Urban WaterManagement Strategy

ballina shire council

Ballina Shire Council

Development Servicing Plan for Wastewater and Recycled Water Supply Infrastructure

GHD

Adopted: XX Xxxxx XXXX

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GHD has prepared the preliminary cost estimates of this Report ("Cost Estimate"):

- *using information reasonably available to the GHD employee(s) who prepared this Report; and*
- *based on assumptions and judgments made by GHD.*

The Cost Estimate has been prepared for the purpose of Section 64 wastewater developer charges and must not be used for any other purpose.

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Where estimates of potential costs are provided with an indicated level of confidence, notwithstanding the conservatism of the level of confidence selected as the planning level, there remains a chance that the cost will be greater than the planning estimate, and any funding would not be adequate. The confidence level considered to be most appropriate for planning purposes will vary depending on the conservatism of the user and the nature of the project. The user should therefore select appropriate confidence levels to suit their particular risk profile.

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Executive Summary

This Development Servicing Plan (DSP) details wastewater and recycled water developer charges relative to the development areas serviced by Ballina Shire Council (BSC).

This DSP has been prepared in accordance with the *Developer Charges Guidelines for Water Supply, Sewerage and Stormwater* (2002) issued by the Minister for Land and Water Conservation (now administered by the NSW Office of Water in the Department of Primary Industries (NOW), pursuant to section 306 (3) of the *Water Management Act 2000*.

The areas covered by this DSP are shown in Figure 1. The wastewater developer charges for the areas covered by this DSP have been calculated as detailed in Table 1. Background documents will be provided in electronic format upon request.

The total developer charge required in consequence of servicing a proposed development in the respective DSP areas will be assessed by multiplying the additional demand (ET) of the proposed development by the developer charge ($/ET) in the table below. Loadings and credits will be assessed in accordance with the NSW Local Government Water Industry Directorate, *Section 64 Determinations of Equivalent Tenements Guidelines* (2005).

Ballina Shire Council anticipates that it will:

- Review this DSP once, and no more than once, in each five year period from the implementation of this plan, and
- Review Developer Charges when and to the extent required by the Department of Environment, Climate Change and Water (DECCW).

In the period between any review, developer charges will be indexed annually (1st day of July) on the basis of movements on the CPI for Sydney, in the preceding 12 months to December, excluding the impact of GST. Current contribution rates are listed in Council's Annual Fees and Charges Document.

The Developer shall be responsible for the full cost of the design and construction of wastewater reticulation works within subdivisions. In addition to this Wastewater DSP there are other Council plans that apply to provision of infrastructure for developments.

Table 1 Summary of Wastewater Developer Charges (2011/12 rates)

Area	Developer Charge ($ per ET)	Developer Charge ($ per ET) 30% Agglomeration Rules applied
DSP Area A Wardell	$13,336	$13,038
DSP Area C Wollongbar Expansion Area	$12,992	
DSP Area B Ballina Island Skennars Head North Ballina Lennox Head West Ballina East Ballina Pacific Pines Estate Henderson Land Central and South	$8,384	$7,623
DSP Area F Cumbalum Precinct A Ballina Heights	$6.088	
DSP Area G Cumbalum Precinct B	$4,858	$4,790
DSP Area E Alstonville and Wollongbar	$3,683	

A background document titled *Ballina Shire Council – Wastewater Infrastructure Planning* (GHD, 2011) identifies the characteristics of the assets covered by this DSP and is available from Council's website.

Eltham Road
Fernleigh
Fernleigh Road
Friday Hut Road
Knockrow
Alstonvale
Byron Bay Road
Ross Lane
Byron Street
Cumbalum B
Lennox Head
Mcleans Ridges
Tintenbar Road
Teven
The Coast Road
WUEA
Bruxner Highway
Rifle Range Road
Cumbalum A, Ballina Heights
Wollongbar
Alstonville Industrial
Alstonville
Ellis Road
North Ballina
Angels Beach Drive
Pacific Highway
East Ballina
Teven Road
Rous
Ballina Island
Bentinck Street
Hill Street
River Street
Lynwood
West Ballina
Rous Road
Dalwood Road
South Ballina
Pimlico Road
Keith Hall
Pimlico
Perrys Lane
Pimlico Riverbank Road
Marom Crk Road
Coolgardie
Wardell Road
Wardell
Bath Street
Patchs Beach
Pacific Ocean
Bagotville
Cabbage Tree Island

LEGEND

Major Roads
Cadastral Boundaries
DSP Area A
DSP Area B
DSP Area C
DSP Area E
DSP Area F
DSP Area G
Oceans and Waterways

1:80,000
0 1 2 3 4
Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

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CLIENTS | PEOPLE | PERFORMANCE

ballina shire council

Ballina Shire Council
Development Servicing Plan: Drinking Water Supply

Job Number | 22-15470
Revision | 1
Date | 11 MAY 2012

DSP Areas Overview

Figure 1

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317 River Street Ballina NSW 2478 Australia T 61 2 6620 6500 F 61 2 6620 6501 E bnkmail@ghd.com W www.ghd.com.au

Data source: BSC - DSP Areas, Cadastral Boundaries, Waterways (2012). Navteq - Major Roads, Place Names (2011). Created by: CM

1. Introduction

Section 64 of the *Local Government Act 1993* enables a local government council to levy developer charges for water supply, wastewater and stormwater. This derives from a cross-reference in that Act to section 306 of the *Water Management Act 2000.*

A Development Servicing Plan (DSP) is a document that details the wastewater and recycled water developer charges to be levied on development areas utilising a water utility's wastewater infrastructure.

This DSP covers wastewater developer charges in regard to development areas served by Ballina Shire Council.

This DSP has been prepared in accordance with the *Developer Charges Guidelines for Water Supply, Sewerage and Stormwater* (2002) issued by the Minister for Land and Water Conservation (now administered by the Department of Environment, Climate Change and Water (DECCW)), pursuant to section 306 (3) of the *Water Management Act 2000*. The guidelines require a review of DSPs to be conducted after a period of 5 to 6 years.

This DSP supersedes all previous wastewater contributions, policies and charges adopted by the Council prior to the adoption of this DSP. This DSP takes precedence over any of Council's codes or policies where there are any inconsistencies relating to wastewater developer charges.

2. Administration

2.1 Name of Development Servicing Plan

This Development Servicing Plan (DSP) is known as *Ballina Shire Council Development Servicing Plan – Wastewater Infrastructure*.

2.2 Purpose of the Plan

The aims and objectives of this DSP are to:

- Ensure that adequate wastewater infrastructure is provided for as part of new development;
- Provide a comprehensive strategy for the assessment, collection, expenditure accounting and review of contributions on an equitable basis;
- Ensure that the existing community is not burdened by the provision of wastewater infrastructure as a result of future development; and
- Enable Council to be both publicly and financially accountable in its assessment and administration of the Development Servicing Plan.

2.3 Land to Which This Plan Applies

This DSP applies to all land within the Ballina Shire Local Government Area that is within the existing and proposed service areas illustrated on Figure 1.

2.4 Date of Commencement of Plan

Council adopted this DSP on dd/mm 2013. The DSP came into effect on dd/mm 2013.

The charges in this Plan will apply to all Development Applications determined on or after the date the Plan came into effect.

The charges in this Plan will also apply to existing development approvals that have developer charges outstanding.

2.5 How Will the DSP be Applied?

In determining a Development Application, Council may impose a condition requiring payment of a monetary contribution in accordance with the provisions of this DSP.

The condition of development consent will outline the amount payable in monetary terms at the time the consent is issued. However, conditions of consent shall advise that the Developer Contributions will be at that rate which applies at the time of payment. Therefore the rate may increase from the time of issue of the development application through indexation or through the replacement or review of this DSP.

2.6 Reviewing/Updating of Calculated Developer Charges

Ballina Shire Council anticipates that the developer charges relating to this DSP will be reviewed once and no more than once, in each five year period from the implementation of this plan.

In the period between any review, developer charges will be adjusted on 1 July each year on the basis of movements in the CPI for Sydney, in the preceding 12 months to December, excluding the impact of GST.

Developer charges will be those charges determined by Council from time-to-time and will be published in Council's Annual Fees and Charges.

2.7 Works within a Development

The Developer shall be responsible for the full cost of the design and construction of wastewater works, including pump stations within subdivisions that service only that development.

2.8 Developments Requiring Forward Funding

Council will generally not support development applications that require the provision of wastewater infrastructure prior to the timeframes outlined within the Works schedule.

Council may however consider a Development Application that requires the provision of infrastructure prior to the planning phase subject to the Developer agreeing to forward fund the infrastructure at the Developer's own cost.

Council may in these instances enter into a written agreement to reimburse the Developer as Council receives developer charges from other developments reliant on that infrastructure in the area.

2.9 Payment for Developer Charges

All developer charges will be paid at the rate applicable at the time of application for a Certificate of Compliance pursuant to Division 5 of Part 2 of Chapter 6 of the *Water Management Act 2000* is issued.

Generally payment of developer charges must be finalised at the following stages:

- Time of application for a Certificate of Compliance pursuant to Division 5 of Part 2 of Chapter 6 of the *Water Management Act 2000*.
- Development consents involving subdivisions – Prior to the release of the Subdivision Certificate (linen plan);
- Development consents involving building work – Prior to the release of the Construction Certificate;
- Other development application - Prior to the commencement of the use or occupation of premises.

2.10 Deferred Payment

The Council will generally not accept deferred or periodic payment of contributions. However, Council may consider an application where:

- Compliance with the provisions relating to when contributions are payable is unreasonable or unnecessary in the circumstances of the case;
- Deferred or periodic payment will not prejudice the timing or the manner of the provision of the services or facilities for which the contribution is required as outlined in the works program; § where the applicant intends to make a contribution by way of a planning agreement, works in kind or land dedication in lieu of a cash contribution and Council and the applicant have a legally binding agreement for the provision of the works or land dedication; and
- There are circumstances justifying the deferred or periodic payment of the contribution. The decision to accept a deferred or periodic payment is at the sole discretion of the Council.

In the event Council decides to accept the deferred or periodic payment of contributions, the applicant may be required to provide a bank guarantee by an Australian bank or recognised financial institution for the full amount of the contribution or outstanding balance on condition that:

- The bank's guarantee be by a bank for the amount of the total contribution, or the amount of the outstanding contribution, plus an amount equal to thirteen (13) months interest plus any charges associated with establishing or operating the bank security;
- The bank unconditionally pay the guaranteed sum to the Council if the Council so demands in writing not earlier than 12 months from the provision of the guarantee or completion of the works;
- The bank must pay the guaranteed sum without reference to the applicant or landowner or other person who provided the guarantee, and without regard to any dispute, controversy, issue or other matter relating to the development consent or the carrying out of development;
- The banks obligations are discharged when payment to the Council is made in accordance with this guarantee or when Council notifies the bank in writing that the guarantee is no longer required; and
- Where a bank guarantee has been deposited with Council, the guarantee shall not be cancelled until such time as the original contribution and accrued interest are paid in accordance to the 90 day bank bill rate.

2.11 Refunds

Ballina Shire Council does not anticipate that developer charges will be refunded. In cases of extenuating circumstances, consideration will be given to a refund where developer charges have been paid in respect of a development consent that has lapsed and the funds have not been allocated/expended on the project identified in the DSP's work schedule.

Refunds will be a matter for Council to decide and it should be noted that any expended funds in the form of preliminary reports, investigations, land acquisitions etc. relating to the project could result in only part of the developer charges being refunded.

2.12 Works in Kind

"Works in kind" involves the construction or provision of infrastructure that has been identified in a works schedule contained in the Development Services Plan in lieu of full or part payment of a contribution relating to that section of the plan.

The decision to accept "works in kind" contributions will be at the discretion of Council. Factors that Council will take into consideration include:

- The extent to which the "works in kind" satisfies an item identified on the works program;
- Whether the payment of the contribution in accordance with the provisions of the DSP is unreasonable or unnecessary in the circumstances of the case;
- Whether the "works in kind" contribution will prejudice the timing or manner of the provision of the services for which the contribution is required; and
- The value of the "works in kind".

2.13 Developments Outside the Development Servicing Areas

Development areas outside the Development Servicing Plan Area (refer to relevant drawing/s in Section 11) that are to be developed during the term of this policy and have no detailed DSP (and require wastewater services), will be subjected to a separate DSP. The Developer shall be responsible for the preparation cost of this DSP.

2.14 Consultation and Dispute Resolution

A Developer who is dissatisfied with how a wastewater utility has calculated a developer charge has a right of appeal pursuant to the DLWC *Guidelines for Calculating Developer Charges of Water Supply, Sewerage, and Stormwater* (2002).

1. A Developer who is dissatisfied with the way in which a wastewater utility has calculated a developer charge may complain to the utility.
2. The General Manager of the utility is to review the complaint or cause it to be reviewed.
3. The Developer, if still dissatisfied, may request that an arbitrator review the matter by way of arbitration. The arbitrator is to be appointed by agreement between the Developer and the wastewater utility.
4. The decision of the arbitrator is to be binding on both the Developer and the utility.
5. Costs of the arbitration are to be borne equally by the utility and the customer.
6. The Commercial Arbitration Act 1984 applies to any such arbitration.

It should be noted that not all aspects of the developer charge calculation are arbitral. That is, those matters of detail which are prescribed in DLWC's Guidelines are not subject to arbitration.

For example, discount rates and the forecast horizon for expected net revenues and costs are parameters that are prescribed by DLWC.

3. Demographic and Land Use Planning Information

3.1 Growth Projections

Growth projections for population and number of ETs are shown in Table 2 below. These projections are for a 20-year planning horizon from the present year to 2030, which is Council's current planning horizon.

Table 2 Projected Equivalent Tenement Growth[1]

Time Period	Projected Shire ET Growth	Total Serviced ETs	Total Shire Population
2010	-	18,309	42,546
2010 – 2015	1,501	19,810	45,356
2015 – 2020	1,538	21,348	48,116
2020 – 2025	1,562	22,910	50,786
2025 – 2030	1,561	24,471	53,276

Projected ET growth for the areas covered by individual DSPs are provided in Appendix A as part of the calculations of the capital charge.

3.2 Land Use Information

This DSP should be read in conjunction with Ballina Shire Council Urban Land Release Strategy (2000), the Ballina Shire Council Local Environmental Plan (1987) (BLEP) and the Draft Ballina Local Environmental Plan (2010).

3.3 Projected Equivalent Tenements

The basis of future development throughout the Ballina Shire has been adopted from information provided by the BSC Strategic and Community Services Group. This included the Ballina Shire Council Local Growth Management Strategy - Housing demand and supply analysis working documents. The information in these documents is derived from information supplied by the Australian Bureau of Statistics, incorporating the latest available population information.

The projected future development areas and dwelling increases across the Shire, based on:

- Areas assumed for future land release;

[1] Source: Ballina Shire Council Local Growth Management Strategy – Housing demand and supply analysis working documents.

- Areas identified as part of the BSC Growth Management Strategy; and
- Potential for Infill Development.

Projected ET growth in this document is for the purpose of capital works planning only. Actual population growth will be subject to the rezoning process and Council Development Approval.

3.3.1 Future Development Areas

A number of key development areas have been identified for future land supply in Ballina Shire, including the following:

- West Ballina Structure Plan which identifies approximately 40 ha of land, incorporating a range of industrial, residential and open space land uses.
- Zoned and Candidate Investigation Release Areas in West Ballina, including potential redevelopment of the Boat Harbour precinct;
- Zoned and Candidate Investigation Release Areas in North Ballina, including potential expansion of the Southern Cross Industrial Estate and further industrial expansion;
- Zoned and Candidate Investigation Release Areas in Cumbalum Ridge;
- Zoned Release Area in East Ballina, including Rainforest Ridge;
- Zoned and Candidate Investigation Release Areas in Lennox Head;
- Candidate Investigation Release Area in Skennars Head;
- Wollongbar Urban Expansion Area; and
- Zoned and Candidate Investigation Release Areas in Wardell.

The ET projections associated with the above development areas are further detailed in Section 3.3.2.

3.3.2 Development Summary

Significant development has been identified across Lennox Head, with future projections representing a development yield of approximately 3000 ET. In addition, future development and infill growth has also been identified throughout the Ballina, Wardell and Wollongbar wastewater catchment service areas.

The location of the proposed development areas are shown in Figure 1.

4. Wastewater Infrastructure

This plan levies developer charges towards the cost of providing wastewater infrastructure to service new development. This infrastructure includes the value of both existing and future assets serving a new development area.

Works covered by this DSP include, but are not limited to:

- Existing Distribution and Trunk Mains;
- Existing Wastewater Pumping Stations;
- Existing Wastewater Treatment Works;
- Proposed Trunk Infrastructure; and
- Recycled Water Infrastructure.

The existing and proposed wastewater trunk infrastructure serving the area covered by this DSP is shown in a spatial format in Section 11.

4.1 Estimates of Capital Cost

The estimated capital cost of works serving the area covered by this DSP are provided in Appendix A.

The capital costs for wastewater mains were estimated using the *NSW Office of Water (formerly Ministry of Energy and Utilities), NSW Reference Rates Manual – Valuation of Water Supply, Sewerage and Stormwater Assets (2003 with 2010 update)* (the Manual). More information on these rates, including excluded items can be found in the Manual. Note that any gravity mains with a diameter less than or equal to 150 mm (except as noted below) were classed as reticulation mains and were therefore not included in the calculation of the capital charge per ET. However, these gravity mains are included in the figures of 11 to show connectivity between potential developments and the sewage treatment plants. For the Wollongbar area an additional difficulty rate for 10% rock was included.

For the Wollongbar Urban Expansion Area (WUEA) some gravity mains of diameter 150 mm have been included as DSP costs, as determined by BSC. For the WUEA costs were provided based on the contracts for the works. These have been incorporated instead of using the reference rates for these items.

The pump station costs were estimated using the GHD Cost Database as it was felt that these costs were more appropriate to valuing new works than those provided in the Manual. These rates include a 30% contingency.

Cost estimates for recycled water infrastructure, which is part of the imminent construction program, prepared by the NSW Public Works Department on behalf of Ballina Shire Council were used for the schemes located in Ballina, Ballina Heights, Cumbalum Urban Release Area (Precinct A & B) as well as Lennox Head, East Ballina and Skennars Head. Some infrastructure costs were prorated in the asset register to adequately account for the entire cost of the system.

All assets that will be greater than 30 years of age when the DSP comes into effect have been excluded from the DSP calculations. This is in accordance with IPART recommendations, as BSC were unable to provide documentation justifying that population growth was accounted for in the development of these assets.

4.2 Timing of Works

The estimated timing for works serving the area covered by this DSP are provided in Appendix A. Further information regarding how the timings were estimated for individual work items is provided in report Reference 3. Dates identified are approximate only and are contingent on development proceeding.

5. Standards of Service

System design and operation are based on providing the following standards of service.

5.1 Desired Standards of Service

The wastewater network is required to meet the following standards of service.

Effluent Quality

- Sewage effluent meeting Environment Protection Authority 90 Percentile License Limits (BOD, SS, total N, NH_3N, Oil and Grease, Total P, Faecal coliforms);

Water Quality

- Recycled water quality to comply with Council's Recycled Water Management Plan and the Australian Recycled Water Guidelines.

Chokages

- All wastewater chokes removed and service restored within 8 hours;

Overflows and Odour

- Wastewater overflows to the environment less than one per 100 km of mains per year; and,
- Odour complaints less than 1 per 1000 properties per year.

6. Design Parameters

Investigation and design of wastewater system components is based on the *Manual of Practice: Sewer Design* (1984) and the *Manual of Practice: Sewage Pumping Station Design* (1986). These Manuals were prepared by the former NSW Public Works Department. In order to determine the infrastructure requirements over the planning horizon, the trunk wastewater system was modelled using Haestad Method's SewerCAD software, to determine the performance of the existing and proposed systems under projected hydraulic loads.

The GHD Watewater Infrastructure Planning report (Reference 3) relates to the system components in this DSP.

6.1 Planning and Design Parameters

The major components of the wastewater network were planned according to the following:

Gravity Mains

- Mannings "n" friction value = 0.014;
- Minimum velocity at Peak Wet Weather Flow (PWWF) = 0.6m/s;

Trunk wastewater pump stations

- Emergency storage = 8 hours @ Average Dry Weather Flow (ADWF), where the ADWF is the average dry weather flow of the pump stations gravity catchment only;
- Duty pump to be capable of matching PWWF inflow;

Rising Mains

- Minimum velocity = 0.75m/s;
- Maximum velocity = 2.0m/s.

7. Calculated Developer Charges

7.1 Background

Developer charges are comprised of the following components:

- Capital charge – the cost of providing the asset, and;
- Reduction amount – the cost recovered through annual charges.

The relationship between these components is as follows:

Developer Charge = Capital Charge – Reduction Amount

7.2 Service Areas

Developer charges were initially calculated for a number of different service areas within the Ballina Shire Local Government Area.

Service areas were determined by Council.

This resulted in the adoption of the service areas detailed in Table 3 below.

Table 3 Service Areas

Service Areas	Localities Included
Area A	Wardell
Area B	Lennox Head Skennars Head East Ballina North Ballina West Ballina Ballina Island Pacific Pines Estate Henderson Land Central and South
Area C	Release area known as the Wollongbar Urban Expansion Area.
Area E	Alstonville and Wollongbar
Area F	Existing and future development in Cumbalum Precinct A Existing and future development in Ballina Heights
Area G	Future development in Cumbalum Precinct B

7.3 Capital Charge

The capital charge of an asset is calculated using the following steps, as described in the Guidelines (DLWC, 2000):

- *Estimate the period to full take-up of asset capacity, commencing in or after 1996. If information is readily available, actual take-up rates to date should be used. If not, the water utility could use an average based on the take-up rate for similar release or development areas, or other (better) estimates that are available. An estimate of the take-up of existing unused capacity should also be made.*
- *Calculate the capital charge per ET necessary to equate the present value of the stream of charges which would be derived from annual (per ET) charges and the capital cost of the asset.*

There are two basic approaches to calculating the capital charge per ET, the return on investment (ROI) approach and the spreadsheet approach. The latter is more appropriate for development areas where infrastructure will be developed in stages, and therefore was adopted for this DSP.

