IPART
New South Wales

Independent Pricing and Regulatory Tribunal

# Modelling local development contributions

## Selection of a discount rate for councils that use an NPV methodology

**Local Government — Final Technical Paper**
September 2012

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# Contents

# 1 Introduction

A council may require developers of an area to make a financial contribution towards the new infrastructure and land that will be needed for the area. Development contributions are calculated using information in a council contributions plan.

A few councils use a net present value (NPV) model to calculate development contributions. This is a model that takes account of the time value of money by considering the timing of receipts and expenditures. It then calculates the contribution rate that will recover the costs of undertaking the development. It does this by discounting future receipts and payments to present values through use of an interest rate, known as a discount rate. However, most councils calculate developer charges using methods that ignore the timing of payments and receipts. We consider that both the NPV method and the other methods used by councils are acceptable methods for calculating development contributions.

This paper sets out IPART's recommended approach for councils to select a discount rate when using an NPV model to calculate development contributions. We have previously issued a draft report on this topic and undertaken consultation with interested stakeholders.

Since then, the NSW Government has issued a Green Paper titled 'A New Planning System for NSW' stating that that the NSW Government will be establishing a task force with local government to look at a range of planning issues, including the use of NPV models[1]. This paper will provide input to the task force.

## 1.1 What is a development contribution and what is a contributions plan

A council may require developers of an area to make either a financial or in kind contribution towards the new infrastructure and land that will be needed for the area.

A contributions plan is a council plan that sets out the infrastructure and land that will be needed by the future residents and businesses of an area that is to be developed. These plans include information about the new area like:

- the projected future population of the area
- the number and size of housing lots, the types of houses that will be built
- the estimated cost of infrastructure that will need to be built like roads, drainage, and
- the estimated cost of land needed for open space eg, for parks.

Councils use information in the contributions plan to calculate the financial contributions that must be paid by developers. The calculations rely on council

1 NSW Government, *A New Planning System for NSW*, Green Paper, July 2012, p 79.

projections and since the plans may be drafted several years before a location is developed, the cost estimates may need to change over time for inflation or if any of the cost assumptions change.

## 1.2 Why did IPART draft this paper?

Councils prepare contributions plans under section 94 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), the *Environmental Planning and Assessment Regulation 2000* and the *Development Contributions Practice Notes – July 2005*[2] (2005 Practice Notes).

IPART assesses contributions plans against the Local Development Contributions Practice Note.[3]

In October 2011, IPART reviewed 3 contributions plans for areas in western Sydney.[4] Two of the plans submitted use a net present value (NPV) methodology for calculating the contributions rate.[5]

Our assessment of these plans indicated that councils needed clearer guidance on the use of an NPV methodology, particularly the selection of a discount rate. We observed that the regulation and the 2005 Practice Note do not prescribe the discount rate nor a method for selecting one.

As previously stated, the Department of Planning and Infrastructure is responsible for setting policy about the use of NPV models and the NSW Government has recently issued a Green Paper titled *A New Planning System for NSW* which indicates that the NSW Government will be establishing a task force with local government to look at a range of issues, including the use of NPV models.

### 1.2.1 What process have we used?

In January and February 2012, we consulted with selected stakeholders including council finance professionals, state government agencies and representatives of the development industry about the appropriate discount rate. We also exhibited a draft technical paper on our website from 15 May 2012 to 15 June 2012.

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2 Department of Infrastructure, Planning and Natural Resources, *Development contributions Practice notes – July 2005*.

3 Department of Planning, *Local Development Contributions Practice Note for assessment of contributions plans by IPART*, November 2010.

4 IPART assessed *The Hills Shire Council's Contributions Plan No 12 - Balmoral Road Release Area*, *The Hills Shire Council's Contributions Plan No 13 - North Kellyville Precinct* and *Blacktown City Council's Section 94 Contributions Plan No 20 - Riverstone and Alex Avenue*. These assessment reports are available on IPART's website: http://www.ipart.nsw.gov.au/Home/Industries/Local_Govt/Contributions_Plans

5 The 2 plans submitted by The Hills Shire Council use an NPV methodology.

This paper sets out our recommended approach for councils to select a discount rate when using an NPV methodology to calculate a contributions rate. It considers the feedback received during the public exhibition period.

