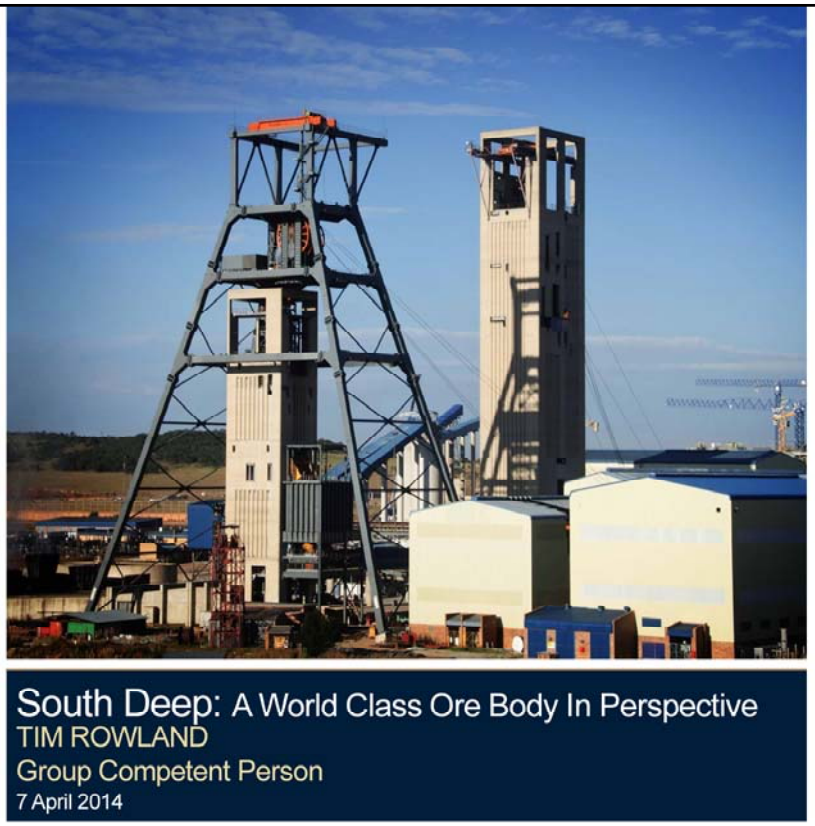


South Deep is an important asset in the Gold Fields (GFI) portfolio and accounts for 71% of the Group's Mineral Resource and 73% of the Mineral Reserve base. The mechanised mine is still in the production ramp-up phase and is scheduled to reach steady state production at the end of 2017.

The South Deep ore body represents the fundamental asset in the ground that underpins the life of mine and anchors the operation's inherent capability to position itself for margin and cash flow delivery. This presentation provides a comprehensive overview on the South Deep ore body, illustrating the significant advances made by Gold Fields in understanding this unique and World Class ore body.

The tools, methodologies and processes employed to continually increase resolution in the Mineral Resource and Mineral Reserve are put into perspective and the importance of how the ore body dictates the mine design, mining methods and production scheduling is explained. The very significant investment Gold Fields has made, since taking full ownership of South Deep in April 2007, in skills and expertise, data acquisition, geology and geostatistical modelling techniques, resource estimation and risk mitigation has ensured that LoM planning and scheduling is based on robust models with appropriate confidence levels. The production build-up plan has been de-risked from an ore body perspective and is under-pinned by high confidence resource models comprising significant components of Measured Resource and Proved Reserve.

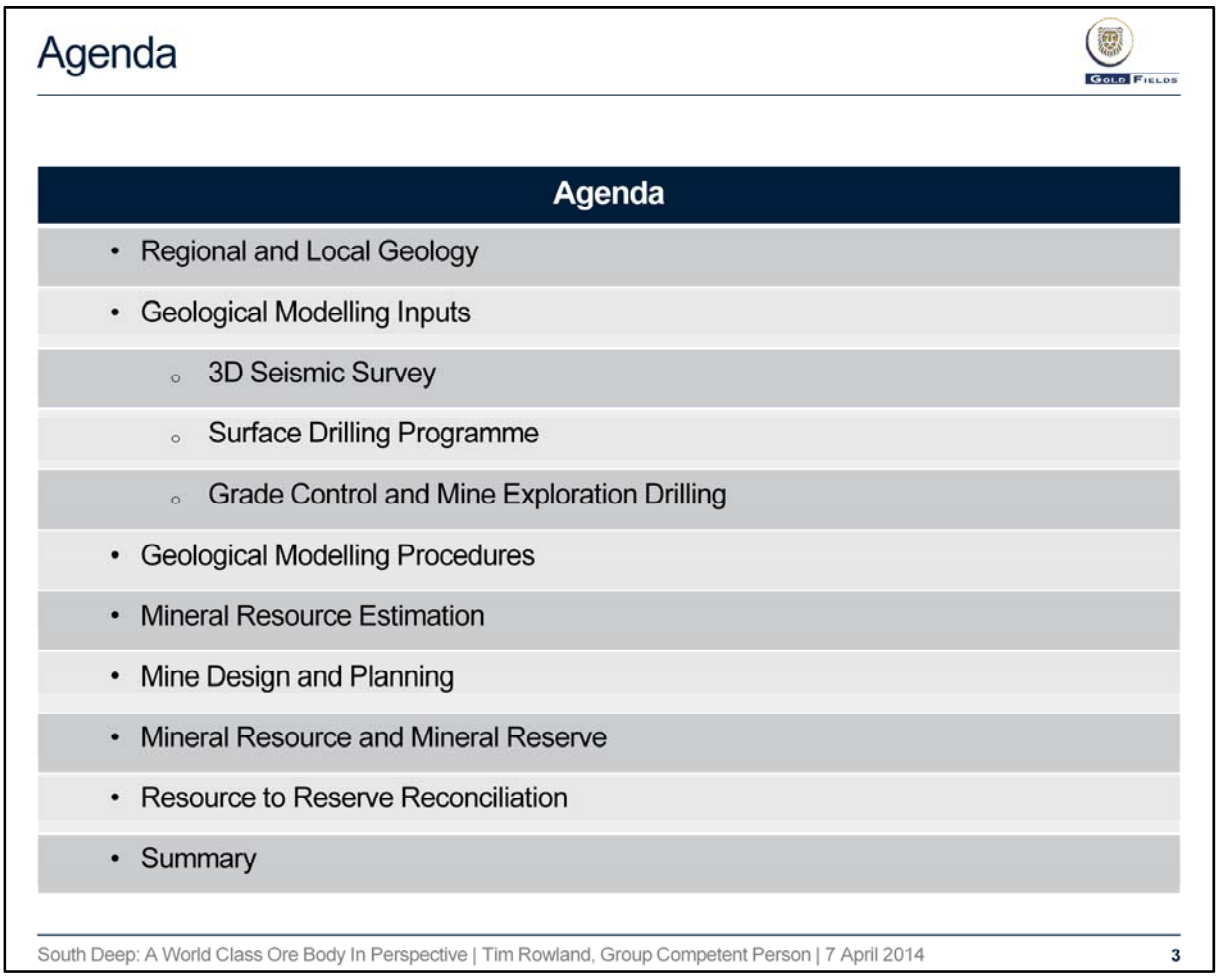
It should be noted that the Gold Fields Mineral Resource and Mineral Reserve Supplement to the 2013 Integrated Annual Review will be issued shortly and will also be posted on the company website for reference.

Forward looking statements

Certain statements in this document constitute "forward looking statements" within the meaning of Section 27A of the US Securities Act of 1933 and Section 21E of the US Securities Exchange Act of 1934.

In particular, the forward looking statements in this document include among others those relating to the Damang Exploration Target Statement; the Far Southeast Exploration Target Statement; commodity prices; demand for gold and other metals and minerals; interest rate expectations; exploration and production costs; levels of expected production; Gold Fields' growth pipeline; levels and expected benefits of current and planned capital expenditures; future reserve, resource and other mineralisation levels; and the extent of cost efficiencies and savings to be achieved. 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, Ghana, Australia, Peru and elsewhere; the ability to achieve anticipated efficiencies and other cost savings in connection with past and future acquisitions, exploration and development activities; decreases in the market price of gold and/or copper; hazards associated with underground and surface gold mining; labour disruptions; availability terms and deployment of capital or credit; changes in government regulations, particularly taxation and environmental regulations; and new legislation affecting mining and mineral rights; changes in exchange rates; currency devaluations; the availability and cost of raw and finished materials; the cost of energy and water; inflation and other macro-economic factors, industrial action, temporary stoppages of mines for safety and unplanned maintenance reasons; and the impact of the AIDS and other occupational health risks experienced by Gold Fields' employees.

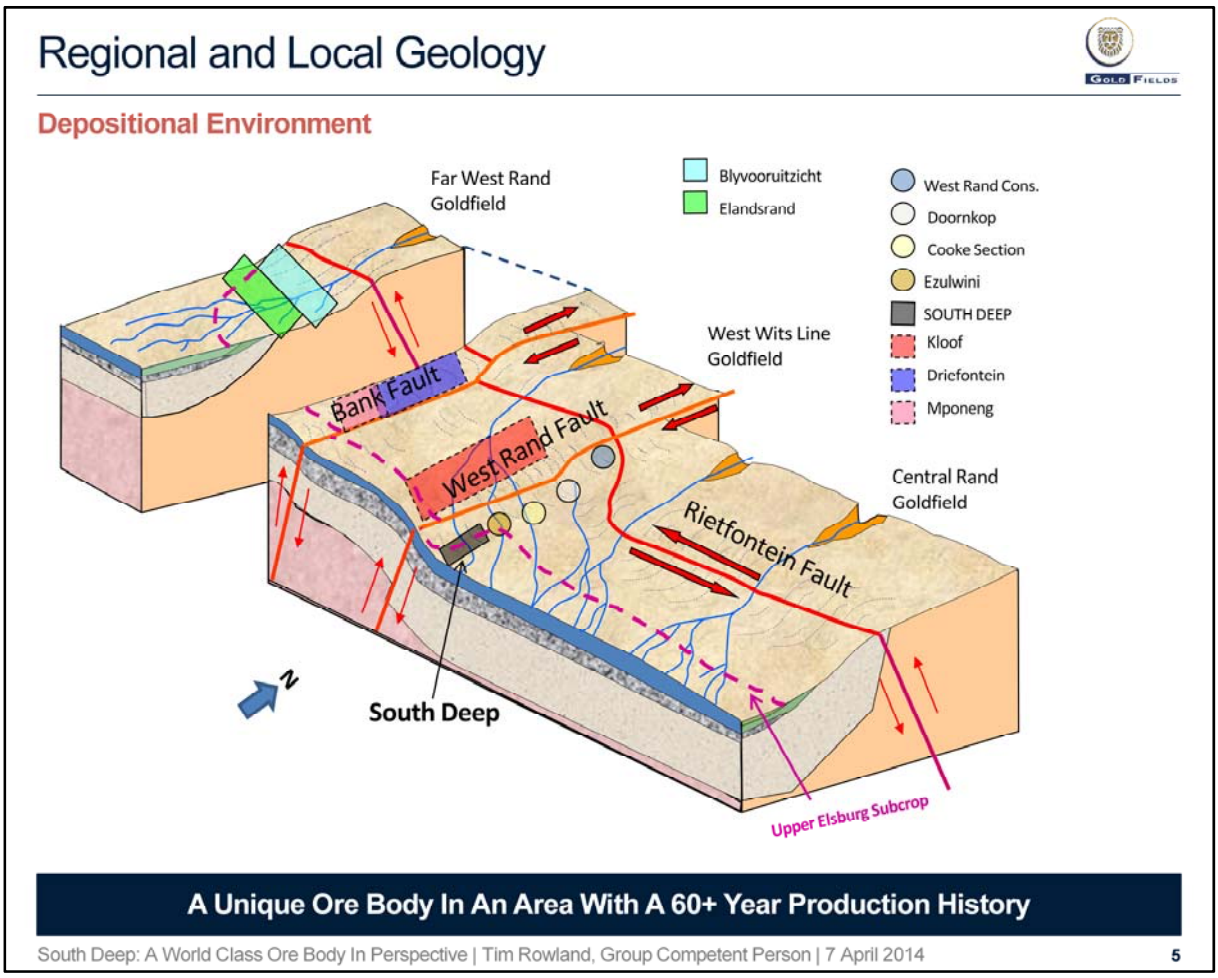
These forward looking statements speak only as of the date of this document. Gold Fields undertakes no obligation to update publicly or release any revisions to these forward looking statements to reflect events or circumstances after the date of this document or to reflect the occurrence of unanticipated events.



