Singleton Shire Council

Water Supply

Developer Charges Calculation

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Contents

Summary

Singleton Shire Council operates one major water supply scheme and one village scheme. This report calculates the developer charges for assets servicing lots in and nearby to Singleton town itself and the Jerrys Plains Scheme.

<u>Methodology</u>

The methodology used was developed to align with the latest guidelines from the Department of Energy, Utilities and Sustainability (DEUS) (Guidelines, Developer Charges for Water Supply, Sewerage and Stormwater, February 2003). The <u>NPV of Annual Charges Method</u> was used and this is based on the following general equation, as recommended by the Independent Pricing and Regulatory Tribunal (IPART)[1].

Developer charge = Capital charge – Reduction amount.

The **capital charge** is the cost of beneficial assets plus a return on investment, which reflects the cost incurred by Council by providing the assets ahead of development.

The ***reduction amount*** is the present value of those capital works costs included in future annual charges which may be deemed to be already included in the total capital charge.

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[1] Developer Charges in NSW Water Industry, September 1994.

<u>Results</u>

Singleton Shire Water Supply Schemes

Agglomeration has grouped locations into "DSP areas." Note that agglomeration is based on descending order of Capital Charge and that Council may further agglomerate, in a number of ways, the various derived DSP areas, except for Broke and Jerrys Plains. However Council may still choose to transparently cross-subsidise Broke and Jerrys Plains to some extent.

All the charges are per equivalent tenement (ET).

Charges are calculated for 2003/04 and should be indexed to reflect inflation. This may be considered appropriate for the next 5 years based on current plans.

Location	Capital Charge / ET	Reduction / ET	Developer Charge / ET ($03/04)
Retreat Estate	$14,612	$0	$14,612
Pinnacle Estate	$6,086	$0	$6,086
Singleton Heights Upper	$5,598	$0	$5,598
Singleton Heights Middle	$5,292	$0	$5,292
Maison Dieu	$9,973	$0	$9,973
Gowrie Gates	$5,225	$0	$5,225
Hunterview Estate	$6,357	$0	$6,357
SingletonTown (Lower Zone; old part of Town)	$5,905	$0	$5,905
Gresford Road	$14,705	$0	$14,705
Bridgeman Ridge	$5,364	$0	$5,364
Mt Thorley	$16,130	$0	$16,130
Broke	$36,695	$0	$36,695
Bulga	$16,130	$0	$16,130
Camberwell	$4,815	$0	$4,815
Jerry's Plains (a separate system to Singleton)	$24,727	$0	$24,727
Weighted Average	$7,512	$0	$7,512

Agglomerated basis - 70% grouping and "additional agglomeration" of Maison Dieu

Location	Capital Charge / ET pre-agglomeration	Capital Charge / ET agglomerated	Reduction / ET	Developer Charge / ET ($03/04)
Broke	$36,695	$36,695	$0	$36,695
Jerry's Plains (a separate system to Singleton)	$24,727	$24,727	$0	$24,727
Bulga	$16,130	$13,630	$0	$13,630
Mt Thorley	$16,130	$13,630	$0	$13,630
Retreat Estate	$14,612	$13,630	$0	$13,630
Gresford Road	$14,705	$13,630	$0	$13,630
Maison Dieu	$9,973	$13,630	$0	$13,630
Hunterview Estate	$6,357	$5,654	$0	$5,654
SingletonTown (Lower Zone; old part of Town)	$5,905	$5,654	$0	$5,654
Pinnacle Estate	$6,086	$5,654	$0	$5,654
Singleton Heights Upper	$5,598	$5,654	$0	$5,654
Singleton Heights Middle	$5,292	$5,654	$0	$5,654
Bridgeman Ridge	$5,364	$5,654	$0	$5,654
Gowrie Gates	$5,225	$5,654	$0	$5,654
Camberwell	$4,815	$5,654	$0	$5,654
Weighted Average	$7,512	$7,512	$0	$7,512

Introduction – Developer Charges and Pricing

The Independent Pricing and Regulatory Tribunal, (IPART), and Department of Energy, Utilities and Sustainability (DEUS) have been instrumental in changing pricing policy across NSW in recent years. Annual charges are structured to match the long term price path, reflecting a user pays approach. This sends signals to customers to conserve water as a resource. This applies to both residential and non-residential customers. Overall charges are reduced by contributions received from developers. This report deals with those contributions as they pertain to a standard or equivalent tenement (ET).

Singleton Shire Future Development

In recent years, significant growth has occured to the north, east and north-east of the existing developed areas. There are a number of new development areas for which settlement is expected in the near future.

