



Gold Fields F2010 Reserve & Resource Declaration  
05 October 2009

Presentation 2 of 3

**South Deep**  
**The Mine Of The Future Taking Shape**  
Vishnu Pillay  
Head of the South Africa Region

Slides and Transcripts



GOLD FIELDS

## June 2009 Resource and Reserve Declaration

*with updates on:*

### South Deep

The Gold Mine Of the Future Taking Shape

### St Ives

A Transformation underway.

Gold Fields Limited

5 October 2009

## INTRODUCTION

## Forward Looking Statement



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Such forward looking statements involve known and unknown risks, uncertainties and other important factors that could cause the actual results, performance or achievements of the company to be materially different from the future results, performance or achievements expressed or implied by such forward looking statements. Such risks, uncertainties and other important factors include among others: economic, business and political conditions in South Africa; decreases in the market price of gold; hazards associated with underground and surface gold mining; labour disruptions; changes in government regulations, particularly environmental regulations; changes in exchange rates; currency devaluations; inflation and other macro-economic factors; and the impact of the AIDS crisis in South Africa. These forward looking statements speak only as of the date of this document.

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## **SOUTH DEEP THE MINE OF THE FUTURE TAKING SHAPE**

Vishnu Pillay  
Head: South Africa Region

Thank you very much Tim and good morning ladies and gentlemen. To those of our colleagues who are on the webcast I would like to extend a very warm welcome to them as well.



## SOUTH DEEP PROJECT Two Key Targets



### F2010 TARGET

- Continue "Safe Production" improvements
- Build-up to 300 koz (65 koz for Q1: Plan + 6%)
- Commence optimisation to long hole stoping



### DECEMBER 2014 TARGET

- Complete required infrastructure
- Attain full production rate (~750 to 800 koz/pa)
- Achieve world class productivities



## ON TRACK TO ACHIEVE F2010 AND F2014 TARGETS

It gives me the greatest of pleasure to talk you through the progress that we've made at South Deep over the last 15 months and since we acquired this operation in December 2006.

For those that visited the operation on Friday, I think we had the opportunity to share with you the progress that we've made. For those that didn't visit the operation, I think you missed a wonderful opportunity to touch the future because South Deep, ladies and gentlemen, unlike any other operation in the group and unlike any other operation in South Africa, is fundamentally going to change the way we do deep level mining in this country.

What we'd like to share with you this morning are some of the key facets of the progress that we've made, and to give you the context in which we expect to take this mine into the future.

There are two key periods that we would like to cover in this presentation.

The first is the progress that we expect to make in the financial year that we are in (F2010).

Then we will give you a heads up on the trajectory that we're going to follow to take us to December 2014, because that's a key milestone date that we are working towards.

Firstly, I have to say that this group has a philosophy that Nick first expounded when he took the office of CEO and that is if we cannot mine safely, we will not mine. That culture is being embedded on every operation and it's very clear that at South Deep the continuance of this philosophy of safe production is being pressed hard as well. This mine today would have run 494 days without a fatal accident. It would have achieved just over 1.6 million fatal free shifts. What it does is it proves that we can run deep level mining operations without having fatal accidents. Indeed, it has an edge over the other conventional mining operations in that it is fully mechanised.

But what we are doing is to make sure that, even on these operations, we achieve the objective of ensuring that every individual goes home safely and healthy.



More than that, our build-up to 300,000 ounces for this financial year (F2010) is pretty much on track. We've seen a quarter on quarter improvement of 26% on this operation and clearly, all of our plans are finding traction.

Most of our current mining on this operation is drift and fill - it comprises approximately 70% of our current mining. But we are slowly gravitating towards long hole stoping. We are currently just over 10% into long hole stoping while our plan calls for a migration from drift and fill into long haul stoping over the next five years, to achieve approximately 60% from long hole stoping.

Our 2014 target is to complete certain key infrastructure that has to be put into place to ensure that we deliver on our December 2014 production target of between 750koz and 800koz.

The first is to make sure that our Tailings Storage Facility is completed, that's on track. The contract has been awarded.

The second is to make sure that the Vent Shaft deepening and equipping is completed timeously to give us the additional hoisting capacity.

The third is to make sure that the extension of the plant, from where we are currently to 330,000 tons per month, is on track.

I am pleased to tell you that these projects are all being project managed and is expected to follow the schedule tightly and be delivered on time.

The one thing that we also need to do is to achieve additional productivities on our equipment. This being a mechanised mine, I have to acknowledge that there is a learning curve that we are following here. Our current equipment is delivering in the range of about 60 metres to 65 metres per rig per month. What we'd like to do is get that up to 100 metres, given that on some of our international operations these rigs deliver just on 250 metres per month. But given that we are a deep level mine, there are differences in shift arrangements and working times. We'd be happy to achieve 100 metres.



