

Appendix A

Central Coast Water Supply Headworks Development Servicing Plan 2019

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Central Coast Council
Development Servicing Plan -Water Headworks 2019

Version 1.0
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1. Introduction

The purpose of this Development Servicing Plan (DSP) is to determine the headworks component of development charges applicable to the proposed new developments within the North and South regions of the Central Coast Council.

This plan has been prepared in accordance with the requirements of the Water Management Act 2000, using the methodology and parameters determined by the Independent Pricing and Regulatory Tribunal's Determination in October 2018 for Central Coast Council for levying maximum developer charges.

2. Area of the Plan

All lands contained within the Central Coast Council Local Government areas serviced by Water Supply headworks may be subject to this DSP. Local area DSPs where applicable will refer to this DSP for headworks component of developer charges.

3. Population and Equivalent Water Tenement Projection

Council has engaged *.id consulting* for its demographics analysis based on latest available Australian Bureau of Statistics (ABS) Census data. *.id* has provided population forecast figures for central coast council's North (former Wyong Shire Council LGA) and South (former Gosford City Council LGA) regions. *.id* has provided population projection up to 2036 only.

Further population projection from 2037 to 2050 is based on previous studies done for sewerage master plan of both North and South regions. The 2036 population has been linearly extrapolated at 1.39% and 0.4% annual growth rates respectively for the Northern and Southern Regions. A small fraction of population is not connected to council's water services therefore both North and South population have been suitably modified to calculate serviced population.

Tenement projection has been done based on 150KL/tenement average annual water demand as per directions from IPART. The water demand patterns of both North and South regions are slightly different to each other which may further depart in future because of higher scope of growth of BASIX (more water efficient) housing in the northern region than the south.

Table 1 below summarises serviced population projection for the North and South regions. The individually climate corrected demand of both regions (239.5 l/c/d for North and 230 l/c/d for South) has been used to forecast water demand for both regions which is further used for calculating total equivalent water tenements.

Table 1 Population and tenement Projection

Year	North Total Population	South Total Population	North Serviced Population	South Serviced Population	North Tenements	South Tenements	Total Tenement
30/6/2021	173,178	176,428	171,446	174,664	99,916	97,966	197,882
30/6/2026	187,806	180,345	185,928	178,542	108,356	100,141	208,497
30/6/2031	204,810	182,955	202,762	181,125	118,166	101,590	219,756
30/6/2036	221,707	186,176	219,490	184,314	127,915	103,379	231,294
30/6/2041	237,551	189,931	235,175	188,032	137,056	105,464	242,520
30/6/2046	254,526	193,761	251,981	191,823	146,850	107,590	254,440
30/6/2049	265,288	196,095	262,635	194,134	153,059	108,887	261,946
30/6/2050	268,976	196,879	266,286	194,910	155,187	109,322	264,509

4. Reference to Other Development Servicing Plans

The development charge for the headworks component determined by this DSP will be included in all applicable North and South region DSP charges.

5. Estimates of Capital and Operation Costs

The capital costs are taken as Gross Replacement Costs of each of the Joint Headworks Assets are as per: 12099 - JWS W&S Final Report 29.09.16 and Gosford-Wyong JWS Fair Value Estimates - Dams & Weirs Final Report 07.06.2016. Assets Costs are determined by using Modern Engineering Equivalent Replacement Asset (MEERA) approach. These costs are further indexed as per June 2019 Update - NSW Water Supply and Sewerage Construction Cost Indices of NSW Reference Rates Manual.

The annual value charges are calculated using 0% discount rate for pre-1996 assets and 4.9% discount rate (real pre-tax WACC as in the prevailing IPART price determination) for post-1996 assets as per IPART's final report on "*Maximum prices to connect, extend or upgrade a service for metropolitan water agencies October 2018.*"

Operating costs are not relevant to this DSP and are detailed in each Local Area DSP.

6. System Demand

Council has used iSDP (Integrated Supply Demand Model) for demand forecast. The iSDP model was first developed by the Institute for Sustainable Futures (ISF), part of the University of Technology Sydney, for Sydney Water Corporation (SWC) in the late 1990s to enable SWC to conduct a detailed water planning exercise. This included both the development of a detailed demand forecast and development of a broad range of demand management and supply options. The model was subsequently modified by SWC and later released in 2003 as the Water Services Association of Australia (WSAA) end use model (EUM). The tool, now

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known as the iSDP model, has been further developed by ISF and CSIRO, and applied to numerous cities across Australia. The model is currently used as a planning tool by various large water service providers. Hunter Water who is working closely with Central Coast Council for long term water resources planning is using iSDP model for water demand forecasting.