Water is supplied from Glennie's Creek Dam, north of the town of Singleton. The dam has a total capacity of 286,000 ML.

The scheme consists of approximately 145km of pipeline, a chlorination system at the dam, a Powdered Activated Carbon (PAC) dosing system to control algae (as required), a direct filtration water treatment plant (with a capacity of 30ML/day), three additional re-chlorination points at the extremities of the system, five pumping stations and seven reservoirs (plus an additional reservoir for the private supply of water to the Army base).

The scheme supplies water to five pressure zones in Singleton town and others including Mount Thorley, etc.

Plans of the various water developer charge zones are in Appendix F.

Growth Projections

The projections used for this analysis were provided by Council, and are in Appendix G

Capital Charge

The capital charge for any area is the value of the investment made by Council on behalf of each equivalent tenancy.

There are a number of scheme assets which benefit more than one developer charge zone; the calculation spreadsheets reflect this accordingly.

Typically capital charges were calculated for existing contributing works and any growth related new works that are planned to start generally in the next five years; or integral to such works, though with later than five-years' construction time. Capital works further in advance as this can be included in the next review when it is confirmed that these works will indeed proceed.

Methodology is described in more detail in appendix C

In line with the Department of Energy, Utilities and Sustainability (DEUS) and Independent Pricing and Regulatory Tribunal (IPART) recommendations a 7% discount rate has been used for future works and 3% has been used for existing assets, as of September 1996.

WATER - The capital charge calculated for each scheme is:

Location	Capital Charge / ET
Retreat Estate	$14,612
Pinnacle Estate	$6,086
Singleton Heights Upper	$5,598
Singleton Heights Middle	$5,292
Maison Dieu	$9,973
Gowrie Gates	$5,225
Hunterview Estate	$6,357
SingletonTown (Lower Zone; old part of Town)	$5,905
Gresford Road	$14,705
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Jerry's Plains (a separate system to Singleton)	$24,727
Weighted Average	$7,512

Agglomerated basis - 70% grouping and "additional agglomeration" of Maison Dieu

Location	Capital Charge / ET pre-agglomeration	Capital Charge / ET agglomerated
Broke	$36,695	$36,695
Jerry's Plains (a separate system to Singleton)	$24,727	$24,727
Bulga	$16,130	$13,630
Mt Thorley	$16,130	$13,630
Retreat Estate	$14,612	$13,630
Gresford Road	$14,705	$13,630
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Bridgeman Ridge	$5,364	$5,654
Gowrie Gates	$5,225	$5,654
Camberwell	$4,815	$5,654
Weighted Average	$7,512	$7,512

Note that agglomeration is based on descending order of Capital Charge and that Council may further agglomerate, in a number of ways, the various derived DSP areas, except for Broke and Camberwell. However Council may still choose to transparently cross-subsidise Broke and Jerrys Plains to some extent.

Detailed calculation is provided in Appendix D.

Reduction Amount

The reduction has been calculated using the NPV of Annual Charges Method

The full IPART method uses this approach but the 2003 DLWC guidelines (now managed by DEUS) have determined a shortened version for local government. A prerequisite of this method is a 30 year financial model. Further description follows:

Developer Charges Flow Chart

The reduction is the net present value (NPV) of the net income from customers over the next 30 years. Net income is defined as the surplus income from annual charges after deducting recurrent costs, ie operations, maintenance, engineering and management.

The net income is directed towards capital works. Without the reduction, customers would be double charged (once through developer charges and once through their annual charges) for the capital works.

In order to calculate the reduction amount, it is necessary to use the financial model that generates the path of future charges. However there is circular effect, as the financial model uses developer charges as one of the inputs for the calculation.
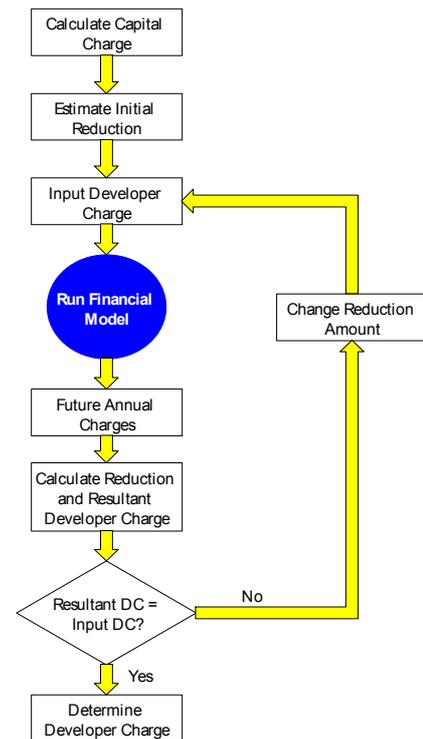
Conducting several iterations in order to identify the correct developer charges solves this issue. The financial model is run with an assumed input developer charge, and a resultant developer charge is calculated. If the resultant developer charge is different from the input developer charge, the model is run again with a different input developer charge until the input developer charge equals the output developer charge. The process is described in the figure above.

