

Development Servicing Plan – Sewerage Services

DSP Review Project

360791



Prepared for
Tenterfield Shire Council

14 July 2020



Contact Information

Cardno (NSW/ACT) Pty Ltd

ABN 95 001 145 035

16 Burelli Street
 Wollongong NSW 2500
 Australia

Phone +612 4228 4133

Fax +612 4228 6811

Document Information

Prepared for Tenterfield Shire Council

Project Name DSP Review Project

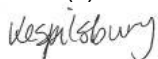
File Reference 3607-91-REPT-DSP
 Tenterfield Sewerage
 Services-v01-00.docx

Job Reference 360791

Date 14 July 2020

Version Number V01-00

Author(s):



Kate Spilsbury
 Graduate Engineer

Effective Date 29/01/2020

Approved By:



Geoffrey Kleu
 Senior Asset Management Engineer

Date Approved 14/07/2020

Document History

Version	Effective Date	Description of Revision	Prepared by	Reviewed by
V0-01	21/06/2019	First Draft	Kate Spilsbury	Geoffrey Kleu
V0-02	11/07/2019	Draft issued to Client	Kate Spilsbury	Geoffrey Kleu
V0-03	13/08/2019	Valuation data incorporated	Kate Spilsbury	Geoffrey Kleu
V0-04	29/01/2020	Update with client feedback	Kate Spilsbury	Geoffrey Kleu
V0-05	16/03/2020	Issued for consultation	Geoffrey Kleu	Geoffrey Kleu
V1-00	13/07/2020	Formal Issue	Geoffrey Kleu	Geoffrey Kleu

© Cardno. Copyright in the whole and every part of this document belongs to Cardno and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or in or on any media to any person other than by agreement with Cardno.

This document is produced by Cardno solely for the benefit and use by the client in accordance with the terms of the engagement. Cardno does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.

Summary

This Development Servicing Plan (DSP) covers sewerage developer charges in regard to the Tenterfield and Urbenville development areas served by Tenterfield Shire Council.

This DSP document has been prepared in accordance with the 2016 Developer Charges Guidelines for Water Supply, Sewerage and Stormwater issued by the Minister for Lands and Water, pursuant to Section 306 (3) of the *Water Management Act, 2000*.

The area covered by each DSP, and the existing and proposed works serving the area are shown on the document in Section 12.

The timing and expenditures for works serving the area covered by each DSP are shown in Section 4.

Levels of service to be provided in each DSP area are summarised in Section 5.

The sewerage developer charges for the areas covered by this DSP document have been determined as follows:

Table 1-1 Proposed Developer Charges

Service	DSP Name	Developer Charge (\$ per ET)
Sewerage	DSP Area A Tenterfield	\$12,263
	DSP Area B Urbenville	\$0

Developer charges relating to this DSP document will be reviewed after a period of 4 to 8 years. In the period between any review, developer charges will be adjusted annually on the basis of the movements in the CPI for Sydney, excluding the impact of GST.

The developer shall be responsible for the full cost of the design and construction of water supply and sewerage reticulation works within subdivisions.

Background information containing all the critical data including calculation models behind each DSP is available on request (e.g. on USB).

Table of Contents

Summary	iii
1 Introduction	1
2 Administration	2
2.1 DSP Name and Area Covered	2
2.2 Payment of Developer Charges	2
2.3 Dispute Resolution	2
3 Demographic and land use planning information	3
3.1 Growth Projections	3
3.2 Land Use Information	4
4 Sewerage Infrastructure	5
4.1 Existing Capital Costs	5
4.2 Future Capital Works Program	5
4.3 Reticulation Works	5
5 Levels of Service	6
5.1 Sewerage	6
6 Design Parameters	7
6.1 Sewerage	7
7 Developer Charges Calculation – Sewerage	8
7.1 Summary	8
7.2 Service Areas	8
7.3 Equivalent Tenements (ETs)	8
7.4 Capital Charge	10
7.5 DSP Area	10
7.6 Reduction Amount	11
7.7 Cross-Subsidy	12
8 Reviewing/ Updating of Calculated Developer Charges	14
9 Background Information	15
10 Other DSPs and related contribution plans	16
11 Glossary	17
12 Plans	20
13 Calculation of ETs	21
14 Existing Capital Costs	25
15 Future Capital Works Program	33
16 Calculation of the Capital Charge	36
16.1 Tenterfield	36
16.2 Urbenville	39
17 Calculation of the Reduction Amount	41
18 Cross-Subsidy Calculations	43

Tables

Table 1-1	Proposed Developer Charges	iii
Table 2-1	DSP name and area covered	2
Table 3-1	Projected population growth	3
Table 3-2	Connected Properties for Sewerage Services	4
Table 3-3	Projected demand growth for ETs	4
Table 5-1	Sewerage Levels of Service	6
Table 7-1	Summary of proposed sewerage developer charges	8
Table 7-2	Sewerage service areas	8
Table 7-3	ET projections for sewerage	9
Table 7-4	Summary of capital charges	10
Table 7-5	Agglomeration of service areas	10
Table 7-6	Weighted average capital charge	10
Table 7-7	Weighted average capital charge for agglomerated areas	11
Table 7-8	Calculation of the reduction amount	11
Table 7-9	Developer charges options – weighted average subsidy	13
Table 7-10	Impact of cross-subsidies on annual bill	13

Figures

Figure 12-1	360791-002-GS-001-SitePlan	20
Figure 12-2	360791-002-GS-002-ZoningPlan_Tenterfield	20
Figure 12-3	360791-002-GS-004-ZoningPlan_Urbenville	20
Figure 12-4	360791-002-GS-008-ExistingSewer_Tenterfield	20
Figure 12-5	360791-002-GS-009-ExistingSewer_Urbenville	20

1 Introduction

Section 64 of the *Local Government Act, 1993* enables a local government council to levy developer charges for water supply, sewerage 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) details the water supply, sewerage and/or stormwater developer charges to be levied on development areas utilising a water utility's water supply, sewerage and/or stormwater infrastructure.

This DSP document covers sewerage developer charges in regard to Tenterfield and Urbenville development areas served by Tenterfield Shire Council (TSC).

This DSP document has been prepared in accordance with the 2016 Developer Charges Guidelines for Water Supply, Sewerage and Stormwater issued by the Minister of Lands and Water, pursuant to Section 306 (3) of the *Water Management Act, 2000*.

This DSP document supersedes any other requirements related to sewerage developer charges for the areas covered by this DSP. This DSP takes precedence over any of TSC's code or policies where there are any inconsistencies relating to sewerage developer charges.

2 Administration

2.1 DSP Name and Area Covered

The service area boundaries within this DSP are defined by the extent of the sewer systems within the LGA. These boundaries capture the existing and future developments served by TSC. Table 2-1 outlines the service areas.

Table 2-1 DSP name and area covered

DSP Name	Area Covered
Tenterfield	The area covered by this DSP is shown on Plan “360791-002-GS-002-ZoningPlan_Tenterfield”. The DSP area is defined as the area serviced by the Tenterfield sewage treatment plant.
Urbenville	The area covered by this DSP is shown on Plan “360791-002-GS-004-ZoningPlan_Urbenville”. The DSP area is defined as the area serviced by the Urbenville sewage treatment plant.

2.2 Payment of Developer Charges

Developer charges will be determined and levied in accordance with the provisions of this DSP document at the time of considering an application for a compliance certificate under Section 305 of the *Water Management Act 2000* or a construction certificate under Section 109 of the *Environmental Planning and Assessment Act 1979* or at the time of issuing a notice or other form of written advice, e.g. under the *SEPP (Exempt and Complying Development Codes) 2008*. The time limit for payment of developer charges will be included in the notice of determination or will be advised to the developer by a separate notice. The amount of any developer charges not paid within the specified time limit will lapse. Any subsequent determination of developer charges will be made in accordance with TSC’s then current DSP.

2.3 Dispute Resolution

Disputes will be resolved in accordance with Section 2.9 of the Guidelines. TSC is not a member of the Electricity and Water Ombudsman (EWON).

3 Demographic and land use planning information

3.1 Growth Projections

Growth projections for Tenterfield Local Government Area (LGA) population are show in Table 3-1. These projections are from 2019 to 2049, which is TSC's current planning horizon.

The population and number of Equivalent Tenements (ETs) in January 1996 (ie.1995/96) are also indicated.

ET calculations are included in Section 7.3 of the DSP document.

Given the low population growth rate and its volatility to even small changes in new developments, an alternate reference was considered for the growth rate to be used for ETs. Analysing the number of connected properties within the LGA to the water supply systems, yields a more consistent growth rate of 0.68% and provides a more reliable basis for forecasting the ETs and performing the required calculations for the developer charges. This is shown in Table 3-1.

Table 3-1 Projected population growth

Year	Population	Population Growth Rate (% p.a.)	Adopted ET Growth Rate (%pa) based on connected properties
1995/96	6,195		
2018/2019	7,210	0.28%	0.68%
2019/20	7,230	0.28%	0.68%
2020/21	7,250	0.28%	0.68%
2021/22	7,250	0.00%	0.68%
2022/23	7,250	0.00%	0.68%
2023/24	7,250	0.00%	0.68%
2024/25	7,250	0.00%	0.68%
2025/26	7,250	0.00%	0.68%
2026/27	7,250	0.00%	0.68%
2027/28	7,250	0.00%	0.68%
2028/29	7,250	0.00%	0.68%
2029/30	7,250	0.00%	0.68%
2030/31	7,250	0.00%	0.68%
2031/32	7,230	-0.28%	0.68%
2032/33	7,210	-0.28%	0.68%
2033/34	7,190	-0.28%	0.68%
2034/35	7,170	-0.28%	0.68%
2035/36	7,150	-0.28%	0.68%
2036/37	7,150	0.00%	0.68%
2037/38	7,150	0.00%	0.68%
2038/39	7,150	0.00%	0.68%
2039/40	7,150	0.00%	0.68%
2040/41	7,150	0.00%	0.68%
2041/42	7,150	0.00%	0.68%
2042/43	7,150	0.00%	0.68%
2043/44	7,150	0.00%	0.68%

Year	Population	Population Growth Rate (% p.a.)	Adopted ET Growth Rate (%pa) based on connected properties
2044/45	7,150	0.00%	0.68%
2045/46	7,150	0.00%	0.68%
2046/47	7,150	0.00%	0.68%
2047/48	7,150	0.00%	0.68%
2048/49	7,150	0.00%	0.68%

Table 3-2 Connected Properties for Sewerage Services

Year	LGA	Tenterfield	Urbenville
2019	1,954	1,805	149

Growth projections for the number of Equivalent Tenements (ETs) for sewerage are shown in Table 3-3. The ET in January 1996 is also indicated. ET calculations are included in Section 7.3 of the DSP document.

Table 3-3 Projected demand growth for ETs

Service Area	ETs 1996	Current ETs 2019	Projected ETs 2049	Total New ETs	Proportion of Growth
Tenterfield	1,221	1,428	1,750	322	92.4%
Urbenville	94	110	134	24	7.6%
Total	1,315	1,538	1,885	347	100.00%

3.2 Land Use Information

This DSP document should be read in conjunction with Tenterfield Local Environmental Plan (LEP) 2013 which sets the framework for planning and development and applies land zonings across the LGA. These zonings specify the land uses permitted in each of the zones and provide development standards that may apply to specific developments. Tenterfield currently does not have any specific strategies in place to guide future residential and commercial development across the LGA. Low population growth has resulted in most developments being in-fill development within Tenterfield itself or small subdivisions on the edge of established towns and villages.

On 1 March 2018, the NSW Government updated the Environmental Planning and Assessment Act 1979 with a number of changes required to be implemented at various stages over the next few years. This included the requirement for Council's to prepare a Local Strategic Planning Statement (LSPS) set out the 20-year vision for land-use in the local area, the special character and values that are to be preserved and how change will be managed into the future. This would, in turn, inform the future Local Housing Strategy and any LEP amendments that may be required to implement the outcomes of the LSPS. The requirement to deliver the LSPS and associated LEP Review is late 2019.

4 Sewerage Infrastructure

The existing and proposed sewerage headworks serving the areas covered by this DSP are shown on plans in Section 12.

The existing and proposed sewerage distribution works serving the areas covered by this DSP document are shown on Plans in Section 12.

4.1 Existing Capital Costs

The estimated MEERA capital cost as at 20190 of the sewerage capital works servicing the areas covered by this DSP document are shown in Section 14. Note that only those assets built in the last 30 years are included.

4.2 Future Capital Works Program

The timing and expenditure for sewerage capital works (including backlog works) serving the area covered by this DSP document are shown in Section 15.

4.3 Reticulation Works

The developer shall be responsible for the full cost of the design and construction of sewerage reticulation works within subdivisions.

5 Levels of Service

System design and operation are based on providing the following levels of service (LOS). Typical levels of service are outlined below.

Further information on levels of service is available from:

- > Tenterfield Shire Council's Strategic Business Plan for Water Supply and Sewerage Services, December 2015, (available at www.tenterfield.nsw.gov.au).
- > NSW Water and Sewerage Strategic Business Planning Guidelines, NSW Office of Water, July 2011, (available at www.water.nsw.gov.au).

5.1 Sewerage

The LOS that apply to TSC's sewerage system are the targets that TSC aims to meet. These targets are not intended as a formal customer contract. The key LOS provided from Tenterfield Shire Council's Strategic Business Plan for Water Supply and Sewerage Services 2015 are:

Table 5-1 Sewerage Levels of Service

Description	Units	Target Level of Service
Availability of Supply	-	All residential and non-residential properties within the defined service area.
Acceptance of Commercial and Industrial Waste	-	In accordance with TSC <i>Liquid Trade Waste Regulation Policy</i> (2014)
Compliance with Environmental Protection License Condition	%	100
Service Complaints/ System Failures		
<i>Priority 1: A complete failure to contain sewerage within the Sewer System or any problem affecting many users resulting in one or more of the following occurring.</i>		
Possible Issue: Blockage overflowing Sewer System, manhole overflowing, Broken Gravity/ Rising Main, Pump Station failure, Missing Manhole Lid Typical Effects: Personal injury significant risk to health, Surcharge inside/outside a building, Property damage e.g. subsidence of critical asset e.g. roadway, buildings, railway etc., Environmental impact e.g. trade waste spill, subsidence causing danger		<i>Repairs to commence:</i> Within 0.5 hour (during work hours) Within 1 hour (after work hours)
<i>Priority 2: Non urgent fault but significant in the belief of the customer.</i>		
Possible Issue: Minor subsidence, Restoration, Locations Typical Effects: No impact on the environment, Seepage investigation		Programmed Maintenance

6 Design Parameters

6.1 Sewerage

Investigation and design of sewerage system components is based on the Manual of Practice: Sewer Design (1984) and the Manual of Practice: Sewage Pumping Station Design (1986).