The agenda is tailored to review the main elements that comprise the ore body modelling process, from the macro and local geology, through exploration and grade control, to detailed modelling and resource estimation.

Regional and Local Geology

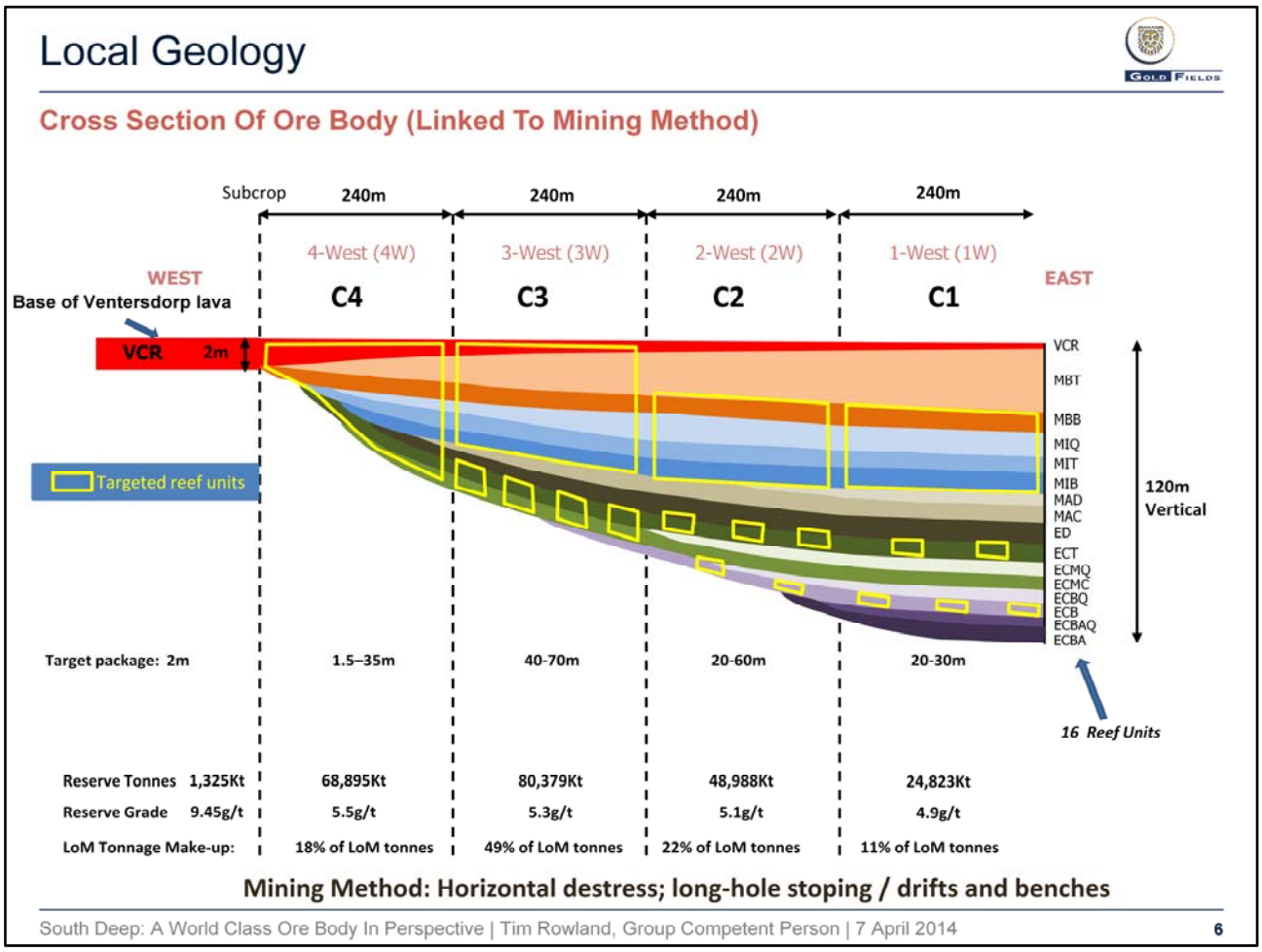
GOLD FIELDS



This schematic in isometric view illustrates the geological setting of South Deep and various West Rand and Far West Rand mines relative to major geological faults. In geological history, on-going fault movements resulted in tectonic shifting and topographic uplift which would have impacted surface water drainage patterns. The repeated movement would have kept re-energising the drainage systems over time, to ultimately generate the stacked conglomerate units and varying inter-bedded quartzites in a sub-basin, that now comprise the Upper Elsburg ore body package.

South Deep is mining the youngest reefs within its geological sub basin, with the oldest reef being mined at Doornkop mine to the north. The reefs become progressively younger to the south, toward South Deep.

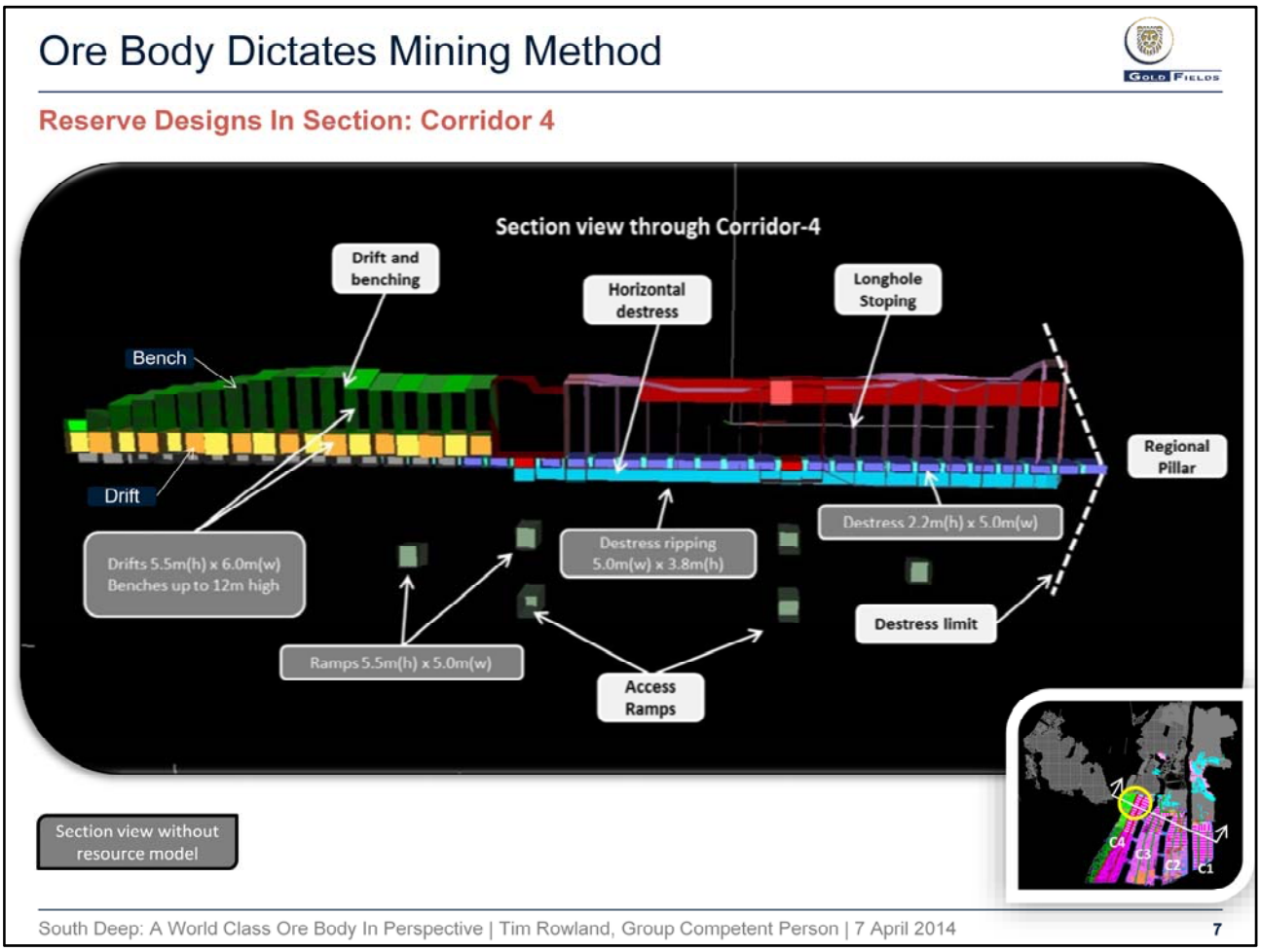
The Upper Elsburgs occur as a variable series of alternating quartzite and conglomerate units comprising a proximal package closer to the source of the gold, just a metre or so thick at the sub crop on the western side of the mine. The Upper Elsburgs attain a maximum distal package thickness up to ~120m on the eastern side of the mine. In contrast, most other reefs extracted in the Goldfield are essentially a single conglomerate band of between 10cm to 3m thick, representing a typical braided stream environment with distinct well defined higher grade pay channels. Contrastingly, the Upper Elsburgs are almost a sheet flood type deposit typical of a very high energy environment with little demonstrated channelisation, and are consequently typically 'massive' in nature.



This stylised west-east cross-section through the ore body, looking approximately north, illustrates the wedge shaped nature of the reef package and especially the sub cropping relationships of the reefs as they on-lap each other toward the west where they eventually sub crop. Repeated transgressions and regressions (forward and backward movements) of the sedimentological depositional system, as a result of ongoing movement focused on the West Rand fault, would have generated the repetitive conglomerate units to eventually build-up the final Upper Elsburg package which comprises the South Deep ore body. The Mineral Reserve grade distribution, as defined by the LoM plan, is also illustrated per mining corridor together with the related production tonnage contribution from each area. Corridors 2 and 3 in the heart of the ore body contribute ~71% of the LoM tonnes with 11% provided by the lower grade and less consistent mineralisation dominating Corridor 1.

