



As the title suggests we'd like to set the scene for the next 3 days visit with a number of slides on orogenic gold deposits, drawing on examples from our own operations.

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Orogenic Deposits



- 1 Overview – importance of orogenic deposits
- 2 Size and grade
- 3 Clusters and Camps
- 4 Significant strike and depth extent
- 5 Deposits grow with time
- 6 Likelihood of development
- 7 St Ives and Agnew Camps
- 8 Concluding remarks

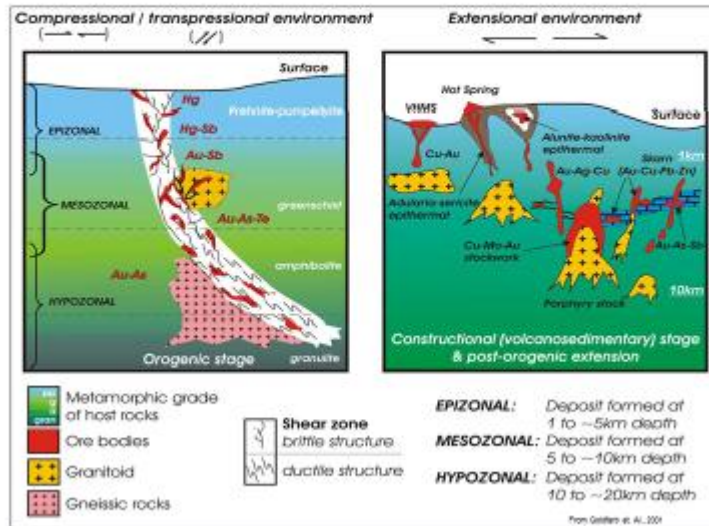
I will touch on a number of themes starting with the geological characteristics of orogenic deposits including their size and grade. I would like to highlight how they occur in clusters and form camps and how this is important in terms of our business and sustainability. The fact that these deposits can have considerable along-strike and depth extent and how these deposits grow with time is an important one. I will give some examples from a number of the operations that show, for some of the bigger deposits, how they grow with time and how this is dependent on in-fill and extensional drilling.

I will present a few statistics on the likelihood of development of orogenic deposits. And then I will conclude with some examples from our St Ives and Agnew operations which bring these points together and show that our business is a successful one.

Orogenic Deposits

Characteristics

- A distinctive class of mineral deposit



Orogenic gold deposits form a distinctive class of mineral deposit. The schematic figures shown here highlight the crustal environment in terms of depth of formation and structural setting of orogenics (left) and intrusion related styles (right); orogenics normally display a close spatial association with large-scale compressional to transpressional structures and occur in deformed and variably metamorphosed host rocks of greenschist to amphibolite grade. Orogenics commonly form at depths of five to ten kilometres and have vertical dimensions of as much as one to two kilometres (Goldfarb et al., 2001).



Orogenic Deposits



Ranking by Deposit Type

- Account for 18% of the world's gold endowment (deposits > 500 Koz)
- Continue to be a significant source of gold production

| Rank | Type | Gold (Moz) | % | Cum % |
|------|------------------|------------|----|-------|
| 1 | Paleoplacer Gold | 3125 | 37 | 37 |
| 2 | Orogenic | 1523 | 18 | 55 |
| 3 | Porphyry | 1220 | 15 | 70 |
| 4 | Placer Gold | 713 | 8 | 78 |
| 5 | Epithermal LS | 505 | 6 | 84 |
| 6 | Carlin | 249 | 3 | 87 |
| 7 | Epithermal HS | 219 | 3 | 90 |
| 8 | VMS | 181 | 2 | 92 |
| 9 | IOCG | 124 | 1 | 94 |
| 10 | Gold Skarn | 79 | 1 | 95 |

Orogenic gold deposits are an important style of mineralisation as they account for a significant volume of the world's gold endowment. As you can see in this table based on deposit type, orogenic deposits rank second globally and account for 18% of the world's known gold endowment with respect to deposits greater than 500 thousand ounces in size.



