2016 Developer Charges Guidelines for Water Supply, Sewerage and Stormwater

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DPI Water

Level 11, 10 Valentine Avenue

Parramatta NSW 2150

Locked Bag 5123

Parramatta NSW 2124

www.water.nsw.gov.au

BEST PRACTICE MANAGEMENT

Compiling editors:

Sam Samra, Senior Manager, Water Utility Performance

Frank Garofalow, Director Water Regulation

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Foreword

These *2016 Developer Charges Guidelines for Water Supply, Sewerage and Stormwater* are issued by the Minister for Lands and Water, pursuant to section 306 (3) of the *Water Management Act 2000*. Developer charges are up-front charges levied to recover part of the infrastructure costs incurred in servicing new developments or additions/changes to existing developments.

Based on the net present value (NPV) approach adopted in the NSW Independent Pricing and Regulatory Tribunal's (IPART) *Determination 9*, of September 2000, these guidelines update the *Water Supply, Sewerage and Stormwater Developer Charges Guidelines, 2002* and modify them in accordance with the recommendations of the IPART Review Report.[1]

Commercial developer charges in accordance with these guidelines are an integral part of the fair pricing of water related services and provide a pricing signal to encourage less costly forms and areas of development. Such developer charges are 2 of the 19 outcomes required by the *NSW Best–Practice Management of Water Supply and Sewerage Framework* (page 5) and are a requirement of the *National Water Initiative Pricing Principles*, April 2010.

The guidelines have been prepared by DPI Water[+] and apply to all NSW urban water utilities apart from Sydney and Hunter Water Corporations, Central Coast Council and the regional utilities Essential Water and Fish River Water Supply which are regulated by IPART. Through section 64 of the *Local Government Act 1993*, local government councils may use these guidelines for calculating developer charges for water supply, sewerage and stormwater services.

The Water Regulation branch of DPI Water will continue to monitor implementation of these guidelines by the NSW local water utilities and to register their development servicing plan documents.

[+] DPI Water is a division of the NSW Department of Primary Industries.

[1] Review of Water Supply, Sewerage and Stormwater Developer Charges Guidelines – Water – Final Report to the Minister, September 2007, Independent Pricing and Regulatory Tribunal of NSW (www.ipart.nsw.gov.au).

Abbreviated Contents

Acknowledgements

The 2016 Developer Charges Guidelines has been prepared by the Water Regulation branch of DPI Water. This updates the *Water Supply, Sewerage and Stormwater Developer Charges Guidelines, 2002* and modifies them in accordance with the recommendations of the IPART Review Report[1].

Executive Summary

Introduction

These *2016 Developer Charges Guidelines for Water Supply, Sewerage and Stormwater* are released by the Minister for Lands and Water pursuant to section 306 (3) of the *Water Management Act 2000*. These *2016 Developer Charges Guidelines* update the *Water Supply, Sewerage and Stormwater Guidelines, 2002* and modify them in accordance with the recommendations of the IPART Review Report[1].

Developer charges are up-front charges levied to recover part of the infrastructure costs incurred in servicing new developments or additions/changes to existing developments.

The power for local government councils to levy developer charges for water supply, sewerage and stormwater derives from section 64 of the *Local Government Act 1993* by means of a cross-reference to Section 306 of the *Water Management Act 2000*.

Section 306 of the Water Management Act indicates that the calculation of developer charges may consider the value of existing water management works and the estimated cost of projected water management works.

Relationship to Section 94 Contributions

Legislation in NSW provides for two types of developer charges:

1. charges for water supply, sewerage and stormwater under section 64 of the *Local Government Act 1993*; and
2. charges for other infrastructure (eg. roads, community facilities) under section 94 or 94A of the *Environmental Planning and Assessment Act 1979*.

Councils can levy developer charges for stormwater under either Act.

Developer charges for water supply and sewerage (section 64 contributions) and section 94 or 94A contributions involve the same underlying principle - development creates a demand for services, and it is therefore equitable that new development pays a contribution towards the capital cost of infrastructure and facilities required to meet that demand. Utilities may elect to coordinate exhibition and publication of their section 64 and section 94 plans. Such coordination of section 64 and section 94 plans would assist the development industry.

Purpose of Developer Charges

Developer charges serve three related functions:

1. they provide a source of funding for infrastructure required for new urban development;
2. they provide signals regarding the cost of urban development and thus encourage less costly forms and areas of development; and
3. are an integral part of the fair pricing[2, 3] of water related services.

[2] Commercial developer charges in accordance with these Guidelines are required as 2 of the 19 outcomes required by the *NSW Best-Practice Management of Water Supply and Sewerage Framework* (Figure 1 on page 5). Developer charges are also a requirement of the *National Water Initiative Pricing Principles*, April 2010 (www.nwc.gov.au).

[3] Fair pricing provides full cost recovery, a commercial return on efficient costs, and strong, cost-reflective pricing signals to encourage efficient use of the services, and minimise any cross-subsidies.

Application of the Guidelines

These 2016 *Developer Charges Guidelines* apply to the regional NSW local water utilities (LWUs). Sydney Water Corporation, Hunter Water Corporation, Central Coast Council and the regional utilities Essential Water and Fish River Water Supply are separately regulated by the Independent Pricing and Regulatory Tribunal (IPART).

Preparation of all new LWU DSP documents commenced after the release of these *2016 Developer Charges Guidelines* must be in accordance with these guidelines, including independent audit.

All the general purpose local government councils in NSW may apply developer charges for stormwater in accordance with these guidelines.

It is noted that section 64 developer charges do not apply for developments serviced by a licenced operator under the Water Industry Competition Act 2006 (WICA) or the Water Industry Competition Amendment (Review) Act 2014. The capital cost of the infrastructure serving such developments would be recovered through annual access and usage charges.

Best-Practice Requirements

To encourage fair pricing for water supply and sewerage services, NSW local water utilities (LWUs) are required to prepare Development Servicing Plans (DSPs) and levy commercial developer charges[2] in accordance with these guidelines.

However, utilities with low growth (under 5 lots/a) are eligible for exemption from preparing a DSP. A utility with such low growth may request exemption from DPI Water[+].

LWUs are to calculate and report developer charges in their DSP documents in accordance with section 306 (3) of the Water Management Act 2000 and these guidelines.

Developer Charges Concept

The developer charges calculation is based on the net present value (NPV) approach. The fundamental principle of the NPV approach is that the investment in assets for serving a development area is fully recovered from the development. The investment is recovered through up-front charges (ie. developer charges) and the present value (PV) of the annual bills to be paid by the development in excess of operation, maintenance and administration (OMA) costs.

The developer charge per equivalent tenement (ET – defined as a detached residential dwelling) is calculated as the PV of the capital expenditures over time required to service the development area (the "**capital charge**") less the PV of the expected net income over time from providing services to the development area (the "**reduction amount**").

Developer Charge	=	Capital Charge (cost of asset provision)	–	Reduction Amount (net income from annual bills)

[+] DPI Water is a division of the NSW Department of Primary Industries.

Capital Charge

There are two methods available for calculation of the capital charge as shown in Table 1.

Table 1 Capital charge calculation methods

Approach	Features
Net Present Value (NPV) Spreadsheet	Must be used by LWUs with 2,000 or more connected properties[4]. May also be used by smaller utilities.
Return on Investment (ROI) Factor	May only be used by LWUs with under 2,000 connected properties for either their water supply or sewerage business.

Existing and future assets are included in the capital cost. The LWU needs to demonstrate that there is a nexus[5] between the development covered by the DSP and the assets included in the capital charge.

Table 2 Discount rates for included assets.

Assets	Discount rate
Pre-1996 assets	3% pa
Post 1996 assets	5% pa

Reduction Amount

There are two methods available for calculation of the Reduction Amount:

Table 3 Methods for calculating the reduction amount.

Method	Concept	Features
NPV of Annual Bills	The reduction amount is the NPV for 30 years of the future net income (ie. annual bills paid in excess of OMA cost) divided by the PV of the new ETs.	Transparent and similar to IPART method for regulated utilities. Must be used by LWUs with 2,000 or more connected properties. May also be used by smaller utilities.
Simplified NPV of Annual Bills	The reduction amount is calculated as the PV for 30 years of current net income per ET.	Simpler than NPV of Annual Bills method, but overstates Reduction Amount (section 6.2 on page 50). May be used by LWUs with under 2,000 connected properties for either their water supply or sewerage business.

[4] A connected property is a property connected to a water utility's water supply or sewerage system and is the agreed national indicator for reporting the size of the urban water utilities. Refer to page 43 of the *2013-14 National Performance Framework: urban performance reporting indicators and definitions handbook (www.nwc.gov.au).* Each NSW utility's number of connected properties is shown in the annual *NSW Performance Monitoring Report*, which is available at www.water.nsw.gov.au. The 2014-15 values are shown on pages 89 (water supply) and 92 (sewerage) of Reference 7 on page 62.

[5] A nexus is established where an asset is required for serving the development. Eg. a utility providing a water supply to a development has such a nexus for each component of its water supply system employed for serving the development. Such assets may include dams, pumping stations, water treatment works, trunk mains and service reservoirs.

Disclosure of Cross-Subsidies

The calculated developer charges are the maximum value that may be levied by a utility. In adopting a DSP for water supply, sewerage or stormwater, the utility may elect to levy less than the calculated amounts.

If a utility elects to levy less than the calculated developer charges, then the resulting cross-subsidy from the existing customers in the typical residential bill[6] must be calculated and disclosed in the relevant DSP, in the utility's Annual Report, annual Operational Plan and in communication materials for consultation with stakeholders. The impact of cross-subsidies for new development on the typical residential bill must also be prominently disclosed and explained on the utility's website and reported to DPI Water.

Phasing-in of developer charges / Capping of developer charges

If the developer charges adopted in a DSP are significantly greater than those presently levied, the higher charges may be phased-in over a 3-year period. Although such phasing-in is permitted, it is not encouraged.

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

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

The cross-subsidy, resulting from capping of developer charges must be disclosed as noted above.

Implementation of Developer Charges

Development Servicing Plan (DSP) Documents

To ensure the developer charges are fair and transparent, LWUs must provide, as a minimum, the following information in their DSP documents:

1. A summary.
2. Administration: the name and extent of the DSP, boundaries and how developer charges will be levied.
3. Demographic and land use planning information. This should include the estimated population and ETs in 1996, and the projected population and ETs over the planning horizon.
4. Timing of the works, including completed and proposed capital works.
5. Levels of service and design parameters.

[6] The typical residential bill is the principal indicator of the overall cost of a water supply or sewerage system and is the bill paid by a residential customer using the utility's average annual residential water supplied per connected property. Refer to page 7 of Reference 6 on page 62.

6. The calculated developer charge.
7. The adopted developer charge and cross-subsidy (if any).
8. Reference to **background information** (page 7) containing all the critical data behind each DSP, including calculation models in Excel or similar format.
9. A reference to other relevant DSPs and to related section 94 or 94A contribution plans.

Number of DSPs Required

LWUs should minimise the number of DSPs. Capital charges need to be calculated for:

- Each water supply distribution system or sewage treatment works catchment;
- A separate small town or village;
- A new development area of over 500 lots.

Areas with calculated capital charges within 30% must be agglomerated into a single DSP, commencing with the area with the highest capital charge.

Utilities with a number of annual water supply or sewerage tariffs should calculate a reduction amount for each tariff area.

DSP Document Options

A separate DSP document may be prepared for each DSP area, and for each of water supply and sewerage (page 46). A LWU may publish its DSP documents as one or more volumes.

Alternatively, a LWU may elect to prepare a single DSP document for each of water supply and sewerage, which is a concise documentation of the required information. If a single DSP document is prepared then the document must clearly identify the capital charge relating to each water supply or sewerage DSP area, the proposed developer charge and the cross-subsidy for each water supply or sewerage DSP area.

Auditing of DSP Documents

LWUs are required to have all DSP documents independently reviewed by an auditor approved[7] by DPI Water before public exhibition of the DSP documents. A check list for key matters to be addressed by each LWU in the preparation of its DSP documents is provided at Appendix D on page 87. The auditor's report must confirm that the utility has addressed the matters in the check list. The process for preparing a DSP document is shown on page 88.

Exhibition of DSP Documents

All draft DSP documents must be publicly exhibited for at least 30 working days.

Registration of DSP Documents

After addressing comments received on the draft DSP documents, the final DSP documents for each service (eg. water supply or sewerage) must be adopted by the utility and registered with DPI Water. The final DSP documents are to remain on the LWU's website until replaced by subsequent DSP documents.

[7] The DSP auditor must have suitable skills and experience in accordance with Appendix F on page 123. The LWU must complete a copy of Appendix F and obtain DPI Water approval before it commissions a DSP auditor.

Reviewing/Updating Developer Charges

Developer charges relating to a utility's DSP documents should be reviewed by the utility after a period of 4 to 8 years.

Key Modifications to the 2002 Guidelines

These 2016 Developer Charges Guidelines for Water Supply, Sewerage and Stormwater have modified and updated the 2002 Guidelines in accordance with the recommendations of the IPART Review Report[1].

The key modifications are outlined below.

2016 Guidelines section and page	Modification	IPART Recomm-endation
General		
Section 1.5 on page 4 and page 5	Includes a new section on **NSW Best-Practice Requirements** for water supply and sewerage management. Commercial developer charges in accordance with these guidelines are 2 of the 19 outcomes required by the best practice framework.	
Section 2.1.2 on page 6	This section on **Time table** indicates that: Preparation of all new LWU DSP documents commenced after the release of these *2016 Developer Charges Guidelines* must be in accordance with these guidelines.	
Section 7.2.1 on page 53	IPART has recommended removing **Phasing-in**. However, in response to strong stakeholder support, the phasing-in of developer charges is permitted, but not encouraged.	28
Administration		
Section 2.2.1 on page 6	The section on **Contents of Development Servicing Plans** includes the requirement for a DSP to refer to **background information** containing all the critical data behind the DSP documents.	1
Section 2.2.4 on page 7	A new section **Auditing of DSP documents** requiring all DSP documents to be independently reviewed by an auditor approved by DPI Water has been added.	2
Section 2.2.5 on page 8	This section on **Exhibition of DSP Documents** includes new provisions as follows: • LWU to make the draft DSP documents available on its website and to make the background information available during and after the exhibition period, and to make the final DSP documents available on the website until replaced by subsequent DSP documents. • LWU to make the background information available in electronic format on request.	2

2016 Guidelines section and page	Modification	IPART Recomm-endation
Section 2.3 on page 8	A new requirement for **Registration of DSP documents** has been added to provide the **auditor's report** to DPI Water as per the checklist in Appendix D on page 87.	3 and 4
Section 2.5 on page 9	**Levying of Developer Charges** section has been extended to include a **time limit for payment** in any developer charges determination or advice provided to developers.	
Section 2.9 on page 11	This **Dispute Resolution** section includes new provisions: • to refer to **Ombudsman** as a part of the dispute resolution process. • to refer to the **expert technical panel** on technical matters or issues of interpretation of the guidelines. The expert panel will be chaired by DPI Water and include representatives from IPART, NSW Water Directorate, LWUs and the development industry, and a developer charges expert.	6 and 7
Equivalent Tenement (ET) Calculation		
Section 3 on page 13	A new section on **Determining Number of ETs** has been added. Attachment 5 of the 2002 guidelines on calculation of ETs has been deleted.	29
Section 3.1 on page 13	This new section **Levels of Service** outlines that: • the volume of average annual water to be supplied to a detached residential dwelling is a **water supply ET**, which is a key Level of Service for a utility and is generally published in its strategic business plan. The current and future water supply ETs should be determined on this basis. • an ADWF of 200L/EP/d can be used to calculate **sewerage ETs**. Where a reliable estimate of the historical ADWF is available, this value may be used to calculate sewerage ETs. • when estimating current and future ETs utilities to carefully consider the ABS data, NSW Department of Planning and Environment data, Council data and historical data on residential water supplied in the annual TBL performance reports provided by DPI Water (page 125).	25 24
Section 3.3 on page 15	Includes **example ET calculations** for water supply.	29

2016 Guidelines section and page	Modification	IPART Recomm-endation
Section 3.4 on page 17	Includes **example ET calculations** for sewerage.	29
Capital Charge Calculation		
Section 4.3.2 on page 22	Modifications to the provision of **Assets to be Included** are outlined below. • Generally only include **Existing assets** less than 30 years old. • **Future assets** required within 10 years of the commencement of the DSP can be included if these assets are in the utility's total asset management plan and capital works program. Otherwise only assets to be constructed within 5 years may be included. In addition, future assets beyond 10 years can be included if the utility has demonstrated a nexus between the future assets concerned and the development, and the utility has detailed plans for building those assets. • Include **future renewal** cost of assets planned within the next 10 years, if the renewal asset is older than 30 years and has been excluded from the capital charge due to (2) on page 23. • Capital charge for a DSP involving **backlog works** should be calculated in the same manner as for other DSP areas and only new developments are required to pay developer charges.	8 and 9 10 23 and 30
Section 4.3.4 on page 24	This section **Reticulation** has been extended for calculating a reticulation supplement that would be payable by developers not providing reticulation assets.	12
Section 4.4.1 on page 25	This **Valuation of Assets** section indicates that no contingencies may be included in MEERA valuations of existing assets.	13
Section 4.4.2 on page 25	Amendments included to **value future assets** on the basis of MEERA cost. The contingency allowance for future works required within 10 years must not exceed 20 percent.	14 and 15
Section 4.5 on page 26	The modifications to the **capital charge calculation methods** are as follows: • The option for using **ROI factor method** by all LWUs has been removed. • **NPV Spreadsheet** method applies to all LWUs. • **ROI factor** method may be used by utilities with under 2,000 connected properties.	18

2016 Guidelines section and page	Modification	IPART Recomm-endation
Section 4.5.1 page 27	This section includes additional comprehensive **example calculations** using the NPV Spreadsheet Method.	
Section 4.5.2 on page 36	Includes a **Table of ROI factors**.	19
Section 4.5.2 on page 37	Includes **example calculations** using ROI Factor Method that may be used by utilities with under 2,000 connected properties.	
Agglomeration		
Section 5 on page 42	A new chapter **Determining Number of DSPs** has been added. This chapter illustrates the process of agglomeration of service areas into DSP areas.	
Section 5.1 on page 42	The 2002 guidelines provision for **Agglomeration of Service Areas** where the capital charges for two or more service areas are within 30% -"30% rule" retained. **Circular LWU 5 of 28 September 2004** that provided for further agglomeration of service areas beyond "30% rule" has been **withdrawn**.	17
As above	Calculation method for **weighted average capital charge** has been changed to calculate on the basis of percentage of PV of new ETs instead of percentage of growth.	16
Section 5.1 on page 44	Includes **example calculations** for agglomeration and calculation of weighted average capital charge.	
Section 5.2 page 44	A new provision for **agglomeration for utilities under 2000 connected properties** has been added to allow these utilities to agglomerate additional service areas (in addition to the "30% rule" on page 42) subject to the post agglomeration capital charge not exceeding the pre-agglomeration capital charge by more than 30%.	17
Section 5.2 page 45	Includes **example calculations** for additional agglomeration for utilities with under 2,000 connected properties.	

2016 Guidelines section and page	Modification	IPART Recomm-endation
Reduction Amount Calculation		
Section 6 on page 47	The changes to the **Reduction Amount calculation methods** are as follows: • **Direct NPV method** has been removed. • **NPV of Annual Bills** method applies to all LWUs. • **Simplified NPV of Annual Bills** method may be used by utilities with under 2,000 connected properties. However, it is preferable not to use this method as it overstates the Reduction Amount (section 6.2 on page 50).	21 20
Section 6.1 on page 47	The modifications to the **NPV of Annual Bills method** indicated in this section are : • use of current (at the time of commencement of the DSP) annual bill from new development and OMA cost for the calculation of PV of future net income. • Requirement for a **30 year financial plan** has been removed.	20 and 22
Section 6.1 on page 49	Includes **example calculations** for NPV of annual bills method.	
Section 6.2 on page 50	A description and an example of the **Simplified NPV of Annual Bills method** for utilities with under 2,000 connected properties have been added.	21
Cross-subsidy Calculation		
Section 7.2 on page 53	Includes provisions for capping of developer charges.	26
Section 2.9 on page 12 and section 7.2 page 53	New provisions on **Disclosure of Cross-subsidies** have been added that extend LWU requirements to disclose cross-subsidies in the DSP, consultation materials, annual Operational Plan, Annual Report and on the utility's website.	27
Section 7.2.2 on page 53	**Example calculations** for developer charges options and cross-subsidy have been added.	

2016 Guidelines section and page	Modification	IPART Recomm-endation
Appendix		
Appendix D on page 87	Addition of **Water Supply and Sewerage Developer Charges Checklist** for the use by the LWU and its approved auditor.	4
Appendix F on page 123	Addition of a **DSP Auditor Approval Form**.	4
Appendix G on page 125	Addition of an **Example TBL Performance Report**.	

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1. Background

These *2016 Developer Charges Guidelines for Water Supply, Sewerage and Stormwater* are released by the Minister for Lands and Water pursuant to section 306 (3) of the *Water Management Act 2000*. These *2016 Guidelines* update the *Water Supply, Sewerage and Stormwater Guidelines, 2002* and modify them in accordance with the recommendations of the IPART Review Report[1].

1.1. Legislation and Application of Developer Charges

Water supply, sewerage and stormwater developer charges are up-front charges levied by urban water utilities to recover part of the infrastructure costs incurred in servicing new developments or additions/changes to existing developments.

The power for local government councils to levy developer charges for water supply, sewerage and stormwater[8] derives from section 64 of the *Local Government Act 1993* by means of a cross-reference in that Act to Section 306 of the *Water Management Act 2000*. The legislation relating to developer charges is outlined in Appendix A on page 63.

These 2016 guidelines apply to the regional NSW local water utilities. Sydney Water, Hunter Water, Central Coast Council and Essential Water and Fish River Water Supply are regulated by the Independent Pricing and Regulatory Tribunal (IPART) and are not covered by the guidelines. All the general purpose local government councils in NSW may apply developer charges for stormwater in accordance with these guidelines.

Developer charges serve three related functions. Firstly, they provide a source of funding for infrastructure required for new urban developments. Secondly, developer charges provide an indication of the cost of urban development and thus encourage less costly forms and areas of development. Thirdly they are an integral part of the fair pricing[9] of water related services. It is important that charges for infrastructure for urban developments indicate the relative costs of providing the infrastructure to ensure that the charges do not distort the form and sequence of development.

IPART, in its report on its *Inquiry into Water and Related Services (1993)* made two proposals on developer charges:

> Proposal 13.1:
>
> the Tribunal proposes that developer charges should:
> - involve full cost recovery
> - reflect variations in the cost of servicing different development areas
> - result in new developments meeting the costs, but no more, of the services provided through developer charges and/or annual charges
> - cover infrastructure expenditures which can be clearly linked to the development in question and are able to be forecast reliably
> - be applied to existing and fringe areas alike
> - be calculated transparently so that the developers can understand and assess the calculated charges.
>
> *IPART, Inquiry into Water and Related Services (1993)*

[8] Councils may elect to levy developer charges for stormwater drainage on the basis of section 64 of the *Local Government Act 1993* or section 94 of the *Environmental Planning and Assessment Act 1979.*

[9] Fair pricing provides full cost recovery, a commercial return on efficient costs, and strong, cost-reflective pricing signals to encourage efficient use of the services, and minimise any cross-subsidies. Fair pricing of services is a key consideration in the *NSW Best-Practice Management of Water Supply and Sewerage Framework* (Figure 1 on page 5).

> Proposal 13.2:
>
> The Tribunal endorses, in principle, the net present value approach…The net present value approach is a standard commercial approach to project evaluation. Using this approach, the developer charge is:
>
> - the sum of the capital expenditures over time required to service the development (the "capital charge"), less
> - the expected net income over time from providing services to that development (the "reduction amount").
>
> *IPART, Inquiry into Water and Related Services (1993)*

IPART, in its report on *Pricing Principles for Local Water Authorities (1996)* made two recommendations on developer charges:

> **Recommendation 7.2:**
>
> The Tribunal considers that developer charges should be calculated by first working out a capital charge for the particular works serving the development, and then subtracting a reduction amount to avoid double charging. The reduction amount should reflect the amount which users of a development will be paying over time through future annual charges.
>
> *IPART, Pricing Principles for Local Water Authorities (1996)*

> **Recommendation 7.3:**
>
> Subject to further confirmation of its practical application, the Tribunal continues to support the net present value (NPV) method of calculating developer charges. For country towns this approach should be regarded as providing a maximum calculation of such charges. Where councils elect to offer more favourable terms to developers, the cross subsidies involved should be transparent.
>
> *IPART, Pricing Principles for Local Water Authorities (1996)*

The NPV approach to calculating developer charges comprises a **Capital Charge** less a **Reduction Amount**.

In *Determination No. 9* of September 2000, IPART has set out the methodology for calculating the developer charges for water supply, sewerage and stormwater drainage by the major NSW water utilities. A copy of *Determination No. 9* is provided in Appendix B on page 65. These Guidelines are based on the NPV approach in this IPART determination, but involve a number of simplifications to make them suitable for the regional NSW local water utilities (LWUs).

1.2. The Net Present Value Approach

The fundamental principle of the NPV approach is that the investment by a water utility in assets for serving a development area is fully recovered from the development. The investment is recovered from up-front charges (ie. developer charges) and the **net income from annual bills** (periodic water or sewerage bills) received from the development in excess of the operation, maintenance and administration (OMA) cost.

The developer charge per equivalent tenement (ET – defined as a detached residential dwelling) is calculated as the present value (PV) of the capital expenditures over time required to service the development area (the "**capital charge**") less the PV of the expected net income over time from providing services to the development area (the "**reduction amount**").

Developer Charge	**=**	**Capital Charge (*cost of asset provision*)**	**–**	**Reduction Amount (*net income from annual bills*)**

The capital charge represents the efficient capital cost of assets used in providing water related services in a DSP area. This includes the cost of both existing and future assets that will be used to service the DSP area. In addition, because LWUs provide the upfront funding for constructing these assets, the capital charge also includes a commercial return on this investment.

As noted on page 1, these 2016 Developer Charges Guidelines update the 2002 guidelines and modify them in accordance with the recommendations of the IPART Review Report[1].

1.3. Relationship to Section 94 Contributions

Contributions under section 94 or 94A of the *Environmental Planning and Assessment Act 1979* may be levied by local government councils in NSW as contributions for infrastructure and facilities, other than water supply and sewerage, required to service development.

Developer charges for water supply and sewerage and section 94 contributions are based on the same underlying principle - development creates a demand for services, and it is therefore equitable that new development pays a contribution towards the capital cost of infrastructure and facilities required to satisfy the demand.

Section 94 contributions are documented in a section 94 Contribution Plan (CP) and developer charges are documented in a Development Servicing Plan (DSP) document. A CP and a DSP are prepared under different Acts, and are based on different sets of Guidelines. However, they have the same purpose - setting out the contributions payable by development to the authority responsible for providing infrastructure and other facilities. Consequently, these documents have many similarities, and they share certain data, such as proposed development and forecast growth.

While a CP and a DSP document for an area are separate documents, utilities preparing both documents should consider issues such as future development, affordability and the communication strategy in a consistent manner. Utilities may elect to coordinate exhibition and publication of their section 64 and section 94 plans. Such coordination of section 64 and section 94 plans would assist the development industry.

1.4. Service to Non-urban Areas

IPART's report on *Pricing Principles for Local Water Authorities* discussed the use of a *'connection fee'* by water utilities for providing a water supply service to non-urban areas:

> **Recommendation 7.4:**
>
> The Tribunal considers that adequate flexibility exists in the *Local Government Act 1993* to apply to developer charges for extension of water services to existing towns, villages and rural customers.
>
> *IPART, Pricing Principles for Local Water Authorities (1996)*

1.5. Best-Practice Requirements

Commercial developer charges in accordance with these guidelines are 2 of the 19 outcomes required by the *NSW Best-Practice Management of Water Supply and Sewerage Framework* (Figure 1 on page 5).

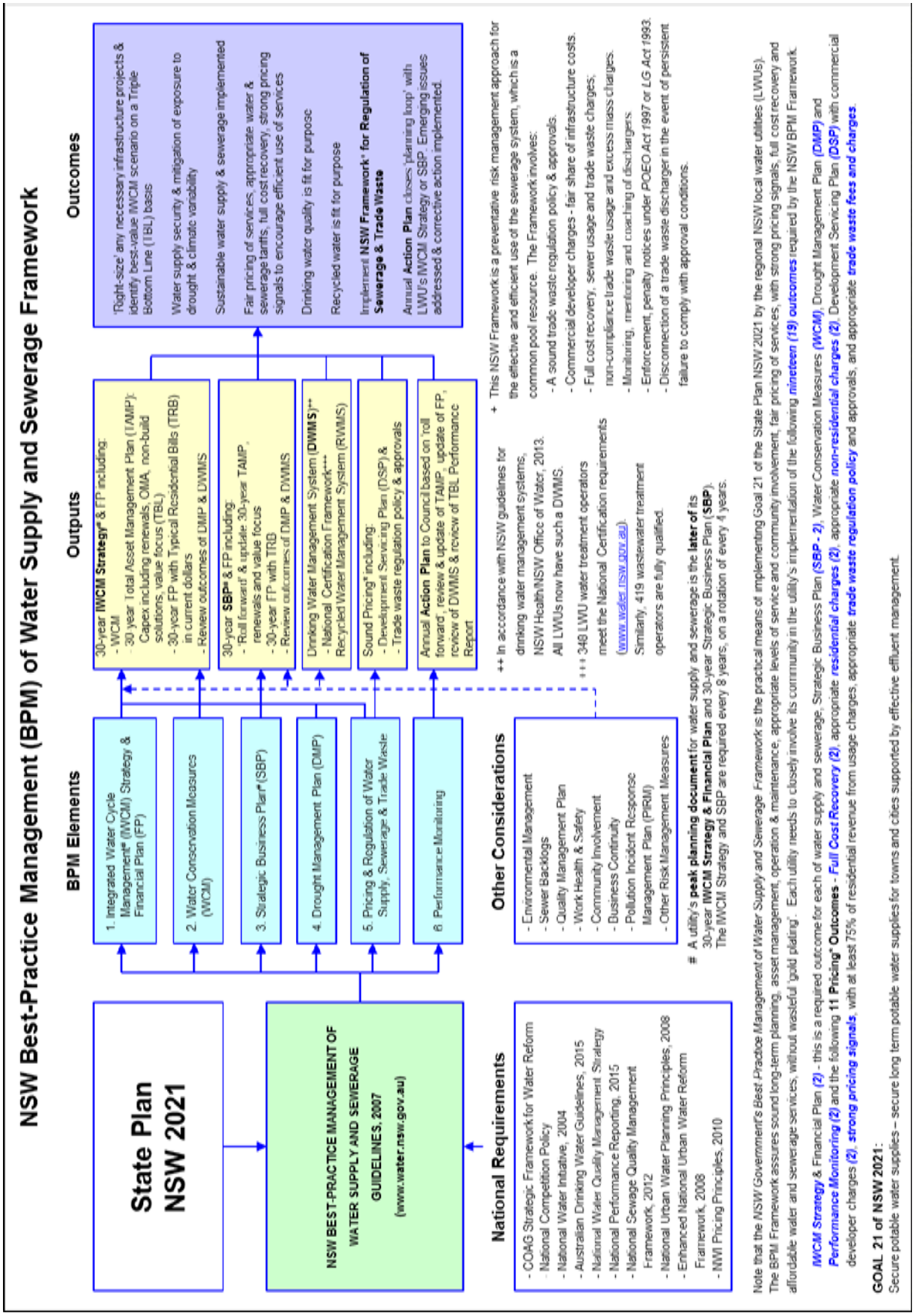

Figure 1 The NSW Best-Practice Management of Water Supply and Sewerage Framework

2. Implementation of the Guidelines

2.1. General

2.1.1 Requirement for Developer Charges

NSW local water utilities (LWUs) are to calculate and report developer charges in accordance with section 306(3) of the Water Management Act 2000 and these *2016 Developer Charges Guidelines for Water Supply, Sewerage and Stormwater*, and to register their development servicing plan (DSP) documents with DPI Water (a division of the NSW Department of Primary Industries). Section 2.2 below outlines the contents and requirements in relation to preparation of a DSP document and levying of developer charges.