The capital charge calculations for wastewater are contained in Appendix A.

7.4 Reduction Amount

Council has adopted the Direct NPV method to calculate the Reduction Amount. For this method, the reduction amount is calculated as the renewal works and works to improve standards per ET, plus part of the net debt of the utility per ET.

The reason this method was adopted is highlighted in the Guidelines (DLWC, 2000), which state:

"…By the second round of DSPs (2007-2009), water utilities with over 2000 assessments will be required to calculate the reduction amount using the NPV of Annual Charges method, which is more transparent and therefore more effective at communicating with the community and development industry.

By that time, utilities are expected to have developed robust strategic business plans with 30 year financial plans, which are a pre-requisite for using this method.

However, at this stage for most utilities, there is a significant advantage in using the Direct NPV method due to its simplicity…"

The reduction amount calculations for wastewater are contained in Appendix B.

7.5 Methodology for Determining Developer Charges to be Paid

Calculation of the developer charge payable on all developments is based on the following formula:

$$\text{Development Charge Payable} = \text{Developer Charge}^{2} \text{ (\$/ET)} \times \text{ETs}$$

[2] Developer charge as defined by this document.

When a development is assessed by Council, the only variable in this calculation is therefore the number of ETs in the proposed development. The following sections define how the number of ETs are defined for specific development types.

It should be noted that when a development is assessed, and the assessed ETs for the same falls below or is equal to the current entitlements, no developer charges will be levied, nor monies refunded on unused entitlements.

A developer charge will only be levied against a development where the ET evaluation is above the current entitlement.

7.5.1 Existing Unconnected Lots

In the case of an existing lot to be connected to Council's system and which has not previously paid developer charges, a contribution equivalent to the relevant developer charges will be applied.

7.5.2 Residential Development

Developer contributions for residential developments are based on industry guidelines that define the number of ETs for common development types. At the time of publishing this policy, the Water Directorate (May 2009 Addendum), *Section 64 Determinations of Equivalent Tenements Guidelines* are the current industry guidelines.

For advice on the current industry guidelines being used to calculate residential developer charges, please contact Ballina Shire Council's Water and Wastewater Section.

7.5.3 Non-Residential Developments including Commercial/Industrial Developments

Developer contributions for non-residential developments are based on industry guidelines that define the number of ETs for common development types, such as commercial and industrial uses.

At the time of publishing this policy, the Water Directorate *Section 64 Determinations of Equivalent Tenements Guidelines* are the current industry guidelines.

For advice on the current industry guidelines being used to calculate non-residential developer charges, please contact Ballina Shire Council's Water and Wastewater Section.

If the industry guidelines do not provide an appropriate match to the development being assessed, then the developer contribution will be determined via the use of one of the following methods:

1. Based on historical sewage production figures of similar developments (see Section 7.5.4); or
2. The number of water / wastewater fixture units (FU's – see Section 7.5.5); or
3. Information supplied by the Developer for sewage production (see Section 7.5.6).

7.5.4 Historical Sewage Production Method

This is applicable where historical water consumption information is available.

The ET loading will be determined by assessing the historical water consumption and applying an appropriate discharge factor for similar developments (i.e.: 1 ET = 230 kL/annum of water consumption (Water Directorate, May 2009 Addendum)).

7.5.5 Fixture Unit (FU) Method

The fixture unit method will be used in cases where the above-mentioned methods are not appropriate.

The fixture units are calculated using the table from Section 6.2 of Part 2.2 of the National Plumbing and Drainage Code – AS3500. This number is then converted to an equivalent tenement using the probable simultaneous flow rate for a standard house.

7.5.6 Information Supplied by the Developer

This will normally be applicable for developments that cannot be determined by historical sewage production (such as a heavy industrial development).

For the calculation of ETs based on this method, the Developer will need to supply to Council a submission outlining the proposed flow rates (instantaneous daily and average annual flow rates) together with relevant supporting documentation.

7.6 Developer Charges

The developer charges determined prior to any agglomeration or cross-subsidy are shown in Table 4. The charges calculated were updated to 2011/12 rates by applying the CPI rate to December 2010 for Sydney (as per updating method in the Guidelines).

Table 4 Developer Charges determined prior to Agglomeration

Development Area	Total Capital Cost per ET ($)	Total ET Growth	Proportion of Growth (%)	Weighted Capital	Reduction amount ($)	Developer charge (prior to agglomeration) ($)
A	15,476	120	1.04	161	2,140	$13,336
C	15,132	780	6.77	1,024	2,140	$12,992
B	10,524	5021	43.55	4,583	2,140	$8,384
F	8,228	2490	21.60	1,777	2,140	$6,008
G	6,998	2939	25.49	1,784	2,140	$4,858
E	5,823	179	1.55	90	2,140	$3,683

7.7 Cross-Subsidy

The Guidelines (DLWC, 2002) permit Local Government Authorities to cross-subsidise the calculated developer charge for an area, provided the extent of cross-subsidisation is fully disclosed. It is also noted that a developer charge cannot be cross-subsidised from one area to another. Instead, a developer charge for a particular area can be cross-subsidised via a corresponding change in the annual charge being paid through water rates.

Note that no cross-subsidy has been included in this report. Cross-subsidy calculations will be performed following discussions with Ballina Shire Council, if required.

7.8 Agglomeration of Service Areas

Once the developer charges have been calculated for each service area, the Guidelines (DLWC, 2000) permit the agglomeration of charges that are within 30% of each other. Agglomeration is intended to minimise the number of different developer charges within the local government area. The agglomeration methodology outlined in the Guidelines (DLWC, 2000) was used to determine the adopted developer charge. The agglomerated charges are shown in Table 5. The charges calculated were updated to 2011/12 rates by applying the CPI rate to December 2010 for Sydney (as per updating method in the Guidelines).

Table 5 Adopted Developer Charges after Agglomeration (2011/12 rates)

Development Area	Total Capital Cost per ET ($)	Agglomeration Inspection (30%)	Total ET Growth	Proportion of Growth (%)	Weighted Capital	Capital Charge for each DSP area ($)	Reduction Amount ($)	Adopted Developer Charge ($)
A	15,476	10,833	120	1.04	161			
C	15,132		780	6.77	1,024			
Total Area A & C				7.81	1,185	15,178	2,140	$13,038
B	10,524	7,367	5021	43.55	4,583			
F	8,228		2490	21.60	1,777			
Total Area B & F				65.15	6,360	9,763	2,140	$7,623
G	6,998	4,899	2939	25.49	1,784			
E	5,823		179	1.55	90			
Total Area G & E				27.05	1,874	6,930	2,140	$4,790

8. Reference Documents

Background information and calculations relating to this DSP are contained in the following documents:

1. Department of Land and Water Conservation (2002), *Developer Charges Guidelines for Water Supply, Sewerage and Stormwater.*
2. New South Wales Government Office of Water, Ministry of Energy and Utilities (2003 with amendments in 2010), *NSW Reference Rates Manual – Valuation of Water Supply, Sewerage and Stormwater Assets*.
3. GHD (June 2011), *Ballina Shire Council – Wastewater Infrastructure Planning, Summary of Updates.*
4. Water Directorate (May 2009 Addendum), *Section 64 Determinations of Equivalent Tenements Guidelines.*
5. Department of Energy, Utilities and Sustainability (DEUS) (October 2004), Circular: *Additional Agglomeration Options for Section 64 Development Servicing Plans (DSPs) for Water Supply and Sewerage*.
6. GHD (2011), *Report for Lennox Head Sewage Pump Station 3001 Pump Upgrade Recommendation.*
7. NSW Water Solutions (NSW Public Works Department) (November 2011), *Ballina Shire Council – Ballina Recycled Water Storage & Distribution Systems: Concept Design Report*
8. NSW Water Solutions (NSW Public Works Department) (November 2011), *Ballina Shire Council – Lennox Head Recycled Water Storage & Distribution Systems: Concept Design Report*
9. IPART (April 2007), *Review of DEUS Developer Charges Guidelines for Water Supply, Sewerage and Stormwater*
10. NSW Office of Water (August 2012), *Developer Charges Guidelines for Water Supply, Sewerage and Stormwater, 2012 - Consultation Draft*

These documents contain more detailed reference information relevant to the derivation of the developer charges. These documents can be reviewed in Council's offices by appointment. To review the documents, please contact Council on (02) 6686 4444.

9. Other DSP's and Related Plans

Other DSP's and related plans include:

- GHD (2004), *Ballina Shire Council – Water Supply Infrastructure – Development Servicing Plan* (anticipated to be revised in the 2011/12 financial year).
- Rous Water (2003), *Rous Water Development Servicing Plans – Regional Water Supply.*

Ballina Shire Council also levies developer contributions for various public amenities under Section 94 of the *Environmental Planning and Assessment Act, 1979*.

10. Glossary

ADWF	Average Dry Weather Flow
Annual Demand	Total annual sewer loading
BOD	Biochemical oxygen demand. Used as a measure of the 'strength' of wastewater.
Capital Cost	The Present Value (MEERA basis) of assets used to service the development.
Capital Charge	Capital cost of assets per ET x Return on Investment (ROI) Factor.
CPI	Consumer Price Index
Developer Charge (DC)	A charge levied on Developers to recover part of the capital cost incurred in providing infrastructure to new development.
Discount Rate	The rate used to calculate the present value of money arising in the future.
DSP	Development Servicing Plan
DCP	Development Control Plan
DLWC	Department of Land and Water Conservation – now known as DIPNR
DIPNR	Department of Infrastructure, Planning and Natural Resources – formerly known as DLWC
EP	Equivalent Person
ET	Equivalent Tenement
IPART	Independent Pricing and Regulatory Tribunal
kL/d	Kilolitres per day
kL/a	Kilolitres per annum
LEP	Local Environmental Plan
MEERA	Modern Equivalent Engineering Replacement Asset
ML/d	Megalitres per day
NHMRC	National Health and Medical Research Council
NPV	Net Present Value
OMA	Operation, maintenance and administration (costs)
Peak Day Demand	Highest water consumption on one day in a year
Post 1996 Asset	An Asset that was commissioned by a water utility on or after 1 January 1996 or that is yet to be commissioned

Pre-1996 Asset	An Asset that was commissioned by a water utility before 1 January 1996
PV	Present value. The value now of money, or ETs, in the future.
Real Terms	The value of a variable adjusted for inflation by a CPI adjustment
Reduction Amount	The amount by which the capital charge is reduced to arrive at the developer charge. This amount reflects the present value of the capital contribution that will be paid by the occupier of a development as part of future annual charges
ROI	Return on investment. Represents the income that is, or could be, generated by investing money
PWWF	Peak Wet Weather Flow
PS	Pumping Station
RWTP	Recycled Water Treatment Plant
Service Area	An area served by a separate water supply system, an area served by a separate sewage treatment works, a separate small town or village, or a new development of over 500 lots.
SR	Service Reservoir
SS	Suspended solids, or the concentration of particles in wastewater. Used as a measure of the 'strength' of sewage.
TRB	Typical residential bill
WWTP	Wastewater Treatment Plant

11. DSP Areas

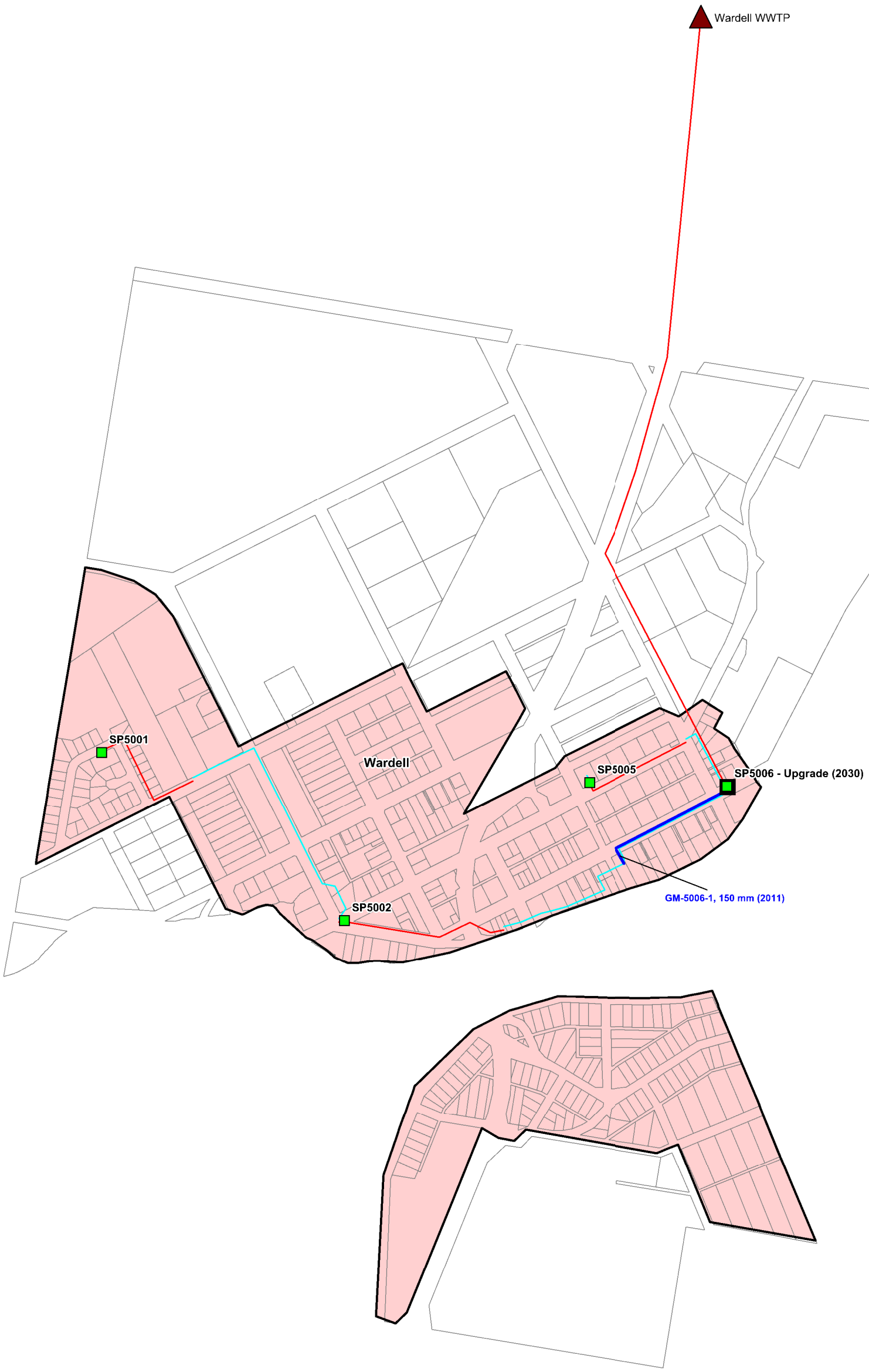
Table 6 provides an index to the figures defining the DSP areas provided in this section. Each figure (excluding Figure 1) indicates:

- The boundaries to the DSP area[3];
- The extent of existing trunk infrastructure;

Table 6 Figure Index

Figure Number	Scheme	Locality	DSP Area
1	Wastewater	Ballina Shire	All DSP Areas
2	Wastewater	Wardell	DSP Area A
3	Wastewater	Ballina (Area B north)	DSP Area B (north)
4	Wastewater	Ballina (Area B south)	DSP Area B (south)
5	Wastewater	Ballina (Area B west)	DSP Area B (west)
6	Wastewater	Wollongbar Urban Expansion Area	DSP Area C
7	Wastewater	Cumbalum A, Cumbalum B and Ballina Heights	DSP Areas F and G
8	Wastewater	Wollongbar and Alstonville	DSP Area E
9	Recycled	Skennars Head, Lennox Head and Fig Tree Hill	DSP Area B (North)
10	Recycled	Skennars Head, East Ballina, Ballina Island	DSP Area B (South)
11	Recycled	North Ballina, Ballina Island, West Ballina	DSP Area B (West)
12	Recycled	Cumbalum A, Ballina Heights	DSP Area F
13	Recycled	Cumbalum B	DSP Area G

[3] The DSP boundaries indicated on all figures represent the extent of the proposed charge boundary. They do not necessarily reflect Council's approval of the extent of the serviceable area. Development within the DSP Areas is subject to Rezoning and Development Approval. For further details regarding development within the DSP Areas please contact Ballina Shire Council.



LEGEND

Pump Stations
Pump Storage Upgrade
Waste Water Treatment Plants
Existing Gravity Mains
Future Gravity Mains
Existing Rising Mains
Cadastre Boundaries

0 100 200 300 400 500
Metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

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BSC Wastewater DSP

Job Number 22-15241
Revision 4
Date 11 MAY 2012

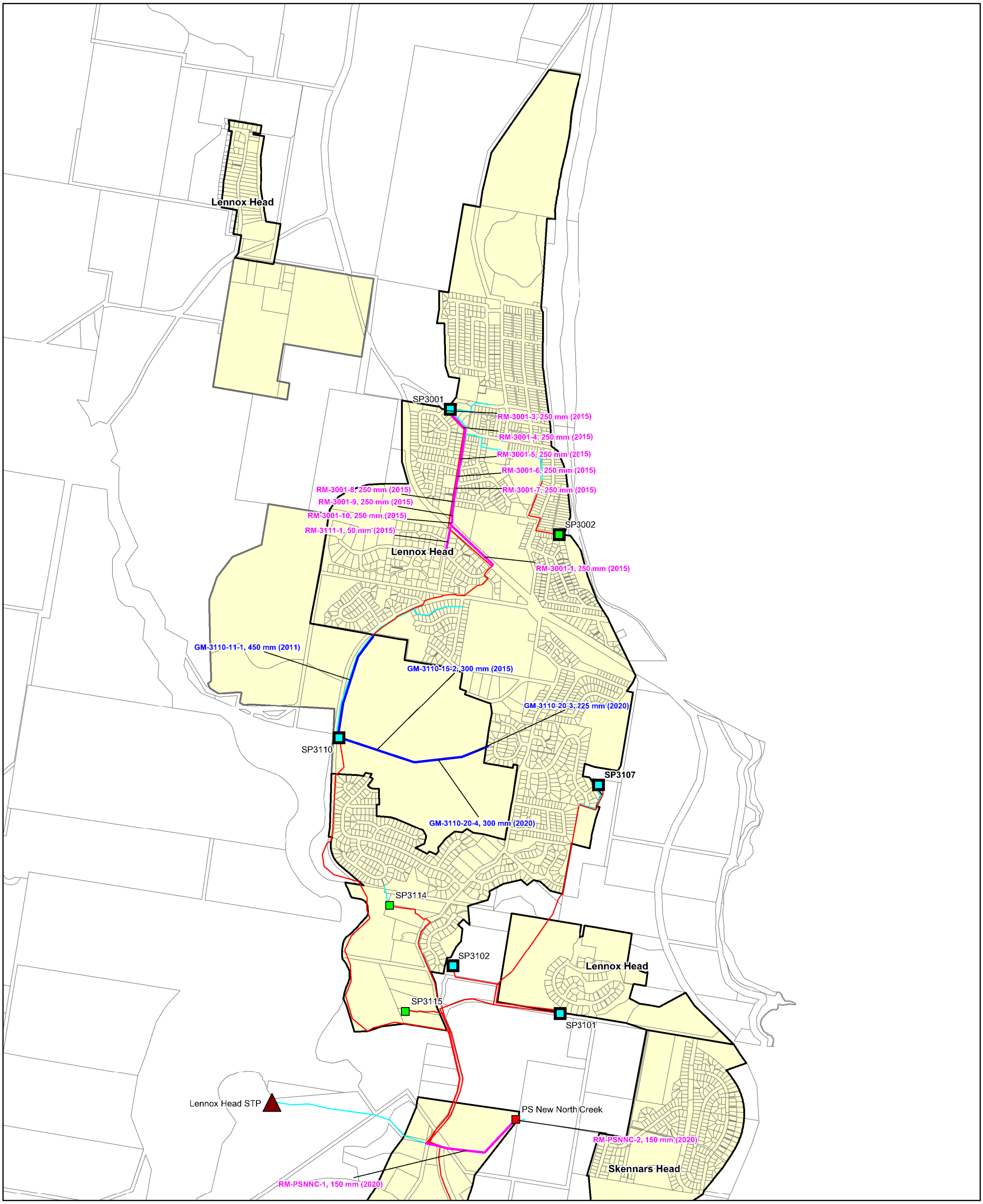
Area A (Wardell)

Figure 2

N:\AU\Toowoomba\Projects\22\15241\GIS\Maps\2215241_22.wor

317 River Street Ballina NSW 2478 Australia **T** 61 2 6620 6500 **F** 61 2 6620 6501 **E** bnkmail@ghd.com **W** www.ghd.com.au

Data source: Ballina Shire Council - Cadastre Boundaries (2010). GHD - Service Areas (2010), Capital Works (Gravity Mains, Rising Mains), Pump Stations, Sewerage Treatment Plants. Created by: CM



LEGEND

- Recycled Water Treatment Plant
- New Pump Station
- Pump Station Upgrade
- Existing Pump Station
- Pump Storage Upgrade
- Future Gravity Mains
- Existing Gravity Mains
- Future Rising Mains
- Existing Rising Mains
- Cadastre Boundaries

0 250 500 750 1000
Metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

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BSC Wastewater DSP

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Date | 11 MAY 2012

Area B (North)

Figure 3

N:\AU\Toowoomba\Projects\22\15241\GIS\Maps\2215241_28.wor

317 River Street Ballina NSW 2478 Australia T 61 2 6620 6500 F 61 2 6620 6501 E bnkmail@ghd.com W www.ghd.com.au

Data source: Ballina Shire Council - Cadastre Boundaries (2010). GHD - Service Areas (2010), Capital Works (Gravity Mains, Rising Mains), Pump Stations, Sewerage Treatment Plants. Created by: CM

SP3114

SP3102 - Upgrade (2015)