Orogenic Deposits



Ranking by Country

- Australia accounts for 22% of gold endowment in orogenic deposits globally (deposits > 500 Koz)

| Rank | Country | Gold (Moz) | % | Cum % |
|------|------------|------------|----|-------|
| 1 | Australia | 339 | 22 | 22 |
| 2 | Canada | 238 | 16 | 38 |
| 3 | Uzbekistan | 167 | 11 | 49 |
| 4 | USA | 124 | 8 | 57 |
| 5 | Russia | 83 | 5 | 62 |
| 6 | Zimbabwe | 73 | 5 | 67 |
| 7 | Ghana | 72 | 5 | 72 |
| 8 | Mali | 59 | 4 | 76 |
| 9 | China | 56 | 4 | 80 |
| 10 | Tanzania | 50 | 3 | 83 |

If we look at rankings by country, we see Australia is ranked number one and accounts for 22% of global gold endowment, again for deposits greater than 500 thousand ounces in size. So if you are looking for this style of mineralisation, Australia is a good place to go and the Yilgarn is one of the better places to explore.



Orogenic Deposits



What makes this style of mineralisation attractive as a business?

- They are well understood geologically
- They can be large and of good grade
- They occur in clusters at different scales providing mining flexibility and optionality
- They can have significant vertical and horizontal dimensions and "grow volumetrically" with time as extensional exploration and development advances
- Access and ore reserve development does not have to be in place years in advance
- They are likely to be developed due to comparatively lower upfront capital investment, shorter construction lead times and clear commercial value drivers

Commercially Attractive

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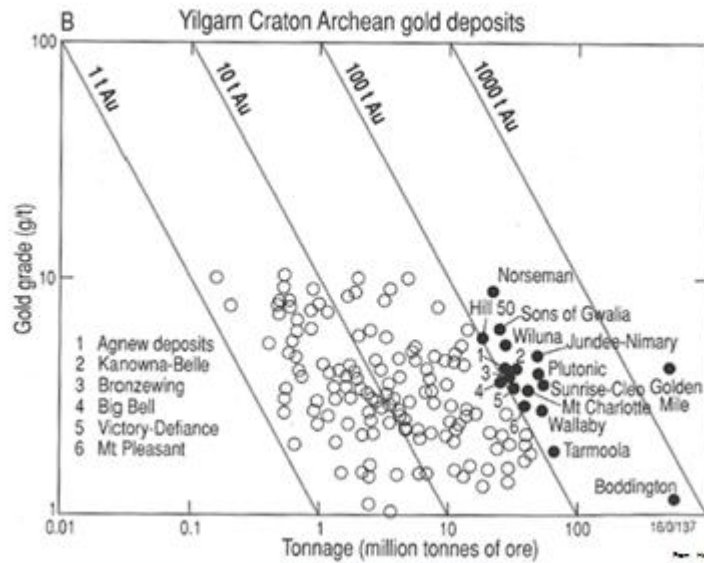
So what makes this style of mineralisation attractive as a business? They are well understood geologically as there has been a lot of research over the years as a result of their endowment and importance to global production. They can be large and of good grade, and I will talk a little bit about this in a moment.

They tend to occur in clusters at different scales, which also provide us quite a lot of flexibility and optionality when we are looking at large tenement packages. They have a significant vertical and horizontal dimension. This is an important point as it explains in part the relatively short life of mine that these deposits characteristically display. It is the larger deposits within a camp that impact significantly on the sustainability of the operation and these, owing to their dimensions, are only drilled out incrementally.

Access and ore reserve development does not necessarily have to be in place years in advance, which is obviously an important point with respect to capital expenditure. And orogenics are likely to be developed due to comparatively lower upfront capital investment, shorter construction lead times and clear commercial value drivers. I will talk a little bit about that towards the end of this presentation.

Orogenic Deposits

They can be large and of good grade



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This figure shows orogenic deposits of the Yilgarn Craton (Hagemann & Cassidy, 2000). The Golden Mile deposit is the largest deposit of this style in the Yilgarn, located north of St Ives and on the same Boulder-Lefroy fault.