A separate DSP is required for each service (eg. water supply or sewerage).

However, LWUs with growth of under 5 lots/a are eligible for exemption[10] from the need to prepare DSPs for water supply and sewerage. A utility which wishes to obtain such an exemption should apply to DPI Water, with supporting information on its growth over the last five years and its forecast growth over the next 5 years.

2.1.2 Timetable

It is recognised that over 70 NSW LWUs[11] already have commercial developer charges for their water supply, sewerage and/or stormwater services. These utilities may continue to use their existing DSPs until the next scheduled review. Preparation of all new LWU DSP documents commenced after the release of these *2016 Developer Charges Guidelines* must be in accordance with these guidelines, including independent audit.

2.2. Development Servicing Plan (DSP) Documents

2.2.1 Content of DSP Documents

The developer charges process must be fair and transparent. LWUs therefore need to provide, as a minimum, the following information in their DSP documents:

1. A summary of the contents of the DSP.
2. Administration: the name of the DSP, the extent of the DSP area (including maps), the basis for defining its boundaries and how the developer charges will be levied (section 2.5 on page 9).
3. Demographic and land use planning information. This should include the estimated population and equivalent tenements (ETs) in 1996, current population and ETs, and the

[10] Such exemption is available in recognition of the fact that it may not be cost-effective to prepare a DSP for utilities with very low growth.

[11] Refer to pages 39, 40 and 82 of the *2014-15 NSW Water Supply and Sewerage Performance Monitoring Report* (Reference 7), which also show the 12 utilities that have received an exemption from the requirement to prepare a DSP (www.water.nsw.gov.au).

Page 6 of Reference 7 shows that the 2015-16 median typical developer charge was $5,900/ET for water supply and $5,100/ET for sewerage. The typical developer charge for water supply and sewerage was $11,000, which is 33% of the $32,900 current replacement cost of system assets per assessment.

projected population and ETs over the planning horizon in accordance with section 3 on page 13.

4. Timing of the works, including completed and proposed capital works.
5. Levels of service to be provided in the DSP area, and design parameters.
6. The ***capital charge*** should be calculated in accordance with section 4 on page 21 and the ***reduction amount*** should be calculated in accordance with section 6 on page 47 using the spreadsheets provided by DPI Water.
7. The cross-subsidy (if any) should be calculated and disclosed in accordance with section 7 on page 52.
8. Reference to **background information** containing all the critical data behind each DSP. This information should be made available electronically to developers, on request, eg. on a CD/USB and should include the calculation models in Excel or similar electronic spreadsheet format, so that all components of the model can be investigated. The calculation model should include an asset list that provides:
    - direct links to the NPV or ROI calculations;
    - the purpose of the asset (reticulation, trunk main, pump, treatment works, reservoir, dam, etc.), commissioning dates and size/length of assets and MEERA valuation of assets (refer to section 4.3.2 on page 22);
    - individual asset numbers that are cross referenced to a DSP area map (where the LWU has this information);
    - total asset capacity in ETs and the number of ETs served in the DSP;
    - a comprehensive explanation of how the total number of existing and forecast ETs were calculated, and how ET ratings for different types of development were derived; and
    - A reference to other relevant DSPs and to section 94 or 94A contribution plans.

The process for preparing a Development Servicing Plan Document is shown on page 88 of Appendix D.

A Model Development Servicing Plan document is provided in Appendix E on page 99.

2.2.2 Number of DSPs Required

LWUs should minimise the number of DSPs prepared as indicated in section 5.1 on page 42.

2.2.3 DSP Document Options

A separate DSP document may be prepared for each DSP area, and for each of water supply and sewerage (section 5.3 on page 46). A LWU may publish its DSP documents as one or more volumes.

Alternatively, a LWU may elect to prepare a single DSP document for each of water supply and sewerage, which is a concise documentation of the required information. If a single DSP document is prepared then the document must clearly identify the capital charge relating to each water supply or sewerage DSP area, the proposed developer charge and the cross-subsidy for each water supply or sewerage DSP area.

2.2.4 Auditing of DSP Documents

LWUs are required to have all DSP documents independently reviewed by an auditor approved by DPI Water before the LWU publicly exhibits the DSP document.

A check list for key matters to be addressed by each LWU in the preparation of its DSP documents is provided at Appendix D on page 87. The auditor's report must confirm that utility has addressed the matters in the check list.

The DSP auditor must have suitable skills and experience in accordance with Appendix F on page 123. The LWU must complete a copy of Appendix F and obtain DPI Water approval before it commissions a DSP auditor.

2.2.5 Exhibition of DSP Documents

All draft DSP documents must be publicly exhibited by the LWU for at least 30 working days.

The LWU should make the draft DSP document available on its website during the exhibition period, and make the final document available on the website until it is replaced by a subsequent DSP document.

At least 10 working days before the start of the exhibition period for the Draft DSP documents, the LWU must inform the Urban Development Institute of Australia[12], and the Housing Industry Association[13].
The LWU should similarly inform any developer who had applied for planning approval, or for a compliance certificate under section 305 of the Water Management Act 2000 in the previous 6 months.

The **background information** (page 7) should be made available electronically to developers on request (eg. on a CD/USB or via email).

2.2.6 Development outside boundaries of DSP

After the adoption of a DSP, an unforeseen new development may occur outside the boundaries of the DSP. In such cases, the utility may either:

- apply the developer charges adopted for the DSP to the new development; or
- prepare a new DSP for the new development.

Such a development is likely to require the construction of specific assets. Refer to section 4.3.6 on page 25 for discussion on funding of out of sequence development.

2.3. Registration of DSP Documents

Following audit and public exhibition, the DSP documents for each service (eg. water supply or sewerage) must be adopted by the utility and registered with DPI Water.

When submitting a DSP document for registration, LWUs need to provide an electronic copy of:

- the final adopted DSP document with the date of adoption;
- the auditor's report;
- the draft DSP document;
- the background information;
- submissions received in response to the draft DSP document; and
- LWU's responses to those submissions.

[12] Suite 2, Level 11, 66 King Street, Sydney NSW 2000 - PO Box Q402 QVB Post Office NSW 1230

[13] 4 Byfield Street, North Ryde NSW 2113

Documents provided for registration may be emailed to urbanwater.ctw@dpi.nsw.gov.au or forwarded to:

Developer Charges Coordinator
DPI Water
Locked Bag 5123
Parramatta NSW 2124

The final DSP documents are to remain on the LWU's website until replaced by subsequent DSP documents.

2.4. Reviewing/Updating Developer Charges

Developer charges relating to a particular DSP document should be reviewed by the LWU after a period of 4 to 8 years. If the review indicates that the developer charges in the DSP document remain valid, the DSP will apply for a further four years after the LWU releases a public notice to this effect. However, if it is considered that a new DSP document is warranted a new DSP shall be prepared, audited, exhibited and registered.

If a major change occurs in a LWU's circumstances, such as the need for significant capital works that had not been included in the DSP, the LWU may carry out a review in less than four years, subject to DPI Water approval. If the review results in a new DSP document, the new DSP needs to be prepared, audited, exhibited and registered in accordance with the requirements of these guidelines.

After adoption of a DSP document, developer charges should be adjusted on 1 July each year on the basis of the change in the Consumer Price Index (CPI) for Sydney in the preceding 12 months to December, excluding impact of the GST. However, general purpose local government councils may index developer charges quarterly if warranted to match the indexing cycle of their section 94 contribution plans.

2.5. Levying Developer Charges under DSP

LWU administration of developer charges needs to include the time limit for payment in any developer charges determination or advice provided to developers. The amount of any developer charges not paid within the specified time limit will lapse. The LWU may subsequently make a new determination of the required developer charges in accordance with its then current DSP document.

Developer charges are determined and levied in accordance with the provisions of the LWU's current DSP at the time of considering an application for a Compliance Certificate under section 305 of the Water Management Act 2000 or a construction certificate under section 109 of the *Environmental Planning and Assessment Act 1979* or at the time of issuing a notice or other form of written advice eg. under the *SEPP (Exempt and Complying Development Codes) 2008*.

However, in order to provide certainty to developers, LWUs may elect to determine developer charges at the time of considering a development application. Such a determination would accompany the development consent, and must specify a time limit for payment as indicated above. If the developer charges are paid in full within the specified time limit, subject to the development consent remaining valid, no further adjustment to the developer charges may be made at the time of considering an application for a Compliance Certificate. However, if the developer charges had not been paid in full

within the time limit, the developer charges will be determined by the LWU at the time of considering an application for a Compliance Certificate, using the LWU's then current DSP document.

If a LWU needs to revise a DSP to correct a major error in the calculation, the LWU should provide a refund for any resulting over-payments by developers.

It is noted that section 64 developer charges do not apply for developments serviced by a licenced operator under the Water Industry Competition Act 2006 (WICA) or Water Industry Competition Amendment (Review) Act 2014. The capital cost of the infrastructure serving such developments would be recovered through annual access and usage charges.

2.6. Developer Charges for Redevelopment

For alterations, additions or change of use for an existing development, the developer charge should be determined on the basis of the resulting increase in the ET loading for each service.

2.7. Developer Charges for Crown Developments

Crown developments for essential community services (eg. education, health, community services, and law and order) are generally exempt from general developer charges. LWUs may charge these developments only for that portion of the direct connection cost (eg. for a lead-in main) relating to the Crown development.

Under sections 306 (4) and (5), of the Water Management Act 2000, the Minister for Planning may make a determination in regard to developer charges levied on Crown developments.

2.8. Use of Moneys Raised from Developer Charges

The Water Management Act states:

> Section 306:
>
> (2) as a pre-condition to granting a certificate of compliance for development, a water supply authority may, by notice in writing served on the applicant, require the applicant to do either or both of the following:
>
> (a) to pay a specified amount to the Authority by way of contribution towards the cost of such water management works as are specified in the notice, being existing works or projected works, or both,
>
> (b) to construct water management works to serve the development.
>
> Water Management Act 2000

Money raised from water supply developer charges may only be used for water supply purposes, money from sewerage developer charges may only be used for sewerage purposes, and money raised from stormwater developer charges may only be used for stormwater purposes. This is a similar constraint to that which applies to special rates and charges under section 409 of the *Local Government Act 1993*, as follows:

> Section 409:
>
> *(3) (a)* money that has been received as a result of the levying of a special rate or charge may not be used otherwise than for the purpose for which the rate or charge was levied.
>
> Local Government Act 1993

In regard to moneys previously raised by councils for water supply and sewerage services under section 94 of the *Environmental Planning and Assessment Act 1979*, the *Local Government (Savings and Transitional) Regulation 1993* covers this matter as follows:

> Clause 9:
>
> Any monetary contribution held by a council immediately prior to the commencement of this Regulation, being a contribution arising from a condition:
>
> (a) that was imposed under section 94 of the Environmental Planning and Assessment Act 1979; and
>
> (b) that specifies that the contribution is to be applied towards providing specified water or sewerage services or towards providing water or sewerage works generally,
>
> is to be applied towards the construction of works within the meaning of Division 2 of Part 3 of the Water Supply Authorities Act 1987*, or towards the repayment on money borrowed for the construction of such works, and is not to be applied towards any other purpose.
>
> Local Government (Savings and Transitional) Regulation 1993

* These provisions are now included in section 305-307 of the Water Management Act 2000.

2.9. Dispute Resolution

It is preferable that appeals be avoided as much as possible through a transparent and consultative process. In case of any disputes:

(1) A developer who is dissatisfied with how a LWU has calculated a developer charge for his development may lodge a formal complaint to the **LWU**;

(2) The **general manager** of the LWU is to review the complaint or cause it to be reviewed;

(3) If the developer is not satisfied with the general manager's response, he may refer the complaint to the **Ombudsman**[14] [note: **technical matters** are discussed under (4) below];

(4) If the complaint is on **technical matters** or issues of interpretation of these guidelines, the developer may refer the complaint to DPI Water. DPI Water will respond to the complaint. Where warranted, DPI Water may refer the matter to the expert technical panel, which includes representatives from DPI Water, IPART, the NSW Water Directorate, local water utilities and the development industry, and a developer charges expert;

[14] Each utility's DSP document must indicate whether the utility is a member of the Electricity and Water Ombudsman (EWON); if so the complaint should be directed to the specialist utilities Ombudsman EWON (Item 3C on page 89 of Appendix D). If the utility is not a member of EWON, the complaint should be directed to the Ombudsman.

(5) The developer, if still dissatisfied, may request that the matter be reviewed by way of **arbitration** by an arbitrator, who is to be appointed by agreement between the developer and the LWU;

(6) The decision of the arbitrator is **binding** on both the developer and LWU;

(7) **Costs** of the arbitration are to be borne equally by the developer and the LWU; and

(8) The *Commercial Arbitration Act 2010* applies to any such arbitration.

2.10. Disclosure of Cross-Subsidies

The calculated developer charges are the maximum value that may be levied by a utility. In adopting a DSP document for water supply, sewerage or stormwater, the utility may elect to levy less than the calculated amounts. If a utility elects to levy less than the calculated developer charges, then the resulting cross-subsidy from the existing customers in the typical residential bill must be calculated and disclosed in the relevant DSP document, in the utility's Annual Report, annual Operational Plan and in communication materials for consultation with stakeholders. The impact of cross-subsidies for new development on the typical residential bill[15] must also be prominently disclosed and explained on the utility's website and reported to DPI Water. Refer also to section 7 on page 52.

[15] The typical residential bill is the principal indicator of the overall cost of a water supply or sewerage system and is the bill paid by a residential customer using the utility's average annual residential water supplied per connected property. Refer to page 6 of Reference 7 on page 62.

3. Determining Number of ETs

3.1. Introduction

Levels of Service

A LWU's **peak planning document** is the **later of** integrated water cycle management (**IWCM**) **strategy** and strategic business plan (**SBP**)[16] prepared in accordance with the 2014 check lists and determines its levels of service for designing and delivering its water supply and sewerage systems. If a LWU has not yet prepared an IWCM Strategy in accordance with the 2014 Check List, its current SBP is its peak planning document.

For **water supply**, a key level of service is the average annual residential water to be supplied[17] for a detached residential dwelling and is defined as the demand for an equivalent tenement (ET) for that utility. Following a utility's water demand analysis and forecasting, this value is generally published in the levels of service in the utility's strategic business plan and must have regard to any planned water efficiencies due to the utility's proposed pricing and demand management measures and the utility's results for average annual residential water supplied per connected property in its annual TBL Performance Report[18] (refer to the example TBL Report in Appendix G on page 125).

[16] The NSW Best-Practice Management (BPM) of Water Supply and Sewerage Framework has been streamlined through the July 2014 Integrated Water Cycle Management (IWCM) Check List and the July 2014 Strategic Business Planning (SBP) Check List (www.water.nsw.gov.au). Refer also to Appendix H of Reference 7 on page 62. A LWU's **peak planning document** for water supply and sewerage should be made available on the utility's website and is the **later of** its **30-year IWCM strategy, total asset management plan (TAMP) and financial plan** and **30-year SBP, TAMP and financial plan**, prepared in accordance with the above 2014 check lists, or any subsequent check lists published on the DPI Water website.

The key **outputs** of the **IWCM Strategy** or **SBP** are the 30-year **TAMP** and 30-year **financial plan** and report and an affordable required Typical Residential Bill (**TRB**) on the basis of agreed levels of service and the projected ETs. The TAMP comprises an operation plan, which includes cost-effective non-build solutions, a maintenance plan and a capital works program. The capital works program must identify the growth, improved standards and renewals components of each project.

The focus of the **IWCM Strategy** is on evaluating alternative options/scenarios to cost-effectively address current and future issues/deficiencies in meeting the regulatory requirements and agreed levels of service with respect to water security, water quality, water distribution system and sewage management system to 'right-size' any required infrastructure and identify the best-value IWCM scenario and strategy on a triple bottom line basis. The focus of the **SBP** is on 'rolling forward', reviewing and updating the TAMP from the IWCM Strategy and analysing the renewals component of the TAMP to develop a sound 30-year renewals plan, the first 5 years of which must include only proven evidence-based renewals that provide value for money.

The SBP and financial plan need to be prepared in accordance with the July 2014 SBP Check List , or any subsequent Check List published on the DPI Water website, and the *NSW Water and Sewerage Strategic Business Planning Guidelines*, July 2011 (http://www.water.nsw.gov.au/ArticleDocuments/36/utilities_nsw_water_sewerage_strategic_planning_guidelines.pdf.aspx). A copy of the strategic business plan should be made available on the utility's website and must include a 30-year TAMP and 30-year financial plan and report. Page 4 of Reference 7 on page 62 shows that 94% of LWUs have completed a sound 30-year SBP and financial plan, including all LWUs with over 3,000 connected properties. These LWUs cover over 99% of the connected properties in regional NSW.

[17] Indicator W12 of the National Performance Framework (Reference 1 on page 62) is the average annual residential water supplied per connected property.

[18] Each LWU's average residential water supplied per property over the last 10 years is graphed for Indicator 33 in each LWU's annual TBL Performance Report. The graph for Indicator 33 on page 126 also shows the percentage of time drought water restrictions were in place. Graph 33a on page 126 provides information on the utility's peak day and peak week demands over this period. DPI Water will continue to include such graphs in the TBL Reports it provides annually to LWUs. In addition, page 64 of Reference 8 shows the results for Indicator 33 for each LWU over the last 6 years.

For example, in 2009-10 the average residential water supplied in coastal areas of regional NSW was 150 kL/connected property (this is a weighted median). For inland utilities, this volume was 252 kL due to the hotter and drier climate, together with the use of evaporative air cooling. The State-wide median for this indicator was 175 kL/connected property. Due to exceptionally high rainfalls, the State-wide median for this indicator fell to 159 kL and 155 kL in 2010-11 and 2011-12 respectively, but increased to 166 kL, 173 kL and 166 kL in 2012-13, 2013-14 and 2014-15 respectively (page 9 of Reference 7 on page 62).

For developments other than a single detached dwelling, the number of ETs to be served is determined as the ratio of the estimated annual water demand for the development divided by the above average annual residential water to be supplied for 1 ET.

In addition, where warranted by its circumstances, the LWU may have regard to other relevant considerations when determining the number of ETs for new development. LWUs wishing to use this provision will need to fully document their methodology in their background document (section 2.2.1 on page 6).

For **sewerage**, the Public Works Department design value for average dry weather flow (ADWF) for sewage treatment works is 240 L/EP/d [EP - Equivalent Person] – Report No. SR160 Hydraulic and Pollution Load on Sewage Treatment Plants, Public Works, January 1994. As there have been a number of metered ADWFs of 200 L/EP/d for sewage treatment works in regional NSW, it is considered reasonable to adopt an **ADWF** of **200 L/EP/d** to calculate sewerage ETs. This takes account of recent reductions in residential water use, while maintaining sufficient sewage treatment capacity. Where a utility has reliable metered average dry weather flow for a sewerage system, it may use its ADWF per EP for determining the volume for a sewerage ET in its developer charges calculation.

In these guidelines an ADWF of 200 L/EP/d is used in the examples. The sewage discharged by **1ET** is thus **200 L/EP/d** multiplied by the utility's **occupancy ratio** (persons per house).

The number of ETs served by a sewage treatment works is thus determined by dividing the metered average dry weather flow (ADWF) received into the treatment works by the product of 200L/EP/d and the utility's occupancy ratio, which is typically 2.6 persons per house, resulting in a sewage discharge of 520 L/ET/d. Refer to Example 3 on page 18.

For other developments, the number of sewerage ETs is determined as the estimated ADWF[19] for the development divided by the sewage discharge for 1 ET.

An ADWF of 200 L/EP/d and a typical occupancy ratio of 2.6 persons per house would result in an annual sewage discharge of 190 kL/a, which corresponds to a 75% sewer discharge factor for the 252kL/a median residential water supplied per connected property for the inland utilities.

LWUs need to estimate the existing and projected number of ETs when calculating developer charges. The number of ETs in 1996 and the growth to date are also required for determining the capital charge (ie. holding cost) for existing assets constructed prior to 1996 (refer to Examples 8 and 9 on pages 29 and 31).

A utility's 'potable residential water supplied' is the utility's estimated 'revenue water' for the residential sector (page 155 of Reference 8 on page 62). It excludes 'non-revenue water' which comprises real losses (leakage and overflows), apparent losses (meter errors, illegal use) and unbilled water (eg. fire fighting).

[19] Sewer discharge factors to assist in estimating the ADWF from various developments are provided in Appendix G of the *Liquid Trade Waste Regulation Guidelines, 2009*, which are available at www.water.nsw.gov.au (Reference 11 on page 62). In addition, LWUs may use locally derived data on discharge factors for businesses in their region; such data should be included in the utility's background information.

LWUs are required to determine the demand in ETs in each service area, so that the cost of providing water and sewerage services can be apportioned to the proposed development. When estimating population and ETs, utilities should carefully consider the latest census data and other demographic statistics from the Australian Bureau of Statistics, population projections by the NSW Department of Planning and Environment and Council, and the historical data on residential water supplied in the annual TBL Performance Reports prepared by DPI Water (example Report in Appendix G on page 125).

3.2. Service areas

For capital charge calculation (refer to section 4.2 on page 21), the number of ETs should be estimated for each service area. Service areas are:

- An area served by a separate water supply distribution system.
- An area served by a separate sewage treatment works.
- Separate small towns or villages.
- A new development area of over 500 lots.
- An area with a dual water supply system or using alternative technologies (eg. a vacuum sewerage system or a pressure sewerage system).

3.3. ET calculations - water supply

Water supply ETs should be calculated on the basis of the average annual water to be supplied for a detached residential dwelling (section 3.1 on page 13).

Example 1: Current and future ET calculations - water supply

Table 4 shows the current number of connected properties and the current annual water to be supplied for two water supply service areas. The utility's average annual water to be supplied for a detached residential dwelling (1 ET) is 160 kL/a. The utility's projected population and ET growth rate, from its planning information, is 2% pa until 2026 and 1.5% pa after 2026. Determine the current number of ETs and future ETs for 30 years for each service area.

Table 4 Current ET calculation – water supply

	Current number of connected properties	Current water to be supplied (kL/a)
Service Area A	1,200	216,000
Service Area B	1,950	360,000

Water to be supplied for a detached residential dwelling (1 ET)	= 160 kL/a
Current ETs for Service Area A	= 216,00/160
	= 1,350 ET
Current ETs for Service Area B	= 360,000/160
	= 2,250 ET

ET projection is shown in Table 5.

Table 5 Future ET Projection

Year	Service Area A			Service Area B		
	Growth rate (%) (1)	New ETs (2)	Projected ETs (3)	Growth rate (%) (4)	New ETs (5)	Projected ETs (6)
2013/14	2.0%		1,350	2.0%		2,250
2013/14	2.0%	27	1,377	2.0%	45	2,295
2014/15	2.0%	28	1,405	2.0%	46	2,341
2015/16	2.0%	28	1,433	2.0%	47	2,388
2016/17	2.0%	29	1,462	2.0%	48	2,436
2017/18	2.0%	29	1,491	2.0%	49	2,485
2018/19	2.0%	30	1,521	2.0%	50	2,535
2019/20	2.0%	30	1,551	2.0%	51	2,586
2020/21	2.0%	31	1,582	2.0%	52	2,638
2021/22	2.0%	32	1,614	2.0%	53	2,691
2022/23	2.0%	32	1,646	2.0%	54	2,745
2023/24	2.0%	33	1,679	2.0%	55	2,800
2024/25	2.0%	34	1,713	2.0%	56	2,856
2025/26	2.0%	34	1,747	2.0%	57	2,913
2026/27	2.0%	35	1,782	2.0%	58	2,971
2027/28	1.5%	27	1,809	1.5%	45	3,016
2028/29	1.5%	27	1,836	1.5%	45	3,061
2029/30	1.5%	28	1,864	1.5%	46	3,107
2030/31	1.5%	28	1,892	1.5%	47	3,154
2031/32	1.5%	28	1,920	1.5%	47	3,201
2032/33	1.5%	29	1,949	1.5%	48	3,249
2033/34	1.5%	29	1,978	1.5%	49	3,298
2034/35	1.5%	30	2,008	1.5%	49	3,347
2035/36	1.5%	30	2,038	1.5%	50	3,397
2036/37	1.5%	31	2,069	1.5%	51	3,448
2037/38	1.5%	31	2,100	1.5%	52	3,500
2038/39	1.5%	32	2,132	1.5%	53	3,553
2039/40	1.5%	32	2,164	1.5%	53	3,606
2040/41	1.5%	32	2,196	1.5%	54	3,660
2041/42	1.5%	33	2,229	1.5%	55	3,715
2042/43	1.5%	33	2,262	1.5%	56	3,771

Example 2: ET calculation for new development area - water supply

This example shows ET calculation for a new development area to be serviced by the utility in Example 1. As per Example 1, the water to be supplied for 1 ET is 160 kL/a.

	Number of lots (1)	Estimated water to be supplied (kL/a) (2)	Number of ETs (3)
Single detached residential dwellings (ETs)	520	83,200	520
Multiple residential dwellings+ (Units/Flats)	150	88,000	550
Non-residential lots	100	48,000	300
Public amenities	5	8,000	50
Total	**775**	**227,200**	**1,420**

+ The total number of units/flats is 800.

This new development area may take a number of years to reach capacity. Annual ET take-up should be estimated over the next 30 years or until the capacity is reached.

3.3.1 Calculation of ETs for significantly lower water demand

The potable water to be supplied for a new development with extensive water conservation measures could be significantly lower than the utility's demand for 1 ET. Lower potable water demand may arise from use of rainwater tanks, stormwater harvesting and use, grey-water use and water efficient fittings and appliances. In estimating ET ratings for new developments LWUs should carefully consider the factors that might impact on the potable water demand.

For example the utility may assess that a new 'BASIX' compliant house in its area may have say only 85% of the demand for a standard detached house in its area. In that case, the utility would impose only 85% of the water supply developer charge for 1 ET for such a house. However, the sewerage developer charge for such a house would be 1 ET as there would be no reduction in the biological and suspended solids loads received from such a house.

In addition, NSW local utilities should take into account the 50% reduction in the average annual residential water supplied per connected property in regional NSW over the last 24 years (page 9 of Reference 7 on page 62). Any reduction to the water supply developer charge would need to be assessed on the basis of comparison with the utility's average annual residential water to be supplied for a detached residential dwelling (1 ET - refer to section 3.1 on page 13).

3.4. ET calculations - sewerage

As noted on page 14, a sewerage ET may be determined as an ADWF of 200 L/EP/d multiplied by the utility's occupancy ratio (persons per house).

Example 3: Current ET calculation for sewerage service area - existing system

Example 3 involves an existing sewage treatment works with a metered average dry weather flow (ADWF) of 2 ML/d serving two service areas.

On the basis of a discharge of 520 L/ET/d [200 L/EP/d (EP – Equivalent Person) for a typical occupancy ratio of 2.6 persons per house, the existing load on the treatment works is 3,846 ET [2,000,000/520 = 3,846 ET].

Flow metering has identified that the split of ADWF between the service areas is 60:40. The ET split between the service areas is therefore 2,308 ET and 1,538 ET.

3.4.1 ET calculation for new development area - sewerage

As noted in section 3.2 on page 15, new developments involving over 500 lots should be considered as a separate service area. The following example is for a new development area draining to an existing sewage treatment works.

Example 4: ET calculation for new development area - sewerage

For the development in Example 2 on page 17, Example 4 calculates the number of sewerage ETs as the sum of the residential ETs and the non-residential ETs. Residential ETs is the total number of residential dwellings. From Example 2, this comprises 520 detached dwellings and 800 units/flats, ie. a total of **1,320 residential ETs**.

The estimated ADWF for non-residential development is divided by the discharge per ET (520 L/ET/d for an occupancy ratio of 2.6) to determine the number of ETs as shown below.

	Number of lots (1)	Estimated ADWF (L/d) (2)
Non-residential lots	100	100,000
Public amenities	5	7,000
Total	**105**	**107,000**

Non-residential ETs for this development = 107,000/520

= 206 ETs

Total ETs is 1,320 residential plus 206 non-residential ie. **1,526 ETs**.

Example 5: ET Projection for Example Utility

ET projections to year 2043/44 are shown in Table 6 below and Figure 2 on page 20 for an example utility's sewerage system.

The utility has a total of 14 sewerage catchments. 11 of the catchments have an existing sewerage service. 3 catchments (Areas 12 to 14) are backlog sewerage areas, which are presently unsewered and commissioning of new sewerage services for these areas are planned for 2016.

Row 17 below shows the number of new ETs sewered in each period. Eg. in the 5 years to 2018/19, 6,835 ETs are planned to be sewered.

Row 18 shows that 1,957 of these ETs are a backlog, for which developer charges may not be levied. However, as noted in Example 6 on page 24, the LWU may elect to obtain a capital contribution from these existing residents.

Row 19 shows new development (excluding backlog) in the 5 years to 2018/19 is projected to be 4,878 ETs. Developer charges will apply for this development.

Table 6 Projected equivalent tenements (ETs) sewered

	Service Areas	Start year	1995/96	2012/13	2013/14	2018/19	2023/24	2028/29	2033/34	2038/39	2043/44
1	Area 1		757	912	931	1,041	1,115	1,166	1,207	1,248	1,289
2	Area 2		1,233	1,485	1,500	1,581	1,639	1,681	1,714	1,772	1,831
3	Area 3		3,186	3,838	3,877	4,025	4,076	4,264	4,385	4,534	4,683
4	Area 4		6,319	7,613	7,800	8,766	9,449	9,946	10,268	10,617	10,967
5	Area 5		2,991	3,603	3,677	4,223	4,561	4,809	4,998	5,168	5,338
6	Area 6		2,596	3,128	3,208	3,723	3,977	4,150	4,284	4,430	4,576
7	Area 7		5,263	6,341	6,470	7,067	7,378	7,728	7,997	8,269	8,541
8	Area 8		1,369	1,649	1,700	1,988	2,249	2,440	2,584	2,672	2,760
9	Area 9		1,993	2,401	2,488	3,020	3,374	3,635	3,829	3,959	4,090
10	Area 10		6,347	7,647	7,843	8,812	9,460	9,955	10,333	10,685	11,036
11	Area 11		415	500	505	524	533	538	542	560	579
12	Area 12	2016	1,058*	1,275*	1,288*	1,373	1,445	1,483	1,511	1,562	1,614
13	Area 13	2016	380*	458*	460*	466	472	475	478	494	511
14	Area 14	2016	172*	207*	209*	225	233	238	244	252	261
15	Total ETs Sewered		32,467	39,117	39,999	46,834	49,961	52,508	54,374	56,224	58,074
16	Average annual ET growth			1.2%	2.3%	3.2%	1.30%	1.00%	0.70%	0.67%	0.65%
17	New ETs in each period			6,650	882	6,835	3,127	2,547	1,866	1,850	1,850
18	Backlog connections in period					1,957	0	0	0	0	0
19	New development in period (excluding backlog)					4,878	3,127	2,547	1,866	1,850	1,850

* Backlog ETs

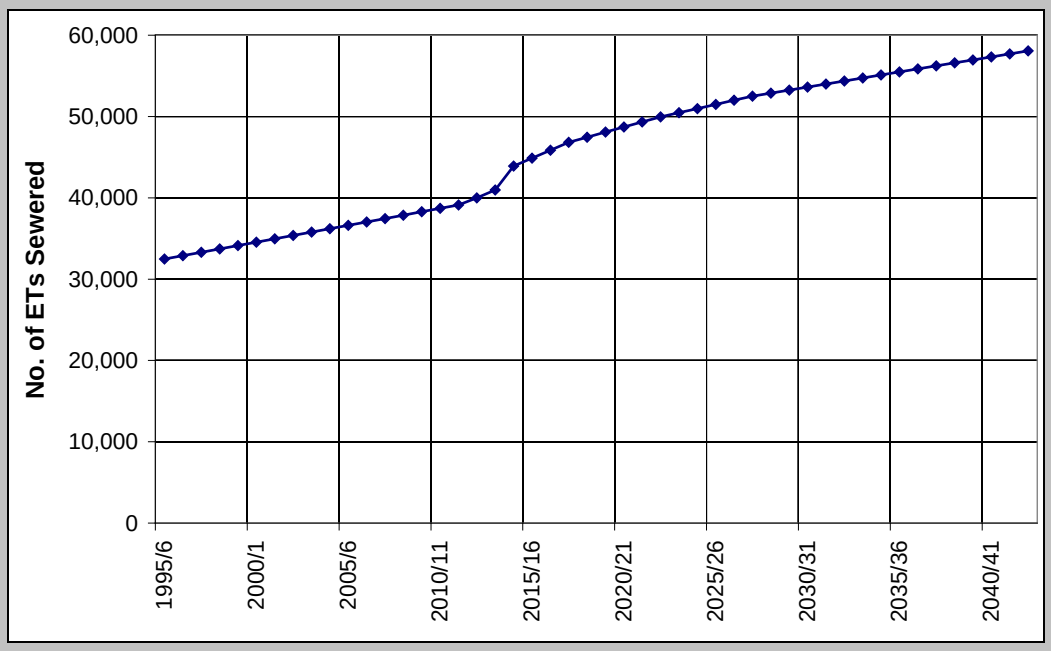

Figure 2 Projected Growth in No. of ETs

4. The Capital Charge

4.1. Introduction

The capital charge represents the efficient capital cost of assets used in providing water related services in a DSP area. This includes the cost of both existing and future assets that will be used to service the DSP area. In addition, because LWUs provide the upfront funding for constructing these assets, the capital charge also includes a commercial return on this investment. The capital charge is calculated as dollars per equivalent tenement (ET).

