

Non-compliance Economic Assessment Tool (NEAT) Model User Guide

Acknowledgement

The NSW Environment Protection Authority (NSW EPA) has been granted a licence by the Environment Protection Authority Victoria (EPA Victoria) to use a tool owned by EPA Victoria known as the “Non-Compliance Economic Assessment Tool” (“NEAT” or “the Model”) and the associated User Guide (© Environment Protection Authority Victoria 2019). EPA Victoria owns the intellectual property (IP) rights to the NEAT Model and User Guide.

The NSW EPA’s version of the NEAT Model User Guide (this document) is based on EPA Victoria’s original version of the User Guide, however, it has been adapted for NSW.

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Published by:

NSW Environment Protection Authority
59 Goulburn Street, Sydney NSW 2000
PO Box A290, Sydney South NSW 1232
Phone: +61 2 9995 5000 (switchboard)
Phone: 131 555 (NSW only – environment information and publications requests)
Fax: +61 2 9995 5999
TTY users: phone 133 677, then ask for 131 555
Speak and listen users: phone 1300 555 727, then ask for 131 555
Email: info@epa.nsw.gov.au
Website: www.epa.nsw.gov.au

Report pollution and environmental incidents
Environment Line: 131 555 (NSW only) or info@epa.nsw.gov.au
See also www.epa.nsw.gov.au

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1. Introduction

1.1 The purpose of the Model and Model User Guide

The NSW Environment Protection Authority (NSW EPA) has been granted a licence by the Environment Protection Authority Victoria (EPA Victoria) to use a tool owned by EPA Victoria known as the “Non-compliance Economic Assessment Tool” (“NEAT” or “the Model”) and the associated User Guide (© Environment Protection Authority Victoria 2019).

The NSW EPA’s version of the NEAT Model User Guide (this document) is based on EPA Victoria’s original version of the User Guide, however, it has been adapted for NSW.

The purpose of the Model is to provide an analytical tool to:

- quantify the economic benefit that may accrue to a business from delayed or avoided compliance with environmental laws; and
- present evidence to a court or judicial body regarding the basis of calculation of those benefits.

The purpose of this document (“the Model User Guide” or “Guide”) is to provide guidance to users of the Model. This Model User Guide is structured as follows:

- Section 2 explains **how to operate the Model**; and
- Section 3 explains **how the Model operates**.

A glossary of terms has been included in Appendix A. Any terms that appear in the glossary have been highlighted in the Model User Guide in ***bold italic***.

1.2 Version history

A version number and date of amendment will identify every version of the Model and this User Guide. **This version (Model User Guide version 1.6.1) is to be used for the Model version 1.6.1.**

Model Version	Description of update	Date of update
NSW v1.2	Model User Guide Version NSW 1.2	4 December 2014
NSW v1.3	Model User Guide Version NSW 1.3 – Minor typographic and presentational amendments	17 December 2014
v1.4	Consistency of Model Version numbering between NSW and Victoria	2 February 2015
v1.5	Re-issue of controlled version of model with password update	4 March 2015
V1.6	Sundry amendments to assist inputs. Revision of calculation of benefits on sales margins. Additional explanations in Guide.	27 July 2015
V1.6.1	Amendment of error trapping in VBA code in Model. Editorial changes to User Guide (only) to prepare for publishing on NSW EPA website. Editorial changes to clarify copyright.	2 September 2015 4 April 2018 1 February 2019

Before using the Model a user should compare the version number and date of the Model with the Model and Model User Guide version history tables to ensure that the most recent versions of the Model and Model User Guide are being used.

1.3 Overview

The Model calculates the change in value that accrues to a business from **avoided** and **delayed expenditures** and additional **sales margins** that are attributable to non-compliance.

The Model does this by taking information on the size and timing of these cash flows and then calculating the **economic benefit** the business would have gained from having been able to retain and reinvest the **avoided** and **delayed expenditure** and any additional **sales margins**.

This can also be illustrated as being the **present value** of the sum of the following cash flows:



The Model calculates the change in economic value over the period between the benefits of non-compliance starting and the chosen date for the assessment of benefit.

The Model uses standard financial cash flow and present value analysis explained in Section 3.

1.4 Security

The Model has been locked in a manner which allows only the required inputs to be populated. This is to protect against:

- inadvertent or uncontrolled changes to the underlying Model structure;
- the risk that the Model may not operate in the way it is intended; and
- the risk that the Model may not operate in the way it may be described in documentation or to a court.

Updates to the Model are required to make sure the assumptions within the Model reflect up-to-date information on taxation and inflation (see Appendix B for more detail).

1.5 Key contact

The NSW EPA contact for this Model is:

Regulatory Practice and Reform Section
Regulatory Reform and Advice Branch
NSW Environment Protection Authority
(02) 9995 5000
MBO@epa.nsw.gov.au

2. How to operate the Model

This section of the Model User Guide covers:

- 1 Getting started;
- 2 Set-up (Menu 1 of 5);
- 3 Capital expenditure (Menu 2 of 5);
- 4 Operating expenditure (Menu 3 of 5);
- 5 Sales margins (Menu 4 of 5);
- 6 Scenario overview (Menu 5 of 5); and
- 7 Outputs.

This part of the Model User Guide explains how to operate the Model. It may be helpful to gain an overview of the Model's objectives and hence some context for the procedural explanations in this section, by first referring to Section 3 of the Model User Guide.

2.1 Getting started

2.1.1 Preparing a summary of the case

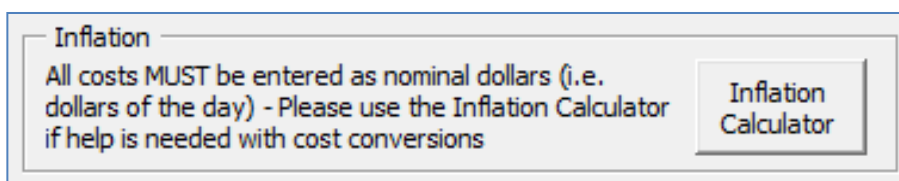
Before the Model is opened it is useful to summarise the key features of the case and the key circumstances which led to non-compliance. This will facilitate the preparation of inputs. Before opening the Model, it is suggested that a user documents a short answer to the following questions:

- 1 What **should** the business have done to be compliant?
- 2 When **should** they have done it?
- 3 When **did** they actually do it?

2.1.2 Input values – nominal and real dollars

The Model requires all financial inputs to be inserted in nominal dollars (dollars of the day). This means that an amount of avoided expenditure arising in say 2008, needs to be input as the amount that would have been expended in 2008, not the amount that would be expended on that same item today (or at any other time). Otherwise there is a risk that the economic benefits calculated by the Model could double count or omit the effects of inflation.

In some circumstances inputs may not be known in terms of “the dollars of the day”. To address this, the Model contains a separate inflation adjustment calculator. The inflation adjustment calculator is included in each Menu where a financial value needs to be inputted.