Lennox Head

SP3115 - Upgrade (2010)

SP3101 - Upgrade (2015)

Lennox Head STP

PS New North Creek

RM-PSNNC-2, 150 mm (2020)

Skennars Head

RM-PSNNC-1, 150 mm (2020)

SPNB2

SP2301 - Upgrade (2011)

GM-2301-1, 300 mm (2011)

RM-SPNB2-2, 150 mm (2015)

SP2317 - Upgrade (2011)

GM-2301-2, 525 mm (2011)

GM-2301-8, 225 mm (2011)

East Ballina

Ballina Island

LEGEND

Recycled Water Treatment Plant

New Pump Station

Pump Station Upgrade

Existing Pump Station

Pump Storage Upgrade

Future Gravity Mains

Existing Gravity Mains

Future Rising Mains

Existing Rising Mains

Cadastre Boundaries

0 250 500 750 1000

Metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

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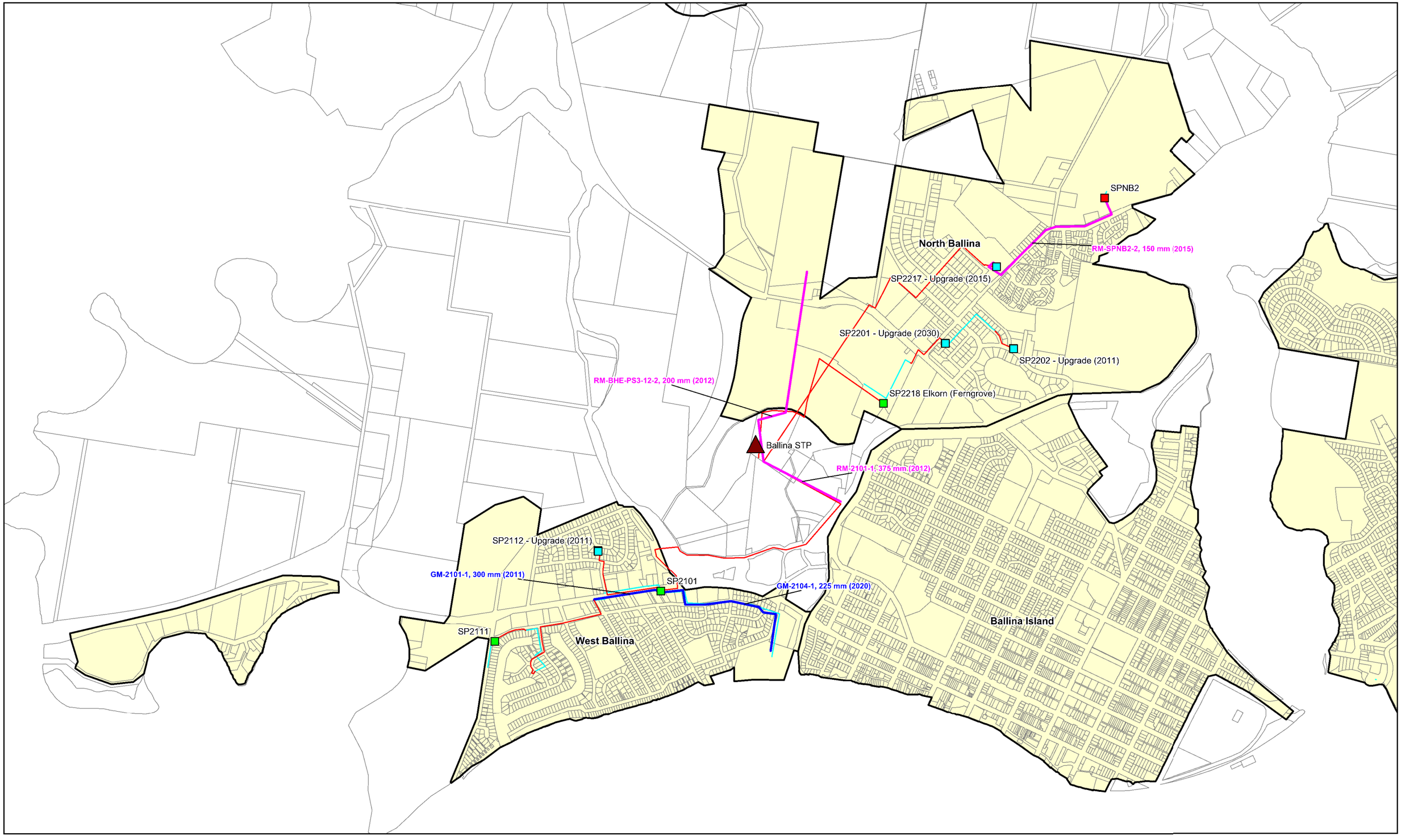
Area B (South)

Figure 4

N:\AU\Toowoomba\Projects\22\15241\GIS\Maps\2215241_29.wor

317 River Street Ballina NSW 2478 Australia T 61 2 6620 6500 F 61 2 6620 6501 E bnkmail@ghd.com W www.ghd.com.au

Data source: Ballina Shire Council - Cadastre Boundaries (2010). GHD - Service Areas (2010), Capital Works (Gravity Mains, Rising Mains), Pump Stations, Sewerage Treatment Plants. Created by: CM



1:20,000 (at A3)

0 200 400 600 800

Metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid Of Australia, Zone 56

N

LEGEND

- Recycled Water Treatment Plant
- New Pump Station
- Pump Station Upgrade
- Existing Pump Station
- Pump Storage Upgrade
- Future Gravity Mains
- Existing Gravity Mains
- Future Rising Mains
- Existing Rising Mains
- Cadastre Boundaries

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BSC Wastewater DSP

Job Number	22-15241
Revision	4
Date	11 MAY 2012

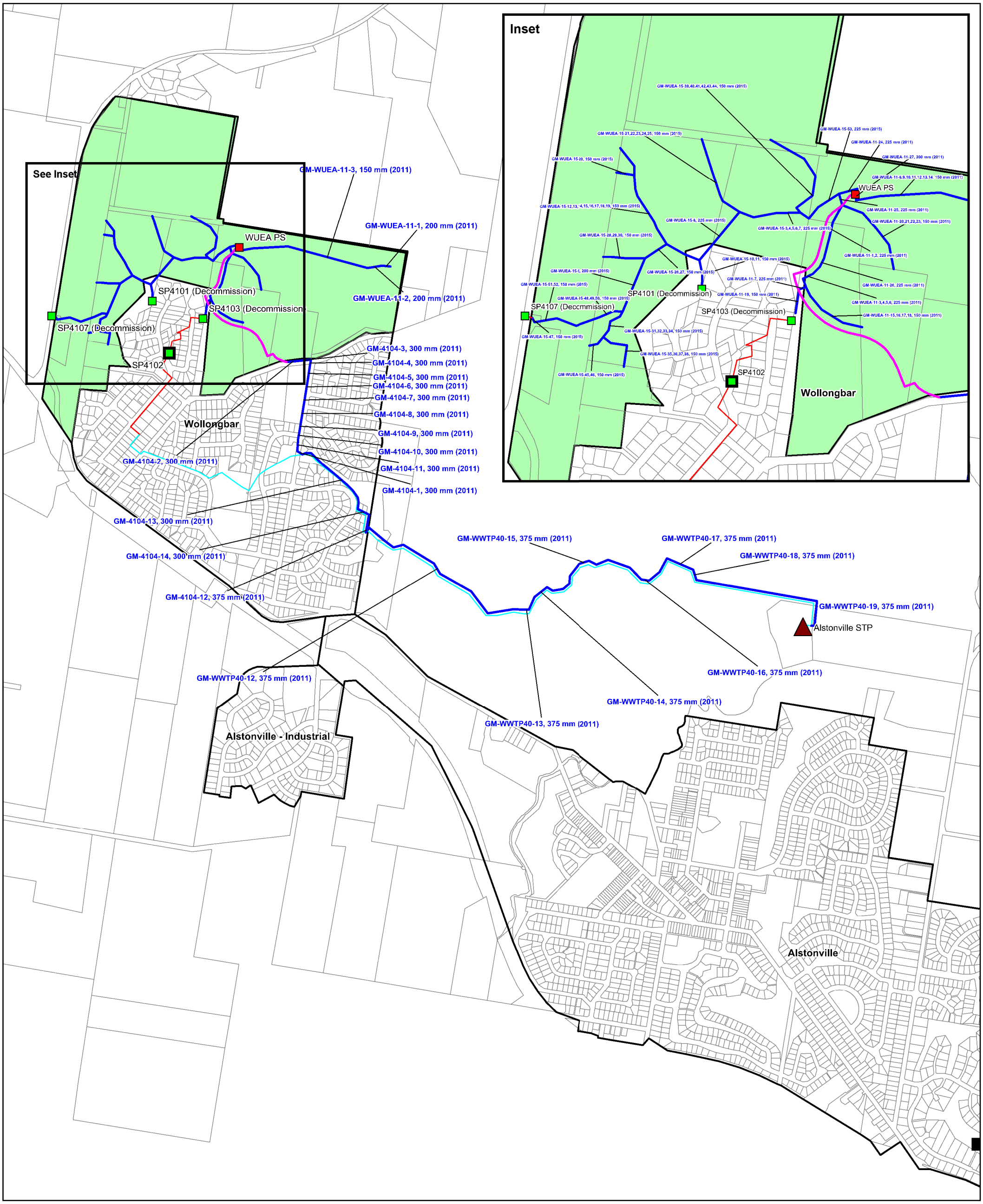
Area B (West)

Figure 5

N:\AU\Toowoomba\Projects\22\15241\GIS\Maps\2215241_30.wor

Data source: Ballina Shire Council (2010) - Cadastre boundary, Existing Gravity Mains, Existing Rising Mains, Existing Pump Station. GHD - New Pump Station, Pump Station Upgrade, Existing Pump Station, Pump Storage Upgrade, Future Gravity Mains, Future Rising Mains, Gravity Reticulation and Future Development Areas. Created by: CM

317 River Street Ballina NSW 2478 Australia T 61 2 6620 6500 F 61 2 6620 6501 E bnkmail@ghd.com W www.ghd.com.au



LEGEND

- Wastewater Treatment Plant
- New Pump Station
- Pump Station Upgrade
- Existing Pump Station
- Pump Storage Upgrade
- Future Rising Mains
- Existing Rising Mains
- Future Gravity Mains
- Existing Gravity Mains
- Area C

0 200 400 600 800
Metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

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Date 11 MAY 2012

Area C (Wollongbar UEA)

Figure 6

N:\AU\Toowoomba\Projects\22\15241\GIS\Maps\2215241_24.wor

317 River Street Ballina NSW 2478 Australia T 61 2 6620 6500 F 61 2 6620 6501 E bnkmail@ghd.com W www.ghd.com.au

Data source: Ballina Shire Council - Cadastre Boundaries (2010). GHD - Service Areas (2010), Capital Works (Gravity Mains, Rising Mains), Pump Stations, Sewerage Treatment Plants. Created by: CM

Lennox Head

Cumbalum B

Scanlan Lane

Cumbalum A
and Ballina Heights

SP2404

SP2402

RM-2401-1, 150 mm (2015)

RM-PS6-20-3, 450 mm (2020)

SP2401 - Upgrade (2015)

RM-BHE-PS3-15-4, 300 mm (2015)

RM-BHE-PS3-15-2, 300 mm (2015)

RM-2402-20-1, 300 mm (2020)

RM-PS6-20-1, 450 mm (2020)

PMP-BHE-PS3

RM-2402-15-1, 225 mm (2015)

Lennox Head RWTP

RM-PS6-20-2, 450 mm (2020)

Pacific Highway

Existing dual
rising mains

North Ballina

Pacific Highway

Ballina RWTP

LEGEND

- Recycled Water Treatment Plants
- New Pump Station
- Pump Station Upgrade
- Existing Pump Station
- Existing Gravity Mains
- Future Rising Mains
- Existing Rising Mains
- Area F
- Area G
- Cadastre Boundaries

0 250 500 750 1000
Metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

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BSC Wastewater DSP

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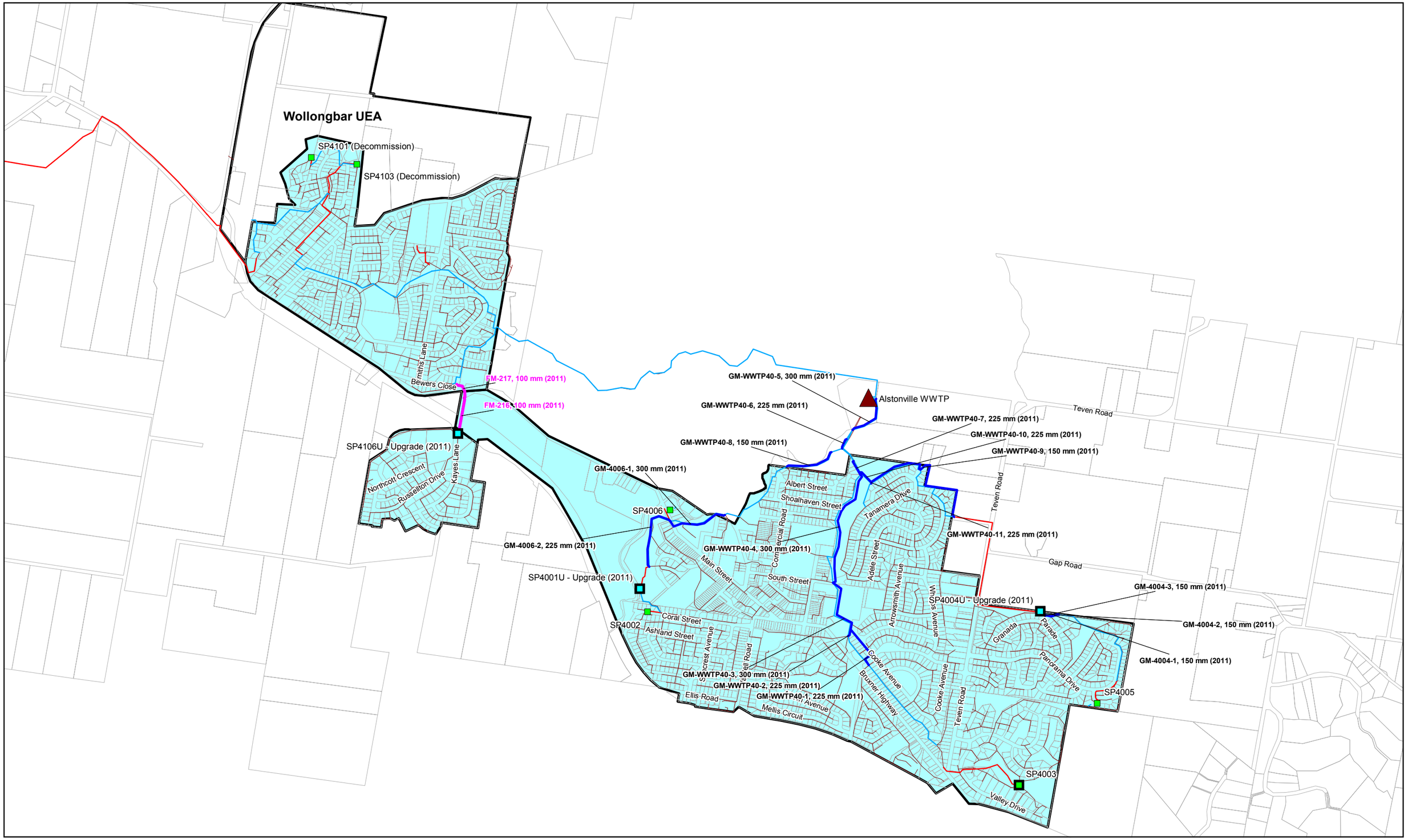
Area F and G (Cumbalum A and Ballina Heights and Cumbalum B)

Figure 7

N:\AU\Toowoomba\Projects\22\15241\GIS\Maps\2215241_21.wor

317 River Street Ballina NSW 2478 Australia T 61 2 6620 6500 F 61 2 6620 6501 E bnkmail@ghd.com W www.ghd.com.au

Data source: Ballina Shire Council - Cadastre Boundaries (2010). GHD - Service Areas (2010), Capital Works (Gravity Mains, Rising Mains), Pump Stations, Sewerage Treatment Plants. Created by: CM



1:15,000 (at A3)

0 150 300 450 600

Metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid Of Australia, Zone 56

N

LEGEND

- Wastewater Treatment Plant
- Pump Station Upgrade
- Existing Pump Station
- Pump Storage Upgrade
- Future Gravity Mains
- Existing Gravity Mains
- Future Rising Mains
- Existing Rising Mains
- Gravity Reticulation
- Cadastre Boundaries
- Area E

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Ballina Shire Council
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Date	11 MAY 2012

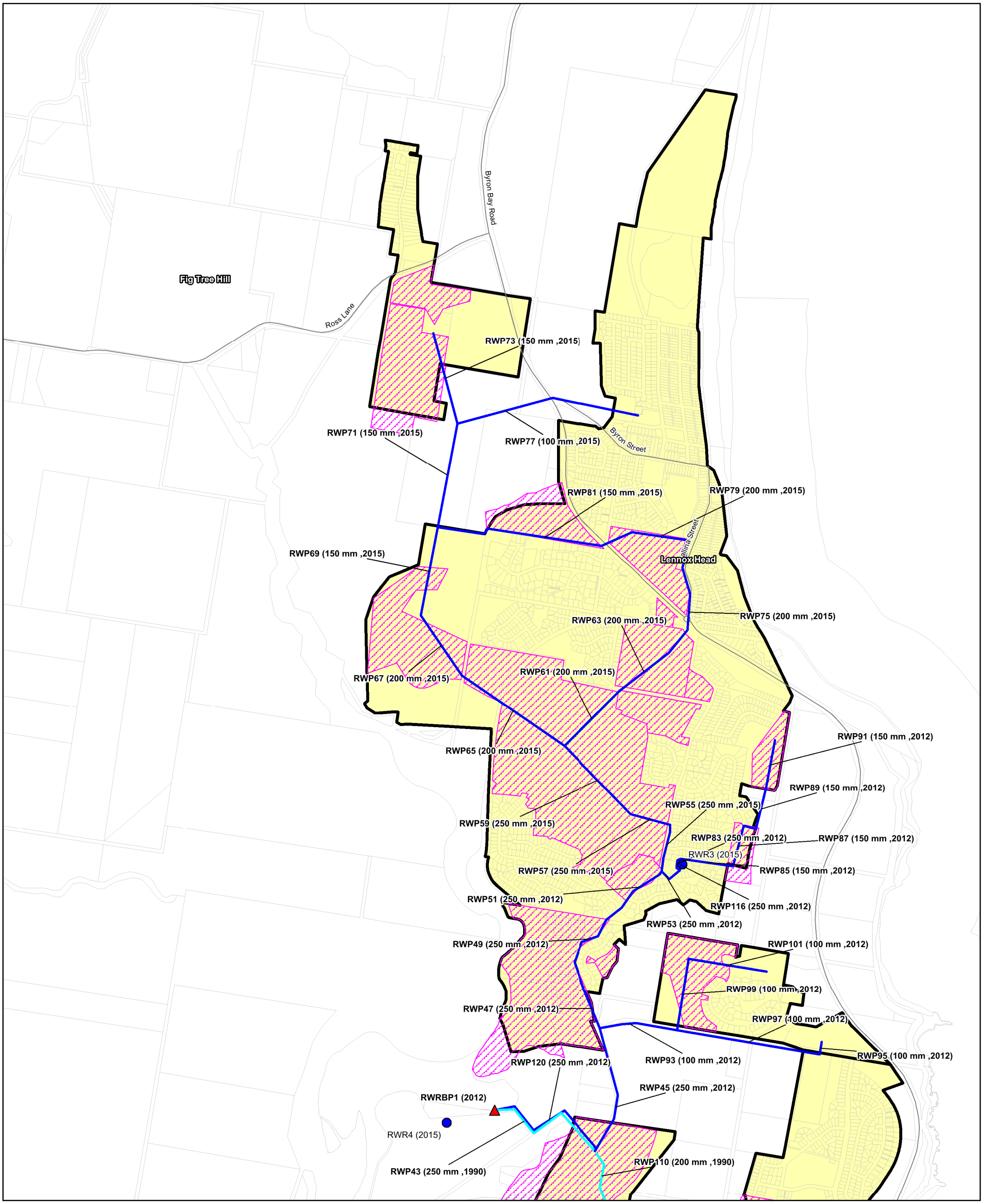
DSP Area E (Alstonville and Wollongbar)

Figure 8

N:\AU\Toowoomba\Projects\22\15241\GIS\Maps\2215241_26.wor

Data source: Ballina Shire Council (2010) - Cadastre boundary, Existing Gravity Mains, Existing Rising Mains, Existing Pump Station. GHD - New Pump Station, Pump Station Upgrade, Existing Pump Station, Pump Storage Upgrade, Future Gravity Mains, Future Rising Mains, Gravity Reticulation and Future Development Areas. Created by: CM

317 River Street Ballina NSW 2478 Australia **T** 61 2 6620 6500 **F** 61 2 6620 6501 **E** bnkmail@ghd.com **W** www.ghd.com.au



LEGEND

- DSP Area
- Cadastral Boundaries
- Major Roads
- Pumps
- Reservoirs
- Recycled Water Pipe Network
  - Existing
  - Future
- Recycled Water Development Areas
  - Urban Dual Reticulation

1:20,000

0 250 500 750 1000

Metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

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Ballina Shire Council
Development Servicing Plan - Recycled Water

Job Number 22-15470
Revision 1
Date 11 MAY 2012

DSP Area B - North

Figure 9

N:\AU\Toowoomba\Projects\22\15470\GIS\Maps\2215470_10A.wor
317 River Street Ballina NSW 2478 Australia T 61 2 6620 6500 F 61 2 6620 6501 E bnkmail@ghd.com W www.ghd.com.au

Data source: BSC - DSP Areas, Cadastral Boundaries, Pumps, Reservoirs, Recycled Water Pipe Network, Recycled Water Development Areas (2012). Navteq - Major Roads, Place Names (2011). Created by: CM