The section also gives an indication of the reef package targeted within each mine corridor. Corridor's 3 and 4 are largely targeted for total ore body extraction, while Corridor's 1 & 2, where the package has thickened considerably with increased inter-bedded quartzite units, is targeted for more selective mining, focused on those units that at practical mining widths exceed the stope selection cut-off requirements.

Horizontal destress is a pre-requisite to enabling the predominantly long hole stoping and more selective drift and benching mining methods to be employed across the various corridors. The following four slides illustrate the typical mine design and mining methods employed in each of the four mining corridors and highlight how the nature of the ore body dictates layout and extraction method.

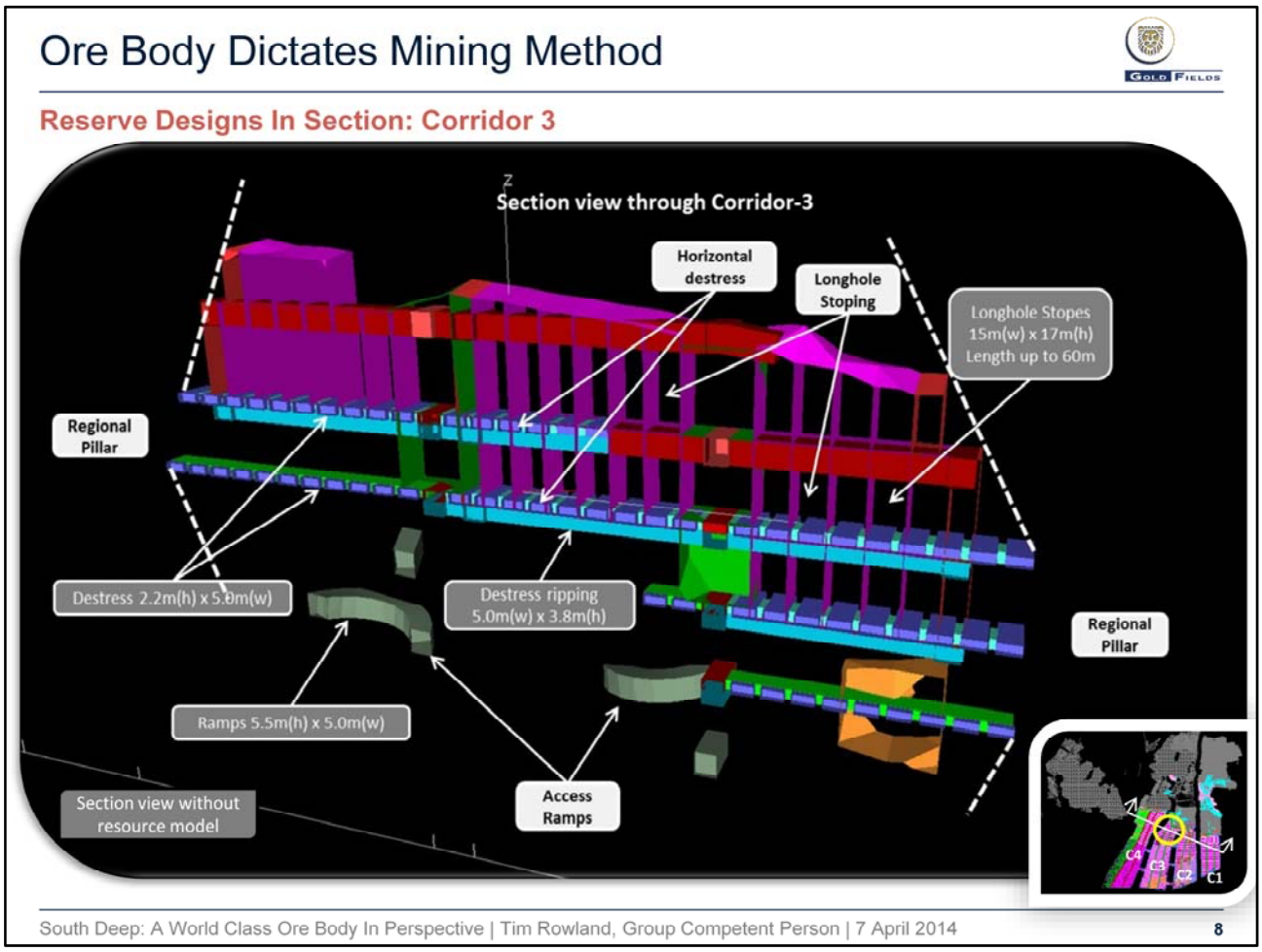


Corridor 4 is the furthest west and is located closest to the sub crop of the Upper Elsburg ore body. The access ramps located outside of the ore body in the footwall are shown, together with the regional pillar location required for macro geotechnical support. The horizontal destress enables the subsequent stoping and as this corridor covers the thinner and more proximal part of the ore body, drift and benching is prevalent, along with long hole stoping. Corridors 4 and 3 build up in volume earlier than Corridors 1 and 2, resulting in a higher overall grade during the first 7 years of the LOM (Corridors 3 and 4 being the highest grade corridors).

Long hole Stoping in this corridor will start in 2014. Mining in the portion closest to the sub crop (West) will be limited to drifting with benches due to the overall reef thickness being too small for long hole stoping. Benches of up to 12m will be mined here. Benches of these heights have previously been mined in the 87-2W project. Corridor 4 north of wrench (NoW) has a lifespan to 2045. The destress ripping is the process where destress accesses are enlarged to 5m x 5m enabling access for the larger equipment (simba's for drilling long hole stope fans and LHD's for cleaning the long hole stope tonnes). The destress limits (indicated as white dotted lines) refer to the zone that is destressed (from 80 Mpa in situ to between 30 and 40 Mpa) all designs need to stay within this zone.

LoM percentage tonnage per mining method:

- Destress (low profile) 16%
- Drifts and Accesses (282 Rigs) 32%
- Long-hole and benching (Simba) 52%



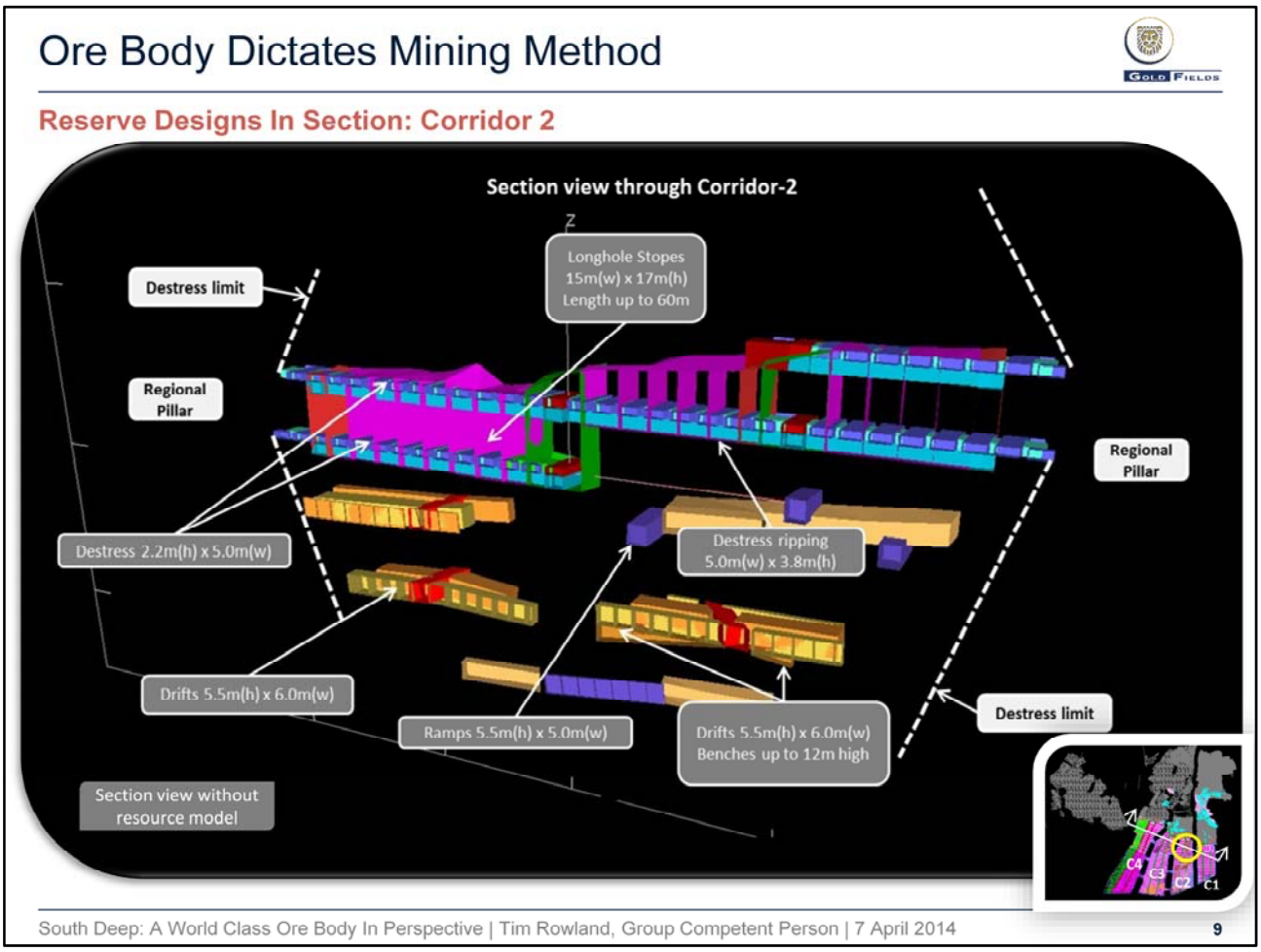
In Corridor 3 the ore body has thickened and the massive extraction of the Upper Elsburgs is well demonstrated with stacked long hole stoping facilitated by several horizontal destress horizons.

The footwall access ramps and regional pillar configurations are again shown.

Corridor 3 has the best volume and grade combination of all the corridors and will deliver the highest gold contribution. Long-hole stoping in this corridor started in Oct 2012. Corridor 3 NoW has a lifespan to 2051 (the longest of the 4 corridors NoW).

LoM percentage tonnage per mining method:

- Destress (low profile) 10%
- Drifts and Accesses (282 Rigs) 23%
- Long-hole and benching (Simba) 67%



In Corridor 2, moving further east and more distal from the sub crop, the mining is dominated by long-hole stoping, targeting more localised blocks that are above the stope cut-off grade.

