

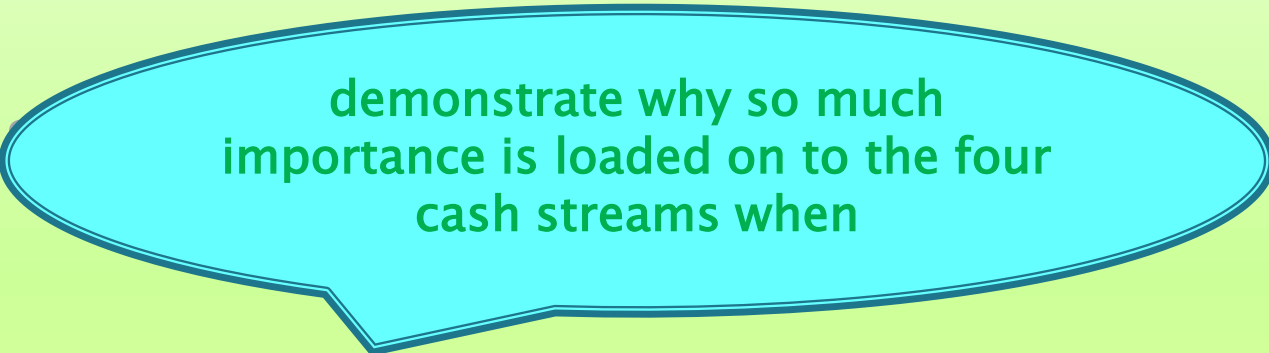
# Teach Yourself: Economic Evaluation:

Step 3 of Evaluating the Business / Project

## 2f: Four Cash Streams

# The purpose of this module is to ...

Level 3: Decision



demonstrate why so much importance is loaded on to the four cash streams when

Level 2: Evaluating the business/project

Level 1: Hands-on economic modelling

Spend only a few seconds on most slides.

# Level 2: Evaluating the business/project

Step 1: Find out what is required

Step 2: Create the hands-on model

Step 3: Compute powerful economic measures:  
NPV, IRR, Payback, **four cash streams**, key drivers,  
break-evens, uncertainty, risk-rewards

Step 4: Assess alternatives, flexibility, options, risks,  
the business, the industry

Step 5: Communicate your message

# Find the true underlying business

Once you have computed the three metrics of

- a) Net Present Value – NPV
- b) Internal rate of return – IRR
- c) Payback – real or nominal

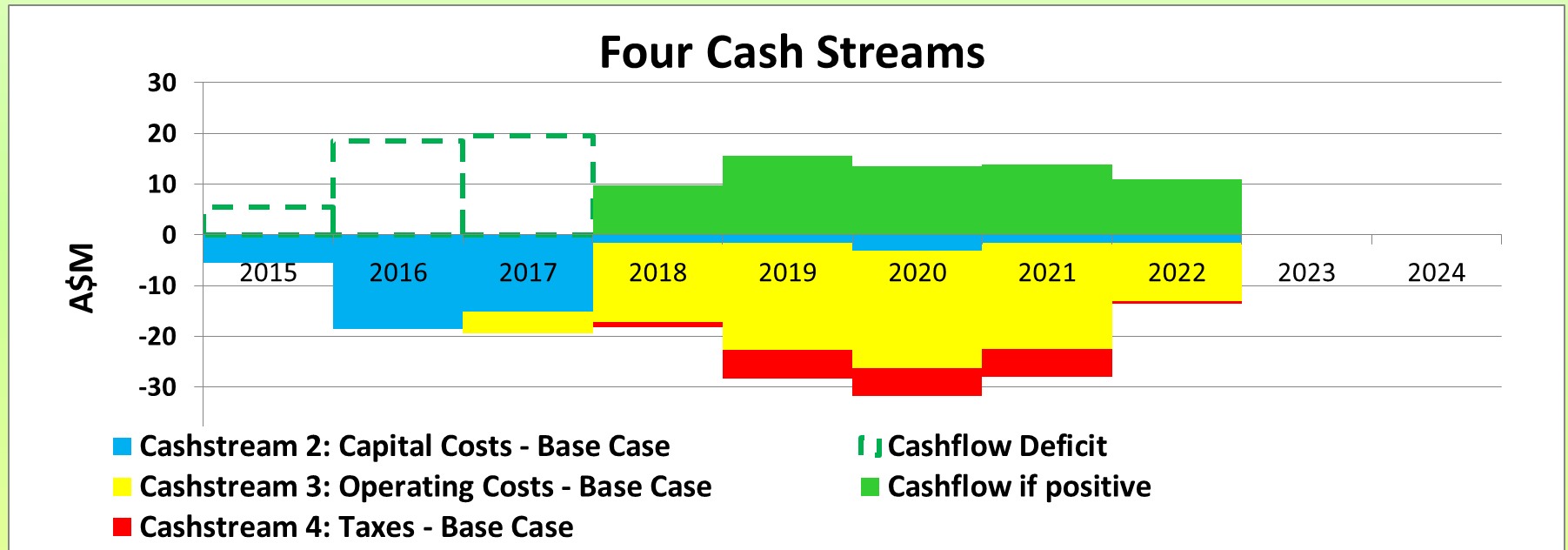
your evaluation of the business/project has just begun.