- > Water Services Association of Australia “Gravity Sewerage Code of Australia WSA 02-2015 Version 3.1”
- > Water Services Association of Australia “Sewage Pumping Code of Australia WSA 04-2005 Version 2.1”

The following technical reports relate to the system components in this DSP document:

- > Council Standards for Engineering Works Policy
- > Council Standards for Engineering Works Preface and Supplementary Notes

TSC has published a range of asset management documentation that covers the sewer system and contains the management strategy for the sewer network. The documents include:

- > Sewerage System Asset Management Plan, 2017 (DRAFT)
- > Asset Management Strategy 2017 – 2027, 2017
- > Tenterfield Shire Council’s Strategic Business Plan for Water Supply and Sewerage Services, December 2015, (available at www.tenterfield.nsw.gov.au).

7 Developer Charges Calculation – Sewerage

All new properties and properties with change in use which are subject to payment of sewerage charges are liable for payment of developer charges. An ET is the basic unit to determine the loading that the development will place on the sewerage system. One ET represents the equivalent loading for a single, detached residential dwelling. TSC uses the NSW Water Directorate’s Guidelines for Determining Water ET Figures.

Credit for existing use is applied in the calculation of the ET loadings, as the developer charges are levied for additional ET loading only. For example, the first lot in residential subdivisions is exempt from developer charges where the lot is already connected to the sewerage system. Properties not already rated for sewerage do not receive the one lot credit.

7.1 Summary

The developer charges for the area covered by this DSP document are as follows:

Table 7-1 Summary of proposed sewerage developer charges

DSP Area	Capital Charge (\$ per ET)	Reduction Amount (\$ per ET)	Calculated Maximum Developer Charge (\$ per ET)	Adopted Developer Charge (\$ per ET)
Tenterfield	\$16,335	\$4,072	\$12,263	\$12,263
Urbenville	\$2,279	\$4,072	<\$0	\$0

These amounts have been calculated on the basis of the information shown in Sections 7.2 to 7.7.

7.2 Service Areas

The sewerage service areas and the basis of determining the service areas are as follows:

Table 7-2 Sewerage service areas

Name of service area	Basis of determining the service area
Tenterfield	Area serviced by a separate sewage treatment works
Urbenville	Area serviced by a separate sewage treatment works

7.3 Equivalent Tenements (ETs)

The number of ETs served by a sewage treatment works is determined by dividing the metered average dry weather flow (ADWF) received into the treatment works by the product of 200 L/EP/day and the utility’s occupancy rate.

The measured ADWF at the Tenterfield sewage treatment works, was 657,000 L/d and the measured ADWF at the Urbenville sewage treatment works was 50,429 L/d.

The number of ETs for Tenterfield Shire Council area were determined based on the occupancy rate of 2.3 persons per dwelling (taken from ABS data for the Tenterfield LGA average).

ET projections for each service area are shown in Table 7-3. The ETs in January 1996 are also indicated.

Table 7-3 ET projections for sewerage

Year	Number of ETs		
	Tenterfield	Urbenville	Total ETs
1995/96	1,221	94	1,315
2018/2019	1,428	110	1,538
2019/20	1,438	110	1,548
2020/21	1,448	111	1,559
2021/22	1,458	112	1,569
2022/23	1,468	113	1,580
2023/24	1,477	113	1,591
2024/25	1,488	114	1,602
2025/26	1,498	115	1,613
2026/27	1,508	116	1,624
2027/28	1,518	117	1,635
2028/29	1,528	117	1,646
2029/30	1,539	118	1,657
2030/31	1,549	119	1,668
2031/32	1,560	120	1,680
2032/33	1,570	121	1,691
2033/34	1,581	121	1,702
2034/35	1,592	122	1,714
2035/36	1,603	123	1,726
2036/37	1,614	124	1,737
2037/38	1,625	125	1,749
2038/39	1,636	126	1,761
2039/40	1,647	126	1,773
2040/41	1,658	127	1,785
2041/42	1,669	128	1,797
2042/43	1,680	129	1,809
2043/44	1,692	130	1,822
2044/45	1,703	131	1,834
2045/46	1,715	132	1,847
2046/47	1,727	133	1,859
2047/48	1,738	133	1,872
2048/49	1,750	134	1,885

ET calculation details for each service area are shown in Section 13.

7.4 Capital Charge

The capital charge for each service area covered by this DSP document has been calculated using NPV spreadsheet method.

Under the NPV spreadsheet method, the capital cost of relevant assets and projected ETs served in a service area are entered into a spreadsheet. These capital costs are only for the share of the asset capacity used in the service area. The PV of capital cost and the PV of the new ETs are calculated, and the capital charge per ET is the PV of the capital cost divided by the PC of the ETs.

Calculations details for PV of ETs and PV of capital costs for each service area are shown in Section 16.

The summary of the capital charge calculations is shown in Table 7-4.

Table 7-4 Summary of capital charges

Service Area	PV of New ETs for pre-1996 assets @3%	PV of New ETs for post-1996 assets @5%	PV of capital cost for pre-1996 assets @3%	PV of capital cost for post-1996 assets @5%	Capital charge for pre-1996 assets	Capital charge for post-1996 assets	Capital charge per ET (\$)
Tenterfield	253	173	\$0	\$2,828,423	\$0	\$16,335	\$16,335
Urbenville	20	14	\$0	\$31,639	\$0	\$2,279	\$2,279

7.5 DSP Area

Table 7-5 shows agglomeration of service areas into DSP areas of within 30% of highest capital charge.

Table 7-5 Agglomeration of service areas

Service Area	Capital Charge (2018/19 \$ per ET)	Percentage of Highest Capital Charge in Service Area	Percentage of Highest Capital Charge in the next Service Area
Tenterfield	\$16,335	100%	
Urbenville	\$2,279	14%	100%

Weighted average capital charge for each DSP area is calculated by weighting by the PV of new ETs in each service area. The calculation is shown in Table 7-6.

Table 7-6 Weighted average capital charge

DSP Area	Service Area	Capital charge for each service area	New ETs in service area	PV of new ETs in service area	% of PV of new ETs in DSP area	Weighted component of the capital charge for each DSP area (\$ per ET)	Weighted capital charge for each DSP area (\$ per ET)
DSP Area A	Tenterfield	\$16,335	322	170	100.00%	\$16,335	\$16,335
DSP Area B	Urbenville	\$2,279	24	13	100.00%	\$2,279	\$2,279

The utility-wide weighted average capital charge is \$15,313.

The *Guidelines* allow for the agglomeration of Service areas for utilities with less than 2000 connections, as long as the agglomerated charge does not increase by more than 30% for any individual service area. Currently TSC has 1954 connections on its sewer systems, so the following analysis was carried out.

Table 7-7 Weighted average capital charge for agglomerated areas

DSP Area	Service Area	Capital charge for each service area	New ETs in service area	PV of new ETs in service area	% of PV of new ETs in DSP area	Weighted component of the capital charge for each DSP area (\$ per ET)	Weighted capital charge for each DSP area (\$ per ET)
DSP Area A	Tenterfield	\$16,335	322	170	92.94%	\$15,182	\$15,343
DSP Area B	Urbenville	\$2,279	24	13	7.06%	\$161	

DSP Area	Service Area	Capital charge for each service area	Weighted capital charge for each DSP area (\$ per ET)	Difference between agglomerated charge and service area charge	% Increase	Test less than 30% increase
DSP Area A	Tenterfield	\$16,335	\$15,343	-\$992	-6%	OK
DSP Area B	Urbenville	\$2,279		\$13,064	573%	Fail

Therefore, it is not suitable to agglomerate the two service areas into a single DSP Area.

7.6 Reduction Amount

Council has adopted the NPV of Annual Bills method to calculate the Reduction Amount. This method involves the difference between the revenue for annual bills, and annual OMA cost, projected for new development over the next 30 years. This is divided by the PV of the new ETs over 30 years to give the reduction amount.

The reduction amounts have been calculated as follows:

- > Income from annual bills at the commencement of the DSP = \$1,477.03 per ET
- > OMA cost at the commencement of the DSP = \$1,130.22 per ET
- > Net income = Annual bill – OMA cost (as above) = \$347 per ET

Based on the calculations shown in Table 7-8, the resulting reduction amount is \$4,072.

Table 7-8 Calculation of the reduction amount

Year	Total ETs	New ETs	PV of new ETs (5%)	Cumulative new ETs	Net income from new ETs (\$)	NPV of net income from new ETs (5%)	Reduction amount (\$ per ET)
2018/19	1,538	0	173			\$706,174	\$4,072
2019/20	1,548	10		10	\$3,468		
2020/21	1,559	11		21	\$7,283		
2021/22	1,569	10		31	\$10,751		
2022/23	1,580	11		42	\$14,566		
2023/24	1,591	11		53	\$18,381		
2024/25	1,602	11		64	\$22,196		
2025/26	1,613	11		75	\$26,011		
2026/27	1,624	11		86	\$29,826		
2027/28	1,635	11		97	\$33,641		

Year	Total ETs	New ETs	PV of new ETs (5%)	Cumulative new ETs	Net income from new ETs (\$)	NPV of net income from new ETs (5%)	Reduction amount (\$ per ET)
2028/29	1,646	11		108	\$37,456		
2029/30	1,657	11		119	\$41,271		
2030/31	1,668	11		130	\$45,086		
2031/32	1,680	12		142	\$49,247		
2032/33	1,691	11		153	\$53,062		
2033/34	1,702	11		164	\$56,877		
2034/35	1,714	12		176	\$61,039		
2035/36	1,726	12		188	\$65,201		
2036/37	1,737	11		199	\$69,016		
2037/38	1,749	12		211	\$73,177		
2038/39	1,761	12		223	\$77,339		
2039/40	1,773	12		235	\$81,501		
2040/41	1,785	12		247	\$85,663		
2041/42	1,797	12		259	\$89,824		
2042/43	1,809	12		271	\$93,986		
2043/44	1,822	13		284	\$98,495		
2044/45	1,834	12		296	\$102,657		
2045/46	1,847	13		309	\$107,165		
2046/47	1,859	12		321	\$111,327		
2047/48	1,872	13		334	\$115,835		
2048/49	1,885	13		347	\$120,344		

Calculation details for reduction amount are shown in Section 17.

7.7 Cross-Subsidy

The cross-subsidy is the difference (%) between the annual bill with the calculated maximum developer charge and the increase in the annual bill with a proposed lower developer charge.

LWUs may elect to cap the developer charges for small villages in order to maintain affordability and to avoid 'stranded' assets in such villages.

LWUs may also cap other developer charges to maintain affordability, subject to adopting a commercial developer charge which recovers a significant proportion of the capital cost of the infrastructure.

The cross-subsidy, resulting from capping of developer charges must be disclosed in the DSP, the utility's Annual Report, annual Operational Plan and in communication materials for consultation with stakeholders as noted above.

Two options were developed and examined as follows.

Option 1 – No cross-subsidy – Calculated maximum developer charge adopted.

Option 2 – Adopted cross-subsidy of 20%.

A summary of the options for developer charges and cross-subsidy is shown in Table 7-9.

Table 7-9 Developer charges options – weighted average subsidy

OPTION 1 – NO CROSS SUBSIDY							
DSP Area	Service Area	Calculated Developer Charge	PV New ETs	Weighting	Weighted component	Weighted average developer charge	Weighted average cross-subsidy to developer charge
DSP Area A	Tenterfield	\$12,263	170.3	93%	\$11,397	\$11,397	\$0
	Urbenville	\$0	12.9	7%	\$0		

OPTION 2 - 20% DISCOUNT							
DSP Area	Service Area	Calculated Developer Charge (less 20%)	PV New ETs	Weighting	Weighted component	Weighted average developer charge	Weighted average cross-subsidy to developer charge
DSP Area A	Tenterfield	\$8,996	170.3	93%	\$8,361	\$8,361	\$3,036
	Urbenville	\$0	12.9	7%	\$0		

The impact of cross-subsidies on the annual water supply/ sewerage bill for each option is shown in Table 7-10 below.

Table 7-10 Impact of cross-subsidies on annual bill

Option	Required annual sewerage bill per ET (\$)	Resulting increase in annual water supply/ sewerage bill (%)
1 – No Cross-subsidy	\$1,477	0.00%
2 – Adopted Cross-subsidy (20%)	\$1,498	1.39%

Council has elected to not apply a cross-subsidy to the calculated developer charges for sewerage services. This results in no increase to the current annual sewerage bill due to developer charges.

Calculation details for the reduction amount are shown in Section 18.

8 Reviewing/ Updating of Calculated Developer Charges

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 reviewed by Council after a period of 4 to 8 years.

9 Background Information

Background information containing all the critical data including calculation models behind each DSP is available from TSC on request. The contact details are below:

Tenterfield Shire Council
Ph: (02) 6736 6000

The background document lists and references all the other studies that have been used as a source, including TSC's Strategic Business Plan, Financial Plan and the latest TBL Performance Report.

10 Other DSPs and related contribution plans

This DSP document supersedes any other requirements related to sewerage developer charges for the Tenterfield area covered by this DSP.