RWP101 (100 mm ,2012)
RWP99 (100 mm ,2012)
RWP47 (250 mm ,2012)
RWP97 (100 mm ,2012)
RWP43 (250 mm ,1990)
RWP93 (100 mm ,2012)
RWRBP1 (2012)
RWP45 (250 mm ,2012)
RWR4 (2013)
RWP95 (100 mm ,2012)
RWP110 (200 mm ,1990)
RWP120 (250 mm ,2012)
Skennars Head
RWP105 (150 mm ,2012)
RWP107 (150 mm ,2012)
RWP109 (200 mm ,1990)
RWP127 (200 mm ,1990)
RWP139 (200 mm ,1990)
RWP113 (200 mm ,1990)
RWP111 (200 mm ,1990)
RWP141 (200 mm ,2010)
RWP115 (200 mm ,1990)
RWP129 (200 mm ,1990)
RWP123 (200 mm ,1990)
RWP131 (200 mm ,1990)
RWP121 (200 mm ,1990)
RWP21 (200 mm ,1990)
Angels Beach Drive
Links Avenue
RWP119 (200 mm ,1990)
RWP133 (150 mm ,1990)
Bangalow Road
Kerr Street
RWP135 (200 mm ,1990)
Manly Street
East Ballina
RWP143 (200 mm ,1990)
Hill Street
RWP137 (150 mm ,1990)
RWP145 (200 mm ,1990)
Bentinck Street
RWP23 (200 mm ,1990)
RWP147 (150 mm ,1990)
Ballina
River Street
Kingsford Smith Drive
RWP149 (150 mm ,1990)

LEGEND

DSP Area
Cadastral Boundaries
Major Roads
Pumps
Reservoirs
Recycled Water Pipe Network
Existing
Future
Recycled Water Development Areas
Urban Dual Reticulation

1:20,000
0 250 500 750 1000
Metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

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DSP Area B - South

Figure 10

317 River Street Ballina NSW 2478 Australia T 61 2 6620 6500 F 61 2 6620 6501 E bnkmail@ghd.com W www.ghd.com.au

Recycled Water Pipe Network
Existing
Future

Recycled Water Development Areas
Urban Dual Reticulation

RWP31 (200 mm ,2010)
RWP25 (300 mm ,2012)
Pacific Highway
Cumbalum
RWP120 (250 mm ,2012)
RWRBP1 (2012)
RWP45 (250 mm ,2012)
RWR4 (2013)
RWP43 (250 mm ,1990)
RWP110 (200 mm ,1990)
RWP105 (150 mm ,2012)
RWP109 (200 mm ,1990)
RWP127 (200 mm ,1990)
RWP113 (200 mm ,1990)
RWP107 (150 mm ,2012)
RWP111 (200 mm ,1990)
RWP125 (200 mm ,1990)
RWP139 (200 mm ,1990)
Angels Beach Drive
North Ballina
RWP141 (200 mm ,2010)
RWP11 (200 mm ,2012)
RWP115 (200 mm ,1990)
RWP129 (200 mm ,1990)
RWP21 (200 mm ,1990)
RWP123 (200 mm ,1990)
RWP131 (200 mm ,1990)
RWP19 (200 mm ,2010)
Links Avenue
RWP114 (200 mm ,2012)
RWP121 (200 mm ,1990)
Ballina WWTP Supply (2012)
RWP119 (200 mm ,1990)
RWP133 (150 mm ,1990)
RWP13 (200 mm ,2012)
Bangalow Road
Kerr Street
RWP135 (200 mm ,1990)
RWP15 (200 mm ,2012)
RWP23 (200 mm ,1990)
East Ballina
RWP143 (200 mm ,1990)
Hill Street
RWP137 (150 mm ,1990)
Bruxner Highway
RWP117 (200 mm ,1990)
RWP147 (150 mm ,1990)
West Ballina
Ballina Island
RWP145 (200 mm ,1990)
Kingsford Smith Drive
RWP149 (150 mm ,1990)
South Ballina

1:30,000 (at A3)
0 0.5 1 1.5
Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

N

LEGEND
DSP Area
Cadastral Boundaries
Major Roads
Pumps
Reservoirs

CLIENTS | PEOPLE | PERFORMANCE

Ballina Shire Council
Development Servicing Plan - Recycled Water

Job Number 22-15470
Revision 1
Date 11 MAY 2012

DSP Area B - West

Figure 11

N:\AU\Toowoomba\Projects\22\15470\GIS\Maps\2215470_10C.wor

Data source: BSC - DSP Areas, Cadastral Boundaries, Recycled Water Pipe Network, Pumps, Reservoirs (2012). Navteq - Major Roads, Place Names (2011). Created by: CM

317 River Street Ballina NSW 2478 Australia T 61 2 6620 6500 F 61 2 6620 6501 E bnkmail@ghd.com W www.ghd.com.au

RWP41 (100 mm ,2012)

RWRBP2 (2013)

RWP118 (300 mm ,2012)

RWR1 (2015)

RWP33 (200 mm ,2012)

RWP27 (350 mm ,2012)

Cumbalum A

RWP29 (200 mm ,2012)

RWP31 (200 mm ,2010)

Ballina Heights

Pacific Highway

RWP25 (300 mm ,2012)

LEGEND

DSP Area

Cadastral Boundaries

Major Roads

Pumps

Reservoirs

Recycled Water Pipe Network

Existing

Future

Recycled Water Development Areas

Urban Dual Reticulation

1:15,000

0 200 400 600 800

Metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

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Ballina Shire Council
Development Servicing Plan - Recycled Water

DSP Area F
Cumbalum A, Ballina Heights

Job Number | 22-15470
Revision | 1
Date | 11 MAY 2012

Figure 12

N:\AU\Toowoomba\Projects\22\15470\GIS\Maps\2215470_11.wor

317 River Street Ballina NSW 2478 Australia T 61 2 6620 6500 F 61 2 6620 6501 E bnkmail@ghd.com W www.ghd.com.au

Data source: BSC - DSP Areas, Cadastral Boundaries, Pumps, Reservoirs, Recycled Water Pipe Network (2012). Navteq - Major Roads, Place Names (2011). Created by: CM

RWR2 (2015)

RWP39 (500 mm ,2015)

RWP112 (250 mm ,2015)

Cumbalum B

RWP37 (250 mm ,2015)

RWP41 (100 mm ,2012)

RWRBP2 (2013)

RWR1 (2015)

RWP118 (300 mm ,2012)

RWP33 (200 mm ,2012)

RWP27 (350 mm ,2012)

Pacific Highway

RWP29 (200 mm ,2012)

LEGEND

DSP Area

Cadastral Boundaries

Major Roads

Pumps

Reservoirs

Recycled Water Pipe Network

Existing

Future

Recycled Water Development Areas

Urban Dual Reticulation

1:15,000

0 200 400 600 800

Metres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56

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Ballina Shire Council
Development Servicing Plan - Recycled Water

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Date | 11 MAY 2012

DSP Area G: Cumbalum B

Figure 13

N:\AU\Toowoomba\Projects\22\15470\GIS\Maps\2215470_12.wor

317 River Street Ballina NSW 2478 Australia **T** 61 2 6620 6500 **F** 61 2 6620 6501 **E** bnkmail@ghd.com **W** www.ghd.com.au

Data source: BSC - DSP Areas, Cadastral Boundaries, Pumps, Reservoirs, Recycled Water Pipe Network (2012). Navteq - Major Roads, Place Names (2011). Created by: CM

Appendix A

Capital Charge Calculation

Extracted spreadsheets from calculation process

A1. Population Projections

Table 7 Population Projections used in the calculation of the developer charge

DSP Area	2010 ET	2015 ET	2020 ET	2025 ET	2030 ET	Total ET Growth as a result of new development areas
A	409	447	489	509	529	120
B	10,800	12,591	14,564	16,020	17,072	6,272
C	0	195	390	585	780	780
E	3,943	3,975	4,045	4,078	4,122	179
F	436	1,478	2,082	2,082	2,082	1,646
G	207	676	1,145	2,083	3,146	2,939
Total	15,795	19,362	22,715	25,357	27,731	11,936

DSP - Existing Gravity Mains

Label	Area	PS Catchment	Diameter (mm)	Length (Unified) (m)	Year of Construction	Material	Relevant material rate to apply	Total Rate (2003$/m)	Total Rate (2010$/m)	Capital Cost (2010$)	Pre or Post 1996 Asset	Effective Year of Commissioning	Adopted Capacity (ETs)	Cost per ET (2010$/ET)	Year when Capacity is Taken-Up	Take-up Period (Years)	Pre 1996 ROI Factor (Non-Uniform Lot Take Up)	Post 1996 ROI Factor (Non-Uniform Lot Take Up)	Capital Charge per ET (2010$/ET)
MH-229-Diversion Link	B	MH-229	304.8	26.5	2010	unplasticised poly vinyl chloride	Relining	313	438	11,612	Post	2010	18,140	0.64	2030	21	1.26	1.64	1.05
P-1006	B	MH-1169	225	26.5	1975	Vitrious Clay	Relining	238	333	8,830	Pre	1996	18,140	0.49	2030	35	1.26	1.64	0.61
P-1007	B	MH-1170	225	34.5	2010	unplasticised poly vinyl chloride	Relining	238	333	11,495	Post	2010	18,140	0.63	2030	21	1.26	1.64	1.04
P-1008	B	MH-1171	381	10	1995	unplasticised poly vinyl chloride	Relining	405	567	5,670	Pre	1996	18,140	0.31	2030	35	1.26	1.64	0.39
P-1057	B	2173	304.8	4	2010	unplasticised poly vinyl chloride	Relining	313	438	1,753	Post	2010	18,140	0.10	2030	21	1.26	1.64	0.16
P-1059	B	MH-272	304.8	17	2010	unplasticised poly vinyl chloride	Relining	313	438	7,449	Post	2010	18,140	0.41	2030	21	1.26	1.64	0.67
P-1084a	B	MH-NB4	225	152.5	1975	Vitrious Clay	Relining	238	333	50,813	Pre	1996	18,140	2.80	2030	35	1.26	1.64	3.54
P-1095a	F	MH-Cura A SP2403	254	48	2010	unplasticised poly vinyl chloride	Relining	238	333	15,994	Post	2010	3,162	5.06	2030	21	1.12	1.27	6.44
P-1104a	B	MH-1232	150	42	0		DICL	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-111	B	MH-124	152.4	41	0		0	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-1112	B	MH-1321	152.4	2.5	0		0	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-1116	B	MH-1324	304.8	10	1980	Cast Iron	DICL	313	438	4,382	Pre	1996	18,140	0.24	2030	35	1.26	1.64	0.30
P-1117	B	MH-661	304.8	83	1980	Vitrious Clay	Relining	313	438	36,371	Pre	1996	18,140	2.00	2030	35	1.26	1.64	2.53
P-112	B	MH-125	152.4	86.5	0		0	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-1124	B	MH-1331	152.4	10	0		0	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-1125	B	MH-1332	152.4	8.5	0	New	0	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-1134	F	MH-Cura A SP2402	381	33	0	unplasticised poly vinyl chloride	Relining	405	567	18,711	Pre	1996	3,162	5.92	2030	35	1.12	1.27	6.60
P-1144	B	MH-1256	225	32.5	1975	Vitrious Clay	Relining	238	333	10,829	Pre	1996	18,140	0.60	2030	35	1.26	1.64	0.75
P-1145	B	MH-1257	225	246	1975	Vitrious Clay	Relining	238	333	81,967	Pre	1996	18,140	4.52	2030	35	1.26	1.64	5.70
P-1146	F	MH-1258	150	295.5	0		0	195	273	-	Pre	1996	3,162	0.00	2030	35	1.12	1.27	0.00
P-2096	F	MH-PS1 (Unara Parkway PS)	152.4	12.5	0		0	195	273	-	Pre	1996	3,162	0.00	2030	35	1.12	1.27	0.00
P-235	B	MH-271	304.8	73	1994	Vitrious Clay	DICL	313	438	31,989	Pre	1996	18,140	1.76	2030	35	1.26	1.64	2.23
P-236	B	B8	304.8	73.5	1994	Vitrious Clay	DICL	313	438	32,208	Pre	1996	18,140	1.78	2030	35	1.26	1.64	2.24
P-237	B	MH-273	304.8	41	1994	Vitrious Clay	Relining	313	438	17,966	Pre	1996	18,140	0.99	2030	35	1.26	1.64	1.25
P-251	B	MH-288	304.8	88	1980	Vitrious Clay	Relining	313	438	38,562	Pre	1996	18,140	2.13	2030	35	1.26	1.64	2.68
P-252	B	MH-289	304.8	29.5	1980	Vitrious Clay	Relining	313	438	12,927	Pre	1996	18,140	0.71	2030	35	1.26	1.64	0.90
P-253	B	MH-290	304.8	37.5	1980	Vitrious Clay	Relining	313	438	16,433	Pre	1996	18,140	0.91	2030	35	1.26	1.64	1.14
P-254	B	MH-293	304.8	40.5	1980	Vitrious Clay	Relining	313	438	17,747	Pre	1996	18,140	0.98	2030	35	1.26	1.64	1.23
P-256	B	MH-295	304.8	53.5	1980	Vitrious Clay	Relining	313	438	23,444	Pre	1996	18,140	1.29	2030	35	1.26	1.64	1.63
P-258	B	MH-297	225	71.5	1980	Vitrious Clay	Relining	238	333	23,824	Pre	1996	18,140	1.31	2030	35	1.26	1.64	1.66
P-259	B	MH-298	225	81	1980	Vitrious Clay	Relining	238	333	26,989	Pre	1996	18,140	1.49	2030	35	1.26	1.64	1.88
P-260	B	MH-299	225	79.5	1980	Vitrious Clay	Relining	238	333	26,489	Pre	1996	18,140	1.46	2030	35	1.26	1.64	1.84
P-261	B	MH-300	225	60	1980	Vitrious Clay	Relining	238	333	19,992	Pre	1996	18,140	1.10	2030	35	1.26	1.64	1.39
P-262	B	MH-301	225	72	1980	Vitrious Clay	Relining	238	333	23,990	Pre	1996	18,140	1.32	2030	35	1.26	1.64	1.67
P-274	B	MH-314	304.8	30	1994	Vitrious Clay	Relining	313	438	13,146	Pre	1996	18,140	0.72	2030	35	1.26	1.64	0.91
P-275	B	MH-315	304.8	67.5	1994	Vitrious Clay	Relining	313	438	29,579	Pre	1996	18,140	1.63	2030	35	1.26	1.64	2.06
P-276	B	MH-316	304.8	48.5	1994	Vitrious Clay	Relining	313	438	21,253	Pre	1996	18,140	1.17	2030	35	1.26	1.64	1.48
P-277	B	MH-317	304.8	66	1994	Vitrious Clay	Relining	313	438	28,921	Pre	1996	18,140	1.59	2030	35	1.26	1.64	2.01
P-278	B	MH-312	304.8	92.5	1994	Vitrious Clay	Relining	313	438	40,534	Pre	1996	18,140	2.23	2030	35	1.26	1.64	2.82
P-498	B	MH-547	304.8	63.5	1979	Vitrious Clay	DICL	313	438	27,826	Pre	1996	18,140	1.53	2030	35	1.26	1.64	1.94
P-564	B	MH-155	152.4	12.5	0		0	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-567	B	MH-546	304.8	16	0		DICL	313	438	7,011	Pre	1996	18,140	0.39	2030	35	1.26	1.64	0.49
P-592	B	MH-586	152.4	92	0		0	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-593	B	MH-587	152.4	44	0		0	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-594	B	MH-588	152.4	26	0		0	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-595	B	MH-549	152.4	64.5	0		0	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-596	B	MH-123	152.4	46	0		0	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-597	B	MH-589	152.4	85.5	0		0	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-598	B	MH-126	152.4	56.5	0		DICL	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-599	B	MH-590	152.4	8	0		DICL	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-602	B	MH-133	304.8	81	1979	Vitrious Clay	DICL	313	438	35,494	Pre	1996	18,140	1.96	2030	35	1.26	1.64	2.47
P-603	B	MH-592	304.8	82.5	1979	Vitrious Clay	DICL	313	438	36,152	Pre	1996	18,140	1.99	2030	35	1.26	1.64	2.52
P-604	B	MH-593	304.8	76.5	1979	Vitrious Clay	DICL	313	438	33,522	Pre	1996	18,140	1.85	2030	35	1.26	1.64	2.33
P-605	B	MH-594	304.8	76.5	1979	Vitrious Clay	DICL	313	438	33,522	Pre	1996	18,140	1.85	2030	35	1.26	1.64	2.33
P-606	B	MH-116	304.8	44.5	1979	Vitrious Clay	DICL	313	438	19,500	Pre	1996	18,140	1.07	2030	35	1.26	1.64	1.36
P-623	B	MH-602	152.4	10	0		DICL	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-624	B	MH-325	152.4	74.5	0		0	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-625	B	MH-603	152.4	72	0		0	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-626	B	MH-569	152.4	48.5	0		0	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-627	B	MH-604	152.4	79.5	0		0	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-628	B	MH-605	152.4	70.5	0		0	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-629	B	MH-323	152.4	41.5	0		DICL	195	273	-	Pre	1996	18,140	0.00	2030	35	1.26	1.64	0.00
P-718	B	MH-291	304.8	30	1980	Vitrious Clay	Relining	313	438	13,146	Pre	1996	18,140	0.72	2030	35	1.26	1.64	0.91
P-720	B	MH-296	304.8	83.5	1980	Vitrious Clay	Relining	313	438	36,590	Pre	1996	18,140	2.02	2030	35	1.26	1.64	2.55
P-738	B	MH-313	304.8	12.5	1994	Vitrious Clay	Relining	313	438	5,478	Pre	1996	18,140	0.30	2030	35	1.26	1.64	0.38
P-739	B	MH-673	304.8	99.5	1994	Vitrious Clay	Relining	313	438	43,601	Pre	1996	18,140	2.40	2030	35	1.26	1.64	3.03
P-740	B	MH-674	304.8	115.5	1994	Vitrious Clay	Relining	313	438	50,612	Pre	1996	18,140	2.79	2030	35	1.26	1.64	3.52
P-741	B	MH-270	304.8	102	1994	Vitrious Clay	DICL	313	438	44,696	Pre	1996	18,140	2.46	2030	35	1.26	1.64	3.11
P-742	B	MH-675	304.8	69.5	1994	Vitrious Clay	DICL	313	438	30,455	Pre	1996	18,140	1.68	2030	35	1.26	1.64	2.12
P-743	B	MH-269	304.8	116.5	1994	Vitrious Clay	DICL	313	438	51,050	Pre	1996	18,140	2.81	2030	35	1.26	1.64	3.55
P-744	B	MH-676	304.8	87	1994	Vitrious Clay	DICL	313	438	38,123	Pre	1996	18,140	2.10	2030	35	1.26	1.64	2.65
P-745	B	MH-677	304.8	85	1994	Vitrious Clay	DICL	313	438	37,247	Pre	1996	18,140	2.05	2030	35	1.26	1.64	2.59
P-746	B	MH-678	304.8	28.5	1994	Vitrious Clay	DICL	313	438	12,489	Pre	1996	18,140	0.69	2030	35	1.26	1.64	0.87
P-809	B	MH-717	381	11	1986	Vitrious Clay	DICL	405	567	6,237	Pre	1996	18,140	0.34	2030	35	1.26	1.64	0.43
P-832	B	MH-1124	762	929	2009	Reinforced Concrete Pipe	Relining	870	1218	1,131,522	Post	2009	18,140	62.38	2030	22	1.26	1.64	102.50
P-1069	F	MH-SP4	152.4	30	2010		DICL	195	273	-	Post	2010	3,162	0.00	2030	21	1.12	1.27	0.00
P-1009	B	MH-1172	152.4	11.5	2010		DICL	195	273	-	Post	2010	18,140	0.00	2030	21	1.26	1.64	0.00
P-1086a	B	MH-SP3115-1	225	8.5	2010		DICL	238	333	2,832	Post	2010	18,140	0.16	2030	21	1.26	1.64	0.26
P-1093a	F	MH-Cura A BHEPS3	304.8	9.5	2010		DICL	313	438	4,163	Post	2010	3,162	1.32	2030	21	1.12	1.27	1.68
P-1101a	B	MH-1330	225	98.5	2010		DICL	238	333	32,820	Post	2010	18,140	1.81	2030	21	1.26	1.64	2.97
P-1102a	B	MH-1230	304.8	46.5	2010		DICL	313	438	20,376	Post	2010	18,140	1.12	2030	21	1.26	1.64	1.85
P-1107a	B	MH-1236	225	33	2010		DICL	238	333	10,996	Post	2010	18,140	0.61	2030	21	1.26	1.64	1.00
P-237	E	MH-813	304.8	19.5	1991	Vitrious Clay	Relining	313	438	8,545	Pre	1996	4122	2.07	2030	35	1.31	1.78	2.71
P-238	E	MH-815	304.8	32.5	1991	Vitrious Clay	Relining	313	438	14,242	Pre	1996	4122	3.45	2030	35	1.31	1.78	4.52
P-239	E	MH-816	304.8	44.5	1991	Vitrious Clay	Relining	313	438	19,500	Pre	1996	4122	4.73	2030	35	1.31	1.78	6.18
P-240	E	MH-817	304.8	146.5	1991	Vitrious Clay	Relining	313	438	64,196	Pre	1996	4122	15.57	2030	35	1.31	1.78	20.35
P-241	E	MH-818	304.8	43.5	1991	Vitrious Clay	Relining	313	438	19,062	Pre	1996	4122	4.62	2030	35	1.31	1.78	6.04
P-242	E	MH-819	304.8	158	1991	Vitrious Clay	Relining	313	438	69,236	Pre	1996	4122	16.80	2030	35	1.31	1.78	21.95
P-243	E	MH-820	304.8	116	1991	Vitrious Clay	Relining	313	438	50,831	Pre	1996	4122	12.33	2030	35	1.31	1.78	16.12
P-244	E	MH-821	304.8	43.5	1991	Vitrious Clay	Relining	313	438	19,062	Pre	1996	4122	4.62	2030	35	1.31	1.78	6.04
P-245	E	MH-822	304.8	75	1991	Vitrious Clay	Relining	313	438	32,865	Pre	1996	4122	7.97	2030	35	1.31	1.78	10.42
P-246	E	MH-823	304.8	49	1991	Vitrious Clay	Relining	313	438	21,472	Pre	1996	4122	5.21	2030	35	1.31	1.78	6.81
P-247	E	MH-824	304.8	19	1991	Vitrious Clay	Relining	313	438	8,326	Pre	1996	4122	2.02	2030	35	1.31	1.78	2.64
P-248	E	MH-825	304.8	68	1991	Vitrious Clay	Relining	313	438	29,798	Pre	1996	4122	7.23	2030	35	1.31	1.78	9.45
P-249	E	MH-826	304.8	59.5	1991	Vitrious Clay	Relining	313	438	26,073	Pre	1996	4122	6.33	2030	35	1.31	1.78	8.27
P-250	E	MH-827	304.8	26	1991	Vitrious Clay	Relining	313	438	11,393	Pre	1996	4122	2.76	2030	35	1.31	1.78	3.61
P-251	E	MH-828	304.8	51.5	1991	Vitrious Clay	Relining	313	438	22,567	Pre	1996	4122	5.47	2030	35	1.31	1.78	7.16
P-252	E	MH-829	304.8	45	1991	Vitrious Clay	Relining	313	438	19,719	Pre	1996	4122	4.78	2030	35	1.31	1.78	6.25
P-253	E	MH-830	304.8	35.5	1991	Vitrious Clay	Relining	313	438	15,556	Pre	1996	4122	3.77	2030	35	1.31	1.78	4.93