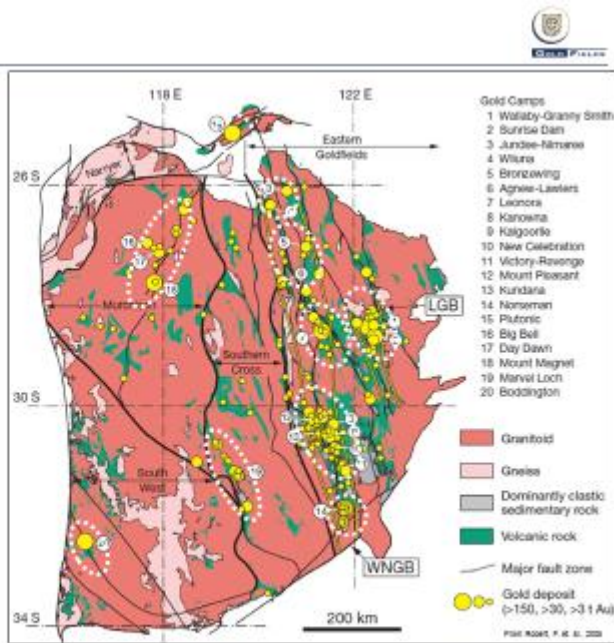
In terms of the grade tonnage distribution of orogenic deposits in general, they range in grade from 1 g/t to over 10 g/t. Importantly, a number of deposits can be of significant size in terms of contained ounces as shown here for the Yilgarn.

Gold Fields Agnew deposits are plotted while other deposits within our current operations would display a similar range in grade, tonnage and contained gold ounces.

Orogenic Deposits

Province Scale Clusters

- 10 clusters > 5 Moz Au
- 49 deposits > 1 Moz Au
- Area selection is paramount!



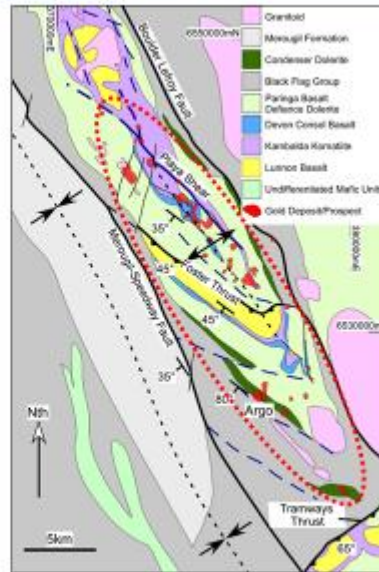
One of the interesting features of Orogenic deposits is their tendency to cluster at both province and camp scales. Here we have a simplified geological map of the Yilgarn Province located in the southwest corner of Western Australian where at least 10 clusters are evident with an endowment of greater than five million ounces each (Robert et al., 2005).

I have highlighted here “area selection is paramount” to focus your attention on the sustainability of the business – having a single economic deposit is of course an attractive proposition, however, having a significant position in a camp is a competitive advantage and allows an operation to sustain itself over several decades, leveraging favourably off sunk capital.

Orogenic Deposits

St Ives Camp Scale Cluster

- 30 km strike
- 69 deposits with historic resources
- A 15.9 Moz camp and growing!



Here we have a simplified geological map of part of the St Ives tenement holding. The area we are looking at is about 40km x 30km and contains numerous deposits that have been mined since 1980 when commercial production commenced. Three decades later in 2010 we celebrated 10Moz of production from this camp while at the end of 2013, the St Ives camp had production plus resources equalling 15.94 Moz.

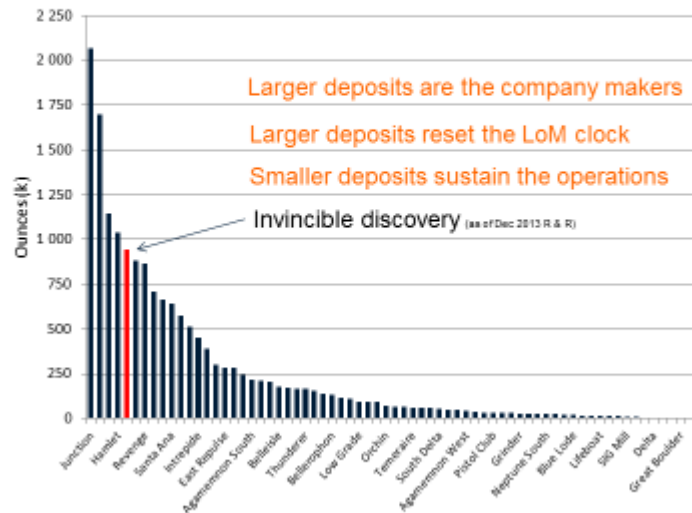


Orogenic Clusters



St Ives Camp

- 80% of resources occur in 25% of deposits



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At St Ives we've shown that since 1980 it is a sustainable business over several decades. We can see in this figure the ounce distribution among the 69 deposits. And importantly, the contribution of the larger deposits with 80% of the resource sitting in just 25% of the total number. Our latest discover "Invincible" shown here in red currently sits as the 5th largest resource to date and growing. You can see here that there are a number of larger deposits over 500,000 ounces.

