

# INVERELL SHIRE COUNCIL



## Development Servicing Plan No. 1



AUGUST 2005

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## Summary

This Development Servicing Plan (DSP) covers water supply and sewerage developer charges in regard to the Council's development areas served by Inverell Shire Council.

The DSP allows Inverell Shire Council to levy developer charges for water supply and sewerage services under Section 64 of the Local Government Act, 1993 by means of a cross-reference to Section 306 of the Water Management Act, 2000, where the anticipated development will, or is likely to increase the demand for public facilities.

This DSP has been prepared in accordance with the guidelines for calculating developer charges for water supply, sewerage and stormwater (DLWC 2002) as issued by the Minister for Land & Water Conservation.

The existing and proposed works servicing the area covered by this DSP are shown in Development Servicing Zone Plans (*Appendix A*).

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

Standards of service to be provided for water and sewerage services are summarised in Section 5.

The water supply and sewerage developer charges for the areas covered by this DSP have been calculated as follows:-

SERVICE	DEVELOPER CHARGE (\$/ET)
Water Supply	\$9,330.00
Sewerage	\$3,010.00

Developer charges relating to this DSP will be reviewed after a period of 5 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.

Developer charges will be those charges determined by Council and will be published in Council's annual fees and charges.

The developer shall be responsible for the full cost of the design and construction of water supply and sewer reticulation works within a subdivision, also any works required to create the subdivision.

A background document titled "Guidelines - Developer Charges for Water Supply, Sewerage & Stormwater (DLWC 2002)" which identifies the characteristics of the assets covered by the DSP is available for reviewing at Council.

Council has identified various works required to cater for backlog works and future growth needs. These works include the following:-

### SEWER

- Yetman – provision of sewerage scheme to the village
- Inverell – upgrade of existing sewer treatment works

### WATER

- Inverell – new reservoir
- Inverell – reticulation service mains

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## 1.0 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) is a document that details the water supply and sewerage development charges to be based on development areas utilising a water utilities water supply and sewerage infrastructure.

This DSP covers water supply and sewerage developer charges in regard to the development areas served by Council as shown in *Appendix A*.

This DSP has been prepared in accordance with the guidelines for calculating developer charges for water supply, sewerage and stormwater (DLWC 2002) issued by the Minister for Land & Water Conservation.

This DSP supercedes any other requirements related to water supply and sewerage developer charges for the area covered by this DSP. This DSP takes precedence over any of Council's codes or policies where there are any inconsistencies relating to water supply and sewerage developer charges.

## 2.0 ADMINISTRATION:

- DSP Name

The name of the Plan is "Inverell Shire Council – Development Servicing Plan No. 1"

- DSP Area

The areas covered by this DSP are the areas served by Inverell, Ashford and Yetman water supply schemes and Inverell, Ashford, Delungra, Gilgai and Yetman sewerage schemes.

- DSP Boundaries

The basis for defining DSP area boundaries is related to the feasibility of providing the services to an area and the development controls relative to that area.

- Payment of Developer Charges

Developer Charges are payable prior to release of Subdivision Plan, Construction Certificate or commencement of approved development.

## 3.0 DEMOGRAPHIC & LAND USE PLANNING INFORMATION:

### 3.1 Growth Projections

#### Projected Residential Demand Growth

REGION	POPULATION				
	1991	1996	2001	2006	2011
Ashford	567	542	476	480	500
Delungra	324	319	276	280	290
Gilgai	379	347	292	295	300
Inv	9,736	9,378	9,537	10,000	10,500
Yetman			139	142	145

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### 3.2 Land Use Information

This DSP should be read in conjunction with the Inverell Local Environmental Plan 1988, as amended or any subsequent replacement plans.

## 4.0 WATER SUPPLY & SEWERAGE INFRASTRUCTURE

The existing and proposed water supply works are based on an annual demand, peak day demand and peak instantaneous demand serving the area covered by this DSP as shown in Developer Contribution Zone Plans (*Appendix A*).

### 4.1 Water Supply Works Serving DCP Area

- Storage Reservoirs – works as described in the reference document “Water Supply Developer Charges Calculation (DPWS 2001)
- Pumping Stations & Treatment Plants – works as described in the reference document “Water Supply Developer Charges Calculation (DPWS 2001)
- Distribution & Trunk Mains – works as described in the reference document “Water Supply Developer Charges Calculation (DPWS 2001)

### 4.2 Sewerage Works Serving DCP Area

- Pumping Stations & Treatment Plants - works as described in the reference document “Water Supply Developer Charges Calculation (DPWS 2001)
- Distribution & Pumping Mains - works as described in the reference document “Water Supply Developer Charges Calculation (DPWS 2001)

### 4.3 Estimates of Capital Costs

Not applicable at this time.

### 4.4 Timing of Works & Expenditure

Not applicable at this time.

## 5.0 STANDARDS OF SERVICE:

System design and operation are based on providing the following levels of service:-

### 5.1 Water Supply

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

- Provision of water treated to meet the 1996 National Health & Medical Research Council/ ARMCANZ Australian Drinking Water Guidelines 100% of the time
- Minimum water pressure of 12m head at the service connection point, when supplying the peak instantaneous demand
- Interruptions to Supply – Planned – Domestic customers to receive 24hours written notice and industrial customers to receive 7 days written notice
  - Unplanned – not to occur more than twice a year nor last longer than 12 hours

The bulk water supply from Copeton Dam for Inverell and district, Pindari Dam (Severn River) for Ashford and bore for Yetman were designed to provide a secure yield. The secure yield is considered to be the annual demand which can be supplied from the headworks over a period of records used in the analysis and satisfying the following conditions:-

- Water restrictions should not be applied more than 5% of the time

- Water restrictions should not be imposed more often than once every 10 years on average
- The water supply system should be able to supply 80% of the normal demand (ie. 20% reduction in consumption) through a report of the worst drought on record

## 5.2 Sewerage Reticulation

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

- Sewage effluent meeting National Water Quality Guidelines for Sewer Systems
- All sewer chokes removed and normal service restored in less than four hours
- Sewage overflows less than one per pump station per year
- Sewer odour complaints less than two per treatment plant and pump station per year

## 6.0 DESIGN PARAMETERS:

### 6.1 Water Supply

Investigation and design of water supply system components is based on the following:-

- Water Supply Investigation Manual (1986) – this manual was prepared by NSW Public Works and is now managed by the Department of Energy, Utilities & Sustainability.
- WS-SPEC Water Service Specification (2000)
- Water Reticulation Code of Australia (1999)

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

- Ashford Water Supply Augmentation Report (No. 208)
- Tingha Water Supply Scheme Investigation Report (1990)
- Augmentation of the Inverell Water Supply Distribution System Report (No. 181)
- Delungra Water Supply Augmentation (No. 389)

### 6.2 Sewerage

Investigation and design of sewerage system components is based on the following:-

- Manual of Practice – Sewer Design (1984)
- Manual of Practice – Sewage Pumping Station Design (1986)

These manuals were prepared by NSW Public Works and are now managed by the Department of Energy, Utilities & Sustainability.

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

- Wastewater Management Options Study for Yetman (2002)
- Inverell Sewerage Augmentation (1981)
- Inverell Sewage Treatment Works (1980)
- Gilgai Sewerage Scheme (No. A224)

## 7.0 CALCULATED DEVELOPER CHARGES

### 7.1 Summary

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

	Capital Charge (\$/ET)	Reduction Amount (\$/ET)	Calculated Developer Charge (\$/ET)	Adopted Developer Charge (\$/ET)
Water Supply	9,910	980	9,330	9,330
Sewerage	3,377	500	3,010	3,010

These amounts have been calculated on the basis of the following capital charges and reduction amounts.

## 7.2 Capital Charges

The capital charges for the area served by this DSP have been calculated as follows:-

### Water Supply

Location	Capital Cost (\$ ,000)	Capital Cost per ET (\$)	Capital Charge per ET (\$)
Ashford	2,784	6,960	9,974
Inverell	3,380	6,762	9,928
Yetman	415	5,390	8,110

### Sewer

Location	Capital Cost (\$ ,000)	Capital Cost per ET (\$)	Capital Charge per ET (\$)
Ashford	1,428	3,570	5,372
Delungra	796	3,980	5,989
Gilgai	934	6,268	7,858
Inverell	8,537	2,135	3,200
Yetman	919	11,072	14,645

## 7.3 Weighted Average Capital Charge

As Council has a single tariff for both water supply and sewerage services, a weighted average capital charge is calculated and shown below.

The majority of development occurs in the Inverell water supply and sewerage scheme areas.

### Water – Weighted Average Capital Charge

Location	Capital Charge Per ET (\$)	% of Total Growth	Weighted Average Capital Charge (\$)
Ashford	9,974	1	\$99.72
Inverell	9,928	98	\$9,729.44
Yetman	8,110	1	\$81.10
<b>TOTAL</b>		<b>100%</b>	<b>\$9,910.00</b>

### Sewer – Weighted Average Capital Charge

Location	Capital Charge Per ET (\$)	% of Total Growth	Weighted Average Capital Charge (\$)
Yetman	14,645	0.5	\$73.225
Gilgai	7,858	1.5	\$117.87
Delungra	5,989	1	\$59.89
Ashford	5,372	1	\$53.72
Inverell	3,200	96	\$3,072.00
<b>TOTAL</b>		<b>100%</b>	<b>\$3,377.00</b>

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#### 7.4 *Reduction Amount*

Council has adopted the NPV of Annual Charges Method to calculate the reduction amount.

This method involves calculation of the present value of the difference between annual rates and charges revenue, and annual operating costs projected for new development over the next 30 years.

This is divided by the present value of the new ETs over the planning horizon to give the reduction amount.

This method involves forecasting 30 years of income and expenditures relating to new development.

The reduction amounts have been calculated as follows:-

#### 7.5 *Water Supply*

- \$980.00 reduction amount (first 5 years)

(Detailed calculations available from "Inverell NPV Annual Charges Water.xls" 1<sup>st</sup> iteration sheet)

#### 7.6 *Sewerage*

- \$500.00 reduction amount (first 5 years)

(Detailed calculations available from "Inverell NPV Annual Charges Water.xls" 1<sup>st</sup> iteration sheet)

### **8.0 DEVELOPER CHARGES:**

#### 8.1 *Reviewing/Updating of the Calculated Developer Charges*

Developer charges relating to this DSP will be reviewed at five yearly intervals. In the period between this review, developer charges will be adjusted on the commencement of each financial year on the basis of the preceding year's movements in the CPI for Sydney, excluding the impact of GST.

Developer charges will be those charges determined by Council and will be published in Council's annual fees and charges.

#### 8.2 *Reticulation Works*

The developer shall be responsible for the full cost of the design and construction of water supply and sewer reticulation works within a subdivision, as well as works leading up to that subdivision.

#### 8.3 *Payment for Developer Charges*

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

#### 8.4 *Timing of Payment of Developer Charges*

Payment of developer charges must be finalised at the following stages:-

- Development consents involving subdivisions will be prior to release of the linen plan
- Development consents involving building work will be prior to the release of the Construction Certificate
- Development consents where no Construction Certificate is required will be at the time of issue of the Notification of Consent, or prior to the commencement of approved development as may be determined by Council.

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### 8.5 Methodology for Determining Developer Charges

Refer to *Appendix B* to determine developer charges to be paid.

#### Water

Developer charges will be applied as follows to all properties rated for water supply (paying standing charge)

In accordance with the Local Government Act 1993, Section 15-1220, water charges may be levied on land within 225m from a water main:

- The first lot in a residential subdivision is exempt from developer charges.
- The Developer charge for a dual occupancy, villa, townhouse or residential flat development is the number of Ets (equivalent tenements) generated as determined in *Appendix B*, minus the charge for one lot (1 ET).

Properties not rated for water supply (paying a standing charge), do not receive the one lot credit.

#### Sewer

In accordance with the Local Government Act 1993, Section 15-1220, sewerage charges may be levied on land which is within 75 metres of a sewer main and is sewerable.

Developer charges will be applied as follows to all properties rated for sewerage:-

- The first lot in a residential subdivision is exempt from developer charges

OR

- The first dwelling on a residential lot is exempt from developer charges
- The developer charge for a dual occupancy, villa, townhouse or residential flat development is the number of ETs (equivalent tenements) generated as per *Appendix B* minus the charge for one lot (1 ET)

### 8.6 Developments Outside Development Servicing Zone

Development areas outside the Development Servicing Zone (*Appendix A*) which are to be developed during the term of this policy and have no detailed DSP will be subject to a separate DSP. The Developer shall be responsible for the preparation cost of this DSP.



