for tertiary filtration equipment.

The proposed faecal coliform concentration target is based on the concept design proposed by GHD (GHD 2003).

Table 7.8 of the EIS also needs to be modified to reflect the proposed amendments. A copy of the amended Table 7.8 is provided below for completeness.

Table 7.8: Comparison of existing and expected effluent quality (90th percentile)

Parameter	Accepted Modern Technology Standard	Proposed Mullumbimby-Brunswick Heads STP	Mullumbimby STP ²	Brunswick Heads STP ¹	Ocean Shores STP ²
Biological oxygen demand (mg/L)	10	<10	7.3	18.0	3
Suspended solids (mg/L)	15	<15	16.1	NA	3
Total nitrogen (mg/L)	10	<10	17.9	24.1	8.6
Total phosphorus (mg/L)	0.3	<0.5	1.82	0.67	0.1

Parameter	Accepted Modern Technology Standard	Proposed Mullumbimby -Brunswick Heads STP	Mullumbimby STP ²	Brunswick Heads STP ¹	Ocean Shores STP ²
Oil and grease (mg/L)	2	<2	2.0	3.7	3.8
pH	6.5 - 8.5	6.5-8.5	7.4	9.1	7.3
Faecal coliforms (cfu/100mL)	200	<150	324	200	127

Notes 1: Based on data set from 7 May 2003 to 25 February 2004 provided by Byron Shire Council
 2: Calculated 90th percentile values based on data provided by Byron Shire Council – includes constructed wetland.
 NA = no data was available
 mg/L = milligrams per litre
 cfu/100mL = colony forming units per 100 millilitres

Effluent quality at proposed effluent release point to Brunswick River

The amended effluent quality objectives to be achieved at the point of release to the Brunswick River are presented in Table 3.7(b).

The effluent quality objectives for biological oxygen demand (BOD) and suspended solids (SS) have been revised and are slightly higher than the equivalent parameters presented in Table 3.7 of the EIS. This revision was undertaken based on effluent quality data obtained from the constructed wetland at West Byron STP. These parameters are not critical to the environmental performance of the project and do not affect the conclusions of the surface water impact assessment presented in Chapter 7 of the EIS.

Table 3.7(b) Expected effluent quality at the point of release to the Brunswick River

Parameter	Accepted Modern Technology Standard (90 th percentile)	Effluent release point at Brunswick River ¹ (90 th percentile)
Biological oxygen demand (mg/L)	10	<10
Suspended solids (mg/L)	15	<15
Total nitrogen (mg/L)	10	<10
Ammonia (mg/L)	2	<2
Dissolve inorganic nitrogen (mg/L)	Not specified	<3
Total phosphorus (mg/L)	0.3	<0.3
Oil and grease (mg/L)	2	<2
pH	6.5 – 8.5	6.5-8.5
Faecal coliforms (cfu/100mL)	200	<14 ²

Notes: 1 Adapted from modelled performance data provided in Table 6.3 of GHD 2003.
 2 Additional UV disinfection to be provided prior to effluent release to Brunswick River
 mg/L = milligrams per litre
 cfu/100mL = colony forming units per 100 millilitres

The effluent quality objective for total nitrogen (TN) was also increased from <1mg/L to <10mg/L. to address a typographical error in the expected TN concentration reported in Table 3.7 of the EIS.

Total nitrogen comprises two components, namely dissolved inorganic nitrogen and organic nitrogen. The key parameter of concern relevant to estuarine systems and used by Manly Hydraulics Laboratory (MHL) to assess the impacts of effluent releases on the Brunswick River was dissolved inorganic nitrogen (DIN). It is understood that the organic nitrogen component of the effluent would not have a significant impact on the estuary, due to its bio-availability, and was not considered further in the assessment conducted by MHL (2005).

On this basis, DIN has been included in the effluent quality objectives presented in Table 3.7(b). The new objective for DIN of 3 mg/L (90th percentile) has been based on the DIN concentration of 1.4mg/L (50th percentile), which was used by MHL to undertake the estuary modelling. The DIN concentration used in the modelling was based on the following key assumptions:

- the REED model utilised effluent concentrations entering the wetland based on 90th percentile estimates, resulting in a conservative estimate of predicted effluent quality leaving the wetland;
- the REED model predicted a TN concentration of 1.4mg/L (50th percentile) leaving the wetland (refer to Appendix K of concept design report, GHD 2003); and
- all of the TN leaving the wetland was DIN, thus providing a worse-case modelling scenario and worse-case impact predictions.

The estuary modelling results concluded that the release of effluent with a DIN concentration of 1.4 mg/L (50th percentile) during ebb-tide conditions would not have an adverse effect on the health of the estuary, except during drought conditions, where the effects would be marginal.

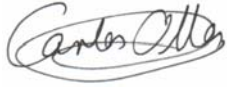
The factor used to convert the 50th percentile DIN concentration to a 90th percentile DIN concentration has been based on a review of historical effluent quality data from similar sewage treatment processes and generally established conversion factors used by the DEC when determining licence conditions.

The high disinfection targets stipulated in Table 3.7(b) have been based on the need to enhance the recreational and commercial values of the river and protect public health, particularly in relation to the health of consumer of seafood that is sourced from the river (e.g. oysters) and to comply with the water quality criteria stipulated in Table 7.4 of the EIS.

Conclusion

The amended effluent quality objectives presented in this letter provide Council with a clear and concise basis from which to specify the performance of the individual project components. The amended effluent quality objectives do not modify or alter the conclusions of the EIS and are consistent with the objectives stated in Section 1.5 of the EIS.

I hope the above information meets with your requirements. Please contact me if you have any queries regarding the content of this letter.

A handwritten signature in black ink, appearing to read 'Carlos Olles', enclosed within a hand-drawn oval.

Carlos Olles
Project Manager
Parsons Brinckerhoff Australia Pty Limited

Appendix B

***Brunswick Area Sewerage Augmentation Project–Effluent Polishing
Plant Review of Environmental Factors***

Brunswick Area Sewerage Augmentation Project – Effluent Polishing Plant

Review of Environmental Factors

September 2006

Byron Shire Council



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Author: Selga Harrington

Reviewer: Carlos Olles

Approved by: Carlos Olles

Signed:

Date: 29 September

Distribution:

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Abbreviations

Abbreviation	Description
ASS	Acid Sulphate Soils
CEMP	Construction Environmental Management Plan
DEC	Department of Environment and Conservation
DIPNR	Department of Infrastructure Planning and Natural Resources (NSW)
<i>EP&A Act</i>	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	Environmental Planning and Assessment Regulation
<i>EPBC Act</i>	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
EPA	Environmental Protection Authority
ESA	Environmental Site Assessment
LEP	Local Environmental Plan
OEMP	Operational Environmental Management Plan
REF	Review of Environmental Factors
RTA	Roads and Traffic Authority
SEPP	State Environmental Planning Policy
STP	Sewage Treatment Plant
SPS	Sewage Pumping Station
<i>TSC Act</i>	<i>Threatened Species Conservation Act 1995</i>

Executive Summary

This Review of Environmental Factors assesses the potential environmental impacts associated with the proposed effluent polishing plant.

The proposal involves the construction and operation of an effluent polishing plant to treat effluent from the proposed Mullumbimby-Brunswick Heads STP to a standard that meets the urban non-potable water quality standard specified by the NSW Residential Re-use Guidelines (NSW Recycled Water Co-ordination Committee, 1993). The polishing plant forms part of the proposed South Mullumbimby effluent reuse scheme, which is an integral component of the Brunswick Area Sewerage Augmentation Project.

The environmental assessment of this proposal indicates that there would be some minor short-term environmental impacts during the construction phase of the project. These minor impacts, such as construction-related noise, would be appropriately managed and detailed in the Construction Environmental Management Plan to be prepared prior to the commencement of construction.

This Review of Environmental Factors has not identified any potentially significant adverse natural or social environmental impacts of the proposal. It is considered, therefore, that an Environmental Impact Statement is not required.

1. Introduction

1.1 Background to the Project

This Review of Environmental Factors (REF) describes a proposal to construct and operate an effluent polishing plant to treat effluent from the proposed Mullumbimby-Brunswick Heads STP to a standard that meets the urban non-potable water quality standard specified by the *NSW Residential Re-use Guidelines* (NSW Recycled Water Co-ordination Committee, 1993). The polishing plant forms part of the proposed South Mullumbimby effluent reuse scheme, which is an integral component of the Brunswick Area Sewerage Augmentation Project.