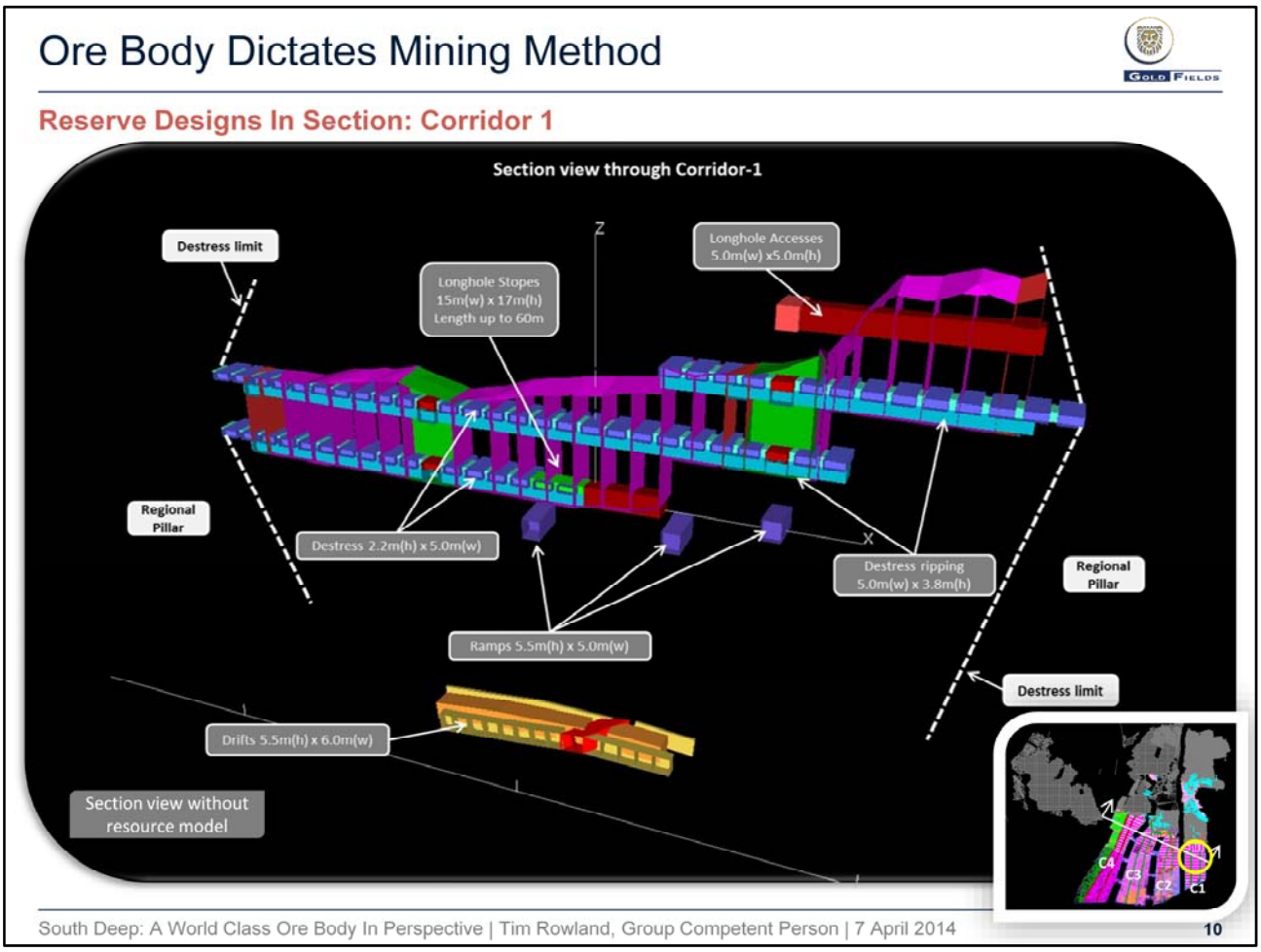
Some selective drifting and benching still exists where discrete high grade blocks are profiled, but are too small for long-hole stoping. The horizontal destress is positioned to enable the mining of the long hole stopes.

Access ramps are now situated within the ore body and the overall extraction ratio has reduced in response to increasing zones of waste and lower grade material.

Regional support pillars constrain the mine design limits in specific areas. Corridor 2 NoW has a lifespan to 2035.

LoM percentage tonnage per mining method:

- Destress (low profile) 11%
- Drifts and Accesses (282 Rigs) 30%
- Long-hole and benching (Simba) 59%



In Corridor 1, which is the most distal area furthest east on the mine, the overall extraction ratio reduces further as the mining selectivity increases in response to the more discrete nature of the reef units containing more localised grades above the stope cut-off grade.

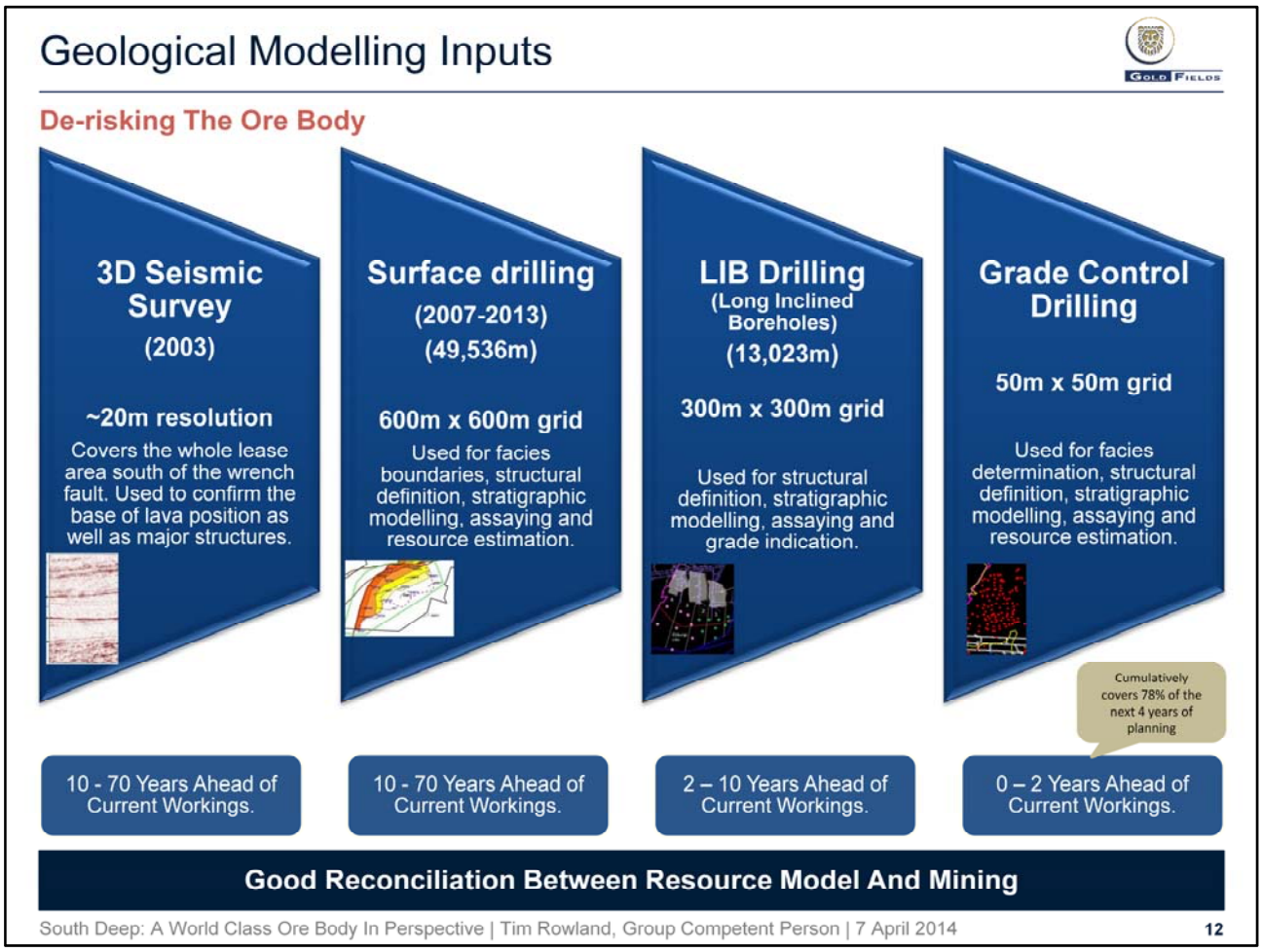
The horizontal destress targets the localised long hole stoping and access ramps remain within the ore body. Due to the geometry of the target reefs, selective mining using drifting is not common place. This series of 4 generic mine design slides highlights how the changing ore body characteristics within Corridors 1-4 dictate mining layouts and mining method.

At its widest part the total package is ~120m wide while the targeted portions are only between 20 and 30m wide.

Corridor 1 NoW has a lifespan to 2033.

LoM percentage tonnage per mining method:
Destress (low profile) 13%
Drifts and Accesses (282 Rigs) 36%
Long-hole and benching (Simba) 51%

Geological Modelling Inputs



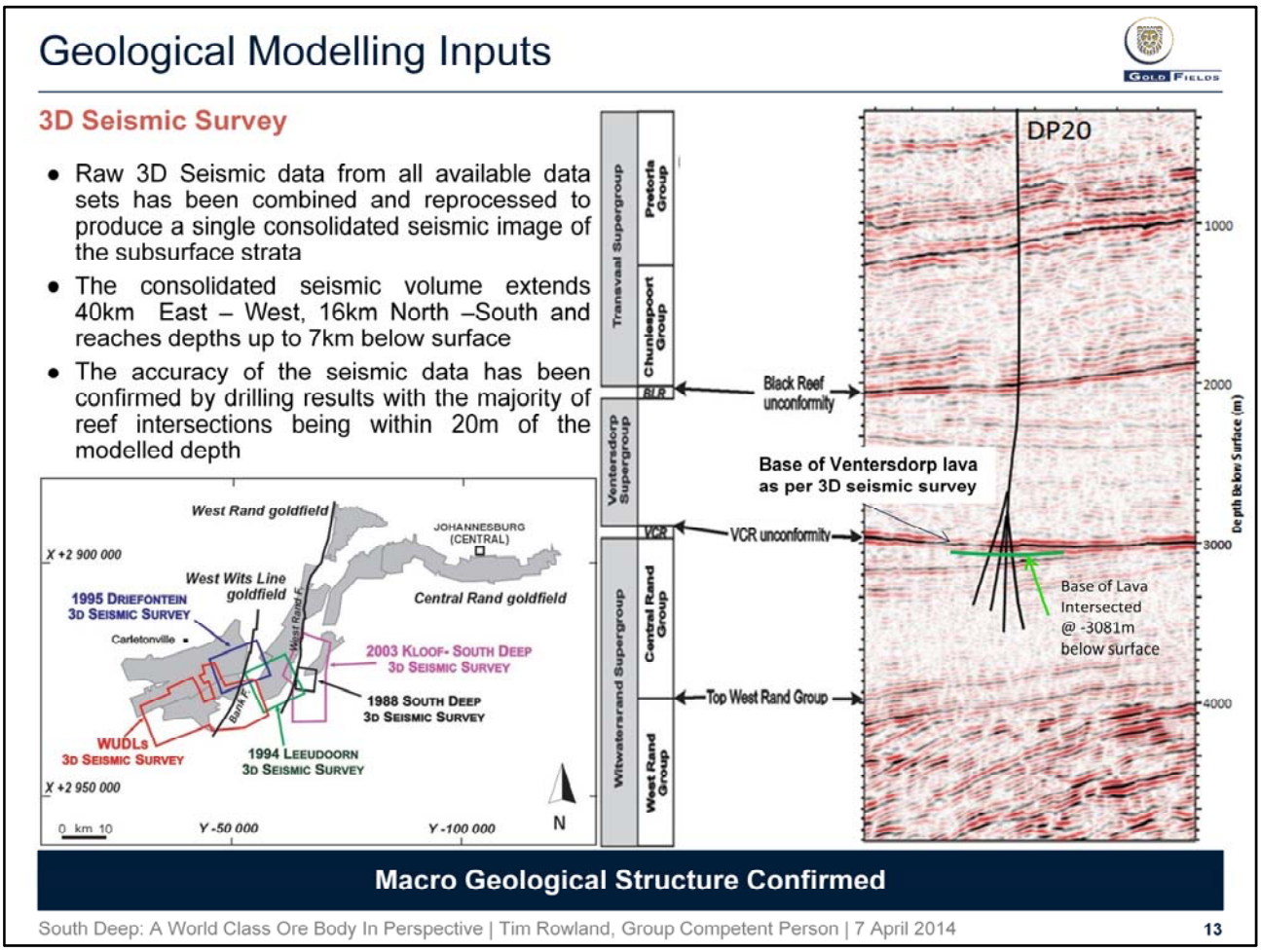
At South Deep a range of methods are applied to de-risk the ore body and ensure the required level of ore body definition and confidence is in place to support the various levels of planning, including the LoM, production ramp-up and operational plans.