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## ***References***

- \* Best Practice Management of Water Supply  
& Sewerage Guidelines  
**Department of Energy, Utilities & Sustainability**  
Sept. 2003
- \* Inverell Shire Council Water Supply  
Strategic Business Plan  
Nov. 1997
- \* NSW Reference Rates Manual  
Valuation of Water Supply, Sewerage &  
Stormwater Assets  
**Department of Energy, Utilities & Sustainability**  
June 2003
- \* Inverell Shire Council  
Section 94 Contributions Plan

These documents contain detailed calculations for the capital charge, reduction amount, including asset commissioning dates, size, length of assets, MEERA valuation of assets, and financial modelling for calculation of reduction amounts. These documents can be reviewed in Council's offices by appointment. To review the documents, please contact Council's Technical Services Department at the Administration Centre on 6728 8200.

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## ***Glossary***

Some common terms are provided below:

ADWF	Average Dry Weather Flow
Annual Demand	Total Annual Water Consumption
AWWF	Average Wet Weather Flow
CPI	Consumer Price Index
DSP	Development Servicing Plan
DCP	Development Control Plan
DLWC	Department of Land & Water Conservation
EP	Equivalent Persons
ET	Equivalent Tenement
GFA	Gross Floor Area – area within outer face of external walls excluding car parking areas and balconies
IPART	Independent Pricing & Regulatory Tribunal
kL/D	Kilolitres per day
LEP	Local Environmental Plan
MEERA	Modern Equivalent Engineering Replacement Asset
ML/d	Megalitres per day
NHMRC	National Health & Medical Research Council
NPV	Net Present Value
Peak Day Demand	Highest water consumption on one day in a year
PMT	Excel function which calculates the required uniform annual loan payments
PWWF	Peak Wet Weather Flow
PS	Pumping Station
SR	Service Reservoir
STW	Sewage Treatment Works
WTW	Water Treatment Works

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***Appendix A***

**ZONE PLANS**

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## ***Appendix B***

### **CALCULATION OF DEVELOPER CHARGES TO BE PAID**

#### WATER & SEWER

Charges shall be calculated for each development, as follows:-

$$C = A \times B$$

C	=	Developer Charges Payable
A	=	\$9,330.00 (Water – 1 <sup>st</sup> July 2004) or as indicated in Council's Annual Fees & Charges
A	=	\$3,010.00 (Sewer – 1 <sup>st</sup> July 2004) or as indicated in Council's Annual Fees & Charges
B	=	Number of ETs (Equivalent Tenements) from "Section 64 Determinations of Equivalent Tenements Guidelines" prepared by NSW Water Directorate.

7 April 2005

Mr Paul Henry  
General Manager  
Inverell Shire Council  
INVERELL NSW 2360

Attention: Graham Bendeich

Dear Paul

**Re: Section 64 Determinations of Equivalent Tenements Guidelines**

As you may be aware the Water Directorate recently released the *Section 64 Determinations of Equivalent Tenements Guidelines*. The purpose of this letter is to encourage you to formally adopt the Guidelines for the reasons outlined below.

The philosophy behind the Guidelines was to ensure that every Council had a defensible and transparent basis to enable Section 64 charges to be determined. Historically Councils have individually determined ETs using a broad range of disparate data sourced from local experience, State agencies, larger Water Authorities and industry associations (often based on data collected in the 1970s and 1980s).

The adoption of standard figures across the State will provide a basis for explanation to proponents/developers and a defence should a S64 charge be legally challenged.

The appropriate process for adoption of the standard ETs will vary from Council to Council. In most cases, however, inclusion in Council's 2005/2006 Management Plan (fees and charges) and/or amendment to your Section 64 Contribution Plan is all that will be required.

To assist you in this process an electronic copy of a draft generic report to Council is available at [www.waterdirectorate.asn.au/news/Section64adoption.htm](http://www.waterdirectorate.asn.au/news/Section64adoption.htm). This draft report will simplify the adoption of the Section 64 Determinations of Equivalent Tenements Guidelines as the basis of part of the technical input to your Developer Servicing Plan.

The Water Directorate is providing this service to member councils to assist your water and sewer staff better manage the services they provide and achieve best practice. Should you require further information or wish to discuss any aspect, please do not hesitate to contact the Water Directorate on 8267 3010.

Yours sincerely



Gary Mitchell  
Executive Officer

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**1 DISCLAIMER AND COPYRIGHT**

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The *Section 64 Determinations of Equivalent Tenements Guidelines* are based on NSW water industry standards and are current as at January 2005.

These Guidelines are to be used only for input into the process of proportioning developer charges under s64 of the *Local Government Act 1993* to ensure full and equitable cost recovery between different land use categories.

The Guidelines are designed to provide a consistent framework for determining water and sewer equivalent tenements (ET) figures. The calculation of the developer contributions for individual developments is the responsibility of the local water authority.

This first edition of the Guidelines includes suggested ET figures based on a sample of local water authorities across NSW. It is intended that subsequent editions will be based on a more comprehensive data set from across the State, as more detailed data based on typical water consumptions and sewage loadings for various development types becomes available in the future.

The Water Directorate and its consultants:

- Do not guarantee the accuracy, currency or completeness of the information contained in these guidelines;
- Are not responsible for the result of any actions taken on the basis of the information in, nor for any error in, or omission from, these guidelines;
- Do not accept liability for any loss or damages arising from the use of the information contained in these guidelines; and
- Expressly disclaim all and any liability and responsibility to any person, whether a recipient, reader or otherwise, in respect of anything, and of the consequences of anything, done or omitted to be done by any such person in reliance upon the whole or part of the contents of these guidelines.

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**2 OVERVIEW**

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The Section 64 Determinations of Equivalent Tenements Guidelines have been prepared for use by local government water authorities in regional NSW. These Guidelines are to be used only for input into the process of proportioning developer charges under s64 of the *Local Government Act 1993* to ensure full and equitable cost recovery between different land use categories.

These Guidelines were prepared by Hunter Water Australia under the peer review of the Water Directorate's Policy Subcommittee consisting of:

- David Byrne
- Mike Rayner
- Daryl McGregor
- Stewart McLeod
- John Gould

The Guidelines provide advice on suggested water and sewer ET figures based on current figures used by a sample of water authorities across NSW. These figures have been presented with the units of 'Standard ET' and are considered state-wide averages. For the purposes of these guidelines, a Standard ET represents:

- An average residential water consumption of 230 kL/a per dwelling
- An average residential sewage loading of 140 kL/a per dwelling (based on a sewer discharge factor of around 60%)

The Guidelines also include advice on establishing ET figures based on state-wide data (Standard ET figures) and local data (Local ET figures). Contributions from Water Directorate member councils were very helpful in putting this data together. Further contributions and feedback are welcome, particularly in reviewing and updating the standard ET figures as outlined in Appendix E.

It should be noted that the water and sewer ET figures included in the guidelines are based on a traditional single supply system (ie no raw water/effluent dual reticulation, rainwater tanks, etc), and represent the total water demand or sewage loading for the development.



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**3 EXPLANATION OF LOCAL ET AND STANDARD ET**

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The following sections include an explanation of Local ET and Standard ET, advice on using the Standard ET figures, an explanation of the user categories and methodologies for establishing ET figures based on local and state-wide data.

**3.1 The Need for a Local ET and a Standard ET**

An 'equivalent tenement' or ET is considered to be the demand or loading a development will have on infrastructure in terms of the water consumption or sewage discharge for an average residential dwelling or house.

While the notion of an equivalent tenement for water demands is generally appropriate for a particular water authority operational area (eg township or local government area), the notion of an equivalent tenement applied across all operational areas in NSW is not strictly valid. This is due to the significant variability that exists in average and peak demands for residential development across NSW (refer to 2002/03 NSW performance reporting (DEUS, 2004)). This variability is due to numerous factors, including:

- Household occupancy rates;
- Climatic variability (eg rainfall, temperature, humidity);
- Socio-economic variability (extent of household fixtures and gardens);
- The presence of water meters and two part tariffs; and
- Penetration of demand management principles

While a state-wide based ET would represent an average consumption of around 230 kL/a, a regional based ET may represent an average consumption of between 50% and 300% of this value (DEUS, 2004).

Similar to water, the notion of an equivalent tenement for sewage loadings is generally appropriate for a particular operational area. However, unlike water, the notion of an equivalent tenement applied across all operational areas in NSW is also considered valid. The variability in sewage loadings for single domestic dwellings across NSW is likely to be significantly less than the variability exhibited in water demands, particularly for peak dry weather loadings, as dry weather or average sewage loadings are not greatly influenced by climate. Factors influencing the variability in domestic sewage loadings include:

- Household occupancy rates; and
- Internal water use efficiency, which is dependent on the presence of water meters and two part tariffs, the penetration of demand management principles and the extent of water efficient appliances and fixtures.

Average dry weather sewage rates generally lie between 0.004 L/s/ET and 0.011 L/s/ET. Sewage rates greater than 0.011 L/s/ET may be the result of significant groundwater infiltration. It is generally accepted that a sewer ET represents an average loading of around 0.008 L/s at both a state and local level, with the accepted design value being 0.011 L/s/ET (PWD, 1987).

Therefore, in assessing ET figures, it is important to distinguish between a state-wide or 'Standard' ET and a 'Local' ET.

### 3.2 Definition of a Standard ET

A Standard ET is considered to be the demand or loading a development will have on infrastructure in terms of the average water consumption or average sewage discharge for an average residential dwelling or house, based on state-wide data.

Based on state averages in recent performance reporting by the NSW Department of Energy, Utilities & Sustainability (DEUS, 2003), (DEUS, 2004) and recent performance reporting data collected by the Water Services Association of Australia (WSAA, 2001), a Standard ET has been defined, for the purposes of these guidelines, as:

- An average water consumption of 230 kL/a (based on average residential consumption)
- An average sewage loading of 140 kL/a (based on around 60% discharge factor)

### 3.3 Definition of a Local ET

A Local ET is considered to be the demand or loading a development will have on infrastructure in terms of the average water consumption or average sewage discharge for an average residential dwelling or house, based on data for a particular water authority.

Generally, the average residential water consumption per dwelling should be determined from the total residential house consumption divided by the total number of residential houses. For local water authorities that have a relatively low proportion of medium density type development, the average residential water consumption per dwelling can be taken as the total residential consumption divided by the total number of residential dwellings (ie houses plus flats/units).

If local data on water consumptions for residential houses is not available, the average residential water consumption per dwelling should be adopted from another similar water authority that has established figures.

#### 3.3.1 *Local ET Figures for Water*

Residential Local ET figures for water should preferably be determined from local data, where sufficient data is available, on the basis that residential water consumption differs substantially across the state. Standard ET figures may be used where sufficient data is not available to determine figures for a particular residential subcategory (eg units).

For non-residential categories, it is assumed that average water consumptions for particular development types do not differ substantially across the state (particularly if any substantial irrigation usage is considered separately). Therefore, for local water authorities that have a Local ET water consumption that does not differ substantially from the Standard ET water consumption (currently 230 kL/a), Standard ET figures for water can be adopted directly as Local ET figures.

Where the Local ET water consumption does differ substantially from the Standard ET water consumption, Standard ET figures for water should be factored up or down, prior to adopting them for Local ET figures.

#### 3.3.2 *Local ET Figures for Sewer*

For both residential and non-residential categories, Standard ET figures for sewer can be adopted directly as Local ET figures, on the basis that sewage loadings for residential and non-residential categories should not differ substantially across the State.

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**4 USING THE STANDARD ET TABLES**

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Tables of Standard ET figures for a comprehensive list of user categories for Residential, Commercial and Industrial developments are included in Part B of the Guidelines. The list of user categories is not exhaustive and consequently, advice has been included in the guidelines on how to calculate ET figures for non-typical developments.

The tables may be used to calculate the estimated water and sewer Standard ET for a development in order to assess the applicable water and sewer developer charges. The figures in the tables are based on the current definition of a Standard ET and may need to be converted to Local ET prior to local use by a particular local water authority.

This first edition of the Guidelines includes Standard ET figures for the majority of subcategories, based on current figures used by a sample of water authorities across NSW (refer to *Appendix C*). However, it is intended that subsequent editions of the Guidelines will include revised Standard ET figures based on a comprehensive set of state-wide data. It is recommended that the revised Standard ET figures are determined using the methodologies proposed within these Guidelines. Priorities for the review and updating of Standard ET figures are included in *Appendix E*.