Generally, the capacity of an asset would not be fully utilised until some years after construction of the asset. These guidelines therefore take account of the period to full take-up of the capacity of an asset in calculating the capital charge.

The Return on Investment (ROI), also known as a holding charge, is based on the cost of early investment and recovery of the cost over time. For example, if a LWU invests $1,000,000 in an asset that would take 10 years for its capacity to be taken up, the cost will need to be recovered by the LWU through developer charges over a period of 10 years. However, the LWU will not recover its cost if it was to receive $100,000 a year for 10 years. The annual payments have to provide a return on the investment, or holding charge, to reflect the discounting of future payments.

The applicable discount rates are shown in Table 7 below. The discount rate for pre-1996 assets is in accordance with IPART's *Determination 9*, 2000 and the discount rate for post-1996 assets is in accordance with the 2013 IPART determination for Gosford and Wyong Councils.

Table 7 Discount rates for use in capital charge calculation.

Assets	Discount Rate
Pre 1996 assets	3% pa
Post 1996 assets	5% pa

4.2. Service Areas

A capital charge should be calculated for each service area. Service areas are discussed in section 3.2 on page 15.

The capacity of each service area should be calculated in ETs and used in capital charge calculations.

4.3. Relevant Assets

LWUs may obtain contributions for providing, extending or augmenting assets required, or likely to be required, to provide services to a development area.

For assets to be included in the DSP, the LWU needs to demonstrate that there is a nexus (ie. a connection or a link) between the development covered by the DSP and the assets required to serve the development.

A nexus is established where an asset is required for serving the development. Eg. a utility providing a water supply to a development has such a nexus for each component of its water supply system

employed for serving the development. Such assets may include dams, pumping stations, water treatment works, trunk mains and service reservoirs.

These assets should be identified in DSPs. Assets serving a development area may be existing and/or future assets.

4.3.1 Utilisation of assets

Where assets are shared by a number of development areas or form part of a system, it is necessary to calculate the relevant capital charge for the system based on expected system utilisation. The per ET capital charge can then be applied to each development area on the basis of the proportion of capacity expected to be utilised by that development area (refer to the dam in Example 9 on page 31). Typically, each asset will need to be assessed in terms of its **design criteria** and the calculated demand, or the area to be served by it.

4.3.2 Assets to be included

As a general rule, a LWU should charge for all assets serving a development area. Assets can be grouped as follows:

Table 8 Assets included in capital charge calculation

Group	Capital Charge Calculation
Existing assets	Include assets less than 30 years old with some exceptions (refer to page 23).
Future assets	Include assets planned[16] within the next 10 years.
Reticulation (existing and future)	Exclude.
Future renewals	Include renewal cost of an asset planned[16] within the next 10 years, if the original asset has been excluded as it is more than 30 years old.
Assets for out-of-sequence development	Exclude if the developer is required to meet the full capital cost of such assets.
Developer provided assets	Exclude. However, include if the assets funded by the developer will serve other future development and if the developer will be reimbursed from the relevant component of future developer charges revenue.

Discussion on these groups is provided on pages 23 to 26.

Existing assets

All existing assets serving a development area should be included in the capital charge, except for 1 and 2 below:

(1) If the capacity of an asset is unlikely to be fully utilised over the planning horizon for calculating developer charges (typically 30 years, but may be over 50 years for assets such as dams and outfalls), then the cost of the capacity for serving development beyond the planning horizon cannot be recovered through developer charges. Underutilisation may occur due to a change in land use. If an asset was constructed to serve earlier development and changes in land use have made surplus capacity available, then it is appropriate to exclude the asset from any subsequent contribution calculation. This will reduce the contributions payable for developments utilising these assets and encourage the use of underutilised assets.

(2) As a general rule, each time a new DSP is prepared, assets that will be more than 30 years old at the commencement of the DSP must be excluded from the capital charge. Exclusion of the asset does not apply to assets such as a dam or outfall in (1) above, which are subject to the documentation and approval requirements in the following paragraph. In addition, if an asset is excluded because it is more than 30 years old and the LWU's strategic business plan[16] proposes to renew the asset within 10 years, then the renewal cost of renewed asset should be included.

Where a LWU seeks to include system assets (eg. a dam or outfall) in the capital charge that will be older than 30 years at the commencement of the DSP, it will need to produce documentation to justify this inclusion. The document must show that when the asset was constructed it was planned to provide capacity for growth into the current DSP period. This document will be considered by DPI Water, and possibly referred to the technical expert panel, before the assets are approved to be included in the DSP. Such assets may not be included in a DSP unless DPI Water has approved their inclusion.

Future Assets

Where a development area is expected to make use of future assets required within 10 years, the capital cost of these assets can be included in the capital charge. Future assets required within 10 years of the commencement of a DSP must be documented and discussed in the utility's total asset management plan, which includes a capital works program[16]. In addition, future assets beyond 10 years can be included if the utility has demonstrated a nexus between the future assets concerned and the development, and the utility has detailed plans for building those assets.

In the absence of such a current total asset management plan and capital works program, only future assets to be constructed within 5 years may be included.

Where assets are implemented in stages, often the first stage includes components that will be part of the subsequent stages. Such assets may therefore be considered as a system, rather than as stand-alone assets and should be included in the DSP (refer to Example 8 on page 29).

4.3.3 Backlog works

If the DSP includes backlog works, which are works required to service existing dwellings without a reticulated water supply or sewerage service, LWUs should calculate the developer charge in the same manner as for other DSP areas. The calculation should include the total system capital cost (any

government subsidies[20] for backlog properties should not be deducted) and all ETs that the system will service (existing and new development). Only new developments are required to pay developer charges in accordance with these guidelines. Refer also to Example 6 on page 24.

Example 6: Development involving backlog works

An existing village is being serviced with a backlog sewerage network. In 1996 there were 100 ETs and today there are 150 ETs. The LWU has designed the system to cater for a total of 500 ETs. New development is expected to be an additional 350 ETs.

The capital cost of providing the system is $5M.

The LWU receives a NSW Government subsidy towards the capital cost of serving the development that existed in 1996, say a total subsidy $500,000.

The capital charge is calculated using the capital cost of the system ($5M) and all ETs (500) that the system will service. Using the NPV method the capital charge can be expressed as PV of $5M divided by PV of 500 ETs. For example, say that was calculated to be $12,000/ET. The new development of 350 ETs would have a capital charge of $12,000 per ET.

These guidelines do not cover cost recovery from existing development as such development is not required to pay a developer charge. However, the utility may elect to obtain a capital contribution from the existing residents served by a backlog scheme using the powers available to it in the *Local Government Act* (section 1.4 on page 4).

4.3.4 Reticulation

Reticulation assets are excluded from the calculation of developer charges as these are typically paid for directly by the developer. In addition, LWUs may calculate a **reticulation supplement** which would be payable by developers that have not provided the reticulation assets[21].

Reticulation is defined as those water supply or sewerage main networks whose principal function is to provide a water supply or sewerage service to individual properties. Reticulation mains, if removed from the water supply or sewerage network, should not have a significant adverse impact on the successful operation of the network beyond the removed mains.

4.3.5 Renewals

A review prepared for IPART commented that:

> All assets necessarily employed in the delivery of a certain service need to be counted, and where components of the asset base have different lives there should be an allowance for renewing short-lived assets over the period of analysis[22].

[20] Section 306(3)(b) of the *Water Management Act, 2000* (refer to page 64).
[21] The reticulation supplement is to be determined as the difference between the calculated developer charges and a calculation which also includes the reticulation assets for serving the DSP in the capital charge.
[22] Review prepared for IPART by consultants Price Waterhouse Coopers and the Centre for International Economics. *Review of Developer* Charges, October 1999 (page 35).

As noted in section 4.3.2 on pages 22 and 23, renewals required within 10 years of the commencement of a DSP which have been included and discussed in the utility's total asset management plan and associated capital works program may be included in the DSP if the renewal asset is older than 30 years and has been excluded due to (2) on page 23.

4.3.6 Out-of-sequence development

LWUs plan their infrastructure development according to a desired sequence of development. In some cases a developer may wish to proceed with a development which is not in the same sequence, ie. before essential assets, such as a water main or reservoir, are in place. Provided that there are no other constraints to the development, the LWU may approve construction of the essential assets ahead of time. In such cases the assets will be sized by the LWU in accordance with the requirements of the DSP, and the full capital cost would initially be met by this developer.

If the asset funded by this developer will serve other future development, the developer should be reimbursed when the LWU collects developer charges from the future development. The LWU and the developer must enter into an agreement stating how the developer will be reimbursed in the future.

4.4. Valuation of Assets

4.4.1 Existing assets

Existing assets are to be valued on the basis of the Modern Engineering Equivalent Replacement Asset (MEERA)[23] cost. Such asset valuations are to exclude a contingency amount.

The NSW Reference Rates Manual[24] provides information to assist in asset valuation. In addition to the estimated construction cost, the capital cost includes the costs for investigation, design and project management. The Reference Rates Manual does not cover site-specific assets such as dams. For such assets, the MEERA cost can be calculated as the historical capital cost indexed to present day costs. A set of cost indices is provided in Attachment 1 of the Reference Rates Manual. Asset valuation must be exclusive of the Goods and Services Tax (GST).

4.4.2 Future assets

Future assets should also be valued on the basis of the "Modern Engineering Equivalent Replacement Asset (MEERA)" cost. The costs for investigation, design and project management, and an appropriate allowance for contingencies (Reference 10 on page 62), are to be included as part of the capital cost. The cost of environmental assessment (eg. an Environmental Impact Statement for a sewage treatment works (STW)) should also be included. The contingency allowance for future works required within 10 years must not exceed 20 percent.

MEERA costs for future assets can be calculated using the NSW Reference Rates Manual which includes the estimated construction cost and the costs for investigation, design and project management. For future assets, the reference rates should be increased by adding an allowance for contingencies. Where the LWU has engineering reports for the proposed works, such as an

[23] MEERA is defined as the value of an asset on the basis that the asset is constructed at the time of valuation in accordance with modern engineering practice and the most economically viable technology, which provides similar utility functions to the existing asset in service.

[24] DPI Water, NSW Reference Rates Manual for Valuation of Water Supply, Sewerage and Stormwater Assets, 2016 (Reference 10 on page 62).

investigation or servicing strategy, the cost estimates in those reports should be used in preference to Reference Rates.

As noted in section 4.4.1 above, the Reference Rates Manual does not cover site-specific assets such as dams. MEERA Costs for such future assets should be calculated from investigation/concept design reports. The costs for investigation, design and project management are to be included as part of the capital cost. As noted above, an appropriate contingency allowance is also to be included for future assets.

If the assets will serve more than the areas covered by the development area, the capital charge applicable to the whole asset should be apportioned on the basis of the share of the capacity of the asset expected to be taken up by the development area (refer to section 4.3.1 on page 22 and to the dam in Example 9 on page 31).

Asset valuation should be exclusive of GST.

4.5. Calculating the Capital Charge

The capital charge of an asset is calculated using the following steps:

- Estimate the period to full take-up[25] of asset capacity, commencing in or after 1996. If information is readily available, actual take-up rates to date should be used. If not, the LWU could use an average based on the take-up rate for similar release or development areas, or other (better) estimates that are available. An estimate of the take-up of existing unused capacity should also be made.
- Calculate the capital charge per ET necessary to equate the present value of the stream of capital charges which would be derived from annual bills to be paid by the development (per ET) and the capital cost (per ET) of the asset.

There are two approaches to calculate the capital charge per ET, the NPV Spreadsheet method and the ROI Factor method. The NPV Spreadsheet method is considered to be best practice and must be used in calculating the capital charge per ET by LWUs with 2,000 or more connected properties. The ROI Factor approach is simpler and may be used only by LWUs with under 2,000 connected properties.

Table 9 Capital charge calculation methods.

Method	Summary
NPV Spreadsheet	Must be used by LWUs with 2,000 or more connected properties. May also be used by smaller utilities.
ROI Factor	Only to be used by LWUs with under 2,000 connected properties for either their water supply or sewerage business.

[25] The period to full take-up of asset capacity must not exceed 30 years after the date of the DSP. For example for a DSP prepared in 2016, take-up should be limited to 2046; for a pre-1996 asset, the take-up period would therefore be 51 years (ie. 2046 - 1995)

4.5.1 NPV spreadsheet method

Under this method, the capital cost of relevant assets and projected new ETs served in a service area are entered into a spreadsheet (such as Example 7 on page 28). As noted in section 4.3.1 on page 22, these capital costs should be for only the share of the asset capacity used in the service area. The PV of the capital cost and the PV of the ETs are calculated, and the capital charge per ET is the PV of the capital cost divided by the PV of the ETs.

$$Capital\ Charge = PV\ of\ capital\ cost\ /\ PV\ of\ ETs$$

Application of the method is shown in Examples 7, 8 and 9 on pages 28, 29 and 31.

Example 7: NPV spreadsheet method - capital charge for future assets

Calculate the capital charge for future assets comprising a staged development of a water supply distribution system for the service area. The new distribution system is proposed to commence in year 2013/14 and construction is to continue over 15 years and serve development until year 2042/43. ET take-up is expected to be non-uniform as shown in column 5 below.

For the future assets covering pumping stations, distribution mains and service reservoirs, the whole of the construction program (column 2 below) and the growth that it services (column 5 below) are tabulated.

Include all future capital expenditures required to serve the development

Year Number	Year	Estimated Capital Expenditure (2013/14$) ($'000)	PV Factor (@ 5%)	PV of Capital Expenditure (@ 5%) ($'000)	Number of New ETs (ETs)	PV of New ETs (@ 5%) (ETs)
	(1)	(2)	(3)	(4)	(5)	(6)
1	2013/14	200	1.00	200	150	150
2	2014/15	500	0.95	476	150	143
3	2015/16	500	0.91	454	150	136
4	2016/17	0	0.86	0	150	130
5	2017/18	1000	0.82	823	150	123
6	2018/19	1000	0.78	784	150	118
7	2019/20	0	0.75	0	150	112
8	2020/21	0	0.71	0	150	107
9	2021/22	2000	0.68	1354	150	102
10	2022/23	1500	0.64	967	150	97
11	2023/24	0	0.61	0	150	92
12	2024/25	1000	0.58	585	150	88
13	2025/26	1500	0.56	835	150	84
14	2026/27	500	0.53	265	150	80
15	2027/28	0	0.51	0	150	76
16	2028/29	0	0.48	0	150	72
17	2029/30	0	0.46	0	150	69
18	2030/31	0	0.44	0	150	65
19	2031/32	0	0.42	0	150	62
20	2032/33	0	0.40	0	150	59
21	2033/34	0	0.38	0	150	57
22	2034/35	0	0.36	0	110	39
23	2035/36	0	0.34	0	110	38
24	2036/37	0	0.33	0	110	36
25	2037/38	0	0.31	0	110	34
26	2038/39	0	0.30	0	110	32
27	2039/40	0	0.28	0	110	31
28	2040/41	0	0.27	0	110	29
29	2041/42	0	0.26	0	110	28
30	2042/43	0	0.24	0	110	27
Total		**9,700**		**6,742**	**4,140**	**2,314**

The capital charge is $2,913 per ET, calculated as **$6,742,000 divided by 2,314 ETs.**
(column 4 / column 6)

Notes:

1. This example involves a new water supply distribution system to serve the new development.
2. As this is a staged development, the required capital works for Years 11 to 14 have been included in this example.
3. In addition, a capital charge for the water supply headworks serving this development would need to be determined. Eg. refer to the dam in Table 10 on page 31.

Example 8: NPV spreadsheet method - capital charge for staged construction

It is often cost-effective for LWUs to construct system components in stages. For example, a LWU might construct a sewage treatment works with a total capacity of say 1,800 ETs in two stages of 900 ETs. However, the capital costs for Stage 1 and Stage 2 may be substantially different, as a number of items forming part of the Stage 1 cost (eg. land acquisition, landscaping, control building, access road and treatment components such as inlet works and effluent pipes) would serve both Stage 1 and Stage 2. For such cases, it is preferable to treat these works as one sub-system in calculating the capital charge.

For example, a sewage treatment works might be constructed in two stages as follows:

Stage 1

Commissioned 1990/91[26], Cost = $3 M (2013/14$, MEERA value), capacity = 900 ET

Stage 2

Projected for 2005/06, Cost = $1 M (2013/14$, MEERA value), capacity = 900 ET

Total Capacity for both stages = 1,800 ET, with uniform take-up over 30 years.

The capital cost of the works needs to be recovered from development over 30 years between 1990/91 and 2019/20. The $3 M Stage 1 is a pre-1996 asset and cost recovery should be based on a discount rate of 3% pa. The $1 M Stage 2 is a post 1996 investment and therefore cost recovery should be based on a discount rate of 5% pa.

For pre-1996 works, the present value must be calculated from 1996. On this basis the ETs connected before 1995/96 are not included in the total ETs served. Thus, only the proportion of the capital works serving the development (from 1995/96 onwards) is considered.

ET take-up is uniform at 60 ET/year.

(Example 8 continues on the next page)

[26] For capital charge calculations, the effective commissioning date for assets commissioned prior to 1995/96 is January 1996.

Example 8 (continued)

Year	New ETs Served	Effective New ETs Served[1]	Capital Cost[2] (2013/14$) ($M)	Effective Capital Cost[3] (2013/14$) ($M)	PV of Stage 1 Cost (@ 3%) (2013/14$) ($M)	PV of Stage 2 Cost (@ 5%) (2013/14$) ($M)	PV of Stage 1 ETs[4] (@ 3%)	PV of Stage 2 ETs[4] (@ 5%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1990/91	60		3.0					
1991/92	60							
1992/93	60							
1993/94	60							
1994/95	60							
1995/96	60	60		2.50	2.50		60	60
1996/97	60	60					58	57
1997/98	60	60					57	54
1998/99	60	60					55	52
1999/00	60	60					53	49
2000/01	60	60					52	47
2001/02	60	60					50	45
2002/03	60	60					49	43
2003/04	60	60					47	41
2004/05	60	60					46	39
2005/06	60	60	1.0	0.83		0.5116	45	37
2006/07	60	60					43	35
2007/08	60	60					42	33
2008/09	60	60					41	32
2009/10	60	60					40	30
2010/11	60	60					39	29
2011/12	60	60					37	27
2012/13	60	60					36	26
2013/14	60	60					35	25
2014/15	60	60					34	24
2015/16	60	60					33	23
2016/17	60	60					32	22
2017/18	60	60					31	21
2018/19	60	60					30	20
2019/20	60	60					30	19
Total	**1,800**	**1,500**	**4.0**	**3.33**	**2.50**	**0.5116**	**1,076**	**888**

Percentage of Capital Works utilised[3] by new ETs after 1995/96 = 83.3% (column 2 / column 1)

$PV_{1995/96}$ of ETs for pre-1996 asset @ 3% (ET) 1,076 (from effective year 1995/96) (column 7)
$PV_{1995/96}$ of ETs for post-1996 asset @ 5% (ET) 888 (column 8)

$PV_{1995/96}$ of effective capital cost for pre-1996 asset @ 3% ($M) 2.50 (from effective year 1995/96) (col 4)
$PV_{1995/96}$ of effective capital cost for post-1996 asset @ 5% ($M) 0.5116 (column 6)

Capital Charge for Stage 1 = Calculated as 2.5 x 10^6 divided by 1076 $2,323 per ET (col 5 / col 7)
Capital Charge for Stage 2 = Calculated as 0.5116 x 10^6 divided by 888 $576 per ET (col 6 / col 8)
Total Capital Charge = Calculated as $2323 + $576 $2,899 per ET

Notes:

1. Effective ETs served are based on an effective commissioning date[26] of 1 January 1996. All of the new ETs in 1995/96 are included because typically they would be served by assets commissioned on 1 January 1996.
2. Capital works are commissioned in two stages, with a total capacity of 1,800 ETs. (column 1)
3. The proportion of capital works utilised by the post-1995/96 ETs. This proportion is 1,500/1,800 = 83.3 %. (col 2 / col 1) The commissioning date of the pre-1996 works has been brought forward to 1995/1996 (ie. to start in January 1996).
4. Present Value of ETs is calculated from 1995/96.

Example 9: NPV spreadsheet method - capital charge for pre and post 1996 existing assets and planned future assets

Calculate the capital charge applicable to the capacities provided for a water supply distribution system within a town. Details of the assets are given below. New development is 100 ET/a from 1995/96, reaching 7,600 ET in 2037/38, thereafter the projected growth is 80 ET/a until 2042/43 when 8,000 ET will be reached. The following table lists the assets that will be serving the development.

Table 10 Assets Employed - Example 9

Component	Year Commissioned	Capital Cost (2013/14$M)	Component Capacity (kL)	Comments
	(1)	(2)	(3)	(4)
Pre-1996 Works				
Dam	1990/91	10.0		Only 40% of the dam capacity will be used by this distribution system
Service Reservoir 1	1990/91	2.5	7,000	Capacity 3,500 ETs
Trunk Mains	1990/91	3.0	-	
Works between 1996 and 2014				
Service Reservoir 2	1996/97	2.0	5,000	Capacity 2,500 ETs
Post-2014 Works				
Pumping Station and Transfer Mains	2014/15	2.0	-	
Service Reservoir 3	2016/17	2.5	4,000	Capacity 2,000 ETs

Based on a peak day demand of 2kL/ET, the existing system capacity is 6,000 ET (3,500 + 2,500) (total capacity = 16,000kL / 2kL/ET = 8,000 ET).

Notes:

1. For pre -1996 assets, the effective date of commissioning for calculating present value is January 1996, ie. 1995/96.
2. With the addition of Service Reservoir 3 in 2016/17 the total system capacity will be 8,000 ET (3,500 + 2,500 + 2,000 = 8,000).
3. Present value for pre-1996 assets is based on a rate of return (discount rate) of 3% pa.
4. Present value for post 1996 assets is based on a rate of return (discount rate) of 5% pa.
5. The dam constructed in 1990/91 will have capacity to serve the development. Only 40% of the dam capacity is required for serving this distribution system.

The calculation of the capital charge is as follows:

(Example 9 continues on the next page)

Example 9 continued:

Table 11 Capital Charge Calculation - Example 9

Year	Total ET (1)	New ETs per year (2)	Capital cost (2013/14$) ($M) (3)	Effective commissioning date & capital cost for post 1996 development (2013/14$) ($M) (4)	PV of pre-1996 works (@ 3%) (2013/14$) ($M) (5)	PV of post 1996 works (@ 5%) (2013/14$) ($M) (6)	PV of ETs for pre-1996 assets (@3%) (7)	PV of ETs for post-1996 assets (@5%) (8)
1990/91			9.5					
1991/92								
1992/93								
1993/94								
1994/95	3,300							
1995/96	**3,400**	**100**		**5.58**	**5.58**		**100**	**100**
1996/97	3,500	100	2.0	1.18		1.12	97	95
1997/98	3,600	100					94	91
1998/99	3,700	100					92	86
1999/00	3,800	100					89	82
2000/01	3,900	100					86	78
2001/02	4,000	100					84	75
2002/03	4,100	100					81	71
2003/04	4,200	100					79	68
2004/05	4,300	100					77	64
2005/06	4,400	100					74	61
2006/07	4,500	100					72	58
2007/08	4,600	100					70	56
2008/09	4,700	100					68	53
2009/10	4,800	100					66	51
2010/11	4,900	100					64	48
2011/12	5,000	100					62	46
2012/13	5,100	100					61	44
2013/14	**5,200**	**100**					**59**	**42**
2014/15	5,300	100	2.0	1.18		0.46	57	40
2015/16	5,400	100					55	38
2016/17	5,500	100	2.5	1.47		0.53	54	36
2017/18	5,600	100					52	34
2018/19	5,700	100					51	33
2019/20	5,800	100					49	31
2020/21	5,900	100					48	30
2021/22	6,000	100					46	28
2022/23	6,100	100					45	27
2023/24	6,200	100					44	26
2024/25	6,300	100					42	24
2025/26	6,400	100					41	23
2026/27	6,500	100					40	22
2027/28	6,600	100					39	21
2028/29	6,700	100					38	20
2029/30	6,800	100					37	19
2030/31	6,900	100					36	18
2031/32	7,000	100					35	17
2032/33	7,100	100					33	16
2033/34	7,200	100					33	16
2034/35	7,300	100					32	15
2035/36	7,400	100					31	14
2036/37	7,500	100					30	14
2037/38	7,600	100					29	13
2038/39	7,680	80					22	10
2039/40	7,760	80					22	9
2040/41	7,840	80					21	9
2041/42	7,920	80					21	8
2042/43	8,000	80					20	8
Total		**4,700**	**16**	**9.40**	**5.58**	**2.11**	**2,576**	**1,887**

Service Reservoir 2: $2.0M

40% of Dam: $4M
Service Reservoir 1: $2.5M
Mains: $3M

Pumping Station and Mains: $2.0M

Service Reservoir 3: $2.5M

Percentage of capital works utilised by new ETs after 1995/96 **58.75%** 4700/8000

$PV_{1995/96}$ of new ETs for pre-1996 asset @ 3% 2,576 ET (column 7)
PV1995/96 of new ETs for post-1996 asset @ 5% 1,887 ET (column 8)

$PV_{1995/96}$ of capital cost for pre-1996 asset @ 3% 5.58 $M (column 5)
PV1995/96 of capital cost for post-1996 asset @ 5% 2.11 $M (column 6)

Capital Charge
Pre 1996 assets = $2,166 per ET ($5.58M/2576) (column 5 / column 7)
Post 1996 assets = $1,118 per ET ($2.11M/1887) (column 6 / column 8)
Total = $3,284 per ET

Example 9A – As for Example 9, with slower growth resulting in only 88% take up (7,050 ET) of the 8,000 ET capacity

In this case use the proportion of the capital works that will serve the growth ETs from the DSP year (ie. 2013/14) until the planning horizon (ie. 2042/43). The proportion in this case is 46.9% (3,750/8,000). Due to the slower growth, the new pumping station and reservoir have been deferred by 3 years. Example 9A below illustrates this scenario.

Year	Total ET (1)	New ETs per year (2)	Capital cost (2013/14$) ($M) (3)	Effective commissioning date & capital cost for post 1996 development (2013/14$) ($M) (4)	PV of pre-1996 works (@ 3%) (2013/14$) ($M) (5)	PV of post 1996 works (@ 5%) (2013/14$) ($M) (6)	PV of ETs for pre-1996 assets (@3%) (7)	PV of ETs for post-1996 assets (@5%) (8)
1990/91			9.5					
1991/92								
1992/93								
1993/94								
1994/95	3,300							
1995/96	**3,400**	**100**		**4.45**	**4.45**		**100**	**100**
1996/97	3,500	100	2.0	0.94		0.89	97	95
1997/98	3,600	100					94	91
1998/99	3,700	100					92	86
1999/00	3,800	100					89	82
2000/01	3,900	100					86	78
2001/02	4,000	100					84	75
2002/03	4,100	100					81	71
2003/04	4,200	100					79	68
2004/05	4,300	100					77	64
2005/06	4,400	100					74	61
2006/07	4,500	100					72	58
2007/08	4,600	100					70	56
2008/09	4,700	100					68	53
2009/10	4,800	100					66	51
2010/11	4,900	100					64	48
2011/12	5,000	100					62	46
2012/13	5,100	100					61	44
2013/14	**5,190**	**90**					**53**	**37**
2014/15	5,280	90					51	36
2015/16	5,370	90					50	34
2016/17	5,460	90					48	32
2017/18	5,550	90	2.0	0.94		0.32	47	31
2018/19	5,630	80					41	26
2019/20	5,710	80	2.5	1.17		0.36	39	25
2020/21	5,790	80					38	24
2021/22	5,870	80					37	22
2022/23	5,950	80					36	21
2023/24	6,020	70					31	18
2024/25	6,090	70					30	17
2025/26	6,160	70					29	16
2026/27	6,230	70					28	15
2027/28	6,300	70					27	15
2028/29	6,360	60					23	12
2029/30	6,420	60					22	11
2030/31	6,480	60					21	11
2031/32	6,540	60					21	10
2032/33	6,600	60					20	10
2033/34	6,650	50					16	8
2034/35	6,700	50					16	7
2035/36	6,750	50					15	7
2036/37	6,800	50					15	7
2037/38	6,850	50					14	6
2038/39	6,890	40					11	5
2039/40	6,930	40					11	5
2040/41	6,970	40					11	4
2041/42	7,010	40					10	4
2042/43	7,050	40					10	4
Total		**3,750**	**16**	**7.50**	**4.45**	**1.58**	**2,238**	**1,709**

Service Reservoir 2: $2.0M

40% of Dam: $4M
Service Reservoir 1: $2.5M
Mains: $3M

Pumping Station and Mains: $2.0M

Service Reservoir 3: $2.5M

Percentage of capital works utilised by new ETs after 1995/96 **46.88%** 3750/8000

$PV_{1995/96}$ of new ETs for pre-1996 asset @ 3% 2,238 ET (column 7)
PV1995/96 of new ETs for post-1996 asset @ 5% 1,709 ET (column 8)

$PV_{1995/96}$ of capital cost for pre-1996 asset @ 3% 4.45 $M (column 5)
PV1995/96 of capital cost for post-1996 asset @ 5% 1.58 $M (column 6)

Capital Charge
Pre 1996 assets = $1,988 per ET ($4.45M/2238) (column 5 / column 7)
Post 1996 assets = $925 per ET ($1.58M/1709) (column 6 / column 8)
Total = $2,913 per ET

4.5.2 ROI factor method

The value of the return on investment is dependent on:

- The time to full take-up of capacity;
- The investment, or the capital cost; and
- The discount rate.

Time to full take-up

The time to full take-up of asset capacity is the period from the effective commissioning year to the year the capacity of an asset or service area is fully taken up or until the end of the planning horizon, whichever is the shorter (section 4.5 on page 26). Limiting the take-up period to the end of the planning horizon avoids 'loading' the developer charges with holding cost with respect to assets that have excess capacity.

The discount rates to be used are given in Table 7 on page 21.

Effective commissioning year

In the ROI factor approach:

(1) Effective commissioning year for all assets in a service area:

a) if pre-1996 assets are used for a service area, all the assets employed will have an effective commissioning date of January 1996; and

b) if all the assets are post-1996, all the assets will have the same effective commissioning date, equal to the first asset commissioned in the service area.

(2) The base date for present value calculations is the effective commissioning date in (1) above.

(3) In calculating the capital cost per ET, the capacity of the sub-system (in ETs) or the capacity of the service area (in ETs) should be used, rather than the capacity of individual assets.

This method[27] is implemented in three steps as follows:

Step 1 - Calculate the capital cost per ET:

The capital cost per ET is the MEERA[23] value of the relevant assets divided by the capacity of the assets (in ETs) and is expressed in dollars per ET for the service area.

