

Teach Yourself Economic Evaluation

0. Start Here

**The purpose of this free website is to
'teach yourself economic evaluation'.**

**It may contain errors so always check your own work
and have it audited by a competent person**

Spend only a few seconds on each slide

Economic Evaluation is ...

If you work in a company, a government body, own your own business, have a project or an idea or make investments then economic evaluation is a well established activity to continuously understand, assess and steer your activity.

It works in manufacturing, health, mining, education, tradesmen, investors, financing, environment, utilities, inventors, service industries, research, catering, retail, Internet, shops, cafes, etc.

This website focusses on mining but applies universally.

1. You create an easy-to-understand Excel model of the activity – which can be as simple or as detailed/complex as you want.
2. You and your colleagues compare your basic plan with other possible scenarios and ideas to identify the strengths and weaknesses of each
3. The decision-makers select the best way into the future.
4. You and your colleagues keep updating your model and interact to decide if changes in direction are wise.

This website is all about being fast, easy-to-follow, transparent, collaborative and correct. It rejects advanced Excel and complex algorithms but uses simple small steps that are quick for everyone to understand.

Economic Evaluation is ...

Economic evaluation was devised about fifty years ago to bridge the gap between operations/engineering and accounting.

In its early years it was all about using a calculator to compute economic returns like NPV, IRR and payback for projects and businesses. As computing power increased so did the computations. In the 1990's people started taking pride in sophisticated workbooks ("models") with complex algorithms and advanced Excel functions. They focussed on computing NPV and IRR. There are relics of this era who persist with convoluted and sophisticated model today – especially amongst immature analysts. Many people called this work “financial modelling” or “financial analysis” – which you can read later is a misnomer.

Today, Economic Evaluation is a profession where the modelling is open, transparent and easy-to-follow, even when the underlying complex business requires a long and detailed model. But more importantly it recognises that modelling for NPV and IRR is no longer the focus, but is a tool for higher level intellectual work.

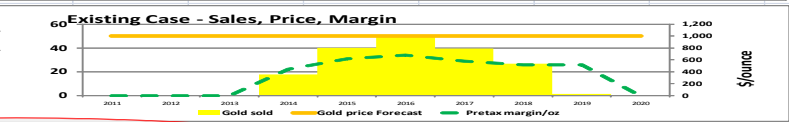
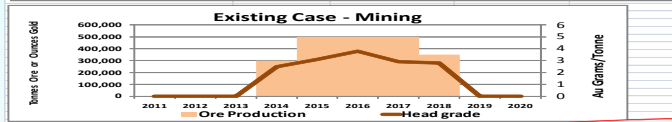
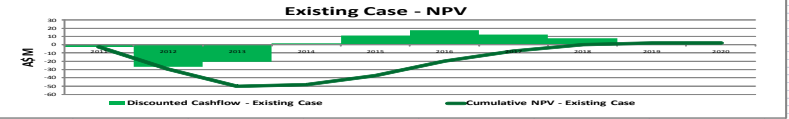
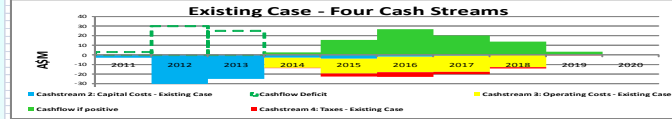
Existing case

carbon in pulp technology

NPV - Existing Case

IRR - Existing Case

AS\$ 2,007,342
9.1%



Today, Economic Evaluation is much, much more than creating a 'clever' model to compute NPV.