The Brunswick Area Sewerage Augmentation Project was assessed in an Environmental Impact Statement (EIS) under Part 5 of the *Environmental Planning and Assessment Act 1979 (EP&A Act)*. The proposed effluent polishing plant was not assessed in the EIS and requires further assessment under Part 5 of the *EP&A Act*.

This REF satisfies the environmental assessment requirements for this proposal.

1.2 Subject site

The site of the proposed effluent polishing plant is within Lot 4 DP 841856. This property is owned by Byron Shire Council, covers 6.7 hectares and is commonly known as the “horse paddock”. The property is approximately 300 metres to the north of Mullumbimby and to the east of the existing Mullumbimby STP. It is bound to the north, west and south by the Brunswick River and to the east by the North Coast Railway.

The land is zoned 1(b1) Agricultural Protection and under this zoning all land uses other than agriculture, bushfire hazard protection and forestry, require development consent and approval under Part 4 of the *EP&A Act*. The surrounding land use is rural.

Refer to *Figure 1.1* for location details.

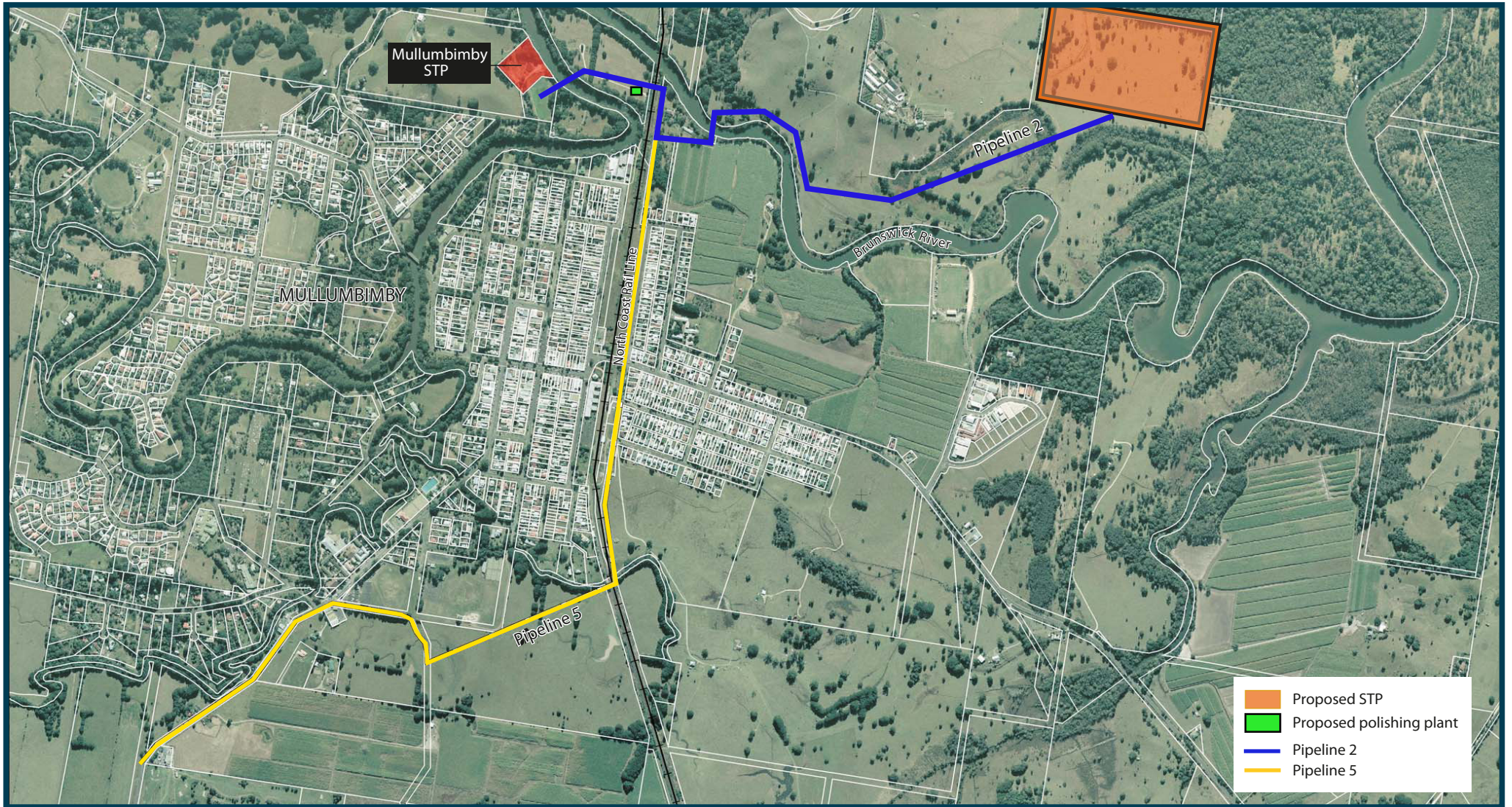


Figure 1.1 Proposed location of effluent polishing plant

1.3 Phases of project planning, assessment and approval

1.3.1 Environmental Impact Assessment Framework

The planning and assessment process for the proposal is established by the requirements of the NSW *Environmental Planning and Assessment Act 1979 (EP&A Act)* and other relevant planning instruments.

The proposed effluent polishing plant would be assessed in accordance with the framework established by the *EP&A Act 1979* under Part 5 of the Act.

1.3.2 Review of Environmental Factors

The purpose of this REF is to identify impacts from the construction and operation of the proposal and to identify measures to mitigate against such impacts. This REF has been prepared to satisfy the requirements of the *EP&A Act*. It presents details of the proposal, assesses the existing natural and social environments, describes the potential impacts on the environment and presents safeguards to minimise and/or avoid these identified impacts.

The REF includes consideration of *Section 228* of the *Environment Planning and Assessment Regulation 2000 (EP&A Regulation)*, which details the factors to be taken onto account when consideration is being given to the likely impact of the activity on the environment (refer *Appendix A*).

Due to the relatively small scale of the proposed development, the REF will not be placed on public exhibition by Byron Shire Council.

1.4 REF Format

The REF has four sections:

- *Section 2* provides the statutory and strategic considerations for the proposal;
- *Section 3* describes the existing sewerage infrastructure and discusses the need for carrying out the proposal, as well as, briefly discussing the various options that were evaluated in choosing the preferred scheme;
- *Section 4* describes the proposal in detail;
- *Section 5* assesses the biophysical, social and economic environmental impacts and provides summary of the proposed mitigation measures to ensure the environment would be adequately protected during the construction and operation of the proposal; and
- *Section 6* summarises environmental management processes applying to construction and operation of the proposal.

2. Statutory and strategic considerations

This Chapter outlines the key requirements of the proposal in regard to NSW and Commonwealth legislation, state, regional and local environmental planning instruments.

2.1 The Environmental Planning and Assessment Act 1979

2.1.1 Zoning and permissibility

In NSW, proposed development is assessed under the *Environmental Planning and Assessment Act 1979* (the Act) and the *Environmental Planning and Assessment Regulation 2000* (the Regulation). Environmental assessment is undertaken under Part 4, Part 3A and/or Part 5 of the Act. Part 4 assessments and approvals are undertaken for proposals which require development consent from a consent authority. Part 5 assessments and approvals normally relate to activities undertaken by government authorities, where development consent is not required, and a determination to approve the activity is made by a determining authority. Part 3A of the Act also applies in this regard however an order made by the Minister for Planning, gazetted on 29 July 2005, excludes local councils from the requirement to proceed under Part 3A.

Clause 11 (1) of *State Environmental Planning Policy No 4 - Development Without Consent and Miscellaneous Exempt and Complying Development* (SEPP 4) allows public authorities to undertake certain developments, such as the construction of water storage dams and sewage treatment works, without the need to obtain development consent.

Byron Shire Council is defined as a 'public authority' under the Act, and hence the provisions of SEPP 4 apply to those parts of the proposal that can be described as 'sewerage treatment works', or 'water storage dams'.

The proposed effluent polishing plant is considered to be part of the sewerage treatment works associated with the Brunswick Area Sewerage Augmentation project and as such, does not require development consent. Byron Shire Council has therefore nominated to proceed with the assessment of this proposal under Part 5 of the Act.

2.2 Environmental impact assessment framework

2.2.1 Relevant Commonwealth legislation

Under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) any action that has, or is likely to have, a significant impact on matters of National Environmental Significance (NES) or other aspects of the environment, such as on Commonwealth land may progress, only with approval of the Commonwealth Minister for the Environment under Part 9 of the EPBC Act. *Appendix B* and *Section 5.6* considers such matters and concludes that the Commonwealth legislation does not apply due to the minor nature of the proposed works.