Step 2 - Calculate the ROI factor:

The ROI factor is the multiplier required to bring the PV of the future income stream (annual payments) to the PV of the current capital expenditure. This is a function of the discount rate, which is given (3% or 5%) depending on when the asset was commissioned, and the number of years until full take-up of asset capacity..

[27] As noted in section 4.5 on page 26, this method may only be used by utilities with under 2,000 connected properties.

There are two ways to calculate the ROI factor, depending on whether or not there is a uniform ET take-up each year.

For uniform ET take-up:

$$ROI = -PMT(r, t, 1) * t / (1+r)$$

Where: r = discount rate (%)

t = take-up period (years)

PMT ( ) is an Excel function which calculates the required uniform annual loan payments.

For non-uniform ET take-up:

$$ROI = Total\ ETs / PV_r\ of\ ETs$$

Where: PV_r = present value at discount rate r.

Table 12 on page 36 provides ROI factors, for uniform ET take-up, for take-up periods of up to 30 years.

Step 3 - Multiply the capital cost per ET by the ROI factor:

$$Capital\ Charge = \sum Capital\ Cost\ per\ ET * ROI\ Factor.$$

In calculating the ROI factor, it is appropriate to assume that the ET take-up commences in the year of commissioning. This is based on the assumption (for the purposes of the calculation) that the asset is commissioned in January and that, due to the time lag between subdivision and building, all development in that financial year (July 1 to June 30) is served by the assets commissioned in January.

This approach is covered in more detail in Examples 10, 11 and 12 on pages 37, 39 and 41.

Table 12 ROI factors for uniform take-up of ETs.

Years to Full Take-up	ROI Factor at 3% discount rate for pre-1996 assets (1)	ROI Factor at 5% discount rate for post-1996 assets (2)	Years to Full Take-up	ROI Factor at 3% discount rate for pre-1996 assets (1)	ROI Factor at 5% discount rate for post-1996 assets (2)
1	1.00	1.00	31	1.50	1.89
2	1.01	1.02	32	1.52	1.93
3	1.03	1.05	33	1.54	1.96
4	1.04	1.07	34	1.56	2.00
5	1.06	1.10	35	1.58	2.04
6	1.08	1.13	36	1.60	2.07
7	1.09	1.15	37	1.62	2.11
8	1.11	1.18	38	1.64	2.15
9	1.12	1.21	39	1.66	2.18
10	1.14	1.23	40	1.68	2.22
11	1.15	1.26	41	1.70	2.26
12	1.17	1.29	42	1.72	2.30
13	1.19	1.32	43	1.74	2.33
14	1.20	1.35	44	1.76	2.37
15	1.22	1.38	45	1.78	2.41
16	1.24	1.41	46	1.80	2.45
17	1.25	1.44	47	1.82	2.49
18	1.27	1.47	48	1.84	2.53
19	1.29	1.50	49	1.87	2.57
20	1.31	1.53	50	1.89	2.61
21	1.32	1.56	51	1.91	2.65
22	1.34	1.59	52	1.93	2.69
23	1.36	1.62	53	1.95	2.73
24	1.38	1.66	54	1.97	2.77
25	1.39	1.69	55	1.99	2.81
26	1.41	1.72	56	2.02	2.85
27	1.43	1.76	57	2.04	2.89
28	1.45	1.79	58	2.06	2.94
29	1.47	1.82	59	2.08	2.98
30	1.49	1.86	60	2.10	3.02

Example 10: ROI factor method - capital charge for pre-1996 assets

Calculate the capital charge for water supply headworks supplying a town. The sub-system comprises a dam, a pumping station, and two transfer mains. The capital costs for the works in this sub-system are shown in Table 13 below:

Table 13 Capital costs for works in sub-system

Component	Year commissioned	Capital cost (2013/14 $M)
Dam	1990/91	3.0
Pumping Station	1990/91	0.6
Transfer Main 1	1990/91	1.5
Transfer Main 2	1995/96	0.75

The capital costs are MEERA costs (refer to section 4.4.1 on page 25), and are expressed in dollars of the year for which the capital charge is being calculated (year 2013/14 in this case). The capital cost for the dam is based on the indexed historical cost. As discussed in section 4.4.1, capital costs for the other components are based on the MEERA method and can be calculated from data in the NSW Reference Rates Manual.

The capacity of this sub-system is 1,500 ET and the capacity will be fully taken up by the year 2020.

The calculation of the capital charge would be as shown in Table 14 below:

Table 14 Calculation of the capital charge

Component	Year Commis-sioned	Effective year of commissioning for ROI[1]	Capital Cost (2013/14$) ($M)	Capacity[2] (ET)	Capital Cost per ET ($ per ET)	Year when Capacity is Taken-Up	Take-up Period (Years)	Return on Investment Factor[3]	Capital Charge per ET (2013/14$)
	(1)	(2)	(3)	(4)	(5) = (3) x 10^6 / (4)	(6)	(7) = (6) – (2) + 1	(8)	(9) = (5) x (8)
Dam	1990/91	1995/96	3.0	1,500	2,000	2019/20	25	1.39	2,788
Transfer PS	1990/91	1995/96	0.6	1,500	400	2019/20	25	1.39	558
Transfer Main 1	1990/91	1995/96	1.5	1,500	1,000	2019/20	25	1.39	1,394
Transfer Main 2	1995/96	1995/96	0.75	1,500	500	2019/20	25	1.39	697
Total			5.85		3,900				5,437

The capital charge for this sub-system is therefore $5,437 per ET (column 9).

Notes:

1. For pre-1996 assets, the effective year of commissioning for calculating Return on Investment (ROI) factors is January 1996, ie. 1995/96 (column 2).
2. The capacity in the above calculation is the total capacity provided by the works acting as a sub-system.
3. The ROI factors are based on a rate of return (discount rate) of 3% pa real applicable for pre-1996 assets (column 8). The ROI factors shown are based on a uniform annual take-up of ETs over the 25 year take-up period (column 7), commencing in the effective year of commissioning of the asset (column 2).

The ROI Factor can be calculated on an Excel spreadsheet using the following formula:

$$ROI = - PMT(r, t, 1) * t/(1+r)$$

Where: r = discount rate (%)

t = take-up period (years)

PMT( ) is a function which calculates the required uniform annual loan payments.

For most pre-1996 assets, there would have been some ETs served at the effective year of commissioning of the asset. However, the capital cost per ET for growth after the effective year of commissioning of an asset (capital cost of growth capacity/growth capacity provided) would be the same as the cost per ET for the total asset (total capital cost/total capacity).

For example: Suppose that the dam in the above example had 40% of its capacity taken up in 1996. Therefore, using the growth data, the capital cost per ET would be $1.8M/900ET = $2,000 per ET and using the total asset, the capital cost would be $3M/1,500ET = $2,000 per ET.

It is therefore satisfactory in such cases to use the capital cost per ET for the total asset in calculating the capital cost per ET as part of the calculation of the capital charge. The take-up period for the growth component for pre-1996 assets would be from January 1996 (ie. 1995/96) until the capacity is fully taken up.

Example 11: ROI factor method - capital charge for pre and post 1996 existing assets

Calculate the capital charge applicable to the service reservoir capacity provided for a water supply distribution system within a town. Details of the service reservoirs are given below. These reservoirs will serve the development until 2042/43.

Table 15 Assets Employed - Example 11

Component	Year Commissioned	Capital Cost (2013/14$M)	Capacity (kL)+
Pre-1996 Works			
Service Reservoir 1	1990/91	0.75	1,500
Service Reservoir 2	1995/96	0.45	500
Post 1996 Works			
Service Reservoir 3	2009/10	0.6	1,000

+ Based on a peak day demand of 2kL/ET, the combined reservoir capacity is 1,500 ET (total capacity = 3,000 kL / 2 kL/ET = 1,500 ET).

The calculation of the capital charge is as follows:

Table 16 Capital Charge Calculation - Example 11

Component	Actual Commis-sioning Year	Effective Year[1,2] of commis-sioning for ROI	Capital Cost (2013/14$M)	PV of Capital Cost[2] (2013/14$M)	Capacity[3] of the Service Area (ET)	Capital Cost per ET (2013/14$)	Year when Capacity is fully Taken Up[4]	Take-Up Period (years)	ROI Factor	Capital Charge per ET (2013/14$)
	(1)	(2)	(3)	(4)	(5)	(6) = (4) / (5)	(7)	(8) = (7) – (2) + 1	(9)	(10) = (6) x (9)
Pre-1996 Works										
Service Reservoir 1	1990/91	1995/96	0.75	0.75	1,500	500	2042/43	48	1.84[5]	922
Service Reservoir 2	1995/96	1995/96	0.45	0.45	1,500	300	2042/43	48	1.84[5]	553
Post 1996 Works										
Service Reservoir 3	2009/10	1995/96	0.6	0.30	1,500	202	2042/43	48	2.53[6]	511
TOTAL			1.8	1.50		1,002				1,986

Notes:

1. For pre-1996 assets, the effective date of commissioning for calculating Return on Investment (ROI) factors is January 1996, ie. 1995/96 (column 1).
2. For post-1996 assets the effective date of commissioning for calculating Return on Investment (ROI) factors is also January 1996, ie. 1995/96, since these assets are part of the same service area (column 1).
3. The capacity is the total capacity provided by the three existing service reservoirs – 1,500 ETs (3,000 kL / 2 kL/ET) (column 5).
4. The year when capacity is taken up is the year when a new reservoir is required for the town.
5. The ROI factor for pre-1996 assets is based on a rate of return (discount rate) of 3% pa. The ROI factors are based on a uniform annual take-up of ETs over the take-up period, commencing in the effective year of commissioning of the asset.
6. The ROI factor for post 1996 assets is based on a rate of return (discount rate) of 5% pa, together with a uniform annual take-up of ETs over the take-up period, commencing in the year of commissioning of the asset.

Note that for the ROI method, providing the period for take-up of asset capacity is limited to 30 years from the date of the DSP, it is not necessary to adjust the capital cost and the capacity of the service area for any remaining asset capacity beyond the planning horizon. This is illustrated in Table 16A below which shows that after adjusting for any unused asset capacity at the end of the 30-year planning horizon, the calculated capital charge of $1,986 per ET is the same as that obtained in Table 16 on page 39, which is based on a 30 year system capacity from the date of DSP (ie. 48 years from the effective commissioning year of 1995/96).

Table 16A below is based on Example 11 on page 39, except that the service reservoirs can serve growth until 2047/48 (ie. 35 years from the DSP year 2013/14, which is 53 years from the effective commissioning year of 1995/96). In accordance with section 4.3.2 (Existing assets, page 23) the system capacity up to the 30 year planning horizon should be considered for capital charge calculation. In Table 16A the capital cost and the capacity of the service area have been pro-rated (by dividing the capital cost of assets by 35 and multiplying by 30) and 2042/43 has been used as the 'Year when Capacity is fully Taken Up' (ie. 30 years from 2013/14, which is 48 years from the effective commissioning year of 1995/96).

Table 16A Capital Charge Calculation - Example 11 (where system capacity is available beyond the planning horizon)

Component	Actual Commis-sioning Year	Effective Year of commis-sioning for ROI	Effective Capital[1] Cost (2013/14$M)	PV of Capital Cost (2013/14$M)	Capacity[2] of the Service Area (ET)	Capital Cost per ET (2013/14$)	Year when Capacity is fully Taken Up	Take-Up Period (years)	ROI Factor	Capital Charge per ET (2013/14$)
	(1)	(2)	(3)	(4)	(5)	(6) = (4) / (5)	(7)	(8) = (7) – (2) + 1	(9)	(10) = (6) x (9)
Pre-1996 Works										
Service Reservoir 1	1990/91	1995/96	0.64	0.64	1,286	500	2042/43	48	1.84[5]	922
Service Reservoir 2	1995/96	1995/96	0.39	0.39	1,286	300	2042/43	48	1.84[5]	553
Post 1996 Works										
Service Reservoir 3	2009/10	1995/96	0.51	0.26	1,286	202	2042/43	48	2.53[6]	511
TOTAL			1.54	1.43		1,002				1,986

Notes:

- Pro-rata the capital cost by dividing the capital cost of assets by 35 and multiplying by 30.
- Pro-rata the capacity of the service area (by dividing the system capacity by 35 and multiplying by 30).
- Refer also to Notes 1 to 6 on page 39.

As noted above, the capital charge per ET for the take-up period capped to the 48 year maximum in Table 16A is $1,986 per ET. This is the same as the result in Table 16 on page 39, which also has a take-up period of 48 years (for a 2013/14 DSP).

Example 12: ROI factor method - capital charge for construction in stages with varying unit costs

This example uses the same data as Example 8 on page 30, but uses the ROI factor method. The Excel ROI formula can be used because ET take-up rate is uniform. The same capital charge is calculated below using the ROI Factor Method ($2,889 per ET) as that calculated in Example 8 using the NPV spreadsheet method. Calculations are shown in the table below.

In Example 8 only the post 1996 growth, and the proportion of the capital works serving this growth was used. However, when using the ROI method it is not necessary to do that, as the asset cost in $/ET remains the same.

Component	Year Commis-sioned	Effective year of commissioning for ROI[1]	Capital Cost (2013/14$M)	PV of Capital Cost[2] (2013/14$M)	Capacity (ET)	Capital Cost per ET ($ per ET)	Year when Capacity is Taken-Up	Take-up Period (Years)	ROI Factor	Capital Charge per ET (2013/14$)
	(1)	(2)	(3)	(4)	(5)	(6) = (4) x 10^6 / (5)	(7)	(8) = (7) – (2) + 1	(9)	(10) = (6) x (9)
Pre 1996 Works										
Stage 1	1990/91	1995/96	3.0	3.00	1,800	1,666.7	2019/20	25	1.3939	2,323
Post 1996 Works										
Stage 2	2005/06	1995/96	1.0	0.614	1,800	341.1	2019/20	25	2.0049	576
Total			4.0	3.614		2008				2,899

Notes:

1. The commissioning date of the pre-1996 assets has been brought forward to 1995/1996 (January 1996). As this is a staged development of the system, the effective year of commissioning for the Stage 2 assets is also 1995/96 (column 2).
2. Present value of the capital cost for Stage 2 is calculated from 1995/96 as the base year, using a discount rate of 5% pa.
3. Sewage treatment works commissioned in two stages, with a total capacity of 1,800 ET (column 5).
4. ROI factors calculated for the a discount rate of 3% pa real for pre-1996 assets and 5% pa real for post 1996 assets (column 9).

5. Determining Number of DSPs

LWUs should minimise the number of DSPs prepared to reduce preparation and administration costs and improve community understanding of the process. The methodology for determining the number of DSPs is provided below.

5.1. Agglomeration of Service Areas

Where the capital charges for two or more service areas are within 30%, they must be agglomerated into a single DSP area, with the capital charge for the DSP area calculated on the following basis:

(1) Order the calculated capital charges for service areas from highest to lowest.

(2) Group the service areas into DSP areas with calculated capital charges within 70% to 100% of the highest charge.

(3) Calculate weighted average capital charge for each DSP area, weighting by the Present Value (PV) of new ETs in each service area. An example of weighting agglomeration by the PV of ETs is shown in Example 13 below.

Please note that **Circular LWU 5 of 28 September 2004 has been withdrawn** and agglomeration for DSPs prepared under these *2016 Developer Charges Guidelines* may now only be carried out in accordance with section 5 of these guidelines.

Example 13: Weighting agglomeration by Present Value (PV) of new ETs

The capital charges (CC) of two service area, 1 and 2 are to be agglomerated as the capital charge for Area 2 is within 30% of the capital charge for Area 1.

(1) CC_1 = \$20,000 (2) CC_2 = \$14,000

(3) $PV(ETs)_1$ = 500 (4) $PV(ETs)_2$ = 2,000 (5) $PV(ETs)_{1+2}$ = 2,500

Weighting factor for Area 1 (6) = (3) / (5) = 500 / 2,500 = 0.2

Weighting factor for Area 2 (7) = (4) / (5) = 2,000 / 2,500 = 0.8

Agglomerated charge = (6)*(1) + (7)*(2) = 0.2*\$20,000 + 0.8*\$14,000 = **\$15,200**

Example 14: Agglomeration for Example Utility

Table 17 below shows the agglomeration of service areas for the Example Utility in Example 5 on page 19.

The capital charges for the 14 sewage treatment works catchments have been sorted in descending order, and grouped into DSP areas of within 30% of the highest capital charge (section 5.1 on page 42). The outcome is agglomeration of these 14 service areas into 4 DSP areas as shown in Table 17 below.

Table 17 Agglomeration of service areas for Example Utility

No.	Service area	Capital charge ($ per ET) (2013/14$)	Percentage of highest capital charge DSP Area A	Percentage of highest capital charge DSP Area B	Percentage of highest capital charge DSP Area C	Percentage of highest capital charge DSP Area D
	(1)	(2)	(3)	(4)	(5)	(6)
14	Area 14	22,130	100%			
13	Area 13	15,170	69%	100%		
12	Area 12	13,050		86%		
1	Area 1	12,520		83%		
6	Area 6	12,060		79%		
9	Area 9	11,940		79%		
11	Area 11	11,810		78%		
2	Area 2	10,500		69%	100%	
4	Area 4	9,785			93%	
8	Area 8	9,280			88%	
7	Area 7	8,950			85%	
10	Area 10	8,810			84%	
5	Area 5	6,460			62%	100%
3	Area 3	6,230				96%

The four DSP areas are:

- Area 14 has a capital charge significantly higher than the others and was grouped on its own, DSP Area A (column 3).
- Area 13, Area 12, Area 1, Area 6, Area 9, and Area 11 have capital charges within 30% of the highest (100%, 86%, 83%, 79%, 79% and 78% in this group) so these were grouped into DSP Area B (column 4).
- Area 2, Area 4, Area 8, Area 7 and Area 10 were grouped into DSP Area C (100%, 93%, 88%, 85% and 84%) (column 5).
- Area 5 and Area 3 (100% and 96%) made up DSP Area D (column 6).

Table 18 on page 44 shows how the weighted average capital charge is calculated, weighting by the present value of new ETs in each service area. The capital charge for each DSP area is shown in column 6 of Table 18.

Table 18 Weighted average capital charge for Example Utility (2013/14$)

DSP Area	Service Area	Capital charge for Service Area ($ per ET) (1)	New ETs* (2)	PV of new ETs (3)	Proportion of PV of new ETs in each DSP area (4)	Weighted component of the capital charge for each DSP area ($ per ET)# (5)	Weighted capital charge for each DSP area ($ per ET)# (6)
A	Area 14+	22,130	259	218	100.0%	22,130	22,130
	Total DSP Area A			**218**	**100%**	**22,130**	
B	Area 13+	15,170	507	438	10.8%	1,636	12,716
	Area 12+	13,050	1,604	1,349	33.2%	4,336	
	Area 1	12,520	369	230	5.7%	710	
	Area 6	12,060	1,419	924	22.8%	2,745	
	Area 9	11,940	1,663	1,077	26.5%	3,167	
	Area 11	11,810	75	42	1.0%	122	
	Total DSP Area B			**4,061**	**100%**	**12,716**	
C	Area 2	10,500	334	192	3.0%	318	9,107
	Area 4	9,785	1,093	686	10.8%	1,057	
	Area 8	9,280	2,146	1,301	20.5%	1,906	
	Area 7	8,950	3,319	2,084	32.8%	2,944	
	Area 10	8,810	3,284	2,073	32.7%	2,882	
	Total DSP Area C			**6,335**	**100%**	**9,107**	
D	Area 5	6,460	1,701	1,077	71.4%	4,612	6,394
	Area 3	6,230	815	432	28.6%	1,783	
	Total DSP Area D			**1,509**	**100%**	**6,394**	
Total			**18,587**	**12,124**			

* New ETs from DSP year to the end of the 30 year planning horizon.

\+ Areas 12, 13 and 14 are Backlog areas and all the existing ETs as at 2016 will become new ETs.

\# Rounded

Weighted average capital charge: = (218 x 22,130 + 4,061 x 12,716 + 6,335 x 9,107 + 1,509 x 6,394)/12,124

= $10, 213 per ET

5.2. Agglomeration for utilities with under 2,000 connected properties

Utilities with under 2,000 connected properties may agglomerate additional service areas to those indicated in (2) on page 42, subject to the post-agglomeration capital charge not exceeding the pre-agglomeration capital charge by more than 30%. An example of agglomeration for utilities with under 2,000 connected properties is shown in Example 15 on page 45. The example shows that Method 1 is not suitable for this utility as the increase in the pre-agglomeration capital charges exceed 30% for areas D, E, F and G (column 7 of Method 1).

Method 2 is suitable for this utility as the increases to the pre-agglomeration capital charges do not exceed 30% (column 7 of Method 2).

Example 15: Agglomeration method for LWUs with under 2,000 connected properties

Method 1 – NOT SUITABLE

Service Area	Capital Charge *for Each Service Area* ($ per ET)	PV of new ETs *in Each Service Area*	% of PV of new ETs+ *in DSP Area*	Weighted Component of the Capital Charge in DSP Areas ($ per ET)	Difference Between Agglomerated Charge and Service Area Charge	% Increase
(1)	(2)	(3)	(4)	(5) = (2) × (4)	(6) = ∑(5) – (2)	(7) = (6) / (2)
A	30,000	200	11%	3,333	-16,817	-56%
B	16,000	300	17%	2,667	-2,817	-18%
C	15,000	400	22%	3,333	-1,817	-12%
D	8,900	300	17%	1,483	4,283	48%
E	8,800	200	11%	978	4,383	50%
F	6,500	200	11%	722	6,683	103%
G	6,000	200	11%	667	7,183	120%
Total for DSP Area		**1,800**	**100%**	**13,183**		

+ Rounded

As shown in Method 1 above, the agglomerated capital charge that would apply if all 7 service areas were agglomerated into one DSP area is $13,183. This would result in significant increases in the capital charge for a number of service areas. For example, it would increase the capital charge of Service Area G by 120% (from $6,000).

As noted above, **Method 1 is not suitable** for use by this utility as the post-agglomeration capital charge involves an increase of over 30% for service areas D, E, F and G.

The service areas are agglomerated into two separate DSPs in Method 2, as shown on page 46. Under this approach, the increases to the pre-agglomeration capital charge for each service area do not exceed 30%. The LWU can therefore apply capital charges of $18,667 for DSP Area 1; and $7,700 for DSP Area 2.

Method 2 – SUITABLE

Service Area	Capital Charge *for Each Service Area* ($ per ET)	PV of new ETs *in Each Service Area*	% of PV of new ETs+ *in DSP Areas*	Weighted Component of the Capital Charge in DSP Areas ($ per ET)	Difference Between Weighted average Charge and Service Area Charge	% Increase
(1)	(2)	(3)	(4)	(5) = (2) × (4)	(6) = ∑(5) – (2)	(7) = (6) / (2)
A	30,000	200	22%	6,667	-11,333	-38%
B	16,000	300	33%	5,333	2,667	17%
C	15,000	400	44%	6,667	3,667	24%
Total for DSP Area 1		**900**	**100%**	**18,667**		
D	8,900	300	33%	2,967	-1,200	-13%
E	8,800	200	22%	1,956	-1,100	-13%
F	6,500	200	22%	1,444	1,200	18%
G	6,000	200	22%	1,333	1,700	28%
Total for DSP Area 2		**900**	**100%**	**7,700**		

+ Rounded

5.3. Publishing DSP Documents

After agglomerating the service areas into DSP areas and calculating the corresponding agglomerated capital charges for the DSP areas, the developer charges will then be calculated for each DSP area and published in the LWU's DSP document.

A LWU may publish several DSPs as one document. However, calculation of capital charges must be shown separately for each DSP. In this case it is not necessary to repeat common sections (eg. levels of service and design parameters).

Refer also to section 2.2.3 on page 7 regarding concise presentation of the required information in a single DSP document for each of water supply and sewerage.

6. The Reduction Amount

The reduction amount represents the portion of the efficient cost of assets used to service a development area that the LWU expects to recover through its annual bills to the new residents (periodic water or sewerage bills). The reduction amount can also be defined as the net present value (NPV) of the future net income expected from providing water-related services to the new residents in the DSP area.

LWUs with 2,000 or more connected properties are required to calculate the reduction amount using the NPV of annual bills method. For LWUs with differential tariff structures, a separate reduction amount must be calculated for each tariff area.

LWUs with under 2,000 connected properties for either their water supply or sewerage business may use a simplified NPV of annual bills method.

Table 19 Methods for calculating the reduction amount.

Method	Concept	Features
NPV of Annual Bills	The reduction amount is the NPV for 30 years of the future net income (ie. annual bills paid in excess of OMA cost) divided by the PV of the new ETs.	Transparent and similar to IPART method for regulated utilities. Must be used by LWUs with 2,000 or more connected properties. May also be used by smaller utilities.
Simplified NPV of Annual Bills	The reduction amount is calculated as the PV for 30 years of current net income per ET.	Simpler than NPV of Annual Bills method, but overstates Reduction Amount (section 6.2 on page 50). May be used by LWUs with under 2,000 connected properties for either their water supply or sewerage business.

6.1. NPV of annual bills method

6.1.1 Introduction

This method involves calculation of the present value (PV) of the future net income, which is the difference between the revenue from annual bills, and annual OMA[28] cost, projected for new development over the next 30 years. This is divided by the PV of the new ETs over 30 years to give the reduction amount.

LWUs should use their current annual bills[29] at the time of the developer charges review.

[28] OMA – operation, maintenance and administration cost

[29] The annual bill per ET is the utility's bill for a residential customer with a water consumption equal to 1 ET. This will be slightly higher than the utility's typical residential bill (footnote 15 on page 12), which is based on the utility's average annual residential water supplied per connected property. This is because in Reference 1 each dwelling in a block of units/flats is 1 residential connected property, whereas such units/flats are less than 1 ET as they have a lower volume of water to be supplied per unit than a detached dwelling. Eg. in Example 2 on page 17, approximately 800 units/flats are 550 ETs for water supply.

As noted in footnote 16 on page 13, 94% of the NSW local water utilities (LWUs) have completed a sound 30-year strategic business plan and financial plan. If your LWU's SBP is over 4 years old, it is considered prudent for the LWU to prepare a 30-year IWCM strategy, TAMP and financial plan or to update its SBP, TAMP and financial plan in accordance with the 2014 Check List, or any subsequent Check List published on the DPI Water website, before finalising their draft DSP in order to ensure any capital works required over the next 10 years have been clearly identified and discussed, together with the required annual revenue and typical residential bill in current dollars. This approach is fair to developers as it accounts for required

Example 16 on page 49 shows a calculation of the NPV of annual bills method.

6.1.2 Outline of the NPV of annual bills method

The NPV of Annual Bills method can be written as:

$$Reduction\ Amount = PV(annual\ bills) - PV(OMA\ cost)$$

The OMA cost needs to be based on the most efficient means of providing the service.

The reduction amount per ET (R) calculated by the NPV of annual bills method can be expressed more precisely as:

$$R = \frac{\sum_{i=1}^{n} PV(AB_i - OMA_i)}{\sum_{i=1}^{n} PV(ET_i)}$$

Where:

AB = Annual bills[30] expected for the new customers in the DSP area for each year (i).

OMA = Expected operation, maintenance and administration cost[31] of providing services to the new customers for each year (i).

ET = The number of new equivalent tenements to be served in the DSP area for each year (i).

n = 30 years

For LWUs with more than one DSP, and a uniform tariff structure, the financial plan and the calculation of the reduction amount would be calculated on a utility-wide basis. The reduction amount may then be adjusted to reflect differential OMA costs (if any) as discussed in section 6.3.2 on page 51.

Calculator Spreadsheet

A calculator spreadsheet is available to assist utilities in calculating the reduction amount as indicated in section 9 on page 61.

increases to the typical residential bill for the utility. Any such increases to the typical residential bill will increase the Reduction Amount, which will reduce the developer charge.

30 LWU's annual bill per ET at the commencement of the DSP multiplied by the number of new ETs.

31 LWU's estimated OMA cost per ET at the commencement of the DSP multiplied by the number of new ETs.

Example 16: Reduction Amount by NPV of annual bills method

This example illustrates the reduction amount calculation using the NPV of annual bills method for a LWU with uniform bills and OMA cost throughout its sewerage system.

The reduction amount calculation involves the following steps:

(1) Calculate the current and the projected total ETs for the whole area of operation
(2) Calculate new ETs for each year over the next 30 years
(3) Calculate PV of new ETs over 30 years, using the current year as base year
(4) Calculate the PV of net income from annual bills ($585 per ET) and OMA cost ($400 per ET) from the new ETs for 30 years.
(5) Calculate the reduction amount as (PV of net income) / (PV of new ETs), ie. (4) ÷ (3)

Annual Sewerage Bill	585	$ per ET
Annual Sewerage OMA Cost	400	$ per ET
Net Income	185	$ per ET

Year	Total ETs (1)	New ETs per year (2) = $(1)_i - (1)_{i-1}$	PV (New ETs) (over 30 years @ 5%) (3) = PV of (2)	Cumulative New ETs (4)	Net Income from New ETs ($'000) (5) = (4) * $185	PV (Net Income) from new ETs over 30 years @ 5% ($'000) (6) = PV of (5)	Reduction Amount ($ per ET) (7) = (6) / (3)
2012/13	5,204						
2013/14	5,354	150	**2,400**	150	28	**5,352**	**2,230**
2014/15	5,504	150		300	56		
2015/16	5,654	150		450	83		
2016/17	5,804	150		600	111		
2017/18	5,954	150		750	139		
2018/19	6,104	150		900	167		
2019/20	6,254	150		1,050	194		
2020/21	6,404	150		1,200	222		
2021/22	6,554	150		1,350	250		
2022/23	6,704	150		1,500	278		
2023/24	6,854	150		1,650	305		
2024/25	7,004	150		1,800	333		
2025/26	7,154	150		1,950	361		
2026/27	7,304	150		2,100	389		
2027/28	7,454	150		2,250	416		
2028/29	7,604	150		2,400	444		
2029/30	7,754	150		2,550	472		
2030/31	7,904	150		2,700	500		
2031/32	8,054	150		2,850	527		
2032/33	8,204	150		3,000	555		
2033/34	8,354	150		3,150	583		
2034/35	8,504	150		3,300	611		
2035/36	8,654	150		3,450	638		
2036/37	8,804	150		3,600	666		
2037/38	8,954	150		3,750	694		
2038/39	9,104	150		3,900	722		
2039/40	9,234	130		4,030	746		
2040/41	9,364	130		4,160	770		
2041/42	9,494	130		4,290	794		
2042/43	9,624	130		4,420	818		
2043/44	9,754	130		4,550	842		

The calculated reduction amount is 5,352,000/2,400 = $2,230 per ET (column 6 / column 3).

Notes:

1. All costs are in dollars of the year for which developer charges are being calculated ie. 2013/14$ in this case.

6.2. Simplified method for LWUs with under 2,000 connected properties

LWUs with under 2,000 connected properties for either their water supply or sewerage businesses have the option to use a simplified NPV of annual bills method to calculate the reduction amount.

$$R_s = PV_{30\ years}\left(Current\mathbf{AB}_{\ per\ ET} - Current\mathbf{OMA}_{\ \text{per ET}}\right)$$

Where:

R_s	- Simplified reduction amount per ET
PV_{30yrs}	- Present value discounted over 30 years
Current**AB** per ET	- the current annual bill for an ET in the LWU area
Current**OMA** per ET	- the current operation, maintenance and administration cost (OMA) per ET in the LWU area.

Example 17: Using simplified method to calculate reduction amount

Current Annual Bill per ET	= Current annual bill per ET
	= $585
Current OMA per ET	= Current OMA cost per ET
	= $400
Net Income per ET	= $585 - $400
	= $185

The PV of $185 for 30 years using a discount rate of 5% is $2,986 (185 x 16.141)

Therefore, Reduction Amount for this example is $2,986 per ET.

It is noted that this Reduction Amount is 43% higher than that calculated in Example 16 on page 49 as the simplified method effectively assumes all the new ETs will be paying this net income for 30 years, whereas Example 16 shows that most of the new ETs pay this net income for under 15 years.

Accordingly, as this method overstates the reduction amount, it is considered preferable for small LWUs to also use the NPV of Annual Bills Method (Example 16) where practicable.

6.3. Adjustments to the reduction amount

It may be appropriate to make adjustments to the calculated reduction amount to account for differential operating costs or differential tariff structures.