These three alone may be sufficient to fill out the boxes in some company's justifications for an investment (where economic evaluation is immature) but are not nearly enough to properly understand the business/project and for you to be able to properly characterise it to your colleagues and managers.

*Good managers do not make good decisions using a few mathematical outputs but want to get inside the business to understand what drives it, its strengths and weaknesses, its ability to flex and adapt to markets and to exploit technology, its ability to cope with risks and optionality.*

*→ And you as the economic evaluation specialist must be first to know and communicate all this.*

One of the best ways to start is to look at the graph of the four cash streams...



If it is missing from some one else's model then you should add it into your own copy of the model.

# To refresh your understanding of this graph ...

Cash might be invested upfront to get a project constructed (blue = capex and yellow = pre-opex)

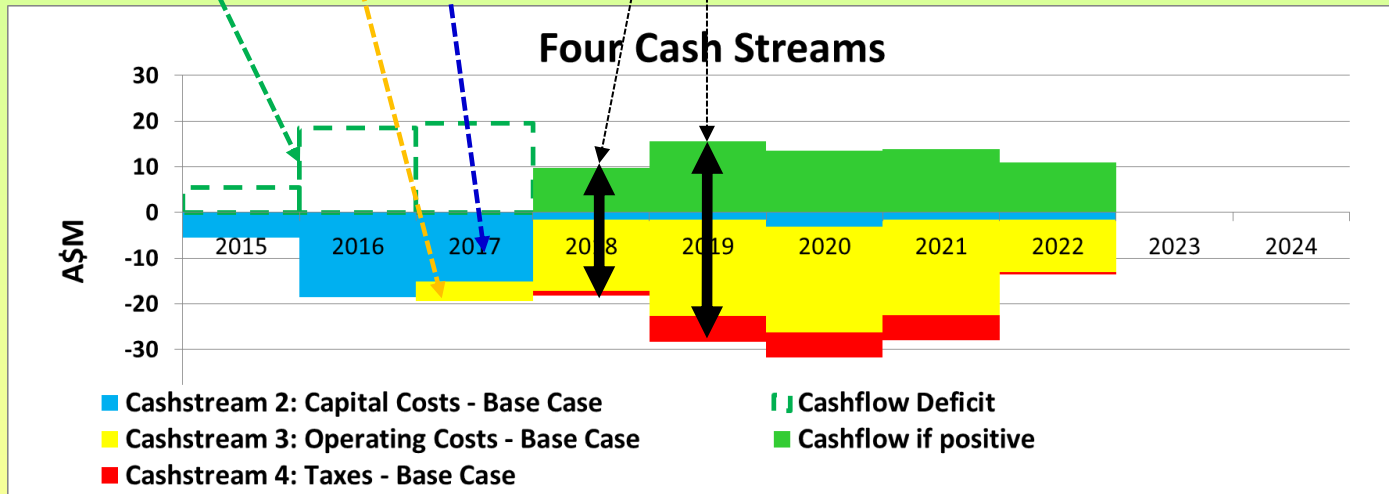
The dotted boxes represent the cash needed to be pumped in each year. ( cash deficit)

Once sales commence the height of the column in any year is the cash revenue.

In each year this is spent as cash on taxes (red), opex (yellow) and capex (blue).

This leaves surplus cash above the zero axis (green)

In a way they are like ice bergs floating.



# Four Cash Streams

This graph of the four cash streams is the best start to understanding the underlying business.

To me it is as important as NPV and IRR because I can see:

1. the relative importance of revenue, operating costs, capex and tax over the life
2. the profile of the surplus/deficit cashflows over the life
3. the cash margin on sales over life
4. by how much the costs could rise before wiping out any cash surplus
5. The profile of surplus cashflow

One look at the graph of four cash streams and I get an instant picture of the underlying business/project.

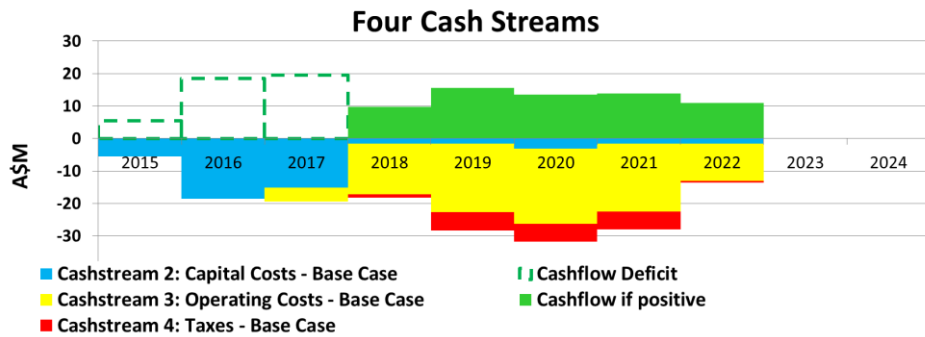
- Does it have high capex upfront then low operating costs/good margins?
- Is it low capex upfront then thin margins?
- When in its business life is the cash generated?
- When and where is it vulnerable/offering opportunity?

I then generate another scenario and look at its four cash streams.