## SOUTH DEEP PROJECT F2010 Target: 300 koz



- Fully mechanised and modernised operation
  - Jumbo drill rigs increased from 8 to 16 units over the past 8 months
  - Achieved success with first long hole stopes
- Motivated team in place
  - Mark Morcombe appointed as Vice President
    - Australian mechanised mining skills brought to bear
  - Effective incentive plan developed
- Rock hoisting
  - Hoisting re-instated at South Shaft - additional hoisting capacity of ~60ktpm
  - Record hoist at Twin Main Shaft in August '09 of 146,781 tons

## CONSTRAINTS TO F2010 BUILD-UP BEING ADDRESSED

In terms of our F2010 target of achieving 300,000 ounces, there are certain key things that you need to take away from this presentation. The first is that we now have a fully mechanised and modernised operation. We've increased the number of drill rigs over the last eight months from eight to sixteen. Our fleet is new and we have skilled operators. We've seen the progress that we've made with respect to long hole stoping and I'm happy to say that our initial designs have proven to be correct, and we are seeing the success in terms of the achievement that we can get from long hole stoping.

We now have a highly skilled mining and engineering team in place. Mark Morcombe will be joining the operation as vice president and head of operations this week. Mark's been general manager at our Agnew operation in Australia and he'll bring a different skill set with him.

Stuart Allan, who was the vice president and head of operations, will be moving over to take over capital management which will allow him to give a significantly greater part of his time towards ensuring that our capital expenditure in the South African region, including on South Deep, is tightly managed and that we deliver against our plans.

We do have an effective incentive scheme in place, but we have not yet fully rolled that out on this operation. Discussions are in progress with our employee unions and our management staff and I expect that in a very short while that scheme will be put into place. It will be more or less consistent with what we have on our other operations, except that it takes into account that we have a mechanised situation on this mine.

South shaft has been refurbished to give us an immediate additional hoisting capacity of 60,000 tons per month. This shaft has a hoisting capacity of 150,000 tons at full production. We currently plan to do 60,000 tons a month through South Shaft while we use the additional time that we have to install the backfill ranges and water columns. Backfill is a critical component of the success of our build up going forward and we need to make sure that our ranges are in place.

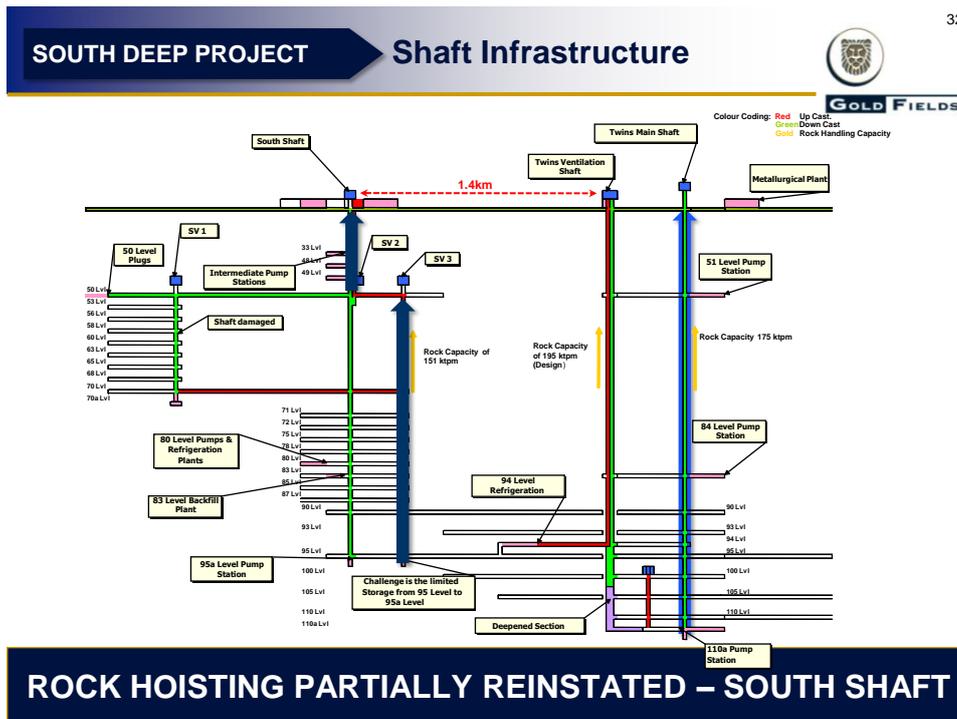
I am pleased to tell you that in August the twin shaft complex achieved a significant milestone -



just short of 150,000 tons hoisted. This is a significant achievement when you consider the context of this shaft. The twin shaft complex is a three kilometre deep shaft. You have a skip that weighs 30 tons, a rope length of three kilometres that weighs 30 tons, and a pay load that weighs 30 tons. When this skip pulls away from shaft bottom, the lights flicker on the West Rand. And it does this every ten minutes!