## 5 EXPLANATION OF USER CATEGORIES

A list of user categories has been developed based on the range of development types typically encountered by regional NSW local government water authorities. The user categories have been grouped according to the following broad development types:

1. Residential (see *Table 1: Standard ET Figures – Residential User Categories*)
2. Commercial (see *Table 2: Standard ET Figures – Commercial User Categories*)
3. Industrial (see *Table 3: Standard ET Figures – Industrial User Categories*)

The broad development types would generally correspond to the likely land zoning. Contained within each of the broad development types is a list of major categories and subcategories.

### 5.1 Residential User Categories

#### 5.1.1 Single Residential Lots

The majority of developments are residential houses on standard size allotments (approximately 450m<sup>2</sup> to 1,000m<sup>2</sup>). It is generally accepted that a demand / loading of 1 ET is applicable for both water and sewer for residential lots.

An increasing number of single dwelling developments are rural residential developments on larger allotments (greater than 2,000m<sup>2</sup>). While it is generally accepted that for this type of development a loading of 1 ET is applicable for sewer, recorded consumptions from existing rural residential development areas indicate that water consumptions generally exceed standard residential house consumptions.

#### 5.1.2 Multi-Residential Lots (Medium Density – 1 to 2 Storey)

Lots are generally classed as multi-residential if more than one domestic dwelling is located on a single allotment. This includes the following development types:

- Duplexes
- Units (including self care retirement units)
- Flats
- Apartments
- Dual occupancies

While units / flats / apartments exhibit lower water demands (due to reduced occupancy rates and significantly smaller or no gardens) and lower sewage loadings (due to reduced occupancy rates), modern duplexes and dual occupancies exhibit demands / loadings similar to residential houses. Therefore, Duplexes and Dual Occupancies on large lots have generally been considered similar to residential houses.

#### 5.1.3 Multi-Residential Lots (High Density – Multi-storey)

For units / flats / apartments, consideration may be given to further reducing water ET figures for multi-storey developments (compared to standard multi-residential) due to the absence of outdoor watering.

## 5.2 Commercial User Categories

Water ET figures for Commercial user categories exclude allowances for significant irrigation. It is suggested that irrigation be considered separately.

### 5.2.1 Accommodation (Permanent)

This category includes accommodation dwellings or rooms that are occupied permanently or semi-permanently, but are generally developed on land zoned for commercial purposes. Subcategories include Caravan / Mobile Home Park (with permanent occupation), Boarding House, Nursing Home and Self Care Retirement Unit.

Irrigation and/or tourist accommodation should be considered separately.

### 5.2.2 Accommodation (Short Term)

This category includes accommodation dwellings or rooms that are occupied temporarily, and are generally developed on land zoned for commercial purposes. Subcategories include Caravan Park, Motel, Backpackers, B&B and Serviced Tourist Apartment.

Irrigation and additional entertainment and sporting facilities such as restaurants, bars, swimming pools, gyms and golf courses should be considered separately.

Permanent accommodation should also be considered separately.

### 5.2.3 Accommodation (Medical Care)

This category includes medical care accommodation, occupied temporarily, including Hospital and Hostel (medical).

### 5.2.4 Business (Excluding Food Preparation)

This is a broad category covering general and specific commercial / business development, but generally excludes developments associated with food preparation. General subcategories include Single Shop, Supermarket, Shopping Centre and Office. Specific subcategories have also been included to cover business developments that are likely to differ substantially from the average demands and loadings for the general subcategories. Consequently, the specific subcategories should be used where available, in place of the general subcategories.

### 5.2.5 Food Preparation

This category covers general and specific commercial / business development associated with food preparation. General subcategories include Restaurant / Cafe, Takeaway / Fast Food and Catering. Specific subcategories have also been included to cover business developments that are likely to differ substantially from the average demands and loadings for the general subcategories (eg Hairdresser, Laundromat). Consequently, the specific subcategories should be used where available, in place of the general subcategories.

### 5.2.6 Entertainment

This category covers commercial / business development associated with entertainment. Subcategories include Pub / Bar, Licensed Club, Theatre, Function Centre and Marina.

### 5.2.7 *Sporting / Spectator Facilities*

This category covers general and specific commercial / business development associated with sporting and spectator facilities. The general subcategory is Amenities & Indoor Facilities. Additional specific facilities such as swimming pools and food preparation areas should be considered separately, as should irrigation. Specific subcategories have been included to cover additional sporting facilities that are likely to differ substantially from the average demands and loadings for the general subcategories (eg Bowling Alley, Swimming Pool). Consequently, the specific subcategories should be used where available, in place of the general subcategories.

### 5.2.8 *Community Facilities*

This category covers commercial / business development associated with community facilities. Subcategories include Child Care, Education, Correctional Centre, Church, Community Centre and Public Amenities Block.

## 5.3 **Industrial User Categories**

General user categories for Industrial have been listed on Table 3. Additional ET figures for sewer have been included on Table 4, for a large range of detailed subcategories. These figures are provided for background information and should only be used as a general guide or where actual consumption data cannot be obtained.

Water ET figures for Industrial user categories exclude allowances for significant irrigation. It is suggested that irrigation be considered separately.

### 5.3.1 *General*

This category covers basic light industrial development, which includes development such as bulk storage and dry trades, but excludes development with significant process water consumption.

For industrial categories that have process water, it is suggested that a non-typical development ET is determined based on the methodology in Section 6.3.

### 5.3.2 *Future Unknown*

This category includes advice on figures to be used for future development areas where the specific development types are unknown. Generally the land zoning should give an indication of whether future development will be light, medium or heavy industry.

### 5.3.3 *Detailed Subcategories*

The detailed industrial subcategories shown on Table 4 are based on WSAA guidelines (WSAA, 2002) and PWD guidelines (PWD, 1987). Some subcategories from the WSAA guidelines were not included due to duplication with Commercial user subcategories. These figures should only be used as a general guide or where actual consumption data cannot be obtained

## 6 ESTABLISHMENT OF ET FIGURES

Advice is included in the following sections on the methodology for determining (or revising) Standard ET figures for water and sewer from actual development based data from across the state, the methodology for determining Local ET figures and the methodology for determining non-typical ET figures.

It should be noted that due to the variability in discharge factors (the proportion of water consumption that is discharged to the sewerage system) for various user categories, water ET figures should not be directly adopted as sewer ET figures. Sewer ET figures will only be the same as water ET figures if the discharge factor for the user category is the same as the residential discharge factor (currently 60%). If the discharge factor exceeds the residential discharge factor, sewer ET figures will be higher and conversely, if the discharge factor is less than the residential discharge factor, sewer ET figures will be lower.

Once a set of revised Standard ET figures has been established, it is proposed that the figures be subject to periodic review in order to ensure they are kept up-to-date, including the addition of new categories and the removal of redundant categories.

It is recommended that during the establishment of revised Standard ET figures (based on state-wide data), the assumption that residential sewage loadings and non-residential town water demands and sewage loadings generally do not exhibit significant variability between various water authorities, is reviewed.

### 6.1 Establishment of Revised Standard ET Figures

#### 6.1.1 Residential Water Standard ET

The proposed methodology for establishing water Standard ET figures for Residential user categories is presented below:

- Water consumption data from across the state, taken from meter readings (over a rolling five year average) of residential properties, should be collated and average consumptions for each user category determined.
- In order to collate the various user categories, information on lot type, number of dwellings, lot area and in some cases the number of bedrooms, will need to be compiled.
- The state-wide average consumption for a residential house becomes the Standard ET water consumption (currently 230 kL/a).
- Having determined the various average consumption figures for the remaining user categories, Standard ET figures can be determined by dividing by the Standard ET water consumption (230 kL/a).

#### 6.1.2 Residential Sewer Standard ET

The proposed methodology for establishing sewer Standard ET figures for Residential user categories is presented below:

- Standard ET figures for water for each user category should be determined, based on the methodology described above.
- Standard Discharge Factors (DF) for each user category then need to be determined based on state-wide data. There are two methods that may be employed for determining Standard DF:

- The first method involves the determination of discharge factors from a water consumption approach. An assessment would have to be made of the typical proportions of water consumption for the various fixtures in and around the dwelling and the summation of the proportions for fixtures that contribute to the sewer would become the discharge factor. Alternatively, outdoor water usage could be metered and subtracted from metered total water consumption to determine the internal usage and DF.
- The second method involves the determination of discharge factors from a sewage loading approach. Flow gauging of a sample range of each Residential user category would have to be undertaken over a period sufficient to assess average loadings and compared to metered water consumption. The discharge factor would be determined as the ratio of average day sewage flows to average day water consumption.
- Sewer Standard ET figures may be determined by multiplying each Standard water ET figure by the relevant Standard DF for the category and dividing by the residential house Standard DF (currently 60%).

### 6.1.3 *Non-Residential Water Standard ET*

The proposed methodology for establishing water Standard ET figures for Non-Residential user categories is presented below:

- Water consumption data from across the state, taken from meter readings (over a rolling five year average) of Non-Residential properties, should be collated and average consumptions for each user category determined.
- For tourist type developments that have significant variations in occupancy rates across the year, water consumption data over peak occupancy periods (eg peak week of tourist season) will need to be collected.
- For developments that have a significant irrigation component, consideration should be given to excluding this irrigation component from the average consumptions and allowing the irrigation component to be considered separately.
- In order to collate the various user subcategories, additional information such as lot type, lot area, floor area, number of rooms, etc will also need to be compiled.
- Having determined the various state-wide average consumption figures for each user subcategory, water Standard ET figures can be determined by dividing by the Standard ET water consumption (230 kL/a).

### 6.1.4 *Non-Residential Sewer Standard ET*

The proposed methodology for determining sewer Standard ET figures for Non-Residential user categories is presented below:

- Standard ET figures for water for each user subcategory should be determined, based on the methodology described above.
- Standard DF for each user category then need to be determined based on state-wide data. There are two methods that may be employed for determining Standard DF:
  - The first method involves the determination of discharge factors from a water consumption approach. An assessment would have to be made of the typical proportions of water consumption for various fixtures and the summation of the proportions for fixtures that contribute to the sewer would become the discharge factor. Alternatively, metering of fixtures that do not contribute to sewage loadings could be undertaken. This method may be appropriate for commercial, light industrial, shops, motels, etc.



- The second method involves the determination of discharge factors from a sewage loading approach. Flow gauging of a sample range of a particular user category would have to be undertaken over a set period and compared to metered water consumption. The discharge factor would be determined as the ratio of average day sewage flows to average day water consumption.
- Sewer Standard ET figures may then be determined by multiplying each Standard water ET figure by the relevant Standard DF for the category and divide by the residential house Standard DF (currently 60%).

## 6.2 Establishment of Local ET Figures

### 6.2.1 Residential Water Local ET

A methodology is included below for establishing residential Local ET figures for water. Residential Local ET figures for water should be determined from local data, where sufficient data is available.

The proposed methodology for establishing Local ET figures for residential user categories is presented below:

- Local water consumption data taken from meter readings (over a rolling five year average) of residential properties should be collated and average consumptions for each user category determined.
- In order to collate the various user categories, information on lot type, number of dwellings, lot area and in some cases the number of bedrooms, will need to be compiled.
- The average consumption for a residential house, based on local data, becomes the Local ET water consumption.
- Having determined the various average consumption figures for the other user subcategories, Local ET figures can be determined by dividing by the Local ET water consumption.
- Where sufficient data is not available to determine figures for a particular residential subcategory (eg units), Standard ET figures may be used.

### 6.2.2 Non-Residential Water Local ET

For non-residential categories, Standard ET figures for water should be factored up or down, prior to adopting them for Local ET figures. Standard ET figures may be converted to Local ET units according to the following formula:

$$\text{Local ET} = \text{Standard ET} \times \frac{\text{Standard ET Water Consumption (ie 230 kL/a)}}{\text{Local ET Water Consumption}}$$

Where the Local ET water consumption does not differ substantially from the Standard ET water consumption, Standard ET figures may be adopted directly.

### 6.2.3 Residential & Non-Residential Sewer Local ET

Standard ET figures for sewer can be adopted directly as Local ET figures.

### 6.3 Advice on Determining a Non-Typical Development ET

It is recommended that the following formulae be used to determine non-typical development ET figures.