Label	Area	PS Catchment	Diameter (mm)	Length (Unified) (m)	Year of Construction	Material	Relevant material rate to apply	Total Rate (2003$/m)	Total Rate (2010$/m)	Capital Cost (2010$)	Pre or Post 1996 Asset	Effective Year of Commissioning	Adopted Capacity (ETs)	Cost per ET (2010$/ET)	Year when Capacity is Taken-Up	Take-up Period (Years)	Pre 1996 ROI Factor (Non-Uniform Lot Take Up)	Post 1996 ROI Factor (Non-Uniform Lot Take Up)	Capital Charge per ET (2010$/ET)
P-254	E	MH-831	304.8	53.5	1991	Vitrious Clay	Relining	313	438	23,444	Pre	1996	4122	5.69	2030	35	1.31	1.78	7.43
P-255	E	MH-832	304.8	37.5	1991	Vitrious Clay	Relining	313	438	16,433	Pre	1996	4122	3.99	2030	35	1.31	1.78	5.21
P-256	E	MH-833	304.8	30	1991	Vitrious Clay	Relining	313	438	13,146	Pre	1996	4122	3.19	2030	35	1.31	1.78	4.17
P-257	E	MH-834	304.8	61.5	1991	Vitrious Clay	Relining	313	438	26,949	Pre	1996	4122	6.54	2030	35	1.31	1.78	8.54
P-258	E	MH-835	304.8	87.5	1991	Vitrious Clay	Relining	313	438	38,343	Pre	1996	4122	9.30	2030	35	1.31	1.78	12.16
P-259	E	MH-836	304.8	76.5	1991	Vitrious Clay	Relining	313	438	33,522	Pre	1996	4122	8.13	2030	35	1.31	1.78	10.63
P-260	E	MH-837	304.8	39	1991	Vitrious Clay	Relining	313	438	17,090	Pre	1996	4122	4.15	2030	35	1.31	1.78	5.42
P-261	E	MH-838	304.8	66	1991	Vitrious Clay	Relining	313	438	28,921	Pre	1996	4122	7.02	2030	35	1.31	1.78	9.17
P-262	E	MH-839	304.8	62	1991	Vitrious Clay	Relining	313	438	27,168	Pre	1996	4122	6.59	2030	35	1.31	1.78	8.61
P-263	E	MH-840	304.8	106.5	1991	Vitrious Clay	Relining	313	438	46,668	Pre	1996	4122	11.32	2030	35	1.31	1.78	14.80
P-264	E	MH-841	304.8	49	1991	Vitrious Clay	Relining	313	438	21,472	Pre	1996	4122	5.21	2030	35	1.31	1.78	6.81
P-265	E	MH-842	304.8	516.5	1991	Vitrious Clay	Relining	313	438	226,330	Pre	1996	4122	54.91	2030	35	1.31	1.78	71.76
P-266	E	MH-843	304.8	96.5	1991	Vitrious Clay	Relining	313	438	42,286	Pre	1996	4122	10.26	2030	35	1.31	1.78	13.41
P-267	E	MH-814	304.8	21	1991	Vitrious Clay	Relining	313	438	9,202	Pre	1996	4122	2.23	2030	35	1.31	1.78	2.92
P-416	E	MH-470	225	76.5	1975	Vitrious Clay	Relining	237	332	25,383	Pre	1996	4122	6.16	2030	35	1.31	1.78	8.05
P-417	E	MH-471	225	56	1975	Vitrious Clay	Relining	237	332	18,581	Pre	1996	4122	4.51	2030	35	1.31	1.78	5.89
P-418	E	MH-472	225	58.5	1975	Vitrious Clay	Relining	237	332	19,410	Pre	1996	4122	4.71	2030	35	1.31	1.78	6.15
P-419	E	MH-473	225	77.5	1989	Vitrious Clay	Relining	237	332	25,715	Pre	1996	4122	6.24	2030	35	1.31	1.78	8.15
P-420	E	MH-474	225	34.5	1988	Vitrious Clay	Relining	237	332	11,447	Pre	1996	4122	2.78	2030	35	1.31	1.78	3.63
P-423	E	MH-477	225	37	1991	Vitrious Clay	Relining	237	332	12,277	Pre	1996	4122	2.98	2030	35	1.31	1.78	3.89
P-424	E	MH-478	225	64.5	1991	Vitrious Clay	Relining	237	332	21,401	Pre	1996	4122	5.19	2030	35	1.31	1.78	6.79
P-425	E	MH-479	225	59.5	1991	Vitrious Clay	Relining	237	332	19,742	Pre	1996	4122	4.79	2030	35	1.31	1.78	6.26
P-427	E	MH-481	225	65.5	1991	Vitrious Clay	Relining	237	332	21,733	Pre	1996	4122	5.27	2030	35	1.31	1.78	6.89
P-429	E	MH-483	225	31	1991	Vitrious Clay	Relining	237	332	10,286	Pre	1996	4122	2.50	2030	35	1.31	1.78	3.26
P-431	E	MH-485	225	45.5	1991	Vitrious Clay	Relining	237	332	15,097	Pre	1996	4122	3.66	2030	35	1.31	1.78	4.79
P-432	E	MH-486	225	73	1991	Vitrious Clay	Relining	237	332	24,221	Pre	1996	4122	5.88	2030	35	1.31	1.78	7.68
P-434	E	MH-488	225	23.5	1991	Vitrious Clay	Relining	237	332	7,797	Pre	1996	4122	1.89	2030	35	1.31	1.78	2.47
P-435	E	MH-489	225	37	1991	Vitrious Clay	Relining	237	332	12,277	Pre	1996	4122	2.98	2030	35	1.31	1.78	3.89
P-436	E	MH-480	225	48.5	1991	Vitrious Clay	Relining	237	332	16,092	Pre	1996	4122	3.90	2030	35	1.31	1.78	5.10
P-437	E	MH-491	225	35	1991	Vitrious Clay	Relining	237	332	11,613	Pre	1996	4122	2.82	2030	35	1.31	1.78	3.68
P-443	E	MH-497	225	38.5	1991	Vitrious Clay	Relining	237	332	12,774	Pre	1996	4122	3.10	2030	35	1.31	1.78	4.05
P-461	E	MH-487	225	12	1991	Vitrious Clay	Relining	237	332	3,982	Pre	1996	4122	0.97	2030	35	1.31	1.78	1.26
P-694	E	MH-650	225	58	1991	Vitrious Clay	Relining	237	332	19,244	Pre	1996	4122	4.67	2030	35	1.31	1.78	6.10
P-698	E	MH-649	225	78.5	1988	Vitrious Clay	Relining	237	332	26,046	Pre	1996	4122	6.32	2030	35	1.31	1.78	8.26
P-699	E	MH-475	225	28	1988	Vitrious Clay	Relining	237	332	9,290	Pre	1996	4122	2.25	2030	35	1.31	1.78	2.95
P-700	E	MH-482	225	41	1991	Vitrious Clay	Relining	237	332	13,604	Pre	1996	4122	3.30	2030	35	1.31	1.78	4.31
P-702	E	MH-484	225	36	1991	Vitrious Clay	Relining	237	332	11,945	Pre	1996	4122	2.90	2030	35	1.31	1.78	3.79
P-703	E	MH-652	225	36.5	1991	Vitrious Clay	Relining	237	332	12,111	Pre	1996	4122	2.94	2030	35	1.31	1.78	3.84
P-704	E	MH-651	225	17	1991	Vitrious Clay	Relining	237	332	5,641	Pre	1996	4122	1.37	2030	35	1.31	1.78	1.79
P-973	E	MH-490	225	26.5	1991	Vitrious Clay	Relining	237	332	8,793	Pre	1996	4122	2.13	2030	35	1.31	1.78	2.79
P-230	E	MH-359	304.8	61	1973	Vitrious Clay	Relining	313	438	26,730	Pre	1996	4122	6.48	2030	35	1.31	1.78	8.47
P-231	E	MH-808	400	62	1983	Vitrious Clay	Relining	435	609	37,787	Pre	1996	4122	9.17	2030	35	1.31	1.78	11.98
P-232	E	MH-809	400	75	1983	Vitrious Clay	Relining	435	609	45,710	Pre	1996	4122	11.09	2030	35	1.31	1.78	14.49
P-233	E	MH-810	400	60.5	1983	Vitrious Clay	Relining	435	609	36,873	Pre	1996	4122	8.95	2030	35	1.31	1.78	11.69
P-234	E	MH-811	400	55	1983	Vitrious Clay	Relining	435	609	33,521	Pre	1996	4122	8.13	2030	35	1.31	1.78	10.63
P-300	E	MH-347	225	16	1973	Vitrious Clay	Relining	237	332	5,309	Pre	1996	4122	1.29	2030	35	1.31	1.78	1.68
P-314	E	MH-362	304.8	43	1973	Vitrious Clay	Relining	313	438	18,843	Pre	1996	4122	4.57	2030	35	1.31	1.78	5.97
P-316	E	MH-364	304.8	65.5	1973	Vitrious Clay	Relining	313	438	28,702	Pre	1996	4122	6.96	2030	35	1.31	1.78	9.10
P-317	E	MH-365	304.8	63	1973	Vitrious Clay	Relining	313	438	27,607	Pre	1996	4122	6.70	2030	35	1.31	1.78	8.75
P-318	E	MH-366	304.8	37	1973	Vitrious Clay	Relining	313	438	16,213	Pre	1996	4122	3.93	2030	35	1.31	1.78	5.14
P-319	E	MH-367	304.8	60.5	1973	Vitrious Clay	Relining	313	438	26,511	Pre	1996	4122	6.43	2030	35	1.31	1.78	8.41
P-333	E	MH-382	225	9	1989	Vitrious Clay	Relining	237	332	2,986	Pre	1996	4122	0.72	2030	35	1.31	1.78	0.95
P-334	E	MH-383	225	112	1989	Vitrious Clay	Relining	237	332	37,162	Pre	1996	4122	9.02	2030	35	1.31	1.78	11.78
P-345	E	MH-394	304.8	30	1973	Vitrious Clay	Relining	313	438	13,146	Pre	1996	4122	3.19	2030	35	1.31	1.78	4.17
P-349	E	MH-398	225	72.5	1973	Vitrious Clay	Relining	237	332	24,056	Pre	1996	4122	5.84	2030	35	1.31	1.78	7.63
P-645	E	MH-396	225	99	1973	Vitrious Clay	Relining	237	332	32,848	Pre	1996	4122	7.97	2030	35	1.31	1.78	10.41
P-647	E	MH-617	225	51	1973	Vitrious Clay	Relining	237	332	16,922	Pre	1996	4122	4.11	2030	35	1.31	1.78	5.37
P-649	E	MH-618	225	45	1973	Vitrious Clay	Relining	237	332	14,931	Pre	1996	4122	3.62	2030	35	1.31	1.78	4.73
P-650	E	MH-620	304.8	81	1973	Vitrious Clay	Relining	313	438	35,494	Pre	1996	4122	8.61	2030	35	1.31	1.78	11.25
P-651	E	MH-393	304.8	62.5	1973	Vitrious Clay	Relining	313	438	27,388	Pre	1996	4122	6.64	2030	35	1.31	1.78	8.68
P-652	E	MH-621	304.8	40.5	1973	Vitrious Clay	Relining	313	438	17,747	Pre	1996	4122	4.31	2030	35	1.31	1.78	5.63
P-666	E	MH-631	225	71.5	1989	Vitrious Clay	Relining	237	332	23,724	Pre	1996	4122	5.76	2030	35	1.31	1.78	7.52
P-667	E	MH-373	225	80	1989	Vitrious Clay	Relining	237	332	26,544	Pre	1996	4122	6.44	2030	35	1.31	1.78	8.42
P-676	E	MH-636	225	58	1973	Vitrious Clay	Relining	237	332	19,244	Pre	1996	4122	4.67	2030	35	1.31	1.78	6.10
P-677	E	MH-348	225	72.5	1973	Vitrious Clay	Relining	237	332	24,056	Pre	1996	4122	5.84	2030	35	1.31	1.78	7.63
P-678	E	MH-637	225	69.5	1973	Vitrious Clay	Relining	237	332	23,060	Pre	1996	4122	5.59	2030	35	1.31	1.78	7.31
P-679	E	MH-355	225	42.5	1973	Vitrious Clay	Relining	237	332	14,102	Pre	1996	4122	3.42	2030	35	1.31	1.78	4.47
P-680	E	MH-638	225	25	1973	Vitrious Clay	Relining	237	332	8,295	Pre	1996	4122	2.01	2030	35	1.31	1.78	2.63

Existing RM

Label	Area	Diameter (mm)	Length (Unified) (m)	Year of Commissioning	Material	Relevant material rate to apply	Pre or Post 1996 Asset	Effective Year of Commissioning	Adopted Capacity (ETs)	Year when Capacity is Taken-Up	Take-up Period (Years)	Pre 1996 ROI Factor (Non-Uniform Lot Take Up)	Post 1996 ROI Factor (Non-Uniform Lot Take Up)	Capital Charge per ET (2010$/ET)
FM-1004	B	225	2	1984	Asbestos Cement	0	Pre	1996	18140	2030	35	1.26	1.64	0.04
FM-1004	B	250	163	1990	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	3.78
FM-1015	F	225	1,598.00	2010	unplasticised poly vinyl chloride	0	Post	2010	3162	2030	21	1.12	1.27	201.43
FM-1021	B	375	5	1987	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	0.15
FM-1025	B	375	1,867.50	1987	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	56.94
FM-1026	B	375	578.5	1987	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	17.64
FM-1029	F	225	523	2010	unplasticised poly vinyl chloride	0	Post	2010	3162	2030	21	1.12	1.27	65.93
FM-1029	F	63	9.5	1980	Poly-ethylene	0	Pre	1996	3162	2030	35	1.12	1.27	0.67
FM-1044	B	300	68	1995	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	1.74
FM-1047	B	150	5.5	2009	unplasticised poly vinyl chloride	0	Post	2009	18140	2030	22	1.26	1.64	0.13
FM-1048	F	150	5	2009	unplasticised poly vinyl chloride	0	Post	2009	3162	2030	22	1.12	1.27	0.51
FM-1049	B	375	5.5	1995	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	0.17
FM-1052	B	152.4	7.5	1979	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	0.13
FM-1053	F	150	449.5	2009	unplasticised poly vinyl chloride	0	Post	2009	3162	2030	22	1.12	1.27	46.23
FM-1053	B	100	202	1985	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	3.24
FM-1061	F	300	6.5	2009	unplasticised poly vinyl chloride	0	Post	2009	3162	2030	22	1.12	1.27	0.96
FM-1062	B	63	155.5	1980	Poly-ethylene	0	Pre	1996	18140	2030	35	1.26	1.64	2.17
FM-1092	B	250	319	1990	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	7.40
FM-1093	B	100	380.5	1983	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	6.10
FM-1127	B	150	1,110.50	1992	Blue Brute	0	Pre	1996	18140	2030	35	1.26	1.64	19.74
FM-413	B	250	134	1990	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	3.11
FM-507	B	450	65	1976	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	2.76
FM-517	B	200	28.5	2010	unplasticised poly vinyl chloride	0	Post	2010	18140	2030	21	1.26	1.64	0.70
FM-520	B	200	76.5	2010	unplasticised poly vinyl chloride	0	Post	2010	18140	2030	21	1.26	1.64	1.89
FM-522	B	375	25.5	1985	Asbestos Cement	0	Pre	1996	18140	2030	35	1.26	1.64	0.78
FM-524	B	150	623.5	1993	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	11.08
FM-526	B	450	336.5	1976	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	14.27
FM-527	B	200	38	2010	unplasticised poly vinyl chloride	0	Post	2010	18140	2030	21	1.26	1.64	0.94
FM-528	B	125	786	1982	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	13.02
FM-529	B	250	30.5	1990	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	0.71
FM-552	B	150	490.5	1981	Asbestos Cement	0	Pre	1996	18140	2030	35	1.26	1.64	8.72
FM-593	F	250	16	2009	unplasticised poly vinyl chloride	0	Post	2009	3162	2030	22	1.12	1.27	2.15
FM-595	B	63	778.5	1985	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	10.86
FM-606	B	150	6.50	2010	unplasticised poly vinyl chloride	0	Post	2010	18140	2030	21	1.26	1.64	0.15
FM-637	B	225	19.5	1981	Asbestos Cement	0	Pre	1996	18140	2030	35	1.26	1.64	0.42
FM-640	B	210.7	1,309.50	2010	unplasticised poly vinyl chloride	0	Post	2010	18140	2030	21	1.26	1.64	32.38
FM-641	B	150	45.5	1979	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	0.81
FM-642-1	B	150	262.5	1979	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	4.67
FM-647-1	B	474	1,183.50	1976	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	57.18
FM-653	B	150	6	2010	unplasticised poly vinyl chloride	0	Post	2010	18140	2030	21	1.26	1.64	0.14
FM-659	B	150	18	2010	unplasticised poly vinyl chloride	0	Post	2010	18140	2030	21	1.26	1.64	0.42
FM-660	B	230	606	1981	Asbestos Cement	0	Pre	1996	18140	2030	35	1.26	1.64	13.20
FM-705	B	375	1,039.00	1985	Asbestos Cement	0	Pre	1996	18140	2030	35	1.26	1.64	31.68
FM-707	B	375	274.5	1985	Asbestos Cement	0	Pre	1996	18140	2030	35	1.26	1.64	8.37
FM-747	B	225	130	1981	Asbestos Cement	0	Pre	1996	18140	2030	35	1.26	1.64	2.83
FM-759	B	225	67	1981	Asbestos Cement	0	Pre	1996	18140	2030	35	1.26	1.64	1.46
FM-761	B	225	67	1981	Asbestos Cement	0	Pre	1996	18140	2030	35	1.26	1.64	1.46
FM-765	B	225	80.5	1981	Asbestos Cement	0	Pre	1996	18140	2030	35	1.26	1.64	1.75
FM-771	B	225	110.5	1981	Asbestos Cement	0	Pre	1996	18140	2030	35	1.26	1.64	2.41
FM-779	B	225	208.5	1981	Asbestos Cement	0	Pre	1996	18140	2030	35	1.26	1.64	4.54
FM-780	B	225	387.5	1981	Asbestos Cement	0	Pre	1996	18140	2030	35	1.26	1.64	8.44