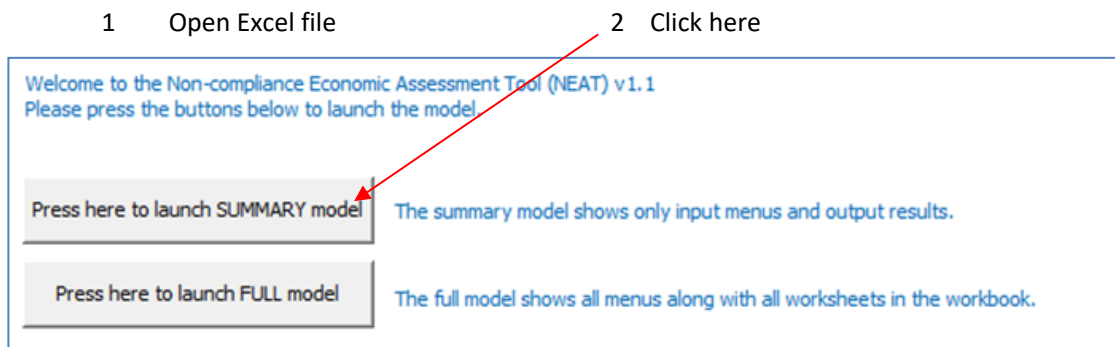
2.1.3 Opening the file

To start to enter inputs, you will need to choose between launching the SUMMARY Model or the FULL Model on the “Start Page”. The FULL Model will show all calculation sheets. The SUMMARY Model will hide calculation sheets and just show the main sheets.

It is suggested that:

- the SUMMARY Model is normally used to quickly determine and print out the results of cases and scenarios;
- the FULL Model is printed out or accessed on the screen to provide a transparent trail of workings and calculations that underpin the results of the Model.

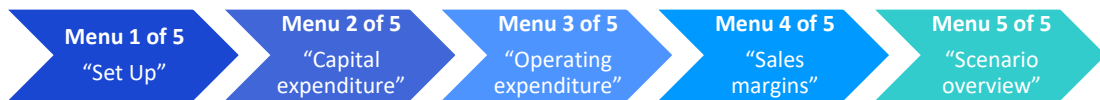
However, it should be noted that the results from the Model will be the same regardless of whether the SUMMARY model or the FULL model has been used.



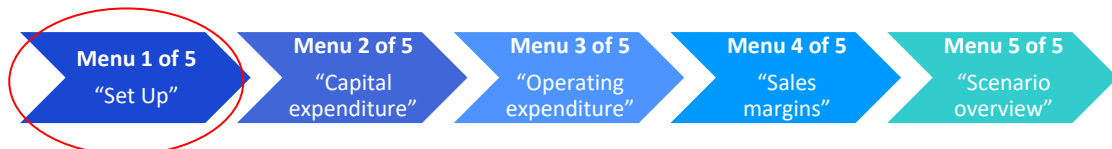
2.1.4 Model menus

The model contains five menus which are navigated through by using the “Next” and “Back” buttons or the drop-down menu. The model contains controls which will alert the user to any required inputs that have not been made prior to continuing to the next menu sheet.

An overview of the five menus is shown in the diagram below:



2.2 Set Up (Menu 1 of 5)



The “Set Up” menu sheet requires case specific information. The Model set up fields should be consistent with information held on the case file. The screen shot below shows how the Model Set Up sheet looks in the Model:

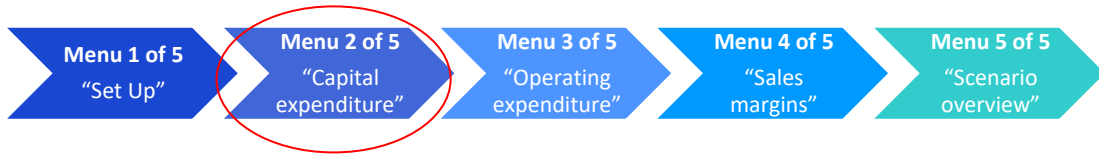
1. Input the case name. This requires a text input that should be the same name used in the EPA case file
2. Choose scenario name. This requires selection from a drop-down menu of "Base Case," "Scenario 1", "Scenario 2", or "Scenario 3"
3. This requires a short description of the scenario. For example, "Extension to date for assessment" or "Use of higher rate of return"
4. Type your full name here. This requires a text input showing the full name of the EPA investigator who is using the Model
5. Select from a drop-down menu the region where the non-compliance took place. This input is required to apply the correct CPI data assumptions

The screenshot shows a 'Set Up (Menu 1 of 5)' dialog box with the following fields and controls:

- Case Details:**
 - Case Name: [Text input field]
 - Scenario Name: [Drop-down menu with 'Base Case' selected]
 - Units: [Drop-down menu with '\$'000' selected]
 - Please write a brief description for: Base Case [Text area with 'xxx' entered]
 - Analyst Name: [Text input field]
 - Region: [Drop-down menu with 'Victoria' selected]
- Timing Assumptions:**
 - Timing of Analysis: [Drop-down menu with 'Financial Year' selected]
 - Date for Assessment: [Date picker showing 31, March, 2015]
- Nominal rate of return:** [Text input field with '10 %' entered]
- Tax Rate:** [Text input field with '30 %' entered]
- Buttons: Save, Print, Next >, Cancel

6. Select the type of units you will use. This requires selection from a drop-down menu as to units of \$, \$'000 or \$Millions
7. Choose between "Financial Year" or "Calendar Year". If in doubt, it is suggested that the "Financial Year" is used
8. Use the drop-down menus to set the chosen date for assessment of benefits. This date could be the current date, or more commonly, a future date (such as the court hearing date or the expected sentencing date)
9. Type in the nominal rate of return to be used for the analysis. This requires an off-Model assessment of the appropriate rate of return for the specific business. Further guidance on the rate of return is shown in Appendix C of this Model User Guide
10. Type in the marginal tax rate to be used for the analysis. This requires an off-Model assessment of the appropriate tax rate for the specific business. Further guidance on the tax rate is shown in Appendix C of this Model User Guide
11. Click "Next"

2.3 Capital expenditure (Menu 2 of 5)



Category Names	Value	Start Date	End Date (Date for Assessment)		
			Day	Month	Year
			31	March	2015
			31	March	2015
			31	March	2015
			31	March	2015
			31	March	2015
			31	March	2015
			31	March	2015
			31	March	2015
			31	March	2015

Capital expenditure is expenditure that creates future benefits. **Capital expenditure** is incurred when a business spends money either to buy assets or to add to the value of an existing fixed asset. These expenditures may include items such as buildings and machinery. The capital expenditure estimate should include all investment outlays avoided and delayed by non-compliance. No inputs are necessary if no capital investment was avoided or delayed.

The **Avoided Capital Expenditure** and **Delayed Capital Expenditure** menu tabs require assumptions on the size and timing of capital expenditure that was avoided and/or delayed by the business. These inputs should be consistent with information held on the case file. Inputs should be made exclusive of Goods and Services Tax (GST).

2.3.1 Tax lives of assets

The Model requires the user to input the tax lives of the avoided or delayed capital expenditure. As a general rule, businesses can reduce their taxation liabilities by deducting **capital expenditure** against taxable income over the life of the asset created by that capital expenditure. The Model applies this approach to individual items of **capital expenditure**.

For example, assume that a business has:

- taxable income of \$100 p.a.;
- makes \$60 of **capital expenditure** in year 1; and
- that **capital expenditure** creates an asset that for taxation purposes, is assumed to have a useful life of three years (i.e. a **tax life** of three years).

