IPART
New South Wales

Independent Pricing and Regulatory Tribunal

Modelling local development contributions in a present value framework

Local Government — Consultation Paper
March 2015

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The Committee members for this review are:

Ms Catherine Jones

Mr Matthew Edgerton

Mr Stuart McDonald

Inquiries regarding this document should be directed to a staff member:

Nicole Haddock	(02) 9290 8426
Dennis Mahoney	(02) 9290 8494

Independent Pricing and Regulatory Tribunal of New South Wales
PO Box K35, Haymarket Post Shop NSW 1240
Level 15, 2-24 Rawson Place, Sydney NSW 2000

T (02) 9290 8400 F (02) 9290 2061

www.ipart.nsw.gov.au

Invitation for submissions

IPART invites written comment on this document and encourages all interested parties to provide submissions addressing the matters discussed.

Submissions are due by 8 May 2015.

We would prefer to receive them electronically via our online submission form <www.ipart.nsw.gov.au/Home/Consumer_Information/Lodge_a_submission>.

You can also send comments by mail to:

Local Government – Modelling development contributions
Independent Pricing and Regulatory Tribunal
PO Box K35
Haymarket Post Shop NSW 1240

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1 Executive summary

This is a draft paper for consultation which incorporates revisions to our Technical Paper *Modelling local development contributions*, September 2012 (2012 Technical Paper). Our 2012 Technical Paper provided guidance on our recommended approach to the discount rate and other aspects of modelling development contributions.

We now seek comments on our revised approach to modelling development contributions. In particular, we seek comment on:

1. Our methodology to determine the discount rate for contributions plans in a present value framework. We have recommended basing the discount rate on a market-based estimate of the cost of debt for the local government sector, by taking the risk free rate (10-year Commonwealth bond) and adding our estimate of the debt margin.
2. How we might adjust that nominal discount rate for inflation in order to derive a real discount rate. We have recommended using a geometric average of the Reserve Bank of Australia's inflation forecast for the next year and nine years of the midpoint of its target inflation range.
3. Whether contributions plans should be modelled in nominal or real terms. We accept both the real and nominal modelling approaches, so long as the nominal approach (which incorporates inflation assumptions in the model) uses realistic and consistently applied forecasts to escalate works and land costs.

1.1 Our revised approach

In determining the contributions rate in a contributions plan, councils have the option of using a net present value (NPV) methodology. The NPV methodology involves the use of a discounted cash flow model. In a discounted cash flow model, the contributions rate is calculated so that the present value of anticipated revenue is equal to the present value of anticipated expenditure. This approach recognises that today's dollars are of greater value than dollars received in the future both because inflation erodes the purchasing power of tomorrow's dollar and interest rates increase the value of today's dollars when invested over time.

The draft revisions to our 2012 Technical Paper update the ways that we recommend that the nominal and real discount rates be measured when a council adopts the NPV modelling approach in a plan. The proposed changes bring our approach more into line with related methodologies that we now use in our other pricing reviews.

The discount rate should take account of the time value of money by converting revenues and expenditures at different dates to present values. In addition, it should also take into consideration the risks that councils face in providing infrastructure in the development contributions system.

1.1.1 Basing the discount rate on the cost of debt

Previously, we recommended that the nominal discount rate be based upon the 20-day average of the 10-year NSW Treasury bond yield. We considered that the NSW Treasury bond yield provided a conservative risk premium above the risk free rate (10-year Commonwealth bond yield).

We still recommend that the discount rate should provide a conservative estimate of the risk premium above the risk free rate to reflect the cost of borrowing that local councils are likely to face. However, we now propose that a market-based estimate of the cost of debt for the local government sector is a more suitable basis for the risk premium and the discount rate.

We propose that the cost of debt is based on the risk free rate (10-year Commonwealth bond yield) plus a debt margin. We have estimated an appropriate margin for the local government sector to be half the spread between the yields on 10-year Commonwealth bonds and 10-year non-financial corporate bonds with an 'A' credit rating. We believe that this is more representative of the likely cost of debt which would be incurred by councils if they had to borrow in the capital market.