Council has used iSDP for water sales forecast for recent IPART Water Pricing submission/determination. The model assumptions have been suitably updated to use it forecasting long term water demand forecasting. The forecast demand is provided in the table below.

Table 2 Projected Water Demand for Central Coast Council

Year	Annual Average Demand ML/year	Average Day Demand ML/day	Peak Day Demand ML/day
30/6/2021	31,397	86	193
30/6/2026	32,829	90	202
30/6/2031	34,443	94	212
30/6/2036	36,194	99	223
30/6/2041	37,978	104	234
30/6/2046	39,900	109	246
30/6/2050	41,534	114	256

7. System Yield

The System Yield of 46,000 ML/year was adopted for the DSP in 2014. Since then council has reworked its system yield with combined system modelling with Hunter Water Corporation which has drastically reduced to 35,400ML/year. Council has also updated its Rainfall Runoff Model for Central Coast water catchments with latest SILO (Scientific Information for Land Owners, owned by Queensland Government) climate data using eSource platform. The rainfall runoff modelling has resulted in lower stream flows than predicted by the previous studies.

Council is currently in the process of building a joint WATHNET model with Hunter Water for system yield analysis but in the meantime the most relevant estimate of system yield (including Hunter Water connection contribution) is 35,400ML/year. While the current agreement with Hunter Water for inter-regional water sharing expires in 2026, it assumed for the purpose of this DSP that the provision for inter-regional water transfers will continue beyond 2026.

The predicted demand exceeds the above described system yield in 2034. A provision of Nominal Yield increase of 7,000 ML/year is proposed in future infrastructure works, enhancing the System Yield to 42,400ML/year

Total existing water treatment and distribution capacity provided for in the DSP is 300 ML/day which is sufficient to meet the peak day demand up to 2050.

The following graphs provide details of annual demand versus yield over time and peak day demand versus treatment capacity over time.