2.2.2 Relevant NSW legislation

As discussed in *Section 1.3.1* of the REF, the proposed effluent polishing plant would be assessed in accordance with the framework established by the *EP&A Act 1979* under Part 5 of the Act.

The REF includes a consideration of State Environmental Factors under *Clause 228* of the *EP&A Regulation 2000*. This is summarised in *Appendix A*.

2.2.3 Local and State Planning Instruments

North Coast regional environmental plan 1988

The North Coast Regional Environmental Plan identifies environmental features that are important to the region and provides a basis for new urban and rural development. With an emphasis on careful assessment, the plan sets requirements for, and guides, the preparation and processing of local environmental plans and some forms of development. The following provisions are relevant to the proposal.

Clause 12- Impact of development on agricultural activities

Under clause 12, the Council would not consent to development on rural land unless it has first considered the likely impact of the proposal on the use of adjoining or adjacent agricultural land and if the development would cause a loss of prime crop or pasture land.

The proposed polishing plant would cover an area of approximately 10 by 15 metres and as such would only remove a small amount of agricultural land and would not impact nearby agricultural land.

Clause 13- Fishery habitat and catchment

The objectives of clause 13 are to preserve and enhance fishery habitats and associated catchments and promote the sustainable use of resources.

The proposed effluent polishing plant would help to reduce treated effluent impacts to the Brunswick River and promote the sustainable use of recycled water in the South Mullumbimby area.

Clause 15- Wetlands or fishery habitat

Under clause 15, Council would not consent to a development within, adjoining wetlands, fishery habitats or catchments without considering potential impacts on fish habitats, aquatic vegetation, aquatic reserves, wetlands, quality and quantity of flows, public foreshore reserves, commercial and amateur fisheries.

The proposed polishing plant would not directly impact aquatic habitats and would help to reduce the need to discharge effluent into the Brunswick River and would therefore improve the water quality of the river and subsequently the fish habitats.

Mitigation measures would be implemented during construction to prevent pollution and sedimentation of the river, including sedimentation and erosion controls. The proposed plant would be fully contained within a bunded area to prevent any accidental spills of chemicals or effluent into the river.

Byron Local Environment Plan 1988

The *Byron Local Environmental Plan 1988* (Byron LEP) outlines the relevant land zonings and development assessment framework in the Byron Shire.

Flood liable land

The proposed location for the effluent polishing plant site is identified as flood liable land. Under clause 24 of the Byron LEP, a dwelling house, any other building, filling or construction of levees must not be constructed without the consent of Council.

Council shall not consent to the erection of a building or the carrying out of work on flood liable land unless it is satisfied that:

- the development would not restrict the flow characteristics of flood waters,
- the development would not increase the level of flooding on other land in the vicinity
- the structural characteristics of any building or work the subject of the application are capable of withstanding flooding
- the building is adequately flood proofed
- satisfactory arrangements are made for access to the building or work during a flood

Although some of the land is located within the 1:100 year flood level, the building of the proposed effluent polishing plant would be restricted to an area outside the 1:100 year flood.

Acid sulfate soils

Clause 63 of the Byron LEP requires the preparation of an acid sulfate soils management plan prior to consent being granted for works which may impact acid sulfate soils. The site is identified as being of low risk (class 4) acid sulfate soils (see section 5.3). In this area, excavations of greater than two metres would require the development of a management plan. The proposed construction works associated with the effluent polishing plant would not, however, require excavation to this depth and as such, an acid sulfate soils management plan would not be required.

State Environmental Planning Policies

State Environmental Planning Policies (SEPPs) generally apply to issues and developments of State significance, from an environmental planning perspective. Relevant SEPPs which need to be considered include.

SEPP 4 - Development without Consent

State Environmental Planning Policy 4 –Development without consent (SEPP 4) allows relatively simple or minor changes of land or building use and certain types of development without the need for formal development applications. Under Clause 11 (1) of this policy public authorities are allowed to undertake certain developments, such as the construction of water storage dams and sewage treatment works, without the need to obtain development consent.

As discussed in *Section 2.1.1*, SEPP 4 applies to the proposed effluent polishing plant as the proposed works are considered 'sewerage treatment works' which are part of the Brunswick Area Sewerage Augmentation project.

SEPP 33 – Hazardous and Offensive Development

Under *State Environmental Planning Policy 33 - Hazardous and Offensive Development* (SEPP 33), hazards and risks from development projects are assessed during the

environmental planning and assessment stage. The objective of SEPP 33 is to ensure that only those industrial projects that are suitably located and can be built and operated with adequate levels of safety can proceed.

Guidance on the assessment requirements under SEPP 33 is provided in the former Department of Urban Affairs and Planning guidelines: *Applying SEPP 33* (1994). This section assesses the likely hazards and risks associated with the project in accordance with the relevant guidelines.

The first step is to determine whether the project is potentially hazardous, using a risk screening method provided in the guidelines. The screening method is based on the quantity of hazardous material stored in the proposed development, and for some classes of hazardous materials, the distance between the storage area and the site boundary. Hazardous materials are substances classified in the *Australian Dangerous Goods Code* (Department of Transport and Regional Services 1998). Projects that are determined to be potentially hazardous require further assessment under *SEPP 33*. However, those determined not to be potentially hazardous are not subject to the provisions of *SEPP 33*, as they do not pose a significant risk to the surrounding community.

Minor quantities of sodium hypochlorite (less than 1,000 litres) and other chemicals (less than 200 litres) would be associated with the operation of the proposed effluent polishing plant. The small volumes of chemicals associated with this plant are well below the threshold quantities specified in *Applying SEPP 33*, and hence SEPP 33 does not apply.

SEPP 44 – Koala Habitat Protection

SEPP 44 aims to encourage the conservation and management of areas of natural vegetation that provide habitat for Koalas. The policy applies to a number of local government areas (listed in schedule 1 of the SEPP) in NSW. The SEPP provides guidelines for determining if land can be regarded as potential or core koala habitat. If land is determined to be core koala habitat under the SEPP, a plan of management would be prepared before development consent for that land is granted.

An assessment of Koala habitat has been undertaken and is provided in *Section 5.6.2* of this REF. It concludes that the area of the proposed works is highly unlikely to be used as habitat by Koalas.

2.2.4 Strategic Planning Policies

A number of strategic planning policies were reviewed and considered applicable to the proposed Brunswick Area Sewerage Augmentation Project, of which the proposed effluent polishing plant is a part of. The list of applicable policies follows:

- Northern Rivers Catchment Blueprint and Northern Rivers Farmland Protection Project (2003)
- North Coast Urban Planning Strategy (1995)
- Northern Rivers Regional Strategy Framework Structure Plan (1998)
- Byron Shire Council Sewage Management Strategy (1999)
- Byron Shire Council Development Strategies (in particular the Mullumbimby Settlement Strategy 2003)



As the proposed effluent polishing plant is an integral component of the larger sewerage augmentation project, these policies would indirectly apply to this proposal. Refer to Section 4.4 of the Brunswick Area Sewerage Augmentation Environmental Impact Statement (Parsons Brinckerhoff 2005) for further details on the relevance and application of these strategies to the project.

3. Need for the project and alternatives considered

3.1 Need for the project

The proposed effluent polishing plant forms an important part of the effluent management strategy associated with the proposed Brunswick Area Sewerage Augmentation Project.

The plant would be designed to treat the effluent produced by the proposed Mullumbimby-Brunswick Heads STP to a quality that is suitable for non-potable, urban re-use applications as stipulated by the *NSW Residential Re-use Guidelines* (NSW Recycled Water Co-Ordination Committee 1993).

The high quality of the effluent produced by the polishing plant would be used to support irrigation activities at existing and proposed public facilities located in the South Mullumbimby area, including the golf course and playing fields.

The need to treat the effluent to such a high standard stems from requirements specified by NSW Health during the EIS process, due to the proposed unrestricted public access that would apply to the lands that are to be irrigated using treated effluent. It is also expected that the provision of the effluent polishing plant would enhance the opportunity for future non-potable residential re-use application in the Mullumbimby area.

3.2 Alternatives considered

A number of alternatives were considered by Council, including the 'do nothing' alternative.