6.3.1 Differential tariff structures

For LWUs with differential tariff structures, a separate reduction amount should be calculated for each tariff area.

For example, consider a LWU with a city of 15,000 connected properties and a town with 1,500 connected properties, with separate tariff structures for the city and the town. The annual bills for the city and the town are $585 and $800 respectively and the OMA cost is $400 per ET. The calculated capital charges for the city and the town are $5,000 and $6,000 respectively. The process is as follows:

- As the calculated capital charges are within 30%, a single DSP must be adopted (refer to section 5.1 on page 42).
- As there are differential tariff structures, the reduction amount needs to be calculated separately for each tariff area.
- For the city and the town, the reduction amounts should be calculated using the NPV of annual bills method (section 6.1 on page 47).

If the growth in the number of ETs for the town is the same as that shown in column 2 of Example 16 on page 49, the resulting reduction amount for the town would be $4,822/ET [ie. $2,230 x ($800 - $400) / ($585 - $400)].

For most NSW LWUs, a uniform tariff structure[32] applies across the full area of operations.

6.3.2 Differential operating costs

The reduction amount may be adjusted (up or down) to reflect differences between the system operating cost and the operating cost for serving the development area. This is demonstrated in the example below.

Example 18: Adjustment of reduction amount for differential operating cost

This example calculates the adjustment required to the reduction amount for a development area with an OMA cost of $420 per ET, served by a LWU where the average OMA cost is $400 per ET.

Year	2013/14	14/15	15/16	……	…..	39/40	40/41	41/42	2042/43
OMA cost for Development Area 1 ($ per ET) (1)	420	420	420	420	…	…	420	420	420
Average OMA cost for business ($ per ET) (2)	400	400	400	400	…	…	400	400	400
Difference ($ per ET) (3) = (2) – (1)	-20	-20	-20	-20	…	…	-20	-20	-20
PV of Difference at 5% p.a. ($ per ET) (4)	-323								

The calculated reduction amount adjustment for Development Area 1 is -$323 per ET. As a result the developer charge for Development Area 1 is increased by $323 per ET.

[32] 2014-15 NSW Water Supply and Sewerage Benchmarking Report (Tables 6A and 7A on pages 137 and 149 of Reference 8 on page 62) (www.water.nsw.gov.au).

7. The Developer Charge

7.1. Calculated Maximum Developer Charges

Developer Charge	**=**	**Capital Charge (cost of asset provision)**	**–**	**Reduction Amount (net income from annual bills)**

The example below shows the calculation of developer charges for two development areas.

Example 19: Calculation of developer charges

Development Area 1

Capital charge	=	$10,000 per ET
Reduction amount	=	$2,200 per ET
Developer charge	=	$7,800 per ET

Development Area 2

Capital charge	=	$6,500 per ET
Reduction amount	=	$2,200 per ET
Developer charge	=	$4,300 per ET

The calculated developer charges are the maximum that may be levied by a LWU. The LWU should consider financial, social and environmental factors to determine a level of developer charges that is balanced, fair and equitable. The underlying principle is that the new development should meet the full cost of assets serving the development, but consideration should be given to DSP areas where the calculated developer charges are unacceptably high.

A LWU exercising best practice management must levy developer charges in a commercial manner, whereby the cost distribution is equitable. However, the adopted developer charges should not involve a high level of cross-subsidy from existing customers.

Many LWUs have calculated developer charges of $20,000 to $35,000 per ET for water supply or sewerage for small villages. It would be reasonable for the utility to cap such charges, but it should also consider maintaining relativity with the charge in the main town in order to provide locational pricing signals. Eg. if the calculated developer charge for the main town was say $8,000/ET, it would be reasonable for such a LWU to adopt the calculated value for the main town and to adopt a developer charge for the villages of about $12,000/ET. The resulting cross-subsidies need to be disclosed as indicated on pages 53 to 57.

7.2. Developer charges to be levied

With the exception of villages with a high calculated developer charge (section 7.1 on page 52), the NSW local water utilities are in the main levying the calculated developer charge in order to fairly allocate the cost of service provision and minimise cross-subsidies.

However, in adopting a DSP, a LWU may elect to levy less than the calculated maximum developer charges, where:

- substantial benefits accrue to the whole community by serving an area; and/or
- existing assets are at risk of being stranded if development does not proceed.

Any resulting cross-subsidies[33] must be disclosed in the relevant DSP, in the LWU's Annual Report and annual Operational Plan, in communication materials for stakeholder consultation and on the LWU's website and reported to DPI Water.

7.2.1 Phasing in of developer charges / Capping of developer charges

If the developer charges adopted in a DSP are significantly greater than those presently levied, the higher charges may be phased-in over a 3-year period. Such phasing-in is permitted, but is not encouraged.

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

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

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

7.2.2 Calculation of cross-subsidies

The process for calculating cross-subsidies is outlined below:

1. Calculate the capital charge for each *service area* (section 4 on page 21)
2. Agglomerate the appropriate *service areas* into DSP areas and calculate capital charge for each DSP area (section 5 on page 42)
3. Calculate the maximum developer charge for DSP areas (Capital Charge – Reduction Amount) (section 6 on page 47)

[33] The total cross-subsidy in a financial year can be calculated by multiplying the cross-subsidy per new ET, from the current DSP, by the number of new ETs during the year.

4. If the LWU elects to levy less than the calculated maximum developer charge recalculate the developer charge (refer to Table 20 on page 55). Use the spreadsheet in Table 21 on page 56 to determine the required annual bill for the lower developer charge.

The cross-subsidy is the difference between the annual bill with the calculated maximum developer charge and the proposed lower developer charge. The cross-subsidy should be calculated using the spreadsheet in Table 21 on page 56.

The LWU may determine that varying levels of developer charges should be applied for each DSP. However, as noted in section 7.1 on page 52, it is important to maintain the relativity in order to convey appropriate locational pricing signals. Each DSP should detail the developer charges calculation for that DSP area, the adopted developer charge and the resulting cross-subsidy along the lines shown in Table 22 and Figure 3 on page 57. Example 20 below demonstrates the calculation and reporting of cross-subsidies.

Example 20: Developer charges options and cross-subsidy

For the example utility in Example 5 on page 19 and Example 14 on page 43, Table 20 on page 55 shows the utility-wide weighted average developer charge for the following options:

- Option 1 – No cross-subsidy (ie. adopt calculated developer charges)
- Option 2 – Moderate cross-subsidy (17% reduction to weighted average developer charge)
- Option 3 – High cross-subsidy (40% reduction to weighted average developer charge)

Example 20 continued:

Table 20 Developer charges options and cross-subsidy

	DSP Area (1)	Service Area (2)	PV of new ETs over 30 years (3)	Calculated developer charge per ET 2013/14$ (4)	Weighted component of developer charge 2013/14$ (5)	Weighted average developer charge per ET 2013/14$ (6)	Weighted average cross-subsidy to developer charge ($/ET) 2013/14$ (7)
Option 1 – No cross-subsidy	A	Area 14	218	19,420	350	7,505	Nil
	B	Area 13	4,061	10,010	3,353		
		Area 12					
		Area 1					
		Area 6					
		Area 9					
		Area 11					
	C	Area 2	6,335	6,400	3,344		
		Area 4					
		Area 8					
		Area 7					
		Area 10					
	D	Area 5	1,509	3,680	458		
		Area 3					
Option 2 – Moderate cross-subsidy	A	Area 14	218	19,420	350	6,099	1,406
	B	Area 13	1,787	10,859	1,601		
		Area 12					
	C	Area 1	8,609	5,196	3,690		
		Area 6					
		Area 9					
		Area 11					
		Area 2					
		Area 4					
		Area 8					
		Area 7					
		Area 10					
	D	Area 5	1,509	3,684	459		
		Area 3					
Option 3 – High cross-subsidy	A	Area 14	218	19,420	350	4,260	3,245
	B	Area 13	1,787	10,859	1,601		
		Area 12					
	C	Area 1	10,118	2,767	2,309		
		Area 6					
		Area 9					
		Area 11					
		Area 4					
		Area 8					
		Area 7					
		Area 10					
		Area 2					
		Area 5					
		Area 3					

The required annual sewerage bill for Option 2 can be determined using the spreadsheet shown in Table 21.

Example 20 continued:

Table 21 Determining the required annual sewerage bill for Option 2

Weighted average developer charge cross-subsidy	(A)	1,406	$ per ET	(from Table 20)
Annual sewerage bill - no cross-subsidy	(B)	580.0	$ per ET	
Annual sewerage bill - with cross-subsidy	(C)	601.4	$ per ET	
Existing ET as at 2012/13	(D)	39,117	ET	

Year	Total ETs	New ETs per year	Annual cross-subsidy on developer charges ($'000)	PV of annual cross-subsidy on developer charges over 30 years @ 5% ($'000)	Annual bill revenue with no cross-subsidy ($'000)	Annual bill revenue with cross-subsidy ($'000)	Additional amount required from annual bills to cover subsidy ($'000)	PV of additional amount from increased annual bill over 30 years @ 5% ($'000)	Cross-subsidy by existing customers ($'000)	PV of Cross-subsidy by existing customers over 30 years @ 5% ($'000)
	(1)	(2) = $(1)_i - (1)_{i-1}$	(3) = (A)*(2)/1000	(4) = PV of (3)	(5) = (1) x (B)	(6) = (1) x (C)	(7) = (6) - (5)	(8) = PV of (7)	(9) = (C - B)*(D)	(10) = PV of (9)
2012/13	39,117									
2013/14	39,999	882	1,240	17,047	23,199	24,056	857	17,047	838	13,528
2014/15	40,953	954	1,342		23,753	24,630	877		838	
2015/16	43,907	2,954	4,153		25,466	26,407	941		838	
2016/17	44,883	976	1,372		26,032	26,994	962		838	
2017/18	45,858	976	1,372		26,598	27,580	983		838	
2018/19	46,834	976	1,372		27,164	28,167	1,003		838	
2019/20	47,459	625	879		27,526	28,543	1,017		838	
2020/21	48,085	625	879		27,889	28,919	1,030		838	
2021/22	48,710	625	879		28,252	29,296	1,044		838	
2022/23	49,336	625	879		28,615	29,672	1,057		838	
2023/24	49,961	625	879		28,977	30,048	1,070		838	
2024/25	50,470	509	716		29,273	30,354	1,081		838	
2025/26	50,980	509	716		29,568	30,661	1,092		838	
2026/27	51,489	509	716		29,864	30,967	1,103		838	
2027/28	51,999	509	716		30,159	31,273	1,114		838	
2028/29	52,508	509	716		30,455	31,580	1,125		838	
2029/30	52,881	373	525		30,671	31,804	1,133		838	
2030/31	53,254	373	525		30,888	32,029	1,141		838	
2031/32	53,628	373	525		31,104	32,253	1,149		838	
2032/33	54,001	373	525		31,320	32,477	1,157		838	
2033/34	54,374	373	525		31,537	32,702	1,165		838	
2034/35	54,744	370	520		31,752	32,924	1,173		838	
2035/36	55,114	370	520		31,966	33,147	1,181		838	
2036/37	55,484	370	520		32,181	33,369	1,189		838	
2037/38	55,854	370	520		32,395	33,592	1,197		838	
2038/39	56,224	370	520		32,610	33,815	1,205		838	
2039/40	56,594	370	520		32,825	34,037	1,213		838	
2040/41	56,964	370	520		33,039	34,260	1,220		838	
2041/42	57,334	370	520		33,254	34,482	1,228		838	
2042/43	57,704	370	520		33,468	34,705	1,236		838	

For Option 2 the required annual sewerage bill is $601 per ET, which is an increase of 4% in comparison with Option 1. Column 10 of Table 21 also shows that for Option 2, the total cross-subsidy from existing customers is $13.5M.

While Table 21 determines the required increase in the annual bill, the percentage increase in the annual bill (4% in this case) is suitable for estimating the percentage increase in the Typical Residential Bill (TRB).

Example 20 continued:

Table 22 Impact of cross-subsidies on annual sewerage bill

Option	Required annual sewerage bill per ET ($)	Resulting increase in annual sewerage bill (%)
1	$580	Nil
2	$601	4%
3	$629	9%

To communicate the extent of any cross-subsidy with its stakeholders, the LWU should report information along the lines of Table 22 above and Figure 3 below in its DSP and in its communication materials for consultation with stakeholders. In addition, the resulting increase in the Typical Residential Bill (TRB) should be reported on the utility's website, Annual Report and Annual Operational Plan.

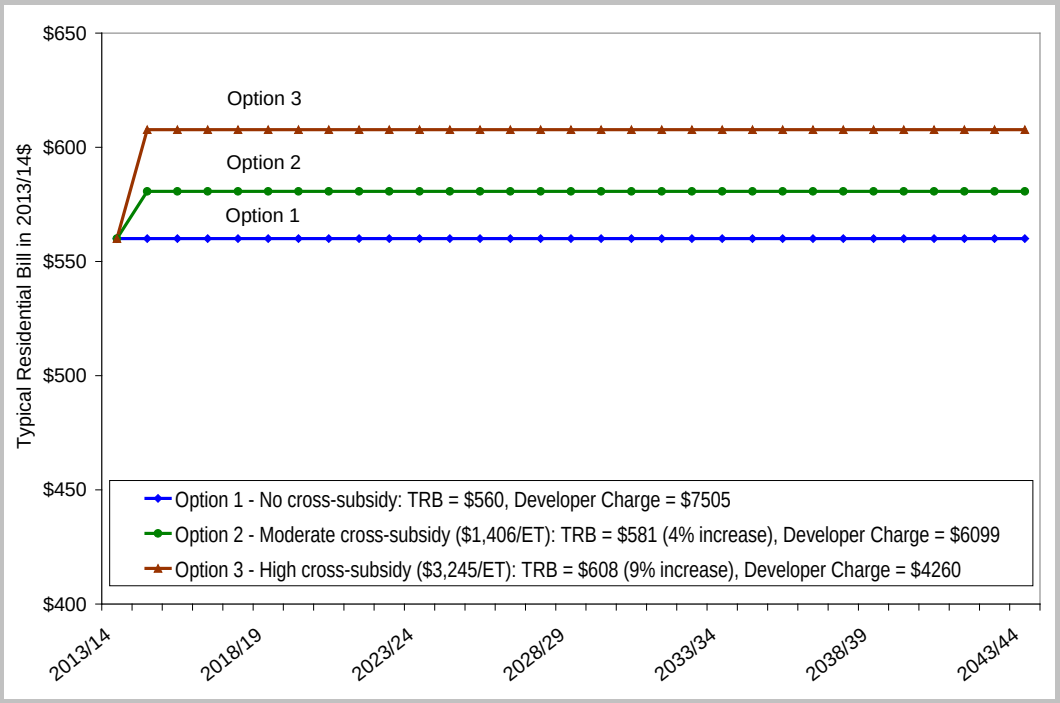

Figure 3 Impact of lower developer charges on TRB

Notes:

1. Option 1 involves a weighted average developer charge of $7,505/ET, with no cross-subsidy.
2. Option 2 involves a weighted average developer charge of $6,099/ET. This involves an average cross-subsidy of $1,406/ET on developer charges, requiring an increase of 4% in each year's Typical Residential Bill (TRB).
3. Option 3 involves a weighted average developer charge of $4,260/ET. This involves an average cross-subsidy of $3,245/ET on developer charges, requiring an increase of 9% in each year's TRB.

Cross-subsidies due to levying lower than the calculated developer charges must be disclosed in accordance with section 2.10 on page 12. Refer also to Items 11F to 11J in the Check List on page 94.

8. Glossary and Abbreviations

Annual Bill	LWU's annual water supply or sewerage bill for an annual demand of 1 ET (page 47).
Asset	An asset (or part of an asset) including land and headworks assets that directly provides, or will provide, the developer services to developments within the DSP area for which the Developer Charge is payable.
ADWF	Average dry weather flow. One of the design parameters for flow in sewers (page 14).
Annual Demand	The total water demand over a year. Used to size headworks components (page 13).
Background Information	Contains all the critical data behind each DSP. This information should be made available electronically to developers on request, eg. on a CD and should include the calculation models in Excel or similar electronic spreadsheet format, so that all components of the model can be investigated.
BOD	Biochemical oxygen demand. Used as a measure of the 'strength' of sewage.
Capital Cost	The Present Value (MEERA basis) of all expenditure on assets used to service the development.
Capital Charge	Capital cost of assets per ET adjusted for commercial return on investment (ROI) (page 21).
CP	Section 94 Contributions Plan.
CPI	Consumer price index.
DPI Water	A division of the NSW Department of Primary Industries
Developer Charge (DC)	Charge levied on developers to recover part of the capital cost incurred in providing infrastructure to new development.
Development Area	See DSP area.
Discount Rate	The rate used to calculate the present value of money arising in the future (page 21).
DSP Document	Development Servicing Plan Document (page 7)
DSP area	That part of a water utility's area covered by a particular Development Servicing Plan (page 6). Also referred to as Development Area.

EP	Equivalent Persons (or equivalent population). Used as a design parameter for loadings of sewage treatment works.
ET	Equivalent tenement. The annual demand a detached residential dwelling will place on the infrastructure in terms of the water consumption or sewage discharge (page 13).
Government Subsidies	Government funds provided towards the capital cost of a project (pages 24 and 64).
GST	Goods and services tax.
Headworks	Significant assets at the top end of the water systems or the bottom end of the wastewater and stormwater system. For example water headworks may comprise a system of storage reservoirs, water treatment works and major supply conduits.
IPART	The NSW Independent Pricing and Regulatory Tribunal.
kL	Kilolitre (1,000 litres).
LGNSW	Local Government NSW
LWU	Local water utility (NSW). Excludes Sydney Water Corporation, Hunter Water Corporation, Central Coast Council, Essential Water and Fish River Water Supply.
MEERA	Modern Engineering Equivalent Replacement Asset. An asset value calculated on the basis that the asset is constructed at the time of valuation in accordance with modern engineering practice and the most economically viable technologies, which provides similar utility functions to the existing asset in service.
ML	Megalitre (1,000,000 litres, or 1,000 kilolitres).
Net Income	Annual bill minus OMA cost per ET.
NOW	NSW Office of Water, replaced by DPI Water since July 2015.
NPV	Net present value means the difference between the Present Value of a revenue stream and the Present Value of a cost stream.
OMA	Operation, maintenance and administration (cost).
Peak Day Demand	The maximum demand in any one day of the year. Used to size water treatment works, service reservoirs, trunk mains and pumping stations in the distribution system.
Operating cost	In relation to a DSP is the operation, maintenance and administration cost (excluding depreciation and interest) of a LWU in providing Customer

	services to a DSP area.
Periodic bills	The periodic bills (generally quarterly) levied by a LWU in accordance with their annual operational plan.
Post-1996 Asset	An asset that was commissioned by a LWU on or after 1 January 1996 or that is yet to be commissioned.
Pre-1996 Asset	An asset that was commissioned by a LWU before 1 January 1996.
PV	Present value. The current value of future money or ETs.
PWWF	Peak wet weather flow. One of the design parameters of flow in sewers.
Real Terms	The value of a variable adjusted for inflation by a CPI adjustment.
Reduction Amount	The amount by which the capital charge is reduced to arrive at the developer charge. This amount reflects the capital contribution that will be paid by the occupier of a development as part of future annual bills.
ROI	Return on investment. Represents the income that is, or could be, generated by investing money.
Service Area	An area serviced by a separate water supply system, an area served by a separate STW, a separate small town or village, or a new development of over 500 lots.
SS	Suspended solids, or the concentration of particles in sewage. Used as a measure of the ‘strength’ of sewage.
STW	Sewage treatment works.
TRB	Typical residential bill, which is the principal indicator of the overall cost of a water supply or sewerage system and is the bill paid by a residential customer using the utility’s average annual residential water supplied per connected property.
WICA	Water Industry Competition Act, 2006.
WICAA	Water Industry Competition Amendment (Review) Act 2014.
WTW	Water treatment works.

9. Excel Files with Example Calculations

The following Excel files are available from DPI Water on request.

1. Calculator NPV Spreadsheet Method.xls	Spreadsheet for the calculation of a capital charge using NPV spreadsheet method.
2. Calculator Reduction Amount.xls	Spreadsheet for the NPV of annual bills method.
3. Calculator – Required Annual Bill for lower developer charges.xls	

The spreadsheets for examples below should also be used as 'calculators' by replacing the present data in these spreadsheets with your LWU's data.

Example 7 to 9.xls	Calculation of the capital charge by NPV spreadsheet method.
Example 10 to 12.xls	Calculation of the capital charge by ROI factor method.
Example 16 to 18.xls	Reduction Amount using the NPV of Annual Bills Method; and Adjustment of reduction amount for differential cost.
Example 20.xls	Developer charges options and cross-subsidy.
Example 21 to 23.xls	Examples from Appendix C explaining the concept of cost recovery and return on investment.

10. References

1. 2013-14 National Performance Framework: urban performance reporting indicators and definitions handbook (available on request from urbanwater.ctw@dpi.nsw.gov.au.
2. *2016 Developer Charges Guidelines for Water Supply, Sewerage and Stormwater, DPI Water, NSW* (available at www.water.nsw.gov.au).
3. *Best-Practice Management of Water Supply and Sewerage Guidelines, NSW Government, 2007 (*available at www.water.nsw.gov.au*).*
4. *NSW Water and Sewerage Strategic Business Planning Guidelines, NSW Office of Water, 2011 (*available at www.water.nsw.gov.au*)*
5. *Water Supply, Sewerage and Trade Waste Pricing Guidelines, Department of Land and Water Conservation, NSW, 2002 (available on request from* urbanwater.ctw@dpi.nsw.gov.au*).*
6. *Wise Water Management – A Demand Management Manual for Local Water Utilities, Water Services Association Australia, 1998 (available on request from* urbanwater.ctw@dpi.nsw.gov.au*).*
7. *2014-15 NSW Water Supply and Sewerage Performance Monitoring Report, DPI Water/Local Government NSW (*available at www.water.nsw.gov.au*).*
8. *2014-15 NSW Water Supply and Sewerage Benchmarking Report, DPI Water/ Local Government NSW (*available at www.water.nsw.gov.au*).*
9. *NSW Water and Sewerage Community Involvement Guidelines – Consultation Draft, October 2012, NSW Office of Water (available on request from* urbanwater.ctw@dpi.nsw.gov.au*).*
10. *NSW Reference Rates Manual for Valuation of Water Supply, Sewerage and Stormwater Assets, 2016, NSW Office of Water (*available at www.water.nsw.gov.au*).*
11. *Liquid Trade Waste Regulation Guidelines, NSW Office of Water, 2009* (available at www.water.nsw.gov.au*).*
12. *Integrated Water Cycle Management Check List, NSW Office of Water, July 2014* (available at www.water.nsw.gov.au)
13. *Strategic Business Planning Check List, , NSW Office of Water, July 2014* (available at www.water.nsw.gov.au)

NOTES

Unless a LWU is eligible for an exemption (Check List Item 1 on page 89), preparation and implementation of a DSP in accordance with these guidelines is essential for meeting the developer charge outcomes required by the *NSW Best-Practice Management of Water Supply and Sewerage Framework* (Figure 1 on page 5).

For further information, assistance and copies of the reference documents, please contact Dilip Dutta, Manager Utility Planning on 02 9842 8499 or dilip.dutta@dpi.nsw.gov.au.

Appendices

A Outline of Legislation

Local Government Act 1993

The power for local government councils to levy developer charges for water supply, sewerage and stormwater derives from section 64 of the *Local Government Act 1993* by means of a cross-reference in that Act to the relevant provisions of the *Water Management Act 2000*.

Section 64 of the Local Government Act states that:

> Division 5 of Part 2 of Chapter 6 of the *Water Management Act 2000* applies to a council exercising functions under this Division in the same way as it applies to a water supply authority exercising functions under that Act.

Environmental Planning and Assessment Act 1979

Prior to the introduction of the *Local Government Act in 1993*, councils used the provisions of section 94 of the *Environmental Planning and Assessment Act 1979* to obtain developer contributions for water supply and sewerage services. As part of the *Local Government (Consequential Provisions) Act 1993*, amendment was made to the *Environmental Planning and Assessment Act* so that section 94 no longer applied for water supply and sewerage services.

However, Councils can levy developer charges for stormwater under either Local Government Act or Water Management Act.

Water Management Act 2000

Section 305 (1) of the *Water Management Act* states that:

> 1. **A person may apply to a water supply authority for a certificate of compliance for development carried out, or proposed to be carried out, within the water supply authority's area.**

Section 306 (2) and (3) of the *Water Management Act* states that:

(2) as a pre-condition to granting a certificate of compliance for development, a water supply authority may, by notice in writing served on the applicant, require the applicant to do either or both of the following:

(a) to pay a specified amount to the Authority by way of contribution towards the cost of such water management works as are specified in the notice, being existing works or projected works, or both,

(b) to construct water management works to serve the development.

(3) In calculating an amount for the purposes of subsection (2) (a):

(a) the value of existing water management works and the estimated cost of projected water management works may be taken into consideration, and

(b) the amount of any government subsidy or similar payment is not to be deducted from the relevant value or cost of the water management works, and

(c) consideration is to be given to any guidelines issued for the time being for the purposes of this section by the Minister.

In 2015, the Minister for Lands and Water became responsible for non-metropolitan NSW town water services. The Minister is responsible for the issue of guidelines for water utilities on the calculation of water supply, sewerage and stormwater developer charges.

Note: Use of moneys raised from developer charges is discussed in section 2.8 on page 10 of the guidelines.

Local Government (Savings and Transitional) Regulation 1993

The Local Government (Savings and Transitional) Regulation 1993 covers the matter of developer contributions which had previously been obtained by councils under the *Environmental Planning and Assessment Act* as follows:

(9) Any monetary contribution held by a council immediately before the commencement of this Regulation, being a contribution arising from a condition:

(a) that was imposed under section 94 of the *Environmental Planning and Assessment Act 1979*; and

(b) that specifies that the contribution is to be applied towards providing specified water or sewerage services or towards providing water or sewerage services generally,

is to be applied towards the construction of works within the meaning of Division 2 of Part 3 of the *Water Supply Authorities Act 1987*, or towards the repayment of money borrowed for the construction of such works, and is not to be applied towards any other purpose.

B IPART Determination No. 9, 2000

INDEPENDENT PRICING AND REGULATORY TRIBUNAL

OF NEW SOUTH WALES

Determination

Under the Independent Pricing and Regulatory Tribunal Act, 1992

DEVELOPER CHARGES

Determination No 9, 2000

Reference 99/175, 99/176, 99/177, 99/178

1 Application of this Determination

1.1 The Services supplied by the Agencies have been declared to be government monopoly services under the IPART Act.

1.2 This Determination is made by the Tribunal under the IPART Act and applies to the Services.

1.3 The Tribunal's reasons for employing a methodology for fixing a maximum price in this Determination, and the principles of that methodology, are set out in Schedule 1.

1.4 Subject to Schedule 2, this Determination replaces all existing determinations for Developer Charges including all guidelines incorporated or referred to in those determinations from the Commencement Date.

1.5 Subject to Schedule 2, the maximum prices that the Agencies can levy for the Services from the Commencement Date are to be calculated in accordance with this Determination.

1.6 This Determination uses a Net Present Value model to calculate Developer Charges. The parameters for the Net Present Value model for each of the Agencies are given in this determination.

2 Information to be included in DSP

Information that must be included in all Development Servicing Plans prepared by Agencies is set out in Schedule 3.

3 Reviews of development servicing plans and developer charges

3.1 Agencies must commence a review of all their existing Development Servicing Plans from the Commencement Date and conclude their review by no later than 30 June 2001. Development Servicing Plans registered with the Tribunal prior to the Commencement Date will continue to apply for all new Developments or stages of Development until such time as a revised Development Servicing Plan is adopted by an Agency.

3.2 Agencies must thereafter:

(a) review their Development Servicing Plans and Developer Charges once, and no more than once, in each five year period from 1 July 2001; and

(b) review their Developer Charges when and to the extent required by a determination of the Tribunal.

3.3 If there is no review of Developer Charges under paragraph 3.2 during any given year, the Developer Charges then prevailing must be multiplied on 1 July in each of such years by the number derived from the application of the following formula.

$$QCPI^{-GST}_{year} = \frac{CPI^{-GST}_{Jun\ year-1} + CPI^{-GST}_{Sep\ year-1} + CPI^{-GST}_{Dec\ year-1} + CPI^{-GST}_{Mar\ year}}{CPI^{-GST}_{Jun\ year-2} + CPI^{-GST}_{Sep\ year-2} + CPI^{-GST}_{Dec\ year-2} + CPI^{-GST}_{Mar\ year-1}}$$

where:

$QCPI_{year}^{-GST}$ means the number derived from the application of the formula.

CPI^{-GST} is as defined and the corresponding subtext (for example Jun year-1) means the quarter indicated (in the example, the June quarter) and for the year corresponding to the year in which the calculation is made less the number of years indicated by the number in the subtext, if any. For example, if the calculation was to be made in the year 2001, year-1 would be the year 2000.

4 Calculation of developer charges using net present value

The calculation that must be used by Agencies to determine the Developer Charges is set out in Schedule 4.

5 Assessment of asset costs

5.1 Identification of relevant assets

(a) The Assets must be assets that:

- were commissioned prior to the Commencement Date;
- were commissioned after the Commencement Date but before a Development commenced; or
- are commissioned, or are to be commissioned, after a Development commences.

(b) An asset (or part of that asset) commissioned prior to 1 January 1970 is taken to be excluded from the definition of “Asset” in this Determination.

(c) In determining which assets are to be included in the definition of “Assets” under this Determination an Agency must demonstrate a nexus between the Development and the assets that will serve the Development.

(d) An Agency must clearly identify Assets in the relevant Development Servicing Plans in accordance with Schedule 3 of this Determination.

(e) The efficient cost of all Assets included in a Development Servicing Plan must be taken from an asset register or other source acceptable to the Tribunal.

5.2 Valuation of assets

The valuation method below must be applied to the assets indicated.

Commissioning Date	Valuation Method
Pre 1996 Asset	MEERA
Post 1996 Asset already commissioned	MEERA
Post 1996 Asset yet to be commissioned	Estimated efficient costs

5.3 Apportionment of assets

If an Asset services a DSP Area ("Single DSP Area") and other DSP Areas ("Other DSP Areas") the value attributable to those Assets that service the Single DSP Area is the value calculated by applying the following formula:

$$\frac{\textit{Expected utilisation of the Assets servicing the Single DSP Area}}{\textit{Total expected utilisation of the Assets for the Single DSP Area and the Other DSP Areas}} \times \textit{Capital charge for the Assets}$$

5.4 Calculation of capital charge

(a) All Assets must be included when calculating Developer Charges with the exception of:

- that Asset (or part of an Asset) that is capable of servicing a DSP Area because capacity has been made available as a result of that Asset no longer servicing the land use function for which it was originally commissioned, or
- an Asset that was funded by a Developer and transferred free of charge to the Agency, or
- that part of an Asset that was commissioned for a reason other than to service growth, such as to accommodate amendments to environmental protection legislation, or
- that part of an Asset that was significantly and unreasonably oversized in respect of system and capacity requirements in light of the relevant demographic statistics available for the DSP Area at the time that part of the Asset was commissioned.

(b) Agencies must calculate a Capital Charge for Pre 1996 Assets as follows:

- estimate the value of the relevant Assets, in accordance with paragraph 5.2 of this Determination, as at 1 January 1996;
- convert the value to Real Terms; and
- the expenditure on those Assets in Real Terms must then be converted by the real Discount Rate set out in Schedule 5 of this Determination, to Present Values, from 1 January 1996 only.

(c) Agencies must calculate a Capital Charge for Post 1996 Assets commissioned on or after 1 January 1996 as follows:

- estimate the value of the relevant Assets in accordance with paragraph 5.2;
- convert the value to Real Terms;
- the expenditure on those Assets in Real Terms must then be converted by the real Discount Rate set out in Schedule 5 of this Determination, to Present Values.

(d) Agencies must calculate a Capital Charge for Post 1996 Assets yet to be commissioned as follows:

- estimate the value of the relevant Assets in accordance with paragraph 5.2;
- convert the value to Real Terms; and
- the expenditure of those Assets in Real Terms must then be converted by the real Discount Rate set out in Schedule 5 of this Determination, to Present Values.