The related Section 64 Development Servicing Plan is:

- > *Tenterfield Shire Council Development Servicing Plan – Water Supply (Cardno, 2020)*

The related Section 7.11 and Section 7.11 Development Contributions Plans are:

- > *Tenterfield Shire Council Section 7.11 Development Contributions Plan (Subdivisions) (Cardno, 2020)*
- > *Tenterfield Shire Council Section 7.12 Development Contributions Plan 2019 (General Development) (Cardno, 2020)*

11 Glossary

Annual Bill	LWU's annual water supply or sewage bill for an annual demand of 1 ET.
Asset	An asset (or part of an asset) including land and headworks assets that directly provides, or will provide, the developer services to development within the DSP area for which the Developer Charge is payable.
ADWF	Average dry weather flow. One of the design parameters for flow in sewers.
Annual Demand	The total water demand over a year. Used to size headworks components
Background Information	Contains all the critical data behind each DSP. This information should be made available electronically to developers on request, e.g. On a USB and should include the calculation models in Excel or similar electronic spreadsheet format, so that all components of the models can be investigated.
BOD	Biochemical oxygen demand. Used as a measure of the 'strength' of sewage.
Capital Cost	The Present Value (MEERA basis) of all expenditure on assets used to service the development.
Capital Charge	Capital cost of assets per ET adjusted for commercial return on investment (ROI)
CP	Section 94 Contributions Plan
CPI	Consumer price index.
DPI Water	A division of NSW Department of Primary Industries
Developer Charge (DC)	Charge levied on developers to recover part of the capital cost incurred in providing infrastructure to new development
Development Area	See DSP area
Discount Rate	The rate used to calculate the present value of money arising in the future.
DSP Document	Development Servicing Plan Document
DSP Area	That part of a water utility's area covered by a particular Development Servicing Plan. Also referred to as Development Area.
EP	Equivalent Persons (or equivalent population). Used as a design parameter for loadings of sewage treatment works.
ET	Equivalent tenement. The annual demand a detached residential dwelling will place on the infrastructure in terms of the water consumption or sewage discharge.
Government Subsidies	Government funds provided towards the capital cost of a project.
GST	Goods and services tax.
Headworks	Significant assets at the top end of the water systems or the bottom end of the

wastewater and stormwater system. For example water headworks may comprise a system of storage reservoirs, water treatment works and major supply conduits.

IPART	The NSW Independent Pricing and Regulatory Tribunal.
KL	Kilolitre (1,000 litres).
LEP	Local Environmental Plan
LGNSW	Local Government and Shires Associations.
LSPS	Local Strategic Planning Statement
LWU	Local water utility (NSW). Excludes Sydney Water Corporation, Hunter Water Corporation, Gosford Council, Wyong Council, Essential Water and Fish River Water Supply.
MEERA	Modern Engineering Equivalent Replacement Asset. An asset value calculated on the basis that the asset is constructed at the time of valuation in accordance with modern engineering practice and the most economically viable technologies, which provides similar utility functions to the existing asset in service.
ML	Megalitre (1,000,000 litres, or 1,000 kilolitres).
Net Income	Annual bill minus OMA cost per ET.
NOW	NSW Office of Water, replaces by DPI Water since July 2015
NPV	Net present value means the difference between the Present Value of a revenue stream and the Present Value of a cost stream.
OMA	Operation, maintenance and administration (cost).
Peak Day Demand	The maximum demand in any one day of the year. Used to size water treatments works, service reservoirs, trunk mains and pumping stations in the distribution system.
Operating Cost	In relation to a DSP is the operation, maintenance and administration cost (excluding depreciation and interest) of a LWU in providing Customer services to a DSP area.
Periodic bills	The periodic bills (generally quarterly) levied by a LWU in accordance with their annual operational plan.
Post 1996 Asset	An asset that was commissioned by a LWU on or after 1 January 1996 or that is yet to be commissioned.
Pre-1996 Asset	An asset that was commissioned by a LWU before 1 January 1996.
PV	Present value. The current value of future money or ETs.
PWWF	Peak wet weather flow. One of the design parameters of flow in sewers
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 capital contribution that will be paid by the occupier of a development as part of future annual bills.
ROI	Return on investment. Represents the income that is, or could be, generated by investing money.
Service Area	An area serviced by a separate water supply system, an area served by a separate STW, a separate small town or village, or a new development of over 500 ETs.
SS	Suspended solids, or the concentration of particles in sewage. Used as a measure of the 'strength' of sewage.
STW	Sewage treatment works
TRB	Typical residential bill, which is the principal indicator of the overall cost of a water supply or sewerage system and is the bill paid by a residential customer using the utility's average annual residential water supplied per connected property.
TSC	Tenterfield Shire Council
WICA	Water Industry Competition Act, 2006
WICAA	Water Industry Competition Amendment (Review) Act, 2014
WTW	Water treatment works.

12 Plans

Plans of the DSP areas and existing assets are shown on the following pages

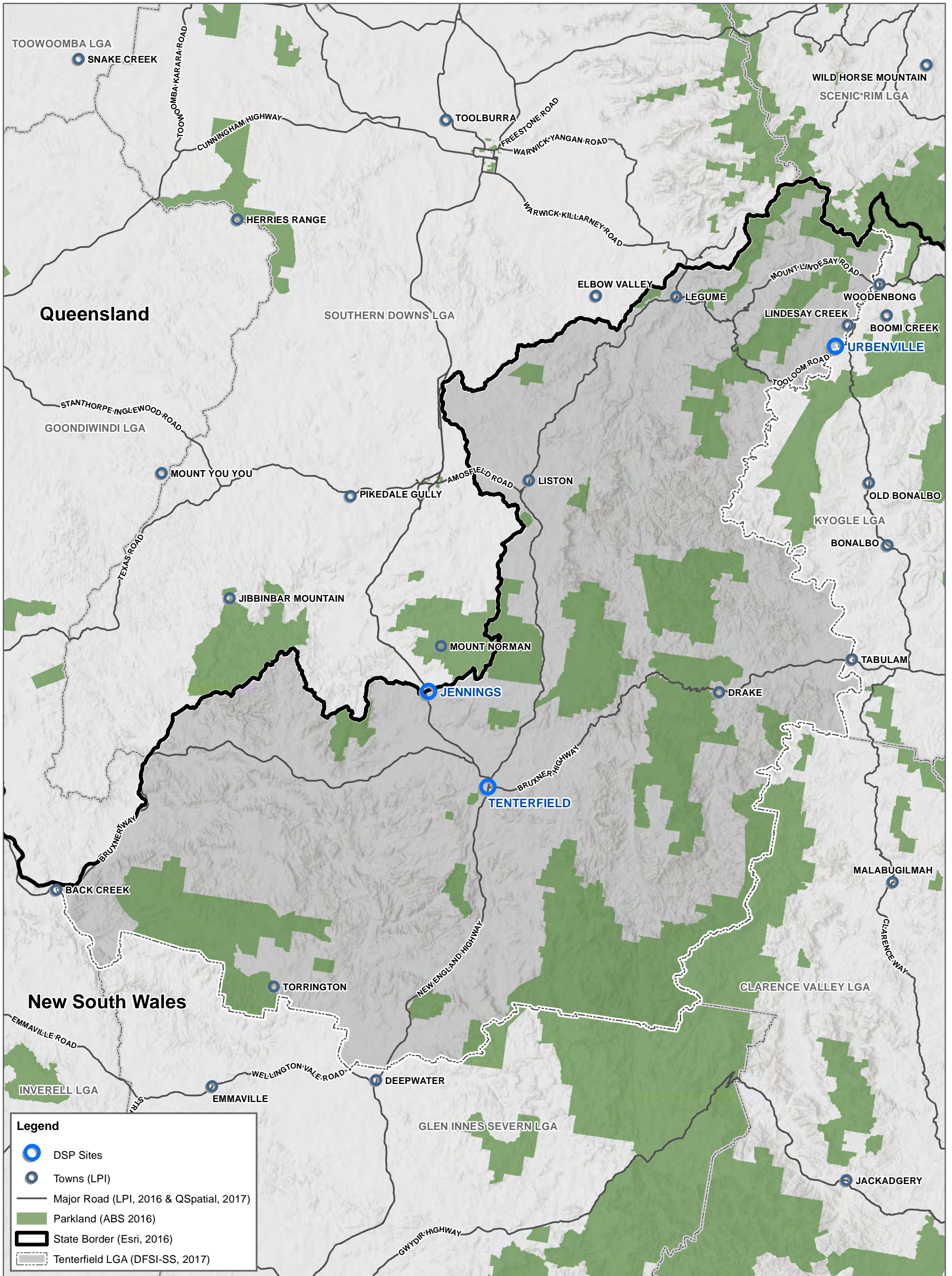
Figure 12-1 360791-002-GS-001-SitePlan

Figure 12-2 360791-002-GS-002-ZoningPlan_Tenterfield

Figure 12-3 360791-002-GS-004-ZoningPlan_Urbenville

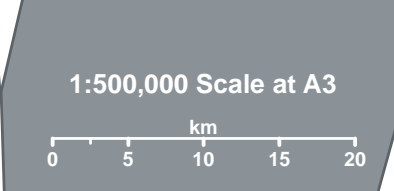
Figure 12-4 360791-002-GS-008-ExistingSewer_Tenterfield

Figure 12-5 360791-002-GS-009-ExistingSewer_Urbenville



Legend

- DSP Sites
- Towns (LPI)
- Major Road (LPI, 2016 & QSpatial, 2017)
- Parkland (ABS 2016)
- State Border (Esri, 2016)
- Tenterfield LGA (DFSI-SS, 2017)



Study Area
TENTERFIELD LOCAL GOVERNMENT AREA

Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 2019-08-12 | Project: 3607-91
Coordinate System: GDA 1994 MGA Zone 56
Map: 360791-002-GS-001-SitePlan.mxd 02



Zoning Plan Tenterfield

TENTERFIELD LGA
DEVELOPMENT SERVICING PLAN

Legend

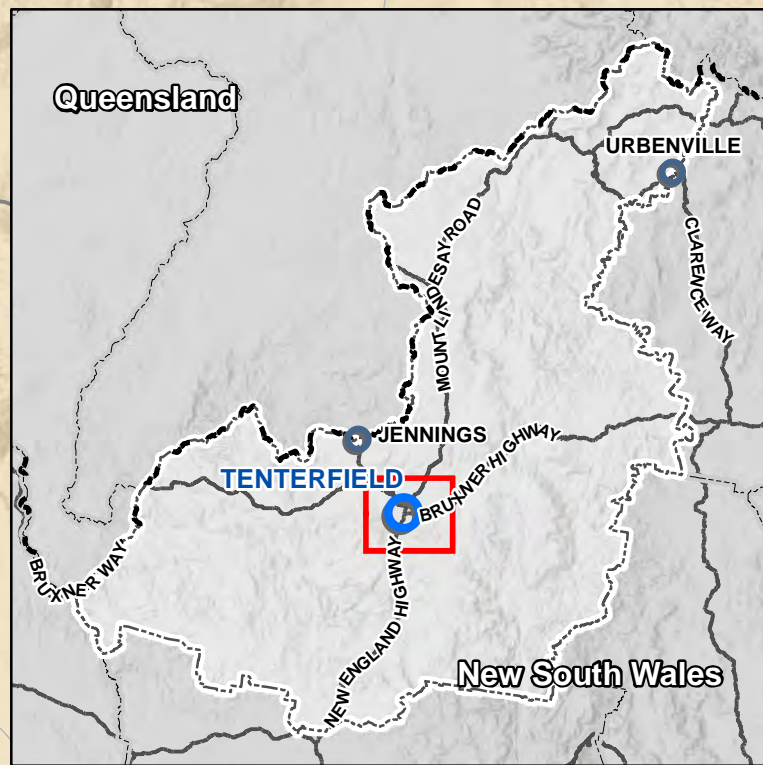
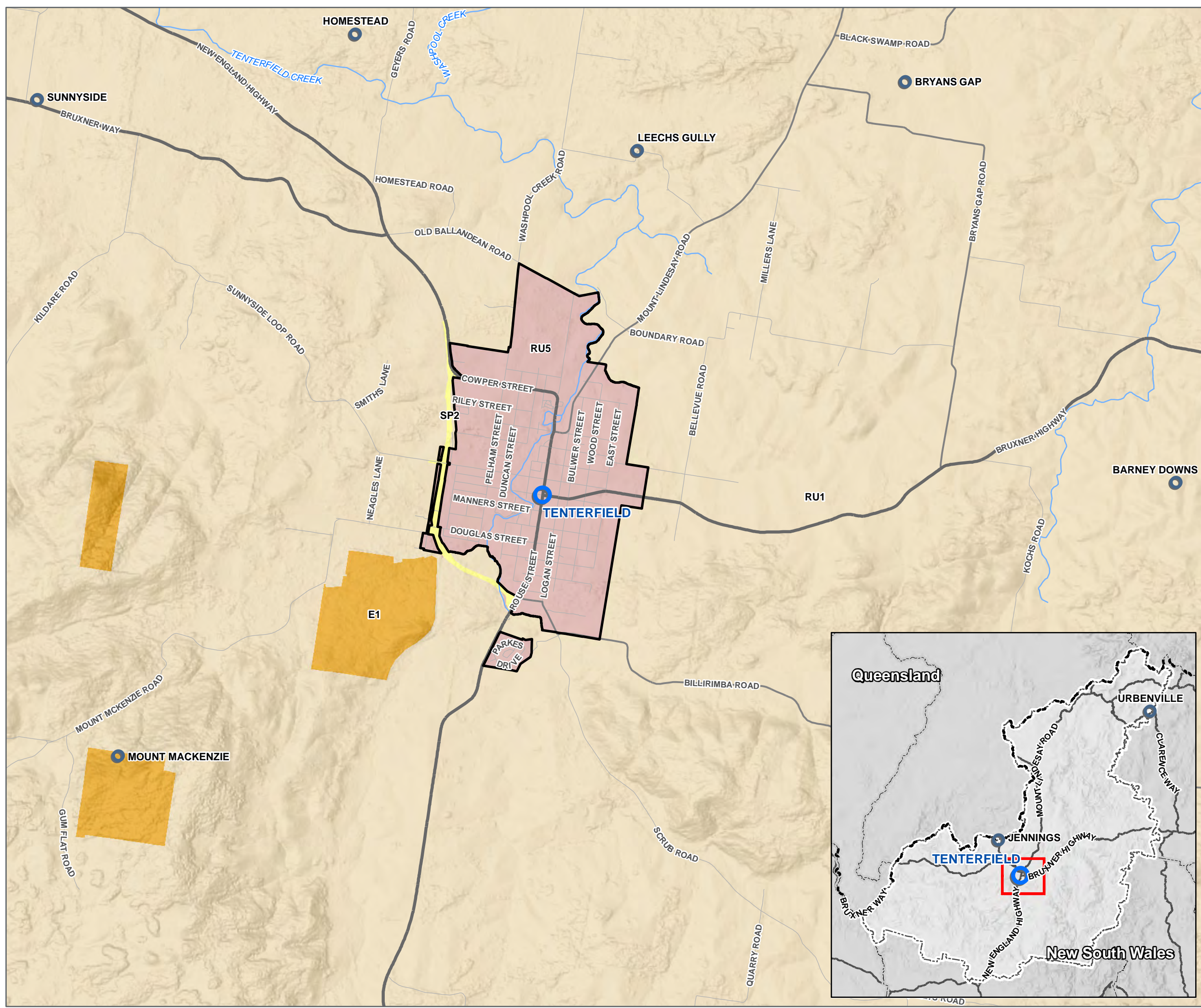
- DSP Sites
 - Towns (LPI)
 - Major Watercourses (LPI)
 - Service Area
 - State Border (Esri, 2016)
 - Tenterfield LGA (DFSI-SS, 2017)
- Roads (NSW SS)**
- Major Road
 - Arterial Road
 - Local Road
- Tenterfield LEP, 2013 (DPE, Feb 2019)**
- E1 - National Parks and Nature Reserves
 - RU1 - Primary Production
 - RU5 - Village
 - SP2 - Infrastructure