Label	Area	Diameter (mm)	Length (Unified) (m)	Year of Commissioning	Material	Relevant material rate to apply	Pre or Post 1996 Asset	Effective Year of Commissioning	Adopted Capacity (ETs)	Year when Capacity is Taken-Up	Take-up Period (Years)	Pre 1996 ROI Factor (Non-Uniform Lot Take Up)	Post 1996 ROI Factor (Non-Uniform Lot Take Up)	Capital Charge per ET (2010$/ET)
FM-818	F	300	62.5	2009	unplasticised poly vinyl chloride	0	Post	2009	3162	2030	22	1.12	1.27	9.26
FM-820	F	225	54.5	2009	unplasticised poly vinyl chloride	0	Post	2009	3162	2030	22	1.12	1.27	6.87
FM-822	F	300	97.5	2009	unplasticised poly vinyl chloride	0	Post	2009	3162	2030	22	1.12	1.27	14.45
FM-824	F	225	95.5	2009	unplasticised poly vinyl chloride	0	Post	2009	3162	2030	22	1.12	1.27	12.04
FM-825	F	300	448	2009	unplasticised poly vinyl chloride	0	Post	2009	3162	2030	22	1.12	1.27	66.40
FM-826	F	300	280	2009	unplasticised poly vinyl chloride	0	Post	2009	3162	2030	22	1.12	1.27	41.50
FM-827	F	225	596.5	2009	unplasticised poly vinyl chloride	0	Post	2009	3162	2030	22	1.12	1.27	75.19
FM-828	F	225	116.5	2009	unplasticised poly vinyl chloride	0	Post	2009	3162	2030	22	1.12	1.27	14.69
FM-871	B	200	368	2010	unplasticised poly vinyl chloride	0	Post	2010	18140	2030	21	1.26	1.64	9.10
FM-872	B	200	389	2010	unplasticised poly vinyl chloride	0	Post	2010	18140	2030	21	1.26	1.64	9.62
FM-873	B	250	284	1990	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	6.58
FM-874	B	250	390.5	1990	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	9.05
FM-875	B	375	286.5	1987	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	8.74
FM-876	B	375	428	1987	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	13.05
FM-881	F	100	183	2009	unplasticised poly vinyl chloride	0	Post	2009	3162	2030	22	1.12	1.27	16.98
FM-882	F	100	118.5	2009	unplasticised poly vinyl chloride	0	Post	2009	3162	2030	22	1.12	1.27	10.99
FM-896	F	225	130.5	2009	unplasticised poly vinyl chloride	0	Post	2009	3162	2030	22	1.12	1.27	16.45
FM-900	F	225	124.5	2009	unplasticised poly vinyl chloride	0	Post	2009	3162	2030	22	1.12	1.27	15.69
FM-901	B	375	279.5	1985	Asbestos Cement	0	Pre	1996	18140	2030	35	1.26	1.64	8.52
FM-902	B	375	253.5	1985	Asbestos Cement	0	Pre	1996	18140	2030	35	1.26	1.64	7.73
FM-905	B	250	223	1990	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	5.17
FM-907	B	250	188.5	1990	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	4.37
FM-909	B	250	181	1990	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	4.20
FM-911	B	250	113.5	1990	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	2.63
FM-912	B	250	34	1990	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	0.79
FM-921	B	250	74.5	1990	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	1.73
FM-922	B	100	5.5	1985	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	0.09
FM-923	B	250	90.5	1990	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	2.10
FM-924	B	150	4.5	1979	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	0.08
FM-925	B	250	194	1990	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	4.50
FM-927	B	150	7	1993	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	0.12
FM-932	B	450	19.5	1976	unplasticised poly vinyl chloride	0	Pre	1996	18140	2030	35	1.26	1.64	0.83
FM-940	B	150	122	2010	unplasticised poly vinyl chloride	0	Post	2010	18140	2030	21	1.26	1.64	2.82
FM-941	B	150	207	2010	unplasticised poly vinyl chloride	0	Post	2010	18140	2030	21	1.26	1.64	4.79
FM-942	B	150	91.5	2010	unplasticised poly vinyl chloride	0	Post	2010	18140	2030	21	1.26	1.64	2.12
FM-943	B	150	65	2010	unplasticised poly vinyl chloride	0	Post	2010	18140	2030	21	1.26	1.64	1.50
FM-945	B	150	105.5	2010	unplasticised poly vinyl chloride	0	Post	2010	18140	2030	21	1.26	1.64	2.44
FM-947	B	150	73.5	2010	unplasticised poly vinyl chloride	0	Post	2010	18140	2030	21	1.26	1.64	1.70
FM-948	B	150	87.5	2010	unplasticised poly vinyl chloride	0	Post	2010	18140	2030	21	1.26	1.64	2.03
FM-951	B	225	103.5	1981	Asbestos Cement	0	Pre	1996	18140	2030	35	1.26	1.64	2.26
FM-952	B	225	151.5	1981	Asbestos Cement	0	Pre	1996	18140	2030	35	1.26	1.64	3.30
FM-969	B	375	5.5	1985	Asbestos Cement	0	Pre	1996	18140	2030	35	1.26	1.64	0.17
FM-973	F	100	144	2009	unplasticised poly vinyl chloride	0	Post	2009	3162	2030	22	1.12	1.27	13.36
FM-974	F	152.4	19.5	2009	unplasticised poly vinyl chloride	0	Post	2009	3162	2030	22	1.12	1.27	2.01
FM-976	F	300	596	2009	unplasticised poly vinyl chloride	0	Post	2009	3162	2030	22	1.12	1.27	88.34
FM-978	F	225	604	2009	unplasticised poly vinyl chloride	0	Post	2009	3162	2030	22	1.12	1.27	76.14
FM-978	F	150	9	1983	unplasticised poly vinyl chloride	0	Pre	1996	3162	2030	35	1.12	1.27	0.81
FM-983	F	225	133	2009	unplasticised poly vinyl chloride	0	Post	2009	3162	2030	22	1.12	1.27	16.77
FM-988	F	63	2.5	1985	unplasticised poly vinyl chloride	0	Pre	1996	3162	2030	35	1.12	1.27	0.18
FM-907	E	150	2.5	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	0.20
FM-887	E	100	4	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	0.27
FM-1076	E	150	4	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	0.32
FM-905	E	50	4	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	0.21
FM-888	E	100	6	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	0.40

Label	Area	Diameter (mm)	Length (Unified) (m)	Year of Commissioning	Material	Relevant material rate to apply	Pre or Post 1996 Asset	Effective Year of Commissioning	Adopted Capacity (ETs)	Year when Capacity is Taken-Up	Take-up Period (Years)	Pre 1996 ROI Factor (Non-Uniform Lot Take Up)	Post 1996 ROI Factor (Non-Uniform Lot Take Up)	Capital Charge per ET (2010$/ET)
FM-901	E	150	6.5	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	0.53
FM-893	E	100	7	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	0.47
FM-220	E	100	7	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	0.47
FM-895	E	150	7.5	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	0.61
FM-900	E	50	7.5	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	0.40
FM-899	E	50	8	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	0.43
FM-206	E	150	8	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	0.65
FM-227	E	100	8	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	0.54
FM-223	E	150	9.5	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	0.77
FM-225	E	152.4	10	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	0.00
FM-228	E	100	10	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	0.67
FM-1073	E	150	11	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	0.89
FM-911	E	100	15	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	1.01
FM-902	E	150	19	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	1.54
FM-579	E	50	42	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	2.26
FM-891	E	32	52.5	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	2.46
FM-582	E	150	60	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	4.87
FM-209	E	32	77	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	3.61
FM-205	E	50	118.5	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	6.36
FM-224	E	150	140	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	11.37
FM-1070	E	50	206.5	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	11.09
FM-219	E	38	270.5	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	13.63
FM-578	E	100	279	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	18.82
FM-687	E	150	297.5	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	24.17
FM-229	E	100	321	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	21.66
FM-1081	E	100	456.5	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	30.80
FM-1069	E	100	596.5	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	40.25
FM-581	E	150	669	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	54.34
FM-207	E	80	2,942.00	1985	unplasticised poly vinyl chloride	Relining	Pre	1996	4122	2030	35	1.31	1.78	182.30
FM-602	A	150	6.5	1993	unplasticised poly vinyl chloride	Relining	Pre	1996	529	2030	35	1.25	1.60	3.93
FM-1102	A	100	7.5	1993	unplasticised poly vinyl chloride	Relining	Pre	1996	529	2030	35	1.25	1.60	3.76
FM-1100	A	200	10.5	1993	unplasticised poly vinyl chloride	Relining	Pre	1996	529	2030	35	1.25	1.60	7.04
FM-1098	A	150	13	1993	unplasticised poly vinyl chloride	Relining	Pre	1996	529	2030	35	1.25	1.60	7.86
FM-1149	A	150	48.5	1993	unplasticised poly vinyl chloride	Relining	Pre	1996	529	2030	35	1.25	1.60	29.31
FM-1103	A	100	255	1993	unplasticised poly vinyl chloride	Relining	Pre	1996	529	2030	35	1.25	1.60	127.98
FM-1068	A	100	315.5	1993	unplasticised poly vinyl chloride	Relining	Pre	1996	529	2030	35	1.25	1.60	158.35
FM-1099	A	150	375.5	1993	unplasticised poly vinyl chloride	Relining	Pre	1996	529	2030	35	1.25	1.60	226.90
FM-191	A	200	785	1993	unplasticised poly vinyl chloride	Relining	Pre	1996	529	2030	35	1.25	1.60	526.18
FM-190	A	200	1,181.50	1993	unplasticised poly vinyl chloride	Relining	Pre	1996	529	2030	35	1.25	1.60	791.95

Existing SPSs

Label	Area	Design Flow (L/s)	Design Head (m)	Year Commissioned	Pre or Post 1996 asset	Effective year of commissioning for ROI	Adopted Capacity (ETs)	Year when capacity is taken up	Take-up period (t) (years)	Pre 1996 Return on Investment Factor	Post 1996 Return on Investment Factor	Capital Charge per ET (2010$)
SP2101	B	110	31	1976	Pre	1996	18140	2030	35	1.26	1.64	16.64
SP2111	B	6.5	5	1985	Pre	1996	18140	2030	35	1.26	1.64	1.72
SP2218 Elkorn (Ferngrove)	B	70	27	2010	Post	2010	18140	2030	21	1.26	1.64	40.53
SP2404	F	12	35	2009	Post	2009	3162	2030	22	1.12	1.27	204.99
SP3002	B	21	13	1981	Pre	1996	18140	2030	35	1.26	1.64	9.61
SP3114	B	13.5	12	0	Pre	1996	18140	2030	35	1.26	1.64	2.77
SP4002	E	2.82	2	1974	Pre	1996	4122	2030	35	1.31	1.78	75.46
SP4102	Ci	17	40	1975	Pre	1996	2016	2030	35	1.31	1.77	211.24
SP4106	E	0.8	25	1989	Pre	1996	4122	2030	35	1.31	1.78	84.78
SP5001	A	6	7.5	2005	Post	2005	529	2030	26	1.25	1.60	619.05
SP5002	A	31	14.5	2005	Post	2005	529	2030	26	1.25	1.60	949.78
SP5005	A	9	9	2005	Post	2005	529	2030	26	1.25	1.60	619.05
SP5006	A	43	33.5	2005	Post	2005	529	2030	26	1.25	1.60	1119.38

Existing STWs

STW	Year Commissioned	Capital Cost	Adopted Capacity	Year when capacity taken up	Reference
Ballina STP	1970	19,390,322	5172	2012	Ballina Shire Council Asset Register 2010 (as supplied to N Charters on 18/01/2011) [Sewer Treatment - Column AN - Ballina STW- all Ballina STW items]. ktferguson: For adopted capcity: Information taken from BSC Council Agenda and Minutes from 24/02/2011, section 11.2. Ballina STP has current capacity of 12,000 EP. Using 2010 ratio of 2.32EP=1ET from E.Glass email (01/03/2011), then ET = 12,000/2.32 = 5172 ET
Lennox Head STP	1982	15,090,527	10183	2030	Ballina Shire Council Asset Register 2010 (as supplied to N Charters on 18/01/2011) [Sewer Treatment - Column AN - Ballina STW- all Ballina STW items]
Alstonville STP	1985	9,661,109	4,902	2030	Ballina Shire Council Asset Register 2010 (as supplied to N Charters on 18/01/2011) [Sewer Treatment - Column AN - Ballina STW- all Ballina STW items]
Wardell STP	1997	2,851,929	529	2030	Ballina Shire Council Asset Register 2010 (as supplied to N Charters on 18/01/2011) [Sewer Treatment - Column AN - Ballina STW- all Ballina STW items]

Area	STP Catchment	Capital Charge per ET - STW FW
A	Wardell	8637
B	Lennox Head STP and Ballina RWF	1871
C	Alstonville STP	2575
D		#N/A
E	Alstonville STP	2576
F	Ballina RWF	0
G	Ballina RWF	0

DSP Area	Component	Year Commissioned	Pre or Post 1996 Asset	Effective Year of Commissioning	Capital Cost	Adopted Capacity (ETs)	Cost per ET	Year when Capacity is Taken-Up	Take-up Period (Years)	Pre 1996 ROI Factor (Non-Uniform Lot Take Up)	Post 1996 ROI Factor (Non-Uniform Lot Take Up)	Capital Charge per ET	Total Charges
A	Wardell STP	1997	Post	1997	$ 2,851,929	529	$ 5,391	2030	34	1.25	1.60	$ 8,637	**$ 8,637**
B	Lennox Head STP	1982	Pre	1995/96	$ 15,090,527	10,183	$ 1,482	2030	36	1.26	1.64	$ 1,871	**$ 1,871**
B	Ballina STP	1970	Pre	1995/96	$ 19,390,322	5,172	$ 3,749	2012	18	1.01	1.03	$ 3,805	**$ -**
C	Alstonville STP	1985	Pre	1995/96	$ 9,661,109	4,902	$ 1,971	2030	36	1.31	1.78	$ 2,575	**$ 2,575**
B	Lennox Head STP	1982	Pre	1995/96	$ 15,090,527	10,183	$ 1,482	2030	36	1.26	1.64	$ 1,871	**$ 1,871**
E	Alstonville STP	1985	Pre	1995/96	$ 9,661,109	4,902	$ 1,971	2030	36	1.31	1.78	$ 2,576	**$ 2,576**
F	Ballina STP	1970	Pre	1995/96	$ 19,390,322	5,172	$ 3,749	2012	18	1.01	1.03	$ 3,805	**$ 3,805**
G	Ballina STP	1970	Pre	1995/96	$ 19,390,322	5,172	$ 3,749	2012	18	1.01	1.03	$ 3,805	**$ 3,805**

2030 Ultimate Number

Future GM

Label	Area	PS Catchment	Diameter (mm)	Length (m)	Year	Material	Total Service ET's	New Service ET's	NPV of New Service ET's	Effective Capital Cost (2010$)	NPV of Capital Cost (@ 7%)	Capital Charge per ET (2010$/ET)
GM-3110-15-1	B	SP3110	225	167.5	2015	New	18,140	5,021	3,029	$ 15,448	11,014	$ 4
GM-3110-15-3	B	SP3110	225	131.5	2015	New	18,140	5,021	3,029	$ 12,128	8,647	$ 3
GM-3110-11-1	B	SP3110	450	628	2011	New	18,140	5,021	3,029	$ 120,702	112,805	$ 37
GM-2101-1	B	SP2101	300	393.5	2011	Vitrious Clay	18,140	5,021	3,029	$ 47,727	44,604	$ 15
GM-2104-1	B	SP2104	225	1,009.00	2020	Vitrious Clay	18,140	5,021	3,029	$ 93,055	47,304	$ 16
GM-4104-1	C	SP4104	300	25.5	2011	unplasticised poly vinyl chloride	780	780	442	$ 11,710	$ 10,944	$ 25
GM-WUEA-15-53	C	WUEA	225	60.0	2015	unplasticised poly vinyl chloride	780	780	442	$ 21,084	$ 15,033	$ 34
GM-WUEA-11-24	C	WUEA	300	46.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 21,123	$ 19,741	$ 45
GM-WUEA-11-25	C	WUEA	225	28.5	2011	unplasticised poly vinyl chloride	780	780	442	$ 10,015	$ 9,360	$ 21
GM-WUEA-11-26	C	WUEA	225	55.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 19,327	$ 18,063	$ 41
GM-4104-2	C	SP4104	300	52.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 23,878	$ 22,316	$ 50
GM-4104-3	C	SP4104	300	52.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 23,878	$ 22,316	$ 50
GM-4104-4	C	SP4104	300	28.5	2011	unplasticised poly vinyl chloride	780	780	442	$ 13,087	$ 12,231	$ 28
GM-4104-5	C	SP4104	300	60.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 27,552	$ 25,750	$ 58
GM-4104-6	C	SP4104	300	56.5	2011	unplasticised poly vinyl chloride	780	780	442	$ 25,945	$ 24,247	$ 55
GM-4104-7	C	SP4104	300	55.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 25,256	$ 23,604	$ 53
GM-4104-8	C	SP4104	300	63.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 28,930	$ 27,037	$ 61
GM-4104-9	C	SP4104	300	47.5	2011	unplasticised poly vinyl chloride	780	780	442	$ 21,812	$ 20,385	$ 46
GM-4104-10	C	SP4104	300	28.5	2011	unplasticised poly vinyl chloride	780	780	442	$ 13,087	$ 12,231	$ 28
GM-4104-11	C	SP4104	300	54.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 24,797	$ 23,175	$ 52
GM-WUEA-15-51	C	WUEA	150	54.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 21,655	$ 15,440	$ 35
GM-WUEA-11-27	C	WUEA	300	7.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 3,214	$ 3,004	$ 7
GM-4104-12	Ci	SP4104	375	117.0	2011	unplasticised poly vinyl chloride	2,016	859	486	$ 29,523	$ 27,591	$ 57
GM-WWTP40-1	Ci	Alstonville WWTP	375	721.5	2011	unplasticised poly vinyl chloride	2,016	859	486	$ 182,057	$ 170,147	$ 350
GM-WWTP40-2	Ci	Alstonville WWTP	375	20.0	2011	unplasticised poly vinyl chloride	2,016	859	486	$ 5,047	$ 4,716	$ 10
GM-WWTP40-3	Ci	Alstonville WWTP	375	202.0	2011	unplasticised poly vinyl chloride	2,016	859	486	$ 50,971	$ 47,636	$ 98
GM-WWTP40-4	Ci	Alstonville WWTP	375	365.0	2011	unplasticised poly vinyl chloride	2,016	859	486	$ 92,101	$ 86,076	$ 177
GM-WWTP40-5	Ci	Alstonville WWTP	375	229.0	2011	unplasticised poly vinyl chloride	2,016	859	486	$ 57,784	$ 54,004	$ 111
GM-WWTP40-6	Ci	Alstonville WWTP	375	122.0	2011	unplasticised poly vinyl chloride	2,016	859	486	$ 30,784	$ 28,770	$ 59
GM-WWTP40-7	Ci	Alstonville WWTP	375	568.5	2011	unplasticised poly vinyl chloride	2,016	859	486	$ 143,450	$ 134,066	$ 276
GM-WWTP40-8	Ci	Alstonville WWTP	375	121.0	2011	unplasticised poly vinyl chloride	2,016	859	486	$ 30,532	$ 28,535	$ 59
GM-4104-13	Ci	SP4104	300	366.0	2011	unplasticised poly vinyl chloride	2,016	859	486	$ 71,612	$ 66,927	$ 138
GM-4104-14	Ci	SP4104	300	130.0	2011	unplasticised poly vinyl chloride	2,016	859	486	$ 25,436	$ 23,772	$ 49
GM-WUEA-15-1	C	WUEA	225	38.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 38,346	$ 27,340	$ 62
GM-WUEA-15-2	C	WUEA	225	49.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 49,303	$ 35,152	$ 80
GM-WUEA-15-3	C	WUEA	225	35.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 35,358	$ 25,210	$ 57
GM-WUEA-15-4	C	WUEA	225	25.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 25,398	$ 18,109	$ 41
GM-WUEA-15-5	C	WUEA	225	60.0	2015	unplasticised poly vinyl chloride	780	780	442	$ 59,761	$ 42,608	$ 96
GM-WUEA-15-6	C	WUEA	225	53.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 53,287	$ 37,993	$ 86
GM-WUEA-15-7	C	WUEA	225	36.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 36,354	$ 25,920	$ 59
GM-WUEA-15-8	C	WUEA	225	152.0	2015	unplasticised poly vinyl chloride	780	780	442	$ 189,875	$ 135,378	$ 306
GM-WUEA-11-1	C	WUEA	225	34.5	2011	unplasticised poly vinyl chloride	780	780	442	$ 34,362	$ 32,114	$ 73
GM-WUEA-11-2	C	WUEA	225	47.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 46,812	$ 43,750	$ 99
GM-WUEA-11-3	C	WUEA	225	24.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 23,904	$ 22,340	$ 51
GM-WUEA-11-4	C	WUEA	225	23.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 22,908	$ 21,410	$ 48
GM-WUEA-11-5	C	WUEA	225	26.5	2011	unplasticised poly vinyl chloride	780	780	442	$ 26,394	$ 24,668	$ 56
GM-WUEA-11-6	C	WUEA	225	21.5	2011	unplasticised poly vinyl chloride	780	780	442	$ 21,414	$ 20,013	$ 45
GM-WUEA-11-7	C	WUEA	225	17.5	2011	unplasticised poly vinyl chloride	780	780	442	$ 17,430	$ 16,290	$ 37
GM-WUEA-15-9	C	WUEA	200	139.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 197,395	$ 140,740	$ 318
GM-WUEA-11-8	C	WUEA	200	35.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 24,926	$ 23,296	$ 53
GM-WUEA-11-9	C	WUEA	200	64.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 45,579	$ 42,598	$ 96
GM-WUEA-11-10	C	WUEA	150	353.5	2011	unplasticised poly vinyl chloride	780	780	442	$ 251,755	$ 235,285	$ 532
GM-WUEA-11-11	C	WUEA	150	135.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 96,144	$ 89,854	$ 203
GM-WUEA-11-12	C	WUEA	150	58.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 41,306	$ 38,604	$ 87
GM-WUEA-11-13	C	WUEA	150	21.5	2011	unplasticised poly vinyl chloride	780	780	442	$ 15,312	$ 14,310	$ 32
GM-WUEA-15-52	C	#N/A	150	50.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 20,065	$ 14,306	$ 32
GM-WUEA-11-14	C	WUEA	150	12.5	2011	unplasticised poly vinyl chloride	780	780	442	$ 8,902	$ 8,320	$ 19
GM-WUEA-15-10	C	WUEA	150	36.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 36,354	$ 25,920	$ 59