Then the business's taxable income and hence taxation liability, will be reduced by the **capital expenditure**, as follows:

	Year 1	Year 2	Year 3
Taxable income before capital expenditure	\$100	\$100	\$100
Capital expenditure deductible over a tax life of three years	<u>\$ (20)</u>	<u>\$ (20)</u>	<u>\$ (20)</u>
Taxable income after tax depreciation	\$80	\$80	\$80
Assumed tax rate 30%			
Taxation liability (30% x \$80)	<u>\$24</u>	<u>\$24</u>	<u>\$24</u>

Had the **capital expenditure** not have been made, the business would have had a taxation liability of **\$30**, being \$100 of taxable income multiplied by the tax rate of 30%, in each of the three years.

The Australian Tax Office (ATO) publishes guidance on standard asset lives which can be used to determine the period over which expenditure on assets can be deducted against taxable income. By way of illustrative guidance, the Model includes a link which takes the user to the most recent guidance published by the ATO. The user will need to use the index for the guidance or in the pdf indexing function to find the most relevant asset category depending on the type of expenditure.

NB: Where expenditure has been avoided in prior years, it is possible that the standard asset life ruling at the date of avoided expenditure may be different to the current standard asset life. A user may need to research into historic standard asset lives to determine whether this may be the case before finalising the calculation of avoided tax depreciation for each asset.

For example, the search can be conducted using a description of the sector (e.g. "manufacturing") or of the particular asset (e.g. "garbage compactor trucks"). It is the responsibility of the user to make the appropriate judgment on the most suitable asset category and the relevant tax life of the asset.

2.3.2 Avoided capital expenditure

Avoided **capital expenditure** is an expenditure which was required by a business to be compliant with environmental regulations, which was never made by the business.

The Model requires the following information for each item of **capital expenditure** that has been avoided:

Model input field	Description
"Category Name"	Description of asset/capital expenditure
"Value"	Value of avoided expenditure
"Start date"	Date on which expenditure was avoided
"Tax lives"	See Section 2.3.1 above

As the expenditure has been avoided, the end date of the benefit is pre-populated as the ***date for assessment***.

The screenshot below shows how the menu looks in the Model:

Capital Expenditure (Menu 2 of 5)

Capital Expenditure (Menu 2 of 5) Clear Form ?

Avoided Capital Expenditure | Delayed Capital Expenditure

Avoided Capital Expenditure (\$'000)

Category Names	Value	Start Date	End Date (Date for Assessment)
			31 March 2015
			31 March 2015
			31 March 2015
			31 March 2015
			31 March 2015
			31 March 2015
			31 March 2015
			31 March 2015
			31 March 2015
			31 March 2015
			31 March 2015
			31 March 2015
			31 March 2015
			31 March 2015
			31 March 2015
			31 March 2015
			31 March 2015

Enter Tax Lives ?

Inflation
All costs MUST be entered as nominal dollars (i.e. dollars of the day) - Please use the Inflation Calculator if help is needed with cost conversions

Inflation Calculator Save Print < Back Next > Cancel

NB: The Model does not accept duplicate names for expenditure or income category names in the following input menu:

- operating expenditure;
- capital expenditure; and
- sales margin.

This is to clearly identify different inputs to avoid calculation errors.

Where there are multiple categories of similar expenditure, distinguishing names should be used for example:

- Waste removal – Class a
- Waste removal – Class b.

2.3.3 Delayed capital expenditure

Delayed capital expenditure is an expenditure that was incurred at a time later than that at which the requirement to make the expenditure arose. Unlike ***avoided capital expenditure***, ***delayed capital expenditure*** is expenditure where the investment was eventually made by the business.

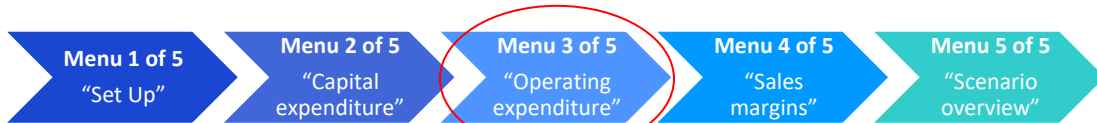
This is why the input menu for **delayed capital expenditure** requires the date when the **delayed expenditure** was actually made by the business to be inputted (End Date).

The Model requires the following information for each item of **capital expenditure** that has been delayed:

Model input field	Description
“Category Name”	Description of asset/capital expenditure
“Value”	Value of avoided expenditure
“Start date”	Date on which expenditure should have taken place
“End date”	Date on which expenditure took place
“Tax lives”	See Section 2.3.1 above

The screenshot below shows how the menu looks in the Model:

2.4 Operating expenditure (Menu 3 of 5)



Operating expenditure refers to non-capital costs that a business incurs. These expenditures may include the cost of labour, power, water, supplies or training of employees. This field can be left blank if no operating expenditure was avoided or delayed.

The “avoided” and “delayed” **operating expenditure** menu sheets require assumptions on the size and timing of operating costs that were avoided or delayed by the business. These inputs should be consistent with information held on the case file. Inputs should be made exclusive of Goods and Services Tax (GST).

2.4.1 Non-tax deductible operating expenditure

The Model includes separate fields for tax deductible and **non-deductible** operational expenditure items. In the normal course of events it would be reasonable to assume that the majority of **operating expenditures** avoided and delayed by a non-compliant business will be tax deductible. However, appropriate professional advice should be sought in determining whether any of the avoided and delayed operational expenditures are **non-deductible**.

Examples, at the time this Guide was written, of **non-deductible** items include:

- stamp duty charged by state or territory governments on the transfer of a property;
- fines and penalties imposed under Australian or foreign law, or ordered by the courts;
- borrowing expenses related to a loan that was taken out to pay a federal tax liability; and
- provisions for employees' long service leave, annual leave, sick leave or other leave (except where the organisation actually paid these amounts to an employee).

2.4.2 One-off or continuous operating expenditure

The user is required to identify if the **operating expenditure** is “one-off” or “continuous”. A one-off expenditure is a payment that should have been made at a single point in time (e.g. an invoice from a consultant to produce an environmental impact statement). A continuous expenditure is a payment which should have been spread evenly over time (e.g. wage expenses).

Each category of **operational expenditure** will require a separate input for each financial or calendar year. If the operational expenditure is recurring then multiple inputs will be required. For example, if the **avoided or delayed expenditure** was recurring wage expenditure in 2008, 2009 and 2010 a separate line item should be used for each year (therefore, three line items in total).

In this example, the expenditure should also be identified as “continuous” as it is likely the payments would be spread evenly over time (rather than a single one-off payment).

2.4.3 Avoided operational expenditure

Avoided operating expenditure is expenditure which was required by a business to be compliant with environmental regulations which was never made by the business.

The Model requires the following information for each item of **operating expenditure** that has been avoided:

Model input field	Description
“Category Name”	Description of operating expenditure
“Value”	Value of avoided expenditure
“Start date”	Date on which expenditure should have taken place
“One-off/continuous”	Select if the expenditure was at a single point in time or spread over the period from the start date to the end of the financial or calendar year

As the expenditure has been avoided, the end date of the benefit is pre-populated as the **date for assessment**.