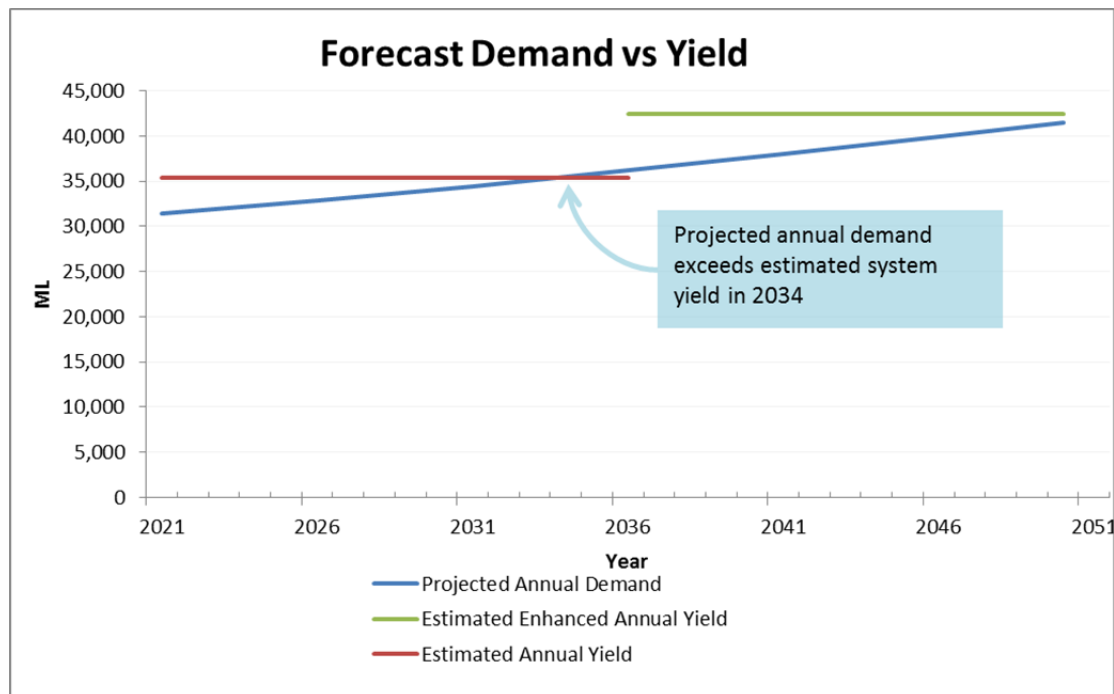


Figure 1 Forecast Demand versus System Yield

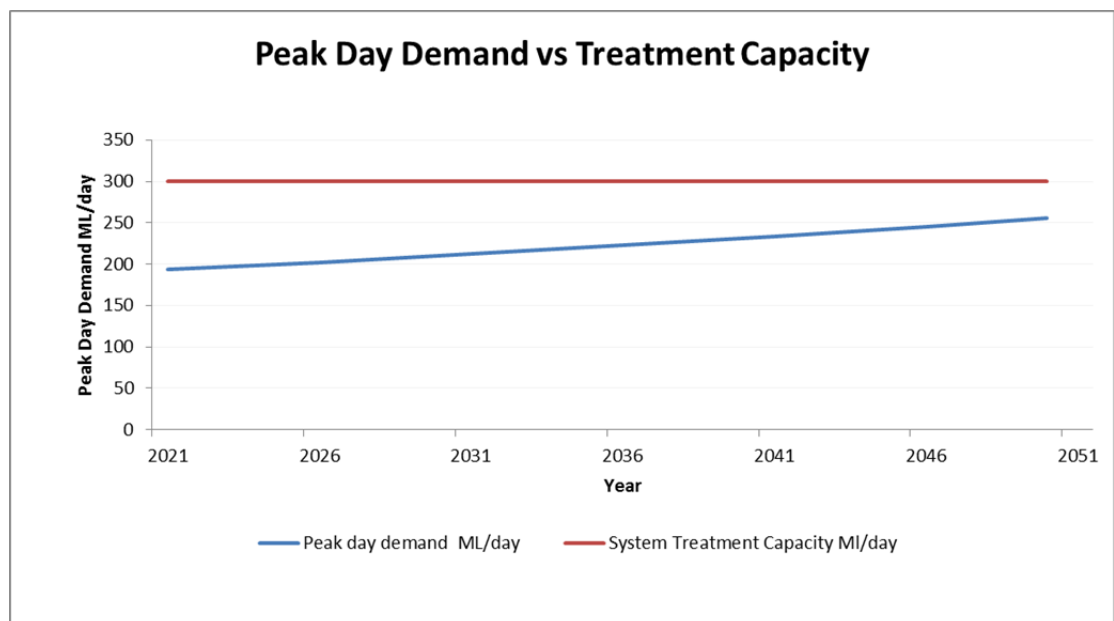


Figure 2 Theoretical Peak Day Demand versus Central Coast Water Treatment Capacity

8. Method of Reviewing/Updating Developer Charges

The Developer Charges determined in this DSP are incorporated in North and South Water DSPs developed by Central Coast Council. The value of charges payable under the Development Servicing Plan will be held constant in real terms for the life of the Plan by the adjustments specified within Local Area DSPs.

9. Calculation of Development Service Charges

The 2018 Calculation Template provided by IPART has been used to calculate maximum charges that can be levied for the headworks component of developer charges on new developments.

Headworks development service charges assessed on the basis of one equivalent tenement (ET) are determined as \$3,933/ET.

10. References

The following Reports provide the basis upon which the need and capacity of capital works have been assessed:

- i. PWD Report on Investigations for Water Supply to the Gosford – Wyong Region, January 1975.
- ii. PWD Report on Investigations for Water Supply to the Gosford – Wyong Region, July 1985.
- iii. WaterPlan 2050 with supporting documents
- iv. DPWS Report on Mardi Dam Condition Assessment of Intake Tower and Outlet Pipe August 2000.
- v. Gosford Wyong Water Supply Desalination Project Concept Design Report July 2005
- vi. Mangrove-Enlarge-Options-Report-Draft-V2-130802-PlusAppendix July 2013
- vii. Forecast.id Report on Central Coast Council Population and Household Forecasts December 2017
- viii. Maximum prices for connecting, or upgrading a connection, to a water supply, sewerage, or drainage system- Sydney Water, Hunter Water and Central Coast Council October 2018

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CALCULATION OF MAXIMUM PRICE

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Note: an input is required in \$FS21 to incorporate the Headwork costs per ET into the maximum price.

