Business Case

Project Name:	*Les Burger Rugby League Field – Effluent Reuse Scheme*
Brief Number: Department: Project Manager:	 Water Andrew Grant
Project Director:	David Oxenham

Rev	Date	Amendment	Approved - Project Manager	Approved - Project Director

1 Introduction

Effluent reuse is an integral component of Tweed Shire Council's Integrated Water Cycle Management Strategy. Tweed Shire Council (TSC) has identified an area where treated effluent water from its Hastings Point STP could replace existing potable water irrigation at several nearby locations, of which, the Les Burger Rugby League Sports Fields represents one opportunity.

The effluent reuse scheme to be applied to the Les Burger Rugby League Field is part of Council's Effluent Reuse Strategy, which was adopted in July 2006. This Strategy is based on the report prepared by MWH titled 'Tweed Shire Council Recycled Water Opportunities Concept Report' February 2006, which identifies the opportunity of reusing up to 19 ML/year of effluent from the Hastings Point STP at the Les Burger Rugby League Field.

The use of recycled water on the sports fields will represent an opportunity to reuse up to 2.2% of dry weather flows from Hastings Point STP.

This business case seeks approval from Council to proceed with the project and resolve funding arrangements for the works by:

- Defining the scope of the project
- Presenting options for consideration
- Identifying of cost allocations
- Identifying resource allocations

The Les Burger Rugby League Sports Fields (LBRLSF) has been identified as a potential site by using recycled water from the Hastings Point STP for irrigation of the grounds.

Tweed Shire Council believes that using recycled water for reuse at Les Burger Rugby League Sports Fields represents a sustainable approach both economically, environmentally and socially. The Department of Environment & Conservation (DEC) NSW and the Tweed Shire Council support the use of recycled water.

2 Project Objectives and Drivers

There are a number of key objectives and drivers for the project's implementation. These are described below.

2.1 Increase use of Recycled Water

Tweed Shire Council (TSC) is aiming to increase the level of recycled water usage throughout the Shire.

The NSW Department of Environment and Conservation (DEC) encourages substituting effluent (herein named recycled water) for potable water wherever it can be substituted for a purpose which is acceptable.

2.2 Decrease demand on Potable Water Supply System

Current planning indicates that growth within the Shire will have an impact on the availability of the current Bulk Water Supply. Encouraging substitution of recycled water for potable water is part of Tweed Shire Council's Integrated Water

Management Planning Strategy that looks at the future water sustainability within the supply district.

The Les Burger Rugby League Sports Fields at Bogangar, NSW have been operating an irrigation system with potable water for approximately ten (10) years.

By substituting recycled water at Les Burger Rugby League Sports Fields, the water savings will be the equivalent to 250 new homes (220kl/property per annum).

2.3 Improve quality of Playing Surface

Currently, only the main field is irrigated and due to the layout of the system, uniform irrigation is not provided.

Recreation Services Unit are aware of the need to reduce water consumption and are impacted by the cost of supplying potable water on it's operating budget for the site.

Recycled water costs will be approximately 80% of potable water and therefore, provide a better opportunity to utilize the available resource. Recycled water will also be available throughout drought periods. This will enable the playing surfaces to be fully irrigated throughout the driest periods without being subject to water restrictions.

2.4 Community Awareness

Given the current focus on water issues and sustainability of bulk water supplies across the region, the project offers an opportunity to demonstrate the benefits water recycling and Tweed Shire Council's commitment to the promotion of sustainable water use.

2.5 Reduce Pressure on Existing Effluent Disposal System

Effluent from the Hasting point Sewage Treatment plant is currently discharged to a dune exfiltration system located east of Tweed Coast Road.

The discharge system is designed to distribute treated effluent through a network of sub-surface drains located within a 400 m long strip of the sand dunes. The treated water peculates downward through the sand and is dispersed into the tidal sub-surface sea water zone.

This system is limited by the hydraulic permeability of the saturated sand system and needs to be managed to ensure operation of the system is optimized.

Reduced flows to the dune exfiltration system will allow the system to function more efficiently.

3 Critical Assumptions & Constraints

The critical assumptions and constraints underpinning the implementation of this reuse scheme are:

3.1 Community Acceptance

Preliminary discussions have been held with the users of the sporting fields and Recreation Services Unit indicating Tweed Shire Council's plans to upgrade and to utilize recycled water for the irrigation system.

Feedback for the discussions held has been generally positive to date.

It is assumed that additional meeting will be held to discuss the proposal and to work together with the users to ensure acceptable outcomes are met.

3.2 Cost Estimations

Preliminary cost estimates have been undertaken for the project. It is assumed that the estimates have included reasonable contingencies for price fluctuations within the market place.

3.3 Development Approvals

Development approval is required for the installation of the pipeline and storage tanks proposed for the scheme.

An Environmental Management Plan for the operation of the irrigation system will be provided to ensure requirements of the Effluent Reuse Guidelines are achieved and appropriately monitored.

4 Option Analysis

4.1 Option Identified

4.1.1 Option 1 – Do Nothing

The do nothing option is considered as a base case in the development of the other options. Under the do nothing option, potable water will be utilized to irrigate the sporting fields. There would be no modification to the irrigation system.

The advantages and disadvantages are discussed below:

Advantages

No additional capital costs
Sporting fields do not need to be dug up and put out of action for installation and rehabilitation period
No environmental impact associated with the installation of the effluent pipelines and storage tanks.