The screenshot below shows how the menu looks in the Model:

2.4.4 Delayed operational expenditure

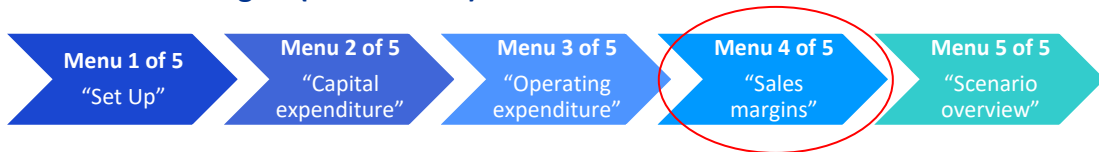
Delayed **operational expenditure** is an expenditure that was incurred at a time later than that at which the requirement to make the expenditure arose. The key difference with delayed **operational expenditure** is that the expenditure was eventually made by the business. This is why the input menu also requires a category for the date when the delayed expenditure was actually made by the business (End Date).

The Model requires the following information for each item of **operating expenditure** that has been delayed:

Model input field	Description
“Category Name”	Description of operating expenditure
“Value”	Value of avoided expenditure
“Start date”	Date on which expenditure should have taken place
“End date”	Date on which expenditure took place
“One-off/continuous”	Select if the expenditure was at a single point in time or spread over the period from the start date to the end of the financial or calendar year

The screenshot below shows how the menu looks in the Model:

2.5 Sales margins (Menu 4 of 5)



The Model can cater for the possibility that during a period of non-compliance, a business may have been able to sell and gain financial benefit from goods and services that ought to have been precluded until such time as it was compliant. For this input category it is important to note that the benefit to the business is not the total revenue earned. It is the total revenue less the costs associated with that revenue. See section 3.5 for more explanation.

The “**additional sales margin**” menu sheet requires inputs on the size and timing of any additional **sales margins**. These inputs should be consistent with information held on the case file. Inputs should be made exclusive of Goods and Services Tax (GST).

2.5.1 One-off or continuous sales margins

The user is required to identify if the sales margins were “one-off” or “continuous”. One-off sales margins would relate to a benefit at a single point in time (e.g. a non-compliant business receiving a single payment for accepting illegal waste). A continuous sales margin is a benefit which is spread evenly over the period between start date and the end of the calendar or financial year (e.g. on-going payments for accepting illegal waste).

Each category of additional **sales margins** will require a separate input for each financial or calendar year. If the **sales margins** are recurring then multiple inputs will be required. For example, if a business received additional **sales margins** that recurred in 2008, 2009 and 2010 a separate line item should be used for each year (therefore, three line items in total). In this example, if the additional **sales margins** were spread evenly over the period they should be identified as “continuous”. However, if the additional **sales margins** were experienced at a fixed point in time they should be identified as “one-off”.

The Model requires the following information for each item of additional *sales margins* that has been gained by the business:

Model input field	Description
“Category Name”	Description of additional sales margins
“Value”	Value of additional sales margins
“Start date”	Date on which additional sales margins started
“End date”	Date on which additional sales margins finished
“One-off/continuous”	Select if the sales margins were at a single point in time or spread over the period from the start date to the end of the financial or calendar year

The screenshot below shows how the menu looks in the Model:

Sales Margin (Menu 4 of 5)

Additional Sales Margin (\$'000)

Category Names	Value	Start Date	End Date (Date for Assessment)	One off/Continuous
		1 July 2012	1 July 2012	
		1 July 2012	1 July 2012	
		1 July 2012	1 July 2012	
		1 July 2012	1 July 2012	
		1 July 2012	1 July 2012	
		1 July 2012	1 July 2012	
		1 July 2012	1 July 2012	
		1 July 2012	1 July 2012	
		1 July 2012	1 July 2012	
		1 July 2012	1 July 2012	
		1 July 2012	1 July 2012	
		1 July 2012	1 July 2012	
		1 July 2012	1 July 2012	
		1 July 2012	1 July 2012	
		1 July 2012	1 July 2012	
		1 July 2012	1 July 2012	
		1 July 2012	1 July 2012	
		1 July 2012	1 July 2012	
		1 July 2012	1 July 2012	
		1 July 2012	1 July 2012	
		1 July 2012	1 July 2012	
		1 July 2012	1 July 2012	

Inflation
All costs MUST be entered as nominal dollars (i.e. dollars of the day) - Please use the Inflation Calculator if help is needed with cost conversions

Inflation Calculator

Save

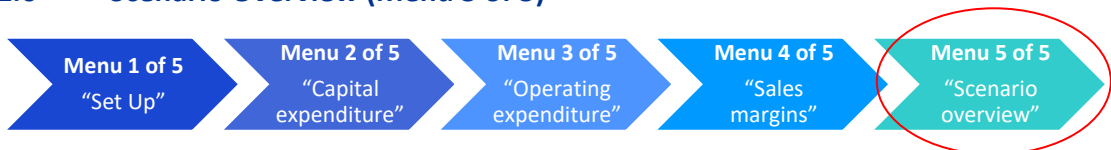
Print

< Back

Next >

Cancel

2.6 Scenario Overview (Menu 5 of 5)



The “Scenario Overview” box gives a brief overview of the inputs and outputs of the current scenario for the case. From this screen, you can choose to adjust any of the inputs, or “Finish” and generate the report.

Scenario Overview (Menu 5 of 5)

Base Case Assumptions

Region (for Inflation) Victoria
Financial Year

Date of Earliest Benefit 0/01/1900
Date for Assessment 1/07/2012

Nominal rate of return 10%

Change Dates
Change Rate

Input Summary

	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09
Avoided Capital Expenditure	-	-	-	-	-	-	-	-	-	-
Delayed Capital Expenditure	-	-	-	-	-	-	-	-	-	-
Avoided Operating Expenditure	-	-	-	-	-	-	-	-	-	-
Delayed Operating Expenditure	-	-	-	-	-	-	-	-	-	-
Additional Sales Margin	-	-	-	-	-	-	-	-	-	-

	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19
Avoided Capital Expenditure	-	-	-	-	-	-	-	-	-	-
Delayed Capital Expenditure	-	-	-	-	-	-	-	-	-	-
Avoided Operating Expenditure	-	-	-	-	-	-	-	-	-	-
Delayed Operating Expenditure	-	-	-	-	-	-	-	-	-	-
Additional Sales Margin	-	-	-	-	-	-	-	-	-	-

Output Summary

	Total nominal inputs
Total Avoided Capital Expenditure	\$0
Total Delayed Capital Expenditure	\$0
Total Avoided Operating Expenditure	\$0
Total Delayed Operating Expenditure	\$0
Total Additional Sales Margin	\$0
	\$0

Results Summary

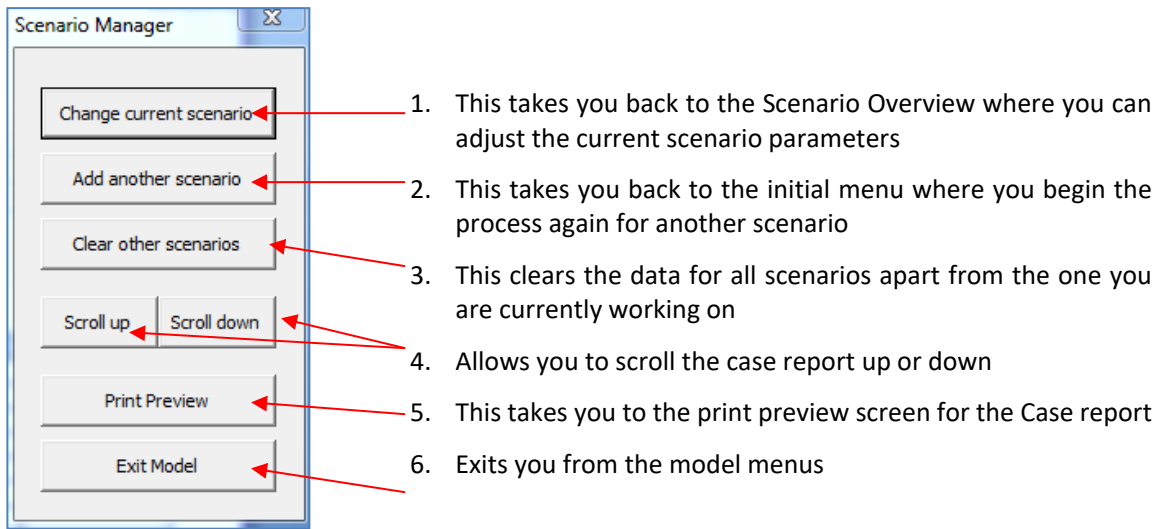
	Pre tax	Tax	Post tax
Present Value to Date for Assessment	\$0	\$0	\$0