The 'do nothing' alternative would mean public access restrictions would need to be imposed by Council during and for some hours after effluent irrigation has occurred at a particular site. This is due to public health concerns associated with the potential exposure of users of these lands to the irrigated effluent. The requirement would add further constraints on the use of effluent for irrigation purposes, particularly during periods of intensive land use, and may affect the project's proposed effluent re-use targets.

The 'do nothing' alternative would also restrict future opportunities to increase effluent re-use rates associated with the supply of high quality effluent to new residential and/or commercial developments in the Mullumbimby area for non-potable domestic applications.

Considering the above issues, the 'do nothing' alternative was rejected by Council.

The two locations which were considered by Council to place the effluent polishing plant were as follows:

- Location 1: Downstream of the effluent storage dam and within the proposed Mullumbimby-Brunswick Heads STP site

- Location 2: On a property owned by Byron Shire Council and commonly known as the “horse paddock”. The property is approximately 300 metres to the north of Mullumbimby and east of the existing Mullumbimby STP

At Location 1, the effluent polishing plant would need to be designed with the capacity to treat the design flow of treated effluent that would be produced by the proposed Mullumbimby-Brunswick Heads STP. An alternative would be to extend Pipeline 5 so that it reaches the effluent polishing plant at the proposed STP site. The disadvantages of this location are:

- larger polishing plant would be required to treat the full flow coming from the proposed STP, increasing the capital cost of the polishing plant and/or increased pipeline length, and operating costs associated with increased chemical and power consumption
- the treatment of all effluent flows to this high quality would reduce the beneficial aspects of using treated effluent for agricultural purposes, due to the significantly reduced nutrient loads in the final effluent.

At location 2, the polishing plant would only be required to treat a portion of the total effluent flow produced by the Mullumbimby-Brunswick Heads STP. The benefits of this option are as follows:

- a smaller polishing plant would be required, as it would only be required to treat flows that are to be used by the south Mullumbimby effluent re-use scheme. This should result in a more efficient use of resources including reduced capital and operational costs.
- the proposed lot of land is owned by Council and is located along the route that has been proposed for Pipeline 2. Hence, pipeline lengths associated with connecting the polishing plant to Pipeline 2 and Pipeline 5 to the effluent storage dam at South Mullumbimby could be kept as short as possible.

Based on the above considerations, Council concluded that location 2 provided the best outcome and was selected as the preferred site location.

4. Project description

The proposed effluent polishing plant would comprise a small above ground structure located in land owned by Council. The site is currently used for agricultural purposes.

The final design and layout of the polishing plant would be confirmed as part of the detailed design phase, however, it is expected that the plant would comprise the following key components:

- a small skid mounted filtration plant located on top of a concrete pad (based on either micro-filtration or sand-filtration technology)
- a sodium hypochlorite dosing station covering an approximate area of 10 by 15 metres. The dosing station would be placed on top a concrete pad and would include a shed containing process equipment, duty and standby dosing pumps and a small sodium hypochlorite storage tank located outside the shed within a sealed and bunded compound.

Treated effluent produced by the proposed Mullumbimby-Brunswick Heads STP would be transferred to the polishing plant by an off-take from Pipeline 2. The polished effluent would be transferred via Pipeline 5 to the 52 megalitre effluent storage dam located at South Mullumbimby. Note that the effluent pumps would be located at the Mullumbimby-Brunswick Heads STP.

The polishing plant would treat the effluent produced by the Mullumbimby-Brunswick Heads STP to a quality that is suitable for the irrigation of public lands and domestic non-potable re-use purposes. The effluent quality needs to comply with the NSW Residential Re-use Guidelines issued by the NSW Recycled Water Co-Ordination Committee (1993). A list of the key effluent quality parameters specified by these guidelines is provided in *Table 4.1*.

Table 4.1 Effluent quality produced by effluent polishing plant

Effluent quality parameters	Proposed Standard
<i>Quality at outlet of effluent polishing plant</i>	
Faecal coliforms	< 1 cfu/100 mL
Total coliforms	< 10 cfu/100 mL (in 95% of samples)
Virus	< 2 in 50 litres
Parasites	< 1 in 50 litres
<i>Quality at point of use or application</i>	
Total coliforms	< 2.5 cfu/100mL (geometric mean over 5 consecutive samples) < 25 cfu/100mL (in 95% of samples)
Turbidity	< 2 NTU (geometric mean over 5 consecutive samples) < 5 NTU (in 95% of samples)
pH	6.5 to 8.0
Residual chlorine	< 0.5 milligrams per litre at point of use

Note: cfu/100mL = colony forming units per 100 millilitres NTU = Nephelometric turbidity unit
Source: Guidelines for Urban and Residential Reuse of Reclaimed Water (NSW Recycled Water Coordination Committee 1993)

The effluent quality produced by the polishing plant would conform to these guidelines. The dosing station would dose the effluent line and provide a residual chlorine concentration of one milligram per litre which meets the urban non-potable water quality standard (NSW Recycled Water Co-ordination Committee 1993).

5. Environmental Impact Assessment

This Chapter provides an assessment of the potential environmental impacts associated with the construction and operation of the proposed effluent polishing plant. It also outlines the proposed mitigation and safeguard measures where impacts have been identified.

5.1 Topography

5.1.1 Existing environment

The site occurs in the Brunswick River valley on the riverine floodplain. The Burringbar Range occurs to the west with the low lying coast line occurring to the east (Packham 1969). The site is relatively flat and is bounded to the north, west and south by the Brunswick River and to the east by the North Coast Railway.

5.1.2 Construction and operational impacts

The proposed polishing plant would be above ground and would not require significant excavation. The construction and operation of the proposal would not impact the topography of the site.

5.1.3 Mitigation measures and safeguards

No mitigation measures or safeguards are required.

5.2 Geology and soils

5.2.1 Existing environment

The Brunswick area is characterised by Palaeozoic metamorphic rocks, overlain with quaternary alluvial sediments. These sediments include river gravels, alluvium, sand, clay and estuarine sediments at lower ground level (Packham 1969).

The site is mapped as consisting of Mullumbimby soils. These soils consist of metamorphic and rhyolitic derived sediments over 300 centimetres deep; moderately well-drained, brown, structured alluvial clays on a floodplain; and very deep (over 500 centimetres), moderately well-drained, bright brown, structured alluvial clays on terraces. The soils are prone to localised seasonal waterlogging, and are moderately erodible with high shrink-swell (Department of Conservation and Land Management).

5.2.2 Construction and operational impacts

The proposed polishing plant would be above ground and would not require significant excavation. As such, construction would not impact the local geology. Impacts to soils would be minimal due to the small footprint of the proposed plant, however, the construction works may result in some erosion to soils and due to the proximity of the site to the Brunswick River, may result in sedimentation impacts to the river.

5.2.3 Mitigation measures and safeguards

The implementation of a soil management plan for this project would be conducted through the Construction Environmental Management Plan (CEMP) that would be prepared prior to the commencement of construction activities associated with the Brunswick Area Sewerage Augmentation project.

The following safeguards would be considered in the CEMP to minimise the effects on soils:

- erosion and sediment controls would be implemented to minimise siltation and sedimentation.
- clearing of surface cover would be minimised as much as possible
- following completion of construction, all building materials would be removed from the site and cleared areas re-vegetated.

5.3 Acid sulfate soils

5.3.1 Existing environment

Acid sulfate soils are naturally occurring soils containing iron sulfides which when disturbed and exposed to air, become oxidised and produce sulfuric acid. Based on the acid sulfate soil risk map, the site has low potential for acid sulfate soil (class 4) (Department of Land and Water Conservation 1997).

5.3.2 Construction and Operational Impacts

When disturbed, Acid Sulfate Soils (ASS) or potential Acid Sulfate Soils (PASS) can leach acid and cause environmental damage, represented by fish kills in rivers, incremental degradation of estuarine ecosystems and decrease in productivity of formerly valuable agricultural land.

Under the Byron LEP, excavations deeper than two metres would trigger the need for a management plan. However, the proposed polishing plant would not require excavations to this depth.

5.3.3 Mitigation measures and safeguards

No mitigation measures or safeguards are required.

