

Development Servicing Plan 2016

Hoxton Park Recycled Water System

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Executive Summary

Hoxton Park recycled water system developer charge

This Development Servicing Plan (DSP) is for Recycled Water Developer Services in the Hoxton Park recycled water supply scheme service area. It has been prepared in accordance with the Independent Pricing and Regulatory Tribunal's (IPART) *Recycled Water Developer Charges, Determination No 8, 2006* (the 2006 Determination).

In previous DSPs Sydney Water levied non-residential developer charges based on the area of the development. In 2008, Sydney Water changed this approach to offer developers the option of having developer charges calculated on the basis of projected flows for non-residential development.

In this DSP, all non-residential development will be charged on a flows basis only. This approach will also be applied to multi-residential properties. A detached or semi-detached single residential dwelling will be charged as one Equivalent Tenement (ET) in line with the 2006 Determination.

Using the methodology in the 2006 Determination, the developer charge for the Hoxton Park recycled water system is \$10,403 (\$2016–17) dollars per ET. However, Sydney Water does not believe that this rate supports the supply of new, affordable homes in western Sydney, as it is not a reasonable equivalent to the lowest cost to the community to meet BASIX. We have approval from the NSW Treasurer to set a price below the maximum price determined by the 2006 Determination, in accordance with section 18(2) of the *Independent Pricing and Regulatory Tribunal Act 1992* (the IPART Act).

From this, Sydney Water has set the developer charge for the Hoxton Park recycled water system at **\$7,428** in 2016-17 dollars per ET. We consider this to be equivalent to the provision of a rainwater tank to meet BASIX. Table 1 below provides the developer charge for different development types including multi-unit residential and non-residential development.

The final charge will be subject to an annual adjustment in line with movements in the Consumer Price Index. The quantum of each adjustment is determined by IPART. The first adjustment will take effect from 1 July 2017.

Table 1 - Developer charges for different development types

Capped Developer Charge (\$ 2016-17)		
Development	Density	Charge \$/dwelling
Residential (dwellings per pure net hectare ¹)	0 – 20	\$7,428
	21 – 35	\$5,646
	36 – 50	\$3,788
	51 – 65	\$3,120
	66 – 81	\$2,674
	82 – 95	\$2,525
	96 – 125	\$2,228
	126 – 155	\$2,006
	> 155	\$1,634
Non-Residential	\$7,428 /ET based on assessed flows	

¹ The per pure net hectare is the actual size of a development site taking into account land use considerations such as:

- Battleaxe handle where the handle forms part of the allotment (excluded if it is a right of way)
- Car parking and landscaping
- Dedicated public reserve areas are generally excluded. However, unless recycled water services are required for irrigation or amenities block etc then it is charged on a flow basis
- Drainage easements are excluded on the basis that the land is sterile. If piped, and land is usable, then it is included in the area calculation
- Environmentally constrained land (flood prone/land slip/foreshore protection/heritage/riparian zones) is excluded unless development is permitted (such as a dwelling), in which case it may be appropriate to include the building envelope area
- Land affected by transmission line easements is generally excluded unless the land has the ability to draw a recycled water demand (eg irrigation for landscaping, wash down for trucks etc)
- Generally excludes public open space and roads etc.

1 Development Servicing Plan methodology

Part 1 of this Development Servicing Plan (DSP) outlines the regulation of developer charges and explains the way in which charges are calculated.

1.1 Introduction

1.1.1 Developer charges and Development Servicing Plans

The *Sydney Water Act 1994* (the Sydney Water Act) allows the Sydney Water Corporation (Sydney Water) to levy charges on developments that will make use of the services it provides. These developer charges are a means by which Sydney Water can recover the cost of providing infrastructure to service urban development. The information used to calculate developer charges is set out in a DSP.

Sydney Water levies developer charges for recycled water services in accordance with the Independent Pricing and Regulatory Tribunal of NSW's (IPART) *Recycled Water Developer Charges, Determination No. 8, 2006* (the 2006 Determination).

1.1.2 Regulation of developer charges

IPART is an independent authority that regulates the pricing of declared government monopoly services. This includes determining the method for fixing a maximum price for developer services for recycled water schemes.

IPART's regulation of DSPs and developer charges for recycled water schemes is detailed in the 2006 Determination. In this determination, IPART specifies the methodology to be applied by Sydney Water when preparing recycled water developer charges. For the purposes of a full and transparent preparation of the Hoxton Park recycled water developer charge, Sydney Water has prepared this document in accordance with the 2006 Determination.

However, Sydney Water has approval from the NSW Treasurer to set a price below the maximum price determined by the 2006 Determination, in accordance with section 18(2) of the *Independent Pricing and Regulatory Tribunal Act 1992* (the IPART Act).

While IPART does not set the recycled usage charges for the Hoxton Park scheme, it has endorsed that our prices are reasonable. The recycled water usage charge and the drinking water charge used in this review are those contained in the *Sydney Water Corporation - Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016, Determination No. 5, 2016*, (the 2016 Determination). There is no recycled water service charge for the Hoxton Park scheme.

1.1.3 Payment of a recycled water developer charge

As a condition of development consent, the consent authority (usually council) requires a developer to make satisfactory arrangements with Sydney Water for the provision of water related services to a new development. To identify the necessary arrangements, a developer must submit to Sydney Water an application for a Section 73 Compliance Certificate.

Upon receiving the application for a Compliance Certificate, Sydney Water investigates the impact that a proposed development is likely to have on its systems. Sydney Water then issues a Notice of Requirements under s74 of the Sydney Water Act. This sets out the conditions that a developer must satisfy before Sydney Water issues a Section 73 Compliance Certificate. For areas with recycled water services, the Notice of Requirements will include the developer charges payable and/or works that a developer must construct before the services are made available.

1.1.4 Dispute resolution

A developer who is dissatisfied with the way in which Sydney Water has applied IPART's methodology may lodge a complaint with Sydney Water. Following a review by Sydney Water, if a developer is still dissatisfied it may request that the matter be reviewed by way of arbitration. An arbitrator is to be appointed by agreement between the developer and Sydney Water and the costs of the arbitration are to be borne equally.

The dispute process is set out in section 31 of the IPART Act. The first step in this process is to notify Sydney Water of the complaint.

1.1.5 Disclaimer

This DSP and the developer charge it contains has been prepared by Sydney Water to meet the requirements of the 2006 Determination and have been prepared using the latest available information.

1.2 Regulation - principles and calculation method

1.2.1 Principles of the regulation

In the 2006 Determination, IPART set a methodology for fixing the maximum price of recycled water developer charges. The principles underlying the methodology are that developer charges should:

- enable the full recovery of relevant costs
- reflect variations in the costs of servicing different developments
- result in new development areas meeting the costs of the services provided
- cover only infrastructure expenditures on recycled water assets that can be clearly linked to development.