Buttons: Finish & Go To Report, Back to initial menu, Print, Save

1. To change any of the assumptions, either use the “Change” buttons or return to the initial menu using the “Back to initial menu” button or the drop-down menu
2. Review the “Output Summary” to view summary outputs of the case
3. If you are satisfied with the assumptions, inputs and outputs, click “Finish & Go To Report” to generate the report or add additional scenarios

2.6.1 Completing the input menus

After clicking “Finish”, the scenario manager menu will appear on the screen. The scenario manager is a tool that enables the user to make adjustments to the inputs of the Base Case in order to compare the impact on outputs. The Model has the functionality to compare a Base Case with up to three additional scenarios.



2.7 Outputs

The key output of the Model is the value of **economic benefit** enjoyed by the business over the period between the benefits of non-compliance starting and the chosen **date for assessment**. This provides the economic value that a business gains over the period that the benefits of non-compliance accrue.

2.7.1 Case report

The Model generates the following report:

Non-compliance Economic Assessment Tool (NEAT) v1.1
Victoria
26/06/2012

Case Report

1. Overview

Case name:
 Report prepared by:

2. Key Assumptions

Key inputs and assumptions in \$'000

Input Category	Base Case	Scenario 1	Scenario 2	Scenario 3
Region (or Jurisdiction)	Victoria			
Firming of Analysis	Financial Year			
Date of Report/ Benefit	1/07/2010			
Date for Assessment	31/03/2015			
Normal rate of return	10.00%			
<i>Inputs (in actual \$'000 entered)</i>				
Total Avoided Capital Expenditure				
Total Delayed Capital Expenditure				
Total Avoided Operating Expenditure				
Total Delayed Operating Expenditure				
Total Additional Sales Margin				

3. Summary

The present value of the expenditure avoided or delayed (and additional sales margin gained) by non-compliance for the period:
 to is:
 after taxation and
 before taxation (in \$'000).

4. Scenario Analysis

Net present value of economic benefits of cash flows in \$'000

Input Category	Base Case	Scenario 1	Scenario 2	Scenario 3
Total Avoided Capital Expenditure				
Total Delayed Capital Expenditure				
Total Avoided Operating Expenditure				
Total Delayed Operating Expenditure				
Total Additional Sales Margin				
Tax				
Total Present Value of Economic Benefit at Date for Assessment after Tax				

Scenario Descriptions:
 Base Case: 100
 Scenario 1: -
 Scenario 2: -
 Scenario 3: -

2.7.2 Saving the Model

It is important to remember to save the Model frequently when completing the input sheets. An option button to save the Model is available on every menu. The button defaults to the “Save-As” functionality.

2.7.3 Use of the Model and reports

The Model is a tool which applies well established economic and financial principles to derive estimates of *economic benefit* on the basis of user inputs. Like any tool, its effectiveness will depend on how it is applied and the quality of the data inputs.

The scope of the Guide does not extend to providing general training in financial or economic analysis, which the Model assists. Nonetheless, consistent with general principles of good practice for financial and economic analysis, it is recommended that a user of the Model seeks appropriate professional review at key stages of developing a case to ensure that:

- the data inputted to the Model fairly reflects the underlying case information and circumstances;
- the Model’s operating assumptions are appropriate to the circumstances of the case;
- the outputs of the Model are properly understood and interpreted; and
- data uncertainty or variability has been dealt with appropriately by using the Model to apply techniques such as scenario and sensitivity testing.

3. How the Model operates

3.1 Overview

The Model calculates the change in value that accrues to a non-compliant business from avoiding and delaying costs of compliance and from changes in sales margins that are attributable to non-compliance.

The Model does this by taking information on the size and timing of expenditure delayed and avoided and changes in *sales margins*. It then calculates the economic benefits (at the time of assessment) as the additional value the business would have gained from having been able to retain and reinvest delayed and avoided expenditure and any *sales margins* (all net of tax).

The Model calculates the present value of the benefits accruing to a business for each item of avoided and delayed expenditure and any *sales margins* in the following categories:

Category	Model User Guide Reference
Avoided capital expenditure	3.2
Avoided operating expenditure	3.2
Delayed capital expenditure	3.3
Delayed operating expenditure	3.4
Additional sales margins	3.5
Taxation on avoided capital expenditure	3.6.2
Taxation on avoided operating expenditure	3.6.3
Taxation on delayed capital expenditure	3.6.2
Taxation on delayed operating expenditure	3.6.3
Taxation on additional sales margins	3.6.3

The total economic benefit is the net sum of the above items. The Model User Guide now explains how the Model calculates each of these, in the sections referred to in the list above.

3.2 Avoided expenditure

Principles

If a business is able to avoid expending a dollar, it will benefit from both:

- the retention of that dollar; and
- being able to earn a return by investing that dollar between the time it avoided paying it and the time the assessment is carried out.

Furthermore, the returns compound. That is to say that if a business earns a return in one year, that return will be reinvested to earn a further return in the next year. This is the same principle that causes interest earned on savings to compound.

Formula

The Model uses the following formula to calculate the **Present Value** of the benefits accruing to a business at the date for assessment.

$$PV = HV \times (1 + i)^T \dots\dots\dots \mathbf{A}$$

where:

- PV = **Present Value** of benefits at the date for assessment
- HV = Historic Value of the expenditure at the time it was avoided
- T = time period (in years) between the date the expenditure was avoided and the date for assessment
- i = annual rate of return. The model assumes a nominal rate of return. For more information on this, please see Appendix C.

Worked example

Avoided expenditure (HV) = \$100,000

Rate of return (i) = 10%

Period between the date expenditure was avoided and the date for assessment (T) = 5 years

The following table illustrates how the present value of economic benefits grows over the five year period, on a starting amount of \$100,000.

Year (T)	Total	Year 1	Year 2	Year 3	Year 4	Year 5
Return earned (10% pa)	\$61,051	\$10,000	\$11,000	\$12,100	\$13,310	\$14,641
PV at end of year		\$110,000	\$121,000	\$133,100	\$146,410	\$161,051

The example above shows that in Year 5 the present value (PV) of the original \$100,000 would be \$161,051. This comprises:

- the expenditure avoided and retained \$100,000
- five years’ returns (pre-tax) \$ 61,051
- \$161,051

The same principle applies to both operating and capital expenditure and to **Sales Margins** (See Section 3.5). The model applies formula **A** to each item of avoided expenditure.