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Revenue										
23 Aug 10 ABC Company Forecast										
Gold price Forecast										
Gold Revenue	AS	Real	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
23 Aug 11 J Gomachie: "Sales Plan: July 2011"										
Debtors - Closing	AS	Real								
Cashstream 1: Revenue - Existing Case	AS	Real	175,736,334							
Cashstream 2: Capital Costs										
10 Aug 10 G Dawson "Capital Cost Estimate: Indicative Estimates Version G"										
Initial Capital Costs	AS	Real	3,000,000							
Ongoing Capital Costs	AS	Real	10,000,000							
Cashstream 2: Capital Costs - Existing Case	AS	Real	68,000,000	3,000,000	30,000,000	20,000,000	3,000,000	1,000,000	0	0
Tax deductions for Capital Expenditure										
3 May 11 E Hermi Assume all capital is deducted in proportion to the gold sold over the life of mine										
Tax Deduction for Capital Expenditure	% of contained gold									
Tax deduction for capital expenditure			68,000,000							
Cashstream 3: Operating Costs										
5 May 11 G Dawson "Operating Cost Estimate: Indicative Estimates." There is no waste to be mined										
mining cost per tonne	AS	Real/ tonne of	31							
mining cost	AS	Real	13,300,000							
processing cost per tonne	AS	Real/ tonne of	100							
processing cost	AS	Real	43,000,000							
fixed costs	AS	Real	15,000,000							
Cashstream 3: Operating Costs - Existing Case	AS	Real	71,300,000	0	0	0	0	0	0	0
Cashstream 4: Taxes										
Government Royalties										
2 June 11 R Torpy: SA State Royalty is 1% of revenue paid monthly										
State Royalty	% of revenue									
State Royalty	AS	Real	1,757,363	0	0	0	0	0	0	0
Company Income Tax										
2 June 11 R Torpy: Company Income tax rate is 30%. The cash payment averages mid year. Ass										
Gold Revenue			175,736,334							
Company Income Tax			52,720,800							
Cashstream 3: Operating Costs - Existing Case	AS	Real	71,300,000	0	0	0	0	0	0	0
Tax deduction for capital expenditure			68,000,000	0	0	0	0	0	0	0
State Royalty			1,757,363	0	0	0	0	0	0	0
Assessable Income			34,678,971	0	0	0	0	0	0	0
Company Income Tax Rate	% of assessable income		30%							
Income Tax			10,403,691	0	0	0	0	0	0	0
Income tax payment			10,403,691	0	0	0	0	0	0	0
Cashstream 4: Taxes - Existing Case	AS	Real	12,161,055	0	0	0	0	0	0	0
Cashflow and NPV										
Cashflows										
Cashstream 1: Revenue - Existing Case	AS	Real	175,736,334	0	0	0	0	0	0	0
Cashstream 2: Capital Costs - Existing Case	AS	Real	68,000,000	3,000,000	30,000,000	25,000,000	16,268,224	4,000,000	2,000,000	1,000,000
Cashstream 3: Operating Costs - Existing Case	AS	Real	71,300,000	0	0	0	0	0	0	0
Cashstream 4: Taxes - Existing Case	AS	Real	12,161,055	0	0	0	234,019	2,999,135	4,778,020	2,570,338
Cashflow - Existing Case	AS	Real	24,275,280	-3,000,000	-30,000,000	-25,000,000	2,534,205	15,729,924	26,560,076	20,206,129
IRR - Existing Case										
IRR - Existing Case			9.1%							
Discounting										
17 July 11 F Green email: discount rate for investment in gold is 8% Real. The base date is 1 July										
Discount Rate	% Real		8%							
Discount Factor			0.89	0.82	0.76	0.71	0.65	0.61	0.56	0.48
Discounted Cashflow - Existing Case	AS	Real	2,007,342	-2,886,751	-26,729,179	-20,624,367	1,935,792	11,125,505	17,393,968	12,252,613
Cumulative NPV - Existing Case	AS	Real	2,007,342	-2,886,751	-29,615,930	-50,240,297	-48,304,505	-37,179,000	-19,785,033	-7,532,420
	AS	Real	2,007,342							2,007,342

Economic evaluation has three levels ...