You can well imagine the complexity with which we are managing these deep level shafts on our operations and I have to give credit to the engineers on the operations who have really fine tuned this now, to the point where we have minimal problems with respect to our hoisting.

The added flexibility at South shaft now gives us the opportunity to accelerate our ramp up to achieve the 300,000 ounces for F2010 that we have committed to.



**ROCK HOISTING PARTIALLY REINSTATED – SOUTH SHAFT**

This is the layout of our two shaft systems at South Deep. The Twin Shaft Complex is on the right and the South Shaft Complex is on the left.

We are shifting ore on 95 level across, through to South shaft, to give us the added flexibility to cope with the increased development that we're going to have coming out of sub 95 level at the Twin Shaft.

So, with the added flexibility of the South Shaft Complex, we have enough capacity on this operation to engineer the build up into the future.

**Additional Note:**

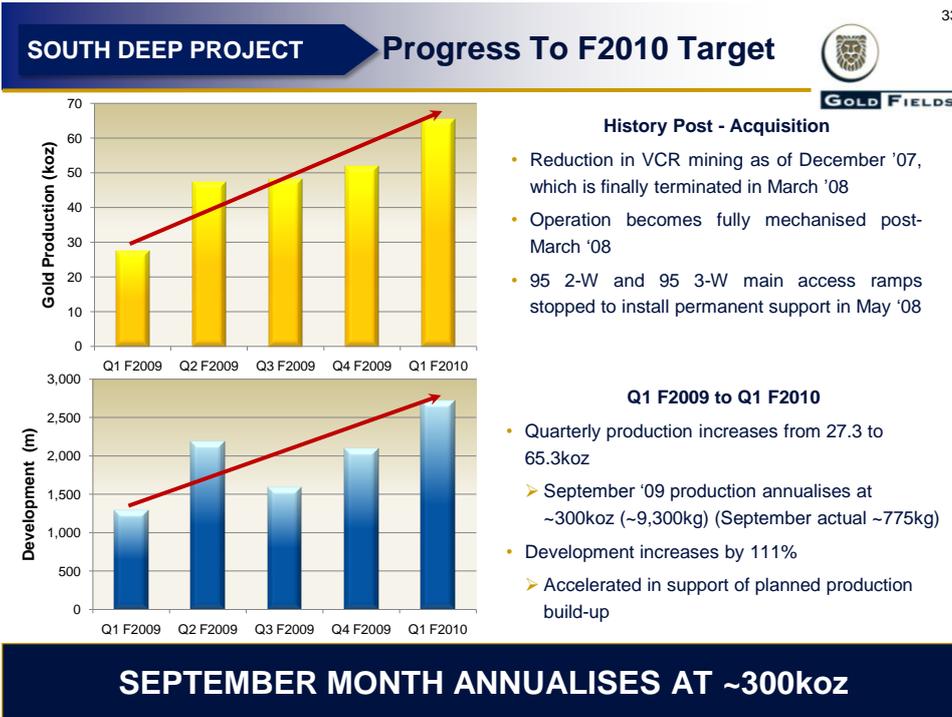
The total hoisting capacity of the Twin Shaft Complex, when completed, will be 370,000 tons per month, made up of 330,000 tons of ore and 40,000 tons of waste.

Only one of the two shafts at the Twin Shaft Complex is currently in production.

This shaft has a full hoisting capacity of 175,000 tons per month.

The second of the Twin Shafts (the Ventilation Shaft), when completed in 2012, will have a total hoisting capacity of an additional 195,000 tons per month, making up the 370,000 tons of total hoisting capacity for the Twin Shaft Complex as whole, referred to above.

The 150,000 tons per month of total hoisting capacity at the South Shaft Complex, when fully refurbished, will be incremental to that of the Twin Shaft Complex, which will bring the full total hoisting capacity of the Twin and South Shaft Complexes combined, to 520,000 tons per month.



This slide tells a story in itself.

Over the last five quarters you can see the progress that we've made in terms of our gold production build-up and in terms of the metres that we've achieved on our development, both on and off reef.

And it is a classic indication that what we are doing is actively managing our production build-up plan going into the future.

This quarter's performance has been a significant achievement in itself.

This quarter South Deep crossed the two ton mark and is well positioned to deliver on its F2010 target.



## SOUTH DEEP PROJECT

December 2014 Target:  
~750 to 800 koz



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- Detailed design and production schedule for next 30 years
- Capital programme on track to deliver key milestones
- All major infrastructure will be in place
  - Development required to provide access to ore body
  - Deepening of Ventilation Shaft with rock hoisting capacity of 195ktpm
  - Ore silo capacity at shaft bottom as well as settler dams and pumps
  - New FPT backfill plant with associated backfill lines to workings
  - Fully operating refrigeration plant underground and ice plant on surface
  - Upgrade of metallurgical plant to mill 330ktpm

## FULLY INTEGRATED PROJECT MANAGEMENT PLAN

In terms of our December F2014 target, because this is a significant milestone that we would like to achieve going forward into the future, I am pleased to tell you that our design and production schedule is in place for the next 30 years.