In order to support development in western Sydney, Sydney Water has approval from the NSW Treasurer to set a price below that determined using the 2006 Determination, in accordance with s18(2) of the IPART Act.

1.2.2 The 2006 Determination

The 2006 Determination requires developer charges to be calculated for one Equivalent Tenement (ET) of development by applying Net Present Value (NPV) principles. IPART defines an ET as the recycled water consumption of an average residential dwelling. Sydney Water has taken this definition to mean the average water consumption by a freestanding or semi-detached residential property.

A developer charge is calculated by:

- taking the present value of the capital costs of the assets used to service the DSP area
- deducting the present value of the future net operating result expected to be incurred by providing the services to the DSP area
- deducting the present value of the cost offsets associated with the recycled water scheme
- dividing by the present value of the number of the benefiting ETs in the DSP area.

IPART's formula for calculating developer charges is shown below.

$$\text{RWDC} = \frac{K_1}{L} + \frac{K_2}{L} - \frac{\text{NPV} (R_i - C_i)}{L} - \frac{PV(CO_i)}{L} \text{ for } i = \text{years } 1, 2, \dots, n$$

Where:

RWDC - Recycled Water Developer Charge per Equivalent Tenement

K₁ - Capital Charge for Pre 2007 Assets which will serve the DSP Area calculated on a NPV basis discounted at rate *r*

K₂ - Capital Charge for Post 2007 Commissioned Assets and/or Post 2007 Uncommissioned Assets which will serve the DSP Area calculated on an NPV basis discounted at rate *r*

L - the Present Value of the number of Equivalent Tenements in the DSP Area and the Present Value of the number of Equivalent Tenements to be developed in the DSP Area, calculated at discount rate *r*

R_i - future Operating Revenues in each year *i*

C_i - future Operating Costs in each year *i*

r - the Discount Rate

n - the forecast period for the assessment of expected revenues and costs and is 30 years from the date of calculating the RWDC

CO - cost offset in each year *i*, calculated as follows:

$$CO = S_i + AC_i + DC_i + GD$$

Where:

S - any subsidy received in each year *i* by a Water Agency for the provision of Recycled Water Developer Services to a Development

AC - Avoided Costs in each year *i*

DC - Deferred Costs in each year *i*

GD - costs associated with a Government Directive

1.2.3 Review of DSPs and developer charges

In accordance with the 2006 Determination, this DSP was placed on public exhibition for a period of 30 working days. Sydney Water considered and responded to submissions received during the public exhibition period. The DSP was then finalised and sent to IPART for registration. Sydney Water informed the Tribunal of its responses to submissions. Once registered, the DSP and developer charge can be reviewed once in each five-year period.

The final developer charge will be subject to an annual adjustment in line with movements in the Consumer Price Index. The quantum of each adjustment is determined by IPART. The first adjustment will take effect from 1 July 2017.

1.2.4 Preparation of DSPs

The 2006 Determination identifies the minimum level of information to be included in each DSP. The information requirements relate to the description of the DSP area, demographic and planning assumptions, the standards of service provided, descriptions of assets and the calculation of a developer charge.

1.3 Forecasting urban development rates

Developer charges are influenced by existing and forecast development that use up the capacity of assets, and the timing of future capital works to service growth. In addition, the operating revenue will vary over time based on periodic pricing determinations.

1.3.1 Existing development

Sydney Water has used its corporate billing and geographic information systems to determine the extent and type of existing development in the DSP area.

1.3.2 Forecasting residential development

As required by the 2006 Determination, Sydney Water has applied the latest Department of Planning and Environment information to forecast the population and residential development in the DSP area. This includes dwelling development, population and occupancy rate projections on a Local Government Area basis. Sydney Water also used the *Hoxton Park Recycled Water Scheme Review – Stage 1a Recycled Water Network Review Report* (ENSure, 2014) to determine future development.

1.3.3 Forecasting non-residential development

Commercial and industrial development forecasts have been based upon development trends in the DSP area over the last ten years. Forecast non-residential development has been limited to land currently zoned for commercial and industrial development in the Local Environment Plans of Liverpool and Campbelltown City Councils.

1.4 Forecasting system demand

1.4.1 Forecasting system demand

The growth forecasts for the Hoxton Park Recycled Water Scheme development area have been used to estimate future demand on the recycled water system. System design allowances have then been applied to identify infrastructure requirements to meet growth and to ensure standards of service are met. Demand has been expressed in terms of average day demand.

1.4.2 Defining an Equivalent Tenement

The 2006 Determination requires developer charges to be expressed in terms of an ET. IPART defines an ET as a measure of recycled water consumption for an average residential dwelling equal to 110 kL per year.

For the purpose of calculating developer charges it is assumed that an average residential dwelling is a single detached dwelling with a single 20 mm recycled water meter. As such, the design allowances for a single detached dwelling represent the demand of one ET.

All other residential development types are equated to a number of ET based upon the relative design allowances for that development type. For example, if the design allowance for a high density residential flat is half that of a single detached dwelling, then the flat is considered to be 0.5 ET. All demands are equated to an ET for the purpose of calculating a developer charge.

Non-residential properties including commercial and industrial developments and special uses such as schools and parks are equated to a number of ET based upon the relative design allowances for that development type. It is assumed for the DSP calculations that the commercial and industrial development demand is 912.5 kL per hectare per year (or 2.5 kL per hectare per day).

1.5 Determining relevant assets

In accordance with the 2006 Determination, the developer charge calculation includes all recycled water assets that Sydney Water has funded or will fund to provide services to new development.

1.5.1 Existing assets

Sydney Water's financial, developer and geographic information systems were used to identify works that have been constructed to provide a benefit to future development. The recycled water infrastructure includes:

- Headworks –the recycled water facilities at Glenfield water recycling plant
- Major works – include recycled water delivery pumping stations, drinking water top-up pumping stations, service reservoirs and large diameter recycled water distribution mains
- Distribution mains and lead-in mains which link developer areas to the existing system
- Reticulation mains which are required to deliver recycled water services within the Hoxton Park Recycled Water Scheme.

1.5.2 Future assets

The 2006 Determination allows Sydney Water to recover the cost of assets that are yet to be constructed and which are identified as being necessary to service future development.

Future recycled water infrastructure within the network is identified from the *Hoxton Park Recycled Water Scheme Review – Stage 1a Recycled Water Network Review Report* (ENSure, 2014).

Future recycled water infrastructure at the Glenfield water recycling plant was identified by the treatment plant operators.

1.5.3 Standards of service

The standards of service for supply of recycled water are set out in the Customer Contract in Sydney Water's Operating Licence. These standards may vary over time with the renewal of the Operating Licence.

The current Licence is effective from 1 July 2015 until 30 June 2020. It requires Sydney Water to ensure that the recycled water system and the recycled water supplied to customers comply with the *Australian Guidelines for Water Recycling 2006* as agreed by NSW Health.