Level 3: Decision making

Level 2: Evaluating the business/project

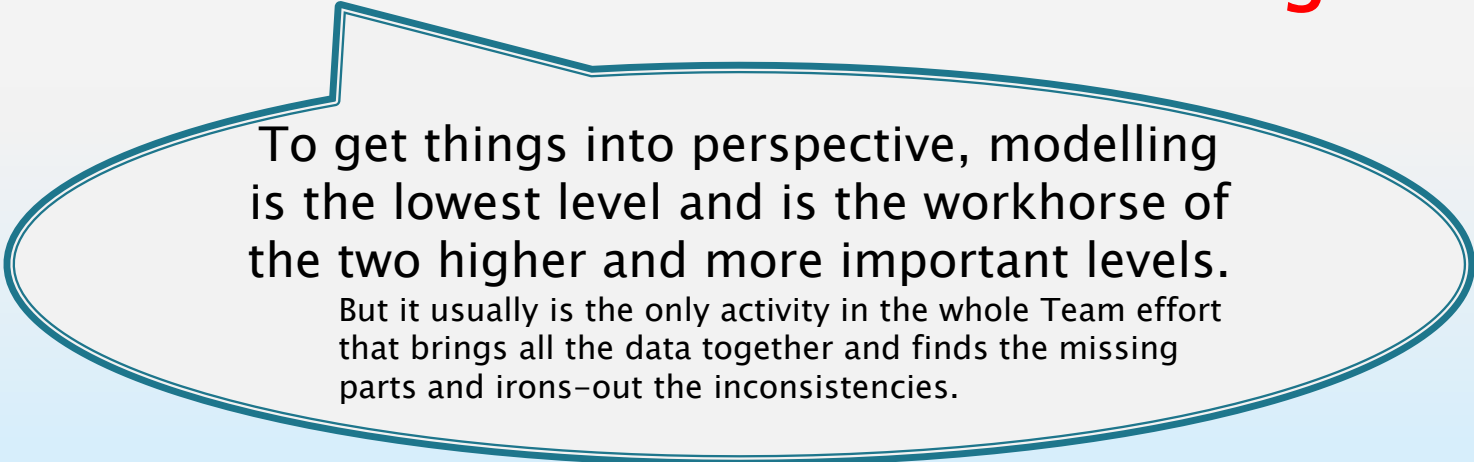
Level 1: Hands-on economic modelling

Economic evaluation has three levels ...

Level 3: Decision making

Level 2: Evaluating the business/project

Level 1: Hands-on economic modelling



To get things into perspective, modelling is the lowest level and is the workhorse of the two higher and more important levels.

But it usually is the only activity in the whole Team effort that brings all the data together and finds the missing parts and irons-out the inconsistencies.

Financial Modelling & Financial Analysis...

Level 3: Decision making

Level 2: Evaluating the business/project

Level 1: Hands-on economic modelling

Some people mistakenly call this lowest level “financial modelling” or “financial analysis”

which is a later, subsidiary, parallel modelling to work out how to finance the investment, including debt and equity.

This website has a set of “teach yourself” modules for each of these three levels...