For water:

$$\text{Standard ET} = \frac{\text{Estimated Ave Development Water Consumption}}{\text{Standard ET Water Consumption (ie 230 kL/a)}}$$

OR

If Local ET figures are being used:

$$\text{Local ET} = \frac{\text{Estimated Ave Development Water Consumption}}{\text{Local ET Water Consumption}}$$

For sewer:

$$\text{Standard ET} = \frac{\text{Estimated Ave Development Sewage Loading (water usage } \times \text{ DF)}}{\text{Standard ET Sewage Loading (ie 140 kL/a)}}$$

For industrial categories it may be appropriate to separate the process water consumption from the consumption associated with office and amenity facilities. The ET for the process water should be then determined based on the above formulae, while the ET for the remainder of the development could be determined according to the typical user categories.



**7 STANDARD ET FIGURES – RESIDENTIAL USER CATEGORIES**

**Table 1: Standard ET Figures - Residential User Categories**

CATEGORY	STANDARD UNIT	SUGGESTED VALUES	
		WATER ET	SEWER ET
<b>Single Residential Lots (House)</b>			
<b>Standard Residential Lot (450m<sup>2</sup> - 2000m<sup>2</sup>)</b>	Lot	1.00	1.00
Small Residential Lot (< 450m <sup>2</sup> )	Lot	<b>Use Units</b>	
Large Residential Lot (> 2000m <sup>2</sup> )	Lot	1.20	1.00
<b>Multi-Residential Lots (Medium Density 1 - 2 Storey)</b>			
Dual Occ - 1 bedroom	Dwelling	Use Units for Lot Size of < 450m <sup>2</sup> / dwelling or Standard Residential Lot for Lot Size > or = 450m <sup>2</sup> / dwelling	
Dual Occ - 2 bedroom	Dwelling		
Dual Occ - 3 bedroom (or more)	Dwelling		
Duplex - 1 bedroom	Dwelling		
Duplex - 2 bedroom	Dwelling		
Duplex - 3 bedroom (or more)	Dwelling		
Units - 1 bedroom	Dwelling	0.40	0.50
Units - 2 bedroom	Dwelling	0.60	0.75
Units - 3 bedroom (or more)	Dwelling	0.80	1.00
<b>Multi-Residential Lots (High Density)</b>			
Multi Storey Apartments (1 bedroom)	Dwelling	0.33	0.50
Multi Storey Apartments (2 bedroom)	Dwelling	0.50	0.75
Multi Storey Apartments (3 or more bedroom)	Dwelling	0.67	1.00

Notes

1 Standard ET = Town Water Usage of 230 kL/a & Sewage Loading of 140 kL/a



**8 STANDARD ET FIGURES – COMMERCIAL USER CATEGORIES**

**Table 2: Standard ET Figures - Commercial User Categories**

CATEGORY	STANDARD UNIT	SUGGESTED VALUES		COMMENTS
		WATER ET	SEWER ET	
<b>Accommodation (Permanent)</b>				
Nursing Home / Special Care Home	Bed	0.50	0.75	Limited medical facilities, communal kitchen / laundry
Self Care Retirement Units / Villas	-	<b>Use Residential Units</b>		Internal kitchen / laundry facilities
Self Care Retirement - Serviced Unit (Onsite)	-	<b>Use Nursing Homes</b>		No internal kitchen / laundry facilities
Self Care Retirement - Serviced Unit (Offsite)	Bed	0.30	0.45	No internal kitchen / laundry facilities
Boarding House	Bed	0.33	0.50	Communal kitchen / laundry
Caravan / Mobile Home Park (1 br)	Van	0.40	0.50	
Caravan / Mobile Home Park (2 br)	Van	0.60	0.75	Use if number of rooms unknown
Caravan / Mobile Home Park (3 br)	Van	0.80	1.00	
<b>Accommodation (Short Term)</b>				
<b>Peak week loading - use peak occupancy</b>				
Caravan Park				
Camping Site (temporary)	Site	0.50	0.63	Site approx. equivalent to average caravan site
Caravan / Cabin Site (temporary)	Site	0.50	0.63	Also use for on-site caravans / cabins
Bed & Breakfast / Guest House	Room	0.40	0.50	House based with communal kitchen / laundry
Motel / Hotel / Resort Room	Room	0.30	0.45	Consider food prep, entertainment & sporting separately
Backpackers / Hostel	Bed	0.15	0.23	Communal kitchen, small laundry, not serviced
Serviced / Unserviced Apartments	-	<b>Use multi-res lots (high density)</b>		Self contained (if not use motel)
<b>Accommodation (Medical Care)</b>				
Hospital	Bed	0.90	1.43	Includes medical facilities
Hostel (Medical)	Bed	0.70	1.11	Includes some medical facilities
Business (Excluding Food Preparation)				
General				
Single Retail Shop	Floor Area m <sup>2</sup>	0.00	0.00	
Supermarket	Floor Area m <sup>2</sup>	0.00	0.00	Includes minor food preparation
Shopping Centre	-	<b>Insufficient Data</b>		Consider amenities, food prep & specific bus. separately
Offices	Floor Area m <sup>2</sup>	0.00	0.01	
Specific				
Hairdresser / Beauty Salon	Basin	0.50	0.79	
Laundromat	Machine	0.45	0.71	
Medical Centre	Room	0.40	0.63	Based on number of consultation rooms
Plant Nursery	-	<b>Insufficient Data</b>		Consider case by case
Car Yard / Showroom	Floor Area m <sup>2</sup>	0.00	0.00	
Service Station	Lane	0.60	0.90	
Car Wash	Lane	5.70	9.03	
Escort Agency	Room	0.40	0.50	
Animal Boarding	-	<b>Insufficient Data</b>		Consider case by case
Self Storage	Floor Area m <sup>2</sup>	0.00	0.01	Consider office area only

**Table 2: Standard ET Figures - Commercial User Categories (continued)**

CATEGORY	STANDARD UNIT	SUGGESTED VALUES		COMMENTS
		WATER ET	SEWER ET	
<b>Food Preparation</b>				
<b>General</b>				
Restaurant / Café	Floor Area m <sup>2</sup>	0.01	0.01	<i>Also use for general food preparation</i>
Take Away / Fast Food (no amenities)	Floor Area m <sup>2</sup>	0.02	0.02	
Take Away / Fast Food (including amenities)	Floor Area m <sup>2</sup>	0.03	0.05	
Catering	Floor Area m <sup>2</sup>	0.02	0.02	
<b>Specific</b>				
Bakery	-	Insufficient Data		<i>Use Take Away / Fast Food (no amenities)</i>
Butcher	-	Insufficient Data		<i>Use Take Away / Fast Food (no amenities)</i>
Fishing Co-op	-	Insufficient Data		<i>Use Take Away / Fast Food (no amenities)</i>
<b>Entertainment</b>				
Licensed Club	Floor Area m <sup>2</sup>	Insufficient Data		<i>Separate into Food Preparation, Entertainment, Amenities</i>
Pub / Bar	Floor Area m <sup>2</sup>	0.03	0.05	<i>Consider food preparation area separately</i>
Cinema / Theatre / Public Entertainment	-	Insufficient Data		<i>Use Food Preparation &amp; Amenities</i>
Function / Conference Centre	-	Insufficient Data		<i>Use Food Preparation &amp; Amenities</i>
Marina	Berth	0.60	0.90	
<b>Sporting / Spectator Facilities</b>				
<b>General</b>				
Amenities & Indoor Facilities	-	Insufficient Data		<i>Use Food Preparation &amp; Amenities</i>
<b>Specific</b>				
Hockey Field (artificial surface)	-	Insufficient Data		<i>Consider case by case</i>
Bowling Alley	Lane	0.35	0.55	
Bowling Green	-	Insufficient Data		<i>Separate into Food Preparation, Amenities, Irrigation</i>
Swimming Pool - Indoor	ML	Insufficient Data		<i>Consider case by case</i>
Swimming Pool - Outdoor	ML	Insufficient Data		<i>Consider case by case</i>
<b>Community Facilities</b>				
Child Care Centre / Pre-school	Person	0.06	0.10	<i>Consider Food Preparation separately</i>
Education - School (primary & secondary)	Person	0.03	0.05	
Education - College, University (tertiary)	Person	0.02	0.02	
Correctional Centre	Person	0.50	0.75	
Church / Place of Worship	-	Insufficient Data		<i>Use Food Preparation &amp; Amenities</i>
Community Centre / Hall	-	Insufficient Data		<i>Use Food Preparation &amp; Amenities</i>
Parks / Gardens / Reserves (Irrigation)	-	Insufficient Data		<i>Consider case by case</i>
Public Amenities Block (per shower)	Shower	0.40	0.63	
Public Amenities Block (per wc)	wc	0.40	0.63	

**Notes**

1 Standard ET = Town Water Usage of 230 kL/a & Sewage Loading of 140 kL/a  
Assumed Residential Standard Discharge Factor: 60%

**9 STANDARD ET FIGURES – INDUSTRIAL USER CATEGORIES (GENERAL)**
**Table 3: Standard ET Figures - Industrial User Categories\***

CATEGORY	STANDARD UNIT	SUGGESTED VALUES	
		WATER ET	SEWER ET**
<b>Industrial General</b>			
Light Industrial	Gross Ha	15	15
Future Unknown - Light	Gross Ha	15	15
Future Unknown - Med	Gross Ha	30	30
Future Unknown - Heavy	Gross Ha	50	50
* For industrial categories that have process water, it is suggested that a non-typical development ET is determined based on the methodology in Section 6.3 of the guidelines.			
** Additional ET figures for sewer have been included on Table 4, for a large range of detailed subcategories. These figures are provided for background information and should only be used as a general guide or where actual consumption data cannot be obtained.			

**Notes**

1 Standard ET = Town Water Usage of 230 kL/a &amp; Sewage Loading of 140 kL/a

Assumed Residential Standard Discharge Factor: 60%

Gross Ha = Total land area of zone



**10 STANDARD ET FIGURES FOR SEWER – INDUSTRIAL USER CATEGORIES**

**Table 4: Standard ET Figures for Sewer - Industrial User Categories (Detailed)**

CATEGORY	STANDARD UNIT	SEWER ET				PWD
		WSAA ET / Built-up Ha (N=1)	WSAA ET / Built-up Ha (N=2)	WSAA ET / Built-up Ha (N=3)	WSAA ET / Built-up Ha (N=4)	
<b>Food Manufacture</b>						
<b>Dairy</b>						
Milk	Built-up Ha	2,857	1,914	1,743	1,600	1,400
Cheese, butter and yoghurt	Built-up Ha	1,714	1,149	1,046	960	850
Ice Cream	Built-up Ha	571	383	349	320	350
<b>Fruit and Vegetable</b>						
Cannery	Built-up Ha	1,143	766	697	640	550
Condiments and Sauces	Built-up Ha	1,143	766	697	640	550
<b>Meat</b>						
Abattoir	Built-up Ha	1,143	766	697	640	550
Rendering tallow	Built-up Ha	571	383	349	320	300
Gelatine and glue	Built-up Ha	1,714	1,149	1,046	960	850
Poultry	Built-up Ha	2,286	1,531	1,394	1,280	1,100
Small-goods	Built-up Ha	1,143	766	697	640	550
<b>Grain</b>						
Flour milling	Built-up Ha	29	19	17	16	15
Starch	Built-up Ha	1,714	1,149	1,046	960	850
Edible oils and fats	Built-up Ha	2,286	1,531	1,394	1,280	1,100
Cereals	Built-up Ha	286	191	174	160	150
Bakery	Built-up Ha	29	19	17	16	15
Biscuits and cakes	Built-up Ha	286	191	174	160	150
<b>Beverages</b>						
Beer	Built-up Ha	1,143	766	697	640	550
Soft drinks and cordials	Built-up Ha	571	383	349	320	300
<b>Others</b>						
Yeast	Built-up Ha	2,286	1,531	1,394	1,280	1,100
Confectionery	Built-up Ha	143	96	87	80	80
Salt	Built-up Ha	571	383	349	320	300
<b>Textile and Leather</b>						
<b>Tannery and Hides</b>	Built-up Ha	1,143	766	697	3,640	550
<b>Wool</b>						
Wool scour	Built-up Ha	2,286	1,531	1,394	1,280	1,100
Felt and Carpet	Built-up Ha	571	383	349	320	300
Dyeing and spinning	Built-up Ha	571	383	349	320	300
<b>Cotton and Synthetics</b>	Built-up Ha	1,143	766	697	320	550
<b>Chemical</b>						
<b>Petrochemical</b>						
Oil Refinery	Gross Ha	29	19	17	16	15
<b>Pharmaceutical</b>	Built-up Ha	286	191	174	160	150
<b>Organic</b>						
Liquids	Built-up Ha	571	383	349	320	300
Resins, polymers and plastics	Built-up Ha	571	383	349	320	300
Adhesives	Built-up Ha	571	383	349	320	300
<b>Others</b>						
Soaps and detergents	Built-up Ha	286	191	174	160	150
Paint manufacture	Built-up Ha	143	96	87	80	80