NOTE: Service Area defined by the water and sewer supply systems

1:50,000 Scale at A3



Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 2020-03-16 | Project: 3607-91
Coordinate System: GDA 1994 MGA Zone 56
Map: 360791-002-GS-002-ZoningPlan_Tenterfield.mxd 03





Zoning Plan Urbenville

TENTERFIELD LGA
DEVELOPMENT SERVICING PLAN

Legend

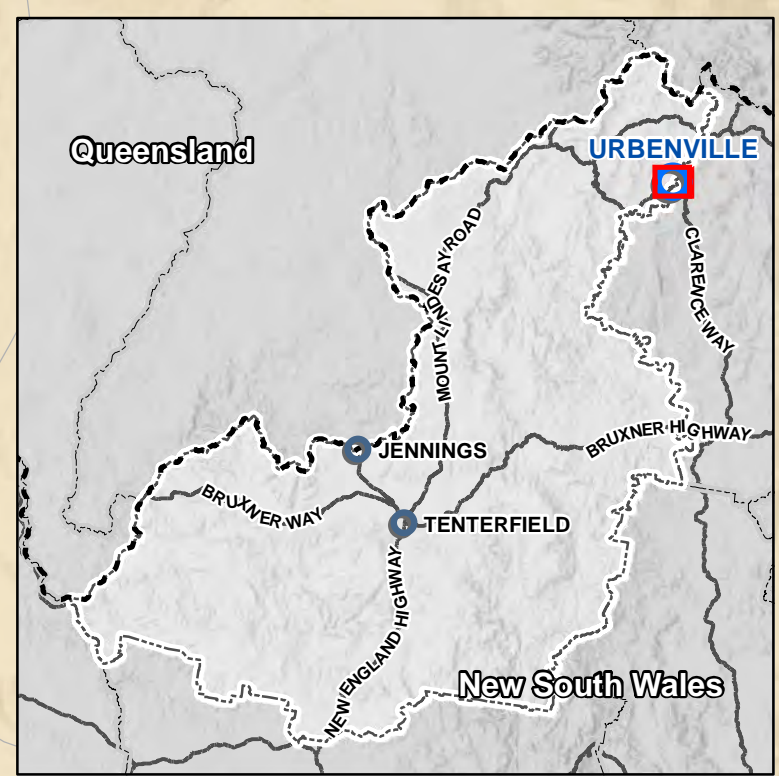
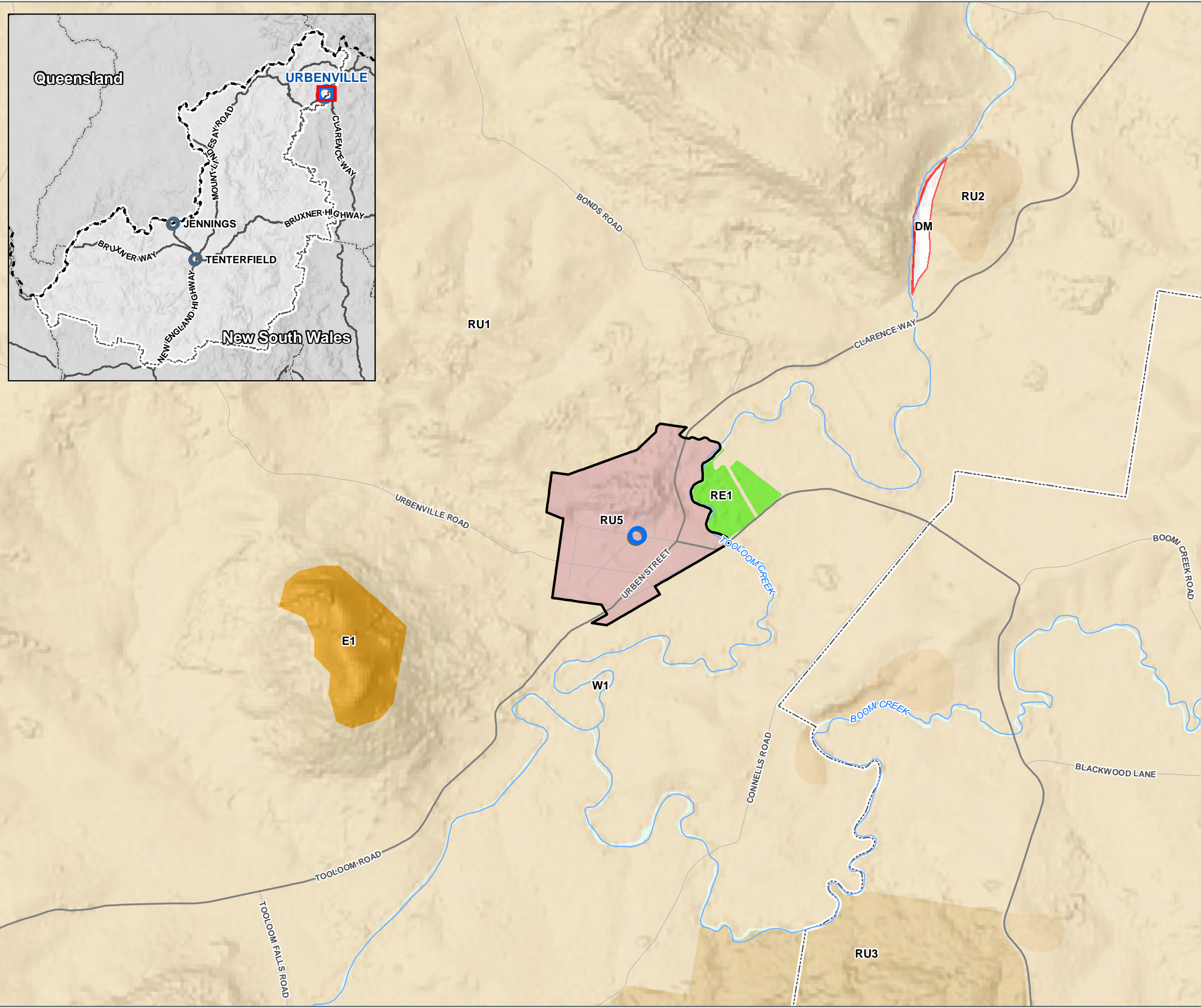
- DSP Sites
- Towns (LPI)
- Major Watercourses (LPI)
- Service Area
- State Border (Esri, 2016)
- Tenterfield LGA (DFSI-SS, 2017)
- Roads (NSW SS)**
 - Arterial Road
 - Local Road
- Tenterfield LEP, 2013 (DPE, Feb 2019)**
 - E1 - National Parks and Nature Reserves
 - RE1 - Public Recreation
 - RU1 - Primary Production
 - RU2 - Rural Landscape
 - RU3 - Forestry
 - RU5 - Village
 - W1 - Natural Waterways
 - DM - Deferred Matter

NOTE: Service Area defined by the water and sewer supply systems




















1:20,000 Scale at A3

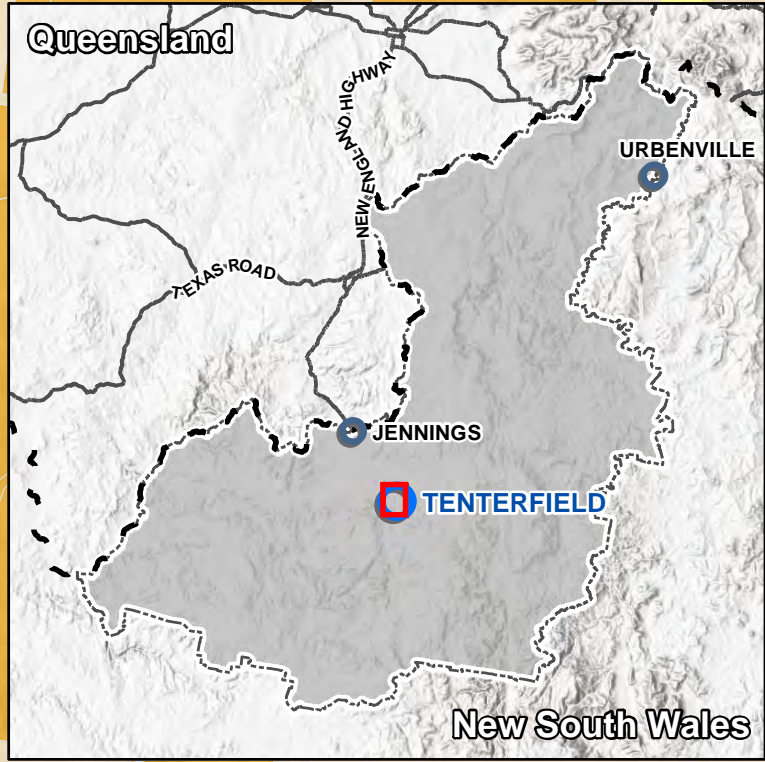
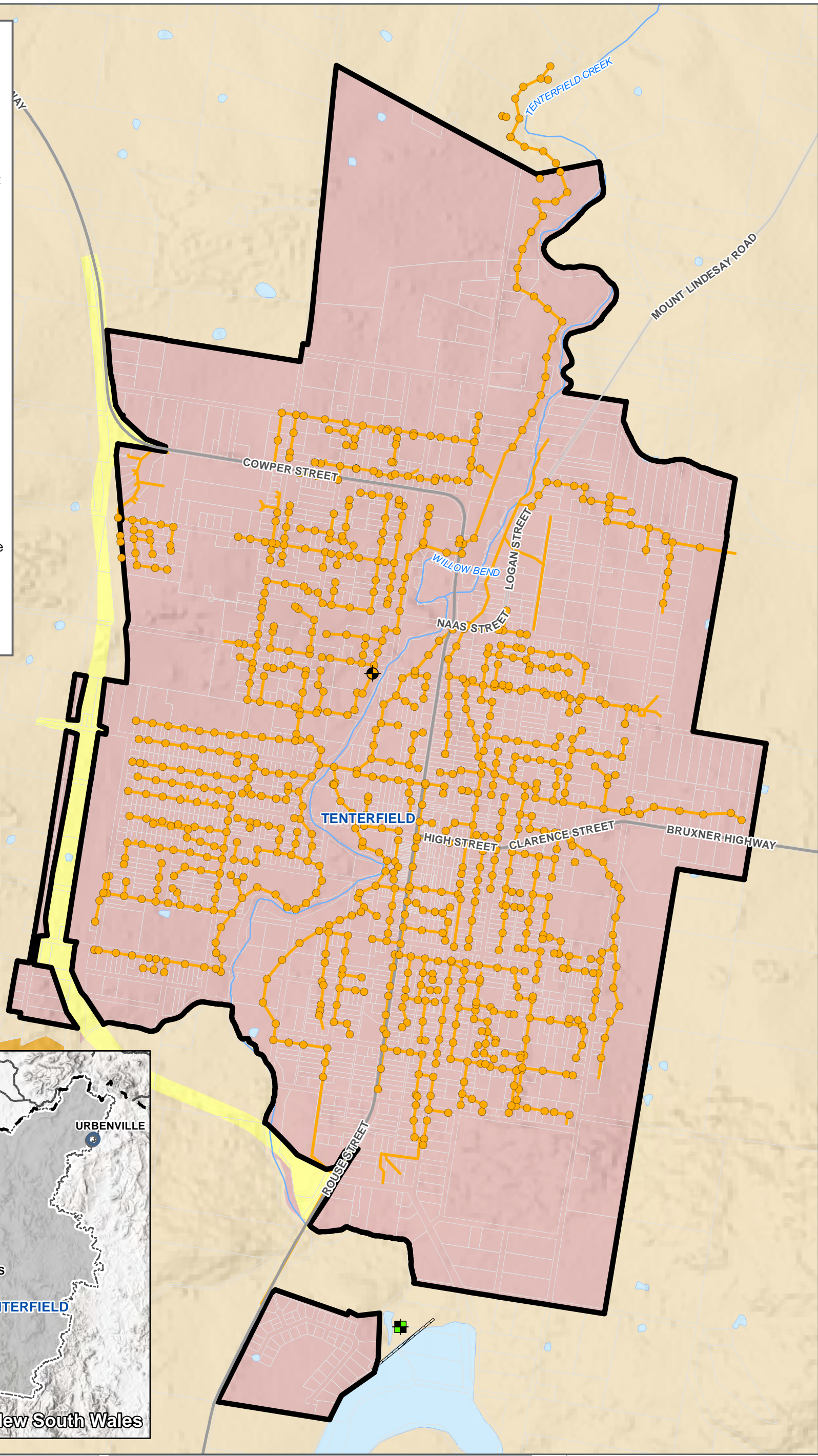


Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 2020-03-16 | Project: 3607-91
Coordinate System: GDA 1994 MGA Zone 56
Map: 360791-002-GS-004-ZoningPlan_Urbenville.mxd 03




Legend

-  DSP Site
 -  Towns (LPI)
 -  Sewer Pump Station
 -  Sewer Main Manholes
 -  Existing Water Treatment Plant
 -  Sewer Main
 -  Major Watercourses (LPI)
 -  Dam Wall
 -  Service Area
 -  Waterbodies (LPI)
 -  State Border (Esri, 2016)
 -  Tenterfield LGA (DFSI-SS, 2017)
- Major Road (NSW SS)**
-  Motorway
 -  Primary Road
 -  Arterial Road
- Tenterfield LEP, 2013 (DPE, Feb 2019)**
-  E1 - National Parks and Nature Reserves
 -  RU1 - Primary Production
 -  RU5 - Village
 -  SP2 - Infrastructure



1:16,000 Scale at A3



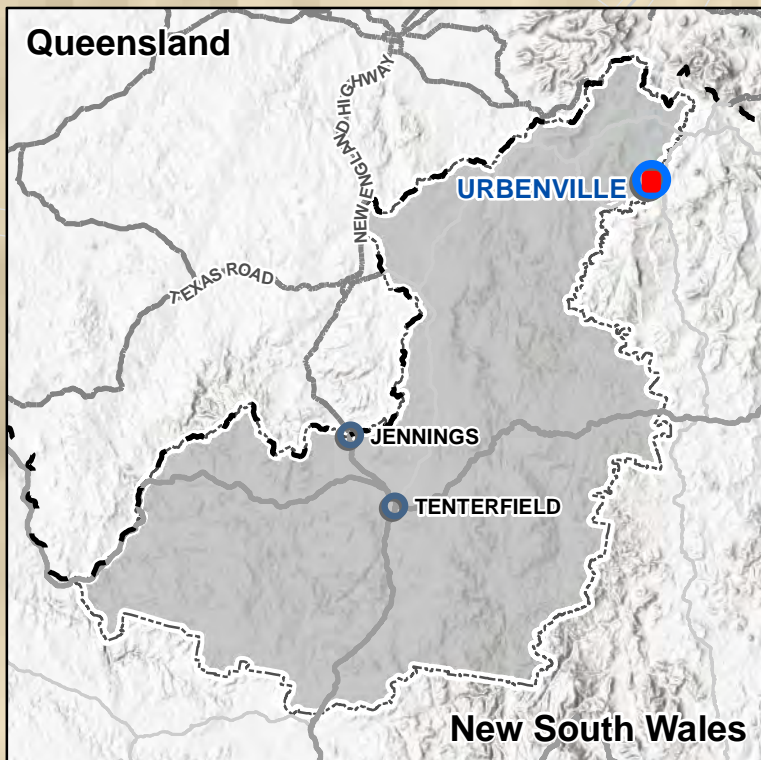
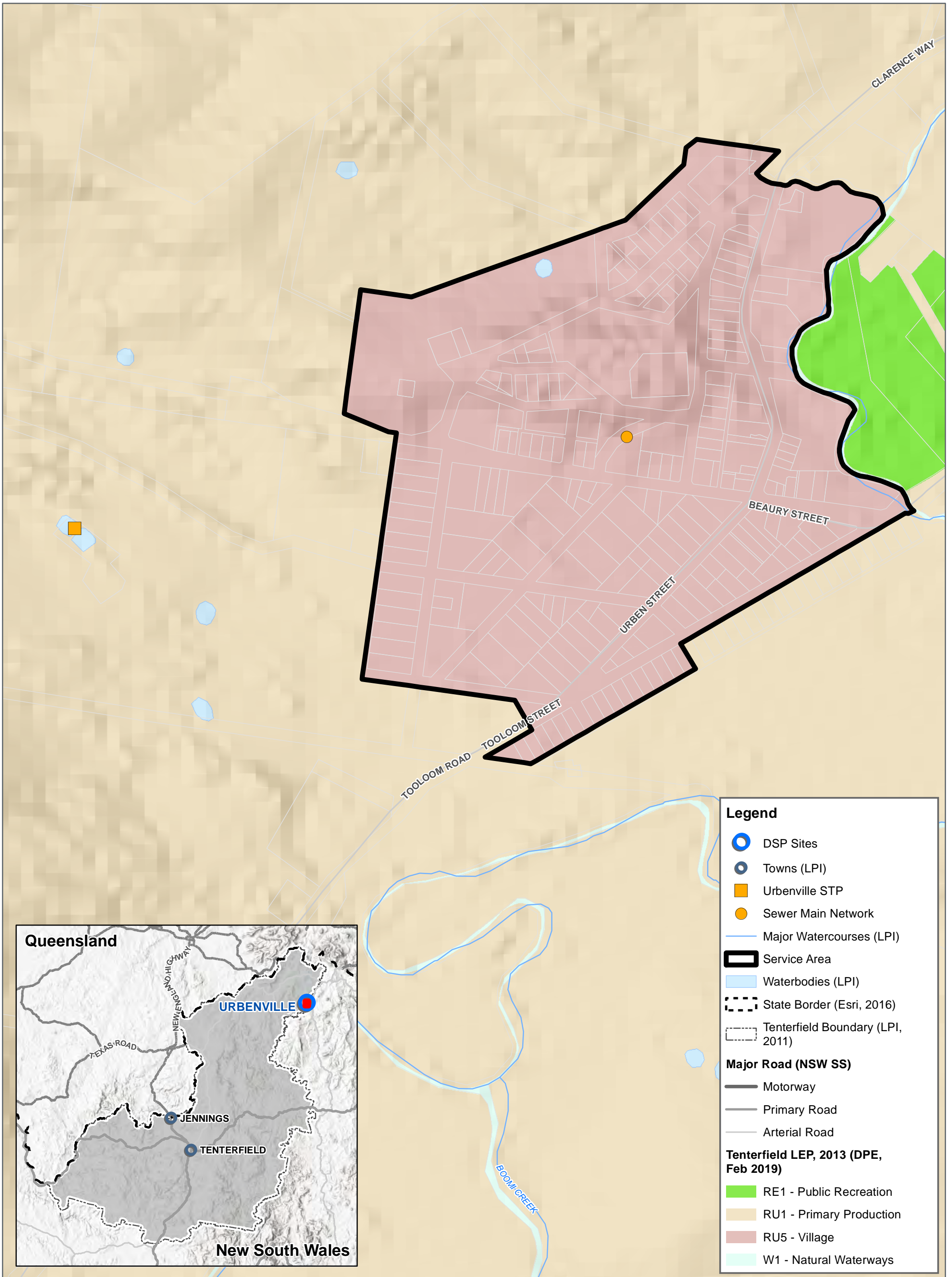
Existing Sewer Infrastructure Tenterfield

TENTERFIELD LGA - DEVELOPMENT SERVICING PLAN



Cardno

Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 2020-01-29 | Project: 3607-91
Coordinate System: GDA 1994 MGA Zone 56
Map: 360791-002-GS-008-ExistingSewer_Tenterfield.mxd 02



Legend

- DSP Sites
- Towns (LPI)
- Urbenville STP
- Sewer Main Network
- Major Watercourses (LPI)
- Service Area
- Waterbodies (LPI)
- State Border (Esri, 2016)
- Tenterfield Boundary (LPI, 2011)

Major Road (NSW SS)

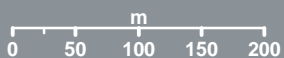
- Motorway
- Primary Road
- Arterial Road

Tenterfield LEP, 2013 (DPE, Feb 2019)

- RE1 - Public Recreation
- RU1 - Primary Production
- RU5 - Village
- W1 - Natural Waterways



1:6,000 Scale at A3



Existing Sewer Infrastructure Urbenville

TENTERFIELD LGA - DEVELOPMENT SERVICING PLAN



Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
 Date: 2020-01-30 | Project: 3607-91
 Coordinate System: GDA 1994 MGA Zone 56
 Map: 360791-002-GS-009-ExistingSewer_Urbenville.mxd 02

13 Calculation of ETs

Sewer Information	Value	Source
ADWF Tenterfield L/d	657,000	Council supplied 657 kL/day
ADWF Urbenville L/d	50,429	Council supplied 353 kL/week
Average L/EP/d	200.0	DSP <i>Guidelines</i> - Regional NSW average
Average Occupancy Ratio	2.3	ABS - Tenterfield average
Equivalent Tenements (ETs) for 2018-2019 - Tenterfield	1,428.3	
Equivalent Tenements (ETs) for 2018-2019 - Urbenville	109.6	

Connected Properties Sewerage			
Year	LGA	Tenterfield	Urbenville
2019	1954	1805	149
Source			
Council - Actual values for 2019			

Data for ET calculations	LGA	Tenterfield	Urbenville
Proportion of connected properties	100%	92.4%	7.6%
ETs (2019)	1538	1428	110

Year	LGA Population (Number)			Adopted ET growth rate	Equivalent Tenements (ET)			Annual ET Take-up (ET)		
	Data points	Growth Rate (% p.a.)	Estimation		LGA	Tenterfield	Urbenville	LGA	Tenterfield	Urbenville
1995/96		0.53%	6,195	0.68%	1,315	1,221	94			
1996/97		0.53%	6,229	0.68%	1,324	1,229	94	9	9	1
1997/98		0.53%	6,262	0.68%	1,333	1,238	95	9	9	1

Year	LGA Population (Number)			Adopted ET growth rate	Equivalent Tenements (ET)			Annual ET Take-up (ET)		
	Data points	Growth Rate (% p.a.)	Estimation		LGA	Tenterfield	Urbenville	LGA	Tenterfield	Urbenville
1998/99		0.53%	6,295	0.68%	1,342	1,246	96	9	8	1
1999/00		0.53%	6,329	0.68%	1,351	1,255	96	9	9	0
2000/01	6,363	0.53%	6,363	0.68%	1,360	1,263	97	9	8	1
2001/02		0.53%	6,397	0.68%	1,369	1,272	98	9	9	1
2002/03		0.53%	6,431	0.68%	1,379	1,281	98	10	9	0
2003/04		0.53%	6,465	0.68%	1,388	1,289	99	9	8	1
2004/05		0.53%	6,499	0.68%	1,398	1,298	100	10	9	1
2005/06	6,534	0.53%	6,534	0.68%	1,407	1,307	100	9	9	0
2006/07		1.39%	6,625	0.68%	1,417	1,316	101	10	9	1
2007/08		1.39%	6,717	0.68%	1,427	1,325	102	10	9	1
2008/09		1.39%	6,810	0.68%	1,436	1,334	102	9	9	0
2009/10		1.39%	6,904	0.68%	1,446	1,343	103	10	9	1
2010/11	7,000	1.39%	7,000	0.68%	1,456	1,352	104	10	9	1
2011/12		0.42%	7,030	0.68%	1,466	1,362	105	10	10	1
2012/13		0.42%	7,060	0.68%	1,476	1,371	105	10	9	0
2013/14		0.42%	7,090	0.68%	1,486	1,380	106	10	9	1
2014/15		0.42%	7,120	0.68%	1,496	1,390	107	10	10	1
2015/16	7,150	0.42%	7,150	0.68%	1,507	1,399	107	11	9	0
2016/17		0.28%	7,170	0.68%	1,517	1,409	108	10	10	1
2017/18		0.28%	7,190	0.68%	1,527	1,419	109	10	10	1
2018/19		0.28%	7,210	0.68%	1,538	1,428	110	11	9	1
2019/20		0.28%	7,230	0.68%	1,548	1,438	110	10	10	0
2020/21	7,250	0.28%	7,250	0.68%	1,559	1,448	111	11	10	1
2021/22		0.00%	7,250	0.68%	1,569	1,458	112	10	10	1
2022/23		0.00%	7,250	0.68%	1,580	1,468	113	11	10	1

Year	LGA Population (Number)			Adopted ET growth rate	Equivalent Tenements (ET)			Annual ET Take-up (ET)		
	Data points	Growth Rate (% p.a.)	Estimation		LGA	Tenterfield	Urbenville	LGA	Tenterfield	Urbenville
2023/24		0.00%	7,250	0.68%	1,591	1,477	113	11	9	0
2024/25		0.00%	7,250	0.68%	1,602	1,488	114	11	11	1
2025/26	7,250	0.00%	7,250	0.68%	1,613	1,498	115	11	10	1
2026/27		0.00%	7,250	0.68%	1,624	1,508	116	11	10	1
2027/28		0.00%	7,250	0.68%	1,635	1,518	117	11	10	1
2028/29		0.00%	7,250	0.68%	1,646	1,528	117	11	10	0
2029/30		0.00%	7,250	0.68%	1,657	1,539	118	11	11	1
2030/31	7,250	0.00%	7,250	0.68%	1,668	1,549	119	11	10	1
2031/32		-0.28%	7,230	0.68%	1,680	1,560	120	12	11	1
2032/33		-0.28%	7,210	0.68%	1,691	1,570	121	11	10	1
2033/34		-0.28%	7,190	0.68%	1,702	1,581	121	11	11	0
2034/35		-0.28%	7,170	0.68%	1,714	1,592	122	12	11	1
2035/36	7,150	-0.28%	7,150	0.68%	1,726	1,603	123	12	11	1
2036/37		0.00%	7,150	0.68%	1,737	1,614	124	11	11	1
2037/38		0.00%	7,150	0.68%	1,749	1,625	125	12	11	1
2038/39		0.00%	7,150	0.68%	1,761	1,636	126	12	11	1
2039/40		0.00%	7,150	0.68%	1,773	1,647	126	12	11	0
2040/41		0.00%	7,150	0.68%	1,785	1,658	127	12	11	1
2041/42		0.00%	7,150	0.68%	1,797	1,669	128	12	11	1
2042/43		0.00%	7,150	0.68%	1,809	1,680	129	12	11	1
2043/44		0.00%	7,150	0.68%	1,822	1,692	130	13	12	1
2044/45		0.00%	7,150	0.68%	1,834	1,703	131	12	11	1
2045/46		0.00%	7,150	0.68%	1,847	1,715	132	13	12	1
2046/47		0.00%	7,150	0.68%	1,859	1,727	133	12	12	1
2047/48		0.00%	7,150	0.68%	1,872	1,738	133	13	11	0