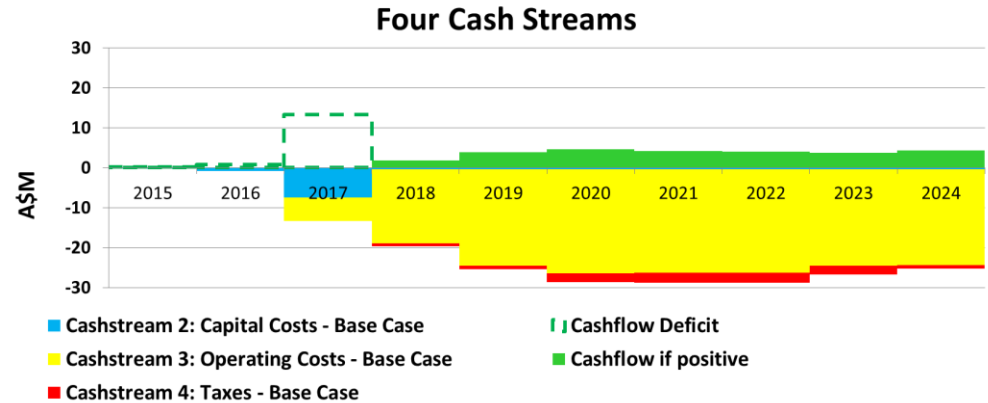
Let's look at three proposed projects: –

# These three projects have similar but slightly differing NPV's. Which ones would you build?

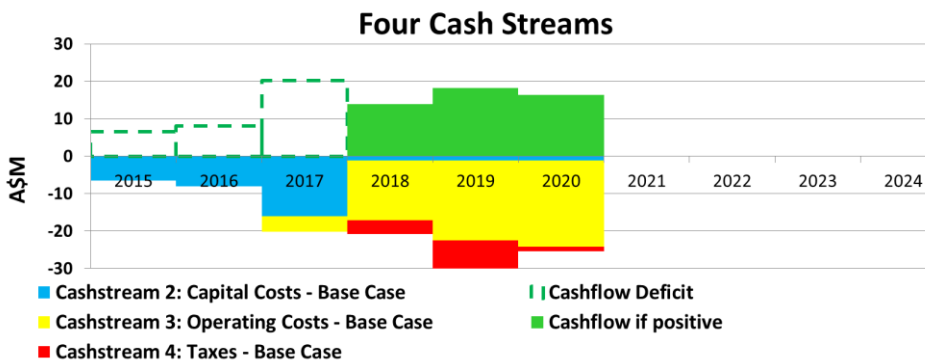


← Middle NPV

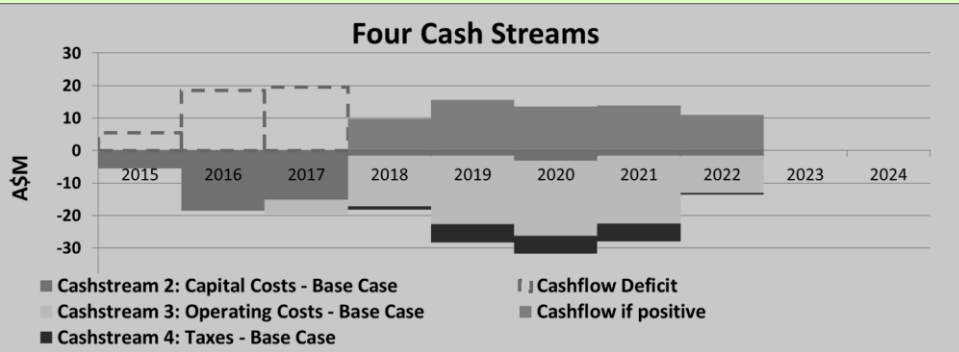
Higher NPV →



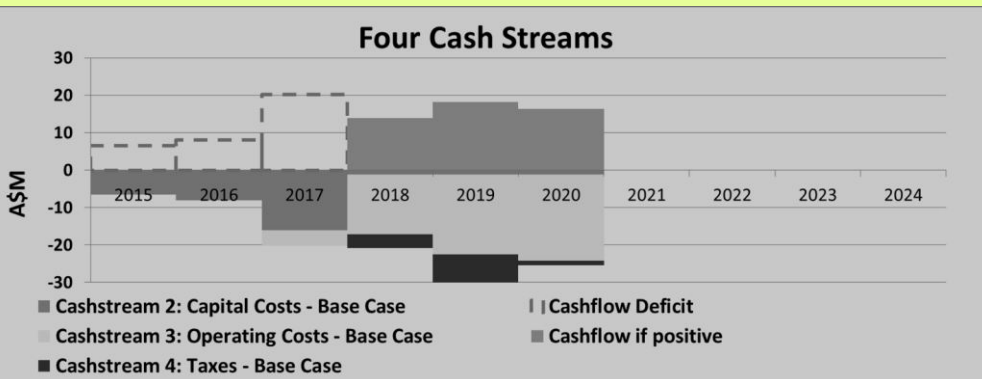
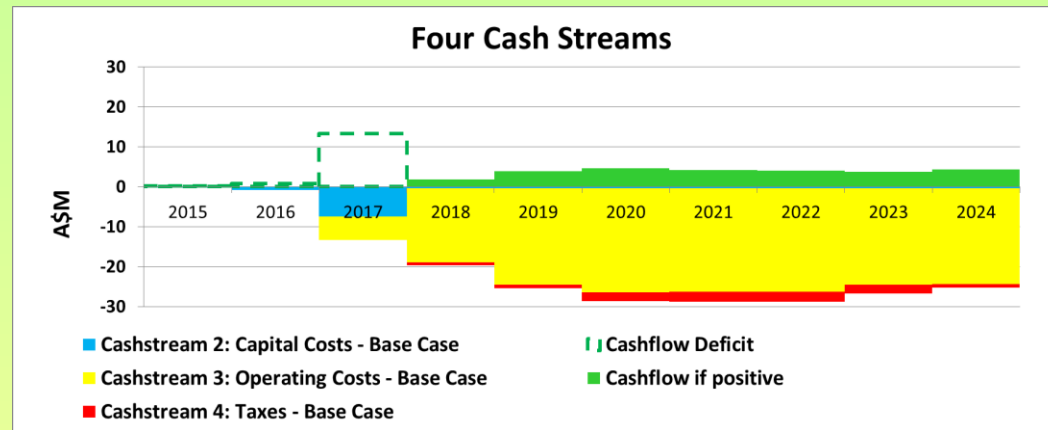
← Lower NPV