Detailed calculation is provided in Appendix E.

Reduction Amount for Water = $0

The zero value is due to the fact that future annual charges, over the next five years, will not have a capital works component.

Developer Charge Calculation

The developer charge for each water or sewerage scheme is obtained by applying the formula:

Developer charge = Capital charge – Reduction amount.

A summary of capital charge, reduction and developer charge follows:

Water:

Location	Capital Charge / ET	Reduction / ET	Developer Charge / ET ($03/04)
Retreat Estate	$14,612	$0	$14,612
Pinnacle Estate	$6,086	$0	$6,086
Singleton Heights Upper	$5,598	$0	$5,598
Singleton Heights Middle	$5,292	$0	$5,292
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Camberwell	$4,815	$0	$4,815
Jerry's Plains (a separate system to Singleton)	$24,727	$0	$24,727
Weighted Average	$7,512	$0	$7,512

Location	Capital Charge / ET *pre-agglomeration*	Capital Charge / ET *agglomerated*	Reduction / ET	Developer Charge / ET ($03/04)
Broke	$36,695	$36,695	$0	$36,695
Jerry's Plains (a separate system to Singleton)	$24,727	$24,727	$0	$24,727
Bulga	$16,130	$13,630	$0	$13,630
Mt Thorley	$16,130	$13,630	$0	$13,630
Retreat Estate	$14,612	$13,630	$0	$13,630
Gresford Road	$14,705	$13,630	$0	$13,630
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Weighted Average	$7,512	$7,512	$0	$7,512

Note that agglomeration is based on descending order of Capital Charge and that Council may further agglomerate, in a number of ways, the various derived DSP areas, except for Broke and Jerrys Plains. However Council may still choose to transparently cross-subsidise Broke and Jerrys Plains to some extent.

Detailed calculation is provided in Appendix D and Appendix E.

The weighted averages are based on future ET to 2030/31.

All the charges are per equivalent tenement (ET). The study covers both residential and non-residential consumption.

Developer charge calculations are a major element of an overall revenue plan. Funding is a combination of annual charges, developer charges, cash reserves, subsides and loans. The financial model has been run with the calculated developer charge (weighted) to generate the minimum feasible price path for the next 20 or 30 years.

References

(1) Singleton Shire Council, *Water Supply Technical Report For Development Servicing Plan* (2005).

(2) Singleton Shire Council, *Water Supply Financial Modelling Report* (2005).

(3) Department of Land and Water Consevation, *Guidelines - Developer Charges for Water Supply, Sewerage and Stormwater* (2002)

Appendix A - Legislative Background

Use of Water and Sewerage funds collected by Developer Charges

The Local Government Act 1993 specifies that moneys raised from water supply developer charges can only be used for water supply purposes and monies raised from sewerage developer charges can only be used for sewerage purposes.

The Local Government (Savings and Transitional) Regulation 1993 covers moneys raised under the Environmental Planning and Assessment Act, 1979. Such moneys, for specified water and sewerage services or water and sewerage works generally, can be released similarly to treatment under the Local Government Act 1993. Further background to legislation follows:

Environmental Planning and Assessment Act, 1979

Until 1993, Councils applied developer charges (DC) for water supply and sewerage under the provisions of the Environmental Planning and Assessment Act.

Local Government Act, 1993

In 1993, a new Local Government Act was legislated. Section 64 of the new Act specifies that councils apply development contributions in accordance with the provisions of section 306 of the Water Management Act 2000

Water Management Act, 2000

Section 306 of this Act authorises the water authority to levy a charge on a developer towards the cost of water management works serving the development. The provisions of this act include that:

• The value of existing water management works and the estimated cost of projected water management works may be taken into consideration.

• 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.

• Consideration is to be given to any guidelines issued for the time being for the purposes of this section by the Minister for Public Works (and Services).

Independent Pricing and Regulatory Tribunal (IPART)

The Independent Pricing and Regulatory Tribunal (IPART) has the power to regulate prices and charges for water authorities that operate under the Water Supply Authorities Act. With the exception of Gosford and Wyong councils, councils in NSW operate under the Local Government Act and are therefore not directly regulated by IPART.