1.6 Asset valuation

The 2006 Determination identifies the methods of asset valuation that are to be adopted in the calculation of developer charges. As the Glenfield water recycling plant is currently mothballed, the existing assets are categorised as “post 2007 assets yet to be commissioned” (in line with the 2006 Determination methodology) for valuation purposes.

Proposed assets are to be valued at estimated efficient costs.

1.6.1 Valuation of existing assets

The valuation of existing assets was calculated from actual capital expenditure obtained from Sydney Water's financial information system and indexed to 2016 dollars based on the historical construction index. This valuation method was adopted based on the assumption that the Hoxton Park Recycled Water Scheme is not yet commissioned (ie “post 2007 assets yet to be commissioned”) in line with the 2006 IPART Determination methodology.

1.6.2 Valuation of future assets

Capital expenditure for future works included in the calculation of developer charges has been based on Sydney Water's Cost Estimating Tool, and where applicable from recently completed projects.

1.7 Operating result

The operating result equals the operating revenue from future development less the operating and maintenance costs associated with servicing this development. As required by the 2006 Determination, the forecast operating result is based on the expected urban development in the recycled water DSP area over the next thirty years.

1.7.1 Revenue

The operating revenue forecasts for the 2016-2020 price path are based upon the 2016 Determination for drinking water and recycled water pricing for Rouse Hill Recycled Water scheme. While IPART did not determine prices for Hoxton Park in the 2016 Determination, in its *Sydney Water Corporation - Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016 - Final report* (page 216) IPART states that it considers that Sydney Water's price of \$1.77 per kL (\$2015-16) for the scheme is reasonable.

Beyond the price path, the current service and usage charges have been assumed to remain constant in real terms. That is, the charges only change by the inflation rate. The operating revenues are based on average usage of 110kL per year by a single detached dwelling as required in the 2006 Determination.

1.7.2 Operating and maintenance costs

The future operating and maintenance costs for the Hoxton Park Recycled Water Scheme are based on actual and estimated costs for Hoxton Park Systems (2015 costs). The method of calculating costs identifies:

- the processes and activities required to produce the recycled water (eg treatment, distribution)
- the cost driver for each process/activity (eg electricity, chemicals)
- fixed or variable (cost per kilolitre) costs for each process/activity.

Many operating and maintenance cost components are constant and do not vary with throughput. Some operating cost components (energy and chemical use) are variable and depend on throughput. Volume dependent components (energy and chemical consumption) of the operating costs are based on actual 2014–15 costs.

Future operating and maintenance costs assume that the plant is commissioned in 2019. Total operating costs for the recycled water schemes are forecast to increase in line with development forecasts and an assumed usage of 110 kL per ET.

Costs incurred to date at the Glenfield Water Recycling Plant during the process proving period and subsequent treatment plant mothballing in 2014 have also been included in the calculations. Replacement costs for the recycled water infrastructure such as pumps, mixers, diffusers and meters have been based on similar costs across the Sydney Water network. The average lifetime of each element has also been factored into the calculations.

1.8 Cost offsets (avoided costs)

The 2006 Determination established a framework for recycled water charges that includes consideration of avoided or deferred costs. IPART defines an avoided cost as the expected change in the present value of a water agency's operating costs and capital expenditure resulting from the permanent deferral of water or sewerage system augmentation². In other words, cost savings made in water and wastewater systems due to the provision of recycled water services can be deducted or offset against recycled water developer charges. These avoided costs are then recoverable under general water or wastewater pricing.

No avoided costs were included in the calculations for the Hoxton Park Recycled Water Scheme as none were applicable to the scheme.

² IPART Report Nos 8 and 9, 2006, *Appendix C Guideline for the Calculation and Treatment of avoided and Deferred Costs of Recycled Water*

2 Hoxton Park Recycled Water Scheme

This section provides information about the area served by the Hoxton Park Recycled Water Scheme and the infrastructure included in this DSP. The development and demand rates used in the calculation of the developer charge are also detailed.

2.1 Hoxton Park recycled water DSP

2.1.1 History of the Hoxton Park recycled water supply scheme

In 2003, The NSW Government announced that all new residential developments from July 2004 must achieve drinking water savings of at least 40 percent. The Hoxton Park recycled water scheme was also specifically identified in the 2004, 2006 and 2010 *Metropolitan Water Plans* as a scheme to enable the achievement of significant drinking water savings in new release areas. In response to this, Sydney Water engaged consultants to investigate options to minimise drinking water demand in the future urban release area of Edmondson Park. Their report concluded that dual reticulation via a recycled water scheme was the preferred option for Edmondson Park. Sydney Water commenced construction of the scheme based on the rate of growth forecasted by the Department of Planning and Environment.

The Hoxton Park Recycled Water Scheme services an area of 960 ha and is located to the south west of Sydney, within Liverpool and Campbelltown Local Government Areas. Sydney Water approved the recycled water scheme in March 2006.

In April 2013, Sydney Water approved a revised Hoxton Park Recycled Water Scheme Stage 1a service area to limit the supply of recycled water to approximately 9,200 dwellings, rather than 14,000 dwellings as per the previous 2010 approval. The Hoxton Park Recycled Water Scheme – Stage 1a service area is predominantly residential with some industrial and commercial development. The area includes a number of development sites including Elizabeth Hills and Middleton Grange to the north, and Panorama Estate (Glenfield Road) and Edmondson Park to the south. The Stage 1a service area is shown in Figure 2-1(see Section 2.4).

In 2015, the dwelling projection was subsequently increased to 11,957 dwellings (by 2024) due to increased dwelling yields in the Edmondson Park, Freemans Reach and Middleton Grange developments. The majority of the increase is due to occur at the Edmondson Park town centre with high rise apartments proposed.

Currently, there are over 4,800 lots developed with approximately 3,430 dwellings with recycled water connections. Of these, approximately 25 percent (at Ingleburn Gardens and Glenfield Road) are supplied drinking water from the Minto water supply zone via WP0416 and Edmondson Park RS0473. The recycled water reticulation for the remaining customers is currently cross connected to local drinking water supplies. These areas will be progressively connected over the next few years as the recycled water trunk mains and lead-in mains are completed.

The Hoxton Park scheme requires a minimum of 6,500 connections to be operational. Since the scheme was built, the population growth in the area was slower than forecast. By

mid-2015 3,000 homes had connected to the system. Due to this lower than expected level of demand, Sydney Water is unable to meet the requirements of the *Australian Guidelines for Water Recycling*. Rather than providing recycled water, customers have been receiving drinking water (at recycled water prices), which meets the required standards.

Once the required demand of 1ML per day is achieved and the scheme can meet the AGWR we will commission the plant. This is anticipated to be in approximately 2019.

When operational, the Hoxton Park Recycled Water Scheme will be supplied from the Glenfield Recycled Water Treatment Plant. Recycled water will be pumped via RP0366 to Edmondson Park Recycled Reservoir RS0473.