### 1.3 Our recommended approach

The key elements of our approach are:

- using a nominal discount rate based on the NSW Treasury Corporation bond yield
- converting to a real discount rate using swap data for inflation-indexed bonds
- accounting for financial risk in implementing contributions plans though :
  - the use of reasonable cash flow contingencies (to address unanticipated increases in the real cost of infrastructure items in a contributions plan)
  - regular updates of the plan (to address changes to the planned timing of revenue receipts and expenditure outlays associated with a contributions plan).
- publishing the real discount rate on our website each quarter.

Our recommendations for the use of reasonable cost contingencies and revision of plans also apply to councils that do not use an NPV methodology. We note that some councils already follow these recommendations.

## 2 Using NPV for development contributions

In determining the contributions rate, councils have the option of using an NPV methodology. The NPV methodology involves the use of a discounted cash flow model. In a discounted cash flow model for local development contributions, the contributions rate is calculated so that the present value of anticipated expenditure is equal to the present value of anticipated revenue.[6] This helps to ensure that a council collects sufficient revenue to cover its anticipated expenditure.

At present, very few councils use an NPV methodology to calculate development contributions. Instead, most councils estimate the total cost of land acquisition and construction, apportion an amount to the development area and divide this amount by the relevant demand units (eg, net developable area (hectares), or estimated residential population).

IPART is not suggesting that all councils should use an NPV methodology. Rather, this paper outlines our preferred approach for selecting a discount rate if a council chooses to adopt an NPV methodology.

6 'Present value' refers to the value of a future sum of money expressed in the dollars of the current day.

## 2.1 The discount rate

An important assumption in the application of an NPV methodology is the choice of discount rate. The discount rate takes account of the time value of money by converting receipts and expenditures at different dates to present values, using an interest rate. The existing guidelines that guide the preparation of contributions plans do not prescribe a method for selecting a discount rate.[7]

In its contributions plans for North Kellyville and Balmoral Road Release Area the Hills Shire Council used a risk free discount rate based on the Commonwealth Government bond yield.

Central to the decision about an appropriate discount rate are considerations around a council's method of financing contributions plans and the risks incurred by council in implementing contributions plans. These are discussed further in section 3 and section 4 of this paper.

## 2.2 Real versus nominal

The 2005 Practice Note gives councils the flexibility to model contributions rates using either nominal or real values. Nominal value refers to costs and revenues being expressed in fixed money (dollar) terms in a given year or series of years. By contrast, the real value adjusts the nominal value to remove the effects of general price level price changes over time and reflect purchasing power.

Modelling in real terms means that the council does not include inflation assumptions within the model but escalates the contribution rate by an inflation indicator each year. In contrast, modelling in nominal terms means that the council includes inflation assumptions within the model. With a nominal model, the council does not have to inflate the contributions rates each year as this is done within the model.

We note that the Hills Shire Council prefers to use nominal values "on the grounds that it calculates the value of contributions on a whole of life basis providing certainty to the Council and developers of the applicable rate."[8]

IPART recommends the use of real, rather than nominal, values. This is because modelling in real terms removes the complexity for councils of selecting a reasonable escalation rate for each cost category (eg, land and capital). However, while we have a preference for a real model, IPART has no strong objection to councils using a nominal model. Our concern is that when councils use a nominal model, the escalation rates used should be realistic and consistently applied.

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7 Department of Infrastructure, Planning and Natural Resources, *Development contributions Practice notes, – July 2005*, July 2005. Department of Planning, *Local Development Contributions Practice Note for assessment of contributions plans by IPART*, November 2010.

8 The Hills Shire Council, submission to IPART 15 June 2012, p 1.

# 3 Method of financing contributions plan expenditures

Councils have a number of options for funding the expenditure that is included in a contributions plan:

1. **Using funds collected under the relevant s94 plan**

   Using revenue already collected under the relevant plans is the most administratively simple approach.