Gold Fields initiated a surface 3D seismic survey, covering Kloof and South Deep, which was completed in 2003. It defined the base of the Ventersdorp lava across the majority of the mine lease, which importantly marks the top of the ore body in 3D space. Other significant geological structures are also identified and incorporated in the geological model.

Information derived from the subsequent GFI surface drilling campaign is used for structural definition, facies modelling, stratigraphic modelling and also in the resource estimation process. The GFI drilling focussed south of the wrench complements the legacy drilling completed by previous owners north of wrench, which was taken through a comprehensive QA/QC process and once ratified was incorporated into the master dataset.

As mining activity continues into virgin ground, LIB holes prospect the area up to 1,500m in front of the workings on an approximate 300m x 300m grid. The data obtained from the LIB holes is used for structural definition, facies modelling, stratigraphic modelling and is also used as an indication of grade (tenor) but is not used in the final grade estimation due to the low angle of intersection.

In addition, up to ~70m ahead of workings, drilling is undertaken on a closely spaced grade control grid covering ~50m x 50m. This is sufficient to classify the resource as a Measured Resource within these areas. The data obtained from the grade control drilling is used for structural definition, facies modelling, stratigraphic modelling and resource estimation.



Similar to a sonar used in medicine, the 3D seismic survey utilises changes in the amplitude of reflected seismic waves to define geological contrasts and features up to 7km below surface.

The change in amplitude is brought about by changes in velocity of the seismic wave as it passes through strata of varying density. The red and black lines define high contrast zones.

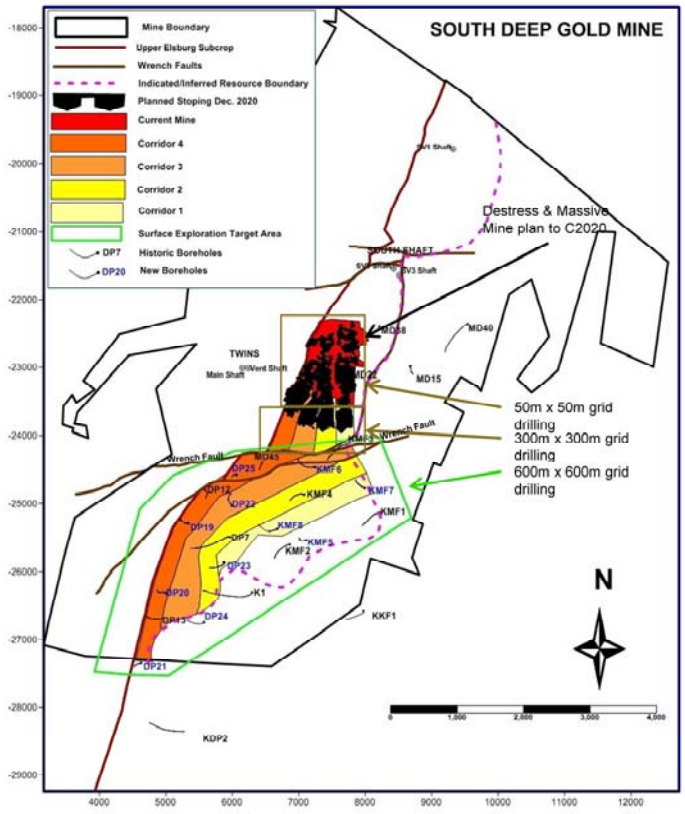
Note that the VCR, which defines the top of the South Deep ore body, is a clearly defined reflector as it marks the contact between coarse grained quartzitic sediments (lower velocity) and dense mafic lavas of the Ventersdorp Group.

The 3D seismic survey can be viewed as a proxy for drilling surface boreholes on a 20m x 20m grid to provide important macro-structural information to support the entire LoM plan. The borehole trace from a completed surface bore hole plotted on the seismic section confirms the accuracy of the seismic modelling in positioning the top of the ore body as demarcated by the base of the lava's.

Geological Modelling Inputs

Surface Exploration Drilling

- Drilling completed by GFI in 2013 (6 Year Project)
- The focus was on improving the confidence in the resource estimate south of the Wrench fault
- Achieved a grid of approximately 600m x 600m
- A total of 49,536m were drilled during the project
- The project comprising 9 boreholes added 72 of 84 planned intersections resulting in 11,635 additional samples south of wrench (SoW)



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On acquiring South Deep, Gold Fields recognised the need to increase the overall geological and estimation confidence in the ore body to underpin long-term life of mine planning south of the wrench fault.

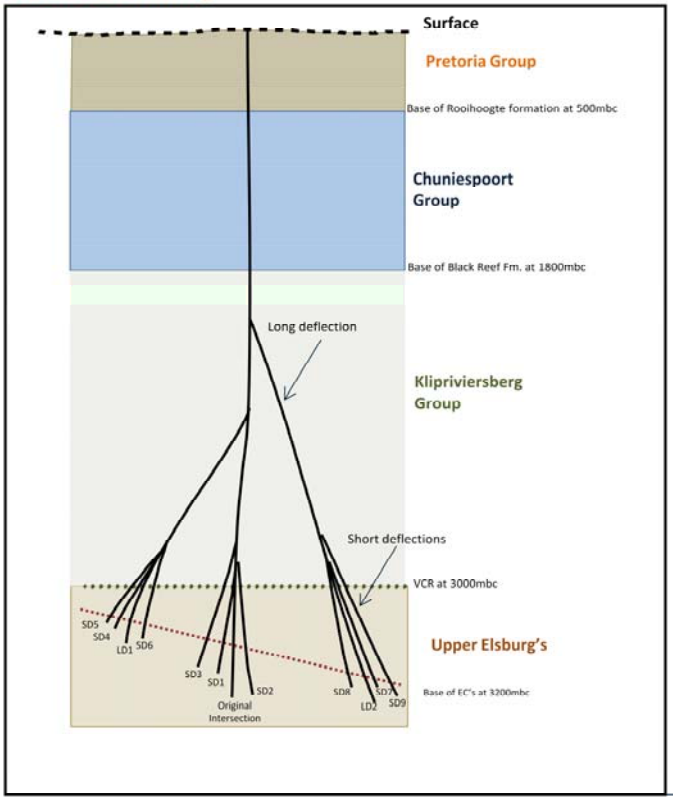
A 6-year programme was initiated in 2007 to drill 9 surface boreholes strategically targeting areas in the four corridors to underpin modelling the ore body to an Indicated Resource SoW fault. The plan shows the South Deep mine boundary and the location of the drill holes in Corridors 1-4.

The planned stoping at a high level of confidence to December 2020 NoW is shown in black to provide context and scale.

The hashed line defines the Indicated to Inferred Resource boundary running along the eastern side of the mine lease.

Geological Modelling Inputs

Surface Drilling



- Borehole depths varied between 2,400m and 3,400m below surface
- Up to 12 intersections per borehole, dependant on ground conditions and drill string integrity
- 3 clusters of 4 intersections each
- Short deflections intersected reef within a 5m radius
- Long deflections are 20m to 30m from the original intersection

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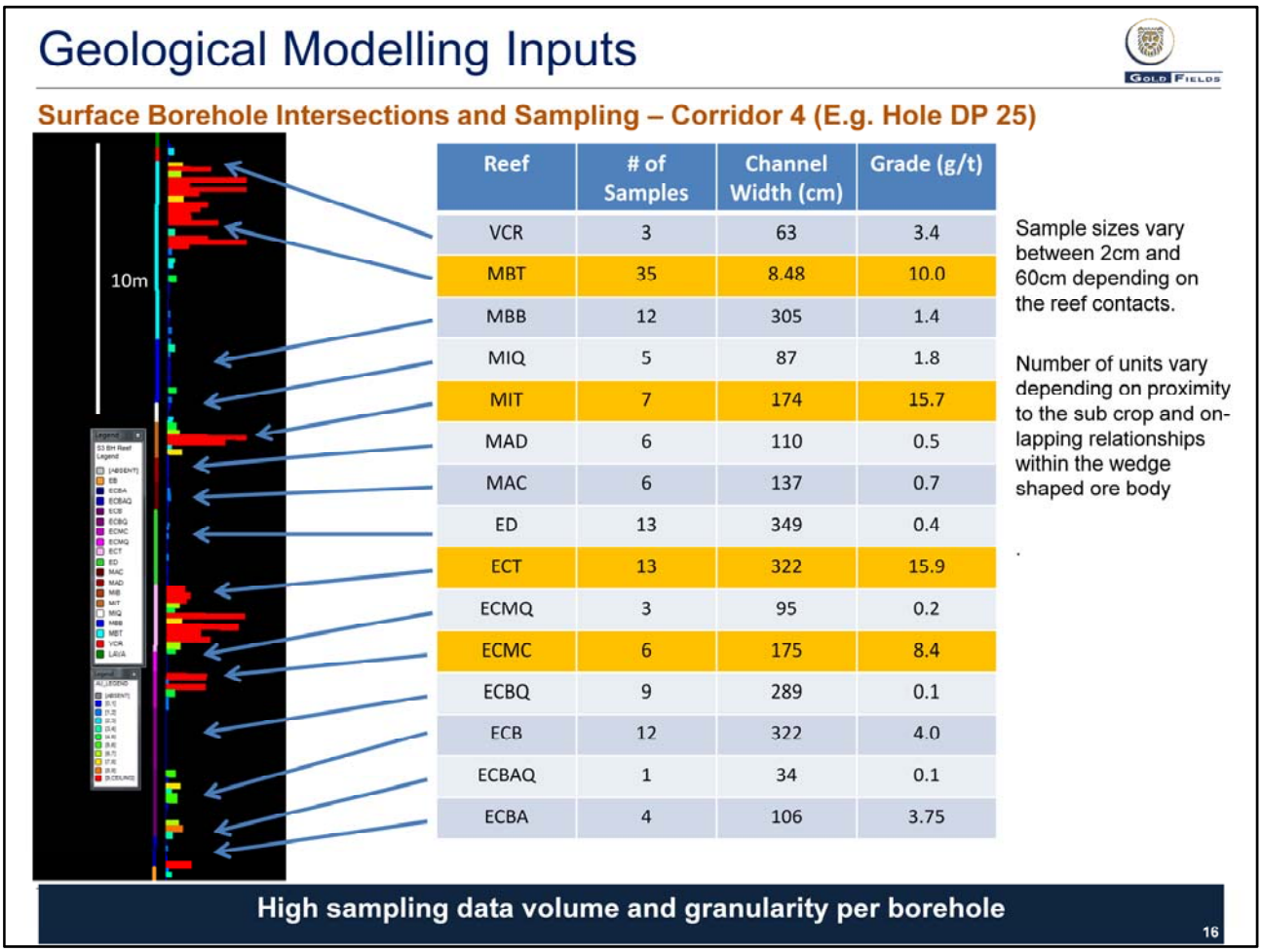
Each surface borehole consists of a mother hole with short deflections followed by long deflections with their own short deflections, drilled to provide the best practical coverage of the ore body at depth.