Drinking water top-up is provided to RS0473 from the Minto water supply zone via pumping station WP0416. A future water pumping station will provide top-up drinking water during peak demand periods from the Cecil Park water supply zone directly to the Elizabeth Hills precinct at the northern end of the servicing area. Future recycled water infrastructure is shown in Figure 2-2. Boundaries

The areas identified in the revised Hoxton Park Recycled Water Scheme Stage 1a service area defines the boundary of the Hoxton Park Recycled Water DSP. This includes the Elizabeth Hills and Len Waters Industrial Estate, Middleton Grange and Park Bridge Estate, Freemans Ridge, Yarrunga, Panorama Estate, Ingleburn Gardens, and areas of the new releases at Edmondson Park. The Stage 1a service area is shown in Figure 2-1 (see Section 2.4).

2.1.2 Recycled water infrastructure

The recycled water infrastructure includes:

- Headworks – such as the recycled water facilities at Glenfield Wastewater Treatment Plant
- Major works – include recycled water delivery pumping stations, drinking water top-up pumping stations, elevated service reservoirs and large diameter recycled water distribution mains
- Lead-in works which link developer areas to the existing system
- Reticulation mains which are required to deliver recycled water services within the Hoxton Park Recycled water dual reticulation area.

The water recycling plant and recycled water pumping station are located at the Glenfield Wastewater Treatment Plant (ST0023). Tertiary treated effluent from ST0023 will receive further treatment before being pumped via the dedicated DN450 delivery main from the Glenfield recycled water pumping station RP0366 to the recycled water elevated reservoir at Edmondson Park RS0473.

The Edmondson Park reservoir RS0473 services the entire recycled water network under average day demand conditions. Under maximum hour demand conditions, a future booster pumping station will supply part of the northern area of the recycled water network from the Cecil Park water supply zone.

When demand for recycled water during peak periods exceeds supply, the recycled water elevated reservoir RS0473 will be topped up with drinking water from the Minto water

supply zone via the Denham Court drinking water pumping station WP0416. This top-up arrangement will also provide a back-up function in case of failure of the Glenfield water recycling plant or the recycled water pumping station RP0366.

2.2 Development rates and demand rates

Table 2-1 details the actual and forecast development within the Hoxton Park Recycled Water System based on residential dwellings and non-residential area (hectares). These rates are based on the method outlined in Section 1.3.

Table 2-1 - Development rates - Hoxton Park Recycled Water System

Financial Year	Single Residential Dwellings	Multi Residential Dwellings	Non-Residential ha
2005-06	16	0	0
2006-07	105	0	0
2007-08	179	0	0
2008-09	176	0	1
2009-10	394	5	42
2010-11	541	32	56
2011-12	1,082	13	0
2012-13	1,191	32	6
2013-14	311	20	163
2014-15	737	47	35
2015-16	600	145	10
2016-17	583	250	10
2017-18	387	300	12
2018-19	275	750	11
2019-20	600	950	9
2020-21	650	800	5
2021-22	497	289	2
2022-23	0	0	2
2023-24	0	0	0
2024-25	0	0	0
2025-26	0	0	0
2026-27	0	0	0
2027-28	0	0	0
2028-29	0	0	0
2029-30	0	0	0

Table 2-2 details the actual and forecast demand within the Hoxton Park Recycled Water System based on ETs. These rates are based on the method outlined in Section 1.4.

Table 2-2 - Demand rates (average ET) - Hoxton Park Recycled Water System

Financial Year	Single Residential Growth ET	Multi Residential Growth ET	Non-Residential Growth ET
2005-06	16	0	0
2006-07	105	0	0
2007-08	179	0	0
2008-09	176	0	1
2009-10	394	3	42
2010-11	541	20	56
2011-12	1,082	8	0
2012-13	1,191	20	6
2013-14	311	13	163
2014-15	737	30	35
2015-16	600	91	85
2016-17	583	157	83
2017-18	387	188	100
2018-19	275	470	91
2019-20	600	596	75
2020-21	650	502	37
2021-22	497	181	17
2022-23	0	0	17
2023-24	0	0	0
2024-25	0	0	0
2025-26	0	0	0
2026-27	0	0	0
2027-28	0	0	0
2028-29	0	0	0
2029-30	0	0	0

2.3 Assets

The assets included in the calculation of the Hoxton Park Recycled Water DSP have been identified and valued in accordance with the method described in Section 1.5 and Section 1.6. The assets are provided in Table 2-3 to Table 2-7.

2.3.1 Existing assets

The majority of the Hoxton Park Recycled Water Scheme trunk infrastructure has been constructed. However, the Glenfield Water Recycling Plant is currently mothballed and will be commissioned when recycled water demand exceeds 1.0 ML per day, which is anticipated to be in approximately 2019.

Existing trunk infrastructure of the Hoxton Park Recycled Water Scheme includes:

- Glenfield water recycling plant (WRP)
- Recycled water pumping station RP0366
- Edmondson Park recycled reservoir RS0473
- Recycled water inlet main to RS0473 (8 km x DN450)
- Recycled water outlet mains (20 km x DN600-DN200)
- Drinking water top-up pumping station WP0416
- Drinking water top-up water main (2 km x DN375)

Existing assets included in the developer charge are detailed in Table 2-3 to Table 2-7.

2.3.2 Future assets

Planned future assets included in the developer charge are detailed in Table 2-3 to Table 2-7. The proposed timing of commissioning of future assets is also identified in the tables.

Future recycled water infrastructure includes a drinking water booster pumping station to be located at the Elizabeth Hills and commissioned by 2019.

Table 2-3 - Recycled water gravity pipelines

Financial Year proposed	Description	Purpose	Length (m)	Diameter (mm)	Modern Material	% Growth	Value in DSP (\$2015-16)
2008-09	Trunk Mains	Trunk Mains for Parkbridge Estate	389	300	uPVC	100%	\$350,321
2008-09	Trunk Mains	Trunk Mains for Parkbridge Estate	545	300	uPVC	100%	\$499,872
2009-10	Reticulation	Reticulation for Yarrunga	661	200/250	mPVC	100%	\$484,925
2008-09	Trunk Mains	Trunk Mains for Yarrunga	3	250	DICL	100%	\$2,240
2009-10	Reticulation	Trunk Mains for Yarrunga	696	250	oPVC	100%	\$560,923
2009-10	Trunk Mains	Trunk Mains for Middleton Grange	30	250	oPVC	100%	\$23,326
2010-11	Reticulation	Reticulation for Middleton Grange	74	200	Mpvc	100%	\$49,507
2012-13	Reticulation	Trunk Mains for Parkbridge Estate	368	250	uPVC	100%	\$297,429
2010-11	Reticulation	Trunk Mains for Parkbridge Estate	512	250	uPVC	100%	\$385,583
2013-14	Trunk Mains	Trunk Mains for Edmondson Park	286	300	oPVC	100%	\$246,628
2013-14	Trunk Mains	Trunk Mains for Edmondson Park	340	300	oPVC	100%	\$287,475
2013-14	Reticulation	Reticulation for Freemans Ridge	142	200	uPVC	100%	\$92,660
2013-14	Reticulation	Reticulation for Middleton Grange	47	200	HDPE	100%	\$30,703
2014-15	Trunk Mains	Trunk Mains for Elizabeth Hills	144	200/250	oPVC	100%	\$97,625
2012-13	Trunk Mains	Trunk Mains for Middleton Grange	530	250/300	oPVC	100%	\$432,137