(e) Once an Asset is commissioned it becomes a Post 1996 Asset whereupon Agencies must calculate the Capital Charge for that Asset in accordance with paragraph 5.4(c) at the next review provided for in paragraph 3.2.

(f) When estimating the capital costs of Assets yet to be commissioned, Agencies must examine all available options and choose the option that is the most efficient.

(g) Where:

- an Agency temporarily supplies Services to a Development from an existing Asset, and
- the Agency transfers the supply of Services to the Development from the existing Asset to the new Asset that has just been commissioned,

then only the costs of the new Asset must be included in calculating Developer Charges.

(h) Where a proposed Development influences the timing of an Agency's anticipated expenditure on an Asset ("**anticipated expenditure**"), that anticipated expenditure must be included in the calculation of Developer Charges by:

- estimating the extent to which the proposed Development would bring forward the timing of the anticipated expenditure, as compared with the timing of the anticipated expenditure if that Development did not proceed;
- calculating the difference in the Net Present Value between the anticipated expenditure that may arise due to that change in timing ("calculated cost"); and
- including the calculated cost as a cost to the Development only if that calculated cost exceeds the cost of any comparable existing Assets used by the Development – the cost of the comparable existing Assets not being included in the calculation.

6 Projection of operating costs

1.1 The operating, maintenance and administration costs (excluding depreciation and interest) to Agencies of providing Services to a DSP Area must:

(a) be based on the most efficient and lowest cost means of providing the Services;

(b) assume the continuation of the service standards set out in the Development Servicing Plan; and

(c) reflect costs associated with the specific Services provided.

1.2 System-wide averages must not be used if the costs of providing Services to the DSP Area vary significantly from the system-wide operating, maintenance and administration costs.

7 Projection of operating revenues

7.1 Agencies must project the operating revenues arising from a DSP Area on the basis of the efficient operation of the Assets used to provide services in that DSP Area.

7.2 An Agency's projection of operating revenues arising from DSP Area must be formulated to best meet the needs of its users, including Developers, based on the service standards set out in the relevant Development Servicing Plan.

7.3 Agencies must assume that residential charges are uniform across the Agency Area unless the Tribunal, by determination, has approved differential Periodic Charges.

7.4 Agencies must calculate estimates of future revenues using the relevant periodic charge applied to the consumption of an average customer in the relevant customer class. In calculating this revenue, the Agency must use the periodic price path as determined by the Tribunal from time to time.

8 Parameters including discount rates

The relevant parameters including Discount Rates that must be used by an Agency in calculating Developer Charges are set out in Schedule 5.

9 Period of analysis for operating revenues and costs

Future operating costs and revenues must be projected over a 30 year period from the date of each review of the Developer Charges under paragraph 3.

10 Demographic assumptions

Demand for the Services arises from, in part, population growth and changes in urban density. Forecasts by Agencies of population and densities must have regard to the latest demographic statistics published by the NSW Department of Urban Affairs and Planning for the Agency Area or a comparable area. For local works, the demographic statistics used must be locality specific, that is, at the local government level. For system wide works, such as Headworks, the demographic statistics used must be for the relevant Agency Area.

11 Impacts of charges

Agencies must publish any revised Developer Charge and the previous Developer Charge, or range of Developer Charges, in their Development Servicing Plans.

12 Dispute resolution

A Developer who is dissatisfied with how an Agency has calculated its Developer Charges may have the dispute arbitrated under section 31 of the IPART Act.

13 Definitions and interpretation

13.1 Definitions

Agencies means the Sydney Water Corporation, Hunter Water Corporation, Gosford City Council and the Wyong Shire Council and Agency means any one of those Agencies.

Agency Area means in relation to an Agency that Agency's area of operations or local government area as the case may be.

Assets means those assets that provide, or will provide, the Services to Developments within a DSP Area for which a Developer Charge is payable.

Capital Charge means the Net Present Value of all expenditure on Assets used to service the Development.

Commencement Date means the date that this Determination commences, being the later of:
(a) the date that this determination is published in the NSW Government Gazette under Section 17(1) of the IPART Act; and
(b) 1 October 2000.

CPI means the consumer price index, All Groups index number for the weighted average of eight capital cities as published by the Australian Bureau of Statistics, or if the Australian Bureau of Statistics does not or ceases to publish the index, then CPI will mean an index determined by the Tribunal that is its best estimate of the index.

CPI_r^{-GST} means the CPI exclusive of the net impact of:

(a) the GST; and

(b) changes to any other Commonwealth, State or Territory taxes or charges, consequent upon the introduction of the GST,

as calculated and published by the Australian Bureau of Statistics from time to time. If the Australian Bureau of Statistics does not, or ceases to, calculate and publish it then CPI^{-GST} will mean:

c) an index published by Commonwealth Treasury which is its best estimate of the CPI^{-GST}; or

d) if Commonwealth Treasury does not, or ceases to, publish an index then an index published by the Reserve Bank of Australia which is its best estimate of CPI^{-GST}; or

e) if the Reserve Bank of Australia does not, or ceases to, publish an index, then at the Tribunal's discretion, either:

(A) an index published by a person appointed by the Tribunal which is that person's best estimate of CPI^{-GST}; or

(B) an index published by the Tribunal that is its best estimate of CPI^{-GST}.

Determination means this determination, including all schedules.

Developer means a person that develops land.

Developer Charges means the charges paid by Developers to Agencies for Services supplied by the Agencies to a Development.

Development means a land development proposed and/or established in an Agency Area.

Development Servicing Plan or **DSP** means a document which contains the information that is used to calculate the Developer Charges for Developments in the relevant DSP Area.

DSP Area means that part of the Agency Area covered by a Development Servicing Plan.

Discount Rate means the rate used to calculate the present value of money arising in the future and, in the case of calculating Developer Charges under this Determination, the Discount Rates in Schedule 5.

Equivalent Tenement is a measure of the demand a Development will place on the infrastructure in terms of the water consumption and discharge for an average residential dwelling.

GST means the Goods and Services Tax as defined in A New Tax System *(Goods and Services Tax) Act, 1999*.

Gosford City Council means the Gosford City Council as constituted under the *Local Government Act, 1993* (NSW).

Headworks means significant assets at the end of water, sewerage and drainage systems that provide services to two or more DSP Areas. For example, in Development Servicing Plans adopted by Sydney Water Corporation, water headworks are comprised of a system of dams, major storage reservoirs, water treatment works and major supply conduits.

Hunter Water Corporation means the Hunter Water Corporation as constituted under the *Hunter Water Act, 1991*.

IPART Act means the *Independent Pricing and Regulatory Tribunal Act, 1992*.

Modern Engineering Equivalent Replacement Asset or **MEERA** means an asset value calculated on the basis that the asset is constructed at the time of valuation in accordance with modern engineering practice and the most economically viable technologies, which provides similar utility functions to the existing asset in service.

Net Present Value or **NPV** means the difference between the Present Value of revenue and the Present Value of costs.

Periodic Charges means charges levied by the Agencies in accordance with a determination by the Tribunal on properties for access to or use of water, sewerage and drainage services.

Post 1996 Asset means an Asset that was commissioned by an Agency on or after 1 January 1996 or that is yet to be commissioned.

Pre 1996 Asset means an Asset that was commissioned by an Agency before 1 January 1996.

Present Value is the value now of money in the future. The Present Value can be the present value of a stream of incomes and expenditures. The Present Value is derived from the formula:

$$PV = FV\ (1 + r)^{-n}$$

Where:

PV = present value;

FV = future value;

r = Discount Rate;

n = number of periods to apply Discount Rate.

Real Terms means that the value of a variable has been adjusted for changes in the purchasing power of money by a CPI adjustment.

Services means those services supplied in connection with the provision or upgrading of water supply and sewerage facilities for new developments and, if required, drainage facilities for such developments, such services having been declared to be government monopoly services by the Independent Pricing and Regulatory Tribunal (Water, Sewerage and Drainage Services) Order 1997, 5 February 1997, published in Gazette No. 18 dated 14 February 1997 at page 558.

Sydney Water Corporation means the Sydney Water Corporation as constituted under the *Sydney Water Corporation Act, 1994*.

Tribunal means the Independent Pricing and Regulatory Tribunal of New South Wales established under the IPART Act.

Wyong Shire Council means the Wyong Shire Council as constituted under the *Local Government Act, 1993* (NSW).

Year means a period commencing on 1 July and ending on 30 June in the ensuing calendar year.

13.2 Interpretation

(a) If there is any inconsistency between this Determination of the Tribunal and a previous determination of the Tribunal, this Determination will prevail to the extent of the inconsistency.

(b) In the interpretation of this Determination a construction that would promote the purpose or object underlying the IPART Act (whether or not that purpose or object is expressly stated in the IPART Act) is to be preferred to a construction that would not promote that purpose or object.

(c) A reference to a person includes an individual, a corporation and a body corporate.

(d) Except where expressly indicated or the context requires, the singular includes the plural and vice versa.

Schedule 1 Reasons for, and principles employed in, this Determination (paragraph 1.3)

A. Under the IPART Act the Tribunal may set maximum prices or may determine a methodology for setting maximum prices. In this Determination, the Tribunal has employed a methodology for fixing the maximum prices that Agencies can charge for Services supplied by them.

   The Tribunal has determined a methodology for fixing maximum prices because it would not be possible for the Tribunal to cover the required diversity of Developer Charges by individual price determinations. This is because Developer Charges are levied to recover water infrastructure costs incurred to service a large variety of developments.

   Developers include Developer Charges in their planning and investment decisions and require a rapid response when applying for an assessment of charges. If Agencies had to return to the Tribunal each time they received an application for an assessment of Developer Charges unworkable delays could result as the Tribunal would have to devote considerable time and resources to mechanically calculating such charges. The Tribunal considers it is preferable that this work be completed by the Agencies.

   The Tribunal has stressed that Developer Charges must be calculated by a consistent and transparent methodology, and recover efficient costs. This Determination will ensure Agencies regulated by the Tribunal recover only the efficient costs of the Services. This Determination will be applied in a transparent manner, will be tested by Developers and monitored by the Tribunal.

B. The basic principles underlying the methodology in this Determination are that Developer Charges should:

   - involve full recovery of relevant costs;
   - reflect variations in the costs of servicing different development areas;
   - result in new development areas meeting the costs of the services provided through developer charges and/or annual charges; and
   - cover only infrastructure expenditures on water, sewerage and drainage assets that can be clearly linked to the development.

Schedule 2 Coverage of Determination (Paragraphs 1.4 and 1.5)

B. This Determination applies to all Agencies for all new Developments or stages of Development from the Commencement Date except as follows:

(a) for Sydney Water Corporation, where a compliance certificate has been issued by it pursuant to Section 73 of the *Sydney Water Act, 1994* for a Development or stage of Development.

(b) for Hunter Water Corporation where:

(i) a compliance certificate has been issued by it pursuant to Section 50 of the *Hunter Water Act, 1991* for a Development or stage of Development, or

(ii) Hunter Water Corporation has served a notice pursuant to Section 50 of the *Hunter Water Act, 1991* in respect of a development in which case the assessment stands for the period specified in the notice.

(c) for Gosford City Council where it has given a written "notice of requirements" pursuant to Section 26 of the *Water Supply Authorities Act, 1987* in respect of a Development or stage of Development in which case the assessment stands for the period specified in the notice of requirements.

(d) for Wyong Shire Council where:

(i) a development consent has been issued by Wyong Shire Council pursuant to Section 91 of the *Environmental Planning and Assessment Act, 1979* in respect of a Development or stage of Development and such consent incorporates relevant water and sewerage charges and/or conditions in accordance with Section 27 of the *Water Supply Authorities Act, 1987*; or

(ii) Wyong Shire Council has advised charge and/or conditions to the Developers in accordance with Section 26 of the *Water Supply Authorities Act, 1987*.

C. This Determination applies to the calculation of Developer Charges for all new Developments and re-developments within an existing or new Development Servicing Plan. Agencies are required to review and re-exhibit all existing Development Servicing Plans in accordance with Part B of Schedule 3 by 30 June 2001.

D. In implementing the Determination, Agencies must use a calculation spreadsheet that has been approved by the Tribunal.

Schedule 3 Information to be included in DSP (paragraph 2)

A. Each Agency must develop a Development Servicing Plan that covers each DSP Area. A Development Servicing Plan must provide, as a minimum, the following for each DSP Area:

1. a summary of the contents of the DSP.
2. the extent of the DSP Area including:
   - its size;
   - the basis for defining its boundaries; and
   - reference to other DSPs where there is an overlap or co-usage of Assets.
3. demographic and land use planning information including:
   - the current resident population;
   - the estimated Equivalent Tenements as at 1996;
   - the projected population over the planning horizon of the DSP; and
   - the projected Equivalent Tenements over the planning horizon of the DSP.
4. timing of works including:
   - completed capital works; and
   - proposed capital works.
5. the standards of service to be provided to customers in the DSP Area and design parameters of Assets.
6. the calculated Developer Charge, and the information used to calculate the Developer Charge, including:
   - the future periodic revenues expected to be received from new customers in the DSP Area each year
   - Periodic Charges used for that calculation
   - average water usage figures used for that calculation
   - the future expected annual operating, maintenance and administration costs of providing Services to new customers in the DSP Area in each year; and
   - indexation principles and parameters used for that calculation.
7. a description, or reference to a background document containing the description, of Pre 1996 Assets and Post 1996 Assets including:
   - the date (or forecast date) of the commissioning of the Asset
   - the size/length of the Asset
   - the actual efficient cost of the Asset (where applicable)
   - the unit cost of the Asset (if applicable)
   - the MEERA valuation of the Asset (if applicable)
   - the total Asset capacity in Equivalent Tenements (if applicable); and
   - the details of the Equivalent Tenements served by an Asset in each DSP where such Asset serves more than one DSP.

B. Following preparation of a draft Development Servicing Plan, an Agency must:

1. publicly exhibit the draft Development Servicing Plan at least 30 working days prior to the Agency adopting that Development Servicing Plan ("exhibition period");
2. prepare and make available upon request by interested parties a background document which includes all of the critical data behind the draft Development Servicing Plan, including the models used to calculate the Developer Charges, so that interested parties can assess the draft Development Servicing Plan and make informed written submissions on that draft Development Servicing Plan to the Agency;
3. advertise in a local newspaper with a circulation covering the Agency Area, the start date of the exhibition period, the length of the exhibition period and that written submissions on the draft Development Servicing Plan can be made to the Agency during the exhibition period.
4. at least 10 working days before the start date of the exhibition period, inform the Urban Development Institute of Australia, the Housing Industry Association, any association representing Developers active in the DSP Area and any Developers who had applied for planning approval any time in the 6 months prior to the commencement of the exhibition period.

   "planning approval" in this Schedule means:

   a) a **compliance certificate** issued by Sydney Water Corporation pursuant to section 73 of the *Sydney Water Act, 1994*;

   b) a **compliance certificate** or **notice** issued by Hunter Water Corporation pursuant to section 50 of the *Hunter Water Act, 1991*;

   c) a **notice of requirements** issued by Gosford City Council pursuant to section 26 of the *Water Supply Authorities Act, 1987*; or

   d) a **development consent** issued by Wyong Shire Council pursuant to section 91 of the *Environment Planning and Assessment Act, 1979* where that development consent incorporates relevant water and sewerage charges and conditions in accordance with section 27 of the *Water Supply Authorities Act, 1987*; or

   e) a charge and/or condition as advised by Wyong Shire Council in accordance with section 26 of the *Water Supply Authorities Act, 1987*.

C. In finalising a Development Servicing Plan the Agency must consider all submissions made to it by interested parties on the draft Development Servicing Plan.

D. Once the Agency has adopted the Development Servicing Plan, the Agency must forward the Development Servicing Plan to the Tribunal for registration. At the time of forwarding the DSP, the Agency is to inform the Tribunal of any submissions lodged during the exhibition period and the Agency's responses to the submissions.

Schedule 4 Calculation of developer charges using net present value (paragraph 4)

A. Agencies must show Developer Charges in Development Servicing Plans on a per Equivalent Tenement basis. Agencies may also show Developer Charges on other bases in addition to per Equivalent Tenement.

B. The Net Present Value approach calculates the Developer Charge per Equivalent Tenement as:

- the Net Present Value of the cost of the assets used to service the DSP Area;
- less the Net Present Value of the future net operating profits (or losses) expected to be derived from providing the Services to the DSP Area, and
- divided by the Net Present Value of the number of Equivalent Tenements in the DSP Area.

C. The Developer Charge per Equivalent Tenement is calculated as follows:

$$DC = \frac{K_1}{L_1} + \frac{K_2}{L_2} - \frac{NPV(R_i - C_i)}{L_3} \quad for\ i = years\ 1, \ldots, n$$

Where:

DC – Developer Charges per Equivalent Tenement

K_1 – the Capital Charge for the Pre 1996 Assets which will serve the DSP Area calculated on an NPV basis discounted at rate r1 discounted from 1 January 1996

K_2 – the Capital Charge for the Post 1996 Assets which serve the DSP Area calculated on an NPV basis discounted at rate r2

L_1, L_2, L_3 – the Present Value of the number of Equivalent Tenements in the DSP Area, or to be developed in the DSP Area, calculated at Discount Rate r1, r2, r3 respectively

R_i - the future periodic revenues expected to be received from new customers in the DSP Area in each year (i)

C_i - the future expected annual operating, maintenance and administration costs of providing services to new customers in the DSP Area in each year (i)

r_1 - the Discount Rate to be used in the calculation of the Net Present Value of Pre 1996 assets under Schedule 5

r_2 - the Discount Rate to be used in the calculation of the Net Present Value of Post 1996 assets under Schedule 5

r_3 - the Discount Rate to be used in the calculation of the Net Present Value of expected revenues and costs under Schedule 5

n – is 30 years from the date of review of the Developer Charge as required by this Determination. It is the forecast period for the assessment of expected revenues and costs.

Schedule 5 Parameters including discount rates (Paragraph 5)

The following parameters apply:

1. The parameters for the NPV calculation for the Sydney Water Corporation are:
   a) A three per cent (3%) real Discount Rate for Pre 1996 Assets (r_1).
   b) A seven per cent (7%) real Discount Rate for Post 1996 Assets (r_2).
   c) A seven percent (7%) real Discount Rate for the expected net revenues and costs (r_3).
   d) Consumption of 240 kilolitres per annum for an average residential customer.
   e) A forecast horizon for expected net revenues and costs of 30 years.

2. The parameters for the NPV calculation for the Hunter Water Corporation are:
   a) A three per cent (3%) real Discount Rate for Pre 1996 Assets (r_1).
   b) A seven per cent (7%) real Discount Rate for Post 1996 Assets (r_2).
   c) A seven percent (7%) real Discount Rate for the expected net revenues and costs (r_3).
   d) Consumption of 210 kilolitres per annum for an average residential customer.
   e) A forecast horizon for expected net revenues and costs of 30 years.

3. The parameters for the NPV calculation for Gosford City Council are:
   a) A zero per cent (0%) real Discount Rate for Pre 1996 Assets (r_1).
   b) A seven per cent (7%) real Discount Rate for Post 1996 Assets (r_2).
   c) A seven percent (7%) real discount rate for the expected net revenues and costs (r_3).
   d) Consumption of 207 kilolitres per annum for an average residential customer.
   e) A forecast horizon for expected net revenues and costs of 30 years.

4. The parameters of the NPV calculation for Wyong Shire Council are:
   a) A zero per cent (0%) real Discount Rate for Pre 1996 Assets (r_1).
   b) A seven per cent (7%) real Discount Rate for Post 1996 Assets (r_2).
   c) A seven percent (7%) real discount rate for the expected net revenues and costs (r_3).
   d) Consumption of 205 kilolitres per annum for an average residential customer.
   e) A forecast horizon for expected net revenues and costs of 30 years.
   f) Developer Charges are to be capped at 85% of the charge calculated under the formula in Schedule 4.

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C Fundamentals of Cost Recovery

C1 Cost Recovery

The fundamental principle of the Net Present Value (NPV) approach is that the investment by a water utility in assets for serving a development area is fully recovered from the development. This cost recovery is from the total of up-front charges (ie. developer charges) and that part of annual bills received from the development in excess of operation, maintenance and administration (OMA) costs.

The developer charge is calculated as:

- the present value (PV) of the capital expenditures over time required to service the development area (the "capital charge")

  less

- the PV of the expected net income [annual bills – OMA cost] over time from providing services to the development area (the "reduction amount").

The capital charge is generally calculated on a per equivalent tenement (ET) basis. It is calculated as the amount per ET so that PV of income from capital charges on the ETs in the development area equates to the PV of expenditures over time on assets to service the development. The discount rate for the PV calculation is the required rate of return on the investment.

The approach is similar to a conventional investment analysis shown in the following example:

Example 21: Cost Recovery

A factory makes an investment in a machine of $1M, with a life of 10 years and an output of 100 units per year. It is necessary to calculate the required price at which units should be sold to provide a rate of return of 3% real per annum.

As shown in the table below, a charge of $1,138 per unit for the sale of 100 units would yield an annual revenue of $113,800 over 10 years, and when discounted at 3% pa, this annual revenue would equate the original investment of $1M. That is, a charge of $1,138 per unit provides a rate of return of 3% on the original investment of $1M.

Year	1	2	3	4	5	6	7	8	9	10
Investment ($)	1,000,000									
Output (Units)	100	100	100	100	100	100	100	100	100	100
Charge per unit ($)	1,138	1,138	1,138	1,138	1,138	1,138	1,138	1,138	1,138	1,138
Annual Income ($)	113,816	113,816	113,816	113,816	113,816	113,816	113,816	113,816	113,816	113,816
Present Value Factor @ 3%	1.00	0.97	0.94	0.92	0.89	0.86	0.84	0.81	0.79	0.77
Present Value ($)	113,800	110,500	107,300	104,200	101,100	98,200	95,300	92,500	89,800	87,200
Total Present Value ($)	1,000,000									

Example 21 (Continued):

Another way of considering this cost recovery is that a Return on Investment Factor of 1.138 could be applied to the original investment, so that the charge per unit would be calculated as:

$$\begin{aligned} \textit{Charge per unit} &= \textit{Investment / Capacity} \times \textit{Return on Investment Factor} \\ &= \$1M / 1000 \times 1.138 \\ &= \$1{,}138 \end{aligned}$$

A similar calculation could be carried out for other discount rates (rates of return) eg. 5%.

A simple method of calculating the annual charge per unit is by calculating the PV of the units sold. The annual charge is calculated as the investment divided by the PV of the units.

Year	1	2	3	4	5	6	7	8	9	10
Investment	$1M									
Output (units)	100	100	100	100	100	100	100	100	100	100
PV of Output @ 3% pa	879									

Charge per unit = $1,000,000 / 879 = $1,138

C2 Application to Developer Charges

This approach is directly applicable to the calculation of the capital charge component of a developer charge. The capital cost of the works is the "investment", and the take-up of the ETs served by the capital works is the "output" of the investment, and the capital charges received from the ETs is the "annual income" from the investment.

It is noted that the discount rate (or rate of return) is to be 3% pa for pre-1996 works (ie. works commissioned before 1 January 1996) and 5% for post 1996 works (ie. commissioned from 1 January 1996). Refer to section 4.1 on page 21 of the *2016 Guidelines*.

Example 22: Capital Charge Calculation

Capital works comprising $1M are commissioned at the start of the year 2013/14 to service a development growing at 100 ET per year. The capacity of the proposed works will fully taken up over a 10 year period.

NPV Spreadsheet Method

Year	2013/14	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Capital Works ($'000)	1,000									
PV of Capital Works ($'000)	1,000									
ETs served (ET)	100	100	100	100	100	100	100	100	100	100
PV of ETs @ 5% pa ($)	811									
Capital Charge ($ per ET)	1,230									

Capital Charge = $1,000,000 / 811ET

= $1,230 per ET

Notes:

1. All costs are in dollars of the year for which developer charges are being calculated ie. 2013/14 $ in this case.
2. PV is calculated using a 5% pa discount rate (applicable for post 1996 works).

Return on Investment (ROI) Factor method

Capital Cost = $1M

Capital Cost per ET = $1M/1,000 = $1000 per ET

Return on Investment Factor = 1.23 (5% over 10 years)

Capital Charge = $1000 x 1.23 = $1,230 per ET

Return on Investment Factors

Return on Investment Factors can be calculated for a range of discount rates and take-up periods using the following formula in Microsoft Excel:

Return on Investment Factor (ROI) = –PMT(r, t ,1) x t / (1 + r)

Where:

r = discount rate (%) per annum (eg. 3%)

t = take-up period (years)

For example, for a discount rate of 5% pa and a take-up period of 20 years, the Return on Investment Factor is 1.53 (refer to Table 12 on page 36).

The above formula assumes that the ET take-up is uniform and commences in the same year as commissioning of the asset to which the ET take-up relates. This formula would be applicable for most cases.

However, if the ET take-up commences the year after commissioning of the asset, the Return on Investment formula would be:

Return on Investment Factor (ROI) = – PMT(r, t, 1) x t

Where:

r = discount rate (%) per annum

t = take-up period (years)

C3 Calculation for Non-Uniform ET Take-up

The spreadsheet approach will automatically take into account cases where the take-up of ETs over the take-up period is not uniform. However, a further calculation is necessary when using the Return on Investment Factor approach if the ET take-up is not uniform.

In such cases, it is necessary to calculate the PV of the ETs taken up over the take-up period, and the Return on Investment Factor is then calculated as:

Return on Investment Factor = Total ETs / PV of ETs

Example 23: ROI Factor for Non-Uniform ET Take-up

A development area consists of 190 ET taken up over 10 years. ET take up is at an increasing rate, as shown in the tabulation below.

Year	1	2	3	4	5	6	7	8	9	10
New ETs	10	12	14	16	18	20	22	24	26	28
Total ETs	190									
PV @ 5% pa	147.5									
Return of Investment Factor	1.29									

Return on Investment Factor @ 5% pa = 190 / 147.5
= 1.29

Calculations involving a backlog component in capital works

In some cases capital works may include a backlog component, where existing customers immediately take up some of the system capacity.

If the NPV Method is being used, then the "growth component" of the capital works and the "growth" ETs taken up need to be used in the spreadsheet for calculating the capital charge.

No adjustment is required for the Return on Investment (ROI) Factor Method as the calculation is based on the capital cost per ET.

Using Excel spreadsheet for calculating Net Present Value

Excel is commonly used for spreadsheet calculations, but users need to be aware of some details in regard to the NPV formula used by Excel.

A user can determine the NPV, for a 5% discount rate, of a series of numbers from cells A1 to A10 in Excel using the following formula:

NPV(0.05, A1:A10)

This formula calculates the NPV based on a factor of 0.95 applying to cell A1, 0.91 to A2 etc.

This will not give the correct answer in calculations requiring that a factor 1.00 be applied to cell A1, 0.95 to cell A2 etc.

For such cases, the formula needs to be:

```
NPV(0.05, A2:A10) + A1
```

Another matter which users need to be aware of Excel is that all cells in the required range need to have a number in them. In NPV calculations, Excel will not take a blank cell as being zero but will simply ignore the cell. For cells where there is no amount, "0" needs to be entered into the cell.

For example, Excel will calculate (incorrectly) the PV of the following expenditures, using 5%, as $1,952.

Year	2002/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12
Amount	$1,000					$1,000				

Excel will calculate the PV of the following (correctly) as $1,784.

Year	2002/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12
Amount	$1,000	0	0	0	0	$1,000	0	0	0	0

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D Water Supply and Sewerage Developer Charges Check List

Developer charges have three related functions:

1. they provide a source of funding for infrastructure required for new urban development,
2. they provide signals regarding the cost of urban development and thus encourage less costly forms and areas of development, and
3. are an integral part of the fair pricing[34,35] of water related services.

The main reference for the implementation of Developer Charges is Reference 1 – 2016 Developer Charges Guidelines for Water Supply, Sewerage and Stormwater, DPI Water[+]. The process for preparing a DSP document is shown in Figure 1 on page 88.

This check list has been prepared to assist NSW local water utilities (LWUs) to address the key issues in calculating developer charges and preparing a ***Development Servicing Plan*** (DSP) document[36] for water supply and sewerage. It comprises the main elements of Reference 1 and highlights common errors in developer charges calculations and in the DSP documents.

Each LWU needs to address each item in this Check List and ***obtain an Independent Audit report*** confirming that the draft DSP documents have addressed each item in this Check List (Item 13C on page 95). The utility's ***proposed Independent Auditor must be approved by DPI Water*** (Item 13B on page 95) ***prior to the commissioning of the DSP auditor***. LWUs ***should complete the DSP Auditor Approval Form*** in Appendix F on page 123 of Reference 1.

References used in this Check List are shown on page 97.

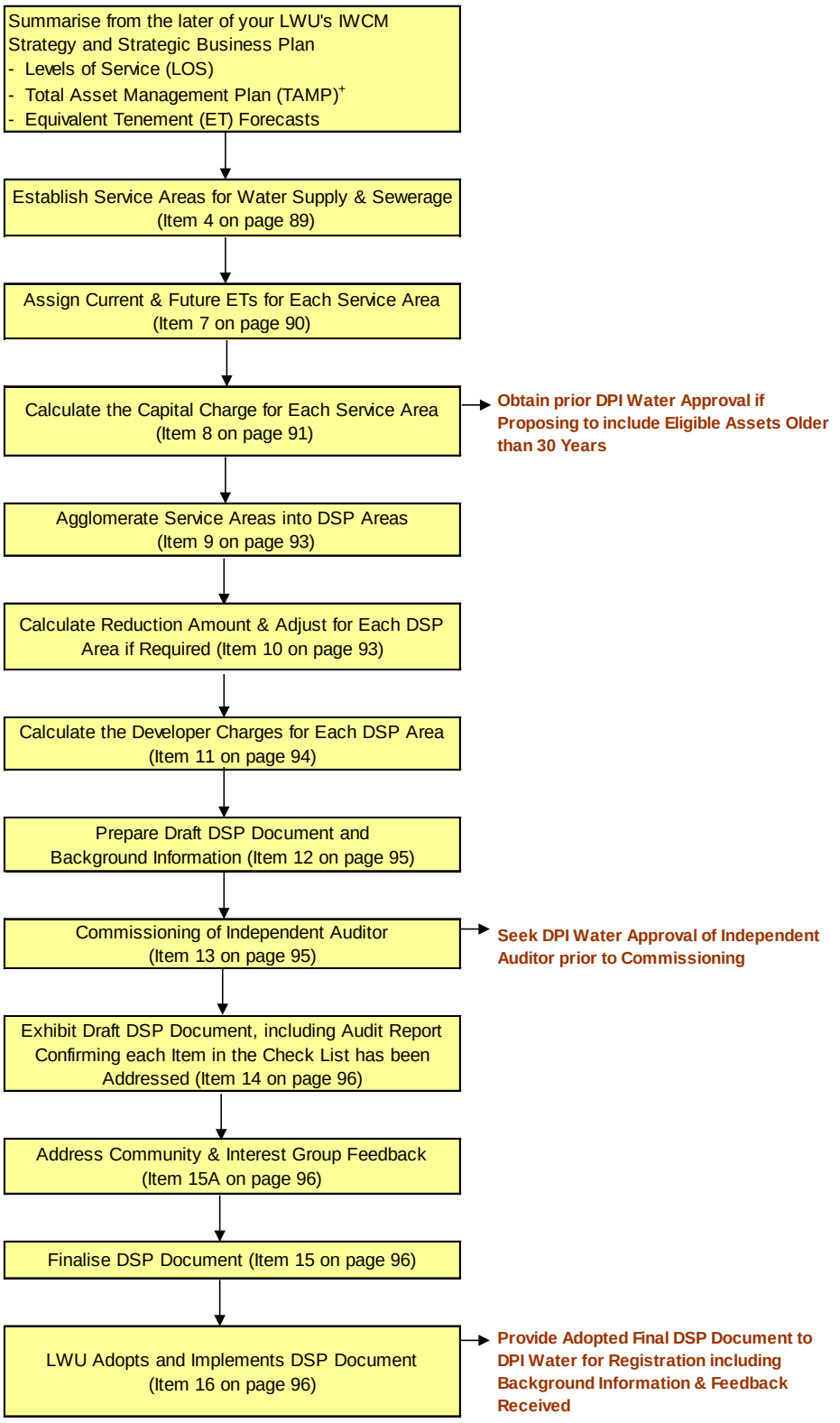
[+] DPI Water is a division of the NSW Department of Primary Industries.