Year	LGA Population (Number)			Adopted ET growth rate	Equivalent Tenements (ET)			Annual ET Take-up (ET)		
	<i>Data points</i>	<i>Growth Rate (% p.a.)</i>	<i>Estimation</i>		<i>LGA</i>	<i>Tenterfield</i>	<i>Urbenville</i>	<i>LGA</i>	<i>Tenterfield</i>	<i>Urbenville</i>
2048/49		0.00%	7,150	0.68%	1,885	1,750	134	13	12	1
Total ETs					1,885	1,750	134	570	530	41
Future ET Total (From 2019)								347	322	24

14 Existing Capital Costs

	Tenterfield	Urbenville
New Growth ETs =	530	41
Total ETs =	1,750	134
Growth %	30.3%	30.5%

Indexation from 2012 to 2019	15%
Indexation from 2017 to 2019	6%

Asset Service Area(s)	Asset	Commissioning Year	Effective Commission Date	Capital Cost (2012)	Capital Cost (2017)	MEERA (2019)	Shared Proportion	Growth Proportion	Recoverable MEERA	Justification
Tenterfield	STW Preliminary	1955	Excluded	\$118,000		\$135,552	100.0%	30.3%	\$0	Excluded, asset more than 30 years old
Tenterfield	STW Siteworks	1955	Excluded	\$471,000		\$541,059	100.0%	30.3%	\$0	Excluded, asset more than 30 years old
Tenterfield	STW Sludge	1976	Excluded	\$120,000		\$137,849	100.0%	30.3%	\$0	Excluded, asset more than 30 years old
Tenterfield	SPS Petre St	1976	Excluded	\$133,000		\$152,783	100.0%	30.3%	\$0	Excluded, asset more than 30 years old
Tenterfield	SPS Drummond St	1997	1/01/1997	\$612,000		\$703,032	100.0%	30.3%	\$212,893	Asset less than 30 years old
Tenterfield	Backup generator	2000	1/01/2000	\$213,000		\$244,683	100.0%	30.3%	\$74,095	Asset less than 30 years old
Tenterfield	SPS Drummond St	2000	1/01/2000	\$27,000		\$31,016	100.0%	30.3%	\$9,392	Asset less than 30 years old
Tenterfield	SPS Saddlers Estate	2005	1/01/2005		\$559,994	\$592,473	100.0%	30.3%	\$179,413	Asset less than 30 years old

Asset Service Area(s)	Asset	Commissioning Year	Effective Commission Date	Capital Cost (2012)	Capital Cost (2017)	MEERA (2019)	Shared Proportion	Growth Proportion	Recoverable MEERA	Justification
Tenterfield	Tenterfield Treatment Plant 06/07 Additions	2007	1/01/2007	\$52,000		\$59,735	100.0%	30.3%	\$18,089	Asset less than 30 years old
Tenterfield	Tenterfield Sewer Main 06/07 additions	2007	1/01/2007	\$122,000		\$140,147	100.0%	30.3%	\$42,439	Asset less than 30 years old
Tenterfield	Tenterfield - WW Treatment Plant Pre Construction 07/08	2008	1/01/2008	\$36,000		\$41,355	100.0%	30.3%	\$12,523	Asset less than 30 years old
Tenterfield	Tenterfield - WW Treatment Plant - Construction Contract 07/08	2008	1/01/2008	\$492,000		\$565,182	100.0%	30.3%	\$171,149	Asset less than 30 years old
Tenterfield	Tenterfield - WW Treatment Plant - Construction Project Management 07/08	2008	1/01/2008	\$19,000		\$21,826	100.0%	30.3%	\$6,609	Asset less than 30 years old
Tenterfield	Tenterfield Mains Augmentation - Riley Street 07/08	2008	1/01/2008	\$0		\$0	100.0%	30.3%	\$0	Asset less than 30 years old
Tenterfield	Tenterfield Mains Augmentation Duffield - Bulwer Street 07/08	2008	1/01/2008	\$2,000		\$2,297	100.0%	30.3%	\$696	Asset less than 30 years old
Tenterfield	Tenterfield Mains Replacement - Drummond Street 07/08	2008	1/01/2008	\$3,000		\$3,446	100.0%	30.3%	\$1,044	Asset less than 30 years old
Tenterfield	Tenterfield Mains Replacement - Rouse Street 07/08	2008	1/01/2008	\$34,000		\$39,057	100.0%	30.3%	\$11,827	Asset less than 30 years old
Tenterfield	Tenterfield Mains Stage 1 Simpson street 07/08	2008	1/01/2008	\$38,000		\$43,652	100.0%	30.3%	\$13,219	Asset less than 30 years old
Tenterfield	Treatment Plant Augmentation 08/09	2009	1/01/2009	\$6,384,000		\$7,333,586	100.0%	30.3%	\$2,220,763	Asset less than 30 years old

Asset Service Area(s)	Asset	Commissioning Year	Effective Commission Date	Capital Cost (2012)	Capital Cost (2017)	MEERA (2019)	Shared Proportion	Growth Proportion	Recoverable MEERA	Justification
Tenterfield	Tenterfield Mains Replacement Petre Street 08/09	2009	1/01/2009	\$24,000		\$27,570	100.0%	30.3%	\$8,349	Asset less than 30 years old
Tenterfield	Tenterfield Mains Replacement - Pelham Street 08/09	2009	1/01/2009	\$25,000		\$28,719	100.0%	30.3%	\$8,697	Asset less than 30 years old
Tenterfield	Tenterfield Mains Manhole Raising 08/09	2009	1/01/2009	\$3,000		\$3,446	100.0%	30.3%	\$1,044	Asset less than 30 years old
Tenterfield	Tenterfield Mains Simpson street 08/09	2009	1/01/2009	\$15,000		\$17,231	100.0%	30.3%	\$5,218	Asset less than 30 years old
Tenterfield	Tenterfield Mains Extension Duffield - Bulwer Street 08/09	2009	1/01/2009	\$0		\$0	100.0%	30.3%	\$0	Asset less than 30 years old
Tenterfield	Sewer Augmentation Standby Pump 08/09	2009	1/01/2009	\$12,000		\$13,785	100.0%	30.3%	\$4,174	Asset less than 30 years old
Tenterfield	Treatment Plant Roadworks 08/09	2009	1/01/2009	\$20,000		\$22,975	100.0%	30.3%	\$6,957	Asset less than 30 years old
Tenterfield	STW Sludge - Mechanical elements/ Civil components	2009	1/01/2009		\$1,028,730	\$1,088,395	100.0%	30.3%	\$329,589	Asset less than 30 years old
Tenterfield	SPS Inlet to STP	2009	1/01/2009		\$1,185,000	\$1,253,728	100.0%	30.3%	\$379,655	Asset less than 30 years old
Tenterfield	SPS Drummond St	2009	1/01/2009		\$264,518	\$279,860	100.0%	30.3%	\$84,747	Asset less than 30 years old
Tenterfield	STW Backup generator	2009	1/01/2009		\$180,000	\$190,440	100.0%	30.3%	\$57,669	Asset less than 30 years old
Tenterfield	Relocated Dehydrator (2020) (from Tenterfield)	2009	1/01/2009			-\$60,000	100.0%	30.3%	-\$18,169	Offset cost for dehydrator from STP Augmentation 2009
Tenterfield	Tenterfield Sewerage Treatment Plant - Standby Generator Shed	2010	1/01/2010	\$26,000		\$29,867	100.0%	30.3%	\$9,044	Asset less than 30 years old

Asset Service Area(s)	Asset	Commissioning Year	Effective Commission Date	Capital Cost (2012)	Capital Cost (2017)	MEERA (2019)	Shared Proportion	Growth Proportion	Recoverable MEERA	Justification
Tenterfield	Tenterfield Sewerage Treatment Plant - Concrete Pavement Headworks	2010	1/01/2010	\$29,000		\$33,314	100.0%	30.3%	\$10,088	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage Treatment Plant - Treatment Plant Augmentation	2010	1/01/2010	\$763,000		\$876,492	100.0%	30.3%	\$265,420	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage Treatment Plant - Augmentation Borrowing Costs	2010	1/01/2010	\$53,000		\$60,883	100.0%	30.3%	\$18,437	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage - Mains Replacement	2010	1/01/2010	\$32,000		\$36,760	100.0%	30.3%	\$11,132	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage - Man Hole Raising	2010	1/01/2010	\$3,000		\$3,446	100.0%	30.3%	\$1,044	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage - Stage 2 Reticulation	2010	1/01/2010	\$102,000		\$117,172	100.0%	30.3%	\$35,482	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage - Simpson Street Reticulation	2010	1/01/2010	\$101,000		\$116,023	0.0%	30.3%	\$0	Excluded, reticulation
Tenterfield	Tenterfield Sewerage - Design for Staged Augmentation	2010	1/01/2010	\$12,000		\$13,785	100.0%	30.3%	\$4,174	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage - Mains Extension	2010	1/01/2010	\$41,000		\$47,099	100.0%	30.3%	\$14,262	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage Pumping Plant - Drummond Street Pump Station	2010	1/01/2010	\$5,000		\$5,744	100.0%	30.3%	\$1,739	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage Ancillary - Treatment Plant Fencing	2010	1/01/2010	\$19,000		\$21,826	100.0%	30.3%	\$6,609	Asset less than 30 years old

Asset Service Area(s)	Asset	Commissioning Year	Effective Commission Date	Capital Cost (2012)	Capital Cost (2017)	MEERA (2019)	Shared Proportion	Growth Proportion	Recoverable MEERA	Justification
Tenterfield	SPS Simpsons St	2010	1/01/2010		\$362,665	\$383,699	100.0%	30.3%	\$116,192	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage - Stage 2 Reticulation - Employee Costs	2011	1/01/2011	\$22,000		\$25,272	100.0%	30.3%	\$7,653	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage - Stage 2 Reticulation - General Expenses	2011	1/01/2011	\$32,000		\$36,760	100.0%	30.3%	\$11,132	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage - Stage 2 Reticulation - Plant Hire Charges	2011	1/01/2011	\$2,000		\$2,297	100.0%	30.3%	\$696	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage - Stage 1 - Simson Street Reticulation - Sewerage Network	2011	1/01/2011	\$45,000		\$51,694	100.0%	30.3%	\$15,654	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage - Pumping Well - Well Washers	2011	1/01/2011	\$1,000		\$1,149	100.0%	30.3%	\$348	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage - Dewatering Equipment	2011	1/01/2011	\$43,000		\$49,396	100.0%	30.3%	\$14,958	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage - SCADA System Upgrade	2011	1/01/2011	\$9,000		\$10,339	100.0%	30.3%	\$3,131	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage - Fence Replacement	2011	1/01/2011	\$4,000		\$4,595	100.0%	30.3%	\$1,391	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage - Design & Construction - Contract	2011	1/01/2011	\$17,000		\$19,529	100.0%	30.3%	\$5,914	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage - Design & Construction - Project Management	2011	1/01/2011	\$2,000		\$2,297	100.0%	30.3%	\$696	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage - Design & Construction -	2011	1/01/2011	\$21,000		\$24,124	100.0%	30.3%	\$7,305	Asset less than 30 years old

Asset Service Area(s)	Asset	Commissioning Year	Effective Commission Date	Capital Cost (2012)	Capital Cost (2017)	MEERA (2019)	Shared Proportion	Growth Proportion	Recoverable MEERA	Justification
	Treatment Plant - Roadworks									
Tenterfield	Tenterfield Sewerage - Riley Street Subdivision	2011	1/01/2011	\$141,000		\$161,973	100.0%	30.3%	\$49,049	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage - Drummond Street Mains Replacement	2011	1/01/2011	\$32,000		\$36,760	100.0%	30.3%	\$11,132	Asset less than 30 years old
Tenterfield	Tenterfield Sewerage - Riley Street Subdivision	2011	1/01/2011	\$6,000		\$6,892	100.0%	30.3%	\$2,087	Asset less than 30 years old
Tenterfield	Mains Extension - Aquilin	2011	1/01/2011	\$9,000		\$10,339	100.0%	30.3%	\$3,131	Asset less than 30 years old
Tenterfield	Mains Extension - Hines	2011	1/01/2011	\$7,000		\$8,041	100.0%	30.3%	\$2,435	Asset less than 30 years old
Tenterfield	Mains Relining (1km Year) - Renewal	2019	1/01/2019			\$157,600	100.0%	30.3%	\$47,725	Asset less than 30 years old
Tenterfield	Mains Augmentation	2019	1/01/2019			\$63,000	100.0%	30.3%	\$19,078	Asset less than 30 years old
Tenterfield	Man Hole Level Alterations (Water Infiltration) - Renewal	2019	1/01/2019			\$147,100	100.0%	30.3%	\$44,545	Asset less than 30 years old
Tenterfield	Upgrade Road to Tertiary Ponds	2019	1/01/2019			\$10,000	100.0%	30.3%	\$3,028	Asset less than 30 years old
Tenterfield	STP - Network Extension	2019	1/01/2019			\$153,800	100.0%	30.3%	\$46,574	Asset less than 30 years old
Urbenville	SPS1 Urben St	1955	Excluded	\$19,000		\$21,826	100.0%	30.5%	\$0	Excluded, asset more than 30 years old
Urbenville	STW Sludge	1955	Excluded	\$8,000		\$9,190	100.0%	30.5%	\$0	Excluded, asset more than 30 years old
Urbenville	Sewerage Pipe in - Treat. Works Eff Pond	1981	Excluded	\$58,000		\$66,627	100.0%	30.5%	\$0	Excluded, asset more than 30 years old
Urbenville	Sewerage Pipe in - RM3 Outfall	1981	Excluded	\$8,000		\$9,190	100.0%	30.5%	\$0	Excluded, asset more than 30 years old