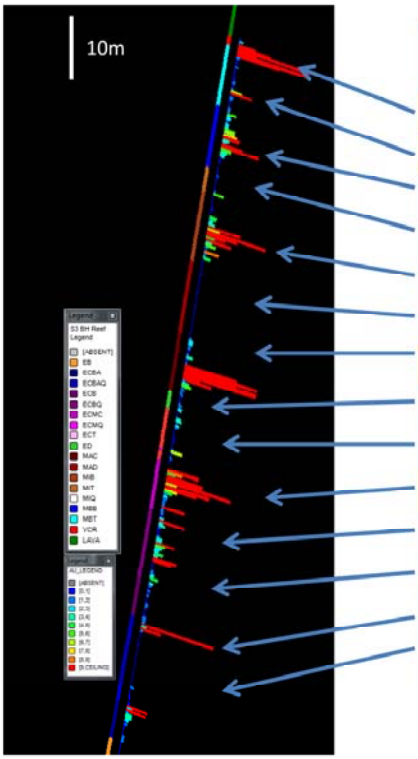
The next four slides illustrate the multiplicity of geological and grade information that is derived from each single borehole intersection of the ore body at South Deep. This is in sharp contrast to the majority of reefs mined in the Witwatersrand Basin in South Africa, where reefs typically comprise single conglomeratic horizons comprising one or a few lithologies. Examples of these reefs are the Carbon leader Reef, VCR Reef, Main Reef, Kloof Reef, Libanon Reef, Beatrix / VS5 Reef and the Black Reef. The modeling of these more conventionally mined reefs has had a traditional two-dimensional or planar focus. The Upper Elsburg ore body at South Deep, however, requires full 3D modelling with each of the reef units modelled individually constrained by their own inherent geological framework variography[1]

The large data sets generated by each borehole reflect the thickness of the massive ore body and also the wide array of stratigraphic units that are sampled discretely. The characteristic number of samples for assay are shown, together with channel width (thickness of the reef unit) and grade, however, this information is treated as raw in situ data at this stage until samples are composited into 1m intervals to ensure the same 'support' is carried by all samples. It is then passed through the well defined resource modelling process and protocol developed by GFI to maintain the highest QA/QC and modelling integrity standards. Typically only those stratigraphic units that pass the reserve stope cut-off grade are used in the mine design and scheduling (generically flagged in orange).

[1]*Variography is a traditional geostatistical method which is used to measure the spatial continuity of a*

Geological Modelling Inputs

Surface Borehole Intersections and Sampling – Corridor 3 (E.g. Hole DP 7)



Reef	# of Samples	Channel Width (cm)	Grade (g/t)
VCR	5	108	30.9
MBT	31	672	7.9
MBB	29	697	3.6
MIT	12	274	1.0
MIB	33	791	4.4
MAD	31	810	0.2
MAC	28	665	10.7
ED	8	190	1.1
DYKE	22	538	1.1
ECMC	24	605	8.4
ECBQ	32	776	3.3
ECB	18	427	1.0
ECBAQ	24	971	3.0
ECBA	19	424	2.3

Sample sizes vary between 2cm and 60cm depending on the reef contacts.

Number of units vary depending on proximity to the sub crop and on-lapping relationships within the wedge shaped ore body

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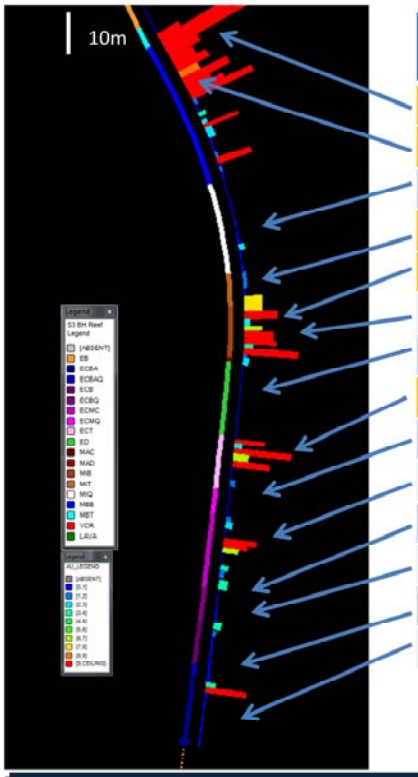
High sampling data volume and granularity per borehole

17

Geological Modelling Inputs

Surface Borehole Intersections and Sampling – Corridor 2 (E.g. Hole DP24 SD3)



Reef	# of Samples	Channel Width (cm)	Grade (g/t)
MBT	3	104	14.5
MBB	25	789	9.5
MIQ	14	527	0.7
MIT	5	187	3.4
MIB	10	294	8.2
MAC	2	26	1.2
ED	8	452	1.6
ECT	9	314	6.8
ECMQ	4	152	0.2
ECMC	14	450	3.0
ECBQ	5	202	0.9
ECB	8	264	1.1
ECBAQ	2	65	0.8
ECBA	16	449	1.8

Sample sizes vary between 2cm and 60cm depending on the reef contacts.

Number of units vary depending on proximity to the sub crop and on-lapping relationships within the wedge shaped ore body

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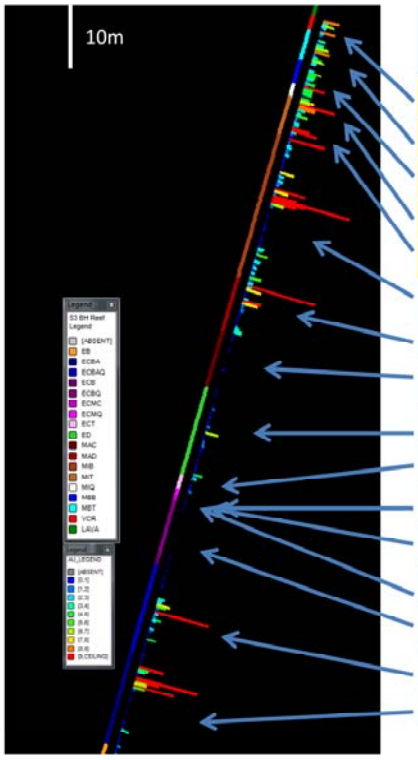
High sampling data volume and granularity per borehole

18

Geological Modelling Inputs

Surface Intersections and Sampling – Corridor 1 (E.g. Hole K1)



Reef	# of Samples	Channel Width (cm)	Grade (g/t)
VCR	7	199	4.4
MBT	15	411	3.7
MBB	11	321	4.3
MIQ	6	170	5.3
MIT	19	523	5.7
MIB	74	1935	3.1
MAD	27	750	3.4
MAC	30	750	0.2
ED	47	1187	0.7
ECT	9	189	0.9
ECMQ	5	97	0.4
ECMC	4	74	0.2
ECBQ	29	755	0.2
ECB	6	111	0.1
ECBAQ	42	1185	2.1
ECBA	49	1253	3.5

Sample sizes vary between 2cm and 60cm depending on the reef contacts.

Number of units vary depending on proximity to the sub crop and on-lapping relationships within the wedge shaped ore body

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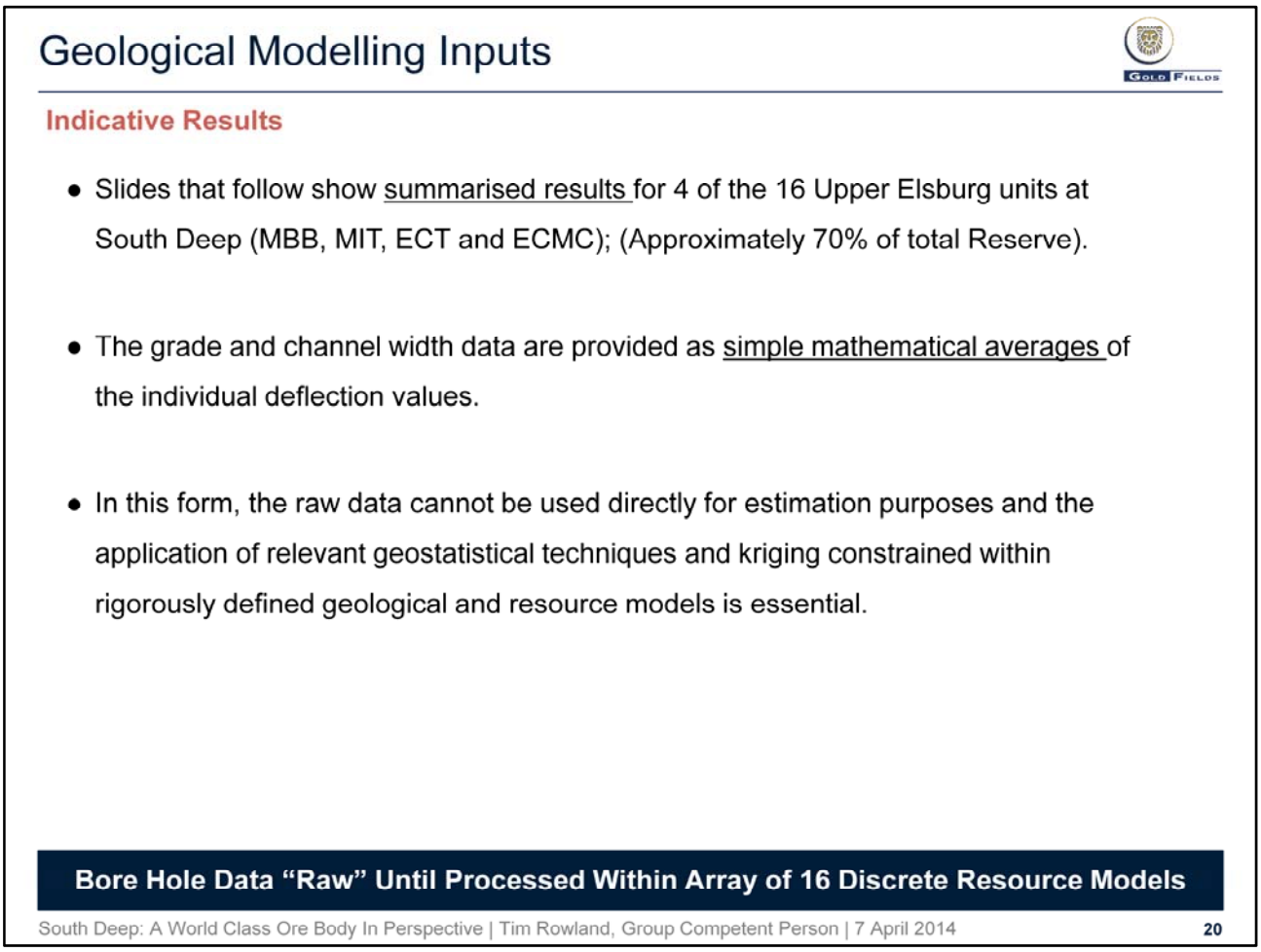
High sampling data volume and granularity per borehole

19



The next 4 slides provide summary information from the surface drilling programme for the typically targeted MBB, MIT, ECT and ECMC units in the Upper Elsburgs.