Tim has talked you through some of the fundamental detail regarding this design and schedule, but most importantly, ladies and gentlemen, this mine in Gold Field's hands is being led and managed differently.

In accordance with the way we run deep level gold mining operations, putting out a mine design and schedule that looks forward 30 years, gives us a good indication of the kind of planning and infrastructure that we need to have in place and how we are going to manage our build up going forward into the future.

And most importantly, to give you a sense of comfort with respect to how mining is going to be executed on this operation, it is important to note that at South Deep we know exactly how much we are going to mine, from what area, what corridor, the mining method that we are going to use and the contribution from that area to our profile.

The capital program is on track. It is being tightly managed by a highly skilled project management team that has got all the necessary systems and facilities to ensure that we deliver, and to ensure most importantly that we don't have capital expenditure overruns on our key project items.



**SOUTH DEEP PROJECT** Capital profile: F2010 to F2014  35  
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Item	Year				
	F2010	F2011	F2012	F2013	F2014
94 Level Refrigeration Plant Phase 1					
Twin Vent Shaft					
Tailings Storage Facility					
Plant Expansion to 330ktpm					
New Mine Development Phase 1					
<b>Total Capital (All projects)</b>	R1,727m	R1,939m	R2,199m	R1,419m	R1,126m

Note: Capital estimates in mid-2010 money

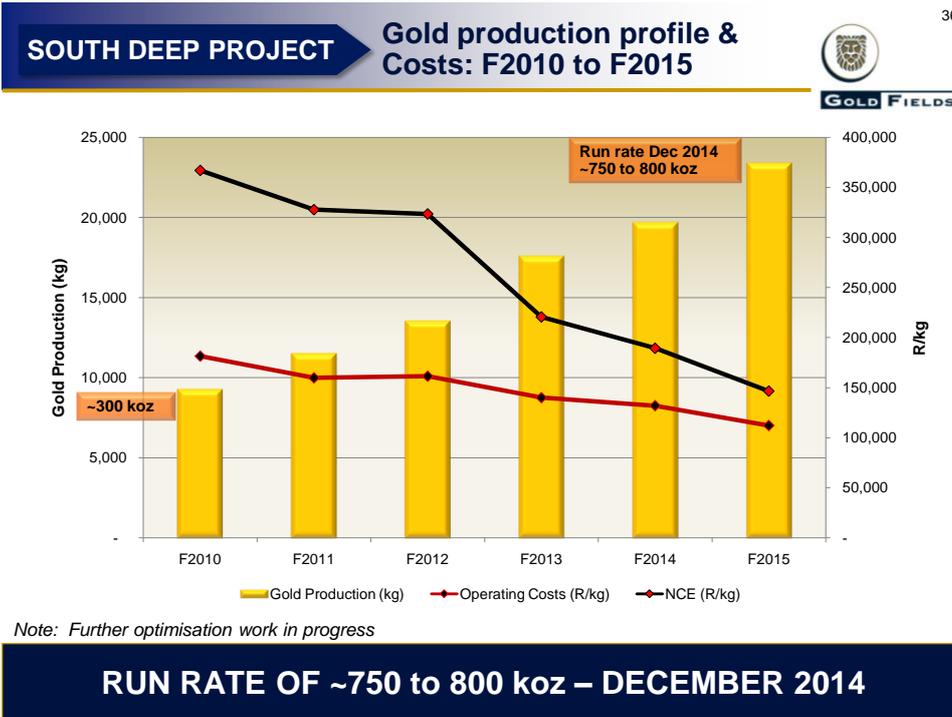
**ALL PROJECTS ON TRACK**

The most important point that I would like to make on this slide, is to draw your attention to the backfill plant tailings facility that should be in place towards the end of F2011. South Deep is fundamentally dependent on the placement of backfill, given the nature and scale of the excavations and given the nature and scale of the mining we're going to be doing across the four corridors. So it's important to ensure that the infrastructure is in place and that we can place backfill at the right time. Our curing rate for backfill is just on about a month now and, going forward into the future, we're going to see how best we can manage that time down. But it is important that the backfill plant tailings facility is in place. Currently we're placing about 80,000 tons of backfill. We expect that to go up to between 240,000 to 260,000 tons at full production. So that is a critical element of our plan going forward into the future.

The met plant is currently designed for an expansion to 330,000 tons per month. However, I would like to inform you that we are looking at optimising our plants between Kloof and South Deep. If it comes to pass after the feasibility is complete that we need to expand the South Deep plant by a further 100,000 tons to compensate for any optimisation that we may want to do at Kloof, we will do so. That decision will be taken some time towards the end of this year. It's a key part of making sure that we start getting the best value out of both these operations, that lie adjacent to each other.