Financial Year proposed	Description	Purpose	Length (m)	Diameter (mm)	Modern Material	% Growth	Value in DSP (\$2015-16)
2014-15	Reticulation	Reticulation for Freemans Ridge	71	200	uPVC	100%	\$44,512
2013-14	Trunk Mains	Trunk Mains for Freemans Ridge	41	300	DICL	100%	\$39,845
2012-13	Pressure Reducing Valve 1 Edmondson Park	Provide differential pressure between the recycled and potable water network	5	600	DICL	100%	\$822,563
2012-13	Pressure Reducing Valve 2 Panorama	Provide differential pressure between the recycled and potable water network	5	250	DICL	100%	\$246,769
2012-13	Pressure Reducing Valve 3 Yarrunga	Provide differential pressure between the recycled and potable water network	5	150	DICL	100%	\$219,350
2012-13	Allowance for Pipeline Easements	Pipeline Easements				100%	\$43,303
2008-09	Trunk Mains	Trunk Mains for Middleton Grange	3603	250/300/375	DICL	100%	\$3,151,807
2008-09	Trunk Mains	Trunk mains from Ingleburn Gardens to Panorama Estatae	2664	200/250/300 0/375	DICL	100%	\$3,098,248
2008-09	Trunk Mains	Trunk Mains from Edmondson Park to Yarrunga	1,246	450/500	DICL	100%	\$2,211,401
2008-09	Scour Pump	Provide scour pump outlet	24	300	DICL	100%	\$21,701
2008-09	Trunk Mains	Trunk Mains for Freemans Ridge	781	300/375	oPVC	100%	\$762,658
2008-09	Trunk Mains	Trunk Mains from Edmondson Park to Yarrunga	1,408	450/500	DICL	100%	\$2155392
2008-09	Trunk Mains	Trunk Mains from Yarrunga to Freemans Ridge	1,608	250/375/450 /500	DICL	100%	\$2482665

Financial Year proposed	Description	Purpose	Length (m)	Diameter (mm)	Modern Material	% Growth	Value in DSP (\$2015-16)
2009-10	Trunk Mains	Trunk Mains and Infrastructure from Edmondson Park RW Reservoir	915	600	DICL	100%	\$2,309,124
2009-10	Trunk Mains	Trunk Mains from Edmondson Park to Ingleburn Gardens	111	375	SCL	100%	\$188,776
2011-12	Trunk Mains	Trunk Mains for Middleton Grange	225	200/250	oPVC	100%	\$163,814
2011-12	Reticulation	Reticulation for Middleton Grange	251	200/250	oPVC	100%	\$168,320
2009-10	Trunk Mains	Trunk Mains from Ingleburn Gardens to Panorama Estate	130	375	SCL	100%	\$221,115
2011-12	Trunk Mains	Trunk Mains for Yarrunga	104	200/250	DICL	100%	\$76,376
2012-13	Trunk Mains	Trunk Mains from Edmondson Park to Yarrunga	1,513	375/600	DICL/SCL	100%	\$3,805,889
2012-13	Trunk Mains	Trunk Mains and Infrastructure from Edmondson Park RW Reservoir	58	600	DICL/SCL	100%	\$142,015
2014-15	Margaret Dawson Drive, Freemans Ridge	Provide missing infrastructure links	6	150	PVC	100%	\$2,940
2014-15	Benera Road, Yarrunga	Provide missing infrastructure links	41	250	PVC	100%	\$31,581
2014-15	Flynn Ave, Middleton Grange	Provide missing infrastructure links	63	150	PVC	100%	\$30,867
2015-16	Near Cowpasture Road, Freemans Ridge to Middleton Grange	Provide missing infrastructure links	51	300	PVC	100%	\$45,947
2016-43	Meter replacements, automatic flushing	Reticulation network	N/A	N/A	N/A	100%	\$1,317,600

Table 2-4 - Recycled water pressure pipelines

Financial Year proposed	Description	Purpose	Length (m)	Diameter (mm)	Modern Material	% Growth	Value in DSP (\$2015-16)
2012-13	Dedicated drinking water top-up main	Provide drinking water top-up/back up to the Hoxton Park Recycled Water Scheme at Edmondson Park reservoir site.	2,000	375	DICL	100%	\$2,039,405
2008-09	Outlet Mains	Transfer recycled water from Glenfield RW Treatment Plant to Edmondson Park Recycled Reservoirs	6,017	450	DICL/SCL	100%	\$10,372,975
2009-10	Outlet Mains	Transfer recycled water from Glenfield RW Treatment Plant to Edmondson Park Recycled Reservoirs	1,511	450	DICL/SCL	100%	\$2,540,895
2012-13	Outlet Mains	Transfer recycled water from Glenfield RW Treatment Plant to Edmondson Park Recycled Reservoirs	72	450	DICL	100%	\$99,796
2012-13	Outlet Mains	Transfer recycled water from Glenfield RW Treatment Plant to Edmondson Park Recycled Reservoirs	194	450/500	SCL/DICL	100%	\$312,071

Table 2-5 - Recycled water treatment plant works

Financial Year proposed	Description	Purpose	Type	Size (ML)	% Growth	Value in DSP (\$2015-16)
2012-13	Glenfield recycled water treatment plant	Supply Recycled Water to Hoxton Park Recycled Water Scheme	IDAL	4	100%	\$30,116,926
2014-15	Glenfield recycled water treatment plant	Mothballing			100%	\$35,875
2015-16	Glenfield recycled water treatment plant	Mothballing			100%	65,000
2016-17	Planning Study	Planning Study to optimise modification works			100%	700,000
2018-19	Glenfield recycled water treatment plant	Commissioning			100%	750,000
2017-18	Glenfield recycled water treatment plant	Plant Re-configuration to meet AGWR			100%	865,000
2018-19	Glenfield recycled water treatment plant	Plant Re-configuration to meet AGWR			100%	3,500,000
2025-26	Glenfield recycled water treatment plant	Renew EB mixer and UPS (every 7 years)			100%	58,000
2028-29	Glenfield recycled water treatment plant	Renew DSPS pumps and SEPS pumps and Filter overhaul (every 10 years)			100%	485,000
2030-31	Glenfield recycled water treatment plant	Renew Diffusers (every 12 years)			100%	400,000
2032-33	Glenfield recycled water treatment plant	Renew EB mixer and UPS (every 7 years)			100%	58,000
2033-34	Glenfield recycled water treatment plant	Renew RP366 pumps			100%	150,000
2038-39	Glenfield recycled water treatment plant	Renew DSPS pumps and SEPS pumps and Filter overhaul and Blowers			100%	785,000
2039-40	Glenfield recycled water treatment plant	Renew EB mixer and UPS (every 7 years)			100%	58,000
2042-43	Glenfield recycled water treatment plant	Renew Diffusers (every 12 years)			100%	400,000