3.3 Delayed capital expenditure

Principles

Where a business may delay capital expenditure, the principles outlined in section 3.2 above apply here too, except that the business:

- does not retain the delayed expenditure; and
- does not earn returns on that expenditure beyond the time the expenditure is made.

The business will, however, continue to compound the returns earned over the period of delay, past the time the expenditure is made.

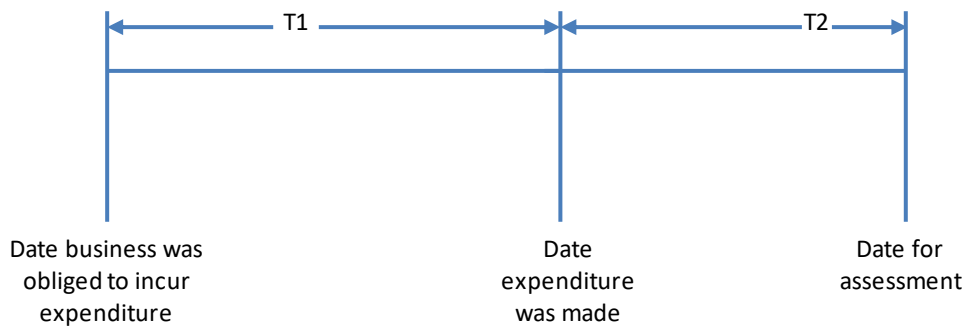
Formula

The present value of economic benefits is calculated as:

$$PV = (HV \times (1 + i)^{T1} - HV) \times (1 + i)^{T2} \dots\dots\dots \mathbf{B}$$

where:

- PV = **Present Value** of benefits at the **date for assessment**
- HV = Historic Value of the delayed expenditure
- i = annual rate of return.
- T₁ and T₂ are the period of delay and the period between the date of expenditure and for assessment, respectively:



The model assumes the expenditure that is eventually made equals the expenditure avoided, grossed up for inflation over the period T₁. However, there may be some circumstances where the expenditure made could be more or less than the expenditure avoided which could result in minor variances.

Worked example

Assume:

- Delayed capital expenditure (HV) = \$100,000
- Rate of return (i) = 10%
- The period of delay (T₁) = 2 years
- The period between the expenditure and date for assessment (T₂)= 3 years.

In this case, the economic value accruing to the business at the date for assessment is as follows (applying the above assumptions to formula B).

$$\begin{aligned}
 PV &= (\$100,000 \times (1 + 10\%)^2 - \$100,000) \times (1 + 10\%)^3 \\
 &= \$21,000 \times (1 + 10\%)^3 \\
 &= \underline{\underline{\$27,951}}
 \end{aligned}$$

This is illustrated further below:

	Year 1	Year 2	Year 3	Year 4	Year 5
Return earned (10%)	\$10,000	\$11,000	\$2,100	\$2,310	\$2,541
Less expenditure made at end of year		\$(100,000)			
Present value at end of year before expenditure	\$110,000	\$21,000	\$23,100	\$25,410	\$27,951

The model repeats this calculation for each item of capital expenditure.

3.4 Delayed operating expenditure

Principles

Operating expenditure can recur each year or be one-off. Where the start of a stream of recurring operating expenditure has been delayed, the delayed expenditure is treated as if it were avoided, because there is no “catch up” or “make good” by the business. In this case, the model applies the formula set out in section 3.2 above.

Example

Assume that a business was required to employ a permanent staff member with effect from the start of Year 1, at \$50,000 per annum, but did not do so until Year 3. The business has retained the benefit of two years’ savings in wages.

Cash Flows

	Total	Year 1	Year 2	Year 3	Year 4	Year 5
Compliant business	\$250,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000
Non-compliant business	\$150,000	\$-	\$-	\$50,000	\$50,000	\$50,000

The difference of \$100,000 arising in Years 1 and 2 is, in reality, avoided expenditure.

Principle

Now assume that an item of operating expenditure that:

- was incurred at a time later than that at which the requirement to make the expenditure arose; and
- would not have been incurred at that later time had it been incurred earlier.

This form of expenditure:

- is classified as delayed expenditure for the purposes of this model; and hence
- is subject to the formula and principles set out at section 3.3 above.

Example

Suppose the business was required to develop an Environmental Management Plan in 2005 but did not do so until 2007. The cost of the development of this plan would be classified as delayed operating expenditure.

3.5 Additional sales margins

Principle

The Model can cater for the possibility that during a period of non-compliance, a business may have been able to sell and gain financial benefit from goods and services that ought to have been precluded until such time as it was compliant. For example, the process of production or supply of goods and services may cause the business to contravene legislation or regulation.

In such an instance, the business will have:

1. gained additional revenues from sales that would not have otherwise been made; but
2. likely incurred costs directly associated with making those sales, which it would have avoided had it not made the sales (such as materials or inventory consumed) – often referred to as the “cost of sales”.

Where this may arise, the benefit (before tax) to the business is the amount by which the revenues earned exceed the corresponding cost of sales. The Model refers to this amount as a **Sales Margin**.

The Model applies the principles and equation **A** explained at Section 3.2 of this Model User Guide to determine the **Present Value** of the economic benefits that may attach to a business in such circumstances

Worked example

- Additional Sales margins (HV) = \$100,000 – assumed to be a one-off event arising at the start of Year 1 only
- Rate of return (i) = 10%
- Period between the date additional sales margins arose and the **date for assessment** (T) = 5 years

Apply Equation A

	Total	Year 1	Year 2	Year 3	Year 4	Year 5
Additional Sales margins		\$100,000				
Return (10%) earned from investment of sales margin	\$61,051	\$10,000	\$11,000	\$12,100	\$13,310	\$14,641
Present value of benefit at end of year		\$110,000	\$121,000	\$133,100	\$146,410	\$161,051

The example above shows that at the end of Year 5 the present value (PV) (before taxation) of the additional sales margins earned while non-compliant, of \$100,000 would be \$161,051.

This comprises:

- additional sales margins earned \$100,000
- five years’ returns on those margins \$ 61,051
- \$161,051

3.6 Tax calculations

3.6.1 Principles

A business will receive a financial benefit from avoiding and delaying expenditure. However, in so doing, it will also avoid the benefit of tax deductions on that expenditure¹. Accordingly, the Model calculates the benefits that accrue to a business both before and after taxation.

To do this, the Model calculates the marginal tax cash flow changes which arise from changes in expenditure and *sales margin*.

The tax calculations for *avoided capital expenditure* and *operating expenditure*, and additional sales margins are different. This is because:

- *capital expenditure* on an asset is deductible against taxation over the life of the asset, according to a set of standard asset lives assumed for taxation purposes;
- *operating expenditure* is deductible against taxation in the year the expenditure is incurred; and
- likewise, margins earned on sales are liable to taxation in the year the margins are earned.

In each case, the Model assumes that tax payments arise in the year following the year in which the additional tax liability was incurred or avoided.

Also, because the benefits from avoided expenditure compound, it is necessary to similarly compound the offsetting tax effect. Accordingly, the Model calculates the *Present Value* of the tax effect using the principles outlined in the sections 3.2 to 3.5 above.

The following subsections describe and exemplify the methods that the Model uses to calculate the *Present Values* of the taxation offsets.

Note that the Model can accommodate the contingency where a business may avoid expenditure that is not tax deductible. In such cases the Model does not account for any cash flows associated with that particular expenditure.