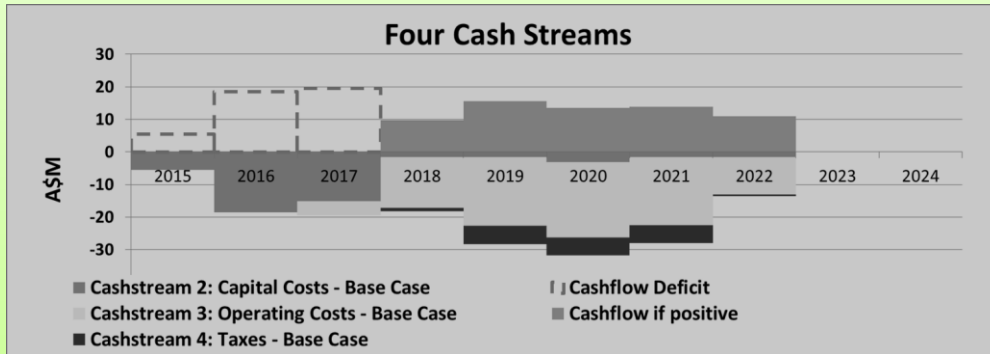
# Which ones would you build?



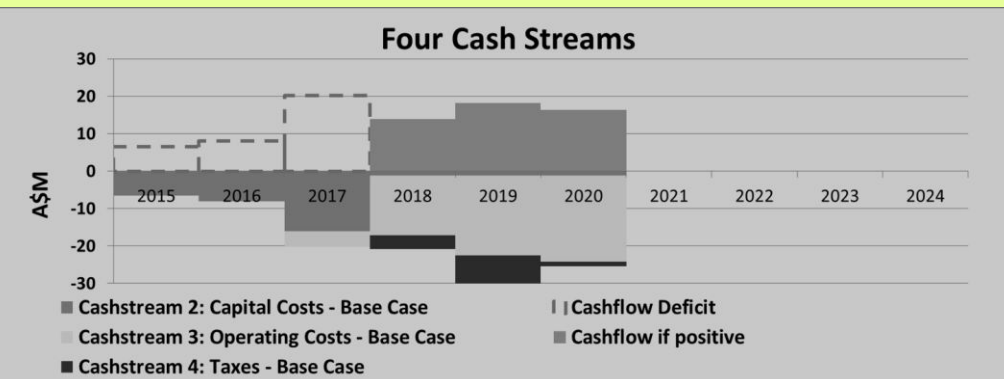
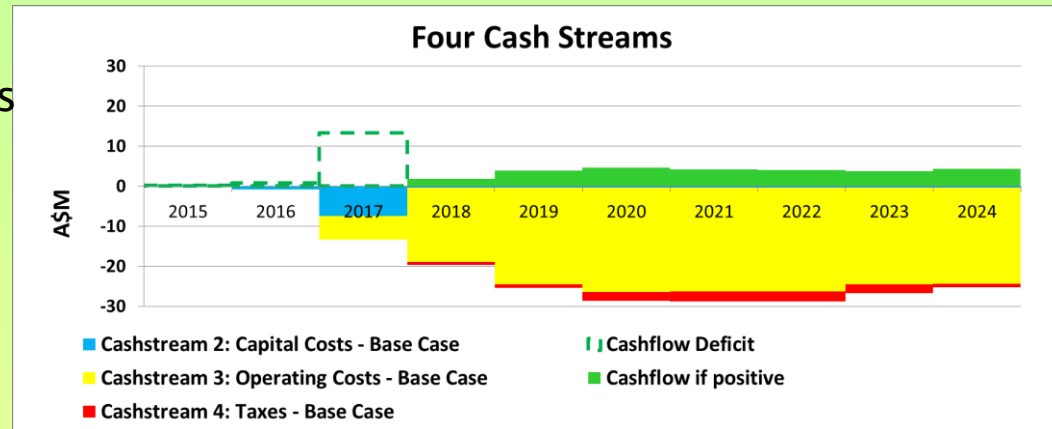
Because this project → has the higher NPV, there are some managers who would say it should be built and it should be first choice.