Table 2-6 - Recycled water pumping stations

Financial Year proposed	Description	Purpose	Power (kW)	Flows (L/s)	Head (m)	% Growth	Value in DSP (\$2015-16)
2012-13	Glenfield recycled water pumping station RP0366	Supply recycled water from Glenfield Recycled water treatment plant to Edmondson Park Recycled Reservoir	96	58	92	100%	\$1,532,630
2012-13	Edmondson Park recycled water pumping station WP0416	Provide Drinking Water Top-Up to the Hoxton Park Recycled Water Scheme	103	174	34	100%	\$4,425,670
2012-13	Allowance for Pumping Station Land Acquisition WP0416	Pumping Station Land Acquisition				100%	\$68,000
2018-19	Elizabeth Hills recycled water pumping station	Provide Drinking Water Top-Up during peak demand periods for Elizabeth Hills	84	80	65	100%	1,826,836
2018-19	Allowance for Pumping Station Land Acquisition	Pumping Station Land Acquisition				100%	20,360
2027-28	Edmondson Park recycled water pumping station WP0416	Replacement of pumps (every 15 years)				100%	150,000
2033-34	Elizabeth Hills recycled water pumping station	Replacement of pumps (every 15 years)				100%	100,000
2042-43	Edmondson Park recycled water pumping station WP0416	Replacement of pumps (every 15 years)				100%	150,000

Table 2-7 - Recycled water reservoirs

Financial Year proposed	Description	Purpose	Type	Size (ML)	% Growth	Value in DSP (\$2015-16)
2014-15	Edmondson Park Elevated Recycled Reservoir RS0473	Provide a gravity supply to the Edmondson Park Elevated Zone	Elevated	2	100%	\$16,077,113
2014-15	Edmondson Park Elevated Recycled Reservoir RS0473	Reservoir Land Acquisition			100%	\$1,290,252
2014-15	Edmondson Park Elevated Recycled Reservoir RS0473	RX0006 Chemical Dosing Unit			100%	\$2,056,503
2033-34	Edmondson Park Elevated Recycled Reservoir RS0473	RX0006 Chemical Dosing Unit Overhaul (every 15 years)			100%	100,000

2.4 Plan of the network system

The following figures shows the area covered by the Hoxton Park Recycled Water DSP and the works that service this area or are planned to meet future development.

Figure 2-1 - Recycled water infrastructure

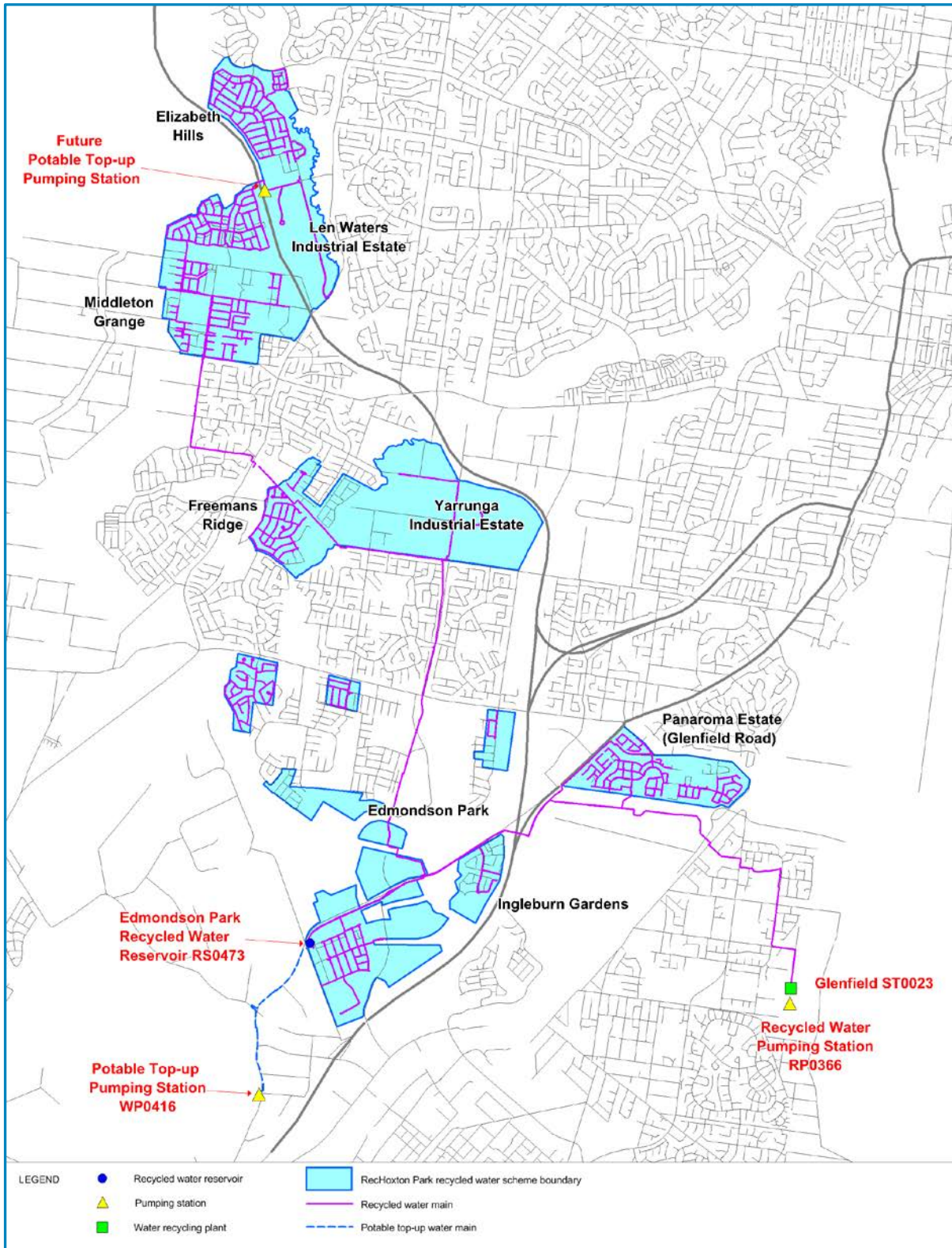
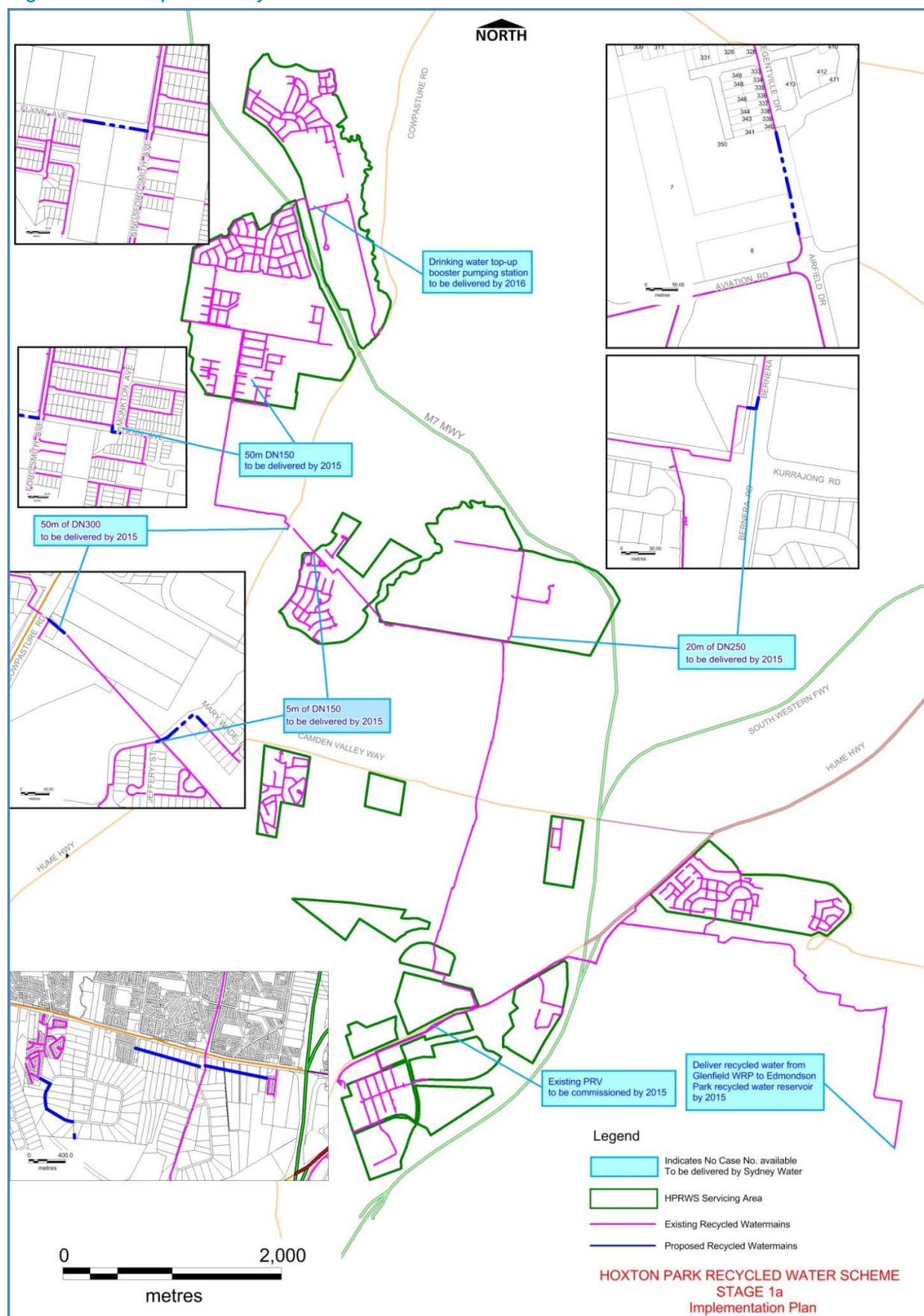