IPART does not intend to set prices for local water authorities but rather to develop a common approach to pricing principles. IPART has reviewed pricing in local authorities and has published several reports, one of them directly relates to local councils[2]. However the method used in this report is the one recommended initially by the then

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[2] Pricing Principals for Local Water Authorities. IPART, September 1996.

Department of Land and Water Conservation (DLWC) called the Direct NPV Method. This is because IPART's NPV method was developed basically for regulated water authorities, where the price path is set, while a non-regulated water authority (Council) has to set both its price path and the developer charges, and the two are inter-related. New DC guidelines were released in February 2003 by the then Minister of DLWC (. In view of this, Commerce has therefore used the Direct NPV Method, developed and recommended for country councils.

(Note that since the DLWC Draft Guidelines, March 2000, the option of using the NPV of Annual Charges Method has been allowable.)

Appendix B - Sensitivity of Direct NPV Method

The NPV model is sensitive to a wide range of input parameters including the following[3]:

- infrastructure capacity and nexus (means of connection of various items of infrastructure to each other, so that capacity can be fully utilised);
- infrastructure cost;
- cost efficiency in construction;
- design standards;
- demand management;
- operating cost and efficiency;
- occupancy rates;
- growth projections;
- apportionment of costs;
- risk allocation;
- discount factors, and
- period of recovery

The Department of Energy, Utilities and Sustainability (DEUS)[4] supports the IPART method of calculation of the Capital Charge, but is concerned about the time and cost to Council in developing the full methodology.

The Direct NPV Method was developed to provide a relatively simple method for councils to adopt in view of the rate of change of councils' plans over time and the cost of calculation using the full (Annual Charges) IPART Method. DEUS are satisfied that the direct NPV Method and Annual Charges Method do not give significantly different results.

Income from developer charges is of greater importance to NSW country councils (especially coastal councils) than metropolitan authorities as such councils are facing large capital works programs and high growth from the existing small customer base.

For many NSW country councils, as opposed to metropolitan authorities, the price path will be subject to large fluctuations over time because of the impact of capital intensive works programs on a small customer base. The price path will be heavily influenced by the level at which developer charges are set.

Also, IPART has recognised that the relatively small scale of country town schemes, compared with those of metropolitan authorities, and the "lumpiness" of investments could pose problems in adopting the full NPV approach.

3. Developer Charges for Water, Water supply and Drainage Services, Understanding the Pricing. IPART, February 1996.
4. Water Supply and Sewerage Developer Charges for NSW Councils, Discussion Paper and Case Study, DEUS (formerly covered by DLWC), March 1998 Advance Copy

Appendix C - Methodology

Capital Charge

The capital charge is made up of the current replacement value of existing assets and current discounted value of future assets serving the new development. The underlying principle is to obtain the capital cost on the basis of one set of brand new assets to serve development. Therefore, this does not include renewals or developer-provided reticulation, though backlog works are included if they serve the development.

A return on investment of 3% pa. and 7%pa. is required for existing and future assets respectively, over the period to full take up. "Existing" and "future" terms are relative to September 1996. For assets commissioned before 1996, the return on investment is calculated on the basis of a deemed commissioning date of 1 January 1996.

The time to full take up of capacity is a critical element in the calculation because it determines the required rate of return for Council. This depends on population/tenement growth and capacity of assets.

The capital charge component may be calculated for individual assets on the basis of current replacement cost and ET capacity, or collectively where a group of assets fulfil a specific function eg. storage.

The capital charge should reflect the relative cost between locations. Distribution zones within one Council area typically have a distinctly different infrastructure in place and the capital charge varies accordingly.

Inclusion of 'Old' Assets

> Water Supply: The Department of Energy, Utilities and Sustainability (DEUS) recommends the developer charge calculation for major water supply headworks eg water treatment plants includes all assets including those constructed prior to 1970. For the distribution zones, assets constructed before 1970 are assumed to have been amortised (paid for) and are not included in the calculation.

> Sewerage: DEUS recommends the developer charge calculation for sewerage assets generally excludes all assets constructed before 1970. These assets are assumed to have been amortised (paid for) and are not included in the calculation. However pre-1970 sewerage major works may be included, subject to DEUS concurrence.

Reticulation and Trunk Mains

> As a rule, reticulation pipelines are not included in the capital charge, as developers are usually charged for the construction of reticulation pipelines separately (in large subdivisions the developer will often construct the reticulation system and hand it over to Council).

> Both water supply and sewerage systems consist of transport (trunk) mains and local distribution (reticulation) pipework.

> The reticulation connects individual properties within a localised area and is usually built at the same time as the properties and paid for as a part of the area development.