   In greenfield areas this is usually not feasible because essential infrastructure, such as roads and stormwater facilities, must be completed prior to the development occurring. Therefore, the council will not have received sufficient revenue from development contributions to fund the expenditure.

2. **Using funds accumulated in other s94 plans (pooling of funds)**

   The pooling of funds allows a council to borrow internally between development contributions accounts to allocate sufficient funds to provide facilities. This allows greater flexibility in the way facilities can be provided and reduces the reliance on external borrowings.

3. **Using funds from general reserves generated from various sources**

   In some instances, councils use general revenue to fund shortfalls in contributions revenue.

4. **Borrowing externally**

   Councils are permitted to borrow externally to finance infrastructure costs. However, councils in NSW generally have a low reliance on debt.

If councils use funds accumulated from other s94 plans or use their general reserves a reasonable discount rate would reflect the opportunity cost of capital to council (ie, the return that could be achieved if the council invested the funds rather than spending them).

There are a number of legislative requirements that govern how a council may invest surplus funds. These include the *Local Government Act 1993*, the *Local Government (General) Regulation 2005*, and the Ministerial Investment Order.[9] Recent revisions to the legislative requirements are more restrictive in regard to how councils can invest and it is likely that the investment yields available to councils are lower than they might have been previously.

An extract from the current Ministerial Investment Order is provided in Box 3.1 below. The NSW Government issued this order in response to the possible exposure of some councils to high risk investments during the global financial crisis.

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9 Department of Premier and Cabinet, *Division of Local Government Investment Policy Guidelines*, May 2010.

**Box 3.1 Councils' investment options**

A council may only invest money (on the basis that all investments must be denominated in Australian Dollars) in the following forms of investment:

1. any public funds or securities issued by or guaranteed by the Commonwealth, any State of the Commonwealth or a Territory
2. any debentures or securities issued by a council (within the meaning of the *Local Government Act 1993* (NSW))
3. interest bearing deposits with or any debentures or bonds issued by, an authorised deposit-taking institution (as defined in the *Banking Act 1959* (Cwth)), but excluding subordinated debt obligations
4. any bill of exchange which has a maturity date of not more than 200 days and if purchased for value confers on the holder in due course a right of recourse against a bank which has been designated as an authorised deposit-taking institution by the Australian Prudential Regulation Authority
5. a deposit with the New South Wales Treasury Corporation or investments in an Hour-Glass investment facility of the New South Wales Treasury Corporation.

All investment instruments (excluding short term discount instruments) referred to above include both principal and investment income.

**Source**: *Local Government Act 1993* - Investment Order (Relating to investments by councils), 12 January 2011.

# 4 Risks

Councils face numerous risks in providing infrastructure for new development including regulatory risk, financing risk and inflationary risk. They also face risks in relation to the planned implementation of contributions plans. These arise from:

- possible increases in the real cost of infrastructure items in a contributions plan (ie, increases not due to inflation)
- changes to the planned timing of revenue receipts and expenditure outlays associated with a contributions plan.

Councils should be compensated for bearing these risks through their development contributions. This can occur either through the discount rate or through other approaches. Councils should only be compensated once for these risks.

A risk-adjusted discount rate may, in part, compensate the council for such risks. This would reflect the council's opportunity costs or contribute towards borrowing costs, if it carries out expenditures in contributions plans prior to receiving contributions. However, quantifying the adjustment to the risk-free rate for these risks can be difficult.

### 4.1 Cost of infrastructure items

The costs included in a contributions plan are only preliminary estimates. When particular facilities are constructed there may be unforseen costs such as project variations, disputes arising from contract documentation, unforeseen site conditions, and changes in industry or supply markets. It is standard practice for these risks to be addressed by including a contingency allowance in the cash flows.