Question: Are they all metallurgically similar?

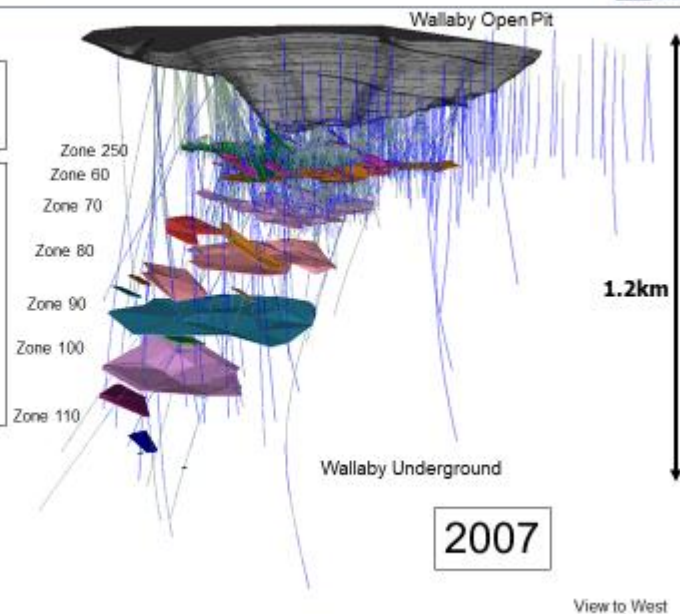
Answer: Yes, more or less. The deposits shown in this figure include both open pit and underground deposits - the open pit deposits would have contained oxides that went to the heap leach. The mineralisation of the deposits shown is not refractory.

Orogenic Deposits

Granny Smith 2007

Wallaby Open Pit Recovered
Production 2001- Dec 2006
1,504,309 oz @ 3.44 g/t

2007 Wallaby Underground
288,322 metres drilled
2007 Wallaby UG Reserve
442,099 oz @ 5.0 g/t
Cumulative Recovered
UG Production 2004-2007
176,944 oz
2007 Total ounces
619,043 oz



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In terms of the dimensions I wanted to walk you through several slides here at Granny Smith to give you a feeling for how big these deposits can be and importantly, as the deposit is mined, how the life of mine has grown.

This is the Wallaby open pit and the Wallaby underground shown in section and looking to the west. You can see the resources shown here are more or less flat zones of mineralisation with the blue lines reflecting drilling that has been completed to 2007. Note the vertical extent of 1.2 km down to the Zone 110 level. I can say we are exploring below this and are intersecting mineralised structures.

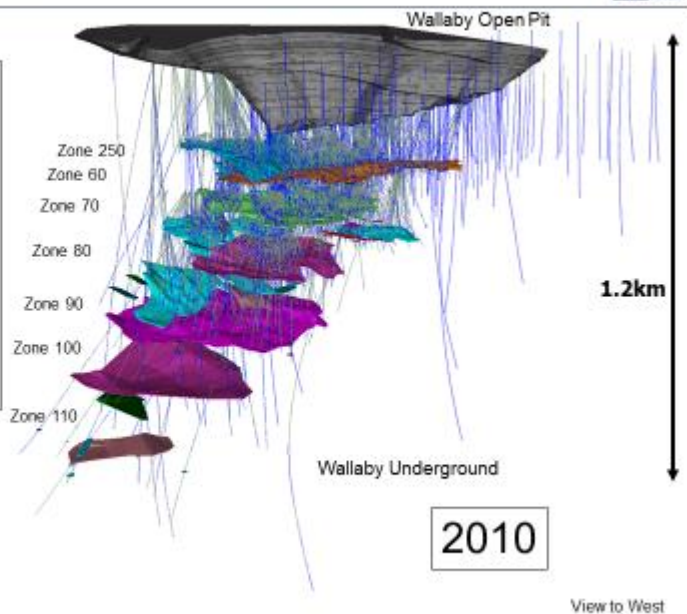
Around 2006 marked the end of the Wallaby open pit. That is 1.5 million ounces at reasonable average grade. As I step through the next couple of slides I would like you to watch the metres drilled, the grade and the total ounces added as the resource grows.

In 2007, approximately 288,000 metres had been drilled. The underground reserve at that date stood at 5 g/t. The underground production up until 2007 was modest at 176,000 ounces with total ounces amounting to 619,000.