Disadvantages

Cost of irrigation of fields using potable water ($1.23/kL increasing to $1.50/kL over next three years)
Community willingness to reduce potable water usage for irrigation
Existing irrigation system does not provide uniform coverage of area
No reuse of effluent achieved

4.1.2 Option 2 – Proceed with proposed Reuse Scheme

Option 2 involves the following components:

- Installation of 100 mm pipeline connecting the Hastings Point STP Effluent Outfall Main to the reuse Les Burger Sports Field site

- Installation of a booster pumping station to transfer recycled water to the reuse site
- Installation of a 150 kL Recycled Water Storage Tank
- Installation of an irrigation pumping system for the recycled water
- Redevelopment of the existing above ground pop-up irrigation system to improve coverage

Under this option, the following approves are required:

- Development Approval (Part 4 EP&A Act) for pipeline, booster pumping station and storage tank
- Environmental Management Plan for Irrigation of treated effluent (EPA Guidelines)

The estimated cost for this option is $400,000 (exclusive of GST).

The advantages and disadvantages are discussed below:

Advantages

Minimal disruption to playing surface
Recycled water substituted for Potable Water
Project aligns with Council's Integrated Water Management Plans
Provides an even coverage of irrigation to improve playing surface
Reduced effluent discharge to dune system

Disadvantages

Cost of installation of reuse system
Irrigation needs to be controlled to ensure a 4 hour non contract period and to minimize the risk of spray drift.

4.1.3 Option 3 – Modify proposed reuse scheme

Option 3 is substantially the same as for Option 2 with the exception of the irrigation system. Option 3 involves the installation of sub-surface irrigation system to fully replace the pop-up system.

Under this option, the following approves are required:

- Development Approval (Part 4 EP&A Act) for pipeline, booster pumping station and storage tank
- Environmental Management Plan for Irrigation of treated effluent (EPA Guidelines)

The estimated cost for this option is $450,000 (exclusive of GST).

The advantages and disadvantages are discussed below:

Advantages

Recycled water substituted for Potable Water
Project aligns with Council's Integrated Water Management Plans

Does not required controlled irrigation as no water is applied to surface
Reduced effluent discharge to dune system

Disadvantages

More disruption to playing surface
Cost of installation of reuse system
System more prone to blockages
Does not provide an even irrigation coverage

4.2 Preferred Option

The preferred option is to proceed with the proceed with the proposed reuse scheme (Option 2)

The cost estimate for the implementation of the scheme is as follows:

Task	*Description*	*Price (Excluding GST)*
1	Design	40,000
2	Underground Recycled Water Pipeline	114,400
3	Recycled Water Booster Pumping Station	39,000
4	Recycled Water Storage Tank	44,000
5	Irrigation System	85,000
6	Modification of Existing Infrastructure	15,600
7	Project Management	30,000
8	Contingencies	32,000
	Total Cost	**$400,000**

Allowing for full cost recovery over a 20year period, the cost of the recycled water would be approximately $1.65/kL.

5 Project Funding

The following funding has been identified for the project:

Capital Contribution from Recreation Services Unit	$85,000
Capital Contribution from Water Unit (Sewer Fund)	$225,000
Australian Community Water Grants Scheme (Round 3)	$50,000

The Water Unit Capital Cost will be recouped from the end user (in this case, Tweed Shire Council's Recreation Services Unit) through a recycled water charge set at a nominally 80% of the per kilolitre charge for potable water.

Based on a usage charge of $0.98/kL for recycled water, the expected capital payback period will be approximately 20 years allowing for a moderate price increase for recycled water over time.

6 Risk Management

The following risks have been identified as potentially impacting on the project delivery:

Identified Risk	Mitigation Strategy
Environmental	
Discharge to groundwater	☑ *Recycled water treated to high quality* ☑ *Irrigation Management Plan implemented to minimize risk of over irrigation*
Discharge to surface Water	☑ *Recycled water treated to high quality* ☑ *Irrigation Management Plan implemented to minimize risk of over irrigation*
Occupational Health & Safety	
Contamination of playing surface	☑ *Recycled water treated to high quality* ☑ *Irrigation only to be undertaken at night between 10pm and 2am*
Handling during maintenance	☑ *Training to be provided to maintenance staff on hygiene requirements*
Aerosol drift during irrigation	☑ *Irrigation not permitted during wind conditions*
Financial	
Installation costs higher than estimates	☑ *Water Unit to fund any increased costs within current budget*
Funding from Water Grant not approved	☑ *Water Unit to fund any increased costs within current budget*

7 Implementation

It is intended that the scheme will be implemented following the completion on the 2007 Rugby League Season.

Discussions have been held with the various users of the fields to allow the reconstruction of the surface to be undertaken in the sporting off season.

Regular users of the fields during the construction period will be relocated to alternative venues through negotiations with Tweed Shire Council's Recreation Services Unit.

The proposed timeframe for implementation of the scheme is as follows:

Lodge DA for Pipeline & Storage	September 2007
Finalise Irrigation Management Plan	September 2007
Install Irrigation System	October 2007
Install Recycled Water Supply Pipework	October -November 2007
Install Recycled Water Storage Tank	November – December 2007

It is proposed that all on-field works will be undertaken directly by Recreation Services Unit's Staff.

The remaining infrastructure is to be installed using sub-contractors and Tweed Shire Council's Water Unit Staff.