Level 3: Decision making

Level 2: Evaluating the business/project

Level 1: Hands-on economic modelling

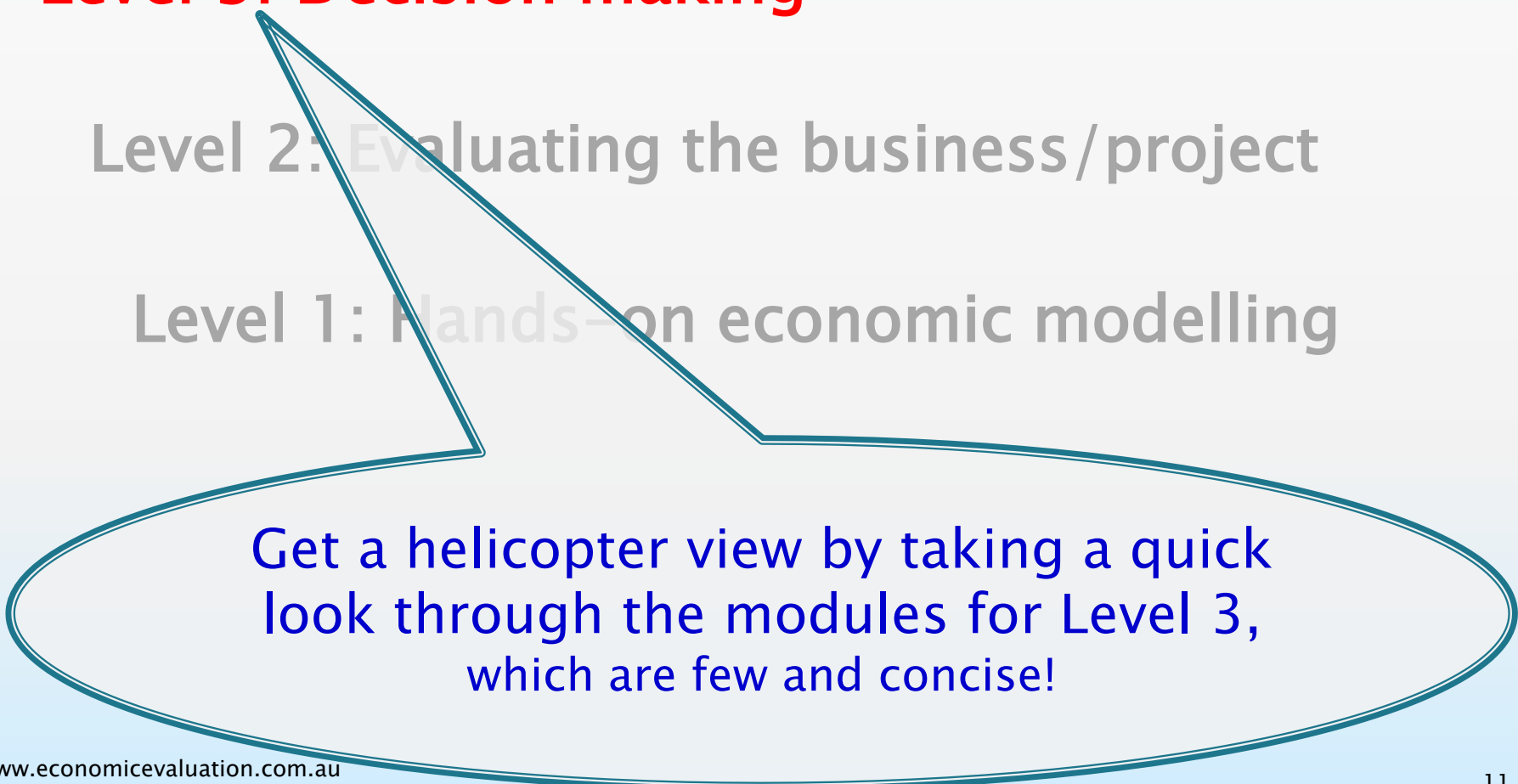
**... plus worked examples in Excel
and modules on planning, marketing, prices**

Where to start using this website?

Level 3: Decision making

Level 2: Evaluating the business/project

Level 1: Hands-on economic modelling



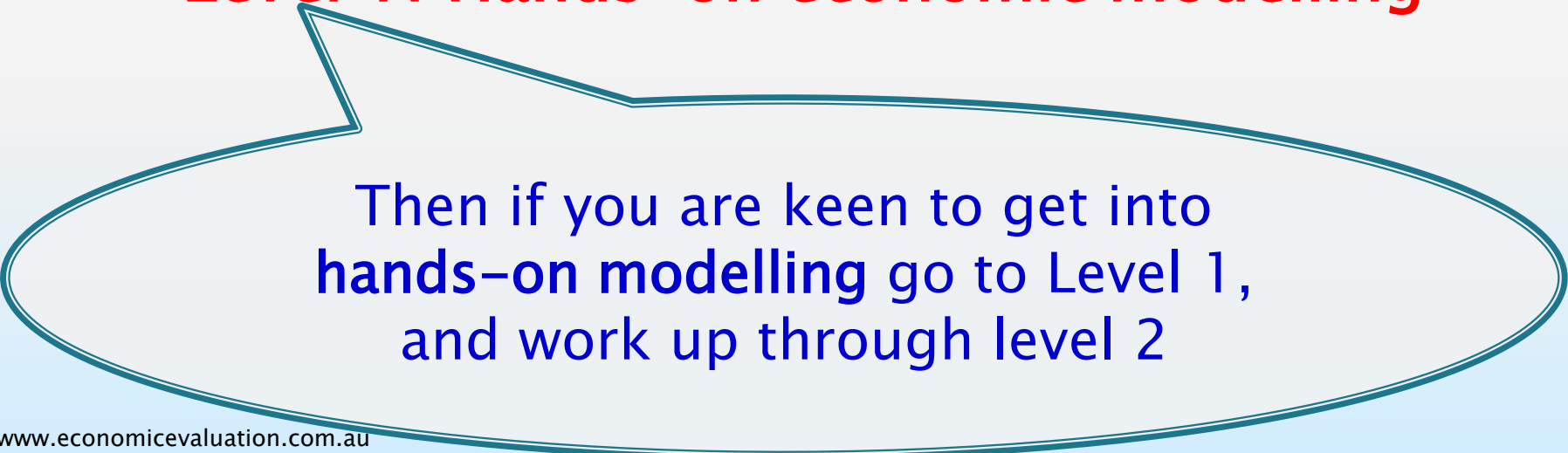
Get a helicopter view by taking a quick look through the modules for Level 3, which are few and concise!