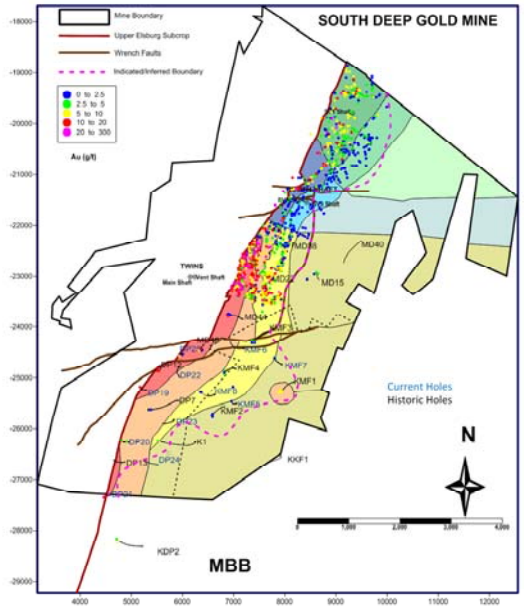
Boreholes are colour coded to reflect their location within defined geological domains as shown in the plan and both channel widths (cm) and grades (g/t) are tabled as 'averages' for specific reef units per borehole.

These selected examples are representative of how the surface borehole information has, in general, provided strong support and re-enforcement for the South Deep resource model and underpin the overall predictable nature of the palaeoplacer style ore body for the life of mine.

Geological Modelling Inputs

Surface Drilling – MBB Reef

Borehole	Channel Width (cm)	Grade (g/t)
MD44	463	13.7
MD45	555	9.6
DP12	293	12.9
DP19	145	15.8
DP21	43	27.6
DP25	282	5.7
DP7	456	3.9
KDP2	402	7.9
KMF1	657	6.1
DP20	544	5.2
DP24	614	10.4
KMF3	558	2.7
KMF4	309	3.3
K1	327	3.7
MD22	526	22.1
KMF8	1863	1.0
KMF2	313	1.2
KMF5	1284	1.8
KMF7	376	1.2

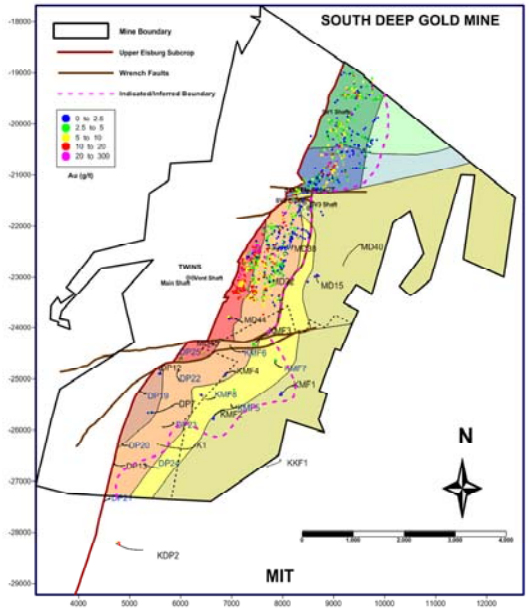


Overall, the drilling results for the MBB Reef show a high correlation with the established geological zones and facies values both in terms of channel width and gold grade.

Geological Modelling Inputs

Surface Drilling – MIT Reef

Borehole	Channel Width (cm)	Grade (g/t)
DP12	132	0.9
DP7	309	2.4
MD44	725	9.1
MD45	1030	9.2
DP25	208	7.5
DP24	194	2.1
KMF3	1513	4.3
KMF4	1607	3.2
K1	532	5.2
KDP2	440	13.5
KMF5	1256	2.6
KMF7	1100	2.5
KMF8	527	1.1
KMF1	1288	1.8
KMF2	668	0.7
MD15	252	0.5



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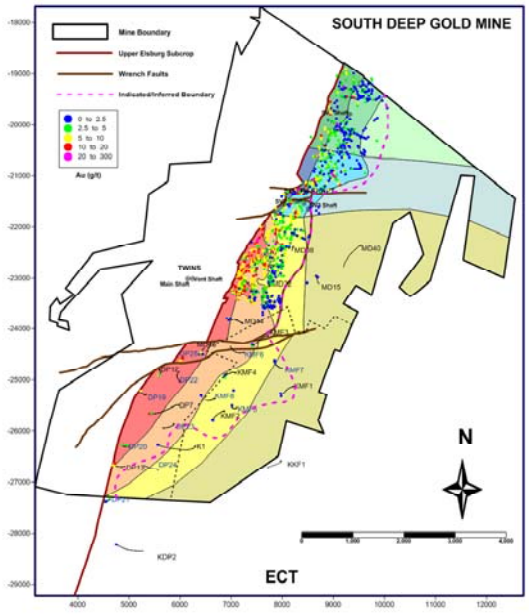
Overall, the drilling results for the MIT Reef show a strong correlation with the established geological zones and facies values both in terms of channel width and gold grade.

DP25 intersected an attenuated MIT horizon close to subcrop, where lower channel widths can be expected.

Geological Modelling Inputs

Surface Drilling – ECT Reef

Borehole	Channel Width (cm)	Grade (g/t)
DP12	575	6.8
DP13	164	7.7
DP7	760	6.7
MD44	425	4.2
MD45	492	4.9
DP19	551	6.2
DP20	469	3.2
DP26	405	13.1
K1	192	0.7
KMF3	584	2.0
DP24	195	7.3
KMF8	359	2.4
KMF2	672	0.7
KMF4	991	1.2
DP21	395	2.4
KMF5	461	2.3
KMF7	487	1.5
KDP2	392	1.0
KMF1	390	0.6
MD15	347	0.2



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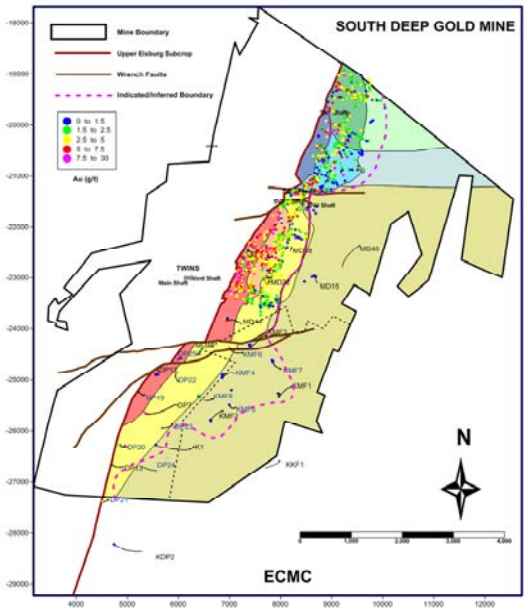
In strong support of the resource modelling, both grade and channel width data from recent boreholes for the ECT Reef are consistent with and support that predicted by the geozones and facies.

Geological Modelling Inputs

Surface Drilling – ECMC Reef

Borehole	Channel Width (cm)	Grade (g/t)
DP12	99	0.7
MD44	581	4.9
DP25	195	13.6
DP7	679	5.7
MD45	437	8.7
DP20	148	3.1
DP21	188	3.8
DP22	301	12.6
KMF8	863	1.7
KDP2	145	1.4
KMF1	300	0.2
KMF2	605	1.2
KMF3	575	0.7
KMF4	650	1.0
K1	75	0.2
MD15	161	0.5
DP24	318	2.8
KMF5	864	0.3
KMF7	221	0.5



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Overall, the drilling results for the ECMC Reef show a good correlation with the established geological zones and facies zone values both in terms of channel width and gold grade.
DP24 indicates that there is potential to extend Zone 3 (Yellow) to the east.

Geological Modelling Inputs

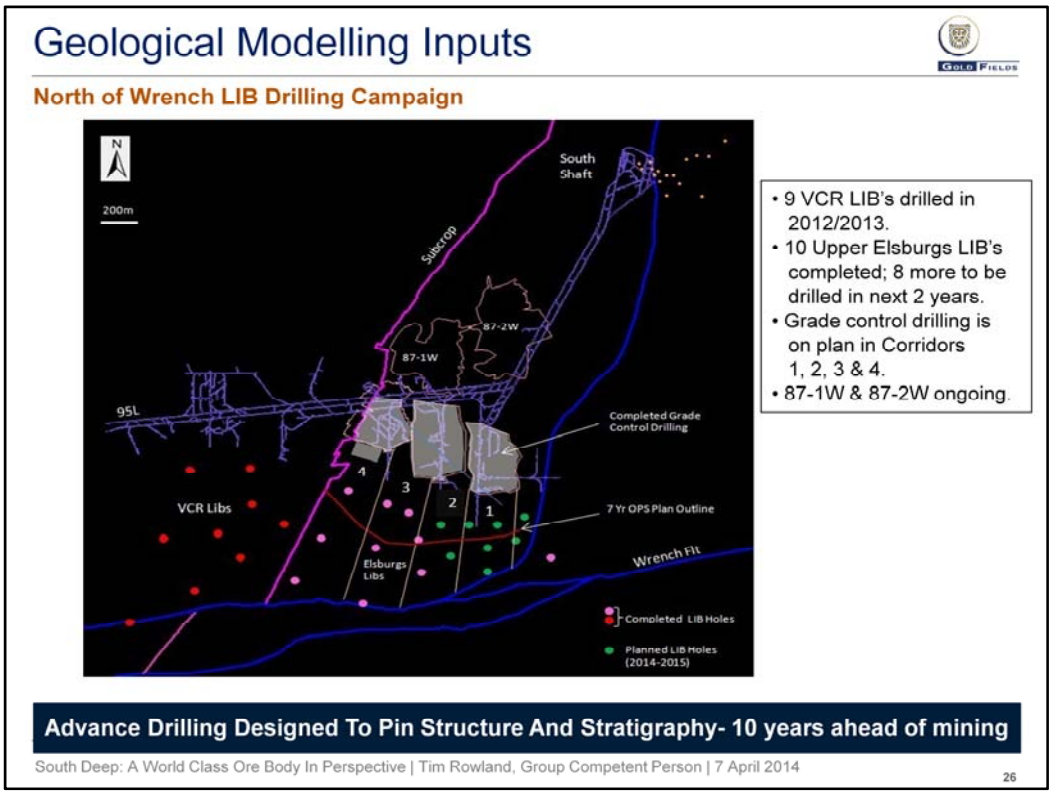
LIB Drilling

- The mine has supported an aggressive underground drilling program since mid-2009 to address the historically low borehole data density which supported the earlier geological and resource models.
- Long Inclined Boreholes (LIB's) are drilled ahead of the current workings on an approximate 300m grid. All LIB drilling has been done post Gold Fields acquisition.
- 10 LIB's, totalling 7,213m have been drilled testing the Upper Elsburgs to the south of current workings.
- The VCR target immediately adjacent (west) to current Elsburg mining has been explored with an additional 9 LIB holes, totalling 5,810m.