### 4.2 Planned timing of revenue receipts and expenditure outlays

Over the life of a contributions plan, councils may not receive sufficient contributions revenue due to:

- general weakening of housing market conditions, leading to delays in construction
- delays in other parties providing prerequisite infrastructure (such as Sydney Water providing their infrastructure), leading to delays in construction
- population or housing densities not reaching estimated levels, leading to insufficient contributions.

On the expenditure side, the council may incur costs earlier than expected due to uncontrollable circumstances. For example, when the council needs to acquire land for a public purpose, it may not be able to control when that purchase is made because the existing landowner is able to initiate the purchase if the landowner is able to demonstrate hardship. Often the council will need to borrow to cover these costs, incurring interest.

## 5 Recommended approach

### 5.1 Overview

From our stakeholder consultation early in 2012,[10] there was no consensus or a majority view amongst stakeholders about the most appropriate discount rate to use. Most accepted that councils face risks in implementing contributions plans but acknowledged that addressing risks through the discount rate is complex.

Based on the outcomes of the consultation we prepared a draft Technical Paper in which we set out our recommended approach. We received 3 submissions - from The Hills Shire Council (THSC), SGS Economics and Planning and an anonymous stakeholder.

[10] In January and February 2012, we consulted with selected stakeholders including council finance professionals, state government agencies and representatives of the development industry about the appropriate discount rate.

After considering these submissions, we have decided to retain the approach we recommended in the draft Technical Paper. Our response to the issues raised in the submissions is set out in the following sections.

In broad terms, our recommended approach is that councils should use a bond rate that trades at a premium to the risk-free rate of return as the basis of the discount rate and account for risk in other ways. We have decided to recommend this approach because it:

- does not involve the complexities of calculating a risk adjusted rate
- is simple to implement as councils could use the discount rate published on our website which is applicable at the time of making a contributions plan
- provides a consistent approach across all councils that adopt our approach as they would use the same method for determining a discount rate
- uses a discount rate and expected inflation rate which are based on readily observable data
- provides a discount rate that is reasonable regardless of whether the contributions plan is for incremental development, greenfield development or major urban renewal.

These benefits are important to the stakeholders that we consulted in January and February 2012.

We also consider that our approach will enable councils to raise enough revenue so that they do not have to subsidise the cost of land and facilities with revenue that is collected from existing residents. This was raised as in issue in one of the submissions received on the draft Technical Paper.

We also consider that our recommended approach, combined with other recommendations, adequately compensate councils for risks that they bear.

### 5.1.1 The submissions

As noted above, we received 3 submissions on the draft Technical Paper:

- The submission from THSC raises several concerns about IPART's recommended approach:
  - the use of a real (rather than nominal) discount rate
  - the use of a risk free rate and our suggested alternatives for dealing with risks that councils face
  - the method of adjusting nominal yields for inflation.

- The submission from SGS Economics and Planning (SGS) is short and includes an academic paper.[11] The paper, by Arrow and Lind, suggests that a risk-free rate should be used for investment by councils.[12]
- The submission from an anonymous individual notes that existing residents should not bear the burden of providing the infrastructure required by new populations. However, the submission does not describe how risks should be transferred away from existing residents (ie, away from the council).[13]

## 5.2 The approach

The key elements of our approach are:

- using a nominal discount rate based on the NSW Treasury Corporation bond yield
- converting to a real discount rate using swap data for inflation-indexed bonds
- accounting for financial risk in implementing contributions plans though:
  - the use of reasonable cash flow contingencies (to address unanticipated increases in the real cost of infrastructure items in a contributions plan)
  - regular updates of the plan (to address changes to the planned timing of revenue receipts and expenditure outlays associated with a contributions plan)
- publishing the real discount rate on our website each quarter.

### 5.2.1 Nominal discount rate

We recommend that the discount rate should be based on the NSW Treasury Corporation 10-year Bond yield.[14] We consider that a 10-year maturity period is reasonable given the long term nature of the infrastructure projects that are included in contributions plans.

In our pricing reviews we use a 20-day average of the historical daily yield taken at the end of the most recent quarter. Using a 20-day average removes short-term fluctuations. The 20-day average of the NSW Treasury Corporation 10-year Bond yield at the end of the March quarter 2012 was 4.98%.