Where to start using this website?

Level 3: Decision making

Level 2: Evaluating the business/project

Level 1: Hands-on economic modelling



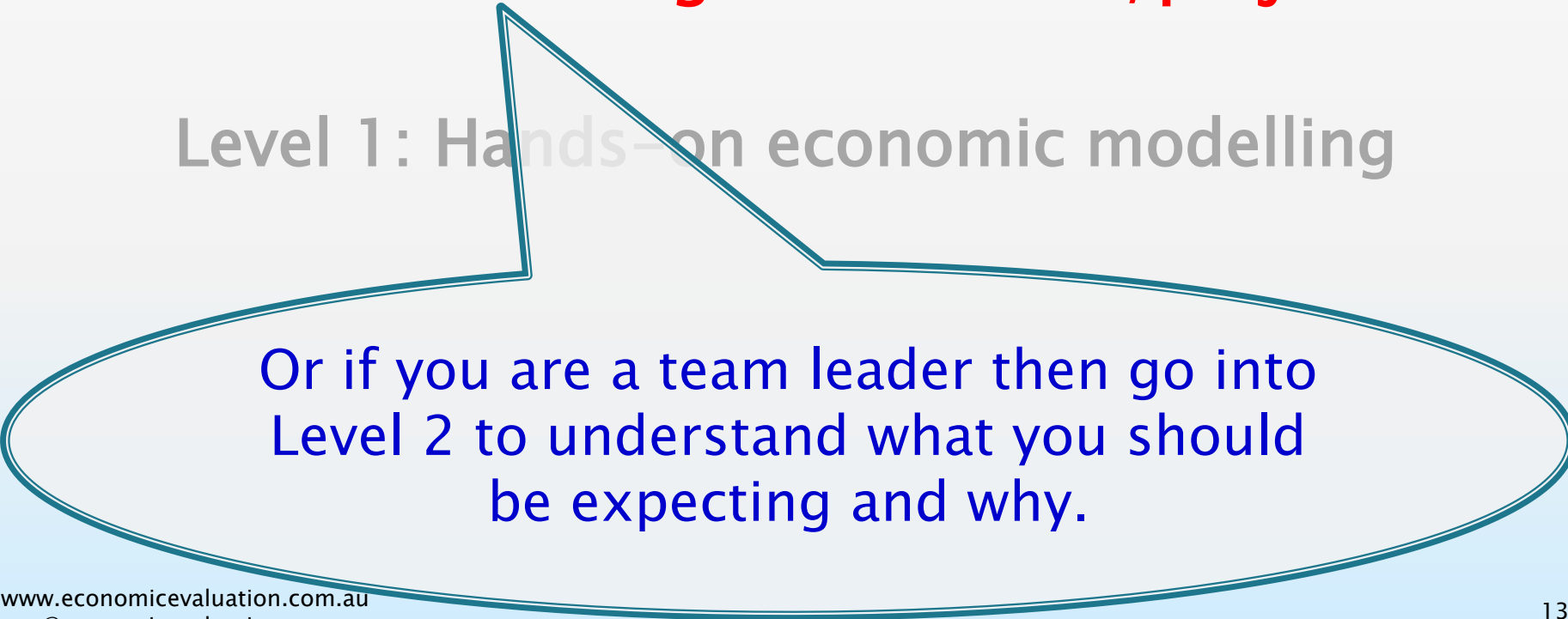
Then if you are keen to get into
hands-on modelling go to Level 1,
and work up through level 2