1.1.2 Other revisions to the modelling approach

Consistent with our current weighted average cost of capital (WACC) methodology that we apply in our pricing reviews for other industries IPART regulates, we also recommend that:

- the calculation of the nominal discount rate be based on the midpoint of two averages; one of the 10-year Commonwealth bond yield and the other of the debt margin
- the averages should be over the last 10 years and over the last two months
- an additional 12.5 basis points should be incorporated into the margin for debt raising costs, and
- for the purposes of a 'real' model, the nominal discount rate is converted to a real discount rate using an inflation forecast based on the geometric average of the Reserve Bank of Australia's (RBA) forecast for headline inflation for the first year,[1] and nine years of the midpoint of its target inflation range of 2.5%.

[1] RBA inflation forecasts are presented in each *Statement on Monetary Policy* http://www.rba.gov.au/publications/smp/index.html

We accept that both the 'real' and 'nominal' modelling approaches can be reasonable. However, the nominal approach, which incorporates inflation forecasts into the model, should use realistic and consistently applied forecasts to escalate works and land costs.

Finally, we plan to publish the latest recommended discount rates semi-annually in our publication *WACC Biannual Update* (usually posted in February and August each year).

2 How local infrastructure is funded by development contributions

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

Section 94 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) has traditionally been the principal method enabling councils to levy contributions for public amenities and services required as a consequence of development.[2]

2.1 Establishing contribution rates in section 94 plans

Section 94 contribution plans (s94 plans) establish contribution rates to recoup the infrastructure costs in the plan, based on tests related to nexus (ie, that the development will contribute to the demand for the relevant infrastructure) and reasonableness (eg, that the cost estimates are reasonable and reasonably apportioned to the relevant development).[3]

Councils must prepare contributions plans in accordance with the *Environmental Planning and Assessment Regulation 2000* and the *Development Contributions Practice Notes – July 2005*.[4] A council must submit a plan to IPART for review if it proposes contributions rates above the current cap. When it makes the submission, it must comply with the 2014 Practice Note for such assessments.[5]

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2 Department of Infrastructure, Planning and Natural Resources, *Development contributions Practice notes – July 2005, Financial management of development contributions,* p 3.

3 Section 94A or "flat levy" plans are an alternative to s94 plans and allow a simple percentage rate to be applied to new development without such tests to be satisfied. Councils also have the option of entering into a voluntary planning agreement with a developer to specify infrastructure provision and contributions under s93F of the EP&A Act.

4 Department of Planning and Environment, *Development contributions Practice notes – July 2005*.

5 Department of Planning & Infrastructure, *Revised Local Development Contributions Practice Note for assessment of contributions plans by IPART,* February 2014. Section 2.3.2 requires IPART to review contributions plans that propose a contribution rate above the relevant cap.

A council's s94 plan must set 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, such as:

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

Councils use information in the contributions plan to calculate the financial contributions that must be paid by developers. The calculations rely on council projections and since the plans may be drafted several years before an area is developed, the cost estimates may need to change over time for inflation or if any of the cost assumptions change.

2.1.1 Using Net Present Value for development contributions

In determining the contributions rate in an s94 plan, councils have the option of using a net present value (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. This helps to ensure that a council collects sufficient revenue to cover its anticipated expenditure.

Only a few councils use a net present value (NPV) model to calculate development contributions. To date, The Hills Shire Council (THSC) is the only council that has submitted plans to IPART for review using an NPV model. This includes contributions plans CP12 (Balmoral Road Release Area) and CP13 ('North Kellyville' precinct) for review in 2011, and CP15 ('Box Hill' precinct) in 2014.

Box 2.1 shows a general formula for calculating development contributions using an NPV model. (For simplicity, we have not shown the escalation in the contribution rates over time.)

Box 2.1 Formula for calculating the NPV of contributions rates

$$PV(Costs) = PV(Revenue)$$

$$PV(costs) = N_1 * DC + \frac{N_2 * DC}{(1+r)} + ... + \frac{N_t * DC}{(1+r)^{t-1}}$$

Where: N (i) = No. of hectares in year (i)
DC = development contribution ($ in year 1 of CP)
r = discount rate (%)
t = time in years

Other councils do not use an NPV approach to modelling contributions. Instead, these councils:

- estimate the total cost of land acquisition and construction in current dollar terms
- apportion an amount of the costs to the development area
- divide this amount by the relevant units being serviced by the development (eg, net developable area (hectares) or estimated residential population), and
- index the contributions rates payable each year by a relevant index (eg, the Consumer Price Index).