5.4 Surface and groundwater

5.4.1 Existing Environment

The site is located adjacent to the Brunswick River. This river catchment covers 228 square kilometres and has a water surface of approximately 2.2 square kilometres. The main arm of the river is 21 kilometres long (Manly Hydraulics Laboratory 2005)

The groundwater is generally shallow in agricultural land within Byron Shire (0.5 to 3 metres deep). This level can fluctuate in response to rainfall and is generally discharged directly via base flow to local waterways. The groundwater salinity is relatively fresh and is suitable for stock, domestic and some irrigation (Parsons Brinckerhoff 2004)

The annual average rainfall is 2,000 millimetres with rainfall heaviest in January to June. Rainfall and runoff varies considerably between years with large floods contribution to this variability. The freshwater replacement time, averaged over a year for the whole estuary, is approximately nine days (CSIRO 2002). However, during dry weather freshwater flushing in the upper estuary is slower, taking approximately fifteen days (Manly Hydraulics Laboratory 2002). Marine flushing is much weaker in the upper estuary (Pont 2001).

5.4.2 Construction and operational impacts

Construction activities have the potential to cause soil erosion and sedimentation due to the clearing of surface vegetation. These impacts are discussed in *Section 5.2*.

The key sections of the plant would be constructed on top of a concrete slab which would minimise the potential for surface contamination to impact on the underlying groundwater source.

The dosing station would be located within a bunded area to avoid possible chemical spills and contamination of ground and surface water.

Limited excavation may be required, but this would not extend to groundwater depths and would be unlikely to impact groundwater.

5.4.3 Mitigation measures and safeguards

The implementation of a surface water management plan for this project would be conducted through the Construction Environmental Management Plan (CEMP) that would be prepared prior to the commencement of construction activities associated with the Brunswick Area Sewerage Augmentation project.

5.5 Air quality

5.5.1 Existing environment

Air quality in the Mullumbimby area is considered to be typical of a rural and rural residential air shed.

Acceptable ranges of air borne particulates, dust, hydrocarbons, oxides of nitrogen and sulphur would be expected in the area due to its relatively undeveloped nature. Local sources of air emissions include a combination of general rural/residential activities and the use of arterial, local and access roads. Regional sources of air emissions would include bushfires and dust storms.

5.5.2 Construction and operational impacts

Air quality impacts are driven by both regional meteorological conditions and by local conditions. Topography, wind speed and wind direction each affect the potential dispersion and transport of particulate and odorous plumes.

Potential construction air quality impacts would be limited to dust emissions and exhaust emission from construction equipment and vehicles.

Exhaust emissions from construction plant and equipment would be associated with the use of diesel fuels and petroleum. Given separation distances (approximately 100 metres to the nearest residential house, on the opposite side of the railway line, and 300

metres to the nearest residential development), short-term emissions from construction plant and equipment would be unlikely to result in impacts on the amenity of nearby residents. There is also a small industrial area (Ross Industrial Complex) approximately 200 metres south of the proposed activity, which may be impacted by the short-term emissions from construction plant and equipment during the construction phase.

Air quality impacts would be unlikely during operation of the proposed effluent polishing plant, as the plant would not include effluent storage and would not generate any odours.

5.5.3 Mitigation measures and safeguards

The implementation of an air quality management plan for this project would be conducted through the Construction Environmental Management Plan (CEMP) that would be prepared prior to the commencement of construction activities associated with the Brunswick Area Sewerage Augmentation project

The following mitigation measures and safeguards are likely to be implemented during the construction phase of the project:

- disturbed areas would be stabilised as soon as possible to prevent or minimise wind-blown dust generation.
- dust-generating activities (particularly clearing and excavating) would be avoided or minimised during dry and windy conditions.
- site speed limits would be imposed on all vehicles.
- vehicle and machinery movements during the construction works would be restricted to designated areas.
- vehicles transporting material to and from the site would be covered immediately after loading to prevent wind-blown dust emissions and spillages as required by law
- tailgates of road transport trucks would be securely fixed prior to loading and immediately after unloading.
- construction plant and equipment would be well maintained and regularly serviced.

5.6 Flora and fauna

5.6.1 Existing environment

The site is relatively flat, has been previously cleared and contains improved pasture. No native vegetation is mapped as occurring within the site (Landmark Ecological Services et al. 1999). Riparian vegetation occurs along the Brunswick River bordering the site and includes Camphor Laurels (*Cinnamomum camphora*) and other mature trees such as Grey Mangroves (*Avicennia marina*) (Parsons Brinckerhoff 2005a). A strip of vegetation runs through the centre of the site in a north south direction (Planit Consulting 2006).

No threatened species, populations or communities have been recorded within the site or would be dependant on the habitats within the site (Department of Environment and Conservation 2006; Parsons Brinckerhoff 2005a). The site does not contain preferred Koala feed trees and is therefore not considered Core Koala Habitat or support for core under SEPP 44.

Byron Shire lies within an area of very high floral and faunal diversity known as the McPherson-Macleay overlap zone, where many species reach the northern or southern limit of their range. Organisms at the edge of their range are often particularly vulnerable to stress (FRC Environmental 2005; Landmark Ecological Services et al. 1999).

The Brunswick River Estuary provides important habitat for aquatic flora and fauna including Grey Mangroves which occur as a thin band on the river bank. In this area, mangrove pneumatophores are relatively long and thin, a phenomenon often associated with acidic runoff (FRC Environmental 2005). Mangroves are important nursery and feeding grounds for most economically important fish occurring in subtropical Australian estuaries (Morton 1990; Morton et al. 1988; Morton et al. 1987).

5.6.2 Construction and operational impacts

No native vegetation would be removed by the proposed works and the polishing plant would be sited to avoid disturbance to native vegetation or habitats. As such, the construction and operation of the proposed polishing plant is unlikely to affect any threatened flora, fauna, ecological communities, endangered populations or migratory species.

Significance assessments under the *Threatened Species Conservation Act 1995* and *Environment Protection and Biodiversity Conservation Act 1999* are, therefore, not required.

The proposed polishing plant would not directly impact aquatic habitats. Mangroves are protected under the *Fisheries Management Act 1994*, however, these would not be impacted by the proposed construction or operation.

5.6.3 Mitigation measures and safeguards

To minimise potential impacts of the proposal on biodiversity the following mitigation measures are proposed:

- the proposed polishing plant would be sited within cleared pasture more than 40 metres from Brunswick River
- no native trees would be cleared
- vehicle speeds within the construction zone would be limited, particularly early in the morning and late in the afternoon, so as to minimise the risk of collision with animals.

5.7 Noise and vibration

5.7.1 Existing environment

The site is located within a rural region with the closest residential development approximately 100 metres to the east, on the opposite side of the railway line, and 300 metres to the south in the township of Mullumbimby. A small industrial area, Ross Industrial Complex, is also located approximately 200 metres to the south of the proposed site.

The acoustic environment at the site has been dominated by railway traffic and the future rail service is uncertain. Existing noise sources such as the Mullumbimby STP, nearby

rural properties and boat and fishing activities on the Brunswick River all contribute to the existing acoustic environment at the site.

Ambient noise levels in the area are expected to fluctuate in accordance with typical day/night patterns.

5.7.2 Construction and operational impacts

Noise impacts could occur during the construction of the proposed effluent polishing plant from activities such as shed construction, excavation and lifting operations. Considering the relatively small scale and pre-fabricated nature of the major plant components, the construction period is expected to be less than 3 months, including plant commissioning and testing. Consequently any noise impacts would be short-term and minor.

Vibration impacts are considered negligible, as no deep excavations are likely to be required for this project.

Operational impacts would not be expected as the main noise generating activities associated with the plant, such as the small dosing pumps, are unlikely to generate any substantial noise levels.

5.7.3 Mitigation measures and safeguards

The implementation of a noise management plan for this project would be conducted through the Construction Environmental Management Plan (CEMP) that would be prepared prior to the commencement of construction activities associated with the Brunswick Area Sewerage Augmentation project

The following mitigation measures and safeguards are likely to be implemented during the construction phase of the project:

- scheduling construction activities between Monday to Friday, 7 am to 6 pm, and Saturdays, 8 am to 4 pm. No works would be undertaken on Sundays or Public holidays
- provision of information to potentially affected local residents prior to commencement of noisy activities
- provision of a contact number for the public so that information can be received or complaints made in relation to noise. A log of complaints would be maintained and actioned by the contractor
- use of plant with lower noise levels where possible
- use of residential class mufflers on all powered equipment used in residential locations
- undertaking construction activities in accordance with *AS2436-1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites*

5.8 Land use impacts

5.8.1 Existing land uses

The site is owned by council and is zoned 1(b1) - Agricultural protection. It has been previously cleared for agricultural use and grazing by horses.

5.8.2 Construction and operational impacts

Under the Byron LEP, land zoned for agricultural protection requires development consent under part 4 of the *EP&A Act*. The primary objective of this zoning is to prevent loss or fragmentation of agriculture land. The proposed polishing plant would cover approximately 10 by 15 metres and would result in minimal loss of agricultural land and would not impact adjacent agricultural land uses.