Label	Area	PS Catchment	Diameter (mm)	Length (m)	Year	Material	Total Service ET's	New Service ET's	NPV of New Service ET's	Effective Capital Cost (2010$)	NPV of Capital Cost (@ 7%)	Capital Charge per ET (2010$/ET)
GM-WUEA-15-11	C	WUEA	150	34.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 34,362	$ 24,500	$ 55
GM-WUEA-15-12	C	WUEA	150	44.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 12,896	$ 9,195	$ 21
GM-WUEA-15-13	C	WUEA	150	18.0	2015	unplasticised poly vinyl chloride	780	780	442	$ 5,216	$ 3,719	$ 8
GM-WUEA-15-14	C	WUEA	150	45.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 13,186	$ 9,401	$ 21
GM-WUEA-15-15	C	WUEA	150	28.0	2015	unplasticised poly vinyl chloride	780	780	442	$ 8,114	$ 5,785	$ 13
GM-WUEA-15-16	C	WUEA	150	17.0	2015	unplasticised poly vinyl chloride	780	780	442	$ 4,927	$ 3,513	$ 8
GM-WUEA-15-17	C	WUEA	150	35.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 10,288	$ 7,335	$ 17
GM-WUEA-15-18	C	WUEA	150	21.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 6,231	$ 4,442	$ 10
GM-WUEA-15-19	C	WUEA	150	55.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 16,084	$ 11,468	$ 26
GM-WUEA-15-20	C	WUEA	150	43.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 12,606	$ 8,988	$ 20
GM-WUEA-15-21	C	WUEA	150	48.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 14,055	$ 10,021	$ 23
GM-WUEA-15-22	C	WUEA	150	16.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 4,782	$ 3,409	$ 8
GM-WUEA-15-23	C	WUEA	150	60.0	2015	unplasticised poly vinyl chloride	780	780	442	$ 17,388	$ 12,397	$ 28
GM-WUEA-15-24	C	WUEA	150	58.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 16,953	$ 12,087	$ 27
GM-WUEA-15-25	C	WUEA	150	23.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 6,810	$ 4,856	$ 11
GM-WUEA-15-26	C	WUEA	150	39.0	2015	unplasticised poly vinyl chloride	780	780	442	$ 12,534	$ 8,936	$ 20
GM-WUEA-15-27	C	WUEA	150	24.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 9,357	$ 6,671	$ 15
GM-WUEA-15-28	C	WUEA	150	42.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 12,317	$ 8,781	$ 20
GM-WUEA-15-29	C	WUEA	150	38.0	2015	unplasticised poly vinyl chloride	780	780	442	$ 11,012	$ 7,852	$ 18
GM-WUEA-15-30	C	WUEA	150	20.0	2015	unplasticised poly vinyl chloride	780	780	442	$ 5,796	$ 4,132	$ 9
GM-WUEA-15-31	C	WUEA	150	13.0	2015	unplasticised poly vinyl chloride	780	780	442	$ 3,767	$ 2,686	$ 6
GM-WUEA-15-32	C	WUEA	150	22.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 6,521	$ 4,649	$ 11
GM-WUEA-15-33	C	WUEA	150	25.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 7,390	$ 5,269	$ 12
GM-WUEA-15-34	C	WUEA	150	21.0	2015	unplasticised poly vinyl chloride	780	780	442	$ 6,086	$ 4,339	$ 10
GM-WUEA-15-35	C	WUEA	150	23.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 6,810	$ 4,856	$ 11
GM-WUEA-15-36	C	WUEA	150	40.0	2015	unplasticised poly vinyl chloride	780	780	442	$ 11,592	$ 8,265	$ 19
GM-WUEA-15-37	C	WUEA	150	28.0	2015	unplasticised poly vinyl chloride	780	780	442	$ 8,114	$ 5,785	$ 13
GM-WUEA-15-38	C	WUEA	150	24.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 7,100	$ 5,062	$ 11
GM-WUEA-15-39	C	WUEA	150	48.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 48,306	$ 34,442	$ 78
GM-WUEA-15-40	C	WUEA	150	14.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 14,442	$ 10,297	$ 23
GM-WUEA-15-41	C	WUEA	150	49.0	2015	unplasticised poly vinyl chloride	780	780	442	$ 48,804	$ 34,797	$ 79
GM-WUEA-15-42	C	WUEA	150	50.0	2015	unplasticised poly vinyl chloride	780	780	442	$ 49,801	$ 35,507	$ 80
GM-WUEA-15-43	C	WUEA	150	45.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 45,318	$ 32,311	$ 73
GM-WUEA-15-44	C	WUEA	150	48.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 48,306	$ 34,442	$ 78
GM-WUEA-11-15	C	WUEA	150	23.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 22,908	$ 21,410	$ 48
GM-WUEA-11-16	C	WUEA	150	44.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 43,824	$ 40,957	$ 93
GM-WUEA-11-17	C	WUEA	150	60.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 59,761	$ 55,851	$ 126
GM-WUEA-11-18	C	WUEA	150	48.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 47,808	$ 44,681	$ 101
GM-WUEA-15-45	C	WUEA	150	21.0	2015	unplasticised poly vinyl chloride	780	780	442	$ 6,086	$ 4,339	$ 10
GM-WUEA-15-46	C	WUEA	150	20.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 5,941	$ 4,236	$ 10
GM-WUEA-11-19	C	WUEA	150	58.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 57,769	$ 53,989	$ 122
GM-WUEA-11-20	C	WUEA	150	53.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 52,789	$ 49,335	$ 112
GM-WUEA-11-21	C	WUEA	150	50.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 49,801	$ 46,543	$ 105
GM-WUEA-11-22	C	WUEA	150	49.0	2011	unplasticised poly vinyl chloride	780	780	442	$ 48,804	$ 45,612	$ 103
GM-WUEA-11-23	C	WUEA	150	60.5	2011	unplasticised poly vinyl chloride	780	780	442	$ 60,259	$ 56,316	$ 127
GM-WUEA-15-47	C	WUEA	150	12.0	2015	unplasticised poly vinyl chloride	780	780	442	$ 11,952	$ 8,522	$ 19
GM-WUEA-15-48	C	WUEA	150	22.0	2015	unplasticised poly vinyl chloride	780	780	442	$ 21,912	$ 15,623	$ 35
GM-WUEA-15-49	C	WUEA	150	38.0	2015	unplasticised poly vinyl chloride	780	780	442	$ 37,848	$ 26,985	$ 61
GM-WUEA-15-50	C	WUEA	150	60.5	2015	unplasticised poly vinyl chloride	780	780	442	$ 60,259	$ 42,964	$ 97
GM-WWTP40-9	E	Alstonville WWTP	225	259.0	2011	unplasticised poly vinyl chloride	4,122	179	101	$ 3,732	$ 3,488	$ 35
GM-WWTP40-10	E	Alstonville WWTP	225	43.0	2011	unplasticised poly vinyl chloride	4,122	179	101	$ 620	$ 579	$ 6
GM-WWTP40-11	E	Alstonville WWTP	300	329.5	2011	unplasticised poly vinyl chloride	4,122	179	101	$ 6,270	$ 5,860	$ 58
GM-WWTP40-12	E	Alstonville WWTP	300	662.5	2011	unplasticised poly vinyl chloride	4,122	179	101	$ 12,607	$ 11,782	$ 117
GM-4006-1	E	SP4006	300	312.0	2011	unplasticised poly vinyl chloride	4,122	179	101	$ 5,937	$ 5,549	$ 55
GM-4006-2	E	SP4006	225	381.0	2011	unplasticised poly vinyl chloride	4,122	179	101	$ 5,490	$ 5,131	$ 51
GM-WWTP40-13	E	Alstonville WWTP	300	247.5	2011	unplasticised poly vinyl chloride	4,122	179	101	$ 4,710	$ 4,402	$ 44
GM-WWTP40-14	E	Alstonville WWTP	225	60.0	2011	unplasticised poly vinyl chloride	4,122	179	101	$ 865	$ 808	$ 8
GM-WWTP40-15	E	Alstonville WWTP	225	89.5	2011	unplasticised poly vinyl chloride	4,122	179	101	$ 1,290	$ 1,205	$ 12
GM-WWTP40-16	E	Alstonville WWTP	150	261.0	2011	unplasticised poly vinyl chloride	4,122	179	101	$ 3,094	$ 2,892	$ 29
GM-WWTP40-17	E	Alstonville WWTP	150	809.5	2011	unplasticised poly vinyl chloride	4,122	179	101	$ 9,597	$ 8,969	$ 89

Label	Area	PS Catchment	Diameter (mm)	Length (m)	Year	Material	Total Service ET's	New Service ET's	NPV of New Service ET's	Effective Capital Cost (2010$)	NPV of Capital Cost (@ 7%)	Capital Charge per ET (2010$/ET)
GM-WWTP40-18	E	Alstonville WWTP	225	80.5	2011	unplasticised poly vinyl chloride	4,122	179	101	$ 1,160	$ 1,084	$ 11
GM-WWTP40-19	E	Alstonville WWTP	225	7.5	2011	unplasticised poly vinyl chloride	4,122	179	101	$ 108	$ 101	$ 1
GM-4004-1	E	SP4004	150	69.5	2011	unplasticised poly vinyl chloride	4,122	179	101	$ 824	$ 770	$ 8
GM-4004-2	E	SP4004	150	25.0	2011	unplasticised poly vinyl chloride	4,122	179	101	$ 296	$ 277	$ 3

Future RM

Label	Area	PS Catchment	Diameter (mm)	Length (m)	Year	Material	Relevant material rate to apply	Total Service ET's	New Service ET's	NPV of New Service ET's	Effective Capital Cost (2010$)	NPV of Capital Cost (@ 7%)	Capital Charge per ET (2010$/ET)
RM-2101-1	B	SP2101	375	505	2012	DICL	0	18140	5021	3029	$ 61,250	$ 53,498	$ 18
RM-BHE-PS3-15-1	F	PMP-BHE-PS3	300	1,597.00	2015	DICL	0	3162	2490	1956	$ 462,967	$ 330,089	$ 169
RM-PSNNC-1	B	PS New North Creek	150	595	2020	DICL	0	18140	5021	3029	$ 42,078	$ 21,390	$ 7
RM-PSNNC-2	B	PS New North Creek	150	24	2020	DICL	0	18140	5021	3029	$ 1,697	$ 863	$ 0
RM-3001-1	B	SP3001	250	382.5	2015	DICL	0	18140	5021	3029	$ 35,276	$ 25,151	$ 8
RM-BHE-PS3-2020-1	F	PMP-BHE-PS3	300	522	2020	DICL	0	3162	2490	1956	$ 151,327	$ 76,927	$ 39
RM-BHE-PS3-12-1	F	PMP-BHE-PS3	300	1,085.50	2012	DICL	0	3162	2490	1956	$ 314,684	$ 274,858	$ 141
RM-WWTP20-1	B	NB	300	1,085.50	2012	DICL	0	18140	5021	3029	$ 110,626	$ 96,625	$ 32
RM-BHE-PS3-12-2	F	PMP-BHE-PS3	200	1,097.50	2012	DICL	0	3162	2490	1956	$ 235,900	$ 206,045	$ 105
RM-2401-1	G	SP2401	150	480.00	2015	DICL	0	3146	2939	1461	$ 114,571	$ 81,687	$ 56
RM-SPNB2-1	B	SPNB2	150	7.5	2015	DICL	0	18140	5021	3029	$ 530	$ 378	$ 0
RM-3107-1	B	SP3107	250	15	2010	DICL	0	18140	5021	3029	$ 1,383	$ 1,383	$ 0
RM-SPNB2-2	B	SPNB2	150	997	2015	DICL	0	18140	5021	3029	$ 70,507	$ 50,270	$ 17
RM-3001-3	B	SP3001	250	121	2015	DICL	0	18140	5021	3029	$ 11,159	$ 7,956	$ 3
RM-3001-4	B	SP3001	250	129.5	2015	DICL	0	18140	5021	3029	$ 11,943	$ 8,515	$ 3
RM-3001-5	B	SP3001	250	139.5	2015	DICL	0	18140	5021	3029	$ 12,865	$ 9,173	$ 3
RM-3001-6	B	SP3001	250	68	2015	DICL	0	18140	5021	3029	$ 6,271	$ 4,471	$ 1
RM-3001-7	B	SP3001	250	69	2015	DICL	0	18140	5021	3029	$ 6,364	$ 4,537	$ 1
RM-3001-8	B	SP3001	250	86.5	2015	DICL	0	18140	5021	3029	$ 7,977	$ 5,688	$ 2
RM-3001-9	B	SP3001	250	73	2015	DICL	0	18140	5021	3029	$ 6,732	$ 4,800	$ 2
RM-3001-10	B	SP3001	250	230	2015	DICL	0	18140	5021	3029	$ 21,212	$ 15,124	$ 5
RM-BHE-PS3-2020-2	F	PMP-BHE-PS3	300	138	2020	DICL	0	3162	2490	1956	$ 40,006	$ 20,337	$ 10
RM-BHE-PS3-2020-3	F	PMP-BHE-PS3	300	121.5	2020	DICL	0	3162	2490	1956	$ 35,223	$ 17,905	$ 9
RM-3107-2	B	SP3107	200	158.5	2010	DICL	0	18140	5021	3029	$ 11,977	$ 11,977	$ 4
RM-3107-3	B	SP3107	200	104	2010	DICL	0	18140	5021	3029	$ 7,858	$ 7,858	$ 3
RM-3115-1	B	SP3115 NB Should use LH16 population data	100	258.5	2010	DICL	0	18140	5021	3029	$ 16,491	$ 16,491	$ 5
RM-3115-2	B	SP3115 NB Should use LH16 population data	150	16	2010	DICL	0	18140	5021	3029	$ 1,131	$ 1,131	$ 0.4
RM-BHE-PS3-2020-4	F	PMP-BHE-PS3	300	130.5	2020	DICL	0	3162	2490	1956	$ 37,832	$ 19,232	$ 10
RM-2402-20-1	F	SP2402	300	35.5	2020	DICL	0	3162	2490	1956	$ 10,291	$ 5,232	$ 3
RM-2402-15-1	F	SP2402	225	42	2015	DICL	0	3162	2490	1956	$ 10,355	$ 7,383	$ 4
RM-BHE-PS3-2020-5	F	PMP-BHE-PS3	300	6	2020	DICL	0	3162	2490	1956	$ 1,739	$ 884	$ 0
RM-BHE-PS3-15-2	F	PMP-BHE-PS3	300	30.5	2015	DICL	0	3162	2490	1956	$ 8,842	$ 6,304	$ 3
RM-BHE-PS3-15-3	F	PMP-BHE-PS3	150	8.00	2015	DICL	0	3162	2490	1956	$ 1,609	$ 1,147	$ 1
RM-BHE-PS3-15-4	F	PMP-BHE-PS3	300	16	2015	DICL	0	3162	2490	1956	$ 4,638	$ 3,307	$ 2
RM-WUEA-1	C	Wollongbar	150	8.5	2011	DICL	0	780	780	442	$ 3,320	$ 3,103	$ 7
RM-WUEA-2	C	Wollongbar	150	25.5	2011	DICL	0	780	780	442	$ 9,961	$ 9,310	$ 21
RM-WUEA-3	C	Wollongbar	300	740.0	2020	DICL	0	780	780	442	$ 289,069	$ 146,948	$ 332
RM-4106-1	E	Wollongbar	100	103.5	2011	DICL	0	4,122	179	101	$ 1,032	$ 964	$ 10
RM-4106-2	E	Wollongbar	100	204.5	2011	DICL	0	4,122	179	101	$ 2,039	$ 1,906	$ 19

Future SPSs

Label	Area	Item	Design Flow (L/s)/Size (m3)	Design Head (m)	Street Name	Year Commissioned	Comments	Total Service ET	New Service ET	NPV of New Service ET's	Effective Capital Cost	NPV of Capital Cost (@ 7%)	Capital Charge per ET (2010$)
PMP-BHE-PS3	F	Pump	125	35	N/A	2015	New Transfer SPS through to Ballina STP	3162	2490	1956	708,148	504,900	258.15
PS New North Creek	B	Pump	26	21	North Creek Road	2020	New Development SPS	18140	5021	3029	66,653	33,883	11.19
SP2112	B	Pump	22	14	WESTLANDS DRIVE	2011	Upgrade Capacity	18140	5021	3029	25,538	23,868	7.88
SP2201	B	Pump	22	32	NORTH CREEK ROAD (CA	2030	Diversion through to Ballina STP through Ferngrove	18140	5021	3029	31,303	8,089	2.67
SP2202	B	Pump	7	20	RACECOURSE ROAD (NO.	2011	Upgrade capacity	18140	5021	3029	6,855	6,406	2.12
SP2217	B	Pump	35	19	NORTH CREEK ROAD - N	2015	Diversion back to Ballina STP	18140	5021	3029	31,303	22,318	7.37
SP2301	B	Pump	206	37	ANGELS BEACH DRIVE (	2011	Upgrade Capacity	18140	5021	3029	199,274	186,237	61.49
SP2317	B	Pump	26	21	SILVER GULL DRIVE (A	2011	Upgrade Capacity	18140	5021	3029	31,303	29,255	9.66
SP2401	B	Pump	34	60	Cumbalum Way	2015	Upgrade Capacity	18140	5021	3029	58,168	41,473	13.69
SP2402	F	Pump	125	15	PERKINS CLOSE	2020	Upgrade to accomodate Precinct A and Ballina Heights	3162	2490	1956	165,464	84,114	43.01
SP3001	B	Pump	121	60	BRYON STREET (LENNOX	2011	Upgrade Capacity	18140	5021	3029	558,979	522,411	172.49
SP3101	B	Pump	21	52	SKENNARS HEAD ROAD	2015	Upgrade Capacity	18140	5021	3029	38,237	27,263	9.00
SP3102	B	Pump	4	35	TARA DOWNS	2015	Upgrade Capacity	18140	5021	3029	11,019	7,856	2.59
SP3107	B	Pump	34	49	SEAMIST PLACE	2010	As constructed - new replacement SPS	18140	5021	3029	110,581	110,581	36.51
SP3110	B	Pump	233	55	BOMBORA PLACE	2015	Upgrade Capacity	18140	5021	3029	270,533	192,886	63.69
SP3115	B	Pump	14	12	SKENNARS HEAD ROAD	2010	Recently constructed	18140	5021	3029	23,463	23,463	7.75
SPNB2	B	Pump	25	15	New Development NB2 - NEW 03/03/2011	2015	New NB2 development catchment SPS	18140	5021	3029	66,653	47,523	15.69
PMP-BHE-PS3	F	Storage	48		N/A	2016	Emergency Storage for new pump station	3162	2490	1956	285,019	189,920	97.10
PS New North Creek	B	Storage	95		North Creek Road	2021	Emergency Storage for new pump station	18140	5021	3029	173,592	82,472	27.23
SP Angles Beach	B	Storage	166		New Development	2016	Emergency Storage for new pump station	18140	5021	3029	278,866	185,820	61.36
SP3001	B	Storage	127		BRYON STREET (LENNOX NO. 1)	2010	Additional Emergency Storage Required	18140	5021	3029	224,637	224,637	74.17
SP3002	B	Storage	89		RUTHERFORD STREET	2010	Additional Emergency Storage Required	18140	5021	3029	154,350	154,350	50.96
SP3101	B	Storage	64		SKENNARS HEAD ROAD	2010	Additional Emergency Storage Required	18140	5021	3029	128,530	128,530	42.44
SP3102	B	Storage	6		TARA DOWNS	2010	Additional Emergency Storage Required	18140	5021	3029	29,161	29,161	9.63
SP3107	B	Storage	34		SEAMIST PLACE	2010	Additional Emergency Storage Required	18140	5021	3029	80,450	80,450	26.56
SP3110	B	Storage	273		BOMBORA PLACE	2010	Additional Emergency Storage Required	18140	5021	3029	428,800	428,800	141.58
SP2402	F	Storage	113			2015	Additional Emergency Storage Required	3162	2490	1956	591,205	421,521	215.52
SP2401	F	Storage	49		Cumbalum Way	2020	Additional Emergency Storage Required	3162	2490	1956	285,019	144,889	74.08
SPNB2	B	Storage	102		New Development NB2	2015	Emergency Storage for new pump station	18140	5021	3029	194,561	138,720	45.80
PMP-SP-NHS1	C		65.0	40.0	New Road - WUEA Development	2020	New - Stage 2 for Development	780	780	442	$ 282,850	$ 143,787	$ 325
PMP-SP-NHS1_Interim	C		25.0	48.0	New Road - WUEA Development	2011	New - Stage 1 for Development	780	780	442	$ 2,015,044	$ 1,883,219	$ 4,260
SP4001U	E		15.0	4.0	Cawley Close	2011	Pump Upgrade	4,122	179	101	$ 1,075	$ 1,005	$ 10
SP4004U	E		29.0	42.0	Granada Pde	2011	Pump Upgrade	4,122	179	101	$ 7,260	$ 6,785	$ 67
SP4106U	E		12.0	15.0	Kayes Lane	2011	Pump Upgrade	4,122	179	101	$ 4,007	$ 3,745	$ 37
SP4001	E		114.0		Cawley Cls (Alst.High School). Dependent on ET all	2011	Upgrade Capacity	4,122	179	101	$ 32,608	$ 30,475	$ 303
SP4003	E		38.0		Cedar Crt (Oceanview)	2011	Upgrade Capacity	4,122	179	101	$ 12,622	$ 11,796	$ 117
SP4004	E		93.0		Granaga Pde (Panorama)	2011	Upgrade Capacity	4,122	179	101	$ 27,235	$ 25,453	$ 253
SP4106	E		162.0		Kays Lane (Russellton)	2011	Upgrade Capacity	4,122	179	101	$ 43,752	$ 40,890	$ 407
SP4102	Ci		24.0		Central Park Dve (Sharwood)	2011	Upgrade Capacity	2,016	859	486	$ 99,049	$ 92,569	$ 190
SP5006	A		7.0		Richmond St	2030	Upgrade Capacity	529	120	75	$ 23,899	$ 6,176	$ 82

Future STW Upgrades

Base Year **2010/2011**

Notes

1. Information provided as per N. Charters markup on 16th February

2. Catchment areas are as per post 2012 catchment areas (ultimate development).

Area	STP Catchment	Capital Charge per ET - STW FW
A	Wardell	1203
B	Lennox Head STP and Ballina RWF	5087
C	Alstonville STP	101
D		
E	Alstonville STP	101
F	Ballina RWF	3982
G	Ballina RWF	3982

NSW Water Supply and Sewerage Cost Indicy uplift from 2003/2004 to 2010/2011: 1.4