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

3 Our recommended approach for NPV modelling

Within our recommended approach to modelling development contributions in an NPV framework, we are considering four elements:

1. The choice of a discount rate.
2. How the nominal discount rate is best measured.
3. How it should be deflated to derive a real discount rate.
4. Whether NPV-based contributions plans should be modelled in nominal or real terms.

The most significant issue for stakeholders is the first element, related to the choice of the discount rate. This is because the level of risk can have a significant bearing on the level of the discount rate, which in turn, can affect the size of the development contributions.

The other issues seek to align our recommended approach with our current WACC methodology that we apply in our pricing reviews.

We also accept both nominal and real modelling approaches without expressing a preference for real modelling as we did in 2012.

3.1 The choice of a discount rate

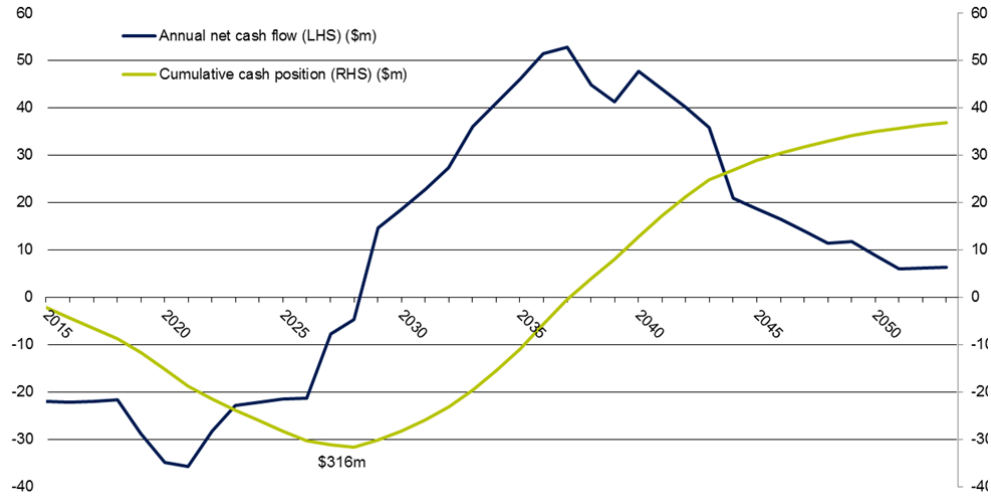
An important component in the application of an NPV methodology is the choice of discount rate. The discount rate takes account of both the time value of money and the risks that councils face in providing infrastructure in the development contributions system.

A major risk is associated with the timing of revenues and expenditures, where expenditures incurred ahead of receiving revenue could impact upon a council's capacity to finance infrastructure.

Figure 3.1 illustrates an example of the extent of the timing issues that a council can face in financing infrastructure. It shows the estimated net cashflow projections and cumulative projected cash position over the life of the plan for one of the contributions plans that we have reviewed. The figure also demonstrates how the shortfall that the council would have had to fund in infrastructure peaks at $316m at around 2027-28.[6]

[6] At the end of the plan's life, the council would reach a cumulative net cashflow position in undiscounted dollar terms of around $370m. When discounted, the present value of this cumulative net cashflow position is zero.

Figure 3.1 Cashflow projections in a typical contributions plan



Over the life of a development plan, councils may not receive the revenue that they expect from contributions because of:

- a general weakening in the housing market that causes delays in construction
- delays in other parties' provision of enabling infrastructure (eg, by Sydney Water), leading to delays in construction, and
- population or housing densities not reaching estimated levels for the relevant area, leading to insufficient contributions.

These risks are distinct from other project risks which may be managed by councils. Such risks may arise from:

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

Councils can account for these risks by including a contingency allowance in the cash flows and by regularly reviewing contributions plans. In our 2014 *Local Infrastructure Benchmark Costs* report, we recommended a range of contingency allowances for the four main categories of infrastructure corresponding to the relevant planning and design stage of the project.[7]

In our 2012 Technical Paper, we also recommended that plans be reviewed every five years. This would enable the council to capture any changes to expected timing of expenditures and receipts. (If circumstances changed significantly, it is likely that a review should occur anyway, regardless of the time period.)