Orogenic Deposits

Granny Smith 2010

| |
|-----------------------------|
| 2010 Wallaby Underground |
| 430,244 metres drilled |
| Additional metres 2007-2010 |
| 141,922 metres |
| 2010 UG Reserve |
| 604,772 oz @ 5.20 g/t |
| Cumulative Recovered |
| UG Production 2004-2010 |
| 549,742 oz |
| Additional ounces 2007-2010 |
| 535,471 oz |



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Moving to 2010 you can see the change in the drilling. These resources have grown, particularly along that vertical extent. There was no further mineralisation identified at depth at that stage. You can see the drilling in those three years doubled. The underground reserve stood at 604,000 ounces at 5.20g/t. Production had increased significantly to approximately 550,000 ounces. So even taking into account production; the underground reserve has grown from 400,000 up to over 600,000 ounces.

Question: Do the grades improve at depth?

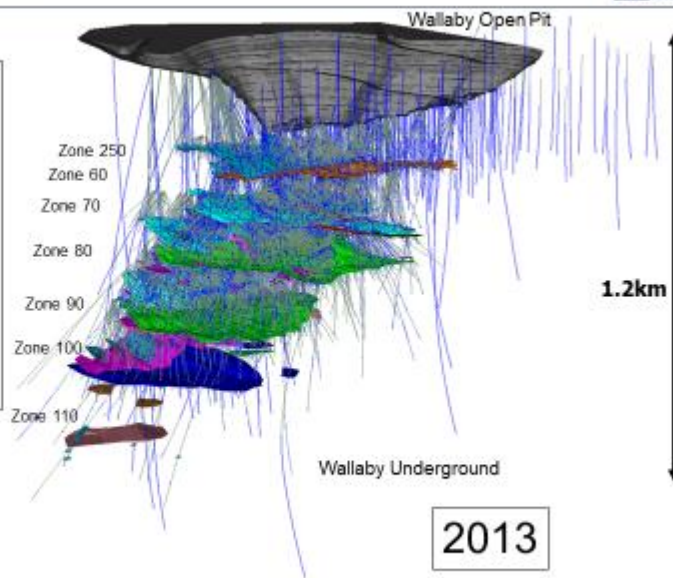
Answer: In this particular deposit they do. In this particular period of time the underground reserve has gone from 5g/t to slightly higher at 5.2g/t. As you will see, this continues to increase to 6.34g/t by 2013.

Orogenic Deposits

Granny Smith 2013

2013 Wallaby Underground
652,807 metres drilled
 Additional metres 20010-2013
222,363 metres

2013 UG Reserve
838,431 oz @ 6.34 g/t
 Cumulative Recovered
 UG Production 2004-2013
1,189,407 oz
 Additional ounces 2010-2013
873,324 oz



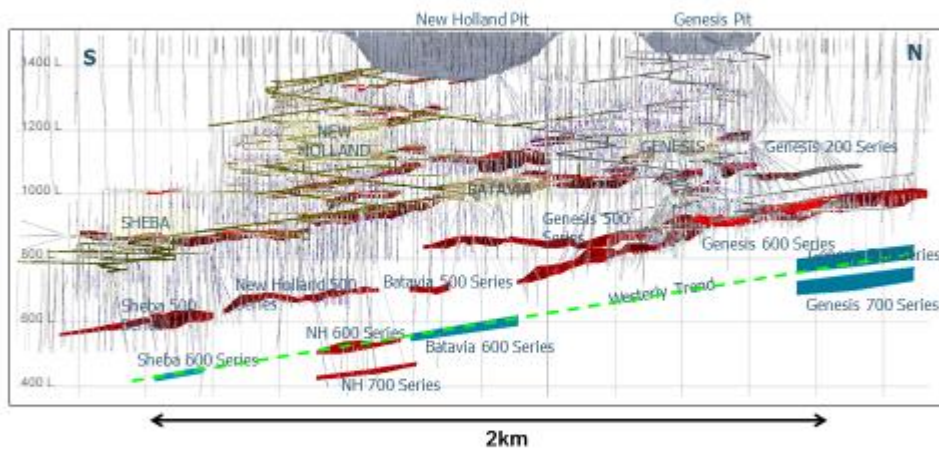
View to West

As we move to 2013 the underground reserve again increases significantly with higher grade. By this stage there was a significant number of metres drilled. Underground production has increased along with an overall addition of 873,000 ounces over the period.