Table 1: Calculation of maximum price (\$, \$2019-20)

Maximum price	Costs to be recovered via DSP	Headworks costs per ET	Post-1996 commissioned assets		Post-1996 uncommissioned assets	Reduction for expected revenue and operation costs
			Pre-1996 assets	Post-1996 commissioned assets	Post-1996 uncommissioned assets	
			257,145,045	125,963,168	25,234,269	0
	ETs		102,076	106,944	106,944	106,944
3,933	Value per ET		2,519	1,178	236	0

Table 2: Key variables used in maximum price calculation (\$, \$2019-20)

Sum of new ETs (not discounted)	Sum of PV of new ETs (discounted at pre-1996 asset discount rate)	Sum of PV of new ETs (discounted at post-1996 asset discount rate)	Sum of PV of new ETs (discounted at expected revenue and costs discount rate)	Sum of PV of Pre-1996 commissioned assets (discounted at pre-1996 asset discount rate)	Sum of PV of Post-1996 commissioned assets (discounted at post-1996 asset discount rate)	Sum of PV of Post-1996 uncommissioned assets (discounted at post-1996 asset discount rate)	Sum of PV of revenue for new customers (discounted at expected future revenue and costs discount rate)	Sum of PV of costs for new ETs (discounted at expected future revenue and costs discount rate)	
	102,076,149	102,076	106,944	106,944	257,145,045	125,963,168	25,234,269	0	0

POST-1996 COMMISSIONED ASSETS WITH A NEXUS TO THE SERVICE FOR WHICH THE MAXIMUM PRICE IS BEING CALCULATED

Consideration must be given to the principles regarding asset exclusions presented on the 'Asset exclusions' worksheet before they are entered into the register.
 Hyperlink to the 'Asset exclusions' worksheet: [Asset exclusions\A1](#)