5.8.3 Mitigation measures and safeguards

The proposal would not have a significant impact on land use and as such mitigation measures are not considered necessary.

5.9 Heritage

5.9.1 Existing environment

Indigenous heritage

Aboriginal people are known to have inhabited the region for over 20,000 years. Early historic reports describe the north coast as supporting a dense population (estimated at one person per 0.4-2.6 square kilometres). By 2500 years before present, there were thought to be numerous autonomous groups with diverging languages of the larger Bundjalung linguistic unit. There were thought to be around twenty distinct groups which interacted thorough marriages and ceremonies (Heritage Concepts 2005).

Ten aboriginal sites were identified within the vicinity of the proposal. These sites included five middens, three open camp sites with artefact scatters, a stone arrangement and a series of seven mounds which were part of an initiation site (Heritage Concepts 2005). None of these sites occur in the vicinity of the proposed polishing plant.

The EIS for the sewerage augmentation project included a detailed heritage assessment and consultation with local aboriginal groups (Tweed Byron Local Aboriginal Land Council and the Byron Bay Bundjalung people (Arakwal). Although this assessment did not include a survey of the proposed polishing plant site, all areas located near the bank of the Brunswick River were identified as being of low aboriginal constraints, although possible heritage items within the site may include middens, open campsites with artefact scatters, and scarred or carved trees (Heritage Concepts 2005).

Non-indigenous heritage

Two non-indigenous heritage items occur in the vicinity of the site (listed on RailCorp's Section 170 Heritage Register):

- the Mullumbimby Railway Station Group (identified in the *State Rail Authority Heritage Register Study*); and
- the Brunswick River Underbridge, Mullumbimby.

The Railway Station Group boundary extends around the Station platform by 20 metres in each direction, around the fenced boundaries of the gatehouse, and 10 metres in all directions around the other Station items.

The station is located approximately 700 metres south from the proposed site and would not be impacted by the proposal.

The Brunswick River Rail Underbridge is located one kilometre to the north of the Mullumbimby Railway Station and is near to the north-east corner of the proposed site and would not be impacted by the proposal.

5.9.2 Construction and operational impacts

The EIS included a detailed heritage assessment. Although this assessment did not specifically include a survey of the proposed effluent polishing plant site, adjacent areas along the Brunswick River were identified as being of low aboriginal constraints (based on landform), and low to moderate non-aboriginal / historic constraints.

The relatively small footprint of the proposed effluent polishing plant is unlikely to impact any known aboriginal or historical sites and the site is considered to have low heritage constraints. The proposal is, therefore, unlikely to have a significant impact on heritage items.

5.9.3 Mitigation measures and safeguards

Although the proposed effluent polishing plant is unlikely to impact on heritage items it is recommended that:

- if a heritage site is uncovered during construction works that all work stops immediately and relevant authorities are notified
- access to the north eastern corner of the site, where the Brunswick River Rail Underbridge occurs, is prevented.

5.10 Visual amenity

5.10.1 Existing visual character

The site occurs on relatively flat ground and is bounded to the north, west and south by the Brunswick River and to the east by the North Coast Railway. Riparian vegetation consisting of Camphor Laurels and other mature trees occur along the Brunswick River. Surrounding land use is rural with the nearest residential property approximately 100 metres to the east, on the opposite side of the railway line, and the nearest residential development 300 metres to the south, in the township of Mullumbimby.

5.10.2 Construction and operational impacts

The site of the proposed effluent polishing plant would not be visible from any surrounding locations. It would be screened from nearby developments by riparian vegetation along the Brunswick River and the North Coast Railway. The proposal would not result in significant visual impacts.

5.10.3 Mitigation measures and safeguards

No mitigation measures are considered necessary.

5.11 Traffic and access

5.11.1 Existing conditions

The proposed effluent polishing plant site is bounded on three sides by the Brunswick River (to the north, south and west) and by the North Coast Railway to the east. Adjacent lands consist of rural properties and the Mullumbimby STP is located across the Brunswick river to the west. Access to the proposed site would be from Mullumbimby to the south and adjacent to the North Coast Railway line.

5.11.2 Construction and operational impacts

Traffic movements through Mullumbimby would increase slightly for a short period of time in association with the proposed construction activities. This increase in traffic would generally occur along Brunswick Terrace and/or Station Street as well as on the main roads into Mullumbimby. The additional movements would be associated with construction employee's vehicles, light trucks and delivery vehicles required during construction.

Due to the intermittent nature of these movements and the very slight increase they will cause to overall traffic movements on local roads, significant impacts to existing traffic movements in the area are not expected.

As the construction works will be entirely contained within the boundaries of the Council-owned site, there will be no restriction of access to any properties in the local area.

5.11.3 Mitigation measures and safeguards

The implementation of a traffic management plan for this project would be conducted through the Construction Environmental Management Plan (CEMP) that would be prepared prior to the commencement of construction activities associated with the Brunswick Area Sewerage Augmentation project

5.12 Waste and hazardous materials

5.12.1 Current waste generation

Currently, there are no waste generation activities occurring at the proposed site.

5.12.2 Construction and operational impacts

Construction of the effluent polishing plant would generate some building waste such as concrete, timber, pipe cut offs, waste bricks and packaging materials. All construction waste materials would be transported off-site to a licensed waste management facility. Where possible or feasible, excess materials would be recycled or re-used by the contractors at other projects.

Minor quantities of sodium hypochlorite (less than 1,000 litres) and other chemicals (less than 200 litres) would be stored and handled at the site. These storages would be contained within a bunded area to contain any spills that may occur during operation.

It is expected that no other waste streams would be generated at the polishing plant.

5.12.3 Mitigation measures and safeguards

The implementation of a waste management plan for this project would be conducted through the Construction Environmental Management Plan (CEMP) that would be prepared prior to the commencement of construction activities associated with the Brunswick Area Sewerage Augmentation project

The waste management plan would outline waste management measures. This would include collection of construction waste in a skip and removal by the construction contractor for disposal. Where practical, waste streams would be segregated to enable recycling.

5.13 Cumulative impacts

The construction of the proposal would be scheduled to occur in conjunction with the overarching Brunswick Area Sewerage Augmentation project. Due to the relatively small scale of the proposal, no significant cumulative impacts would occur in relation to construction and/or operation of the effluent polishing plant.

6. Environmental Management

This section summarises the mitigation measures and safeguards that would be implemented during the construction and operation of the proposed effluent polishing plant at Mullumbimby.

Table 6.1 lists the environmental safeguards and mitigation measures and outlined in Section 5 of the REF. These mitigation measures and safeguards would be used as the basis for the preparation of environmental management plans for the design, construction and operational phases of the proposal.

Table 6.1 Summary of proposed mitigation measures

Issue	Mitigation measures
General	<ul style="list-style-type: none"> ▪ Council to ensure that residents are notified of where construction would be taking place and to provide a contact point nominated for dealing with queries and complaints.
Geology and Soils	<ul style="list-style-type: none"> ▪ Develop and implement a soil management plan as part of the Construction Environmental Management Plan (CEMP) for the project. ▪ The following safeguards would be considered in the CEMP to minimise the effects on soils: <ul style="list-style-type: none"> ○ erosion and sediment controls would be implemented to minimise siltation and sedimentation. ○ clearing of surface cover would be minimised as much as possible ○ following completion of construction, all building materials would be removed from the site and cleared areas re-vegetated.
Surface and groundwater	<ul style="list-style-type: none"> ▪ Develop and implement a water management plan as part of the Construction Environmental Management Plan (CEMP) for the project.
Air Quality	<ul style="list-style-type: none"> ▪ Develop and implement an air quality management plan as part of the Construction Environmental Management Plan (CEMP) for the project. ▪ The following safeguards would be considered in the CEMP to minimise the effects on local air quality: <ul style="list-style-type: none"> ○ disturbed areas would be stabilised as soon as possible to prevent or minimise wind-blown dust generation. ○ dust-generating activities (particularly clearing and excavating) would be avoided or minimised during dry and windy conditions. ○ site speed limits would be imposed on all vehicles. ○ vehicle and machinery movements during the construction works would be restricted to designated areas. ○ vehicles transporting material to and from the site would be covered immediately after loading to prevent wind-blown dust emissions and spillages as required by law. ○ tailgates of road transport trucks would be securely fixed prior to loading and immediately after unloading. ○ construction plant and equipment would be well maintained and regularly serviced.