Where to start using this website?

Level 3: Decision making

Level 2: Evaluating the business/project

Level 1: Hands-on economic modelling



Or if you are a team leader then go into Level 2 to understand what you should be expecting and why.

Making yourself relevant ...

‘Economic Evaluation’ is no longer the task of creating a ‘financial model’ and churning out an NPV.

It now is a Profession where you use an economic evaluation model with your colleagues as a tool to evaluate the full range of possibilities so as to fully understand the project, the business and the opportunity.

It is about working directly with colleagues to analyse, synthesise, create, test, discuss, understand and decide.

It is assessing your project within your business, and assessing your business within your industry.

It is thinking laterally with colleagues to create a better project and a better business

It is about earning yourself a position amongst those people who will be making the final decision.

It is all about hard work, competency, rigour and presentation

so that decision makers act with their ‘eyes wide open’

The excitement of modelling: –

When you get assigned an evaluation task, you probably will want to jump straight into the detailed hands-on economic modelling. (This is fine as long as you retain a helicopter view of the business.)

As you get to understand the business/project more and more you will want to incorporate lots of your knowledge into your model. Some people love to create a sophisticated model with a myriad of detail, lots of complex interactions and lots of ‘clever’ Excel functions. They know how to use Excel to its limits and they focus on getting recalculations done quickly with draw-down menus, complex algorithms and sophisticated functions.

This sort of modelling will prove very rewarding for them at an intellectual level. They will go home at night feeling proud of their state-of-the-art **‘trophy’ model** and be pleased with what they can do with the click of a draw-down menu. They have the full range of results in one magical Table. Wow!

The excitement of modelling: –

When you get assigned an evaluation task, you probably will want to jump straight into the detailed hands-on economic

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This sort of modelling will prove very rewarding for them at an intellectual level. They will go home at night feeling proud of their state-of-the-art ‘trophy’ model and be pleased with what they can do with the click of draw-down menu.

Use your brains in a better way...

Firstly ...

If you work with others, this model will be a failure. If colleagues and managers find your model challenging to understand then you will lose your own relevance. You will degrade yourself to an old fashioned, 'backroom', 'spreadsheet jockey' churning out numbers for a document.

Instead, clever evaluation experts use their intellect and expertise to make complexity and detail in an economic model flow intuitively. So colleagues can see the detail and complexity but readily understand the big picture and readily follow the project/business from beginning to end.

'Easy-to-follow' modelling does not mean 'simplistic', 'small' and 'naive'. → Some of your models will become very long, very detailed and complex. But you must create models so others can easily understand the flow and visually understand the inputs, computations and outcomes: completely intuitively!

Use your brains in a better way...

Secondly ...

The model is a workhorse. It is a tool. *Much more important is the work to be done at Level 2 with that model.*

Do not get lost in 'advanced' Excel.

Level 2 is where you add value, where you can make your mark, and earn a key position in the project team or business management team.

We suggest that you follow the guidelines for model creation in the modules for Level 1 modelling **without fussing about their colours and their details**. Then work through Level 2 to make a difference to the business outcome and set yourself up to be amongst the decision makers.

Economic evaluation has three levels ...

Level 3: Decision making

Level 2: Evaluating the business/project

Level 1: Hands-on economic modelling

Always think:

Level 2 is where I do my most important work
The model created in Level 1 is simply my tool
(not my trophy!)

Tell colleagues:

“If you do not intuitively understand
my model and my evaluation work
then you do not have a problem,
but I do!”

End