**Table 4: Standard ET Figures for Sewer - Industrial User Categories (Detailed) (continued)**

CATEGORY	STANDARD UNIT	SEWER ET				PWD	
		WSAA ET / Built-up Ha (N=1)	WSAA ET / Built-up Ha (N=2)	WSAA ET / Built-up Ha (N=3)	WSAA ET / Built-up Ha (N=4)		
<b>Metal Processing</b>							
<b>Metal Finishing</b>							
Electroplating	Built-up Ha	571	383	349	320	300	
Anodizing	Built-up Ha	571	383	349	320	300	
Galvanizing	Built-up Ha	571	383	349	320	300	
<b>Battery Manufacture</b>							
Dry Cell	Built-up Ha	286	191	174	160	150	
Wet cell (lead acid)	Built-up Ha	286	191	174	160		
<b>Engineering</b>							
Machine shops	Built-up Ha	286	191	174	160		
Sheet metal	Built-up Ha	286	191	174	160		
Foundry	Built-up Ha	286	191	174	160		
Rolling	Built-up Ha	286	191	174	160		
Extrusion	Built-up Ha	286	191	174	160		
<b>Manufacture - Non-Metallic</b>							
<b>Paper</b>	Built-up Ha	143	96	87	80		80
<b>Plastics</b>	Built-up Ha	571	383	349	320		
<b>Wood</b>	Built-up Ha	143	96	87	80	80	
<b>Mining (Earth)</b>							
Glass	Built-up Ha	143	96	87	80		
Fibre cement	Built-up Ha	71	48	43	40		
Concrete products	Built-up Ha	1,143	766	697	640		
<b>Services</b>							
<b>Laboratories</b>							
Industrial and research	Built-up Ha	1,143	766	697	640	550	
<b>Others</b>							
Film Processing	Built-up Ha	571	383	349	320	300	

Notes

N = number of independent same category industrial connections

Built-up Ha = Total floor area of building

Gross Ha = Total land area of zone

For more information refer to (PWD, 1987) & (WSAA, 2002)



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**11 REFERENCES**

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4. PWD (1987), *Manual of Practice, Sewer Design*, prepared by the NSW Public Works Department (now the responsibility of DEUS).
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**12 GLOSSARY OF TERMS**

DEUS	Department of Energy, Utilities & Sustainability
Developer Charge	A charge levied on developers to recover part of the capital cost incurred in providing infrastructure to new development, under Section 64 of the <i>Local Government Act 1993</i> .
DF	Discharge Factor. The proportion of water consumption (volume) for a particular development that is discharged to the sewerage system.
Dwelling	A place of residence or home
EP	Equivalent Persons (or equivalent population). A measure of the demand or loading a development will have on infrastructure in terms of the average water consumption or average sewage discharge for an average person.
ET	Equivalent Tenements. A measure of the demand or loading a development will have on infrastructure in terms of the average water consumption or average sewage discharge for an average residential dwelling.
Local ET	An ET based on local data for a particular water authority.
Standard ET	An ET based on state-wide data.
Fixtures	Taps, toilets, showers and sinks / drains
Floor Area m <sup>2</sup>	Building floor area in m <sup>2</sup>
kL	Kilolitre (1,000 litres)
kL/a	Kilolitres / annum
L/s	Litres / second (flow rate)
Occupancy Rate	The average number of people per residential house
PWD	Public Works Department (The PWD Guidelines are now the responsibility of DEUS).
WSAA	Water Services Association of Australia

**13 FEEDBACK FORM**

The Water Directorate welcomes comments and feedback on the use of the Section 64 Determinations of Equivalent Tenements Guidelines. Please tick the appropriate box and write any additional comments you may have regarding the format, content or practical use of these guidelines.

	VERY USEFUL	USEFUL	NOT USEFUL
<b>How useful were the following Sections of the Section 64 Determinations of Equivalent Tenements Guidelines?</b>			
Section 3 Explanation of Local ET and Standard ET?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Section 4 Using the Standard ET Tables?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Section 5 Explanation of User Categories?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Section 6 Establishment of ET Figures?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Section 7 Standard ET Figures – Residential User Categories?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Section 8 Standard ET Figures – Commercial User Categories?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Section 9 Standard Et Figures – Industrial User Categories?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Section 10 Standard Et Figures for Sewer – Industrial User Categories?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Section 11 References?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Section 12 Glossary of Terms?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appendix A – Background?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appendix B – What are the Available Methods?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appendix C -Determination of User Categories & Standard ET Figures ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appendix D – Benchmarking with other Water Authorities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appendix E – Priorities for Review and Update of Standard ET Figures?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appendix F – Worked Examples (Standard ET)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>YES</b>	<b>NOT SURE</b>	<b>NO</b>
<b>Overall use of these Technical Guidelines</b>			
Is there a need for this type of document?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has your Council used these Technical Guidelines?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If not, does your Council plan to use these Technical Guidelines?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Please write any general comments you have here, particularly in relation to drought experiences that may assist future review of this document:			
.....			
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.....			

Please post or fax back this form to the:  
**Executive Officer, Water Directorate, Level 12, 447 Kent Street, Sydney 2000**  
**Fax (02) 9283 5255**

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**APPENDIX A - BACKGROUND**

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The Water Directorate, through its technical advisory role to local government water authorities in regional NSW, has identified the need to establish consistent and defensible guidelines for the determination of water and sewer equivalent tenements (ETs) for input to the process of calculating developer contributions under s64 of the *Local Government Act 1993*. The need for the guidelines has been driven by the inconsistencies (and subsequent challenges by developers) associated with the existing methodologies adopted by regional water authorities across NSW and the lack of up-to-date guidelines on the estimation of ET figures.

The Water Directorate has proposed a three-staged approach to the project in order to maximise the benefit to its members. The three stages are:

1. Determination of user categories and development of methodology to establish corresponding ET figures
2. Establishment of ET figures
3. Periodic review and update of user categories and ET figures

In order to establish a set of ET figures, the process requires that two key components be considered. The first component is the list of user categories for which ETs are required. The second component is the actual ET figures that apply to each category. The first stage of this project addresses the first component and provides advice on the methodology / strategy for addressing the second component. The second stage of the project will fully address the second component. Once each authority has established a revised set of ET figures, the process should be subject to periodic review and update (third component).

By undertaking the project in this manner, the Water Directorate and its members can be assured that a consistent and defensible methodology is adopted and applied by regional water authorities across NSW.

Hunter Water Australia originally prepared a discussion paper in March 2004, summarising the preliminary assessment of Stage 1 of the project. After a review session with the Water Directorate's Policy Committee in March 2004, the paper was developed into a set of Guidelines (1<sup>st</sup> Draft). Further review meetings were held in July and November 2004 with the Water Directorate's Policy Committee, prior to the preparation of the Final Guidelines.

## APPENDIX B - WHAT ARE THE AVAILABLE METHODS?

The estimation of water and sewer ET's for developments is complex and therefore contentious. There is no perfect, universal approach and consequently a number of different methodologies have been adopted by water authorities and councils around Australia.

The following methodologies have either been used or have been considered by water authorities in the past:

- **Recorded Water Consumption (Water)** – This methodology is based on actual average recorded consumption data (eg over a rolling 5 year period) for similar developments in the system. The equivalent water ET's are standardised based on various measurable units such as ET per m<sup>2</sup> or ET per facility.
- **Recorded Water Consumption (Sewer)** – While most authorities only use metered data to determine average water consumption, sewer ET's could potentially be determined from water consumption of similar developments, taking into account the discharge factor for the development. The discharge factor represents the proportion of water consumption that is discharged to the sewerage system. Two difficulties with this method are the accurate estimation of a discharge factor and the adoption of a sewage rate for a standard ET. Discharge factors are often assumed or guessed and are sometimes difficult to estimate. The average sewage rate for a standard house is generally around 0.004 to 0.008 L/s/ET. However, this is substantially less than the design average dry weather sewage rate of 0.011 L/s/ET.
- **PWD Design Criteria (Sewer)** – This methodology is based on the well known and widely adopted Public Work Department design criteria for sewerage systems developed in the late 1970's and early 1980's. The criteria are widely used as the basis for determining design loadings for the design and investigation of sewerage systems. The sewer ET's are standardised based on various measurable units such as ET per bed and more generally ET per built up hectare. While the methodology would potential produce a reasonable estimate of ET's on average, the method may fail for developments that are not average developments.
- **PWD Design Criteria (Water)** – This methodology is not as widely used as the PWD design criteria for sewer, however, it is still commonly used in the absence of metered consumption data. The number of categories listed in the criteria is limited and the focus is on peak usage for typical development types. Similar to the sewer design criteria, the water design criteria was developed in the late 1970's and early 1980's.
- **Fixtures (Water & Sewer)** – This methodology may be adopted for the estimation of both water and sewer ET's. The method is based on assigning equivalent demands/loadings to each individual fixture within the development. The main drawback of this method is the requirement to determine or accurately estimate the numbers of various types of fixtures to be installed in the development. In addition, the methodology is more suited to estimating potential peak demands rather than assessing average consumption.
- **Meter Size (Water)** – This methodology is generally only applicable to water ET's and is based on water meter sizes. The size of a water meter for a new development is generally based on bands of average water consumption. Small developments may require a 20mm to 40mm meter size, while larger developments may require meters greater than 40mm or multiple meters. Different ET factors apply to each meter size.

- **WSAA Water Supply & Sewerage Codes** – These two documents are focused on the design and construction of water supply and sewerage transportation systems and consequently are focused on peak demands / loadings. While the codes offer some guidance for assessing peak demands / loadings, there is limited application for determining water and sewer ET's. The sewerage code does include a useful table (Table A2 WSA 02-2002 v2.2) for assessment of industrial loadings.

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**APPENDIX C – DETERMINATION OF THE USER CATEGORIES AND STANDARD ET FIGURES**

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A brief survey and review of the existing user categories and methodologies adopted by various water authorities across NSW as well as other parts of Australia has been undertaken. The review encompassed the following water authorities:

- 9 NSW local government authorities;
- 2 NSW state authorities;
- 4 interstate authorities; and
- 1 national association.

The purpose of the review was to determine a general list of water and sewer user categories that encompasses the range of categories likely to be encountered by the majority of regional water authorities in NSW. The compiled list was grouped into Residential, Commercial and Industrial development types.

An assessment of the general list of user categories compiled from the review was undertaken in order to determine the importance of including various user categories in the proposed list. While the proposed list is comprehensive and generally covers the full range of common development types across NSW, it is not exhaustive and consequently the guidelines include advice on how to calculate an equivalent loading for non-typical developments. It should be noted that the standard units used to assess ET figures need to be reviewed during the establishment of ET figures phase. Standard ET figures included in the guidelines were determined by reviewing water and sewer ET figures currently used by a sample of water authorities across NSW, including:

- Hunter Water Corporation
- Sydney Water Corporation
- Shoalhaven Council
- Coffs Harbour Council
- Hastings Council
- Tweed Council
- Dubbo Council
- Lismore Council
- Albury Council
- Gosford Council

Water and sewer ET figures based on PWD criteria (PWD, 1987) and WSAA guidelines (WSAA, 2002) were also reviewed.

Adopted ET figures for each sub-category were generally based on the following:

- Hunter Water values for water ET figures were adopted where data was available, as their values are based on a comprehensive database of local water users.
- Average values were adopted where there was some agreement between values used by various water authorities.
- For consistency, some adopted values were based on an assumed proportion of other adopted ET figures (eg based on a comparison of internal fixtures or a comparison of the proportion of external usage). Internal usage was assumed to be split into 15% kitchen usage, 25% laundry usage, 30% toilet usage and 30% bathroom usage.

- Sewer ET figures were generally determined from the water ET figures and an assumed discharge factor.
- Where insufficient data was available, no specific value was provided.
- For each sub-category, the basis for the adopted ET figures is shown on the following tables, along with the assumed discharge factor.