3.6.2 Capital expenditure

Step 1 – Calculating the *tax depreciation* of the asset

Consider a period of p years between when *capital expenditure* has been delayed or avoided and a *date for assessment*, where:

- TCF = the annual tax cash flow resulting from the *tax depreciation* in each year within the period;
- J = the tax rate;
- HV = Historic Value of asset; and
- L = Tax life of asset

¹ Conversely any benefit a business receives from being able to profit from additional sales margins as a consequence of non-compliance, will be offset by tax payable on that profit.

For each year 1 to L,

$$TCF = - \frac{(J \times HV)}{L} \dots\dots\dots C$$

Step 2 – Calculating the *Present Value of tax depreciation*

First of all it is necessary to determine, then add together, the present values of each year’s tax depreciation over period p. This gives the expression:

$$T = p$$

$$\sum_{T = 1} TCF \times (1 + i)^T \dots\dots\dots D$$

Tax cash flows are assumed to arise in the year after the year in which the liability is incurred. Therefore they are delayed by one year and hence it is necessary to “discount” this total present value by one year.

Accordingly,

$$PV_{TCF} = \frac{\sum_{T = 1}^{T = p} TCF \times (1 + i)^T}{(1 + i)} \dots\dots\dots E$$

Where $p > L$ the asset would become fully written off or depreciated against taxation liabilities and no further **tax depreciation** would accumulate over the period between that date and the **date for assessment**.

Nonetheless the benefits foregone from lost tax deductions will continue to compound, after the deduction has been lost.

Accordingly, where $p > L$:

$$PV_{TCF} = \frac{\left(\sum_{T = 1}^{T = L} TCF \times (1 + i)^T \right)}{(1 + i)} \times (1 + i)^{(p-L)} \dots\dots\dots F$$

In the instance of delayed capital expenditure, the Model applies the approach described above, except that tax depreciation is assumed to cease to be available at the earlier of:

- the date at which the expenditure is made; and
- the expiry of the asset’s tax life (L).

Example of tax treatment of capital expenditure

Assume:

- Avoided capital expenditure (HV) = \$30,000;
- Tax life of asset (L) = 3 years;
- Marginal tax rate (J) = 30%;
- Nominal rate of return (i) = 10%; and
- Period between date at which the obligation to make the (avoided) expenditure arose and **date for assessment** (p) = 6 years.

Step 1

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Undepreciated capital expenditure	\$30,000	\$20,000	\$10,000			
Tax depreciation	(\$10,000)	(\$10,000)	(\$10,000)			
Tax cash flow (TCF) arising in the following year, being 30% of tax depreciation	\$-	(\$3,000)	(\$3,000)	(\$3,000)	\$-	\$-

Step 2

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
1st year's tax depreciation						
Return offset (10%) -		(\$300)	(\$330)	(\$363)		
Present value of tax effect of tax depreciation		(\$3,300)	(\$3,630)	(\$3,993)		
2nd year's tax depreciation						
Return offset (10%) -			(\$300)	(\$330)		
Present value of tax effect of tax depreciation			(\$3,300)	(\$3,630)		
3rd year's tax depreciation						
Return offset (10%) -				(\$300)		
Present value of tax effect of tax depreciation				(\$3,300)		
Total Present value to end of asset tax life		(\$3,300)	(\$6,930)	(\$10,923)		
Return offset (10%)					(\$1,092)	(\$1,202)
Total present value	\$-	(\$3,300)	(\$6,930)	(\$10,923)	(\$12,015)	(\$13,217)

Substituting the assumptions:

- Avoided capital expenditure (HV) = \$30,000;
- Tax life of asset (L) = 3 years;
- Marginal tax rate (J) = 30%;
- Nominal rate of return (i) = 10%; and
- Period between date at which the obligation to make the (avoided) expenditure arose the and **date for assessment** (p) = 6 years

into equation F above, provides the same result, namely:

$$TCF = - 30\% \times \$30,000 / 3 = \$3,000 \text{ pa}$$

Therefore

$$PV_{TCF} = - \frac{(\$3,000) \times ((1 + 10\%)^1 + (1 + 10\%)^2 + (1 + 10\%)^3)) \times (1 + 10\%)^{(6-3)}}{(1 + 10\%)}$$

$$= (\$13,217)$$

3.6.3 Operating expenditure and sales margins

Principles

The Model calculates tax cash flows associated with avoided and delayed operating expenditure for a year T as:

$$TCF_T = - \text{Avoided or delayed Opex}_{T-1} \times J \quad \dots\dots\dots G$$

where

- TCF_T = the tax cash flow in year T
- $\text{Avoided or delayed Opex}_{T-1}$ = Operating expenditure avoided or delayed in the prior year T-1
- J = is the tax rate

The model then:

- calculates the **Present Value** at the **date for assessment**, of the foregone tax benefit arising in each year; and
- totals the present values for all years.

The same principles are applied to the additional tax cost that arises on additional **sales margins**.

$$TCF_T = - \text{Additional sales margin}_{T-1} \times J \quad \dots\dots\dots H$$

where

- $\text{Additional sales margin}_{T-1}$ = Additional **sales margin** earned in the prior year T-1

In the same way as the loss of tax deduction reduces the net benefit to a business of avoided or delayed expenditure, the additional tax liability arising on additional sales margins earned also reduces the benefit accruing to a business.

Example of tax treatment of operating expenditure

The following simplified example illustrates how the Model calculates the tax effect for a one-off avoided item of operating expenditure.

Assume

- The tax benefit forgone would have arisen at the start of Year 2
- Avoided operating expenditure (HV) = \$50,000
- Marginal tax rate (J) = 30%
- Nominal rate of return (i) = 10%

Step 1

	Year 1	Year 2	Year 3	Year 4	Year 5
Operating expenditure (HV)	\$50,000				
Tax cash flow		(\$15,000)	-	-	-

Step 2- **Applies Equation G**

	Total	Year 1	Year 2	Year 3	Year 4	Year 5
Tax cash flow			(\$15,000)			
Return offset	(\$6,962)		(\$1,500)	(\$1,650)	(\$1,815)	(\$1,997)
Present value of tax cash flow		\$ -	(\$16,500)	(\$18,150)	(\$19,965)	(\$21,962)

The example above shows that in Year 5 the present value (PV) of the original tax deduction forgone of \$15,000 would be \$21,962.

This comprises:

- | | |
|-------------------------------------|-----------------|
| • the original benefit forgone | \$15,000 |
| • five years' reductions in returns | <u>\$ 6,962</u> |
| | <u>\$21,962</u> |

3.7 Inflation adjustments

3.7.1 Overview

The Model requires inputs to be inserted in nominal dollars (dollars of the day). This requirement is based on the premise that expenditure (or sales margins) is most likely to be obtained from records of cost or prices at the time. The Model then arrives at a present value of the economic benefits of non-compliance, expressed in dollars that include inflation to the **date for assessment**. (The Model does this by using a "nominal" rate of return).

This means that an amount of avoided expenditure arising in say 2008, needs to be input as the amount that would have been expended in 2008, not the amount that would be expended on that

same item today (or at any other time). Otherwise there is a risk that the economic benefits calculated by the Model could double count or omit the effects of inflation.

However, in some circumstances, inputs may not be known in terms of “the dollars of the day”. To address this, the Model contains a separate inflation adjustment calculator. For example, if the value of an asset is known in 2012 but the avoided expenditure took place in 2008, then the inflation calculator can be used to convert the value from the value in 2012 to the value in 2008.