11 SGS Economics and Planning, Submission to IPART, June 2012.
12 Arrow, JA and Lind RC, "Uncertainty and the Evaluation of Public Investment Decisions", *The American Economic Review*, pp 364-378.
13 Anonymous, submission to IPART, June 2012.
14 The bond yields can be sourced from the Reserve Bank of Australia's website, at no charge.

We have selected the NSW Treasury Corporation Bond yield as it provides a premium over the Commonwealth Government Bond yield which is commonly used as the benchmark for the risk-free rate.[15] This approach is aimed at providing councils with a small return which would contribute to a council's opportunity cost of funds or borrowing costs. A council will incur an opportunity cost of funds or borrowing costs if it carries out contributions plan expenditures prior to receiving contributions.

We note that the Hills Shire Council wants to use a higher premium than the one IPART recommended in the draft Technical Paper. This is despite the Hills Shire Council using a risk-free rate in its original models for the contributions plans for Balmoral Road Release Area (CP12) and North Kellyville (CP13). The Hills Shire Council cites 2 documents in support of its case:

- DLG circular 12-17 *Information About Rating For 2012/13* which quotes a Supreme Court methodology which uses the Reserve Bank cash rate plus 6% to determine the maximum rate of interest payable on overdue rates and charges.
- NSW Treasury's Guidelines for Financial Appraisal which suggests the application of a market risk premium of 6%.[16]

We have considered whether to include a more 'commercial' risk premium. For businesses that IPART regulates where there is strong contestability (actual or in principle) between private and public investment it makes sense to adopt a more commercial approach. However, there are many complexities of applying this approach to local government. Our earlier phase of consultation emphasised the need for a consistent approach based on readily observable benchmarks and we remain of the opinion that using the NSW Treasury Corporation bond rate is the best way of meeting these requirements.

15 One of the submissions we received during the public exhibition period made reference to the Arrow-Lind theorem. This theorem supports a zero risk premium for public investments in circumstances where certain conditions are met. Other academics, such as Hirshleifer, have argued that, in the absence of market failure, public sector projects should be evaluated on a comparable basis to private sector projects with similar risks. This avoids a distortion in the allocation of resources between projects on the basis of ownership. Subsequent debate has emphasised that the Arrow-Lind theorem applies only under restrictive conditions and therefore does not provide a general guide for economic policy.

16 The Hills Shire Council Submission, pp 1-2.

### 5.2.2 Adjusting for inflation

In our October 2011 round of contribution plan assessments, we recommended that cost estimates used in councils' discounted cash flow models should be presented in real terms.

IPART's preferred option is to use real values for modelling local development contributions. However, we do not oppose councils using nominal values as long as the council uses realistic escalation rates to forecast nominal costs and revenues and consistently applies them throughout its various plans.

As described in Box 5.1, the NSW Treasury Corporation Bond yield is a nominal value. To convert it to a real value requires an estimate of anticipated inflation.

There are various options for the inflation rate that is used in this equation:

- the midpoint of the Reserve Bank of Australia's target range for inflation of 2% to 3% over the medium-term (ie, 2.5%)
- economists' forecast of inflation using the midpoint of the Reserve Bank of Australia's target range for inflation
- the inflation rate implied by the difference between yields on nominal and indexed bonds
- inflation indexed swaps.

In our pricing role, we use market data of inflation-indexed swaps. The inflation-indexed swaps data is available every quarter from Bloomberg.

An inflation-indexed swap is a financial instrument between 2 parties to transfer inflation risk from one party to another through an exchange of cash flows. With an inflation-indexed swap, one party pays a fixed rate on a notional principal amount, while the other party pays a floating rate linked to an inflation index, such as the Consumer Price Index (CPI). Because they are the market's attempt to forecast inflation they can be used as a proxy for future inflation.