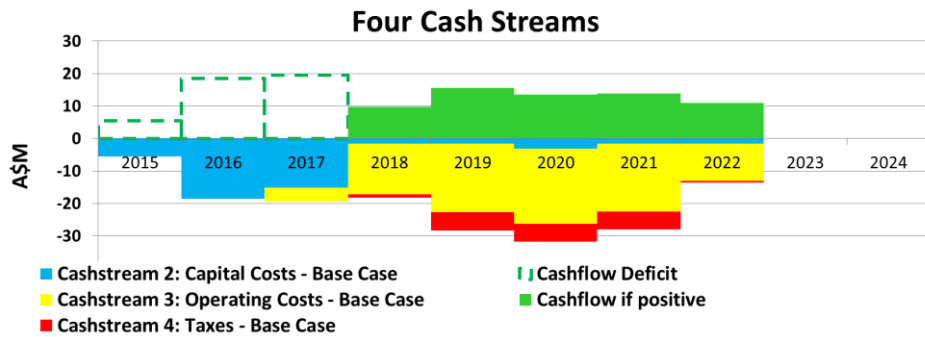
# Which ones would you build?



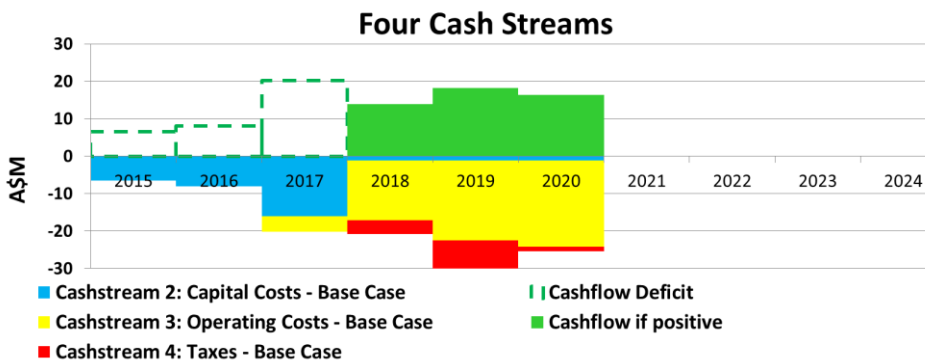
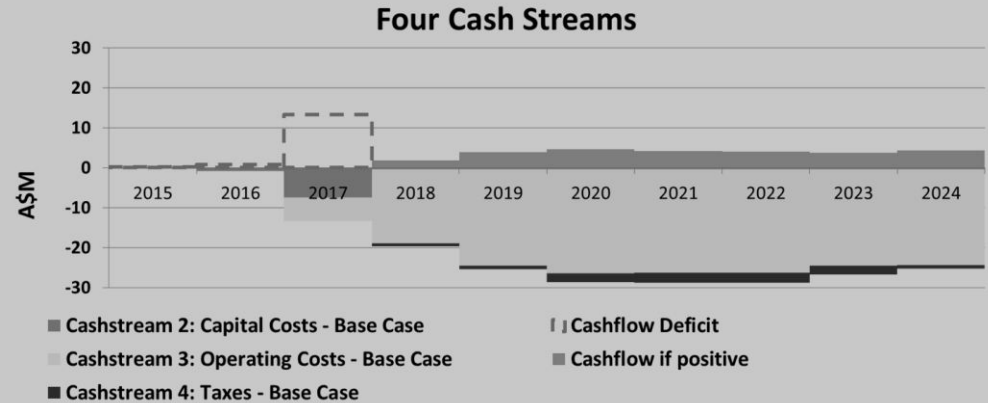
I would be wary of this project → Its margins are very thin and if there is a slight increase in operating costs (yellow) or a slight reduction in price/sales, then the project would bleed cash. But if I was confident I could reduce operating costs then it would justify more work.



# Which ones would you build?



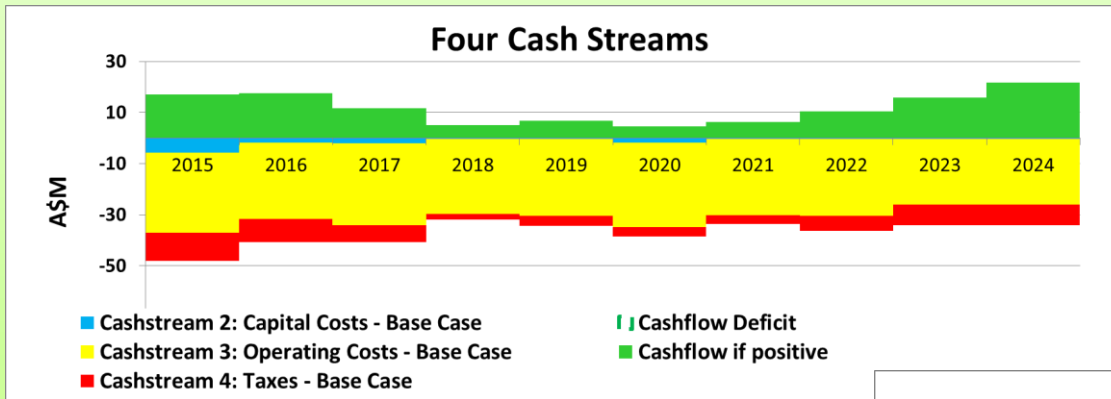
← This one looks to have reasonable margins, payback after 4 years and overall looks to warrant further evaluation.