Issue	Mitigation measures
Flora and Fauna	<ul style="list-style-type: none"> ▪ the proposed polishing plant would be sited within cleared pasture more than 40 metres from Brunswick River ▪ no native trees would be cleared ▪ vehicle speeds within the construction zone would be limited, particularly early in the morning and late in the afternoon, so as to minimise the risk of collision with animals.
Noise and Vibration	<ul style="list-style-type: none"> ▪ Develop and implement a noise management plan as part of the Construction Environmental Management Plan (CEMP) for the project. ▪ The following safeguards would be considered in the CEMP to minimise the effects on local noise amenity: <ul style="list-style-type: none"> ○ scheduling construction activities between Monday to Friday, 7 am to 6 pm, and Saturdays, 8 am to 4 pm. No works would be undertaken on Sundays or Public holidays ○ provision of information to potentially affected local residents prior to commencement of noisy activities ○ provision of a contact number for the public so that information can be received or complaints made in relation to noise. A log of complaints would be maintained and actioned by the contractor ○ use of plant with lower noise levels where possible ○ use of residential class mufflers on all powered equipment used in residential locations ○ undertaking construction activities in accordance with <i>AS2436-1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites</i>
Heritage	<ul style="list-style-type: none"> ▪ if a heritage site is uncovered during construction works that all work stops immediately and relevant authorities are notified ▪ access to the north eastern corner of the site, where the Brunswick River Rail Underbridge occurs, is prevented.
Transport and Access	<ul style="list-style-type: none"> ▪ develop and implement a traffic management plan as part of the Construction Environmental Management Plan (CEMP) for the project.
Waste	<ul style="list-style-type: none"> ▪ develop and implement a waste management plan as part of the Construction Environmental Management Plan (CEMP) for the project ▪ waste streams are to be segregated to enable recycling, where practical.



7. Conclusion

The proposal has been assessed against the matters for consideration outlined in Clause 228 of the *Environmental Planning and Assessment Regulation 2000* (see *Appendix A*). This assessment shows that there are some short-term minor environmental impacts. These impacts can be appropriately managed.

The REF has not identified any potential natural or social environmental impacts from the proposal, which would result in significant adverse environmental impacts. In many respects, the proposal would result in improved environmental outcomes. Given the limited environmental impacts, an Environmental Impact Statement is not required.

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Appendix A

Checklist of Clause 228 Factors of
the EP&A Regulation 2000

Checklist of Clause 228 Factors (EP&A Regulation 2000)

Table A.1: Checklist of Clause 228 Factors

Clause 228 Factors	Impact	
a Any environmental impact on a community <i>Comments:</i> Short term temporary impacts would result from construction activity such as noise, traffic disturbance, and dust impacts, while positive long term outcomes would be achieved with respect to water quality within Brunswick River. <i>Mitigation Measures:</i> Refer to Section 5 of this REF.	-ve	<input checked="" type="checkbox"/>
	Nil	<input type="checkbox"/>
	+ve	<input checked="" type="checkbox"/>
b Any Transformation of A Locality <i>Comments:</i> The proposal would not result in transformation of a locality	-ve	<input type="checkbox"/>
	Nil	<input checked="" type="checkbox"/>
	+ve	<input type="checkbox"/>
c Any environmental impact on the ecosystems of the locality <i>Comments:</i> The proposal would not include clearing native vegetation and would result in improved water quality and increased flows in Brunswick River due to decreased effluent discharge and decreased water extraction.	-ve	<input type="checkbox"/>
	Nil	<input type="checkbox"/>
	+ve	<input checked="" type="checkbox"/>
d Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality <i>Comments:</i> The proposal would result in improved water quality and increased flows in Brunswick River due to decreased effluent discharge and decreased water extraction.	-ve	<input type="checkbox"/>
	Nil	<input type="checkbox"/>
	+ve	<input checked="" type="checkbox"/>
e Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations <i>Comments:</i> There are no impacts on any item of heritage or archaeological relics as a result of the proposed works. <i>Mitigation Measures:</i> Stop work provisions are required in event of uncovering a heritage item. .	-ve	<input type="checkbox"/>
	Nil	<input checked="" type="checkbox"/>
	+ve	<input type="checkbox"/>
f Any impact on the habitat of protected fauna (within the meaning of the <i>National Parks and Wildlife Act 1974</i>) <i>Comments:</i> The proposal would not include clearing native vegetation or habitats. It would however, improve aquatic habitats through improved water quality and increased flows in Brunswick River due to decreased effluent discharge and decreased water extraction.	-ve	<input type="checkbox"/>
	Nil	<input type="checkbox"/>
	+ve	<input checked="" type="checkbox"/>
g Any endangering of any species of animal, plant or other form of life whether living on land, in water or in the air <i>Comments:</i> No impact on any species of animal or plant or other form of life resulting from the proposed works.	-ve	<input type="checkbox"/>
	Nil	<input checked="" type="checkbox"/>
	+ve	<input type="checkbox"/>
h Any long term effects on the environment <i>Comments:</i> No long term adverse effects on the environment resulting from the proposed works. There would be a long-term positive impact of the proposal on the environment due to the improved water quality in Brunswick River resulting from decreased effluent discharge.	-ve	<input type="checkbox"/>
	Nil	<input type="checkbox"/>
	+ve	<input checked="" type="checkbox"/>
i Any degradation of the quality of the environment <i>Comments:</i> During construction there would be temporary minor impacts related to geology and soils, noise, dust, traffic, general amenity and air quality resulting from the proposal. During operation the proposed works will improve the air quality of the area. <i>Mitigation Measures:</i> Refer to Section 5 of this REF.	-ve	<input checked="" type="checkbox"/>
	Nil	<input type="checkbox"/>
	+ve	<input checked="" type="checkbox"/>

Clause 228 Factors		Impact	
j	Any risk to the safety of the environment	-ve	<input type="checkbox"/>
	<i>Comments:</i> There would no risk to the safety of the environment resulting from the proposed works.	Nil	<input checked="" type="checkbox"/>
		+ve	<input type="checkbox"/>
k	Any reduction in the range of beneficial uses of the environment	-ve	<input type="checkbox"/>
	<i>Comments:</i> There would be an increase in the beneficial use of the environment in surrounding areas with the improvement of water quality in Brunswick River as a result of decreased effluent discharge.	Nil	<input type="checkbox"/>
		+ve	<input checked="" type="checkbox"/>
l	Any pollution of the environment	-ve	<input checked="" type="checkbox"/>
	<i>Comments:</i> During construction there will be minor temporary noise impacts.	Nil	<input type="checkbox"/>
	<i>Mitigation Measures:</i> Refer to Section 5 of this REF.	+ve	<input type="checkbox"/>
m	Any environmental problems associated with the disposal of waste	-ve	<input type="checkbox"/>
	<i>Comments:</i> There will be no environmental problems during construction and operation with waste disposal. During construction material will be recycled where possible and waste managed according to the Waste Management Plan.	Nil	<input checked="" type="checkbox"/>
		+ve	<input type="checkbox"/>
n	Any increased demands on resources (natural or otherwise) that are or are likely to become in short supply	-ve	<input type="checkbox"/>
	<i>Comments:</i> The proposed works would not result in increased demands on resources.	Nil	<input checked="" type="checkbox"/>
		+ve	<input type="checkbox"/>
o	Any cumulative environmental effect with other existing or likely future activities	-ve	<input type="checkbox"/>
	<i>Comments:</i> The proposal would result in improved water quality and increased flows in Brunswick River due to decreased effluent discharge and decreased water extraction..	Nil	<input type="checkbox"/>
		+ve	<input checked="" type="checkbox"/>

Appendix B

Consideration of Matters of National
Environmental Significance

Checklist of Matters of National Environmental Significance

Under the *Environment Protection and Biodiversity Conservation Act 1999* (the *EPBC Act*), any action which:

- has, would have or is likely to have a significant impact on matters of national environmental significance; and/or
- has, would have or is likely to have a significant impact on Commonwealth land, triggers this Act and therefore requires Commonwealth assessment and approval.

Matters of National Environmental Significance as identified in the Act are considered within the checklist in the table below.