The inflation adjustment calculator is shown in the screenshots below.

The inflation adjustment calculator allows the user to calculate the values across different years into nominal values.

Appendix B explains the sources of CPI data. For CPI forecasts, the rate of change arising in the latest quarter forecast is assumed to continue unchanged for subsequent periods.

3.7.2 Formula

Nominal values are related to real values by the following arithmetic relationship:

$$N = R(1 + \Delta CPI_{t_2-t_1})$$

where:

- N = Nominal value (Dollars of the year t_2 you want to convert to)
- R = Real value (Dollars of the year t_1 in which the information you have at hand, is expressed)
- $\Delta CPI_{t_2-t_1}$ = proportional change in CPI from t_1 (the date the real values are in) to t_2 (the date you want to convert values to)

The Model is pre-populated with CPI data that has been sourced from the Australian Bureau of Statistics (ABS) and is recorded quarterly.

3.7.3 Worked example

The above formula is shown in the example below:

Example of inflation adjustment

Real value (R) = \$100,000

CPI at date expenditure was avoided t_2 = 169.5

CPI at date of Real cost t_1 = 184.5

Change in CPI between dates ($\Delta CPI_{t_2-t_1}$) = $\frac{169.5-184.5}{184.5} = -0.082$

$N = \$100,000 \times (1 - 0.082)$

= \$91,800

Appendix A: Glossary of terms

The following glossary of terms has been drafted to provide meanings recognisable by a lay person for the purposes of understanding the Model, rather than formal technical definitions. If necessary, appropriate professional advice should be sought on general purpose definitional matters.

Avoided expenditure	An expenditure which was required by a business to be compliant with environmental regulations which was never made by the business. The expenditure was avoided because there was no “catch up” of the expenditure by the business.
Capital expenditure (capex)	Capital expenditures are expenditures creating future benefits. Capital expenditure is incurred when a business spends money either to buy assets or to add to the value of an existing fixed asset with a useful life extending beyond the financial year. The Model assumes that capital expenditure will be identified in accordance with generally accepted accounting principles.
Consumer Price Index (CPI)	The Consumer Price Index measures the changes in prices of goods and services purchased by households.
Date for assessment	The chosen date for assessment of benefits. This date could be the current date, or more commonly, a future date (such as the court hearing date or the expected sentencing date).
Delayed expenditure	An expenditure that was incurred at a time later than that at which the requirement to make the expenditure arose.
Economic Benefit	The economic benefit to a business from not having complied with environmental requirements in a timely manner.
Marginal Tax Rate	The amount of tax paid on an additional dollar of income.
Non-deductible expenditure	Expenditure specified under income tax law as non-deductible against taxable income and hence does not reduce a business’s taxation liability.
Operational expenditure (opex)	Non-capital expenditure that a business incurs.
Present Value (PV)	The value on a given date of a cash flow or series of cash flows made at other times.
Rate of return	The rate of return that a business could earn on avoided or delayed expenditure or additional sales margins.
Sales Margins	Revenue less the costs directly associated with that revenue.
Tax depreciation	That part of the total expenditure on an asset that can be deducted each year from a business’s taxable income to reduce the business’ taxation liability.
Tax lives of assets	The period over which expenditure on assets can be deducted against taxation liabilities.

Appendix B: Updates to the Model for publicly available data

Data	Source	Update	Effective date of last update
Tax lives of assets	Australian Tax Office (ATO) Taxation Ruling TR 2014/4 - Income tax: effective life of depreciating assets	User inputs on a case by case basis	1 July 2014
Tax rates	Australian Tax Office (ATO)	User inputs on a case by case basis	1 July 2014
CPI (Historic)	Australian Bureau of Statistics (ABS) 6401.0 Consumer Price Index, Australia, TABLES 1 and 2. CPI: All Groups – Capital Cities and weighted average of capital cities	Quarterly	31 December 2014
CPI (Forecast)	Reserve Bank of Australia (RBA) Statement on Monetary Policy	Quarterly	For periods starting 1 January 2015 forecasts published in November 2014 for the two years ending 31 December 2016

Note: For the years after 2016 and up to 2021, the Model uses the 2016 projected CPI (forecast) rate for those years. Updating CPI data has the effect of replacing forecasts of CPI based on RBA data with known historic CPI.

Appendix C: Off-model assumptions

Rate of return

The Model requires as an input, a nominal rate of return. By this, we mean a rate of return which includes inflation and which represents the return a business could earn on avoided or delayed expenditure, or additional sales margins.

Broadly speaking, a business's assets are normally financed by a combination of debt and equity. The weighted average cost of capital (WACC) is the weighted average of the returns required by the providers of these sources of financing.

Pre and post-tax rates of return

The Model can be used to calculate benefits that accrue to a business either:

- net of avoided tax benefits and/or costs; or
- before avoided tax benefits and/or costs.

If a user wishes to calculate benefits net of avoided taxation benefits and costs:

- a post-tax rate of return should be used; and
- the taxation inputs to the Model should be completed (e.g. input a marginal rate of tax and for assets, tax depreciation lives).

If a user wishes to calculate benefits before avoided taxation benefits and costs:

- a pre-rate of return should be used;
- the tax rate should be set to zero; and
- no values entered for assets taxation depreciation lives.

It is necessary for the user to understand whether the rate of return input to the Model is a pre-tax or post-tax rate of return.

The relationship between a pre-tax and a post-tax rate of return is:

$$\text{Pre-tax rate of return} = \frac{\text{Post-tax rate of return}}{(1 - \text{Tax rate})}$$

Illustrative example rates of return

For the purposes of the Model, detailed WACC calculations may be required to accurately develop a rate of return. In the absence of detailed calculations, bank lending rates provide one potential proxy for nominal pre-tax rates of return. For example, for businesses where it might be reasonable to assume marginal savings from avoided or delayed costs would be utilised to reduce short term borrowing costs.

Bank lending rates can be sourced from the Reserve Bank of Australia (RBA) and vary according to a range of factors including the size of business and the term of the borrowing.

An example of bank lending rates is shown in the table below:

% per annum	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Small business ⁽¹⁾	9.10	9.35	9.35	10.10	11.55	9.25	10.15	11.00	10.70	9.80	9.30
Large business ⁽²⁾	6.55	6.70	6.60	7.05	8.00	5.35	6.20	6.60	6.20	5.10	4.60

⁽¹⁾ Small business, small overdraft rate as of March each year, RBA

⁽²⁾ Large business weighted-average variable rate on credit outstanding as of March each year, RBA
See RBA's indicator lending rates (F5): <http://www.rba.gov.au/statistics/tables/>

It is important to note the above approach should be considered as a single example of a number of valid alternatives only and appropriate professional advice should be sought on a rate of return for each specific business to ensure the accuracy of the outputs of the Model.

Marginal tax rate

The marginal tax rate is the amount of tax paid on an additional dollar of income. The marginal rate can vary between tax payers, businesses, corporate entities and over time.

For example, at the time of writing this Guide the standard corporate tax rate in Australia is 30%. Examples of entities subject to the 30% marginal tax rate include corporations, corporate limited partnerships and public trading trusts. However, some entities are taxed at different rates.

Appropriate professional advice should be sought on the marginal tax rate for each specific business to ensure the accuracy of the outputs of the Model.