← This one has the lowest NPV but looks to have the best overall form: high margins and fast payback. Definitely warrants further assessment!

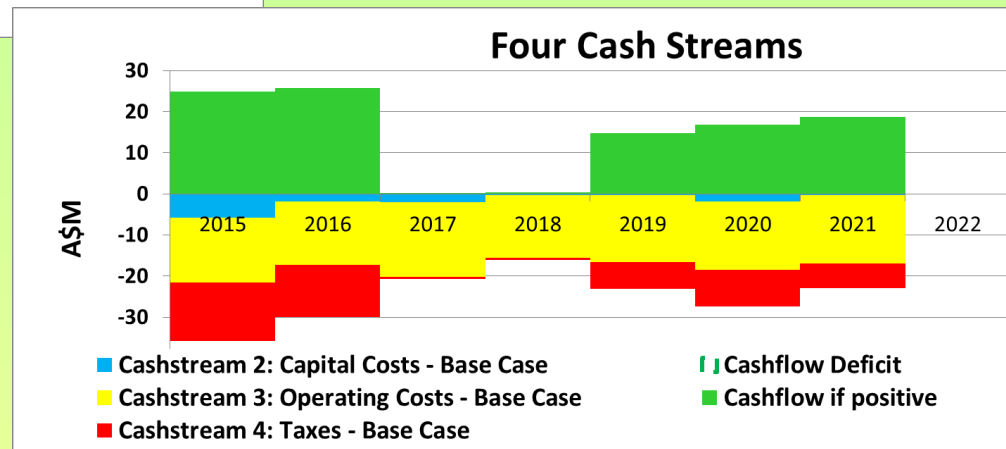
**Now let's look at three existing businesses  
that are up for sale: –**