An important point is that it is very difficult to drill these deposits out at the outset. These deposits grow incrementally with in-fill and extensional drilling, and in general, as underground drill platforms become available.

Significant Depth and Strike Extent

New Holland – Genesis Resource

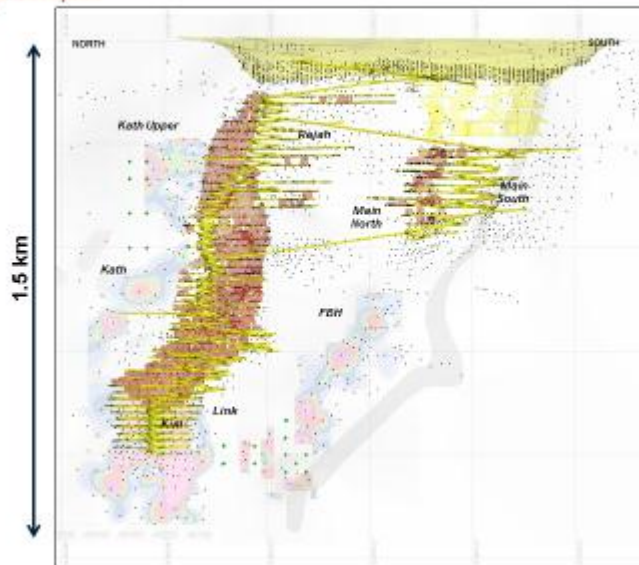


A similar example of a large deposit is from Agnew-Lawlers. This is the New Holland - Genesis resource in long section. This deposit was one of our recent acquisitions. The drill traces are shown in light grey and the resources in red.

Again note the dimensions; about 2.4km in the north-south direction, and over 1km in depth. Again these zones of mineralisation are fairly flat lying.

Significant Depth Extent

Waroonga Complex



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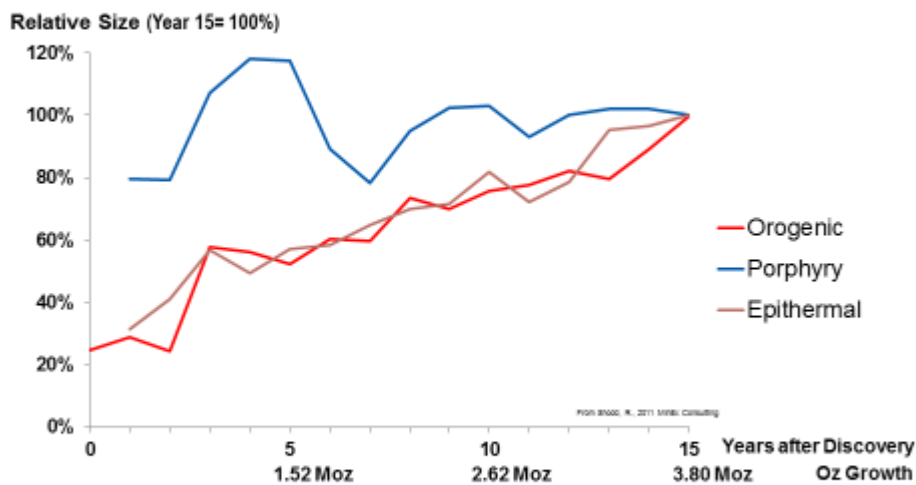
At Agnew-Lawlers is the Waroonga complex – you can see here this is a steeply plunging zone of mineralisation extending to approximately 1.5km to where we have drilled to date.

We have drilled some areas from surface using navigational drilling. But again, in order to take these resources through each category to reserve status, it relies in general on access to drill platforms as development and mining progresses.

Orogenics Deposits



“Grow” with time and are “step changers”



Caution: In given year figures are based only on deposits with reported resource. This fixes the problem of delays in reporting a maiden resource, and biases from large deposits

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This figure highlights the same concept. This is a figure from Richard Schodde of MineEx Consulting. He has taken data for a number of deposit styles, and in this case around 20 of the larger orogenic deposits. And he has shown with time, over 15 years, some deposits grow incrementally. It is the same concept that I have just show in section from our own operations.

In this particular case, these deposits have grown fivefold over a period of approximately 15 years. Porphyries display a different trend and in part reflect the different style of mineralisation; large disseminated systems that, in general, can be scoped at a very early stage of exploration with the resource not growing significantly over time.