Figure 2-2 - Proposed recycled water infrastructure



Source: Hoxton Park Recycled Water Scheme Review – Stage 1a (ENSure, 2014)

3 Developer charge calculation

3.1 Key assumptions and inputs

This section sets out key assumptions in the calculation of developer charge and financial inputs including capital expenditure and future operating expenditure and revenues.

Table 3-1 - Inputs to the developer charge calculation model

Recycled Water Scheme		Hoxton Park
Present Year for Evaluation		2015-16
Real Pre-tax Rate of Return		5.9%
Recycled Water Charges		
	2015-16	2016-17
Service Charge (20mm, \$/year)	0	0
Usage Charge (\$2015-16/kL)	1.82	1.77
Recycled Water Average Consumption		
ET Consumption (kL/year)		110
Multi Residential (kL/dwelling/year)		69
Non Residential (per dwelling)		913

Table 3-2 - Annual capital expenditure and capital charge

Financial Year	CAPEX (Constant, \$2015-16)	Current Value or Present Value of CAPEX
2007-08	\$0	\$0
2008-09	\$24,952,710	\$37,272,579
2009-10	\$6,329,085	\$8,927,229
2010-11	\$435,090	\$579,507
2011-12	\$408,510	\$513,791
2012-13	\$44,603,953	\$52,973,812
2013-14	\$853,881	\$957,612
2014-15	\$19,667,267	\$20,827,636
2015-16	\$110,947	\$110,947
2016-17	\$1,000,000	\$944,287
2017-18	\$1,165,000	\$1,038,805
2018-19	\$6,097,196	\$5,133,840
2019-20	\$0	\$0
2020-21	\$0	\$0
2021-22	\$0	\$0
2022-23	\$0	\$0
2023-24	\$0	\$0
2024-25	\$0	\$0
2025-26	\$58,000	\$32,694
2026-27	\$0	\$0
2027-28	\$150,000	\$75,395
2028-29	\$485,000	\$230,194
2029-30	\$0	\$0
2030-31	\$400,000	\$169,286
2031-32	\$0	\$0
2032-33	\$58,000	\$21,888
2033-34	\$421,760	\$150,293
2034-35	\$71,760	\$24,147
2035-36	\$71,760	\$22,801
2036-37	\$71,760	\$21,531
2037-38	\$71,760	\$20,332
2038-39	\$856,760	\$229,220
2039-40	\$129,760	\$32,782
2040-41	\$71,760	\$17,119
2041-42	\$71,760	\$16,165
2042-43	\$621,760	\$132,261
2043-44	\$0	\$0
2044-45	\$0	\$0
Total	\$109,235,238	\$130,476,151