34 Commercial developer charges in accordance with these 2016 Guidelines are 2 of the 19 outcomes required by the NSW Best-Practice Management of Water Supply and Sewerage Framework (on page 5 of Reference 1). Developer charges are also a requirement of the National Water Initiative Pricing Principles, April 2010 (www.nwc.gov.au).

35 Fair pricing provides full cost recovery, a commercial return on efficient costs, and strong, cost-reflective pricing signals to encourage efficient use of the services, and minimise any cross-subsidies.

36 An electronic version of the model DSP document (Appendix E on page 99 of Reference 1) is available from DPI Water website to assist LWUs (www.water.nsw.gov.au).

Figure 1: Process for Preparing a Development Servicing Plan (DSP) Document



+ A LWU's TAMP prepared in accordance with the Check Lists in footnote 16 on page 13 of the 2016 Guidelines, reflects the proposed levels of service and defines the required capital works (for each of growth, improved standards and renewals). The TAMP also shows the LWU's annual operating expenditures, including any cost-effective non-build solutions, as well as its annual maintenance expenditures.

Water Supply and Sewerage Developer Charges - Check List

Topic		Outcome Achieved
1	Requirement for Plan Preparation	☐ Establish whether your LWU is to (Section 2.1.1, page 6): (a) Prepare a DSP document, or (b) Request exemption **Note:** In order to implement the outcomes required by the NSW Best-Practice Management Framework (page 5 of Reference 1), a ***LWU must either*** prepare a ***DSP document with*** commercial developer charges ***or apply to*** DPI Water for exemption. Exemption from the Best-Practice requirement to prepare a DSP document is available only for LWUs with a growth rate of under 5 lots/a. Common error: - Some LWUs with a low growth rate have not prepared a DSP document and have not requested exemption. Such utilities should **request exemption** from DPI Water.
		Once the requirement for the DSP document has been established, prepare the DSP document in accordance with the Model DSP document table of contents (Appendix E, page 99 of Reference 1):
2	Summary	☐ A. Includes statements relating to the legal basis & driver for the DSP document. ☐ B. Includes the DSP areas covered and the levels of service (LOS) and summary of the total asset management plan (TAMP) associated with each DSP area for each service (eg. water supply or sewerage). ☐ C. Includes a summary table showing the proposed developer charges and any cross-subsidy (resulting in an increase in the Typical Residential Bill (TRB)) for each service in each DSP area. ☐ D. Includes a statement that the DSP document will be reviewed after a period of 4 to 8 years in accordance with Reference 1.
3	Introduction / Administration	☐ A. Includes the 5 paragraphs from the Model DSP document (Appendix E, page 103 of Reference 1). ☐ B. Includes the time limit for payment in any developer charges determination or advice provided to developers in accordance with Section 2.5, page 9 of Reference 1. ☐ C. Includes a statement to indicate whether the LWU is a member of the Electricity and Water Ombudsman (EWON) (page 11 of Reference 1).
4	Service Areas	☐ A. Check if service areas within the entire area of operation have been correctly identified[37]. A service area typically comprises the area serviced by a separate water supply system, sewage treatment works, small towns/ villages or a new development area of greater than 500 lots (Section 3.2, page 15 and Section 5, pages 42-46 of Reference 1). ☐ B. Includes the basis for defining the service area boundaries. The basis/reason could be included as a note on each service area map.

37 Refer to the later of your LWU's 30-year IWCM Strategy and SBP, in accordance with page 13 of the 2016 Guidelines. LWUs should remain cognisant of 'demand risk' (Item 5C on page 6 of the Strategic Business Planning Check List, Reference 11).

Water Supply and Sewerage Developer Charges - Check List

Topic		Outcome Achieved
		☐ C. Includes a map or aerial image of the service areas in Appendix E, Section 13, page 117 of Reference 1. Common errors include: - Too many service areas. - Parts of the town are not covered by a service area.
5	Levels of Service (LOS)	☐ A. Includes the key LOS from the later of your LWU's 30-year IWCM strategy and 30-year Strategic Business Plan (SBP)[16]. ☐ B. Community consultation is essential on the proposed levels of service* (LOS) in order to negotiate an appropriate balance between LOS and the resulting Typical Residential Bill (section 12.4 on page 85 of Reference 3). Refer also to Item 4 on page 5 of SBP Check List, Reference 11. - * As noted in section 7.2 on page 35 of Reference 3, LOS refer only to operational levels of service such as aesthetic drinking water quality (e.g. colour – refer to section 12.1 on page 81 of Reference 3), water pressure, response times etc. Regulatory requirements such as complying with your utility's water extraction licence, sewerage system licence and dam safety and workplace health and safety requirements cannot be negotiated down by a water utility. Similarly utilities must meet the health related aspects of the Australian Drinking Water Guidelines 2015 (ADWG) such as microbiological and chemical water quality compliance (refer to section 7.1.1 on page 31 of Reference 3).
6	Design Parameters	☐ A. Includes reference to the adopted 30-year Total Asset Management Plan (TAMP) and financial plan in the later of your LWU's 30-year IWCM strategy and 30-year SBP[16]. ☐ B. Includes reference to specific technical manuals, standards, etc used in the sizing, design & construction of water supply and sewerage system components. These documents provide the minimum requirement guidance for cost estimation.
7	Service Area Equivalent Tenement Projection	For ***each water supply service area*** establish the following: ☐ A. The number of equivalent tenements[38] (ETs) serviced by the existing assets in 1996 and at present. ☐ B. The 30-year projection of equivalent tenements[39] (ETs). For ***each sewerage service area*** establish the following: ☐ C. The number of equivalent tenements[40] (ETs) serviced by the existing assets in 1996 and at present.

38 Refer to pages 13 & 15 of Reference 1. In the absence of a better data set, this could be calculated using the adopted LOS for the average annual volume of water to be supplied for a single residential dwelling. You should also have regard to the average annual residential water supplied per connected property over the last 10 years shown in your utility's latest TBL Performance Report (page 125 of Reference 1).

39 Refer to the later of your LWU's 30-year IWCM Strategy and 30-year SBP, in accordance with page 13 of the 2016 Guidelines for the growth in ET numbers.

40 Refer to pages 14 & 17 of Reference 1. In the absence of a better data set, this could be calculated using the adopted LOS for average dry weather flow for a single residential dwelling.

Water Supply and Sewerage Developer Charges - Check List

Topic		Outcome Achieved
		☐ D. The 30-year projection of equivalent tenements[39] (ETs).
8	Service Area Capital Charge Calculation	***For assets used in the capital charge calculation ensure the capital charge:*** ☐ A. Includes the existing and future assets required to serve a service area (page 22 of Reference 1). Future assets required within 10 years of the commencement of the DSP document must be shown and discussed in your LWU's TAMP[16] in order to be included in the DSP document (page 23 of Reference 1). ☐ B. Includes future assets beyond 10 years provided the LWU has demonstrated a nexus between the relevant future assets and the development, and the LWU has detailed plans for construction of the assets. ☐ C. Includes renewal cost of an asset from your TAMP[16] that is planned within the next 10 years, only if the original asset had been excluded as it is over 30 years old. ☐ D. In the absence of a current TAMP[16], may only include future assets required within 5 years (page 23 of Reference 1). That is the provisions of Items 8A to 8C above apply only if you have a current TAMP[16]. ☐ E. For assets older than 30 years at the commencement of the DSP document is only included if the assets meet the requirements in section 4.3.2 of Reference 1 and ***approval to inclusion of the assets has been provided by DPI Water*** (page 23 of Reference 1). ☐ F. Is based on valuation of existing assets on the basis of Modern Engineering Equivalent Replacement Asset (MEERA) cost (page 25 of Reference 1) and assigned to the correct service area for each water supply & sewerage service. ☐ G. **Excludes** contingencies for existing assets and **includes** contingencies for future assets (page 25 of Reference 1). Note that the capital cost of future assets in the TAMP should include a contingency allowance. ☐ H. Uses the capital cost of future assets in the TAMP assigned to the correct service area for each water supply & sewerage service. ☐ I. Is not reduced for any government grants or a similar payment towards the capital cost (page 23 of Reference 1) from the capital charge calculations. ☐ J. Excludes reticulation assets (page 24 of Reference 1) from the capital charge calculations. ☐ K. For out-of-sequence development, where the full capital cost of the assets has been met by the developer is excluded (page 25 of Reference 1) from the capital charge calculations'. ***For LWUs with number of connected properties less than 2,000 then***: ☐ J. Either the ROI Factor method[41] or NPV Spreadsheet method[42] could be used (Section 4.5, page 26 of Reference 1). ☐ K. Calculate capital charge using one method only.

41 ROI Method calculation spreadsheets are available from DPI Water on request (page 61 of Reference 1).

42 NPV Spreadsheet Method calculation spreadsheets are available from DPI Water on request (page 61 of Reference 1).

Water Supply and Sewerage Developer Charges - Check List

Topic	Outcome Achieved
	Common errors include: - Failure to include all assets e.g. future sewage transport systems. - Failure to include assets beyond 5 years that are clearly serving development (eg. a future water treatment works). Where ROI Factor method[41] is used: ☐ L. Calculate capital cost per ET of existing assets in each service area for each water supply & sewerage service using the MEERA cost and assessed system capacity in ETs. ☐ M. Calculate capital cost per ET of future assets (Items 8A, 8B and 8C on page 91) using capital cost in the TAMP in current dollars, in each service area for each of water supply and sewerage. ☐ O. Ensure the correct discount rates are applied for the pre and post 1996 assets ☐ P. Includes the correct years to full take-up for each system. Provide basis for the chosen year to full take-up. ☐ Q. Calculate separately the capital charge for each water supply service area and sewerage service area and include the values for each service area as per Table 3 in the model DSP document (page 108 of Reference 1). Provide separate tables for the water supply and sewerage service. Common errors include: - Incorrectly assigning effective commissioning year. - Incorrect base year for present value of capital works. ***LWUs with number of connected properties 2,000 or more must use the NPV Spreadsheet method***[42] (Section 4.5, page 26 of Reference 1): ☐ R. Enter on the spreadsheet the MEERA capital cost for the proportion of the assets serving post-1996 growth for each water supply service area and sewerage service area and the post-1996 growth in ETs[43]. ☐ S. Calculate the present value of ETs and the capital cost of assets for each water supply service area and sewerage service area. ☐ T. Ensure the correct discount rate is applied for the pre and post 1996 assets ☐ U. Calculate separately the capital charge for each water supply service area and sewerage service area and include the values for each service area as per Table 3 in the model DSP document (page 108 of Reference 1). Provide a separate table for each service area. Common errors include: - Failure to use 1996 as the effective year of commissioning for pre-1996 assets.

[43] Examples 7, 8 and 9 on pages 28, 29 and 31 of Reference 1 illustrate the implementation of Items 8R and 8S above. Spreadsheets are available from DPI Water on request (page 61 of Reference 1).

Water Supply and Sewerage Developer Charges - Check List

	Topic	Outcome Achieved
9	Agglomeration of Service Areas into DSP Areas	☐ A. Agglomerate service areas where the capital charge is within 30% of the highest capital charge in order to minimise the number of water supply & sewerage DSP areas (page 42 of Reference 1). Provide separate tables for the water supply and sewerage service with details as per Table 4 in the model DSP document (page 108 of Reference 1). ☐ B. For utilities with less than 2000 connected properties, agglomerate additional service areas as per Section 5.2, page 44 of Reference 1. ☐ C. Calculate the weighted average capital charge and the capital charge for each water supply & sewerage DSP area (page 44 of Reference 1). Provide separate tables for the water supply and sewerage service with details as per Table 5 in the model DSP document (page 109 of Reference 1). Common errors include: - Failure to agglomerate service areas in accordance with the guidelines, page 42 of Reference 1.
10	Reduction Amount Calculation	***For LWUs with number of connected properties less than 2,000 then***: ☐ A. Either the Simplified NPV[44] of Annual Bills Method or NPV of Annual Bills Method[45] could be used (Section 6.2, page 50 of Reference 1). ☐ B. Calculate the reduction amount using one method only. Common errors include: - Choosing inappropriate method. - Using more than one method. Where the NPV of Annual Bills Method[44] is used: ☐ C. Ensure accurate values of current annual bill per ET (footnote 29 on page 47 of Reference 1) and the current OMA cost per ET are used to calculate the Reduction Amount. ☐ D. Provide separate tables for the water supply and sewerage service with details as per Table 6 in the model DSP document (page 110 of Reference 1). ☐ E. Check the NPV calculations are correct. ***LWUs with number of connected properties 2,000 or more must use the NPV of Annual Bills method[45]***: ☐ F. Use accurate values of current annual bill per ET and the current OMA cost per ET to calculate the Reduction Amount (page 47 of Reference 1). ☐ G. Base the OMA cost on the most efficient and lowest cost means of providing the service (page 46 of Reference 1).

44 Simplified NPV of Annual Bills Method calculation spreadsheet is available from DPI Water on request. As shown in Example 17 on page 50 of Reference 1, this method greatly overstates the Reduction Amount. It is therefore considered preferable for small LWUs to use the NPV of Annual Bills Method (Footnote 45 below).

45 NPV of Annual Bills Method calculation spreadsheet is available from DPI Water on request (page 61 of Reference 1).

Water Supply and Sewerage Developer Charges - Check List

Topic		Outcome Achieved
		☐ H. Ensure correct value of ETs is used for utility-wide reduction amount calculation. ☐ I. Provide separate tables for the water supply and sewerage service with details as per Table 6 in the model DSP document (page 110 of Reference 1). Utilities with a number of annual water supply or sewerage tariffs should calculate a reduction amount for each tariff area and report the details of analysis as per Table 6 in the model DSP document (page 110 of Reference 1). ☐ J. Check the NPV calculations are correct. ☐ K. Calculate appropriate reduction amount adjustments for differential tariff or OMA cost (page 51 of Reference 1). Common errors include: - Inconsistent data used in the capital charge and reduction amount calculations (eg. growth projections).
11	Developer Charge Calculation	☐ A. Subtract the reduction amount from the capital charge for each water supply & sewerage DSP area to obtain the calculated developer charge for each DSP area (page 52 of Reference 1). LWUs may not levy a higher developer charge than the calculated value for each DSP area (page 52 of Reference 1). ☐ B. Adjust the calculated developer charge for DSP areas with different OMA cost or different tariff (page 51 of Reference 1). ☐ C. Avoid a high level of cross-subsidy and disclose any cross-subsidies in the DSP document and on your LWU's website (pages 12 & 53 of Reference 1). ☐ D. The utility may elect to cap the developer charges for small villages in order to maintain affordability and to avoid 'stranded' assets in such villages. ☐ E. LWUs may also cap developer charges for other areas to maintain affordability, subject to adopting a commercial developer charge which recovers a significant proportion of the capital cost of the infrastructure. ☐ F. Outline the rationale for cross-subsidy if proposed (sections 7.1 & 7.2, pages 52 & 53 of Reference 1). Includes details as per section 7.7 in the model DSP document (page 110 of Reference 1). ☐ G. Where lower developer charges are proposed than the calculated charge then provide details of analysis as per Table 7 in the model DSP document (page 111 of Reference 1). Provide separate tables for the water supply and sewerage service. ☐ H. Also provide details of analysis as per Table 8 in the model DSP document (page 111 of Reference 1) to show the impact of cross-subsidies on TRB. Provide separate tables for the water supply and sewerage service. ☐ I. Include a graphical representation of the TRB based on the calculated developer charge and the developer charges proposed with cross-subsidy as per Figure 1 in the model DSP document (page 112 of Reference 1). Provide separate figures for the water supply and sewerage service. ☐ J. Check if the proposed developer charges convey locational signals by maintaining relativity between the DSP areas (page 52 of Reference 1).

Water Supply and Sewerage Developer Charges - Check List

	Topic	Outcome Achieved
		Common errors include: - Adopting a developer charge that is the weighted average of two or more DSP areas. This leads to some DSP areas being incorrectly charged higher than the calculated maximum developer charge. - Failure to clearly disclose cross-subsidies.
12	Draft DSP Document	**DSP Document Format Options:** ☐ 1. A separate DSP document may be prepared for each DSP area, and for each of water supply and sewerage (page 46 of Reference 1). A LWU may publish its DSP documents as one or more volumes. ☐ 2. Alternatively, a LWU may elect to prepare a single DSP document for each of water supply and sewerage, which is a concise documentation of the required information. If a single DSP document is prepared then the document must clearly identify the capital charge relating to each water supply or sewerage DSP area, the proposed developer charge and the cross-subsidy for each water supply or sewerage DSP area. **DSP Document Contents:** ☐ A. The contents of the DSP document must be in accordance with the guidelines (page 6 of Reference 1) and should use the Model DSP document[36] (Appendix E on page 99 of Reference 1) as the framework. ☐ B. Include all the outcomes from items 2 to 11 on pages 89 to 94 of this Check List. ☐ C. The **Background Information** must contain all the critical data behind each DSP, including calculation models in Excel or similar format (page 7 of Reference 1). The Background Information must be made available to developers on request during and after the public exhibition of the Draft DSP document (Item 14 below). Common errors include: - DSP document lacks clarity and has insufficient information. - A single DSP covers water supply and sewerage. - Failure to make the Background Information available after public exhibition of the Draft DSP document.
13	Commissioning of Independent Auditor	☐ A. The **draft DSP document must** be reviewed by an Independent Auditor before the LWU publicly exhibits the DSP document (page 7 of Reference 1). ☐ B. DPI Water approval is obtained prior to commissioning of proposed DSP Auditor (page 123 of Reference 1). ☐ C. An independent Auditor's Report is obtained confirming that the draft DSP documents have addressed each item in this Check List (page 7 of Reference 1).
14	Exhibition of Draft DSP Document	☐ A. LWU must publicly exhibit the draft DSP document for at least 30 working days and makes it available on its website (page 8 of Reference 1). ☐ B. LWU must inform the industry bodies & developers at least 10 days before the start of the public exhibition of the DSP documents (page 8 of Reference 1).

Water Supply and Sewerage Developer Charges - Check List

Topic		Outcome Achieved
		Common errors include: - Short exhibition period. - Insufficient consideration of submissions received.
15	Final DSP Document	☐ A. Has addressed the submissions and feedback received on the draft DSP documents (page 8 of Reference 1). ☐ B. In addition to the contents outlined in the draft, the final DSP document also includes a summary of the feedback received and how it has been addressed in the final DSP document. ☐ C. Includes recommended developer charges for each DSP area for the water supply and sewerage services.
16	Adopt Final DSP Document	☐ A. LWU resolves to adopt final DSP document (page 8 of Reference 1). ☐ B. Disclose any cross-subsidies in your annual Operational Plan and on your LWU's website (pages 11 & 53 of Reference 1). ☐ C. Provide the adopted final DSP document, auditor's report, background information, submissions received and your LWU's responses to the DPI Water Developer Charges Coordinator for registration (page 8 of Reference 1). ☐ D. DSP document is registered by DPI Water (page 8 of Reference 1). Common errors include: - No reference in annual Operational Plan.

REFERENCES

1. *2016 Developer Charges Guidelines for Water Supply, Sewerage and Stormwater, DPI Water, NSW (available at www.water.nsw.gov.au).*
2. *NSW Reference Rates Manual for Valuation of Water Supply, Sewerage and Stormwater Assets, 2016, NSW Office of Water (available at www.water.nsw.gov.au).*
3. *NSW Water and Sewerage Strategic Business Planning Guidelines, NSW Office of Water , 2011 (*available at www.water.nsw.gov.au*).*
4. *Best-Practice Management of Water Supply and Sewerage Guidelines, NSW Government, 2007 (*available at www.water.nsw.gov.au*).*
5. *Water Supply, Sewerage and Trade Waste Pricing Guidelines, Department of Land and Water Conservation, NSW, 2002 (available on request from urbanwater.ctw@dpi.nsw.gov.au).*
6. *Wise Water Management – A Demand Management Manual for Local Water Utilities, Water Services Association Australia, 1998 (available on request from urbanwater.ctw@dpi.nsw.gov.au).*
7. *2014-15 NSW Water Supply and Sewerage Performance Monitoring Report, DPI Water/Local Government NSW* (available at www.water.nsw.gov.au).
8. *2014-15 NSW Water Supply and Sewerage Benchmarking Report, DPI Water/Local Government NSW (*available at www.water.nsw.gov.au*).*
9. *Liquid Trade Waste Regulation Guidelines, NSW Office of Water, 2009* (available at www.water.nsw.gov.au).
10. *Integrated Water Cycle Management Check List, NSW Office of Water, July 2014* (available at www.water.nsw.gov.au)
11. *Strategic Business Planning Check List, , NSW Office of Water, July 2014* (available at www.water.nsw.gov.au)

NOTES

Unless a LWU is eligible for an exemption (Section 2.1.1 on page 6 of Reference 1), preparation and implementation of a DSP document in accordance with these guidelines is essential for meeting the developer charges outcomes required by the *NSW Best-Practice Management of Water Supply and Sewerage Framework* (Figure 1 on page 5 of Reference 1).

For further information, assistance and copies of the Reference documents, please contact Dilip Dutta, Manager Utility Planning on 02 9842 8499 or dilip.dutta@dpi.nsw.gov.au.

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E Model Development Servicing Plan Document

Table of Contents

Tables

Figures

Summary

This Development Servicing Plan (DSP) covers water supply [and/or sewerage] developer charges in regard to the . . . development areas served by . . . Council.

*[**Note**:*

Comments to assist LWUs or references to the 2016 Developer Charges Guidelines[36] are shown below in italics, red font].

[A DSP can cover either water supply or sewerage. However, water supply and sewerage DSPs can be published as one document provided the required information is included in the DSP for each service].

This DSP document has been prepared in accordance with the 2016 Developer Charges Guidelines for Water Supply, Sewerage and Stormwater[46] issued by the Minister for Lands and Water, pursuant to section 306 (3) of the *Water Management Act, 2000*.

The area covered by each DSP, and the existing and proposed works serving the area are shown on the document in section 13.

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

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

The water supply [and/or sewerage] developer charges for the areas covered by this DSP document have been determined as follows:

Proposed developer charges

	DSP Name	**Developer Charge ($ per ET)**	**Cross-subsidy+: Resulting Increase in the Typical Residential Bill**
Water Supply			. . . .
Sewerage			. . .

+ Omit this column if there is no cross-subsidy ie. the proposed developer charges are the calculated amounts.

Developer charges relating to this DSP document will be reviewed after a period of 4 to 8 years.

In the period between any review, developer charges will be adjusted annually on the basis of the movements in the CPI for Sydney, excluding the impact of GST.

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

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

[46] References to the 2016 Developer Charges Guidelines in this Model Development Servicing Plan refer to "*the guidelines*" and are shown in italics, red font.

1 Introduction

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

A Development Servicing Plan (DSP) details the water supply [and/or sewerage] developer charges to be levied on development areas utilising a water utility's water supply [and/or sewerage] infrastructure.

This DSP document covers water supply [and/or sewerage] developer charges in regard to the . . . development areas served by . . . Council. [Water supply and sewerage developer charges can be documented in a single DSP provided the required information for each service is included in the DSP].

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

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

2 Administration

2.1 DSP Name and Area Covered

DSP Name	Area Covered
	The area covered by this DSP is shown on Plan . . . [showing the water supply area covered by the DSP] and Plan . . . [showing the sewerage service area covered by the DSP].
	The basis for defining the DSP area boundaries is as follows. [*Refer to section 3.2 on page 15 and section 5.1 on page 42 of the guidelines* for considerations in determining DSP areas.]

2.2 Payment of Developer Charges

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

[*Refer to section 2.5 on page 9 of the guidelines*].

3 Demographic and land use planning information

3.1 Growth Projections

Growth projections for population and number of water supply [and/or sewerage] ETs are shown in the table below. These projections are from the present year to . . . , which is Council's current planning horizon.

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

ET calculations are included in section 7.3 [and/or 8.3] of the DSP document.

Table 1 Growth Projections

Year	Population	Number of New ETs	Cumulative Number of ETs
1995/96			
To end of 2015/16			
2016/17			
2017/18			
2018/19			
2019/20			
2020/21			
2021/22			
2022/23			
. . .			
. . .			
. . .			

[Refer to section 3.1 on page 13 of the guidelines and also to Table 5 on page 16 of the guidelines].

3.2 Land Use Information

This DSP document should be read in conjunction with . . . Local Environmental Plan . . . [or similar]. *[Any relevant issues such as, re-zoning and consequent impact on growth should be discussed].*

4 Water Supply (and/or Sewerage) Infrastructure

Water Supply

[Description of existing and proposed water supply systems].

The existing and proposed water supply headworks serving the area covered by this DSP are shown on Plans in section 13.

The existing and proposed water supply distribution works serving the area covered by this DSP document are shown on Plans in section 13.

Sewerage

[Description of existing and proposed sewerage systems].

The existing and proposed sewerage major works serving the area covered by this DSP document are shown on Plans in section 13.

The existing and proposed sewerage non-major works serving the area covered by this DSP document are shown on Plans in section 13.

4.1 Existing Capital Costs

The estimated MEERA capital cost of water supply and/or sewerage existing assets serving the area covered by this DSP document is shown in section 15.

[Refer to section 4.3 on page 21 of the guidelines].

4.2 Future Capital Works Program

The timing and expenditure for water supply and/or sewerage capital works (including backlog works) serving the area covered by this DSP document are shown in section 16.

[Refer to section 4.3 on page 21 of the guidelines].

4.3 Reticulation Works

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

5 Levels of Service

System design and operation are based on providing the following levels of service (LOS). Typical levels of service are outlined below. *[Utilities should tabulate levels of service relevant to their systems].*

Further information on levels of service is available:

- Council water supply and sewerage strategic business plan, which is available on Council's website.
- *NSW Water and Sewerage Strategic Business Planning Guidelines*, NSW Office of Water, July 2011, (available at www.water.nsw.gov.au).

5.1 Water Supply

The key levels of service provided are:

- Average annual water to be supplied for one detached residential dwelling (1 ET) is … kL.
- Treated water to comply with Australian Drinking Water Guidelines, 2015 (ADWG) at least 98% of the annual samples tested.
- Minimum water pressure of 12 metres at the property boundary for at least 90% of properties.
- Water quality complaints less than 10 per 1,000 connected properties per annum.
- Nil unplanned interruptions greater than 6 hours.
- Nil programmed interruptions greater than 12 hours.
- Water restrictions applying for not greater than 10% of the time on average.

5.2 Sewerage

The key levels of service provided are:

- An ET is an ADWF of 200L/EP/d multiplied by the utility's occupancy ratio (persons per house).
- Sewage effluent meeting Environment Protection Authority (EPA) 90 Percentile Licence Limits (BOD, SS, Total N, NH3N, Oil and Grease, Total P, Faecal coliforms).
- All sewer chokes removed and service restored within 8 hours.
- Sewer overflows to the environment less than 20 per 100 km of mains per year.
- No dry weather overflows to the environment.
- Sewage odour complaints less than 1 per 1,000 properties per year.

6 Design Parameters

6.1 Water Supply

Investigation and design of water supply system components is based on the Water Supply Investigation Manual (1986).

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

[List investigation reports and main design reports]

6.2 Sewerage

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

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

[List investigation reports and main design reports]

7 Developer Charges Calculation – Water Supply

7.1 Summary

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

DSP Name	Capital Charge ($ per ET)	Reduction Amount ($ per ET)	Calculated Maximum Developer Charge ($ per ET)	Adopted Developer Charge ($ per ET)
	. . . .	. . . .	. . . .	. . . .
	. . . .	. . . .	. . . .	. . . .

These amounts have been calculated on the basis of the sections 7.2 to 7.8 below.

[If the adopted developer charge is the same as the calculated developer charge, the table can be simplified by combining the final two columns under the heading 'Developer Charge'].

7.2 Service Areas

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

Name of service area	Basis of determining the service area
	[*Refer to section 3.2 on page 15 of the guidelines*]

7.3 Equivalent Tenements (ETs)

As indicated in section 5.1 above, one of the key levels of service (LOS) for Council's water supply is "average residential water to be supplied for a detached residential dwelling (1 ET) per tenement", which is … kL/annum. Council's 20…strategic business plan (available at www……nsw.gov.au) includes this LOS and was derived after careful consideration of the average residential water supplied per connected property over the last 10 years. This volume (…...kL) is the council's average annual residential water to be supplied for a single detached residential dwelling and represents 1ET.

For each service area, the number of ETs to be served has been determined as the estimated annual water to be supplied to the service area divided by the volume for 1 ET.

[Refer to section 3 on page 13 of the guidelines].

ET projections for each service area are shown in Table 2. The ETs in January 1996 are also indicated.

Table 2 ET Projections

Year	Number of ETs				
	Service area 1	Service area 2	Service area 3	Service area 4	Total ETs
January 1996					
2015/16					
2016/17					
2017/18					
2019/20					

ET calculation details for each service area are shown in section 14.

[Refer to section 3.3 on pages 15 and 16 of the guidelines].

7.4 Capital Charge

The capital charge for each service area covered by this DSP document has been calculated using NPV spreadsheet method *[ROI factor method may be used by utilities with under 2000 connected properties].*

Under the NPV spreadsheet method, the capital cost of relevant assets and projected ETs served in a service area are entered into a spreadsheet. These capital costs are only for the share of the asset

capacity used in the service area. The PV of capital cost and the PV of new ETS are calculated, and the capital charge per ET is the PV of the capital cost divided by the PV of the ETs.

Calculation details for PV of ETs and PV of capital costs for each service area are shown in section 17.

[Refer to section 4.5 page 26 of the guidelines].

The summary of the capital charge calculations is shown in Table 3.

Table 3 Summary of Capital Charges

Service Area	PV of New ETs for pre-1996 assets @3%	PV of New ETs for post-1996 assets @5%	PV of capital cost for pre-1996 assets @3%	PV of capital cost for post-1996 assets @5%	Capital charge for pre-1996 assets	Capital charge for post-1996 assets	Capital charge per ET ($)
	(1)	(2)	(3)	(4)	(5)=(3)/(1)	(6)=(4)/(2)	(7)=(5)+(6)
	[Calculation spreadsheets are available from DPI Water, page 61]						

[Refer to Example 7 on page 28 of the guidelines].

7.5 DSP Areas

The table below shows agglomeration of service areas into DSP areas of within 30% of highest capital charge.

[Refer to section 5.1 on page 42 of the guidelines].

Table 4 Agglomeration of service areas

Service area	Capital charge (2016/17$ per ET)	Percentage of highest capital charge DSP Area A	Percentage of highest capital charge DSP Area B	Percentage of highest capital charge DSP Area C

[Refer to Example 14 on page 43 of the guidelnes]

Weighted average capital charge for each DSP area is calculated by weighting by the PV of new ETs in each service area. The calculation is shown in the table below.

Table 5 Weighted average capital charge

DSP area	Service area	Capital charge for each service area ($ per ET)	New ETs in service area (2015/16$)	PV of new ETs in service area	% of PV of new ETs in DSP area	Weighted component of the capital charge for each DSP area ($ per ET)	Weighted capital charge for each DSP area ($ per ET)
A							
B							
C							

Utility-wide weighted average capital charge: $.....

[Refer to Table 18 on page 44 of the guidelines].

7.6 Reduction Amount

Council has adopted the NPV of Annual Bills method to calculate the Reduction Amount. [Select one of the available methods [*refer to section 6.1 on page 47 of the guidelines*] and provide a brief explanation of the method].

[Utilities with a number of annual water supply or sewerage tariffs should calculate a reduction amount for each tariff area].

The reduction amounts have been calculated as follows:

[Refer to section 6.1 on page 47 of the guidelines for NPV of annual bills method and section 6.2 on page 50 of the guidelines for simplified method.]