7 IPART, *Local Infrastructure Benchmark Costs - Final Report,* April 2014, chapter 7, pp 50-59.

We also noted that the provisions for contingencies and regular reviews be applied equally to all contribution plans, not just to those set within an NPV framework.[8]

3.1.1 Pricing risk in local government contributions plans

The challenge is determining how much councils should be compensated for the types of risks that they may encounter, as reflected in the choice of discount rate.

IPART's general practice in its pricing reviews is to use a commercial model to compensate the entities for such risk and estimate a rate of return for the regulated industries. In doing so, we disregard government ownership of, for example, State-owned corporations (SOCs). This ensures competitive neutrality between potential commercial competitors attempting to compete in this market.

In the 2012 Technical Paper, we did not recommend the use of a commercial, risk-adjusted rate of return, largely because council services are less contestable than market-based services.

However, providing infrastructure for new developments can still be a risky enterprise for councils because of the mismatch in the timing of cash flows and the possibility that a development might not be fully completed or not proceed at all.

Therefore, we propose to estimate the discount rate used in NPV models based on an estimate of the cost of debt. This can be done by using both risk-free borrowing costs and an allowance for risk, based on an estimate of the debt margin applicable to local councils.

3.1.2 Use of debt by local government

Many councils have not traditionally borrowed externally to fund s94 expenditures. Instead, councils either:

- use funds accumulated in other s94 plans or in other reserves[9], and
- delay expenditure until sufficient contributions have been received (usually not feasible in greenfield developments because stormwater is required before other housing development can occur).

However, more councils are choosing to borrow funds in order to undertake infrastructure works, in part because of concessional funding provided by the State Government through various mechanisms.

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8 2012 Technical Paper, pp 12-13.

9 By drawing on the balances shown in s94 and s94A reserves in successive Annual Financial Statements, Note 17.

3.2 Estimating the cost of debt

For the utilities IPART regulates, the cost of debt is calculated as the nominal risk free rate plus a debt margin. This debt margin represents the level of compensation lenders require and takes into account things such as the probability of default of a borrower and the duration of the debt.

To use the same methodology for councils to determine their cost of debt, we would ideally use the debt margin likely to be charged to local councils which borrow in their own names. However, no such data are available.

To estimate an appropriate debt margin, we apply the same methodology we use in our pricing determinations. We use the benchmark debt margin which applies to all business in one industry sector. Since we cannot directly estimate this benchmark, we use a proxy based on a benchmark credit rating and term-to-maturity.

For local councils, we apply the same methodology. To illustrate the methodology, we have applied it to the latest available data.

We considered the yields on credit-rated non-financial corporate 10-year debt (ranging from A+, A, A- to BBB) and their spreads to 10-year Commonwealth or NSW Treasury bond yields.[10] The data are published by the RBA. The midpoint of these rates, averaged over 10 years and two months, are shown in Table 3.1.

Table 3.1 Yields on selected 10-year bonds (%)

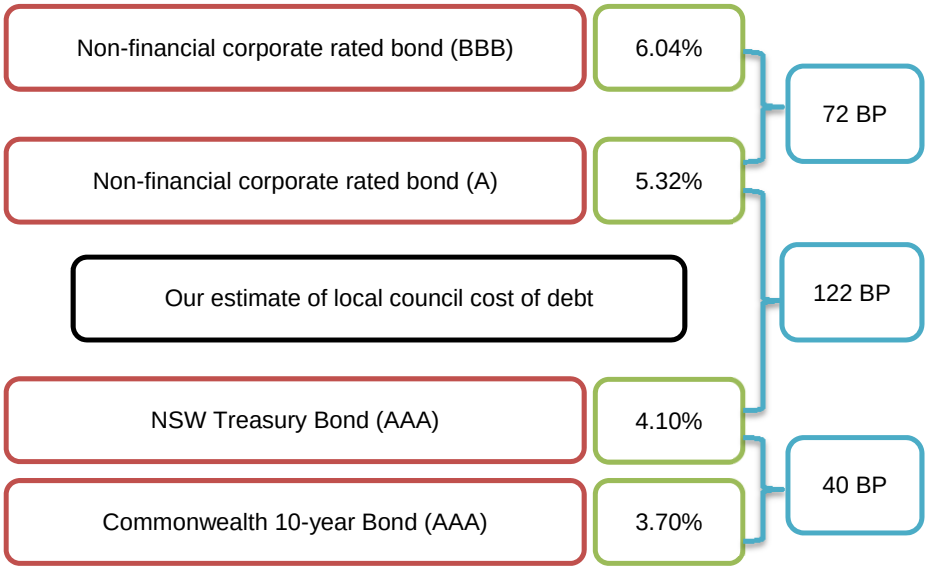
	Commonwealth 10-year bond yield	NSW Treasury 10-year bond yield	Non-financial corporate 10-year bond with A credit rating	Non-financial corporate 10-year bond with BBB credit rating
Average of last 10 years (Mar-05 to Feb-15)	4.83	5.35	6.77	7.58
Average of last 2 months (Jan-15 to Feb-15)	2.57	2.84	3.87	4.49
Midpoint	**3.70**	**4.10**	**5.32**	**6.04**