Table 3-3 - Forecast revenue

Financial Year	Usage Revenue (Constant \$2015-16)			Total Revenue (Constant \$2015-16)
	Single Residential	Multi-unit Residential	Non-Residential	
2015-16	\$765,942	\$11,033	\$77,838	\$854,813
2016-17	\$921,398	\$11,480	\$91,976	\$1,024,854
2017-18	\$1,038,218	\$35,906	\$111,357	\$1,185,482
2018-19	\$1,151,728	\$66,439	\$129,124	\$1,347,291
2019-20	\$1,227,077	\$103,078	\$143,660	\$1,473,815
2020-21	\$1,280,620	\$194,675	\$150,928	\$1,626,223
2021-22	\$1,397,440	\$310,699	\$154,158	\$1,862,297
2022-23	\$1,523,995	\$408,403	\$157,388	\$2,089,786
2023-24	\$1,620,761	\$443,698	\$157,388	\$2,221,847
2024-25	\$1,620,761	\$443,698	\$157,388	\$2,221,847
2025-26	\$1,620,761	\$443,698	\$157,388	\$2,221,847
2026-27	\$1,620,761	\$443,698	\$157,388	\$2,221,847
2027-28	\$1,620,761	\$443,698	\$157,388	\$2,221,847
2028-29	\$1,620,761	\$443,698	\$157,388	\$2,221,847
2029-30	\$1,620,761	\$443,698	\$157,388	\$2,221,847
2030-31	\$1,620,761	\$443,698	\$157,388	\$2,221,847
2031-32	\$1,620,761	\$443,698	\$157,388	\$2,221,847
2032-33	\$1,620,761	\$443,698	\$157,388	\$2,221,847
2033-34	\$1,620,761	\$443,698	\$157,388	\$2,221,847
2034-35	\$1,620,761	\$443,698	\$157,388	\$2,221,847
2035-36	\$1,620,761	\$443,698	\$157,388	\$2,221,847
2036-37	\$1,620,761	\$443,698	\$157,388	\$2,221,847
2037-38	\$1,620,761	\$443,698	\$157,388	\$2,221,847
2038-39	\$1,620,761	\$443,698	\$157,388	\$2,221,847
2039-40	\$1,620,761	\$443,698	\$157,388	\$2,221,847
2040-41	\$1,620,761	\$443,698	\$157,388	\$2,221,847
2041-42	\$1,620,761	\$443,698	\$157,388	\$2,221,847
2042-43	\$1,620,761	\$443,698	\$157,388	\$2,221,847
2043-44	\$1,620,761	\$443,698	\$157,388	\$2,221,847
2044-45	\$1,620,761	\$443,698	\$157,388	\$2,221,847
Total	\$44,963,155	\$10,903,075	\$4,478,974	\$60,345,203

Table 3-4 - Net operating result

Financial Year	Total Revenue	O & M Costs	Net Operating Result	Average ET Growth
2015-16	\$854,813	\$1,400,250	-\$545,438	766
2016-17	\$1,024,854	\$1,457,407	-\$432,553	823
2017-18	\$1,185,482	\$1,636,435	-\$450,953	675
2018-19	\$1,347,291	\$947,529	\$399,762	837
2019-20	\$1,473,815	\$911,094	\$562,721	1,271
2020-21	\$1,626,223	\$945,628	\$680,594	1,189
2021-22	\$1,862,297	\$988,571	\$873,726	695
2022-23	\$2,089,786	\$1,026,304	\$1,063,482	17
2023-24	\$2,221,847	\$1,044,677	\$1,177,170	0
2024-25	\$2,221,847	\$1,044,677	\$1,177,170	0
2025-26	\$2,221,847	\$1,044,677	\$1,177,170	0
2026-27	\$2,221,847	\$1,044,677	\$1,177,170	0
2027-28	\$2,221,847	\$1,044,677	\$1,177,170	0
2028-29	\$2,221,847	\$1,044,677	\$1,177,170	0
2029-30	\$2,221,847	\$1,044,677	\$1,177,170	0
2030-31	\$2,221,847	\$1,044,677	\$1,177,170	0
2031-32	\$2,221,847	\$1,044,677	\$1,177,170	0
2032-33	\$2,221,847	\$1,044,677	\$1,177,170	0
2033-34	\$2,221,847	\$1,044,677	\$1,177,170	0
2034-35	\$2,221,847	\$1,044,677	\$1,177,170	0
2035-36	\$2,221,847	\$1,044,677	\$1,177,170	0
2036-37	\$2,221,847	\$1,044,677	\$1,177,170	0
2037-38	\$2,221,847	\$1,044,677	\$1,177,170	0
2038-39	\$2,221,847	\$1,044,677	\$1,177,170	0
2039-40	\$2,221,847	\$1,044,677	\$1,177,170	0
2040-41	\$2,221,847	\$1,044,677	\$1,177,170	0
2041-42	\$2,221,847	\$1,044,677	\$1,177,170	0
2042-43	\$2,221,847	\$1,044,677	\$1,177,170	0
2043-44	\$2,221,847	\$1,044,677	\$1,177,170	0
2044-45	\$2,221,847	\$1,044,677	\$1,177,170	0
Total	\$60,345,203	\$32,296,114	\$28,049,089	
Present Value			\$10,843,146	11,672
\$ per ET			\$929	

3.2 Developer charge

The following table details the components of the developer charge calculation.

Table 3-5 - Components of the developer charge

Constant Value \$Year	Capital Charge 1992-93 to 2014-15	Capital Charge 2015-16 to 2039-40	Net Operating Result	Avoided Costs	Developer Charge	Developer Charge \$(2016-17)
2015-16	\$10,475	\$722	\$929	\$0	\$10,249	\$10,403

While the above calculation shows a developer charge of \$10,403 per ET (\$2016–17), Sydney Water has made a decision to cap the developer charge at **\$7,428 per ET (\$2016–17)**, which is considered equivalent to the provision of a rainwater tank. We have approval from the NSW Treasurer to set the charge at this level, in accordance with section 18(2) of the IPART Act. Accordingly, the table below provides the developer charge for different development types including multi-unit residential and non-residential development.

Table 3-6 - Schedule of developer charges

Capped Developer Charge (\$ 2016-17)		
Development	Density	Charge \$/dwelling
Residential (dwellings per pure net hectare ³)	0 – 20	\$7,428
	21 – 35	\$5,646
	36 – 50	\$3,788
	51 – 65	\$3,120
	66 – 81	\$2,674
	82 – 95	\$2,525
	96 – 125	\$2,228
	126 – 155	\$2,006
	> 155	\$1,634
Non-Residential	\$7,428 /ET based on assessed flows	

³ The per pure net hectare is the actual size of a development site taking into account land use considerations such as:

- Battleaxe handle where the handle forms part of the allotment (excluded if it is a right of way)
- Car parking and landscaping
- Dedicated public reserve areas are generally excluded. However, unless recycled water services are required for irrigation or amenities block etc then it is charged on a flow basis
- Drainage easements are excluded on the basis that the land is sterile. If piped, and land is usable, then it is included in the area calculation
- Environmentally constrained land (flood prone/land slip/foreshore protection/heritage/riparian zones) is excluded unless development is permitted (such as a dwelling), in which case it may be appropriate to include the building envelope area
- Land affected by transmission line easements is generally excluded unless the land has the ability to draw a recycled water demand (eg irrigation for landscaping, wash down for trucks etc)
- Generally excludes public open space and roads etc.