We have recommended the same approach to adjust the discount rate used in an NPV methodology for development contributions. We note that in its submission, the Hills Shire Council argued against the use of swap data for inflation-indexed bonds preferring the midpoint of the RBA's target range of inflation of 2.5% pa as it was the council's existing approach. However, we consider that inflation-indexed swaps provide a better estimate of inflation as it incorporates all relevant information such as the market's expectation of inflation, the RBA's short term forecasts of inflation and also its inflation targets for monetary policy. Allowance can be made for the relevant risks through other mechanisms.

**Box 5.1 Converting nominal rates to real rates**

The NSW Treasury Corporation Bond yield is a nominal discount rate. It can be converted to a real discount rate by adjusting for expected inflation. This conversion uses the Fisher equation rearranged as follows:

$$r = \frac{1 + i}{1 + \pi} - 1$$

Where $r$ = real discount rate
$i$ = nominal discount rate
$\pi$ = expected rate of inflation

### 5.2.3 Accounting for risk in other ways

We suggest that the financial risk councils face in implementing a contributions should be addressed by:

- the use of reasonable cash flow contingencies (to address unanticipated increases in the real cost of infrastructure items in a contributions plan)
- regular updates of the plan (to address changes to the planned timing of revenue receipts and expenditure outlays associated with a contributions plan).

In its submission, THSC also argued that using cost contingencies and regular review of plans are not suitable methods to address risks faced by councils implementing contributions plans. This is because it disagrees with the level of contingencies that IPART recommended in its assessment of contributions plans in 2011. The council considers that IPART's recommended amount of up to 15% for cost contingencies is not "reflective of the level of assessment undertaken by the council to prepare its contributions plans which occur absent of any detailed assessment of facility design requirements or site constraints."[17]

In our assessment of councils' contributions plans last year we indicated that it was reasonable to include contingencies of up to 15% in cost estimates because recent contributions plans for other greenfield sites provided a contingency allowance of 5% to 16%.[18] Given that cost estimates in plans already include cost contingencies it would be unreasonable to also include a risk component in other areas such as the discount rate to cater for the risk of increased costs as this would be double counting.

The Hills Shire Council also disagrees with regular updates of plans to address risks of reviewing plans at least every 5 years. The council considers that regular updates of its plan will "require the council to frequently review its plan in response to movements in the bond rate, timing of expenditure and revenue receipts". It also

17 The Hills Shire Council, Submission, to IPART, June 2012, p 2.
18 IPART, *Assessment of The Hills Shire Council's Contributions Plan No 12*, October 2011, pp 40-41.

added that the "process was likely to add further uncertainty to the existing method adopted by the council".

In our review of contributions plans last year, we recommended that councils review their plans at least every 5 years unless a significant change in circumstances prompts an earlier review.[19] By regularly reviewing plans, councils are able to incorporate their actual expenditure and revenue to date and their latest estimates of future contributions revenue and cost estimates. This will enable councils to calculate more accurate section 94 contributions and thus help minimise the risk of councils receiving insufficient contributions.

Our recommendations for the use of reasonable cost contingencies and revision of plans also apply to councils that do not use an NPV methodology. Some councils already follow these recommendations.[20]

The Practice Notes for section 94 contributions plans recommend reviewing plans.[21] The extent to which this is done in practice varies between councils. Regular review of contributions plans is good practice.

We recommend that councils should review their contributions plans at least every 5 years, unless a significant change in circumstances prompts an earlier review.

### 5.2.4 Placing on our website

We recognise that councils may not have access to Bloomberg data. Therefore, we propose publishing the inflation adjusted discount rate (real discount rate) on IPART's website at the end of each quarter.

19 IPART, *Assessment of The Hills Shire Council's Contributions Plan No 12*, October 2011, p 58.

20 In our review of certain councils' plans in 2011, we found that a particular council had adopted a good practice of regularly reviewing its plans. The council indicated that its Section 94 Finance Committee met monthly to consider the need to review its contributions plans and aimed to review contributions plans annually in fast-growing areas.

21 Department of Infrastructure, Planning and Natural Resources, *Development contributions Practice notes, – July 2005*, July 2005.