Source: RBA, *Statistical Bulletin*, Tables, F2 and F3.

The midpoint measures of each bond as shown in Table 3.1, and the spreads in basis points (BP) between them, are shown in Figure 3.2.

[10] This approach has also been recommended for the cost of debt for a regulated Australian energy network with a credit rating of BBB to BBB+ in Lally, M. *Implementation Issues for the Cost of Debt*, 20 Nov 2014, available at www.aer.gov.au.

Figure 3.2 Selected debt instruments, latest yields and debt margins



Source: RBA *Bulletin*, Tables F2 and F3 (February 2005 to March 2015 data) and IPART calculations.

It is highly likely that the councils that would want to issue debt would be both well managed and financially sustainable. We consider they would be likely to have a credit rating considerably better than BBB.[11] We assume that councils would be most likely to bear a AA credit rating, for which no specific data exists.

In the absence of this data, we have decided to halve the spread between 10-year Commonwealth bond yields and non-financial corporate A rated debt. Based on current data, that would make the yield 4.51%.[12] In effect, this is the best proxy we have for the cost of borrowing by local governments (with an assumed AA credit rating).[13]

We also propose adding IPART's standard allowance for debt-raising costs of 12.5 basis points so that, based on the latest data available, the current nominal discount rate under this methodology would be 4.635%.[14]

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11 We infer this from the descriptions of credit ratings used by Standard & Poor's.
- AAA - has extremely strong capacity to meet its financial commitments.
- AA - has very strong capacity to meet its financial commitments. It differs from the highest-rated obligors only to a small degree.
- A - has strong capacity to meet its financial commitments but is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than [AAA and AA] obligors.
- BBB - has adequate capacity to meet its financial commitments. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity of the obligor to meet its financial commitments.

12 Half the spread of 162bps is added to the 3.70% of the 10-year Commonwealth bond yield.

13 This compares with the current yield of 4.10% on the 10-year NSW Treasury bond which was the financial instrument we recommended in our 2012 Technical Paper.

14 The 12.5bps appears most recently in IPART, *Review of Regulated Retail Prices for Electricity – From 1 July 2013 to 30 June 2016 - Final Report*, June 2013, p 190.

Key advantages of this approach are that:

- it is consistent with IPART's WACC methodology (in determining the cost of debt for utilities)
- it has a strong market basis (based on an assumed credit rating for the sector)
- it is relatively simple to administer, and
- historical data are available on the relevant margin.

3.2.1 Implications from a higher discount rate for the size of development contributions

The implication of using the 10-year Commonwealth bond yield plus the margin as proposed, means that based on the latest available data, the current nominal discount rate would be 4.635%. This compares with a rate of 4.10% if it were based on the NSW Treasury bond yield (see Figure 3.2).

In the context of contribution plans, generally the higher the discount rate the higher the required development contributions. The contribution rate increases with the discount rate because we assume that revenues are received later than costs over the life of the plan. Hence, an increase in the discount rate will result in a greater reduction in the present value of the revenues compared to the present value of the costs. To offset this, the contributions rate increases to allow the present value of both to remain equal.

The effect of a higher discount rate on contributions depends on the extent of the mismatch between costs and revenues.

To illustrate, we present a hypothetical scenario. In this scenario, we assume that the discount rate is increased by 50 basis points under two different development paths (Table 3.2).

Table 3.2 Effect of 50bps rise in discount rate on contribution rates

	25-year development	40-year development
Contribution rate per hectare (at discount rate of 4.5%)	$911	$1,063
Contribution rate per hectare (at discount rate of 5.0%)	$930	$1,126
Percentage increase in contributions rate	2.1%	5.9%

Source: IPART calculations. The dollar numbers are illustrative only.