Asset Service Area(s)	Asset	Commissioning Year	Effective Commission Date	Capital Cost (2012)	Capital Cost (2017)	MEERA (2019)	Shared Proportion	Growth Proportion	Recoverable MEERA	Justification
Urbenville	Sewerage Pipe in - RM3 Outfall	1981	Excluded	\$19,000		\$21,826	100.0%	30.5%	\$0	Excluded, asset more than 30 years old
Urbenville	Sewerage Pipe in - RM3 Outfall	1981	Excluded	\$5,000		\$5,744	100.0%	30.5%	\$0	Excluded, asset more than 30 years old
Urbenville	Sewerage Pipe in - RM3 Outfall	1981	Excluded	\$1,000		\$1,149	100.0%	30.5%	\$0	Excluded, asset more than 30 years old
Urbenville	STW Main	1982	Excluded	\$45,000		\$51,694	100.0%	30.5%	\$0	Excluded, asset more than 30 years old
Urbenville	STW Main	1982	Excluded	\$216,000		\$248,129	100.0%	30.5%	\$0	Excluded, asset more than 30 years old
Urbenville	STW Main	1982	Excluded	\$172,000		\$197,584	100.0%	30.5%	\$0	Excluded, asset more than 30 years old
Urbenville	STW Polishing	1982	Excluded	\$21,000		\$24,124	100.0%	30.5%	\$0	Excluded, asset more than 30 years old
Urbenville	STW Polishing	1982	Excluded	\$180,000		\$206,774	100.0%	30.5%	\$0	Excluded, asset more than 30 years old
Urbenville	STW Preliminary	1982	Excluded	\$66,000		\$75,817	100.0%	30.5%	\$0	Excluded, asset more than 30 years old
Urbenville	STW Siteworks	1982	Excluded	\$64,000		\$73,520	100.0%	30.5%	\$0	Excluded, asset more than 30 years old
Urbenville	STW Sludge	1982	Excluded	\$64,000		\$73,520	100.0%	30.5%	\$0	Excluded, asset more than 30 years old
Urbenville	SPS1 Urben St	1982	Excluded	\$92,000		\$105,685	100.0%	30.5%	\$0	Excluded, asset more than 30 years old
Urbenville	SPS1 Urben St	1982	Excluded	\$148,000		\$170,014	100.0%	30.5%	\$0	Excluded, asset more than 30 years old
Urbenville	SPS2 Woodenbong St	1982	Excluded	\$77,000		\$88,453	100.0%	30.5%	\$0	Excluded, asset more than 30 years old
Urbenville	SPS2 Woodenbong St	2001	1/01/2001	\$63,000		\$72,371	100.0%	30.5%	\$22,087	Asset less than 30 years old

Asset Service Area(s)	Asset	Commissioning Year	Effective Commission Date	Capital Cost (2012)	Capital Cost (2017)	MEERA (2019)	Shared Proportion	Growth Proportion	Recoverable MEERA	Justification
Urbenville	Manproof Fencing - Tertiary Ponds 08/09	2009	1/01/2009	\$7,000		\$8,041	100.0%	30.5%	\$2,454	Asset less than 30 years old
Urbenville	Relocated Dehydrator (2020) (from Tenterfield)	2009	1/01/2009			\$60,000	100.0%	30.5%	\$18,312	Asset less than 30 years old

15 Future Capital Works Program

	Tenterfield	Urbenville
New Growth ETs =	322	24
Total ETs =	1,750	134
Growth %	18.4%	17.9%

Asset Service Area(s)	Asset Details	Year	Cost Estimate	Shared Proportion	Growth Proportion	Recoverable Cost	Justification
Tenterfield	Mains Augmentation	2020	\$64,600	100%	18.4%	\$11,885	Future Asset
Tenterfield	Mains Relining (1km Year) - Renewal	2020	\$161,500	100%	18.4%	\$29,712	Future renewal within next 10 years
Tenterfield	Manhole Level Alterations (Water Infiltration)	2020	\$150,800	100%	18.4%	\$27,744	Future renewal within next 10 years
Tenterfield	Relocation Dehydrator	2020	\$10,000	100%	18.4%	\$1,840	Future renewal within next 10 years
Tenterfield	Sludge dehydrator for biosolids	2020	\$81,350	100%	18.4%	\$14,967	Future renewal within next 10 years
Tenterfield	STP Network Extension	2020	\$184,500	100%	18.4%	\$33,944	Future Asset
Tenterfield	Tenterfield STP Entrance Road and Drainage repair	2020	\$8,000	100%	18.4%	\$1,472	Future renewal within next 10 years
Tenterfield	Trail Lane Pump Station	2020	\$192,000.0	100%	18.4%	\$35,324	Future Asset
Tenterfield	Mains Augmentation	2021	\$66,200	100%	18.4%	\$12,179	Future Asset
Tenterfield	Mains Relining (1km Year) - Renewal	2021	\$165,500	100%	18.4%	\$30,448	Future renewal within next 10 years
Tenterfield	Manhole Level Alterations (Water Infiltration)	2021	\$154,600	100%	18.4%	\$28,443	Future renewal within next 10 years
Tenterfield	Martin St Pump Station	2021	\$318,000.0	100%	18.4%	\$58,505	Future Asset
Tenterfield	STP Network Extension	2021	\$189,100	100%	18.4%	\$34,790	Future Asset
Tenterfield	Mains Augmentation	2022	\$67,900	100%	18.4%	\$12,492	Future Asset
Tenterfield	Mains Relining (1km Year) - Renewal	2022	\$169,600	100%	18.4%	\$31,203	Future renewal within next 10 years
Tenterfield	Manhole Level Alterations (Water Infiltration)	2022	\$158,500	100%	18.4%	\$29,161	Future renewal within next 10 years

Asset Service Area(s)	Asset Details	Year	Cost Estimate	Shared Proportion	Growth Proportion	Recoverable Cost	Justification
Tenterfield	STP Network Extension	2022	\$189,100	100%	18.4%	\$34,790	Future Asset
Tenterfield	STP Scada System	2022	\$31,600	100%	18.4%	\$5,814	Future renewal within next 10 years
Tenterfield	Upgrade Road to Tertiary Ponds	2022	\$5,000	100%	18.4%	\$920	Future renewal within next 10 years
Tenterfield	Mains Augmentation	2023	\$69,600	100%	18.4%	\$12,805	Future Asset
Tenterfield	Mains Augmentation	2023	\$69,600	100%	18.4%	\$12,805	Future Asset
Tenterfield	Mains Relining (1km Year) - Renewal	2023	\$173,800	100%	18.4%	\$31,975	Future renewal within next 10 years
Tenterfield	Manhole Level Alterations (Water Infiltration)	2023	\$162,500	100%	18.4%	\$29,896	Future renewal within next 10 years
Tenterfield	STP - 3 bay Shed for Storage	2023	\$25,000	100%	18.4%	\$4,599	Future renewal within next 10 years
Tenterfield	STP - Grinder Pump	2023	\$10,000	100%	18.4%	\$1,840	Future renewal within next 10 years
Tenterfield	STP Network Extension	2023	\$193,800	100%	18.4%	\$35,655	Future Asset
Tenterfield	Mains Relining (1km Year) - Renewal	2024	\$173,800	100%	18.4%	\$31,975	Future renewal within next 10 years
Tenterfield	Mains Augmentation	2025	\$71,600	100%	18.4%	\$13,173	Future Asset
Tenterfield	Mains Relining (1km Year) - Renewal	2025	\$178,710	100%	18.4%	\$32,879	Future renewal within next 10 years
Tenterfield	Manhole Level Alterations (Water Infiltration)	2025	\$166,350	100%	18.4%	\$30,605	Future renewal within next 10 years
Tenterfield	STP Network Extension	2025	\$196,100	100%	18.4%	\$36,078	Future Asset
Tenterfield	Mains Augmentation	2026	\$72,940	100%	18.4%	\$13,419	Future Asset
Tenterfield	Mains Relining (1km Year) - Renewal	2026	\$182,000	100%	18.4%	\$33,484	Future renewal within next 10 years
Tenterfield	Manhole Level Alterations (Water Infiltration)	2026	\$170,250	100%	18.4%	\$31,322	Future renewal within next 10 years
Tenterfield	STP Network Extension	2026	\$198,890	100%	18.4%	\$36,591	Future Asset
Tenterfield	Mains Augmentation	2027	\$74,280	100%	18.4%	\$13,666	Future Asset
Tenterfield	Mains Relining (1km Year) - Renewal	2027	\$185,290	100%	18.4%	\$34,089	Future renewal within next 10 years
Tenterfield	Manhole Level Alterations (Water Infiltration)	2027	\$174,150	100%	18.4%	\$32,040	Future renewal within next 10 years
Tenterfield	STP Network Extension	2027	\$201,680	100%	18.4%	\$37,105	Future Asset
Tenterfield	Mains Augmentation	2028	\$75,620	100%	18.4%	\$13,912	Future Asset
Tenterfield	Mains Relining (1km Year) - Renewal	2028	\$188,580	100%	18.4%	\$34,695	Future renewal within next 10 years

Asset Service Area(s)	Asset Details	Year	Cost Estimate	Shared Proportion	Growth Proportion	Recoverable Cost	Justification
Tenterfield	Manhole Level Alterations (Water Infiltration)	2028	\$178,050	100%	18.4%	\$32,757	Future renewal within next 10 years
Tenterfield	STP Network Extension	2028	\$204,470	100%	18.4%	\$37,618	Future Asset
Tenterfield	Mains Augmentation	2029	\$76,960	100%	18.4%	\$14,159	Future Asset
Tenterfield	Mains Relining (1km Year) - Renewal	2029	\$191,870	100%	18.4%	\$35,300	Future renewal within next 10 years
Tenterfield	Manhole Level Alterations (Water Infiltration)	2029	\$181,950	100%	18.4%	\$33,475	Future renewal within next 10 years
Tenterfield	STP Network Extension	2029	\$207,260	100%	18.4%	\$38,131	Future Asset
Urbenville	Pad and Building including access for STP Urbenville	2020	\$8,000	100%	17.9%	\$1,429	Future renewal within next 10 years
Urbenville	Sludge Removal	2020	\$10,300	100%	17.9%	\$1,840	Future renewal within next 10 years
Urbenville	Surface Airator/ Mixer sized for Urbenville	2020	\$14,000	100%	17.9%	\$2,501	Future renewal within next 10 years
Urbenville	Sludge Removal	2021	\$10,600	100%	17.9%	\$1,894	Future renewal within next 10 years
Urbenville	STP Geotube for Sludge Removal	2023	\$10,000	100%	17.9%	\$1,787	Future renewal within next 10 years
Urbenville	STP Telemetry from PS to STP	2023	\$10,300	100%	17.9%	\$1,840	Future renewal within next 10 years

16 Calculation of the Capital Charge

Dates and General information	Value	Source
Year of Calculation	2019	
Assessment date	30/06/2019	
Discount rate date	1/01/1996	
30yr cut-off date	30/06/1989	
DISCOUNT RATE (pa) FOR ASSETS CONSTRUCTED BEFORE 1 JANUARY 1996 :	3%	DSP Guidelines
DISCOUNT RATE (pa) FOR ASSETS CONSTRUCTED ON OR AFTER 1 JANUARY 1996 :	5%	DSP Guidelines
DISCOUNT RATE (pa) FOR PROPOSED FUTURE ASSETS :	5%	DSP Guidelines

16.1 Tenterfield

Tenterfield			
	NPV Assets	NPV ETs	Capital Charge
Existing Assets (Pre 1996)	\$0	253	\$0
Existing Assets (Post 1996)	\$2,828,423	173	\$16,335
		Total	\$16,335

Year	Annual ET Take-up (ET)	Existing Assets (Pre 1996)	Existing Assets (Post 1996)	Historical Index	PV of Historical ETs (3%)	PV of Historical ETs (5%)	PV Existing Assets (Pre 1996) (3%)	PV Existing Assets (Post 1996) (5%)
1988/89		\$0						
1989/90		\$0						
1990/91		\$0						
1991/92		\$0						
1992/93		\$0						
1993/94		\$0						
1994/95		\$0						
1995/96	0		\$0	0	0	0	\$0	\$0
1996/97	9		\$212,893	1	9	9		\$202,755
1997/98	9		\$0	2	8	8		\$0
1998/99	8		\$0	3	7	7		\$0
1999/00	9		\$83,487	4	8	7		\$68,685
2000/01	8		\$0	5	7	6		\$0
2001/02	9		\$0	6	8	7		\$0
2002/03	9		\$0	7	7	6		\$0
2003/04	8		\$0	8	6	5		\$0