# These three existing businesses have similar but slightly differing NPV's. Which ones would you buy?

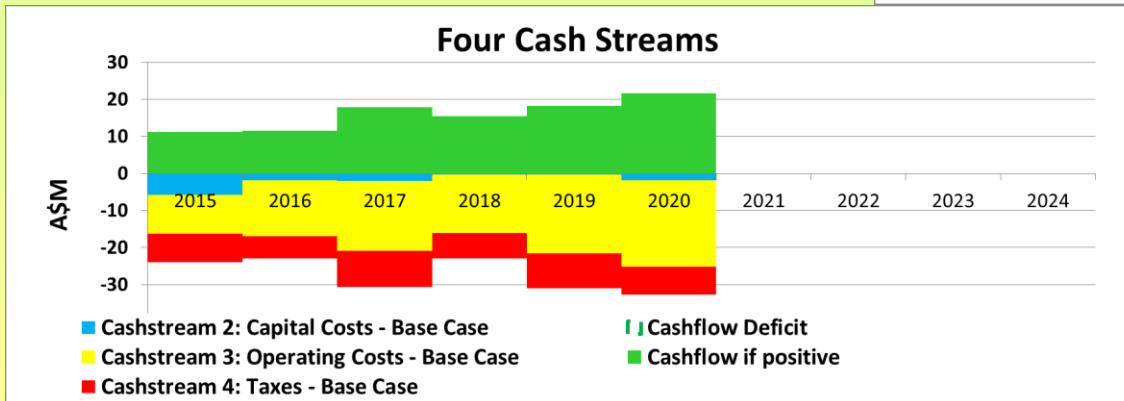


← Highest NPV

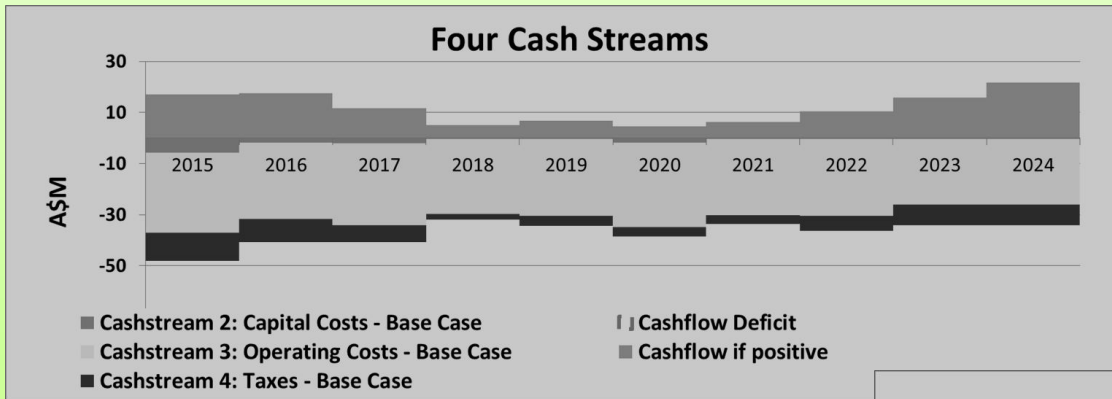
Middle NPV →



← Lowest NPV

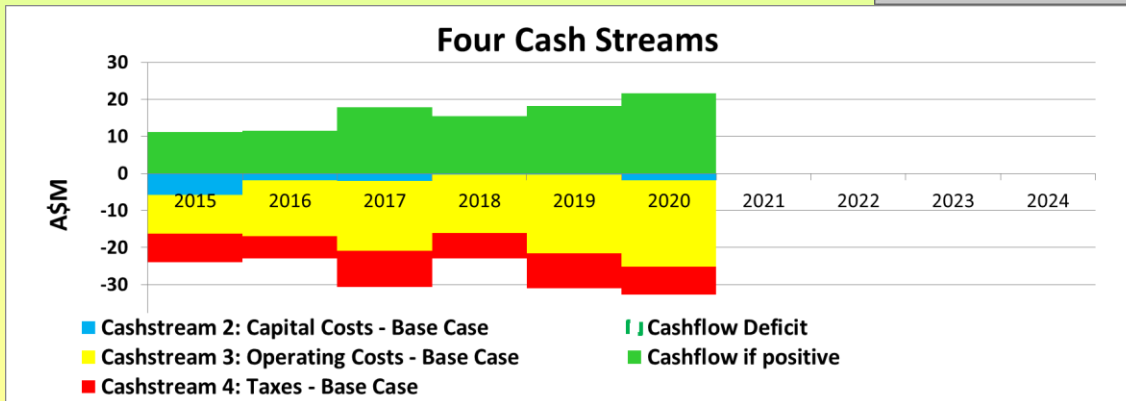
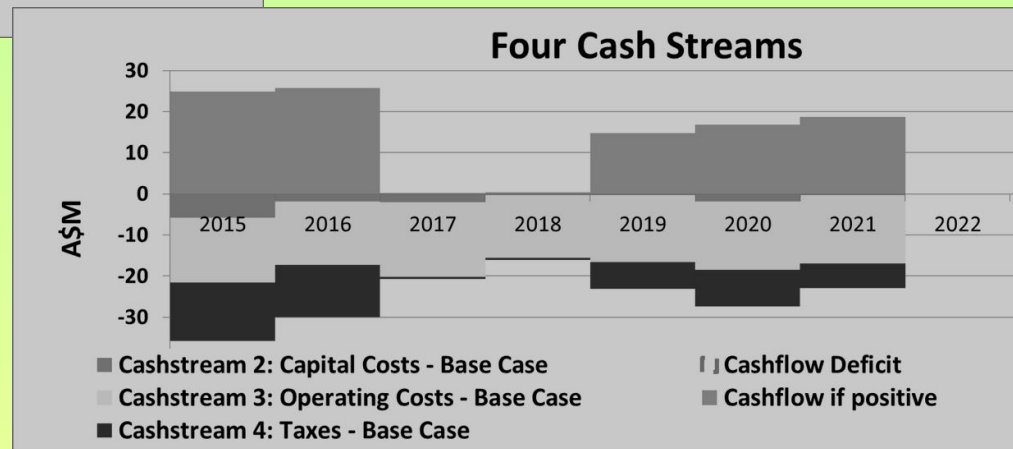


# Which ones would you buy?



← This one has highest NPV but it scares me – poor margins over many years and looks very vulnerable after three years.

This one has positive NPV, but if conditions get worse in 2017 & 2018 it will bleed cash. Who would fund the cash deficits? → Suspending a business and restarting can be very costly.

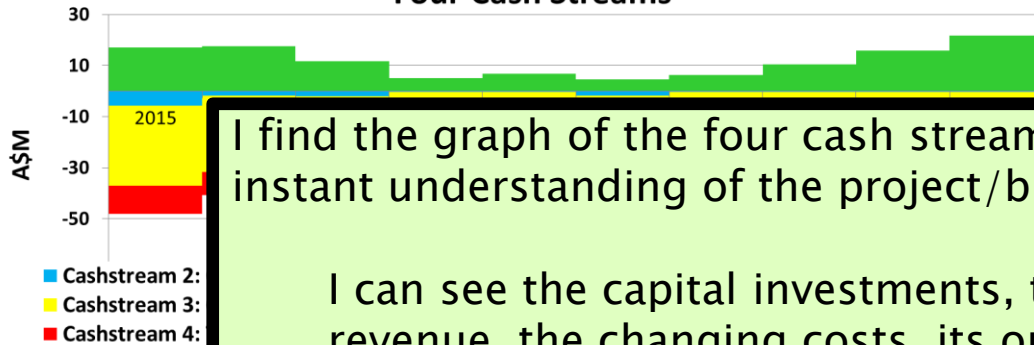


← Lowest NPV, but looks more sound as a business with good margins that are forecast to improve over the years. Assess further!