Orogenic Deposits



Are likely to be developed

- There have been 285 gold discoveries >100 Koz globally since 1994
- Of these 285 discoveries, 29% are orogenics
- Of these 285 discoveries, 21% are in production
- Of those discoveries in production, 41% are orogenics!

These statistics I find interesting. If we go back and look at gold discoveries over 100,000 ounces globally since 1994, 29% of those discoveries have been orogenic. We should keep in mind that these numbers are not exact as there are no doubt a few deposits that weren't included.

Of the 285 discoveries 21% are in production. And the thing that took my eye is that of those discoveries that are in production, almost half or 41% are orogenics. It is important to remember that a lot of these deposits get into production with relatively lower upfront capital costs than some other "popular" deposit styles e.g. porphyry Cu-Au. Sometimes the sustaining capex and opex are also favourable.

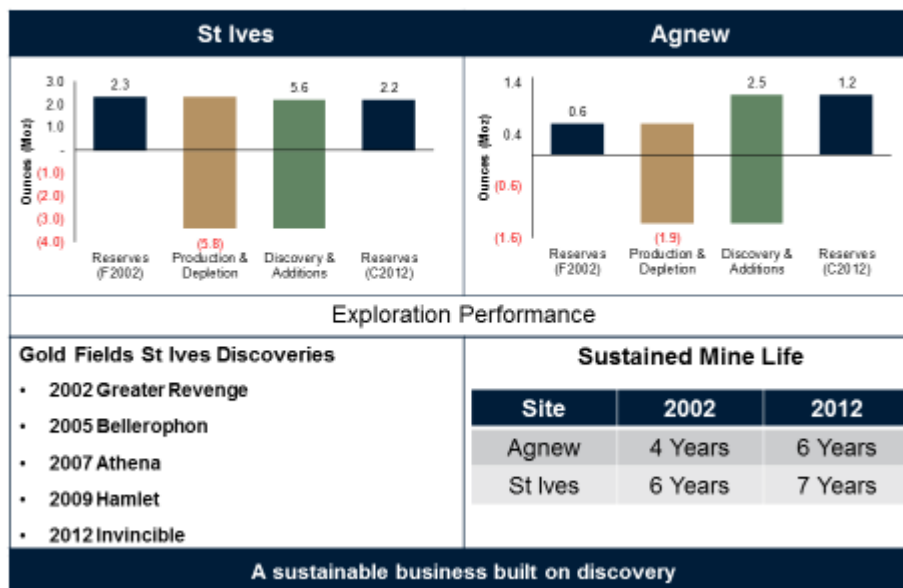
So from a business perspective, this is an interesting fact to consider. That the likelihood of this deposit style getting into production following discovery is excellent.



Orogenic Deposits



Long lived operations



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In summary then, this slide supports a lot of what I've been saying and what Richard Weston highlighted earlier in his presentation.

St Ives and Agnew are sound testament to the longevity of operations leveraging off orogenic gold camps. In 2002, St Ives had reserves of 2.3Moz and a 6 year LoM – 10 years of production later, reserves and the LoM remained similar at 2.2Moz and 7 years. Agnew has provided a similar story of successful reserves replacement.

Fundamental to this success is the land position and the ability to make consistent discoveries over time.



Orogenic Deposits



Concluding Remarks

- Orogenic deposits are an important source of global gold production.
- Although known reserves characteristically do not extend much further than several years on any particular deposit, the nature of orogenic systems can provide companies with long lived, sustainable gold operations.
- Having acquired the WMC assets in 2002, Gold Fields is now leveraging off it's initial success and understanding of these systems with the 2013 acquisition of Darlot, Lawlers and Granny Smith operations.
- Orogenic ore bodies are a Gold Fields core competency – we know how to FIND them, DEFINE them and MINE them!

Thank you!

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Orogenic deposits are an important source of global gold production. Although known reserves characteristically do not extend further than several years on any particular deposit, the tendency for orogenic gold deposits to form clusters can provide companies with long-lived, sustainable operations. Having acquired the WMC assets in 2002 Gold Fields is now leveraging off its initial success and understanding of the systems with the 2013 acquisition of the Barrick operations.

Orogenic deposits are a Gold Fields' core competency. That is what we feel. We know how to find them, how to define them and obviously how to mine them. I hope after these next three days you will agree with that statement. Thank you for your time.