Year	Annual ET Take-up (ET)	Existing Assets (Pre 1996)	Existing Assets (Post 1996)	Historical Index	PV of Historical ETs (3%)	PV of Historical ETs (5%)	PV Existing Assets (Pre 1996) (3%)	PV Existing Assets (Post 1996) (5%)
2004/05	9		\$179,413	9	7	6		\$115,651
2005/06	9		\$0	10	7	6		\$0
2006/07	9		\$60,528	11	7	5		\$35,390
2007/08	9		\$217,067	12	6	5		\$120,871
2008/09	9		\$3,088,692	13	6	5		\$1,637,999
2009/10	9		\$493,624	14	6	5		\$249,314
2010/11	9		\$136,710	15	6	4		\$65,760
2011/12	10		\$0	16	6	5		\$0
2012/13	9		\$0	17	5	4		\$0
2013/14	9		\$0	18	5	4		\$0
2014/15	10		\$0	19	6	4		\$0
2015/16	9		\$0	20	5	3		\$0
2016/17	10		\$0	21	5	4		\$0
2017/18	10		\$0	22	5	3		\$0
2018/19	9		\$160,949	23	5	3		\$52,400
2019/20	10		\$87,546	24	5	3		\$27,145
2020/21	10		\$164,366	25	5	3		\$48,538
2021/22	10		\$114,379	26	5	3		\$32,168
2022/23	10		\$129,576	27	5	3		\$34,707
2023/24	9		\$31,975	28	4	2		\$8,157
2024/25	11		\$112,734	29	5	3		\$27,388
2025/26	10		\$114,817	30	4	2		\$26,566
2026/27	10		\$116,900	31	4	2		\$25,760
2027/28	10		\$118,982	32	4	2		\$24,970
2028/29	10		\$121,065	33	4	2		\$24,198
2029/30	11		\$0	34	4	2		\$0
2030/31	10		\$0	35	4	2		\$0
2031/32	11		\$0	36	4	2		\$0
2032/33	10		\$0	37	3	2		\$0
2033/34	11		\$0	38	4	2		\$0
2034/35	11		\$0	39	3	2		\$0
2035/36	11		\$0	40	3	2		\$0
2036/37	11		\$0	41	3	1		\$0
2037/38	11		\$0	42	3	1		\$0
2038/39	11		\$0	43	3	1		\$0
2039/40	11		\$0	44	3	1		\$0
2040/41	11		\$0	45	3	1		\$0
2041/42	11		\$0	46	3	1		\$0
2042/43	11		\$0	47	3	1		\$0
2043/44	12		\$0	48	3	1		\$0

Year	Annual ET Take-up (ET)	Existing Assets (Pre 1996)	Existing Assets (Post 1996)	Historical Index	PV of Historical ETs (3%)	PV of Historical ETs (5%)	PV Existing Assets (Pre 1996) (3%)	PV Existing Assets (Post 1996) (5%)
2044/45	11		\$0	49	3	1		\$0
2045/46	12		\$0	50	3	1		\$0
2046/47	12		\$0	51	3	1		\$0
2047/48	11		\$0	52	2	1		\$0
2048/49	12		\$0	53	3	1		\$0
	530				253	173	\$0	\$2,828,423

16.2 Urbenville

Urbenville			
	NPV Assets	NPV ETs	Capital Charge
Existing Assets (Pre 1996)	\$0	20	\$0
Existing Assets (Post 1996)	\$31,639	14	\$2,279
		Total	\$2,279

Year	Annual ET Take-up (ET)	Existing Assets (Pre 1996)	Existing Assets (Post 1996)	Historical Index	PV of Historical ETs (3%)	PV of Historical ETs (5%)	PV Existing Assets (Pre 1996) (3%)	PV Existing Assets (Post 1996) (5%)
1988/89		\$0						
1989/90		\$0						
1990/91		\$0						
1991/92		\$0						
1992/93		\$0						
1993/94		\$0						
1994/95		\$0						
1995/96	0		\$0	0	0	0	\$0	\$0
1996/97	1		\$0	1	1	1		\$0
1997/98	1		\$0	2	1	1		\$0
1998/99	1		\$0	3	1	1		\$0
1999/00	0		\$0	4	0	0		\$0
2000/01	1		\$22,087	5	1	1		\$17,306
2001/02	1		\$0	6	1	1		\$0
2002/03	0		\$0	7	0	0		\$0
2003/04	1		\$0	8	1	1		\$0
2004/05	1		\$0	9	1	1		\$0
2005/06	0		\$0	10	0	0		\$0
2006/07	1		\$0	11	1	1		\$0
2007/08	1		\$0	12	1	1		\$0
2008/09	0		\$20,766	13	0	0		\$11,013
2009/10	1		\$0	14	1	1		\$0
2010/11	1		\$0	15	1	0		\$0
2011/12	1		\$0	16	1	0		\$0
2012/13	0		\$0	17	0	0		\$0
2013/14	1		\$0	18	1	0		\$0
2014/15	1		\$0	19	1	0		\$0
2015/16	0		\$0	20	0	0		\$0
2016/17	1		\$0	21	1	0		\$0
2017/18	1		\$0	22	1	0		\$0
2018/19	1		\$0	23	1	0		\$0

Year	Annual ET Take-up (ET)	Existing Assets (Pre 1996)	Existing Assets (Post 1996)	Historical Index	PV of Historical ETs (3%)	PV of Historical ETs (5%)	PV Existing Assets (Pre 1996) (3%)	PV Existing Assets (Post 1996) (5%)
2019/20	0		\$5,770	24	0	0		\$1,789
2020/21	1		\$1,894	25	0	0		\$559
2021/22	1		\$0	26	0	0		\$0
2022/23	1		\$3,627	27	0	0		\$971
2023/24	0		\$0	28	0	0		\$0
2024/25	1		\$0	29	0	0		\$0
2025/26	1		\$0	30	0	0		\$0
2026/27	1		\$0	31	0	0		\$0
2027/28	1		\$0	32	0	0		\$0
2028/29	0		\$0	33	0	0		\$0
2029/30	1		\$0	34	0	0		\$0
2030/31	1		\$0	35	0	0		\$0
2031/32	1		\$0	36	0	0		\$0
2032/33	1		\$0	37	0	0		\$0
2033/34	0		\$0	38	0	0		\$0
2034/35	1		\$0	39	0	0		\$0
2035/36	1		\$0	40	0	0		\$0
2036/37	1		\$0	41	0	0		\$0
2037/38	1		\$0	42	0	0		\$0
2038/39	1		\$0	43	0	0		\$0
2039/40	0		\$0	44	0	0		\$0
2040/41	1		\$0	45	0	0		\$0
2041/42	1		\$0	46	0	0		\$0
2042/43	1		\$0	47	0	0		\$0
2043/44	1		\$0	48	0	0		\$0
2044/45	1		\$0	49	0	0		\$0
2045/46	1		\$0	50	0	0		\$0
2046/47	1		\$0	51	0	0		\$0
2047/48	0		\$0	52	0	0		\$0
2048/49	1		\$0	53	0	0		\$0
	41				20	14	\$0	\$31,639

17 Calculation of the Reduction Amount

Income	Water	Source
Income	\$2,271,504	2019-2020 Operation Plan (pg77)
Ops, Mnt and Admin	\$1,738,145	2019-2020 Operation Plan (pg77)
ET's	1,538	
Income / ET	\$1,477	
Ops, Mnt and Admin / ET	\$1,130	
Net income per ET	\$347	

	NPV Income	NPV ETs	Reduction Amount
Reduction Amount	\$706,174	173	\$4,072

Year	Total ETs	New ETs	PV New ETs (5%)	Cumulative ETs	Net Income (\$'000s)	PV Net income (5%)
2018/19	1538	0	0			
2019/20	1,548	10	10	10	\$3,468	\$3,303
2020/21	1,559	11	10	21	\$7,283	\$6,606
2021/22	1,569	10	9	31	\$10,751	\$9,287
2022/23	1,580	11	9	42	\$14,566	\$11,984
2023/24	1,591	11	9	53	\$18,381	\$14,402
2024/25	1,602	11	8	64	\$22,196	\$16,563
2025/26	1,613	11	8	75	\$26,011	\$18,485
2026/27	1,624	11	7	86	\$29,826	\$20,187
2027/28	1,635	11	7	97	\$33,641	\$21,685
2028/29	1,646	11	7	108	\$37,456	\$22,995
2029/30	1,657	11	6	119	\$41,271	\$24,130
2030/31	1,668	11	6	130	\$45,086	\$25,105
2031/32	1,680	12	6	142	\$49,247	\$26,117
2032/33	1,691	11	6	153	\$53,062	\$26,800
2033/34	1,702	11	5	164	\$56,877	\$27,359
2034/35	1,714	12	5	176	\$61,039	\$27,963
2035/36	1,726	12	5	188	\$65,201	\$28,447
2036/37	1,737	11	5	199	\$69,016	\$28,677
2037/38	1,749	12	5	211	\$73,177	\$28,959
2038/39	1,761	12	5	223	\$77,339	\$29,148
2039/40	1,773	12	4	235	\$81,501	\$29,254
2040/41	1,785	12	4	247	\$85,663	\$29,284
2041/42	1,797	12	4	259	\$89,824	\$29,244
2042/43	1,809	12	4	271	\$93,986	\$29,142
2043/44	1,822	13	4	284	\$98,495	\$29,086

2044/45	1,834	12	3	296	\$102,657	\$28,871
2045/46	1,847	13	3	309	\$107,165	\$28,704
2046/47	1,859	12	3	321	\$111,327	\$28,399
2047/48	1,872	13	3	334	\$115,835	\$28,142
2048/49	1,885	13	3	347	\$120,344	\$27,845
			173			\$706,174

18 Cross-Subsidy Calculations

Council has elected to not apply a cross-subsidy to the developer charges for sewerage services. The following calculations are provided for reference only.

Option 1 - No Cross Subsidy							
DSP Area	Service Area	Calculated Developer Charge	PV New ETs	Weighting	Weighted component	Weighted average developer charge	Weighted average cross-subsidy to developer charge
DSP Area A	Tenterfield	\$12,263	170.3	93%	\$11,397	\$11,397	\$0
DSP Area B	Urbenville	\$0	12.9	7%	\$0		

Option 2 - 20% Discount							
DSP Area	Service Area	Calculated Developer Charge	PV New ETs	Weighting	Weighted component	Weighted average developer charge	Weighted average cross-subsidy to developer charge
DSP Area A	Tenterfield	\$8,996	170.3	93%	\$8,361	\$8,361	\$3,036
DSP Area B	Urbenville	\$0	12.9	7%	\$0		

Option	Required annual water supply / sewerage bill per ET (\$)	Resulting increase in annual water supply/ sewerage bill (%)
1 – No Cross-subsidy	\$1,477	0.00%
2 – Adopted Cross-subsidy (20%)	\$1,497	1.39%

Option 2 - 20% Discount	
Weighted subsidy	\$3,036.34
Income	\$2,271,504
ETs	1,538
Annual Bill 0%	\$1,477
Annual Bill 10%	\$1,498
Increase %	1.39%

Year	Total ETs	New ET's	Annual Subsidy	PV Annual with Subsidy	Annual Bill revenue - no subsidy	Annual Bill revenue - with subsidy	Additional amount required (Difference)	PV Additional Amount
2018/19	1,538							
2019/20	1,548	10	\$30,363	\$28,917	\$2,286,948	\$2,318,699	\$31,751	\$30,239
2020/21	1,559	11	\$33,400	\$30,295	\$2,302,497	\$2,334,464	\$31,967	\$28,995
2021/22	1,569	10	\$30,363	\$26,229	\$2,318,151	\$2,350,336	\$32,185	\$27,802
2022/23	1,580	11	\$33,400	\$27,478	\$2,333,912	\$2,366,316	\$32,403	\$26,658
2023/24	1,591	11	\$33,400	\$26,170	\$2,349,780	\$2,382,404	\$32,624	\$25,561
2024/25	1,602	11	\$33,400	\$24,923	\$2,365,756	\$2,398,602	\$32,845	\$24,510
2025/26	1,613	11	\$33,400	\$23,737	\$2,381,841	\$2,414,910	\$33,069	\$23,501
2026/27	1,624	11	\$33,400	\$22,606	\$2,398,035	\$2,431,329	\$33,294	\$22,534
2027/28	1,635	11	\$33,400	\$21,530	\$2,414,339	\$2,447,859	\$33,520	\$21,607
2028/29	1,646	11	\$33,400	\$20,505	\$2,430,754	\$2,464,502	\$33,748	\$20,718
2029/30	1,657	11	\$33,400	\$19,528	\$2,447,281	\$2,481,258	\$33,977	\$19,866
2030/31	1,668	11	\$33,400	\$18,598	\$2,463,919	\$2,498,128	\$34,208	\$19,048
2031/32	1,680	12	\$36,436	\$19,323	\$2,480,672	\$2,515,112	\$34,441	\$18,265
2032/33	1,691	11	\$33,400	\$16,869	\$2,497,537	\$2,532,213	\$34,675	\$17,513
2033/34	1,702	11	\$33,400	\$16,066	\$2,514,518	\$2,549,429	\$34,911	\$16,793
2034/35	1,714	12	\$36,436	\$16,692	\$2,531,614	\$2,566,762	\$35,148	\$16,102
2035/36	1,726	12	\$36,436	\$15,897	\$2,548,826	\$2,584,214	\$35,387	\$15,439
2036/37	1,737	11	\$33,400	\$13,878	\$2,566,156	\$2,601,784	\$35,628	\$14,804
2037/38	1,749	12	\$36,436	\$14,419	\$2,583,603	\$2,619,473	\$35,870	\$14,195
2038/39	1,761	12	\$36,436	\$13,732	\$2,601,169	\$2,637,283	\$36,114	\$13,611
2039/40	1,773	12	\$36,436	\$13,078	\$2,618,854	\$2,655,213	\$36,359	\$13,051
2040/41	1,785	12	\$36,436	\$12,456	\$2,636,659	\$2,673,266	\$36,607	\$12,514
2041/42	1,797	12	\$36,436	\$11,863	\$2,654,586	\$2,691,441	\$36,855	\$11,999
2042/43	1,809	12	\$36,436	\$11,298	\$2,672,634	\$2,709,740	\$37,106	\$11,505
2043/44	1,822	13	\$39,472	\$11,656	\$2,690,805	\$2,728,164	\$37,358	\$11,032

Year	Total ETs	New ET's	Annual Subsidy	PV Annual with Subsidy	Annual Bill revenue - no subsidy	Annual Bill revenue - with subsidy	Additional amount required (Difference)	PV Additional Amount
2044/45	1,834	12	\$36,436	\$10,247	\$2,709,100	\$2,746,712	\$37,612	\$10,578
2045/46	1,847	13	\$39,472	\$10,573	\$2,727,519	\$2,765,387	\$37,868	\$10,143
2046/47	1,859	12	\$36,436	\$9,295	\$2,746,063	\$2,784,189	\$38,126	\$9,726
2047/48	1,872	13	\$39,472	\$9,590	\$2,764,733	\$2,803,118	\$38,385	\$9,325
2048/49	1,885	13	\$39,472	\$9,133	\$2,783,531	\$2,822,176	\$38,646	\$8,942
				\$526,579				\$526,579