# These existing businesses have similar NPV Which ones would you buy?

Four Cash Streams



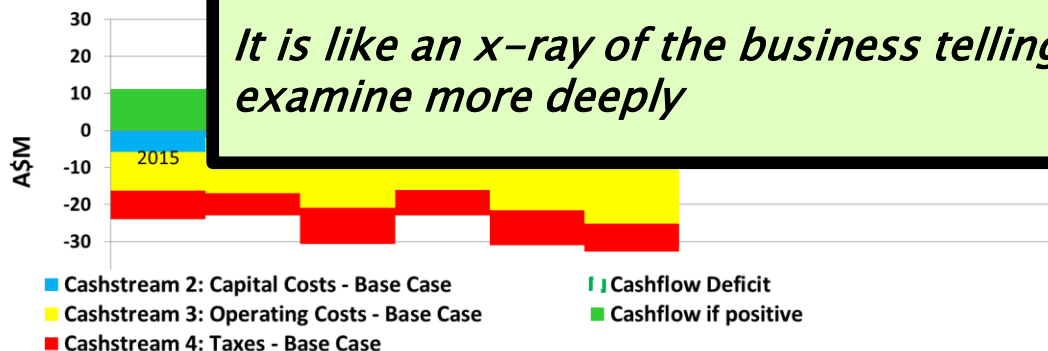
I find the graph of the four cash streams gives me an instant understanding of the project/business.

I can see the capital investments, the shape of the revenue, the changing costs, its operating margins, the danger years, the strengths and even sense the risks

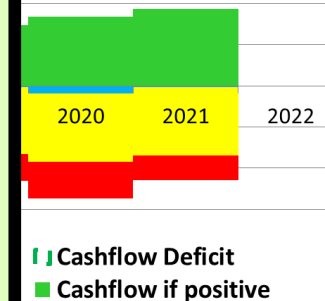
I quickly discover where more investigation is needed and where things can be improved.

I can see if sustaining capital is missing, if costs are assumed to decrease for no good reason, if prices are assumed to increase in real terms.

*It is like an x-ray of the business telling me where to examine more deeply*



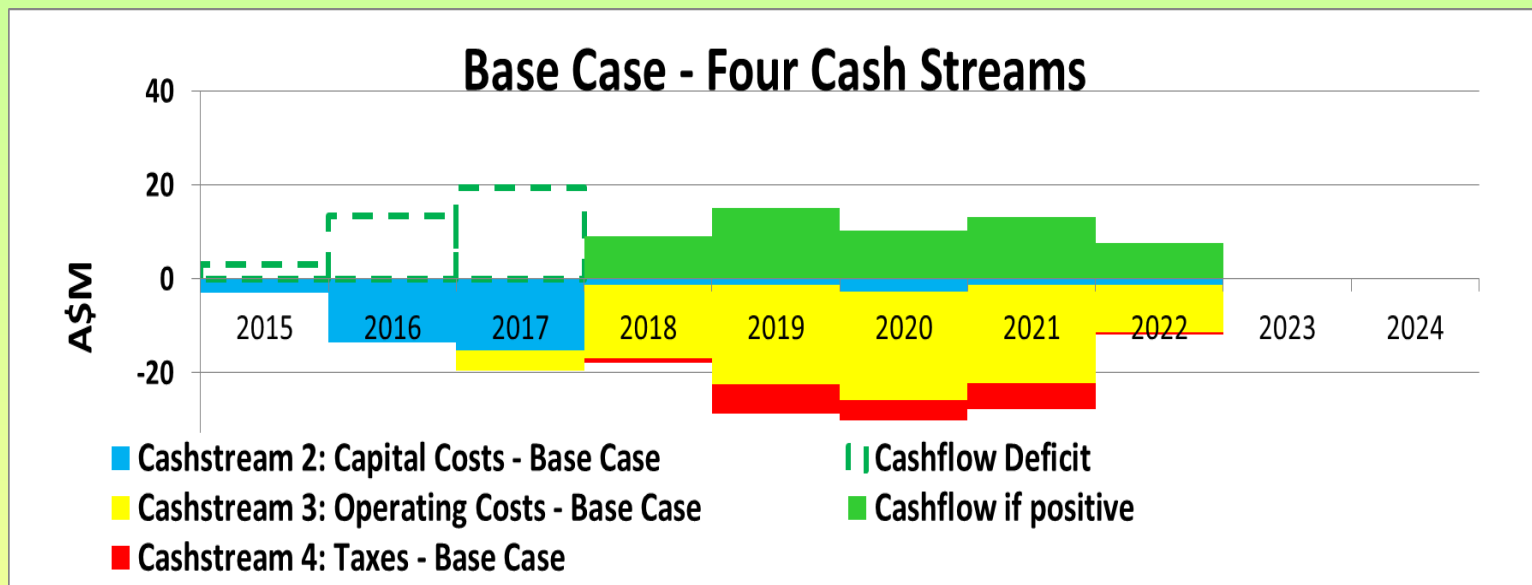
Cash Streams



# Four Cash Streams

So when I look at someone else's evaluation model I naturally first find the NPV, IRR and Payback but then head for the graph of the four cash streams (or create it for myself).

It is the best way to immediately understand the underlying business. Just one peek and I get an instant picture of its health.



Then I generate another business scenario and look at how the four cash streams change → danger or opportunity!!!.

# And be first to find your own errors ...

The graph of the four cash streams is a great place to find your own errors in your own model: before others do.

I know well from personal experiences

Before issuing NPV, IRR and payback results check your model and have it audited. Start with your own graphs of the four cash streams.

If you are under too much time pressure from your managers to tell them the latest NPV, and so if you do not have not time to pause to check your own work, then you are negligent! (You will invoke *Murphy's Law*)

# END