In larger towns it is often difficult to distinguish between where trunk mains end and the reticulation begins, and in the absence of more specific details, any water distribution pipe of 100mm dia.(refer note (i) below) or less is considered reticulation, and in a sewerage system any sewer of 150mm dia. or less is considered to be reticulation.

There are exceptions, as follows:

(i)   Where Council has paid, or will pay, for both transport mains and reticulation, the costs of both are included in the capital charge

(ii)   In small communities, where the transport mains may be small diameter. Sometimes in these cases, even the transport mains are supplied by the developer and paid for by the development. If not, the cost is included in the overall capital charge calculations.

Return on Investment

The return on investment (ROI) represents the finance cost incurred by Council investing in assets. It is typical for water and water supply infrastructure to be provided ahead of development, with cost recovery through developer charges occurring over a period of years thereafter.

The ROI is expressed as a factor, or multiplier, of the capital costs. It is calculated to equate the net present value of the stream of charges that would be derived from developer charges over the years and the costs of the assets.

Return on Investment Factor
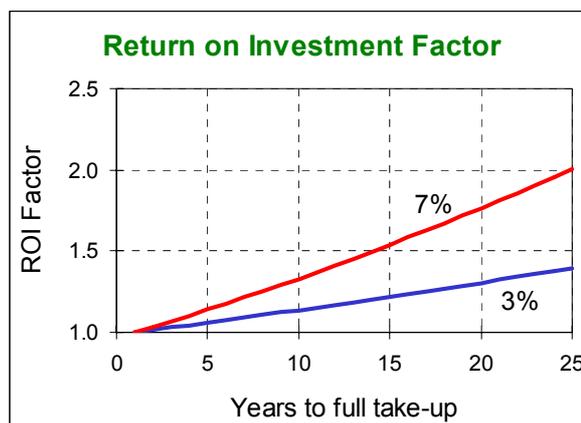
The calculation in this report adopts a rate of return of 3 % pa. for existing assets (constructed up to and including September 1996), and 7 % pa. for future assets. The figure above depicts the ROI factor as a function of the time to full take up of asset capacity, at these rates.

The take-up period for water and water supply assets is typically 10-25 years. The ROI factor would therefore usually be in the range of 1.1–1.4 for existing works, and 1.3–2.0 for future works.

Example

The following example demonstrates the concept of the ROI factor:

An asset is required at a current day cost of $200,000, with capacity of 2000 ET and estimated time to full take up of 20 years. The take up of the capacity is assumed to be uniform, at the rate of 100 ET every year.

The capital cost per ET is: total cost ÷ capacity

    $200,000 ÷ 2000 = $100 per ET

The ROI factor for 20 years at a rate of return of 7% is 1.76 (refer to Figure 1).

The capital charge per ET is: capital cost x ROI factor

    $100 x 1.76 = $176 per ET.

The income from developer charges would be ($176/ET x 100 ET pa =) $17,600 pa.

The present value of an income stream of $17,600 pa. over 20 years at a discount rate of 7% is $200,000, which equates the capital investment. QED

Return on Investment History

IPART, in its determination for Sydney Water, used a rate of return of 3% pa. for existing works and 9% pa for new works. The Department of Energy, Utilities and Sustainability has suggested that future works for local government should return 7% pa. The lower rate has the effect of reducing the capital charge.

A rate of return for future assets of 7% was used in this analysis. IPART have advised that since the 9% determination, interest rates have fallen, and if a similar determination was made now, that 7% would be reasonable.

Time to Full Take Up

Past and future growth in tenements for the zone must be identified so that the ET to full uptake can be calculated for all the assets.   This should be consistent with the design capacity of the individual assets.

The period to full take up may be calculated on ET capacity or taken as when an asset is duplicated or augmented, thereby indicating it has reached its full utilisation.

Reduction

The reduction amount is calculated on an overall basis even if there are sub-schemes or separate towns.

Without the reduction, customers would be double charged (once through development contributions and once through their annual charges) for the capital works.

In the document, "Guidelines, Developer Charges for Water Supply, Sewerage and Stormwater," February 2003 there are two methods described for calculation of development contributions. The two methods are:

1.   Direct NPV Method

2.   NPV of Annual Charges Method

The Direct NPV Method is simpler, in regard to the "reduction component", and the results of each method are not significantly different. (Note that the calculation of the capital charge is the same for both methods) The NPV of Annual Charges Method is more transparent though it requires a robust 30 year financial plan. Since Council has recently updated its financial model, the latter method is appropriate.

Appendix D - Capital Charge Calculation Sheets

Appendix E - Reduction Calculation Sheets

Appendix F – Maps Showing Developer Charge Zones

Appendix G – Growth Projections