This slide gives you a clear indication of the progress and time duration with respect to the major projects that I referred to earlier, but I think the important point to note is that the total capital for all of the projects, tallies to approximately R8.4 billion right up until the end of F2014.

That capital will be funded internally through the facilities we have and through the cash flow that we expect to generate.



This is the build up plan going forward into the future.

In fact, our September month's performance at South Deep annualises to just short of 300,000 ounces, and we are quite certain that every effort will be made to achieve our 300,000 ounce target for F2010.

The build up to 750,000 to 800,000 ounces by 2014 is now planned and scheduled accordingly.

Our total costs, referred to as NCE, drops from just over R380,000/kg to about R150,000/kg over that period and our cash costs from about R185,000/kg to about R112,000/kg.

Clearly, what this all means is that we've got to deliver in respect of our build-up plan going forward into the future.

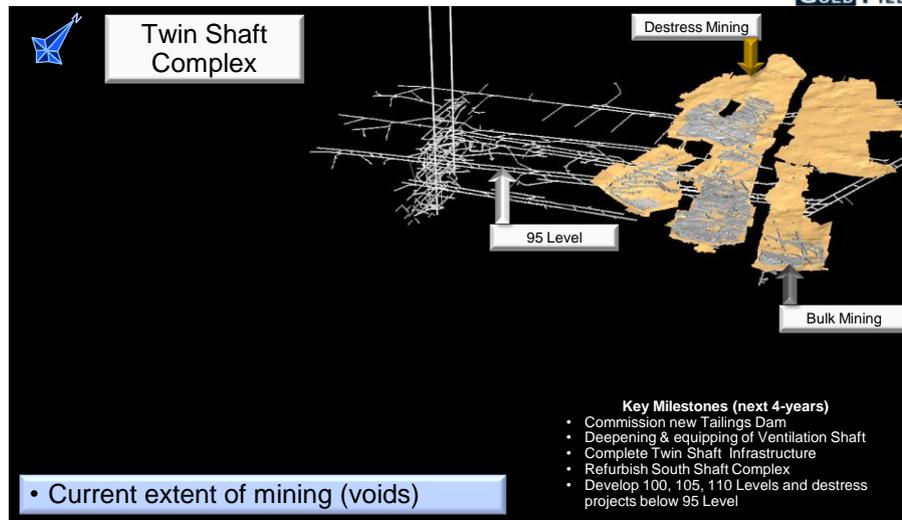
I am pleased to say that, given that we now have an operations plan that we are managing tightly as is evident from the progress that we have made over the last five quarters, unless there's something exceptional that happens, which we haven't anticipated or planned for, we expect to deliver on this going into the future.



## SOUTH DEEP PROJECT F2009 Operational Plan



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### STATUS QUO - CURRENT MINE

This is an important slide because it should give you some sense of where we are going to mine going forward.

What you need to do is keep your eye on the twin shaft complex and to the area to the right of the twin shaft complex to see the build.

What the slide shows you is the destress mining that is in place and the gray, the current bulk mining that is being undertaken.

It is also important to note that bulk mining will only take place in the shadow of the destress mining and that the destress mining is just as important to us in terms of managing our production profile going forward, because it is all in ore.

The different colours that you see coming up in the next few slides represents progress that's going to be made on an annual basis with respect to our build up plan. It shows very clearly the areas that we will be mining in, it shows the development that is going to be put into place to sustain the plan going forward and, indeed, will set us up for production beyond 2014.

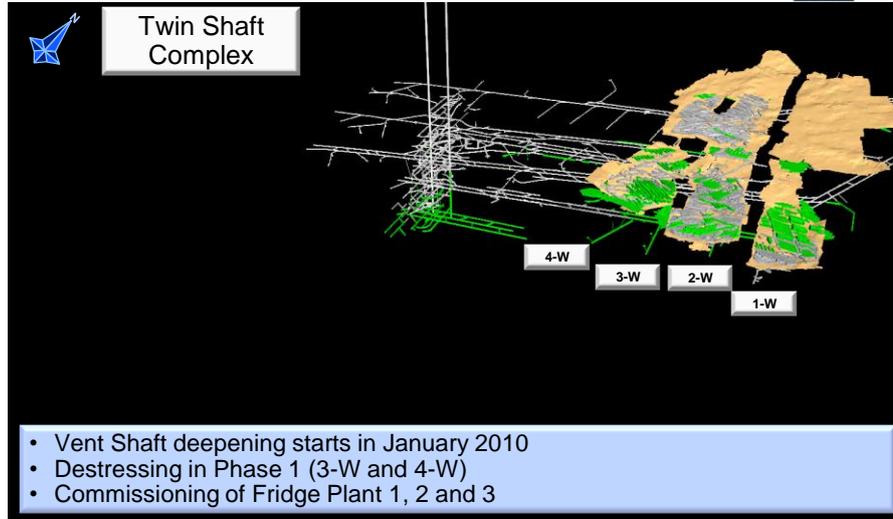


## SOUTH DEEP PROJECT F2010 Operational Plan

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**GREEN – DEVELOPMENT AND MINING IN F2010**