**Table 5: Standard ET Figures – Residential User Categories including Assumed Discharge Factor**

CATEGORY	STANDARD UNIT	SUGGESTED VALUES		ASSUMED DISCHARGE FACTOR	BASIS
		WATER ET	SEWER ET		
Single Residential Lots (House)					
Standard Residential Lot (450m <sup>2</sup> - 2000m <sup>2</sup> )	Lot	1.00	1.00	60%	Standard ET
Small Residential Lot (< 450m <sup>2</sup> )	Lot	Use Units			SWC
Large Residential Lot (> 2000m <sup>2</sup> )	Lot	1.20	1.00	50%	HWC data, increased outdoor
Multi-Residential Lots - Med Density (1 - 2 Storey)					
Dual Occ - 1 bedroom	Dwelling	Use Units for Lot Size of < 450m <sup>2</sup> / dwelling or Standard Residential Lot for Lot Size > or= 450m <sup>2</sup> / dwelling			
Dual Occ - 2 bedroom	Dwelling				
Dual Occ - 3 bedroom (or more)	Dwelling				
Duplex - 1 bedroom	Dwelling				
Duplex - 2 bedroom	Dwelling				
Duplex - 3 bedroom (or more)	Dwelling				
Units - 1 bedroom	Dwelling	0.40	0.50	75%	Half 3 b/room Unit Average
Units - 2 bedroom	Dwelling	0.60	0.75	75%	
Units - 3 bedroom (or more)	Dwelling	0.80	1.00	75%	Sewer ET same as House
Multi-Residential Lots (High Density)					
Multi Storey Apartments (1 bedroom)	Dwelling	0.33	0.50	90%	Sewer ET same as Units
Multi Storey Apartments (2 bedroom)	Dwelling	0.50	0.75	90%	Sewer ET same as Units
Multi Storey Apartments (3 or more bedroom)	Dwelling	0.67	1.00	90%	Sewer ET same as Units

**Notes**

1 Standard ET = Town Water Usage of 230 kL/a &amp; Sewage Loading of 140 kL/a

**Table 6: Standard ET Figures – Commercial User Categories including Assumed Discharge Factor**

CATEGORY	STANDARD UNIT	SUGGESTED VALUES		COMMENTS	ASSUMED DISCHARGE FACTOR	BASIS
		WATER ET	SEWER ET			
Accommodation (Permanent) Nursing Home / Special Care Home	Bed	0.500	0.750	Limited medical facilities, communal kitchen / laundry	90%	HWC water ET
Self Care Retirement Units / Villas	-	Use Residential Units		Internal kitchen / laundry facilities	-	
Self Care Retirement - Serviced Unit (Onsite)	-	Use Nursing Homes		No internal kitchen / laundry facilities	-	
Self Care Retirement - Serviced Unit (Offsite)	Bed	0.300	0.450	No internal kitchen / laundry facilities	90%	60% of Nursing Home
Boarding House	Bed	0.330	0.500	Communal kitchen / laundry	90%	Sewer = House / 2
Caravan / Mobile Home Park (1 br)	Van	0.400	0.500	Use if number of rooms unknown	75%	Same as Units
Caravan / Mobile Home Park (2 br)	Van	0.600	0.750		75%	Same as Units
Caravan / Mobile Home Park (3 br)	Van	0.800	1.000		75%	Same as Units
Accommodation (Short Term) Caravan Park				Peak week loading - use peak occupancy		
Camping Site (temporary)	Site	0.500	0.600	Site approx. equivalent. to ave caravan site	75%	< ave permanent caravan
Caravan / Cabin Site (temporary)	Site	0.500	0.600	Also use for on-site caravans / cabins	75%	As above
Bed & Breakfast / Guest House	Room	0.400	0.500	House based with communal kitchen / laundry	75%	Same as 1 b/r Unit
Motel / Hotel / Resort Room	Room	0.300	0.450	Consider food prep., entertainment & sporting separately	90%	Average
Backpackers / Hostel	Room	0.150	0.230	Communal kitchen, small laundry, not serviced	90%	1/2 boarding house / motel
Serviced / Unserviced Apartments Accommodation (Medical Care)		Use multi-res lots (high density)		Self contained (if not use motel)	-	
Hospital	Bed	0.900	1.400	Includes medical facilities	95%	HWC water ET
Hostel (Medical)	Bed	0.700	1.100	Includes some medical facilities	95%	Ave Nursing / Hospital
Business (Excluding Food Preparation)						
General						
Single Retail Shop	Floor Area m <sup>2</sup>	0.002	0.003	Includes minor food preparation	95%	Average
Supermarket	Floor Area m <sup>2</sup>	0.002	0.003	Consider amenities, food preparation and specific business separately	95%	HWC water ET, average
Shopping Centre	-	Insufficient Data			-	
Offices	Floor Area m <sup>2</sup>	0.004	0.006		95%	Average

**Table 6: Standard ET Figures – Commercial User Categories including Assumed Discharge Factor (Continued)**

CATEGORY	STANDARD UNIT	SUGGESTED VALUES		COMMENTS	ASSUMED DISCHARGE FACTOR	BASIS
		WATER ET	SEWER ET			
Specific Business						
Hairdresser / Beauty Salon	Basin	0.500	0.800		95%	HWC water ET
Laundromat	Machine Room	0.450	0.700		95%	HWC water ET
Medical Centre		0.400	0.600		95%	HWC water ET
Plant Nursery	-	Insufficient Data		Based on number of consultation rooms		
Car Yard / Showroom	Floor Area m <sup>2</sup>	0.002	0.002	Consider case by case	-	
Service Station	Lane	0.600	0.900		60%	Average
Car Wash	Lane	5.700	9.000		90%	HWC water ET
Escort Agency	Room	0.400	0.500		95%	HWC water ET
Animal Boarding	-	Insufficient Data		Consider case by case	75%	HWC water ET
Self Storage	Floor Area m <sup>2</sup>	0.004	0.006	Consider office area only	-	
Food Preparation					95%	Same as Office
General						
Restaurant / Café	Floor Area m <sup>2</sup>	0.008	0.013		95%	Average
Take Away / Fast Food (no amenities)	Floor Area m <sup>2</sup>	0.015	0.024	Also use for general food preparation	95%	HWC water ET / average area
Take Away / Fast Food (including amenities)	Floor Area m <sup>2</sup>	0.030	0.048		95%	2 x Take Away (no amenities)
Catering	Floor Area m <sup>2</sup>	0.015	0.024		95%	Take Away (no amenities)
Specific						
Bakery	-	Insufficient Data		Use Take Away / Fast Food (no amenities)	-	
Butcher	-	Insufficient Data		Use Take Away / Fast Food (no amenities)	-	
Fishing Co-op	-	Insufficient Data		Use Take Away / Fast Food (no amenities)	-	
Entertainment						
Licensed Club	Floor Area m <sup>2</sup>	Insufficient Data		Separate into Food Preparation, Entertainment, Amenities		
Pub / Bar	Floor Area m <sup>2</sup>	0.030	0.048	Consider food preparation area separately	95%	Take Away (incl amenities)
Cinema / Theatre / Public Entertainment	-	Insufficient Data		Use Food Preparation & Amenities	-	
Function / Conference Centre	-	Insufficient Data		Use Food Preparation & Amenities	-	
Marina	Berth	0.600	0.900	Use Food Preparation & Amenities	90%	HWC Water ET

**Table 6: Standard ET Figures – Commercial User Categories including Assumed Discharge Factor (Continued)**

CATEGORY	STANDARD UNIT	SUGGESTED VALUES		COMMENTS	ASSUMED DISCHARGE FACTOR	BASIS
		WATER ET	SEWER ET			
Sporting / Spectator Facilities General Amenities & Indoor Facilities Specific Hockey Field (artificial surface) Bowling Alley Bowling Green Swimming Pool - Indoor Swimming Pool - Outdoor Community Facilities Child Care Centre / Pre-school Education - School (primary & secondary) Education - College, University (tertiary) Correctional Centre Church / Place of Worship Community Centre / Hall Parks / Gardens / Reserves (Irrigation) Public Amenities Block (per shower) Public Amenities Block (per wc)	-	Insufficient Data		Use Food Preparation & Amenities	-	
	-	Insufficient Data		Consider case by case	-	
	Lane	0.350	0.550	Separate into Food Preparation, Amenities, Irrigation	95%	HWC Water ET
	-	Insufficient Data		Consider case by case	-	
	ML	Insufficient Data		Consider case by case	-	
	ML	Insufficient Data			-	
	Person	0.060	0.100		95%	HWC water ET
	Person	0.030	0.050		95%	HWC water ET
	Person	0.015	0.024	Consider Food Preparation separately	95%	HWC water ET
	Person	0.500	0.750		90%	Nursing Home
-	Insufficient Data		Use Food Preparation & Amenities	-		
-	Insufficient Data		Use Food Preparation & Amenities	-		
Shower		0.400	0.600	Consider case by case	95%	Average
WC		0.400	0.600		95%	Average

**Table 7: Standard ET Figures – Industrial User Categories\* (General) including Assumed Discharge Factor**

CATEGORY	STANDARD UNIT	SUGGESTED VALUES		ASSUMED DISCHARGE FACTOR	BASIS
		WATER ET	SEWER ET**		
Industrial General					
Light Industrial	Gross Ha	15	15	60%	Average
Future Unknown - Light	Gross Ha	15	15	60%	Light Industrial
Future Unknown - Med	Gross Ha	30	30	60%	PWD, HWC Sewer ET
Future Unknown - Heavy	Gross Ha	50	50	60%	PWD, HWC Sewer ET

\* For industrial categories that have process water, it is suggested that a non-typical development ET is determined based on the methodology in Section 6.3 of the guidelines.

\*\* Additional ET figures for sewer have been included on Table 4, for a large range of detailed subcategories. These figures are provided for background information and should only be used as a general guide or where actual consumption data cannot be observed.

Notes

1 Standard ET = Town Water Usage of 230 kL/a & Sewage Loading of 140 kL/a  
 Assumed Residential Standard Discharge Factor: 60%  
 Gross Ha = Total land area of zone

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**APPENDIX D - BENCHMARKING WITH OTHER WATER AUTHORITIES**

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Where it is suspected that the average residential water consumption per dwelling for a particular local water authority is likely to differ substantially from the Standard ET water consumption, but sufficient data is not available to accurately determine local consumptions, it is suggested that the average residential water consumption per dwelling be adopted from another similar local water authority that has accurate consumption data.

DEUS benchmarking data on NSW Water Supply & Sewerage Performance Monitoring (DEUS, 2004) and regional climate averages should be used to assess the most appropriate water authority to adopt figures from, based on a consideration of factors such as:

- Climate (rainfall, evaporation, temperature)
- Household occupancy rates
- Use of water meters
- Tariff structure
- Demand management measures
- Socio-economic variability (such as extent of fixtures and gardens)

**APPENDIX E - PRIORITIES FOR REVIEW AND UPDATE OF STANDARD ET FIGURES**

The following priorities for review and update of Standard ET figures have been set based on a consideration of typical new development types, the likelihood of quality data being available and the uncertainty in the current ET figures.

High, medium and low priorities have been set, with high priority categories being targeted over the next 1 to 2 years, medium priority categories being targeted within 3 to 4 years and low priority categories after that.

**Table 8: Priorities for Review and Update of Standard ET Figures**

<b>High Priority Categories</b>	Self Care Retirement Villages Caravan / Mobile Home Park Motel / Hotel / Resort Tourist Apartments Single Retail Shop Supermarket	Shopping Centre Office Restaurant / Café Take Away / Fast Food Public Amenities
<b>Medium Priority Categories</b>	Nursing Home Caravan Park B&B / Guest House Backpackers / Hostel Laundromat Plant Nursery Service Station Car Wash Catering	Self Storage Licensed Club Pub/ Bar Function / Conference Centre Swimming Pool Child Care / Preschool Education (school / TAFE) Community Centre / Hall
<b>Low Priority Categories</b>	Boarding House Hospital Hostel (medical) Hairdresser Medical Centre Car Yard / Showroom Escort Agency Animal Boarding Bakery	Butcher Fish Co-op Cinema / Theatre Marina Hockey Field (artificial surface) Bowling Alley Bowling Green Correctional Centre Church

**APPENDIX F - WORKED EXAMPLES (STANDARD ET)**
**WORKED EXAMPLE FOR A RESIDENTIAL DEVELOPMENT**

Calculate the ET for a proposed residential subdivision consisting of 20 × 750m<sup>2</sup> lots, 10 × 400m<sup>2</sup> lots (3 bedroom dwellings) and 5 × 2 bedroom units.