Table 6 Calculation of the reduction amount

Annual bill at the commencement of the DSP = $.... per ET

OMA cost at the commencement of the DSP = $..... per ET

Net income = Annual bill – OMA cost (as above) = $.....per ET

Year	Total ETs	New ETs	PV of new ETs	Cumulative new ETs	Net income from new ETs ($)	PV of net income from new ETs	Reduction Amount ($ per ET)
	(1)	(2)	(3)	(4)	(5) = (4) x net income per ET	(6)	(7) = (6) / (3)
Current year 2015/16							
2016/17							
2017/18							
2018/19							
2019/20							
……..							
……..							
30th year 2045/46							

Calculation details for reduction amount are shown in section 18.

[Refer to Example 20 on page 56 of the guidelines].

7.7 Cross-Subsidy

Note:

Section 7.7 should be omitted if your LWU proposes to adopt the calculated developer charges.

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

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

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

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

[Develop options for cross-subsidy and outline rationale for cross-subsidy on the basis of sections 7.1 and 7.2 on pages 52 and 53 of the guidelines].

Two [show number of options] options were developed and examined as follows.

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

Option 2 – Adopted cross-subsidy.

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

[Tables 7 and 8 and Figure 1 below should be included for utilities that propose to adopt lower than the calculated developer charge. Refer to Table 20 and Table 22 on pages 55 and 57 of the guidelines].

Table 7 Developer charges options and cross-subsidy

[Refer to Example 20 on page 55 of the guidelines].

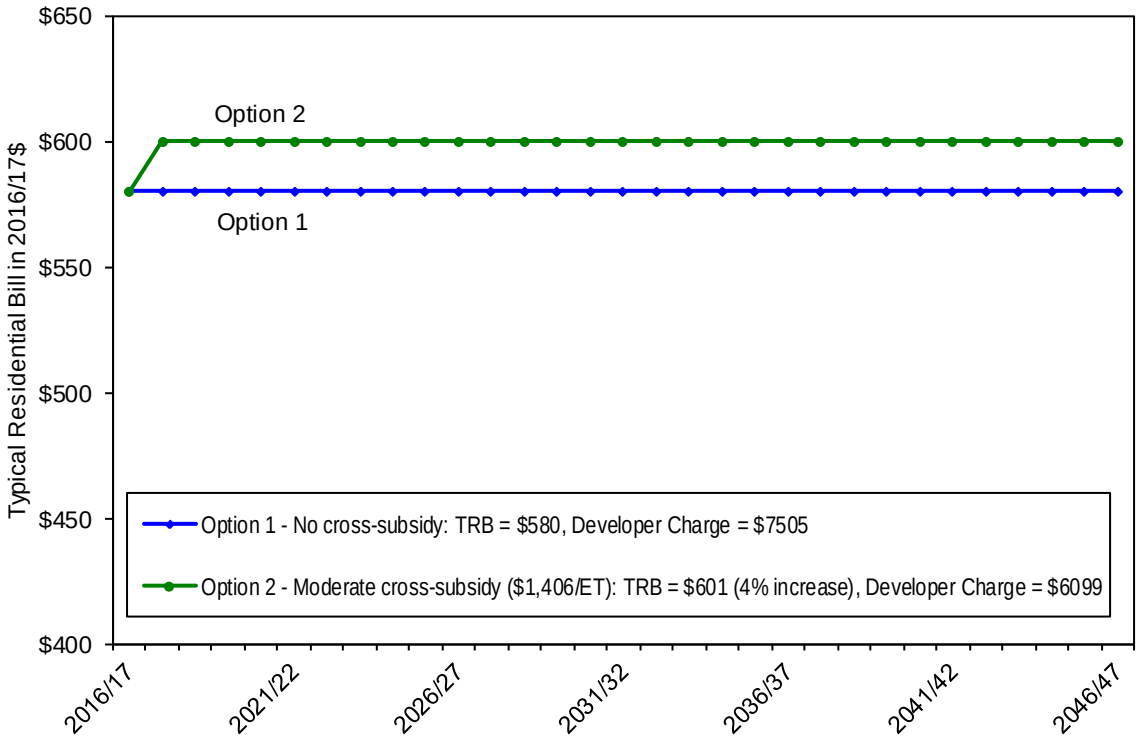
The impact of cross-subsidies on the annual water supply / sewerage bill for each option is shown in Table 8 below.

Table 8 Impact of cross-subsidies on annual bill

Option	Required annual water supply / sewerage bill per ET ($)	Resulting increase in annual water supply / sewerage bill (%)
1 – No Cross-subsidy		
2 – Adopted Cross-subsidy		

[Refer to Example 20 on page 57 of the guidelines].

Figure 1 Impact of Developer Charges options on TRB



Notes:

1. Option 1 involves a weighted average developer charge of $7,505/ET, with no cross-subsidy.
2. Option 2 involves a weighted average developer charge of $6,099/ET. This involves an average cross-subsidy of $1,406/ET on developer charges, requiring an increase of 4% in each year's TRB.

Calculation details for the reduction amount are shown in section 19.

[Refer to section 7.2 on page 53 of the guidelines].

8 Developer Charges Calculation – Sewerage

[Include this section if Council decides to have water supply and sewerage DSPs in one document or indicate if there are separate documents for sewerage DSPs or if Council does not provide sewerage services.]

8.1 Summary

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

DSP Name	Capital Charge ($ per ET)	Reduction Amount ($ per ET)	Calculated Maximum Developer Charge ($ per ET)	Adopted Developer Charge ($ per ET)
	. . . .	. . . .	. . . .	. . . .
	. . . .	. . . .	. . . .	. . . .

These amounts have been calculated on the basis of the sections 8.2 to 8.7 below.

[If the adopted developer charge is the same as the calculated developer charge, the table can be simplified by combining the final two columns under the heading 'Developer Charge'.]

[Sections similar to 7.2 to 7.7 are to be inserted as 8.2 to 8.7 for sewerage.]

9 Reviewing/Updating of Calculated Developer Charges

Developer charges will be adjusted on 1 July each year on the basis of movements in the CPI for Sydney, in the preceding 12 months to December, excluding the impact of GST.

Developer charges will be reviewed by Council after a period of 5 to 6 years.

10 Background information

Background information containing all the critical data including calculation models behind each DSP is available from Council on request (eg. on CD/USB). Contact details….

The background document lists and references all the other studies that have been used as a source, including the utility's strategic business plan, the utility's financial plan and the utility's latest TBL Performance Report [example in Appendix G on page 125].

[The background information must contain detailed calculations for the capital charge and reduction amount, including asset commissioning dates, size/length of assets, MEERA valuation of assets, and financial modelling for calculation of reduction amounts.]

11 Other DSPs and related contribution plans

[List the other DSPs prepared by Council.]

[List related section 94 contribution plans prepared by Council.]

12 Glossary

[Some common terms are provided below]

Annual Bill	LWU's annual water supply or sewerage bill for an annual demand of 1 ET (page 47 of Guidelines).
Asset	An asset (or part of an asset) including land and headworks assets that directly provides, or will provide, the developer services to developments within the DSP area for which the Developer Charge is payable
ADWF	Average dry weather flow. One of the design parameters for flow in sewers (page 14 of Guidelines).
Annual Demand	The total water demand over a year. Used to size headworks components (page 13 of Guidelines).
Background Information	Contains all the critical data behind each DSP. This information should be made available electronically to developers on request, eg. on a CD and should include the calculation models in Excel or similar electronic spreadsheet format, so that all components of the model can be investigated.
BOD	Biochemical oxygen demand. Used as a measure of the 'strength' of sewage.
Capital Cost	The Present Value (MEERA basis) of all expenditure on assets used to service the development.
Capital Charge	Capital cost of assets per ET adjusted for commercial return on investment (ROI) (page 21 of Guidelines).
CP	Section 94 Contributions Plan.
CPI	Consumer price index.
DPI Water	A division of NSW Department of Primary Industries
Developer Charge (DC)	Charge levied on developers to recover part of the capital cost incurred in providing infrastructure to new development.
Development Area	See DSP area.
Discount Rate	The rate used to calculate the present value of money arising in the future (page 21 of Guidelines).
DSP Document	Development Servicing Plan Document (page 7 of Guidelines)

DSP area	That part of a water utility's area covered by a particular Development Servicing Plan. Also referred to as Development Area (page 6 of Guidelines).
EP	Equivalent Persons (or equivalent population). Used as a design parameter for loadings of sewage treatment works.
ET	Equivalent tenement. The annual demand a detached residential dwelling will place on the infrastructure in terms of the water consumption or sewage discharge (page 13 of Guidelines).
Government Subsidies	Government funds provided towards the capital cost of a project (pages 24 and 64 of Guidelines).
GST	Goods and services tax.
Headworks	Significant assets at the top end of the water systems or the bottom end of the wastewater and stormwater system. For example water headworks may comprise a system of storage reservoirs, water treatment works and major supply conduits.
IPART	The NSW Independent Pricing and Regulatory Tribunal.
kL	Kilolitre (1,000 litres).
LGNSW	Local Government NSW.
LWU	Local water utility (NSW). Excludes Sydney Water Corporation, Hunter Water Corporation, Central Coast Council, Essential Water and Fish River Water Supply.
MEERA	Modern Engineering Equivalent Replacement Asset. An asset value calculated on the basis that the asset is constructed at the time of valuation in accordance with modern engineering practice and the most economically viable technologies, which provides similar utility functions to the existing asset in service.
ML	Megalitre (1,000,000 litres, or 1,000 kilolitres).
Net Income	Annual bill minus OMA cost per ET.
NOW	NSW Office of Water, replaced by DPI Water since July 2015.
NPV	Net present value means the difference between the Present Value of a revenue stream and the Present Value of a cost stream.
OMA	Operation, maintenance and administration (cost).

Peak Day Demand	The maximum demand in any one day of the year. Used to size water treatment works, service reservoirs, trunk mains and pumping stations in the distribution system.
Operating cost	In relation to a DSP is the operation, maintenance and administration cost (excluding depreciation and interest) of a LWU in providing Customer services to a DSP area.
Periodic bills	The periodic bills (generally quarterly) levied by a LWU in accordance with their annual operational plan.
Post 1996 Asset	An asset that was commissioned by a LWU on or after 1 January 1996 or that is yet to be commissioned.
Pre-1996 Asset	An asset that was commissioned by a LWU before 1 January 1996.
PV	Present value. The current value of future money or ETs.
PWWF	Peak wet weather flow. One of the design parameters of flow in sewers.
Real Terms	The value of a variable adjusted for inflation by a CPI adjustment.
Reduction Amount	The amount by which the capital charge is reduced to arrive at the developer charge. This amount reflects the capital contribution that will be paid by the occupier of a development as part of future annual bills.
ROI	Return on investment. Represents the income that is, or could be, generated by investing money.
Service Area	An area serviced by a separate water supply system, an area served by a separate STW, a separate small town or village, or a new development of over 500 ETs.
SS	Suspended solids, or the concentration of particles in sewage. Used as a measure of the ‘strength’ of sewage.
STW	Sewage treatment works.
TRB	Typical residential bill, which is the principal indicator of the overall cost of a water supply or sewerage system and is the bill paid by a residential customer using the utility’s average annual residential water supplied per connected property.
WICA	Water Industry Competition Act, 2006
WICAA	Water Industry Competition Amendment (Review) Act, 2014
WTW	Water treatment works.

13 Plans

[Include Plans showing area covered and capital works servicing the area]

14 Calculation of ETs

1. Estimates of water to be supplied

[Include Table or Tables to calculate estimated water to be supplied for each service area].

2. ET projections

[Estimate growth and include Table or Tables showing ET projections for each service area].

[Additional details can also be provided and/or referred to here.]

15 Existing Capital Costs

[Include Table or Tables showing existing assets and their MEERA valuation, capacity in ETs for each service area]

1. Water Supply Headworks serving the Area

2. Water Supply Distribution Works serving the Area

3. Sewerage Major Works serving the Area

4. Sewerage Non-Major Works serving the Area

[Additional details can also be provided and/or referred to here.]

16 Future Capital Works Program

[Include Table or Tables showing new assets and estimated costs, capacity in ETs and timing of works for each service area.]

1. Water Supply Headworks serving the Area

2. Water Supply Distribution Works serving the Area

3. Sewerage Major Works serving the Area

4. Sewerage Non-Major Works serving the Area

[Additional details can also be provided and/or referred to here.]

17 Calculation of the Capital Charge

[Calculation spreadsheets are available from DPI Water]

1. Capital Charge for Water Supply Headworks serving the Area

[Include Table or Tables showing calculations]

2. Capital Charge for Water Supply Distribution Works serving the Area

[Include Table or Tables showing calculations]

3. Capital Charge for Sewerage Major Works serving the Area

[Include Table or Tables showing calculations]

4. Capital Charge for Sewerage Non-Major Works serving the Area

[Include Table or Tables showing calculations]

[Additional details can also be provided and/or referred to here.]

18 Calculation of the Reduction Amount

1. Water Supply

[Include Table or Tables showing any additional calculations]

2. Sewerage

[Include Table or Tables showing any additional calculations]

3. Adjustments for differential operational costs or tariff structures

[Additional details can also be provided and/or referred to here.]

19 Cross-Subsidy Calculations

[Calculation spreadsheets are available from DPI Water]

1. Water Supply

[Include Table or Tables showing calculations]

2. Sewerage

[Include Table or Tables showing calculations]

[Additional details can also be provided and/or referred to here.]

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F NSW DSP Auditor Approval Form

Utility Name:		
Utility's Development Servicing Plan (DSP) Project Manager:	Name:	
	Phone & Mobile:	
	Email:	

Proposed DSP Auditor:	Name:	Phone:
	Email:	Mobile:
Team Leader	Name:	
	Email:	
(Team leader must be a partner or equivalent in the audit firm)		
Team Members: (Please attach brief resumes)		
Upper Limit Fee:		

Does the proposed DSP Auditor have both the necessary technical skills and extensive experience in preparing or analysing DSPs (Yes/No)? **Provide evidence**.	
Has the proposed Auditor undertaken work for the Utility in the past 2 years (Yes/No)?	
If Yes, approximately what percentage of the total work given to Consultants by the Utility has been undertaken by the proposed Auditor (%)?	
Is the proposed Auditor being considered for any current major consultancies (Yes/No)?	
Are any of the team members recent employees of the Utility (Yes/No)?	
Does the proposed Auditor have any interest, obligation or duty which will conflict with the performance of the audit (Yes/No)?	
Does the proposed Auditor have adequate insurance coverage (Yes/No)?	

The following to be completed by DPI Water

DSP Auditor approved by DPI Water	
Name:	Date:

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G Example TBL Performance Report

Coffs Harbour Council 2014-15 Water Supply TBL Report (Page 1)

Coffs Harbour City Council | **TBL Water Supply Performance** | **2014-15**

WATER SUPPLY SYSTEM - Coffs Harbour City Council serves a population of 71,300 (25,060 connected properties). Water is sourced from the Nymboida River (part of the Regional Water Supply which includes Shannon Creek Dam) and also from the Orara River. Water is transferred to Karangi Dam where it is treated and supplied to the Coffs Harbour area which stretches from Sawtell to Corindi. Council has 2 storage dams at Karangi and Woolgoolga (total storage capacity 5,870ML), not including the 30,000ML Shannon Creek Dam. Council has 2 smaller systems providing treated water to Coramba and Nana Glen villages.The water supply network comprises a dissolved air flotation treatment works, a conventional water treatment works and a chlorinator, 18 service reservoirs (88 ML), 7 pumping stations, 43 ML/d delivery capacity into the distribution system, 157 km of transfer and trunk mains and 478 km of reticulation. 95% of water supplied is potable and 5% nonpotable (recycled).

PERFORMANCE - Coffs Harbour City Council achieved 100% implementation of the outcomes required by the NSW BPM Framework. The 2015-16 typical residential bill was $588 which was close to the statewide median of $593 (Indicator 14). The economic real rate of return was similar to the statewide median (indicator 43). The operating cost (OMA) per property was $395 which was close to the statewide median of $400 (Indicator 49). Water quality complaints were negligible compared to the statewide median of 3 (Indicator 25). Compliance was achieved for microbiological water quality (100% of the population, 3 of 3 zones compliant), chemical water quality and physical water quality. There were no failures of the chlorination system or the treatment system. Coffs Harbour City Council reported no water supply public health incidents. Current replacement cost of system assets was $423M ($15,900 per assessment). Cash and investments were $29.4M, debt was $77M and revenue was $22M (excluding capital works grants).

IMPLEMENTATION OF OUTCOMES REQUIRED BY THE NSW BEST-PRACTICE MANAGEMENT (BPM) FRAMEWORK

(1) Complete Current Strategic Business Plan & Financial Plan	**YES** [12]	**(3) Sound water conservation implemented**	**YES**
(2) (2a) Pricing - Full Cost Recovery, without significant cross subsidies	Yes	**(4) Sound drought management implemented**	**YES**
(2b,2c) Pricing - Appropriate Residential Charges	Yes	**(5) Complete performance reporting (by 15 September)**	**YES**
(2d) Pricing - Appropriate Non-residential Charges	Yes	**(6) Integrated water cycle management strategy**	**YESC**
(2e) Pricing - DSP with Commercial Developer Charges	Yes	**IMPLEMENTATION OF ALL OUTCOMES**	**100%**

TRIPLE BOTTOM LINE (TBL) PERFORMANCE INDICATORS

	NWI	No.				LWU RESULT	RANKING >10,000 properties Note 1	RANKING All LWUs Note 2	MEDIANS Statewide Note 3	MEDIANS National Note 4
	C1	1	**Population served:**	71300						
	C4	2	**Number of connected properties:**	25060	Number of assessments: 26660	Col 1	Col 2	Col 3	Col 4	Col 5
UTILITY / CHARACTERISTICS		3	**Residential connected properties** (% of total)		%	94			92	
		4	**New residences connected to water supply** (%)		%	1.6	2	1	1.1	
	A3	5	**Properties served per kilometre of water main**		Prop/km	40			31	34
		6	**Rainfall** (% of median annual rainfall)		%	145	1	1	116	
	W11	7	**Total urban water supplied at master meters** (ML)		ML	6,100			7,000	9,060
		8	**Peak week to average consumption** (%)		%	120	1	1	141	
		9	**Renewals expenditure** (% of current replacement cost of system assets)		%	0.0	5	5	0.4	
		10	**Employees per 1000 properties**		per 1,000 prop	1.9	4	3	1.4	
SOCIAL / CHARGES & BILLS	P1		**Residential tariff structure for 2015-16:**	inclining block; independent of land value; access charge $143						
	P1.3	12a	**Residential water usage charge for 2014-15 for usage <365 kL (c/kL)**		c/kL (2014-15)	263	2	1	213	185
		12	**Residential water usage charge for 2015-16 for usage <365 kL (c/kL)**		c/kL (2015-16)	267	2	1	226	
	P3	14a	**Typical residential bill for 2014-15** ($/assessment)		$ (2014-15)	582	4	2	566	589
		14	**Typical residential bill for 2015-16** ($/assessment)		$ (2015-16)	588	3	2	593	
		15	**Typical developer charge for 2015-16** ($/equivalent tenement)		$ (2015-16)	10,100	1	1	5,900	
	F4	16	**Residential revenue from usage charges** (% of residential bills)		%	76	1	1	72	66
	F5	17	**Revenue per property** - water ($/property)		$/prop	880	3	3	827	881
SOCIAL / HEALTH		18	**Water Supply Coverage** (% of Urban Population with reticulated WS)		% of population	99.5	3	2	99.5	
		18a	**Risk based Drinking Water Management System (DWMS)?**		Yes/No	Yes				
		19	**Physical compliance achieved? Note 10**		Yes/No	Yes	1	1		
		19a	**Chemical compliance achieved? Note10**		Yes/No	Yes	1	1		
	H4	19b	**% population with chemical compliance**		% of population	100	1	1	100	
		20	**Microbiological (E. coli) compliance achieved? Note 10**		Yes/No	Yes	1	1		
	H3	20a	**% population with microbiological compliance**		% of population	100	1	1	100	100
SOCIAL / SERVICE LEVELS	C9	25	**Water quality complaints per 1000 properties**		per 1,000 prop	0	1	1	3	2
	C10	26	**Water service complaints per 1000 properties**		per 1,000 prop	0.1	1	1	6	0
	C17	27	**Incidence of unplanned interruptions per 1000 properties**		per 1,000 prop	11	2	2	24	91
	C15	28	**Average duration of interruption** (min)		min	120	1	2	133	117
	A8	30	**Number of water main breaks per 100 km of water main**		per 100km	3	1	1	9	13
		31	**Drought water restrictions** (% of time)		% of time	0	1	1	0	
		32	**Total days lost** (%)		%	3.2	3	4	2.9	
ENVIRONMENTAL / NATURAL RESOURCE MANAGEMENT	W12	33	**Average annual residential water supplied - STATEWIDE** (kL/property)		kL/prop	167	3	2	166	181
		33a	**Average annual residential water supplied - COASTAL LWUs** (kL/property)		kL/prop	167	4	4	150	
		33b	**Average annual residential water supplied - INLAND LWUs** (kL/property)		kL/prop				225	
	A10	34	**Real losses** (leakage) (L/service connection/day)		L/connection/day	50	2	2	60	76
		35	**Energy consumption per Megalitre** (kiloWatt hours)		kWh/ML	489	2	3	700	
		36	**Renewable energy consumption** (% of total energy consumption)		%				0	
	E12	36a	**Net greenhouse gas emissions - WS & Sge** (net tonnes CO2 equivalents per 1000 properties)		t CO2	490	5	5	410	393
ECONOMIC / FINANCE		42	**Current replacement cost per assessment** ($)		$/assessment	15,900	3	3	16,400	
	F17	43	**Economic real rate of return** - Water (%)		%	2.0	1	2	1.6	1.9
		44	**Return on assets** - Water (%)		%	0.6	4	4	1.0	
	F22	45	**Net Debt to equity** - WS & Sge (%)		%	13	1	1	-1	11
	F23	46	**Interest cover** - WS & Sge			1	3	3	4	2
		47	**Loan payment per property** - Water ($)		$/prop	454	1	1	69	
	F24	47b	**Net profit after tax** - WS & Sge ($'000)		$'000	-3,270	5	5	2340	7120
ECONOMIC / EFFICIENCY		48	**Operating cost (OMA) per 100km of main** ($'000)		$'000	1,580	4	4	1,320	
	F11	49	**Operating cost (OMA) per property ($/prop) Note 8**		$/prop	395	2	1	400	455
		50	**Operating cost (OMA) per kilolitre** (cents)		c/kL	161	4	4	129	
		51	**Management cost** ($/prop)		$/prop	153	4	3	141	
		52	**Treatment cost** ($/prop)		$/prop	76	4	2	58	
		53	**Pumping cost** ($/prop)		$/prop	13	2	1	31	
		54	**Energy cost** ($/prop)		$/prop	9	2	1	18	
		55	**Water main cost** ($/prop)		$/prop	93	4	4	74	
	F28	56	**Capital Expenditure** ($/prop)		$/prop	53	5	4	155	163

NOTES :

1 Col 2 rankings are on a % of LWUs basis - best reveals performance compared to similar sized LWUs (ie. Col 1 is compared with LWUs with >10,000 properties).

2 Col 3 rankings are on a % of LWUs basis - best reveals performance compared to all LWUs (ie. Col 1 is compared with all LWUs).

3 Col 4 (Statewide Median) is on a % of connected properties basis- best reveals statewide performance (gives due weight to larger LWUs & reduces effect of smaller LWUs).

4 Col 5 (National Median) is the median value for the 76 utilities reporting water supply performance in the National Performance Report 2014-15 (www.bom.gov.au).

5 LWUs are required to annually review key projections & actions in the later of their IWCM Strategy and financial plan and their Strategic Business Plan and to annually 'roll forward', review and update their 30-year total asset management plan (TAMP) and 30-year financial plan.

6 2015-16 Non-residential Tariff: Access Charge based on Meter Size: 40mm $572, Two Part Tariff; Usage Charge 267c/kL.

7 Non-residential water supplied was 25% of potable water supplied excluding non-revenue water.
Non-residential revenue was 24% of annual rates and charges, indicating fair pricing of services between the residential and non-residential sectors.

8 The operating cost (OMA) per property was $395. Components were: management ($153), operation ($108), maintenance ($104), energy ($9) & chemical ($17).

9 Rehabilitations included 0.3% of water mains, 0.14% of service connections and 5.8% of water meters. Renewals expenditure was $12,000/100km of main.

10 Compliance with ADWG 2011 for drinking water quality is shown as "Yes" if compliance has been achieved (indicators 19, 19a & 20).

11 Coffs Harbour City Council has 3 fully qualified water treatment operators who meet the requirements of the National Certification Framework.

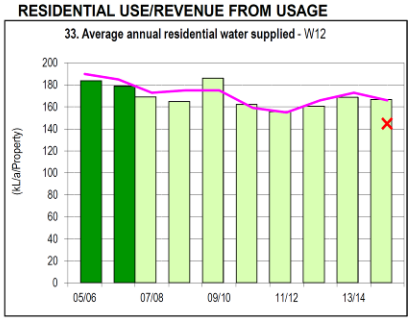
12 As Council's IWCM Strategy is over 6 years old, it will need to prepare a new 30-year IWCM Strategy, financial plan and report in accordance with the July 2014 IWCM Check List (www.water.nsw.gov.au).

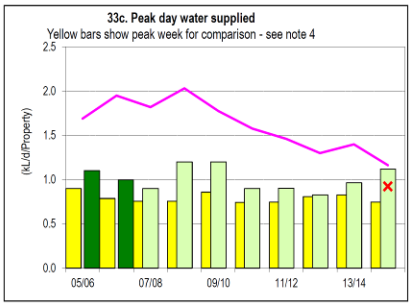
Coffs Harbour Council 2014-15 Water Supply TBL Report (Page 2)

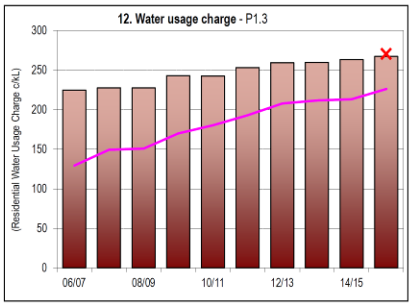
Coffs Harbour City Council | **TBL Water Supply Performance (page 2)** | **2014-15**

(Results shown for 10 years together with Statewide Median and 2014-15 Top 20%)

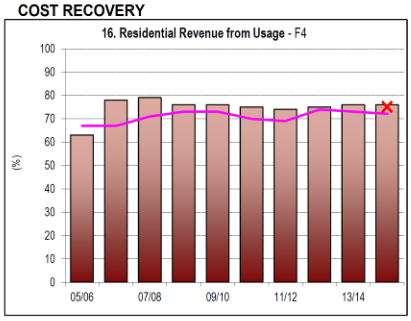
RESIDENTIAL USE/REVENUE FROM USAGE

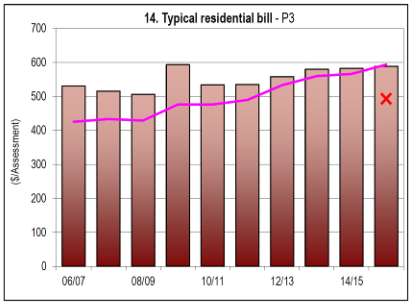


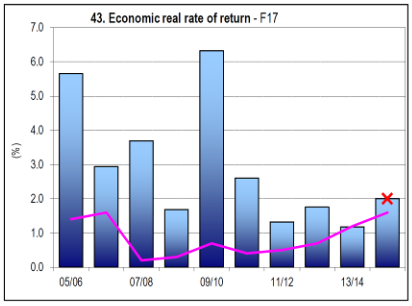




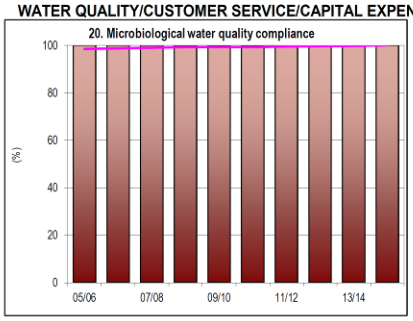
COST RECOVERY

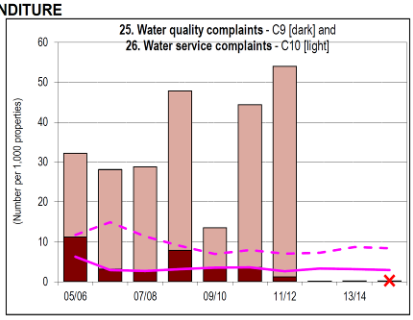


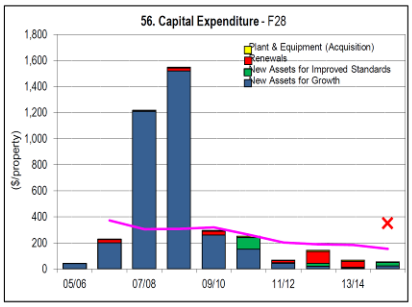




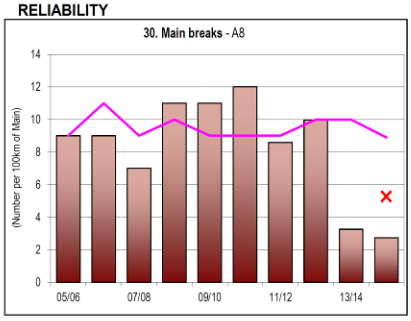
WATER QUALITY/CUSTOMER SERVICE/CAPITAL EXPENDITURE

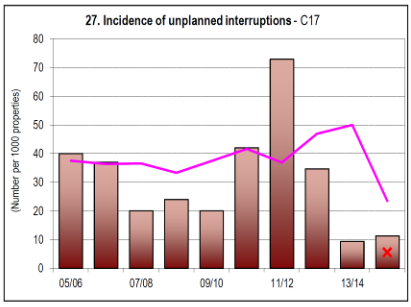


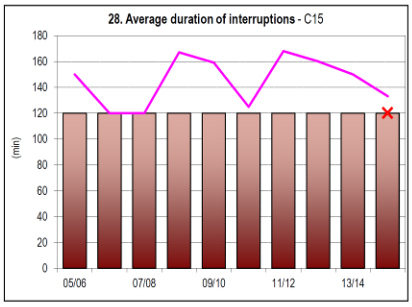




RELIABILITY







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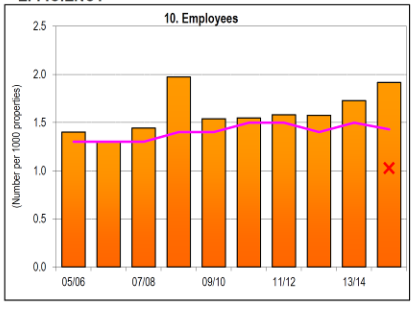

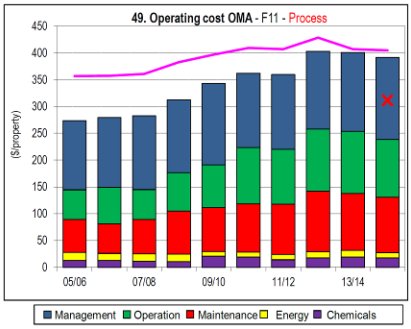

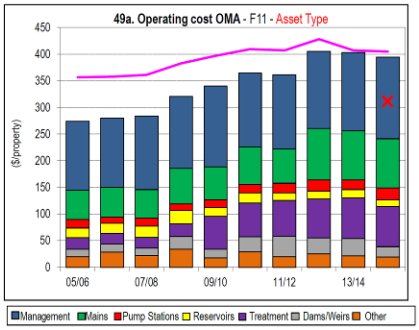

NOTES:

1. Costs are in Jan 2015$ except for graphs 12 and 14, which are in Jan 2016$.
2. Microbiological water quality compliance 1999-00 to 2003-04 was on the basis of 1996 NHMRC/ARMCANZ Australian Drinking Water Guidelines for E. coli; from 2004-05 to 2010-11 compliance was on the basis of the 2004 NHMRC/NRMMC Australian Drinking Water Guidelines (ADWG) and for 2011-12 to 2014-15 compliance was on the basis of the 2011 ADWG.
3. Indicators 33 and 33c - Green shading of bars shows % of time Drought Water Restrictions applied in each year: 0 - 30% | 30-50% | >50% of time
4. Indicator 33c - Yellow bars show Peak Week Water Supplied for comparison with Peak Day Water Supplied shown in green.

LEGEND
State Median for all years
Top 20% for 2014-15

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