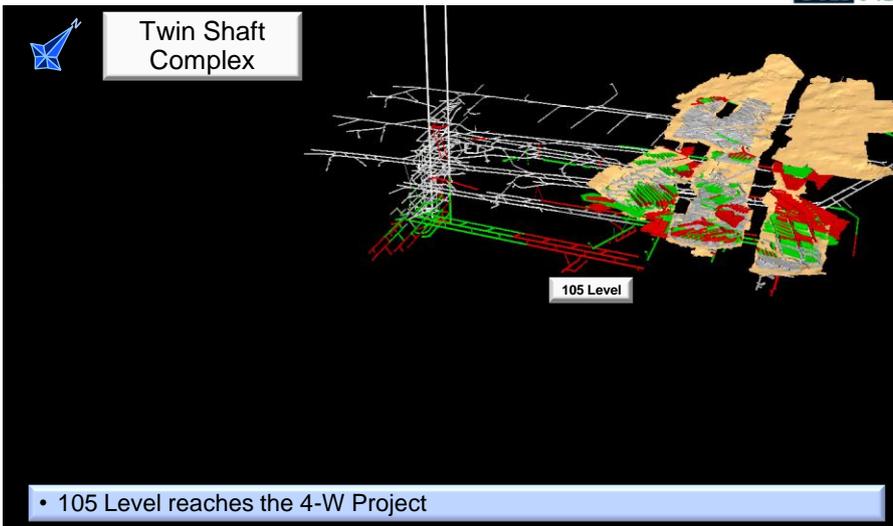
The green shows F2010 which is our current operational plan for this year.

## SOUTH DEEP PROJECT F2011 Operational Plan

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**RED – DEVELOPMENT AND MINING IN F2011**

The red shows the progress that we're going to make in F2011, both in terms of mining and development on 105-level. You can see 105-level has progressed off the shaft and has reached the four west project corridor.



**SOUTH DEEP PROJECT** F2012 Operational plan

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Twin Shaft Complex

- 105 Level reaches 2-W
- Destressing in Phase 1 (1-W and 2-W)
- Bulk Mining in 3-W and 4-W

**BLUE – DEVELOPMENT AND MINING IN F2012**

The blue shows progress in F2012 and you can see that the shaft infrastructure is completed by that time and development out of the shaft to the south has commenced in earnest.

**SOUTH DEEP PROJECT** F2013 Operational Plan

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Twin Shaft Complex

- Vent Shaft commissioning in July 2012
- 105 Level reaches 1-W

**BROWN – DEVELOPMENT AND MINING IN F2013**

This is F2013 and you can see the progress that's being made in the four west corridor and the three west corridor in terms of the mining and the destress. You can also see the progress down dip off the existing corridors and the final commissioning of the Vent Shaft for hoisting. The



commissioned vent shaft would give us an additional hoisting capacity of about 195,000 tons a month during F2013, as previously mentioned.

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**SOUTH DEEP PROJECT** **F2014 Operational Plan**

Twin Shaft Complex

110 Level towards Phase 1 South of Wrench

- Top access to Phase 1 South of Wrench starts

**MAUVE – DEVELOPMENT AND MINING IN F2014**

That's our mining for 2014 and you can see, coming out of the shaft is the development that's going to take us through to south of the major wrench fault. That's part of our build up plan as well. So there's a significant amount of development taking place out of the shaft complex.



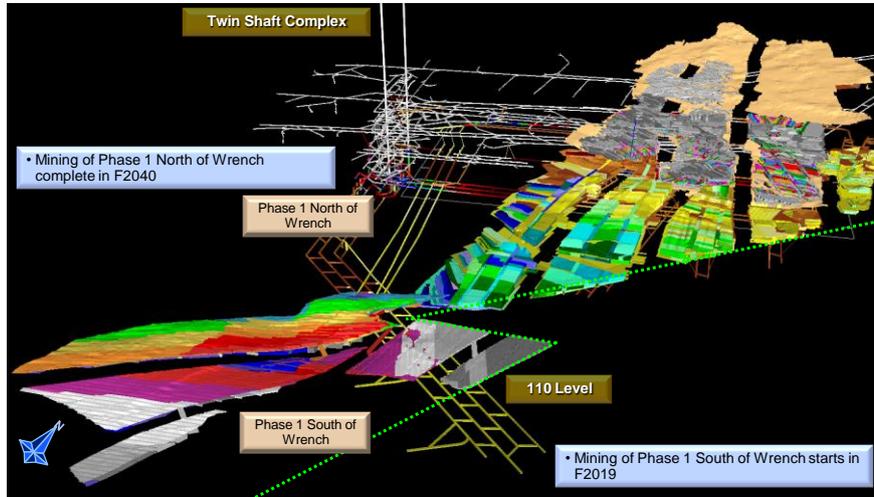
**SOUTH DEEP PROJECT** Scheduled Mineral Reserves