DSP Area	STP Catchment	Component	Development area	Year of Construction	Total Service ET	New Service ET	NPV of New Service ET's	Capital Cost 2004 GHD Estimate	Capital Cost 2010/2011 Estimate	Effective Capital Cost	NPV of Capital Cost (@ 7%)	Capital Charge per ET	Total Charges
Ballina RWF Catchment Area	*Ballina RWF*	Ultimate Upgrade - Stage 1	All	2010/11	14,265	7,893	4,893	N/A	$ 20,240,000	$ 11,198,350	$ 11,198,350	2288.661829	
	Ballina RWF	Ultimate Upgrade - Stage 2	All	2011/12	14,265	7,893	4,893	N/A	$ 15,240,000	$ 8,431,959	$ 7,880,336	$ 1,611	
	Ballina RWF	Ultimate Upgrade - Stage 3	All	2012/13	14,265	7,893	4,893	N/A	$ 840,000	$ 464,754	$ 405,934	$ 83	**$ 3,982**
Lennox Head STP Catchment Area	*Lennox Head STP*	Lennox Head RWF - Optimisation Upgrade	All	2010/11	10,183	4,350	2,632	N/A	$ 2,600,000	$ 1,110,647	$ 1,110,647	$ 422	
Lennox STW Catchment Area	*Lennox Head STP*	Lennox Head RWF - Ultimate Upgrade	All	2011/12	10,183	4,350	2,632	N/A	$ 4,500,000	$ 1,922,274	$ 1,796,518	$ 682	**$ 1,104**
Alstonville STP Catchment Area	*Alstonville STP*	Biosolids Management		2010/11	4,902	959	540	$ 200,000	$ 280,000	$ 54,778	$ 54,778	$ 101	**$ 101**
Wardell STP Catchment Area	*Wardell STP*	Additional 1750EP IDEA Tank - Stage 1	All	2019/20	529	120	75	$ 166,667	$ 233,334	$ 52,930	$ 28,791	$ 384	
Wardell STP Catchment Area	*Wardell STP*	Additional 1750EP IDEA Tank - Stage 2	All	2020/21	529	120	75	$ 166,667	$ 233,334	$ 52,930	$ 26,907	$ 359	
Wardell STP Catchment Area	*Wardell STP*	Additional 1750EP IDEA Tank - Stage 3	All	2021/22	529	120	75	$ 166,667	$ 233,334	$ 52,930	$ 25,147	$ 336	
Wardell STP Catchment Area	*Wardell STP*	UV Disinfection System Upgrade	All	2018/19	529	120	75	$ 50,000	$ 70,000	$ 15,879	$ 9,242	$ 123	**$ 1,203**

Pipes

Label	Priced by PWD?	DSP AREA	Area	Length	Material	Diameter	Row Ref for diameter	Pipe Base Rate 2003 ($/m)	Construction Difficulty	Row Ref for diameter	Construction Difficulty Rate 2003 ($/m)	Total Rate 2003 ($/m)	Total Rate 2011 ($/m)	Total Cost 2011 ($)	Date of Construction	Pre or Post 1996 Asset	Effective Year of commissioning	Capital Cost (2010/2011$)	Date of Renewal	Adopted Capacity (ET's)	Capital Cost per ET (2010/2011$)	Year when capacity is taken up	Take-up period (t) (years)	Pre 1996 Return on Investment Factor	Post 1996 Return on Investment Factor	% Water/ Wastewater	Capital Charge per ET (2011/2012$)
RWP11	PWD	North Ballina	B	52.94	PVC	200	7	130	High	5	120	250	736	38983	2012	Post	2012	38983	2062	18991.24	$ 2.05	2030	19	1.251183936	1.608325549	100%	$ 3.30
RWP13	PWD	North Ballina	B	281.14	PVC	200	7	130	High	5	120	250	736	207018	2012	Post	2012	207018	2062	18991.24	$ 10.90	2030	19	1.251183936	1.608325549	100%	$ 17.53
RWP15	PWD	Ballina Island	B	161.26	PVC	200	7	130	High	5	120	250	736	118744	2012	Post	2012	118744	2062	18991.24	$ 6.25	2030	19	1.251183936	1.608325549	100%	$ 10.06
RWP25	PWD	Ballina Island, Lennox Head	B	5469.53	PVC	300	11	210			0	210	736	4027507	2012	Post	2012	4027507	2062	18991.24	$ 212.07	2030	19	1.251183936	1.608325549	100%	$ 341.08
RWP27	PWD	Ballina Heights	F	262.11	PVC	350	13	243			0	243.3333333	736	193006	2012	Post	2012	193006	2062	2415.92	$ 79.89	2030	19	1.114164003	1.268569647	100%	$ 101.34
RWP29	PWD	Ballina Heights	F	971.21	PVC	200	7	130			0	130	736	715154	2012	Post	2012	715154	2062	2415.92	$ 296.02	2030	19	1.114164003	1.268569647	100%	$ 375.52
RWP31	PWD	Ballina Heights	F	352.14	PVC	200	7	130			0	130	736	259299	2012	Post	2012	259299	2062	2415.92	$ 107.33	2030	19	1.114164003	1.268569647	100%	$ 136.15
RWP33	PWD	Ballina Heights	F	300.36	PVC	200	7	130			0	130	736	221171	2012	Post	2012	221171	2062	2415.92	$ 91.55	2030	19	1.114164003	1.268569647	100%	$ 116.13
RWP37		CURA B	G	3098.96	PVC	250	9	170			0	170	238	737552	2020	Post	2020	737552	2070	2938.98	$ 250.96	2030	11	1.382211779	2.011106773	100%	$ 504.70
RWP39		CURA B	G	1737.95	PVC	500	17	400			0	400	560	973252	2020	Post	2020	973252	2070	2938.98	$ 331.15	2030	11	1.382211779	2.011106773	100%	$ 665.98
RWP41	PWD	Ballina Heights	F	179.6	PVC	100	5	70			0	70	736	132249	2012	Post	2012	132249	2062	2415.92	$ 54.74	2030	19	1.114164003	1.268569647	100%	$ 69.44
RWP45	PWD	Lennox Head	B	743.4	PVC	250	9	170	Moderate	6	75	245	197	146194	2012	Post	2012	146194	2062	18991.24	$ 7.70	2030	19	1.251183936	1.608325549	100%	$ 12.38
RWP47	PWD	Lennox Head	B	240.32	PVC	250	9	170	Moderate	6	75	245	197	47260	2012	Post	2012	47260	2062	18991.24	$ 2.49	2030	19	1.251183936	1.608325549	100%	$ 4.00
RWP49	PWD	Lennox Head	B	601.12	PVC	250	9	170	Moderate	6	75	245	197	118214	2012	Post	2012	118214	2062	18991.24	$ 6.22	2030	19	1.251183936	1.608325549	100%	$ 10.01
RWP51	PWD	Lennox Head	B	312.42	PVC	250	9	170	Moderate	6	75	245	197	61439	2012	Post	2012	61439	2062	18991.24	$ 3.24	2030	19	1.251183936	1.608325549	100%	$ 5.20
RWP53	PWD	Lennox Head	B	138.21	PVC	250	9	170	Moderate	6	75	245	197	27180	2012	Post	2012	27180	2062	18991.24	$ 1.43	2030	19	1.251183936	1.608325549	100%	$ 2.30
RWP55		Lennox Head	B	270.75	PVC	250	9	170	Moderate	6	75	245	343	92867	2020	Post	2020	92867	2070	18991.24	$ 4.89	2030	11	1.251183936	1.608325549	100%	$ 7.86
RWP57		Lennox Head	B	232.46	PVC	250	9	170	Moderate	6	75	245	343	79734	2020	Post	2020	79734	2070	18991.24	$ 4.20	2030	11	1.251183936	1.608325549	100%	$ 6.75
RWP59		Lennox Head	B	543.72	PVC	250	9	170	Moderate	6	75	245	343	186496	2020	Post	2020	186496	2070	18991.24	$ 9.82	2030	11	1.251183936	1.608325549	100%	$ 15.79
RWP61		Lennox Head	B	444.12	PVC	200	7	130	Moderate	5	60	190	266	118136	2020	Post	2020	118136	2070	18991.24	$ 6.22	2030	11	1.251183936	1.608325549	100%	$ 10.00
RWP63		Lennox Head	B	355.22	PVC	200	7	130	Moderate	5	60	190	266	94489	2020	Post	2020	94489	2070	18991.24	$ 4.98	2030	11	1.251183936	1.608325549	100%	$ 8.00
RWP65		Lennox Head	B	708.87	PVC	200	7	130	Moderate	5	60	190	266	188559	2020	Post	2020	188559	2070	18991.24	$ 9.93	2030	11	1.251183936	1.608325549	100%	$ 15.97
RWP67		Lennox Head	B	414.9	PVC	200	7	130	Moderate	5	60	190	266	110363	2020	Post	2020	110363	2070	18991.24	$ 5.81	2030	11	1.251183936	1.608325549	100%	$ 9.35
RWP69		Lennox Head	B	513.07	PVC	150	6	105	Moderate	4	45	150	210	107745	2020	Post	2020	107745	2070	18991.24	$ 5.67	2030	11	1.251183936	1.608325549	100%	$ 9.12
RWP71		Lennox Head	B	601.45	PVC	150	6	105	Moderate	4	45	150	210	126305	2020	Post	2020	126305	2070	18991.24	$ 6.65	2030	11	1.251183936	1.608325549	100%	$ 10.70
RWP73		Fig Tree Hill	B	531.14	PVC	150	6	105			0	105	147	78078	2020	Post	2020	78078	2070	18991.24	$ 4.11	2030	11	1.251183936	1.608325549	100%	$ 6.61
RWP75		Lennox Head	B	688.55	PVC	200	7	130	Moderate	5	60	190	266	183154	2020	Post	2020	183154	2070	18991.24	$ 9.64	2030	11	1.251183936	1.608325549	100%	$ 15.51
RWP77		Lennox Head	B	1061.49	PVC	100	5	70	Moderate	3	30	100	140	148609	2020	Post	2020	148609	2070	18991.24	$ 7.83	2030	11	1.251183936	1.608325549	100%	$ 12.59
RWP79		Lennox Head	B	328.18	PVC	200	7	130	Moderate	5	60	190	266	87296	2020	Post	2020	87296	2070	18991.24	$ 4.60	2030	11	1.251183936	1.608325549	100%	$ 7.39
RWP81		Lennox Head	B	1149.52	PVC	150	6	105	Moderate	4	45	150	210	241399	2020	Post	2020	241399	2070	18991.24	$ 12.71	2030	11	1.251183936	1.608325549	100%	$ 20.44
RWP83	PWD	Lennox Head	B	88.14	PVC	250	9	170	Moderate	6	75	245	197	17333	2012	Post	2012	17333	2062	18991.24	$ 0.91	2030	19	1.251183936	1.608325549	100%	$ 1.47
RWP85	PWD	Lennox Head	B	300.61	PVC	150	6	105	Moderate	4	45	150	197	59117	2012	Post	2012	59117	2062	18991.24	$ 3.11	2030	19	1.251183936	1.608325549	100%	$ 5.01
RWP87	PWD	Lennox Head	B	308.95	PVC	150	6	105	Moderate	4	45	150	197	60757	2012	Post	2012	60757	2062	18991.24	$ 3.20	2030	19	1.251183936	1.608325549	100%	$ 5.15
RWP89	PWD	Lennox Head	B	232.9	PVC	150	6	105	Moderate	4	45	150	197	45801	2012	Post	2012	45801	2062	18991.24	$ 2.41	2030	19	1.251183936	1.608325549	100%	$ 3.88
RWP91	PWD	Lennox Head	B	286.74	PVC	150	6	105	Moderate	4	45	150	197	56389	2012	Post	2012	56389	2062	18991.24	$ 2.97	2030	19	1.251183936	1.608325549	100%	$ 4.78
RWP93	PWD	Lennox Head	B	445.05	PVC	100	5	70	Moderate	3	30	100	197	87522	2012	Post	2012	87522	2062	18991.24	$ 4.61	2030	19	1.251183936	1.608325549	100%	$ 7.41
RWP95	PWD	Skenners Head	B	71.34	PVC	100	5	70			0	70	197	14029	2012	Post	2012	14029	2062	18991.24	$ 0.74	2030	19	1.251183936	1.608325549	100%	$ 1.19
RWP97	PWD	Lennox Head	B	823.67	PVC	100	5	70	Moderate	3	30	100	197	161979	2012	Post	2012	161979	2062	18991.24	$ 8.53	2030	19	1.251183936	1.608325549	100%	$ 13.72
RWP99	PWD	Lennox Head	B	413.6	PVC	100	5	70	Moderate	3	30	100	197	81337	2012	Post	2012	81337	2062	18991.24	$ 4.28	2030	19	1.251183936	1.608325549	100%	$ 6.89
RWP101	PWD	Skenners Head	B	450.49	PVC	100	5	70			0	70	197	88591	2012	Post	2012	88591	2062	18991.24	$ 4.66	2030	19	1.251183936	1.608325549	100%	$ 7.50
RWP105	PWD	Lennox Head	B	540.26	PVC	150	6	105	Moderate	4	45	150	197	106245	2012	Post	2012	106245	2062	18991.24	$ 5.59	2030	19	1.251183936	1.608325549	100%	$ 9.00
RWP107	PWD	East Ballina	B	654.9	PVC	150	6	105	Moderate	4	45	150	197	128790	2012	Post	2012	128790	2062	18991.24	$ 6.78	2030	19	1.251183936	1.608325549	100%	$ 10.91
RWP110		Lennox Head	B	822.46	PVC	200	6	130	Moderate	5	60	190	266	218774	2012	Post	2012	218774	2062	18991.24	$ 11.52	2030	35	1.251183936	1.608325549	100%	$ 18.53
RWP112		CURA B	G	133.81	PVC	250	9	170			0	170	238	31847	2020	Post	2020	31847	2070	2938.98	$ 10.84	2030	11	1.382211779	2.011106773	100%	$ 21.79
RWP114	PWD	North Ballina	B	68.57	PVC	200	7	130	High	5	120	250	736	50492	2012	Post	2012	50492	2062	18991.24	$ 2.66	2030	19	1.251183936	1.608325549	100%	$ 4.28
RWP116	PWD	Lennox Head	B	66.35	PVC	250	9	170	Moderate	6	75	245	197	13048	2012	Post	2012	13048	2062	18991.24	$ 0.69	2030	19	1.251183936	1.608325549	100%	$ 1.11
RWP118	PWD	Ballina Heights	F	114.35	PVC	300	11	210			0	210	736	84202	2012	Post	2012	84202	2062	2415.92	$ 34.85	2030	19	1.114164003	1.268569647	100%	$ 44.21
RWP120	PWD	Lennox Head	B	795.1	PVC	250	9	170	Moderate	6	75	245	197	156361	2012	Post	2012	156361	2062	18991.24	$ 8.23	2030	19	1.251183936	1.608325549	100%	$ 13.24

Reservoirs

Label (ID)	Catchment	DSP Area	DSP Area	Capacity (ML)	Year Commissioned	Capacity (ML)	Reference rate (2003/04$)	Pre/Post 1996	Effective Date of Commissioning	Asset Division between DSP Areas	Capital Cost (2011/12$)	Year of Renewal	Capacity (ETs)	$/ET	Year of Full Take up	Take up Period	ROI	% Water/ Wastewater	Capital Charge ($/ET)
NOTE: Ballina Heights reservoir is listed twice to distribute the asset value between the two areas it services, it is still the same single facility																			
Ballina Heights Reservoir - RWR1		Ballina Island, North Ballina	B	3.5	2012	3.5	External Figure	Post	2013	0.44	1093953.436	2112	18991.24	57.60305469	2025	12	1.469987089	100%	$ 84.68
Ballina Heights Reservoir - RWR1		Cura A & Ballina Heights	F	3.5	2012	3.5	External Figure	Post	2013	0.56	1402546.564	2112	2415.92	580.5434632	2025	12	1.268569647	100%	$ 736.46
Kings Court Tank - RWR3		Lennox Head	B	0.17	2016	0.2	External Figure	Post	2013	1	720000	2116	18991.24	37.91221637	2026	13	1.495916014	100%	$ 56.71
Ross Lane Reservoir - RWR2		Cura B	G	2.8	2017	3	1636663.756	Post	2025	1	2073276.68	2117	2938.98	705.4408944	2027	2	1.80855946	100%	$ 1,275.83
Lennox Head Reservoir - RWR4		Lennox Head	B	2.7	2014	3	1636663.756	Post	2013	1	2073276.68	2114	18991.24	109.1701584	2028	15	1.550521611	100%	$ 169.27

Pumps

Description	Label (ID)	DSP Area	DSP Area	Flow	Head	kW	Reference rate (2007/08$)	Pre/Post 1996	Effective Date of Commissioning		Capital Cost (2011/12$)	Year Commissioned	Capacity (ETs)	$/ET	Year of Full Take up	Take up Period	ROI	% Water/ Wastewater	Capital Charge ($/ET)
Cura A Booster Pump	RWRBP2	Cura A & Ballina Heights	F	19.99	30	10	External Figure	Post	2015		194164.517	2015	2415.92	80.36876924	2030	15	1.268569647	100%	$ 101.95
Ballina Recycled Water Scheme	RWRSP1	North Ballina	B	90	103	145	777502.6111	Post	2012		875086.0386	2012	18991.24	46.0784045	2030	18	1.608325549	100%	$ 74.11
Lennox Head Recycled Water Scheme	RWRBP1	Lennox Head	B	160	95	240	External Figure	Post	2012		952000	2012	18991.24	50.12837498	2030	18	1.608325549	100%	$ 80.62

Label (ID)	Catchment	DSP Area	DSP Area	Plant Type	Year Commissioned	Capacity (ML/d)	Reference rate (2007/08$)	Pre/Post 1996	Effective Date of Commissioning	Asset Division between DSP Areas	Capital Cost (2011/12$)	Year of Renewal	Capacity (ETs)	$/ET	Year of Full Take up	Take up Period	ROI	% Water/ Wastewater	Capital Charge ($/ET)
NOTE: Ballina RWP is listed 3 times to distribute the asset value between the three areas it services, it is still the same single																			
Ballina RWP		CURA A, Ballina Heights	F		2012		External Figure	Post	2012	0.32	290983.1182	2082	2415.92	120.4440206	2030	18	1.268569647	100%	152.7916287
Ballina RWP		CURA B	G		2012					0.53	478646.1437	2082	2938.98	162.8613137	2030	2030	2.011106773	100%	327.5314909
Ballina RWP		Ballina Island	B		2012					0.15	140370.7382	2082	18991.24	7.391341385	2030	2030	1.608325549	100%	11.88768319
Lennox Head RWP			B		2012		External Figure	Post	2012	1	3430000	2082	18991.24	180.6095863	2030	18	1.608325549	100%	290.479012

Appendix B

Reduction Amount Calculation

NPV of Annual Charges Method

Table 8 - Calculation of Developer Charges using the Direct NPV Method

Ballina Shire Council - Sewerage

Base Data

Capital charge per ET (2010/11$)	**Varies for each DSP area**	
Year 1	**2010** /11	**Enter Year 1 of Analysis - this is the finanical year in which the DSP is expected to be implemented eg. 2000/01**
Debt at end of 2009/10 ($'000)	**7,362**	include borrowings and overdraft
Cash and investments at end of 2009/10 ($'000)	**122,579**	include all cash and investments, including sinking fund etc.
Net debt ($'000)	**(115,217)**	
Discount rate for future works	**7%**	

Assessments at year end

Year No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Year	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Residential (including backlog works)	11,332	11,551	11,767	11,984	12,204	12,420	12,642	12,861	13,082	13,308	13,534	13,763	13,989	14,216	14,447	14,681	14,917	15,144	15,373	15,604	15,839
Non-residential	1,906	1,925	1,943	1,961	1,980	2,001	2,021	2,040	2,060	2,080	2,100	2,119	2,138	2,157	2,176	2,195	2,215	2,234	2,253	2,272	2,291

ET per Residential assessment	0.84
ET per non-residential assessment	1.55
Capacity for future customers (ET)	-

Capital works

Base year	**2010** /11	**Enter Base Year - this is the financial year in whose dollars the Capital Cost of Renewals and Works for Improved Standards have been calculated**																			
Year		2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Renewals (2010/11$'000)		265	242	190	125	3473	79	1458	751	2202	246	6169	1328	1627	12039	11171	5830	1	1428	0	2059
	3.00%	**R**	Enter (**R**)ecorded or (**P**)rojected in space to left																		
Inflation from Base year to Year 1 (%)	**3.00%**																				
Capital Works for Improved Standards (2010/11$'000)		1388	165	191.5	53.1	54.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Government Grant on Works for Improved standards (2010/11$'000)		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**												
Inflation from 2010/11 to 2010/11 (%)	**3.00%**																				
Last year of the program	**2015** /16	**Enter the last year in which there is an expenditure on Improved Standards**																			

NPV of renewal works

Year No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Renewals ($'000) in 2010/11$		273	250	196	129	3,577	81	1,502	774	2,268	253	6,354	1,368	1,676	12,401	11,506	6,005	1	1,471	0	2,121
NPV Renewals at discount rate of 7% pa		23,972																			
Total equivalent assessments (ET)	14,288	14,536	14,780	15,026	15,275	15,523	15,776	16,026	16,277	16,533	16,791	17,049	17,304	17,561	17,822	18,086	18,352	18,608	18,867	19,127	19,393
Growth (ET)		248	244	246	249	249	253	250	252	256	258	258	255	257	261	264	265	257	259	260	265.149533
NPV of 50 years of growth (ET)		-2,391																			
NPV ETs		11,898																			
NPV Renewals per ET ($)		**2,015**																			

NPV of Works for Improved Standards to existing population

Year No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Works for Improved Standards ($'000) in 2010/11$ after Government grant	1,430	170	197	55	56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NPV of works for Improved Standards at discount rate of 7% pa	1,849																			
Growth in (ET) - cut off at 6 years	248	244	246	249	249	253	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NPV of 6 years of growth (ET)	1,016																			
NPV ETs	15,304																			
NPV Standards per ET ($)	**121**																			

The **Reduction Amount** is the greater of

(1)	NPV Renewals per ET + NPV Standards per ET	2,136
(2)	Capital Charge - {[N/(N-F)] * [Capital Charge - NPV Renewals per ET - NPV Standards per ET - Net Debt per ET]}	0

Where:

Capital Charge =	Varies for each DSP area
N - Present ETs =	14,536
F - Capacity for future customers =	0
Net debt per ET	-7,926

Developer Charge Calculation

Reduction Amount is therefore $2,136 say **$2,140**

Note: The value for inflation from the 2010/11 to 2010/11 of 3.00% is based on the recorded CPI increase of 3.0% in the year to December 2011 (1.0300=1.03).

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