Date range for assets

Start date	01 Jan 1996
End date	30 Jun 2019

Register of post-1996 commissioned assets

General inputs				Service potential inputs			Asset value inputs					
Identifier	Description	Date commissioned	Financial year of commissioning		Expected system-wide ETs to be serviced by this asset	Proportion of asset cost to be recovered via this DSP	Number of units or length of asset (A)	Unit of measure in (A)	MEERA value per unit/measure of length (B) (\$ as at 1 July 2019)	Total MEERA value (A x B) (\$, \$2019-20)	MEERA value to be recovered via DSP (\$, \$2019-20)	
Raw Water Yield	Mangrove Dam - Communications Upgrade	01 Jan 2010	2009-10		261,946	39.0%	1		395,416	395,416	154,087	
	Mardi Dam Upgrades	01 Jan 2012	2011-12		261,946	39.0%	1		18,185,994	18,185,994	7,086,790	
	Mooney Dam Upgrades-Instrumentation, Destratification and other minor works	01 Jan 2004	2003-04		261,946	39.0%	1		270,269	270,269	105,319	
	Mangrove Creek Electrical Upgrades Works	01 Jan 2004	2003-04		261,946	39.0%	1		37,692	37,692	14,688	
	Lower Wyong River Weir -Fishwayand other Upgrade	01 Jan 2010	2009-10		261,946	39.0%	1		1,429,042	1,429,042	556,875	
	Ourimbah Creek Upper Weir- Fishway Upgrade	01 Jan 2007	2006-07		261,946	39.0%	1		637,781	637,781	248,533	
	Lower Wyong PS to Mardi Dam WMR -Upgrade pipeline DN1000	01 Jan 2006	2005-06		261,946	39.0%	1		8,102,685	8,102,685	3,157,486	
	Mardi Dam to Mangrove Dam WMR	01 Jan 2011	2010-11		261,946	39.0%	1		91,713,571	91,713,571	35,739,305	
	Boomerang Creek Tunnel Upgrade	01 Jan 2004	2003-04		261,946	39.0%	1		234,533	234,533	91,394	
	Mangrove Creek Pumping Station -Electrical Control Upgrade	01 Jan 2004	2003-04		261,946	39.0%	1		164,002	164,002	63,909	
	Mooney Mooney Pumping Station- Electrical Control Upgrade	01 Jan 2004	2003-04		261,946	39.0%	1		158,701	158,701	61,843	
	Mooney Pumpstation and Power upgrade	01 Jan 2016	2015-16		261,946	39.0%	1		3,397,358	3,397,358	1,323,896	
	Mangrove Creek PS to Somersby BalanceTanks WMR- Upgrade	01 Jan 2007	2006-07		261,946	39.0%	1		426,706	426,706	166,280	
	Wyong River WPS 1A	01 Jan 2012	2011-12		261,946	39.0%	1		11,311,913	11,311,913	4,408,071	
	Ourimbah Creek Pumping Station (WPS11) Electrical Control Upgrade	01 Jan 2004	2003-04		261,946	39.0%	1		169,842	169,842	66,185	
	Mardi Dam to Mangrove Creek Dam Pumping Station WPS24	01 Jan 2012	2011-12		261,946	39.0%	1		7,539,559	7,539,559	2,938,045	
	Treatment and Transfer											
		Somersby WTP Electrical Control Upgrade 1	01 Jan 2004	2003-04		261,946	39.0%	1		904,888	904,888	352,620
		Somersby WTP Electrical Control Upgrade 2	01 Jan 2004	2003-04		261,946	39.0%	1		2,020,896	2,020,896	787,511
		Mardi WTP-Electrical Control Upgrade 1	01 Jan 2004	2003-04		261,946	39.0%	1		1,920,427	1,920,427	748,360
Mardi WTP-Electrical Control Upgrade 2		01 Jan 2004	2003-04		261,946	39.0%	1		486,884	486,884	189,731	
Somersby Balance Tank 1 Electrical Control Upgrade		01 Jan 2004	2003-04		261,946	39.0%	1		83,029	83,029	32,355	
Somersby Balance Tank 2 Electrical Control Upgrade		01 Jan 2004	2003-04		261,946	39.0%	1		142,936	142,936	55,700	
Kariong Reservoir No 1(K1) Electrical Power Upgrade		01 Jan 2004	2003-04		261,946	39.0%	1		156,599	156,599	61,024	
Kariong Reservoir No 2 (K2 -Electrical Power Upgrade		01 Jan 2004	2003-04		261,946	39.0%	1		192,333	192,333	74,949	
Tuggerah 2 Reservoir Electrical Power Upgrade		01 Jan 2004	2003-04		261,946	39.0%	1		126,120	126,120	49,147	
Forresters Beach Pumping Station Electrical Power Upgrade		01 Jan 2004	2003-04		261,946	39.0%	1		68,807	68,807	26,813	
Woy Woy WTP for Groundwater Bores		01 Jan 2007	2006-07		261,946	39.0%	1		9,735,059	9,735,059	3,793,596	
Hunter Connection		01 Jan 2007	2006-07		261,946	39.0%	1		21,297,039	21,297,039	8,299,114	
Somersby WTP Civil and Metal Upgrade		01 Jan 2008	2007-08		261,946	39.0%	1		1,099,601	1,099,601	428,497	
Mardi WTP- Civil/ Mech/Elec Upgrade		01 Jan 2008	2007-08		261,946	39.0%	1		1,592,590	1,592,590	620,607	
Mardi Dam to Mardi WTP Pumping Station WPS23		01 Jan 2010	2009-10		261,946	39.0%	1		5,037,338	5,037,338	1,962,970	
High Lift Pump Station WPS25		01 Jan 2011	2010-11		261,946	39.0%	1		9,936,469	9,936,469	3,872,082	
Ourimbah Pumping Station (WPS17) Electrical Power Upgrade		01 Jan 2013	2012-13		261,946	39.0%	1		1,197,930	1,197,930	466,814	

POST-1996 UNCOMMISSIONED ASSETS WITH A NEXUS TO THE SERVICE FOR WHICH THE MAXIMUM PRICE IS BEING CALCULATED

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 Hyperlink to the 'Asset exclusions' worksheet: [Asset exclusions!A1](#)

Date range for assets

Start date

Register of uncommissioned assets

General inputs				Service potential inputs			Asset value inputs				
Identifier	Description	Date commissioned	Financial year of commissioning	DSP areas serviced by asset	Expected system-wide ETs to be serviced by this asset	Proportion of asset cost to be recovered via this DSP	Number of units or length of asset (A)	Unit of measure in (A)	MEERA value per unit/measure of length (B) (\$ as at 1 July 2019)	Total MEERA value (A x B) (\$, \$2019-20)	MEERA value to be recovered via DSP (\$, \$2019-20)
Future Yield Augmentation			-			-				-	-
	Mardi to Warnervale Pipeline (M2WPL)	30 Jun 2021	2020-21		261,946	39.0%	1		13,714,819	13,714,819	5,344,445
	Future Yield Augmentation (DESAL)	30 Jun 2034	2033-34		261,946	39.0%	1		100,970,000	100,970,000	39,346,387
			-			-				-	-