Development	Sub-Category	Water ET	Sewer ET
750m <sup>2</sup> lots	Residential Lots (450m <sup>2</sup> – 2000m <sup>2</sup> )	1 × 20 = 20.0	1 × 20 = 20.0
400m <sup>2</sup> lots	Use Units – 3 bedroom (or more)	0.80 × 10 = 8.0	1 × 10 = 10.0
Units	Units – 2 bedroom	0.6 × 5 = 3.0	0.75 × 5 = 3.75
<b>TOTALS</b>		<b>31.0</b>	<b>33.75</b>

**WORKED EXAMPLE FOR A COMMERCIAL DEVELOPMENT (1)**

Calculate the ET for a proposed caravan park with an expected peak holiday loading (based on peak occupancy) of 20 × camping sites, 10 × on-site cabins and 30 × 2 bedroom self-contained permanent caravans.

Development	Sub-Category	Water ET	Sewer ET
Camping sites	Camping Site (temporary)	0.5 × 20 = 10.0	0.6 × 20 = 12.0
On-site cabins	Caravan / Cabin Site (temporary)	0.5 × 10 = 5.0	0.6 × 10 = 6.0
Caravans	Caravan / Mobile Home Park (2 bed)	0.6 × 30 = 18.0	0.75 × 30 = 22.5
<b>TOTALS</b>		<b>33.0</b>	<b>40.5</b>

**WORKED EXAMPLE FOR A COMMERCIAL DEVELOPMENT (2)**

Calculate the ET for a proposed catholic school consisting of pre-school (20 children), primary school (300 students) and a church (20m<sup>2</sup> kitchen & 10 wc's).

Development	Sub-Category	Water ET	Sewer ET
Pre-school	Child Care Centre / Pre-school	0.06 × 20 = 1.2	0.095 × 20 = 1.9
Primary school	Education – School (primary & tertiary)	0.03 × 300 = 9.0	0.048 × 300 = 14.4
Church	Church / Place of Worship	0.015 × 20 + 0.4 × 10 = 4.3	0.024 × 20 + 0.6 × 10 = 6.5
<b>TOTALS</b>		<b>14.5</b>	<b>22.8</b>
Sporting Fields	Irrigated Field	<i>Calculate on a case by case basis</i>	



**WORKED EXAMPLE FOR A MIXED USE DEVELOPMENT**

Calculate the ET for a proposed golf course resort consisting of

- Accommodation – 100 × 450m<sup>2</sup> residential lots, 30 × 3 bedroom apartments and 20 × 3 bedroom serviced tourist apartment;
- Resort – 200 × 2 bedroom units, including bar (100m<sup>2</sup>), swimming pool (300kL);
- Clubhouse – Bar (100m<sup>2</sup>), restaurant (300m<sup>2</sup>), change rooms (6 showers + 6 toilets);

Development	Sub-Category	Water ET	Sewer ET
450m <sup>2</sup> lots	Standard Residential Lots	1 × 100 = 100.0	1 × 100 = 100.0
3 bedroom apartments	Multi-storey apartments (3 or more bed)	0.67 × 30 = 20.0	1 × 30 = 30.0
Serviced tourist apartments	Use Multi-storey apartments (3 or more bed)	0.67 × 20 = 13.3	1 × 20 = 20.0
Resort units	Motel / Hotel / Resort	0.3 × 200 = 60.0	0.45 × 200 = 90.0
Bars	Pub / Bar	0.03 × 200 = 6.0	0.048 × 200 = 9.6
Restaurant	Restaurant / Café	0.008 × 300 = 2.4	0.013 × 300 = 3.9
Change rooms	Public Amenities Block (shower)	0.4 × 6 = 2.4	0.63 × 6 = 3.8
	Public Amenities Block (wc)	0.4 × 6 = 2.4	0.63 × 6 = 3.8
<b>TOTALS</b>		<b>206.5</b>	<b>261.1</b>
Swimming pool	Swimming pool – outdoor	Calculate on a case by case basis	
Golf Course	Irrigated Field	Calculate on a case by case basis	

**WORKED EXAMPLE FOR AN INDUSTRIAL DEVELOPMENT**

Calculate the ET for a proposed light industrial development consisting of 10 × 0.5 Ha lots.

Development	Sub-Category	Water ET	Sewer ET
General	Light Industrial (including showers)	15 × 10 × 0.5 = 90	15 × 10 × 0.5 = 90
<b>TOTALS</b>		<b>90.0</b>	<b>90.0</b>



# LEGEND

○ Sewerage  
● Stormwater  
□ Sewerage  
□ Stormwater

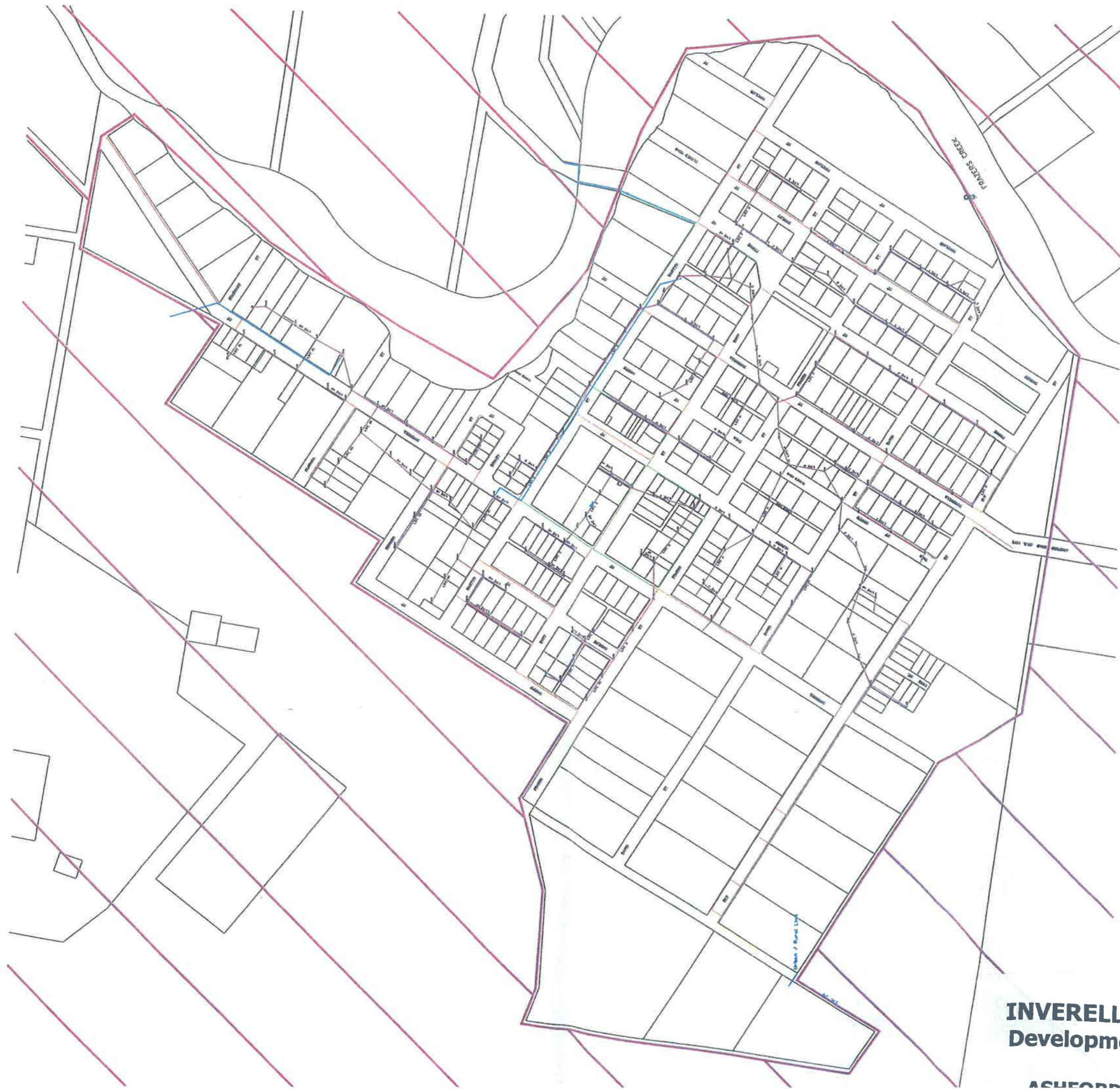
Scale



## INVERELL SHIRE COUNCIL Development Servicing Plan



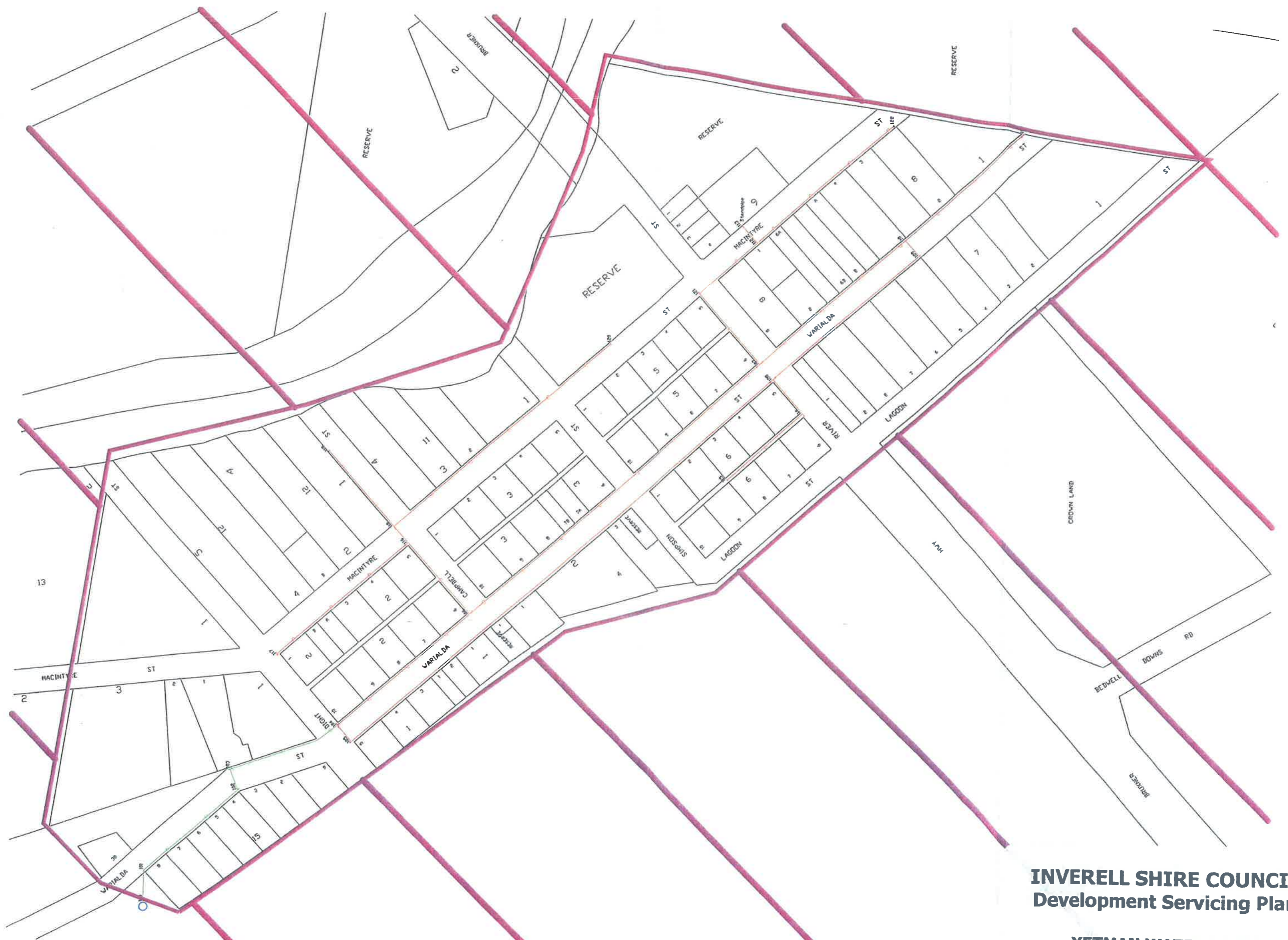
**INVERELL SHIRE COUNCIL**  
**Development Servicing Plan**