Table B.1: Checklist of EPBC Act Matters

Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> Factors		Impact	
a	Any environmental impact on a World Heritage property? <i>Comments:</i> There are no World Heritage properties within the vicinity of the proposed works. <i>Mitigation Measures:</i> N/A	-ve Nil +ve	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
b	Any environmental impact on Wetlands of International importance? <i>Comments:</i> There are no Wetlands of International importance within the vicinity of the proposed works. <i>Mitigation Measures:</i> N/A	-ve Nil +ve	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
c	Any environmental impact on Commonwealth Listed Threatened Species and Ecological Communities? <i>Comments:</i> There are no Commonwealth Listed Threatened Species or Ecological Communities at the site of the proposed works. <i>Mitigation Measures:</i> N/A	-ve Nil +ve	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
d	Any environmental impacts on Commonwealth Listed Migratory Species? <i>Comments:</i> The proposed works would have no impact on Commonwealth Listed Migratory species. <i>Mitigation Measures:</i> N/A	-ve Nil +ve	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
e	Does any part of the proposal involve a Nuclear Action? <i>Comments:</i> No nuclear actions are proposed. <i>Mitigation Measures:</i> N/A	-ve Nil +ve	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
f	Any environmental impact on a Commonwealth Marine Area? <i>Comments:</i> The proposed works are not in the vicinity of any Commonwealth Marine Area. <i>Mitigation Measures:</i> N/A	-ve Nil +ve	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
g	Any impact on Commonwealth land? <i>Comments:</i> The proposed works do not affect any Commonwealth land. <i>Mitigation Measures:</i> N/A	-ve Nil +ve	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>

Appendix C

Documentation relating to proposed deferral of specific works

17 October 2006

Parsons Brinckerhoff
Level 27, Ernst & Young Centre
680 George Street
GPO Box 5394
Sydney NSW 2000

Attention: Carlos Olles

Dear Mr Olles

Brunswick Area Sewerage Augmentation Environmental Impact Statement

I refer to recent discussions and emails regarding a revised implementation program for the works described in the Brunswick Area Sewerage Augmentation Environmental Impact Statement (EIS).

Council wishes to implement the works proposed in the subject EIS by initially constructing all works except the Stage 1 effluent reuse scheme (excluding the effluent reuse pipeline connecting the Mullumbimby Brunswick Heads (M-BH) STP to the existing Mullumbimby STP) and some sewage pump station upgrades at Brunswick Heads followed at a later date by the remainder of the works as set out below.

Council therefore proposes to initially defer the following works:

- Capacity upgrades and/or emergency storage additions to SPS 2002, 2003, 2004, 2005, 2007, 2008 and 2010,
- Vallances Road Effluent Storage (60ML),
- South Mullumbimby Effluent Pipeline (pipeline No. 5),
- Vallances Road Irrigation Area,
- South Mullumbimby Effluent Polishing Plant,
- Ocean Shores Effluent Transfer pipeline (pipeline No. 3),
- South Mullumbimby Effluent Storage and
- South Mullumbimby Irrigation Area.

Council believes this approach is consistent with the objectives and conclusions of the EIS for the following reasons:

1. This program of work was foreshadowed in Section 8.5 Effluent Management Strategy of GHD's Brunswick Area Sewerage Augmentation Concept Design and Detailed Investigations report dated December 2003 (page 126) wherein the first paragraph of Section 8.5.1 states

"The effluent reuse scheme however could be staged, such that land under irrigation and storage capacity grows with future growth in effluent from both plants."

This Concept Design report provided the foundation for the subsequent EIS.

2. The primary driver in the EIS relevant to effluent reuse is the statement in the last paragraph of Section 7.6 on page 7-30 viz.

"The assessment noted that the proposal may exceed the water quality assessment criteria for chlorophyll-a during drought conditions. However, this situation is unlikely to occur, as the proposed effluent re-use scheme included in the proposal would utilise most of the effluent produced by the proposed Mullumbimby Brunswick Heads STP during these conditions, so that releases to the Brunswick River estuary would be unlikely to occur during these extreme conditions."

At all other times the EIS concluded that effluent discharges to the Brunswick River estuary

" ... would meet the proposed water quality assessment criteria for dissolved inorganic nitrogen, chlorophyll-a and faecal coliforms ..." (EIS page 7-30).

Council believes that the above approach will satisfy these conditions because the current demand for effluent from the existing Main Arm customers not only exceeds the combined dry weather flow for both Mullumbimby and Brunswick Heads STPs but also this combined dry weather flow is unlikely to exceed the demand of our existing customers for at least 8-10 years. In fact Council cannot supply reclaimed water to any new customers in the Brunswick River valley until either effluent becomes available at the new M-BH STP from the Ocean Shores (OS) STP or substantial growth occurs in Mullumbimby and/or Brunswick Heads following the completion of the M-BH STP. The basis for including the OS STP in this Scheme is set out in the last paragraph on page 1-5 and the second last paragraph of Section 3.1.3 of the EIS.

This issue has also been considered in Section 7.2.6 (last paragraph on page 7-9) of the EIS which indicates that current dry weather flows from the Mullumbimby STP do not satisfy demand from the Main Arm customers and that 75% of dry weather flows from the Brunswick Heads STP can be diverted for these customers use.

3. Council believes that the assessment of the justification for the Scheme in Section 23 of the EIS is not affected by deferring the above works.
4. There is no immediate need to upgrade the sewage pump stations at Brunswick Heads as the sewage system currently operates satisfactorily. These upgrades will be required in the future when flows increase from growth.
5. To ensure that Council completes the remainder of the Stage 1 effluent re-use scheme it is recommended that the Scheme be further amended to provide for Council to complete an Effluent Management Strategy for the Brunswick Area (similar to the Byron Bay Effluent Management Strategy) which will monitor flows to the M-BH STP and ensure the remainder of the Stage 1 effluent re-use scheme is implemented at the appropriate time.

Thus Council believes all objectives and conclusions of the EIS have been satisfied even the requirement to develop

" ... an effluent re-use scheme to maximise the opportunity for the beneficial re-use of effluent"

because the Stage 1 re-use scheme will be implemented in the future when it is necessary to ensure that all flows to the Brunswick River estuary must be eliminated during potential drought conditions.

Would you therefore please review this change in the Brunswick Area Sewerage Augmentation Scheme implementation program and confirm that the objectives and conclusions of the subject EIS will continue to be achieved.

Yours sincerely

Ian Bishop
Manager Strategic Planning Water



**Parsons
Brinckerhoff**

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Our reference: 2116422A/LT_4647/CO
Your reference: 04000142

17 October 2006

Ian Bishop
Manager Strategic Planning Water
Byron Shire Council
MULLUMBIMBY NSW 2482

Ian

**Re: Brunswick Area Sewerage Augmentation Project –
Revised implementation program for the works
described in the EIS**

I have reviewed the letter provided (Council Ref. ENG704545 / #629703 dated 17 October 2006) in relation to Council's proposal to revise the implementation program for the works described in the Brunswick Area Sewerage Augmentation Environmental Impact Statement (EIS).

I acknowledge that the staged or deferred implementation of specific components of the Stage 1 effluent re-use scheme has been noted in the Concept Design report on the basis that the demand for effluent from existing customers at the Main Arm re-use scheme alone is likely to exceed the supply of effluent from the proposed Mullumbimby-Brunswick Heads STP for quite a number of years. As population grows in the area and inflows to the STP increase, there will come a time when the STP would be able to meet the effluent demand from Main Arm customers. At this time, it would be appropriate to commence the implementation of the remainder of the Stage 1 effluent re-use scheme to ensure the long-term objectives and conclusions of the EIS are maintained.

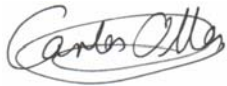
It is understood that Council's decision to defer the upgrade of selected pump stations in the Brunswick Heads area has been based on recent studies which determined that the sewage system in this area currently operates in a satisfactory manner. The need to upgrade this system should be monitored closely, as population grows in this area, to ensure the satisfactory performance of the system is maintained in the future.

Council's proposal to develop and implement a Brunswick Area Effluent Management Strategy is essential to ensure the implementation of the deferred components of the Stage 1 effluent re-use scheme and sewage system upgrades at Brunswick Heads occurs at the appropriate time.

On this basis, I can confirm that the proposed staged implementation of the specific components of the project stated in Council's letter would not affect the objectives and conclusions of the EIS. The approval being sought by Council should reflect the proposed staging of the project and commitments made in the letter provided.

**Over a Century of
Engineering Excellence**

I hope the above information meets with your requirements. Please contact me if you have any queries regarding the content of this letter.

A handwritten signature in black ink, appearing to read 'Carlos Olles', enclosed within a hand-drawn oval.

Carlos Olles
Project Manager
Parsons Brinckerhoff Australia Pty Limited