In the first case, we have considered the effect on the contribution rate when the development plan is assumed to span 25 years. The increased discount rate increases the contributions rate by 2.1%.

In the second case, we have assumed that the plan spans 40 years and revenues are collected later than under the 25-year plan. As a result, at the same discount rate, the contributions rate is higher than under the 25-year plan ($1,063 compared to $911). Further, the effect of a 50 basis point rise in the discount rate is more pronounced in reducing the present value of contributions and so the contributions rate would increase more, by 5.9%.

However, this is a hypothetical scenario only, and any variation in contributions will ultimately depend on a number of different aspects of the plan, such as the expected development path and the expenditure profile over the plan. Therefore, the exact extent of the increase in contributions associated with a higher discount rate can only be estimated within the context of a specific contributions plan.

3.3 Calculating the discount rate

All the discount rates presented above (in Figure 3.2) have been calculated in the same way as in our WACC methodology.[15] That is, as the midpoint of the 2-month and 10-year averages of the underlying security yield.

In the 2012 Technical Paper, IPART recommended calculating the discount rate by taking the 20-day average of the 10-year NSW Treasury bond yield. This method of calculation (not the particular bond) was consistent with the WACC methodology at the time.

IPART now calculates the risk free rate based on the midpoint method above to better balance long-term yield trends with short-term ones. This is also more consistent with the long-term nature of contribution plans.

3.4 Adjusting the nominal rate for inflation

We recently reconsidered how we forecast inflation in our WACC methodology to convert the nominal risk-free rate to a real rate. To more simply and accurately forecast inflation, we have decided to use a geometric average of the first year's headline CPI inflation forecast by the RBA and nine years of the midpoint of its target inflation range (2.5%).[16] At present, this average is 2.50%. Previously, we used data from the swap market to determine the inflation adjustment.

We consider that in the context of a council modelling development contributions, the proposed inflation adjustment based on RBA data would be much simpler to replicate and more transparent for stakeholders than the inflation swap data. Monthly inflation data are accessible on the RBA's website

15 IPART, *Review of WACC Methodology - Final Report*, December 2013.

16 See IPART, *Fact Sheet – New approach to forecasting the WACC inflation adjustment*, December 2014 and an update of the same name published in March 2015.

although we also plan to publish the nominal discount rate, the inflation adjustment and the real discount rate semi-annually when we publish our update of the WACC parameters.

3.5 Real versus nominal NPV models of contribution plans

The 2005 Practice Note gives councils the flexibility to model contributions rates using either nominal or real values.[17] Modelling in real terms means that inflation assumptions are not included within the model. Modelling in nominal terms means that the council includes inflation assumptions within the model.

In the 2012 Technical Paper, IPART stated that the real approach was IPART's preferred model because:

> …modelling in real terms removes the complexity for councils of selecting a reasonable escalation rate for each cost category (eg, land and capital).[18]

However, we expressed no objection to councils using a nominal model, if the escalation rates were realistic and consistently applied.

One aspect of contributions plans is that different cost categories (eg, land or transport infrastructure costs) may be escalated at different rates. It is therefore reasonable for councils to use different rates of escalation for each cost category.

For example, in the case of CP15 – Box Hill Precinct, we considered that the escalation assumptions were reasonable because they were based on recent past growth rates of land and capital costs (measured by ABS indices of established house prices and producer prices).[19]

A nominal model can be more cost reflective because it allows councils the flexibility to apply the different escalation factors to different cost categories.

A disadvantage of the nominal model is that where inflators are applied over long periods of time, there may be large forecasting errors. Therefore, it is still important for the council to review the plan regularly. Alternatively, councils may use the real modelling approach.

For these reasons, we accept both the real and nominal modelling approaches, so long as the nominal approach uses realistic and consistently applied assumptions.

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17 Department of Planning and Environment, *Development Contributions Practice Notes* – July 2005, sub-note *Financial management of development contributions,* p 3. The Practice Note does not specify whether councils should use real or nominal modelling NPV approaches.

18 2012 Technical Paper, p 4.

19 Box Hill Precinct S94 Contributions Plan, p 14. This Contributions Plan is reproduced in IPART, *Assessment of The Hills Shire Council's Section 94 Contributions Plan No 15 Box Hill Precinct,* December 2014.