**INVERELL SHIRE COUNCIL**  
**Development Servicing Plan**

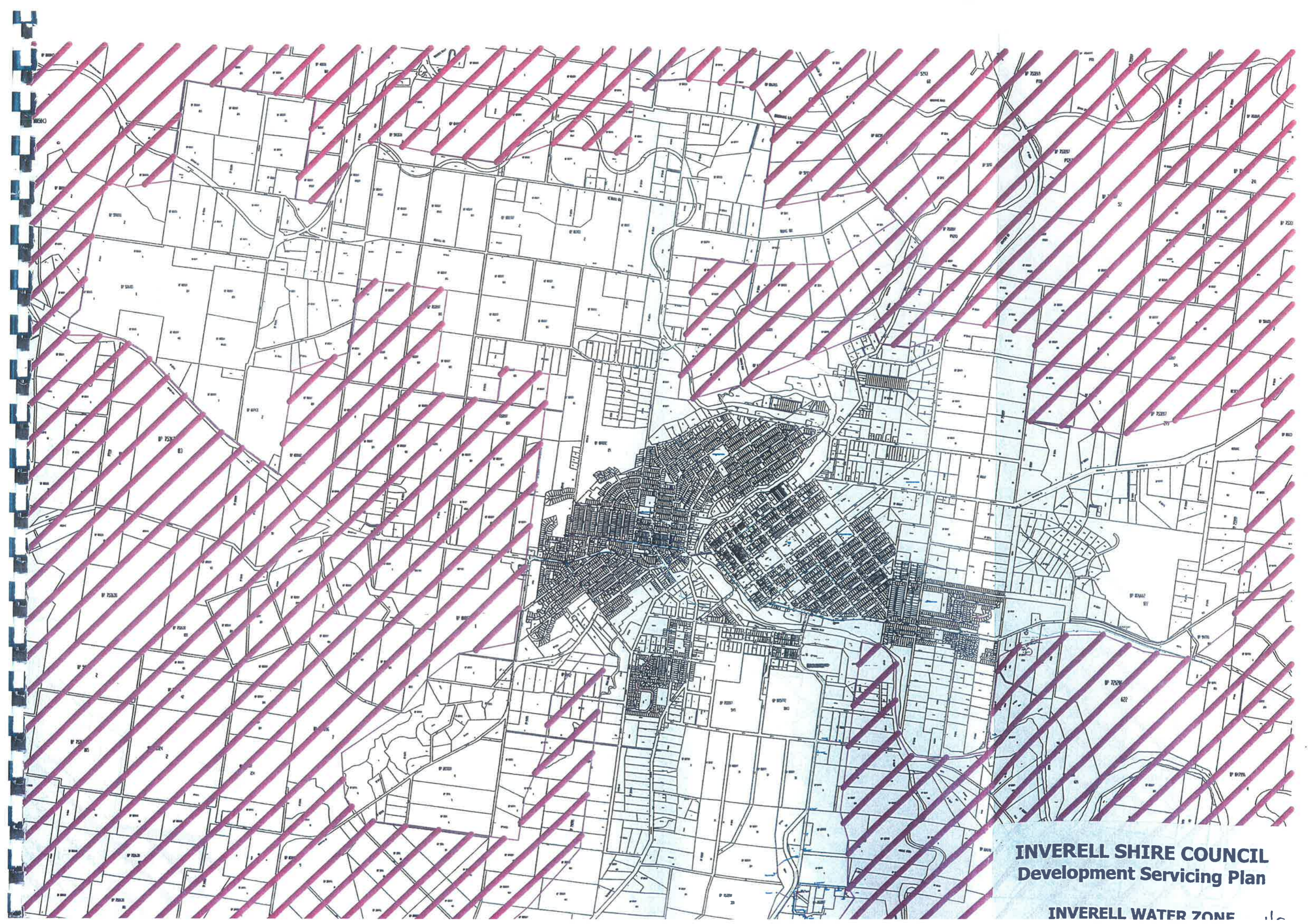
ASHFORD TOWN





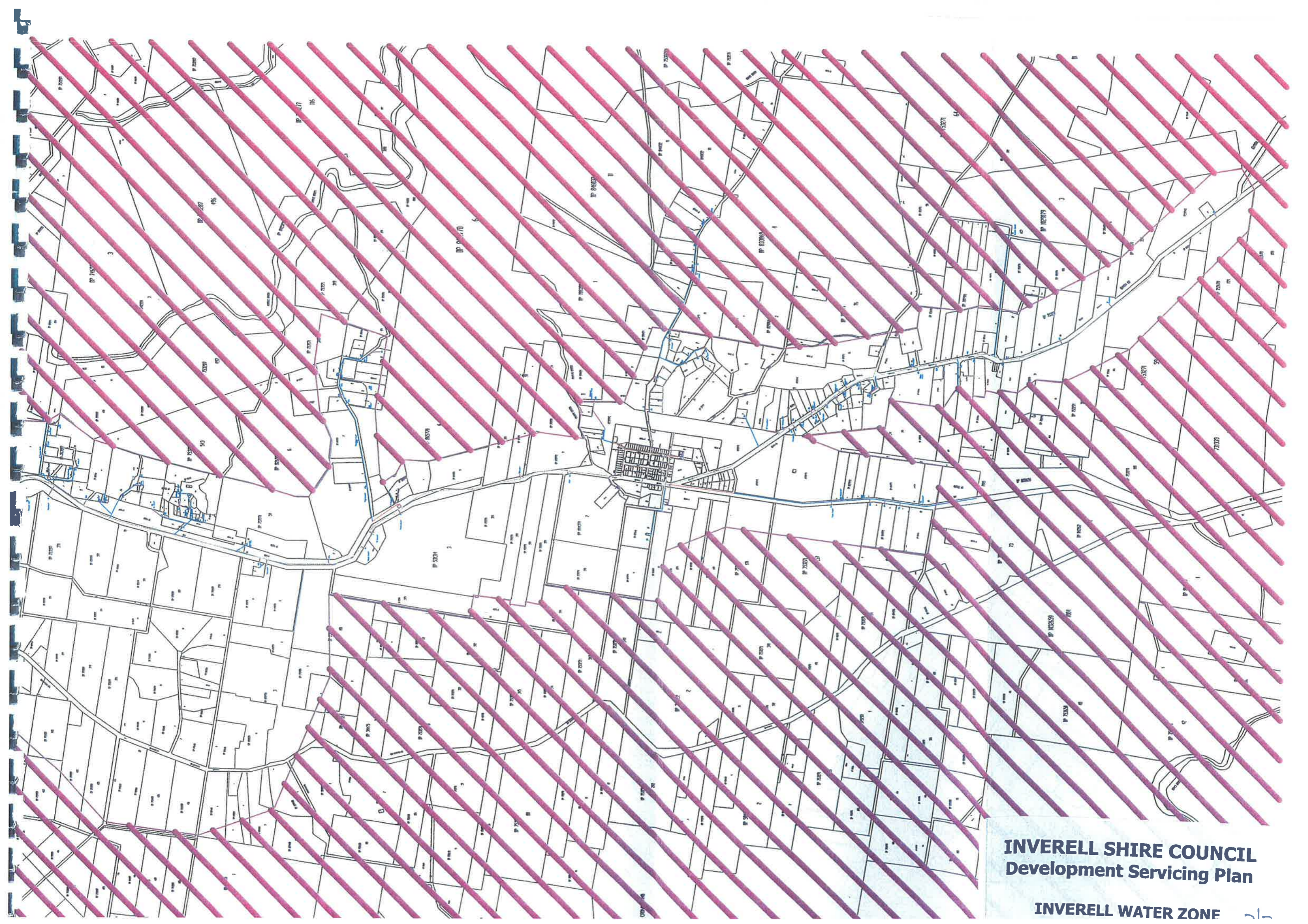
**INVERELL SHIRE COUNCIL**  
**Development Servicing Plan**

**VETMAN WATER ZONE**



**INVERELL SHIRE COUNCIL**  
**Development Servicing Plan**

**INVERELL WATER ZONE**



**INVERELL SHIRE COUNCIL**  
**Development Servicing Plan**

**INVERELL WATER ZONE** 21







**INVERELL SHIRE COUNCIL  
Development Servicing Plan**

**CULCAT SEWERAGE ZONE**



- LEGEND:**
- Proposed sewer line
  - Proposed manhole, lamp hole
  - Proposed sewage pumping station
  - - - Proposed rising main

**INVERELL SHIRE COUNCIL**  
**Development Servicing Plan**

**YETMAN SEWERAGE ZONE**

- b) *the new charges be implemented in conjunction with the commencement of the 240l kerbside recycling service; and*
- c) *advance publicity be given of the increase in charges well in advance of the implementation date.*

2. WANDERA VILLAGE 6.8.5 & 18.6.45

*That the matter be referred to Committee-of-the-Whole for discussion as the matter relates to personal matters concerning particular individuals. (Section 10A (2)(a) of the Local Government Act, 1993).*

SP-A

SUBDIVISION – RESTRICTION TO USER DA 184/04

*49/05 RESOLVED (Lloyd/Harmon) that the Council Seal be used on the Section 88b Instrument relating to the subdivision of Lot 3 DP 650772 as per Development Application 184/04.*

**ADJOURNMENT**

At this juncture, the time being 3.20 pm, Council adjourned.

**RESUMPTION**

At this juncture, the time being 3.47 pm, Council reconvened.

DTS-A  
ASO-A

4. WORKS/SERVICES COMMITTEE MEETING MINUTES 4.11.4

*50/05 RESOLVED (Barnes/Jones) that:*

- a) *the Minutes of the Works/Services Committee Meeting held on Wednesday, 9 March 2005 be received and noted; and*
- b) *the following recommendations of the Works/Services Committee be adopted by Council:*

1. OCCUPATIONAL HEALTH & SAFETY LEGISLATION AMENDMENT (WORKPLACE FATALITIES) BILL 2004 22.17.1

*That Council provide written advice of its position in this matter to the Hon. Bob Carr, NSW Premier, the Hon. John Della Bosca, Minister for Industrial Relations and John Brogden MP, NSW Opposition Leader.*

2. INVERELL AIRPORT 30.7.1

*That representations continue to be made for the full funding of the program.*

3. DEVELOPMENT SERVICING PLAN FOR WATER SUPPLY AND SEWERAGE 32.9.1

*That:*

- a) *the Draft Development Servicing Plan be adopted as the final Development Servicing Plan;*
- b) *the Development Servicing Plan be forwarded to the Department of Energy, Utilities and Sustainability for registration;*
- c) *the Development Servicing Plan apply from 1 July 2005, subject to it being registered by the Department of Energy, Utilities and Sustainability; and*

- d) *the charges in the Development Servicing Plan be phased in over a three (3) year period, based on one third of the difference between the existing cost and the full cost in 2005/2006, two thirds of the difference between the existing cost and the full cost in 2006/2007 and full cost from 2007/2008.*

4. CRUSHING ROCK FOR RESHEETING 28.9.12

*That funding be made available to:*

- a) *treat 1 km on the Elsmore Road from Elsmore with crushed gravel at an estimated cost of \$18,000;*  
 b) *treat the adjacent 1 km on the Elsmore Road with a rock buster at an estimated cost of \$18,000 and that the results be evaluated over a 12 month period; and*  
 c) *Council call for expressions of interest for the crushing of gravel.*

5. DIRECTIONAL SIGNAGE 28.9.18

*That the Director Technical Services pursue action/funding in this matter at the earliest possible time to ensure the erection of appropriate signage, with a report to be brought back to Council.*

DCS-A  
ASO-A

5. FINANCE/BUDGET COMMITTEE MEETING MINUTES 4.11.2

*51/05 RESOLVED (Baker/Lewis) that:*

- a) *the Minutes of the Finance/Budget Committee Meeting held on Wednesday, 9 March 2005, be received and noted; and*  
 b) *the following recommendations of the Finance/Budget Committee be adopted by Council:*

1. SUBDIVISION – RESTRICTION TO USER DA 77/04

*That the Council Seal be used on the Section 88b Instrument relating to the subdivision of Lot 3A Sec 8 DP 158176 as per Development Application 77/04.*

2. POLICY ON FINANCIAL ASSISTANCE TO WORKS ACTIVITIES BY COUNCIL 12.22.1 & 4.14.1

*That a policy be established on a 'points system basis' to be utilised in instances where requests are made to Council for financial assistance.*

3. CAMPBELL PARK ROTUNDA 21.8.11

*That a letter of appreciation be sent to the Inverell Rotary Club and Inverell East Rotary Club in this matter.*

**SUPPLEMENTARY  
SECTION H  
COMMITTEES REPORT**

*52/05 RESOLVED (Irvine/Harmon) that Council consider the following Supplementary Section H Committees Report, 'Mayor's Drug Advisory Committee Meeting Minutes'.*