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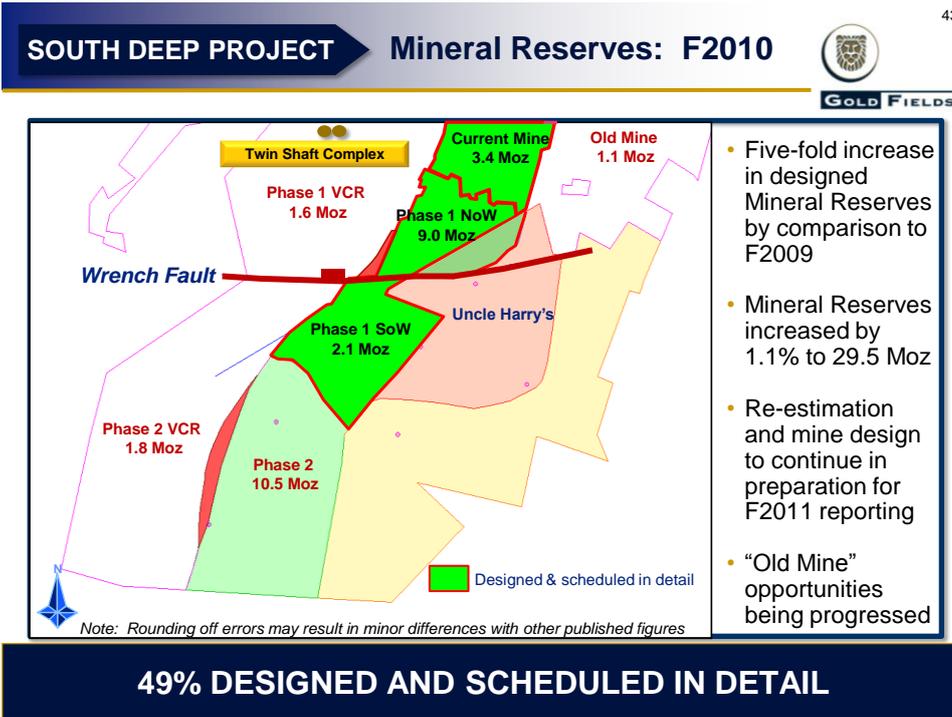
**Phase NoW and SoW**



**14.5Moz OF RESERVES DESIGNED & SCHEDULED IN DETAIL**

Going beyond F2014 into the future it is very clear that mining is exactly planned and scheduled well into the future.

What we will be doing going forward, as with all mine plans, we will optimise these designs and our schedule to make sure that we can reap the maximum benefit and reward from this operation, given that the Twin Shaft, the Vent Shaft and the South Shaft will all be at full capacity.



I should stress that what is not yet in the mine design and schedule is the VCR which we still have access to, and work is currently being done on mechanising the VCR mining.

What is also not in this schedule is the million ounces of reserves at South Shaft, which is an opportunity that we expect to realise in this financial year, and the potential that we have above 87-level at South Shaft, which is an opportunity that we have a full time team looking at as we speak.

Given all of that and given the mine design and schedule that we have, what I'd like to leave you with, very clearly, is the significant up-side potential on this operation. We plan to crystallise that as we progress towards our F2014 target.

The green on this slide shows the area that we've designed and scheduled out for production going forward into the future and that roughly represents 50% of the potential on this operation, given that we've got a reserve base of just under 30 million ounces. We have scheduled out just on half of that.

That's sufficient right now to give us a clear indication of how we're going to manage this operation going forward. However, it is not that the mine design and scheduling has stopped. Work is in progress, as I speak, on dealing with the rest of the operation.

But what we'd like to do is make sure that the surface drilling that Tim alluded to earlier is completed and is incorporated into our build-up plan going forward into the future. Because that's important.



## SOUTH DEEP PROJECT Conclusions



- South Deep is a long-life world class ore body
  - Mineral Reserves total 149.4Mt at 6.1g/t (~29.5Moz)
  - Ore body geometry allows for efficient exploitation by modern mechanised mining methods (viz. benching & long hole stoping)
- Performance improving
  - Gold production for Q1 of F2010 is 6% above plan
  - Continued improvement in delivery against plan (F2009: 98% of Plan)
- Capital programme is on track
  - Fully integrated project management plan with fully staffed PMO
  - Projects currently on time and within budget
  - Controls enhanced by roll-out of project management system

### ON TRACK TO ACHIEVE F2010 AND F2014 TARGETS

In conclusion, South Deep is the jewel in the Gold Fields crown. It's an acquisition that we are extremely proud of and it's an acquisition that we believe is going to deliver considerable value, not just to the South African region, but to the organisation as a whole.

It has a reserve that we can exploit. Given the progress that we have made with machining this operation, we believe that we now have the equipment. We have the design that will deliver the tonnage for the build up and for sustaining this operation going forward into the future.

Most importantly I think we've got the leadership on the ground that can actually ensure that we deliver a sustainable performance. What is also clear is that the build-up actually did not start in the last quarter. It started a year ago and you've seen the progress that we've made in respect of our gold production and development over the last five quarters. We have been tightly managing the build-up over the last five quarters and I'm pleased to say that production for quarter one, which has just ended, is above plan as well. Quarter on quarter we've seen a 26 per cent improvement and production for the quarter is six per cent above plan.

The capital programme is on track and is being tightly managed. Given the significant investment that we're making on this operation, we've got a fully staffed project management office, with a large number of engineers that have responsibility for the myriad of projects that we're actually running on the mine.

I am pleased that we have now truly come to grips with this mine and we believe that, under the Goldfields banner, we will be able to deliver this project safely going into the future, for the benefit of all of our shareholders.

In conclusion I must say that South Deep, for those who have not had firsthand experience of what this mine has to offer, you may have missed an opportunity on Friday. But what we would like to do is to make sure, on an ongoing basis, that we give you the opportunity to experience what the future of mining is going to be about in this country, by arranging regular visits.



This industry has become accustomed to labour intensive conventional operations, but South Deep is different in all aspects.

South Deep is going to be the leader of mining in this country going forward, and it is expected that South Deep will set the standards for bulk mining at depth, irrespective of the challenges that we face. South Deep is going to set the benchmarks on a global scale.

I am very pleased with where we are and, I must say, on every visit to this mine, my love for this operation and the people that work on it grows increasingly. I am absolutely confident that going forward we will see major progress in respect of delivery.

With that I would like to hand you over to my colleague, Glenn, who will talk you through the progress that he is making at St Ives in Australia.

Thank you very much.

## **SOUTH DEEP QUESTIONS AND ANSWERS**

**Steve Shepherd (JP Morgan):** On South Deep, could you please explain carefully to those of us that are somewhat confused what the reef hoisting capacity is all together, including the deepened twin shafts plus the south shaft. Because my arithmetic – I'm having a bit of trouble here, because it doesn't look like you've got milling capacity to match your hoisting capacity. Maybe you could just explain that a bit more to me and I will leave it there.

**Vishnu Pillay:** Steve, there's a slide in the pack that shows shaft infrastructure for South Deep. The twin shafts, let me read it out for you, Steve. I'm a few years younger than you.

Steve, the name plate capacity for the twin shaft complex is 175,000 tons per month. (That is for the one shaft that is currently in operation).

The vent shaft, when completed, will give you an additional 195,000 tons per month. This is name plate capacity.

And then South Shaft, it will give you an additional 150,000 tons per month when fully operational. It is now at 60,000 tons per month.

**SS: Is that reef tonnage or total tonnage?**

**VP: Total tonnage. Reef plus waste.**

**SS: Could you give us an estimate for what you think realistically the reef hoisting tonnage will be? In other words what percentage of your tonnage is going to be waste and which is going to be reef?**

**VP:** Let me just confirm with Stuart. It is about 40,000 tons of waste and the rest is reef. Stuart?

**Stuart Allan:** Yes Vishnu, at full production South Deep is based on 330,000 reef tonnes hoisted per month and another ten per cent or 40,000 waste tons hoisted per month. So the twin shafts, with the current 175,000 tons per month plus the future 195,000 tons per month, will hoist 370,000 tons per month. Anything else from South Shaft is incremental, is additional.

**SS: That leads to the obvious question of why you are designing a 330,000 process facility,**



**bearing in mind that you said on Friday I think that this is a tonnage factory.**

**VP:** Steve I did mention earlier on, we are currently in the process of looking whether we should take it to 430,000 tons, because that would seem to be the obvious decision to make. I think before that decision is taken we just need to holistically look at what are the optimisation protocols that we need to follow with respect to Kloof as well. Having said that, the design was meant for 330,000 tons. In all likelihood we will be revisiting that number going forward.

**SS:** Just one last question, a quick one. Can you just remind us if you mentioned it and I forgot, when you would make that decision between 330 and 430?

**VP:** Feasibility with respect to the plant optimisation should be completed by November of this year. This calendar year.

**Question 2 (Shane Hunter, BJM)** South Deep again, also to do with the mine call factor. You seem to have gone up from 91 per cent, to 100 per cent. I wonder if you could just explain what's behind that because it sounds like that could be a little bit optimistic.

**TR:** I'm actually going to hand you over to the mineral resource manager for South Deep, Michael Cameron. That's not a hospital pass, so I would just like him to answer that one. Mike, if you like to answer that.

**Michael Cameron:** Thanks Tim. Yes, 12 months ago at South Deep we introduced a new modelling process and the average MCF since that period is running in the high 110s. The contribution from grade reconciliation appears to be about 10 to 11 per cent, so we have a slight underestimation of our resource, which we are currently looking at rectifying.