LIB's or Long Incline Borehole drilling is a common technique employed for testing the ore body up to several hundred meters away from current mining activities, where the angle of attack provided by footwall access development is typically shallow.

The LIB borehole is drilled comparatively flat but wedges inserted into the hole at specified positions are used to 'lift the borehole' so that it eventually intersects the ore body at an appropriate angle to confirm structure, stratigraphy and overall grade trends. The typically very low angle of intersection causing the reef samples to be tens of metres wide does however preclude the values from passing QA/QC and being used in the estimation database.

LIB's are drilled up to ~1500m ahead of the mining front and are designed to approximate testing the ore body on a 300m x 300m grid and effectively infill the gaps between the surface drilled boreholes.

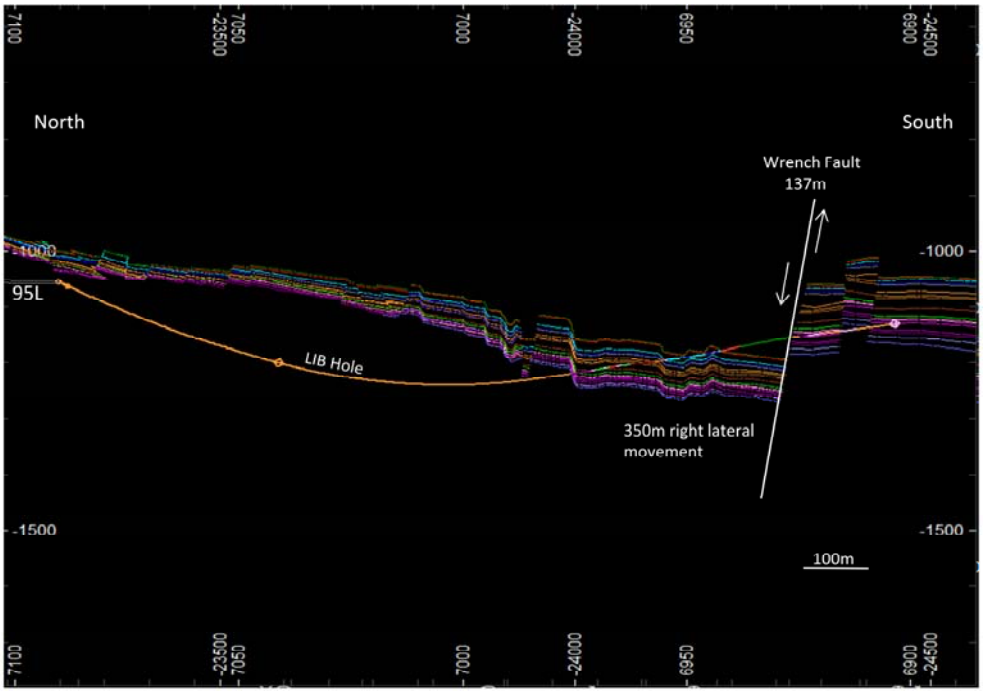


Current LIB drilling is constrained by the availability of development infrastructure to provide suitable drill platforms and drill cuddy's. LIB drilling is conducted primarily for structural and stratigraphic definition of the ore body and not for generating grade data due to the typically acute low angle (~15deg) that the borehole intersects the reef. The LIB drilling effectively provides a rolling or advancing front of important geological information well ahead (up to ~1500 m) of mining activities.

LIB drilling provides information that permits a higher confidence within the Indicated Resource (SAMREC) component of the ore body. It's important to note that the LIB drilling is sequentially supplemented by the closer spaced grade control (GC) drilling as the close-spaced GC grid is rolled forward. The 7 year build-up plan outline, which spatially demarcates the advancing mining front position in year 2020, is shown in the plan and highlights the LIB hole density. The planned LIB holes to be drilled over the next ~18 months are scheduled as per the availability of the platform development.

Geological Modelling Inputs

Cross Section of a LIB Hole Looking East



1,300m LIB hole drilled from 95L intersecting the 137m upthrow Wrench Fault and confirming position and throw of the Upper Elsburg reefs.

This cross section clearly illustrates the nature of a typical LIB hole drilled from development on 95L and traversing the Wrench Fault to intersect the Upper Elsburgs south of wrench (SoW).

The multiple stratigraphic units constituting the ore body are depicted in various colours and the thickening of the ore body as one moves from the proximal area (nearer the source) to the more distal area (further from the source) is clearly demonstrated with the Wrench Fault up-throwing the ore body to the south by ~137 metres.

Geological Modelling Inputs

Grade Control Drilling

- A planned drilling grid is targeted comprising in-stope and destress drilling and drilling from footwall infrastructure up to 70m ahead of the current destress 'leading edge'
- In-stope and footwall drilling is ongoing and the average drill density has been reduced from an 80m grid to a 50m grid
- Drilling from the destress stopes will be into both the hangingwall and footwall

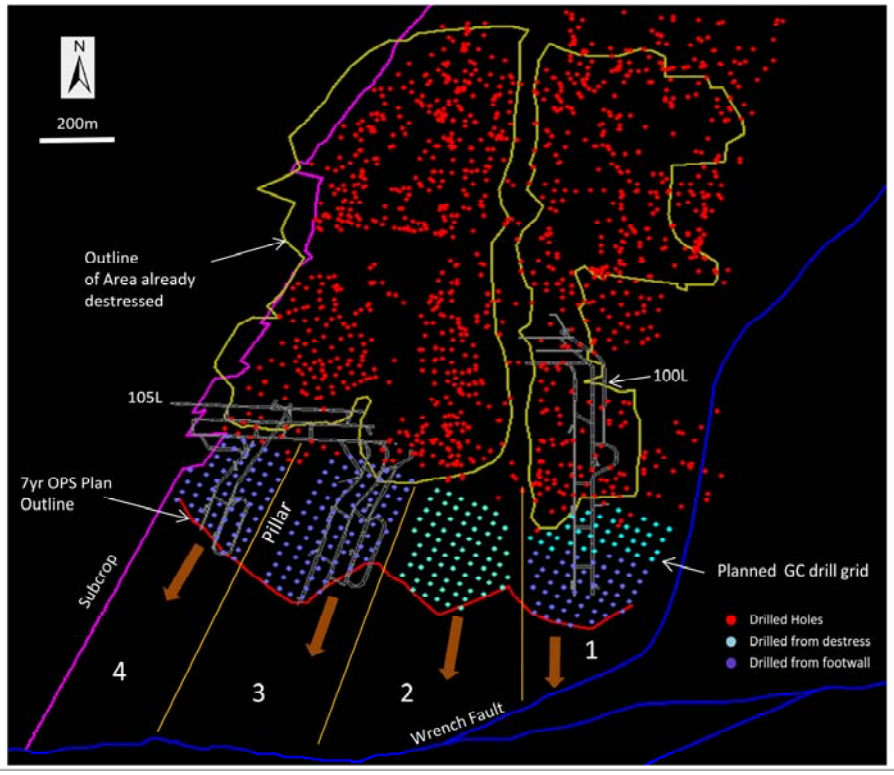
Grade Control Drilling Designed To Confirm Short To Medium Term Resource Model

The grade control drilling grid has been designed to leverage the cost-benefit value of close spaced drilling in the Upper Elsburgs ore body and to provide quality empirical data that can be fully uitilised in the resource modelling and estimation process.

The closely spaced nature of the grade control drilling that averages a grid of ~50m x 50m provides detailed information on the short interval controls on grade trends and effectively infills the gaps between the LIB drilling to complete an appropriate level of data coverage before mining commences.

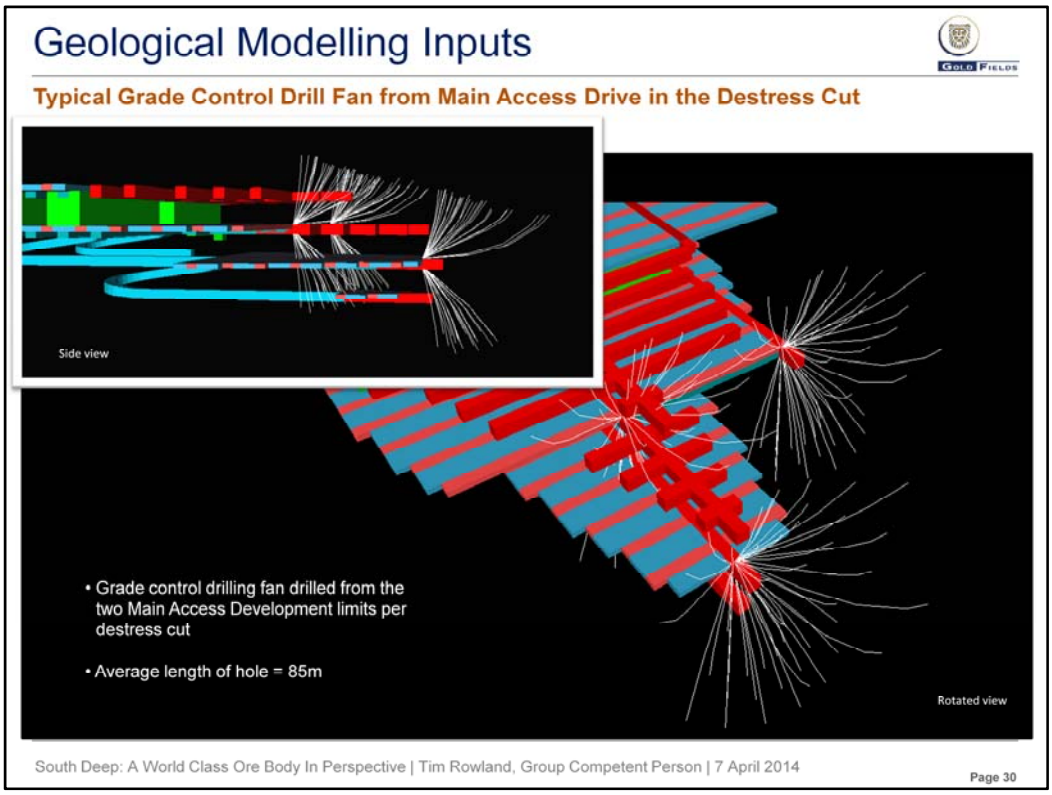
Geological Modelling Inputs

Grade Control Drilling – 7 year plan (provides high confidence)



- Drill hole density has been reduced from 80m to 50m in the last 5 years
- Virgin ground drilling done ahead of mining, covers a range of 50-70 metres
- 62% of 7 yr plan is within the current destress area.

All grade control drilling is budgeted for annually based on a detailed logistical plan that is linked to the ongoing availability of drill platforms and this drilling advances ahead of mining on a rolling basis so that an apron of close spaced drilling is always in place ahead of stoping.



This isometric view and section (insert), shows the layout of typical grade control fans drilled ahead of access drives in the destress cut. The advancing “apron” of high density diamond drill holes cutting through the ore body, is clearly demonstrated.

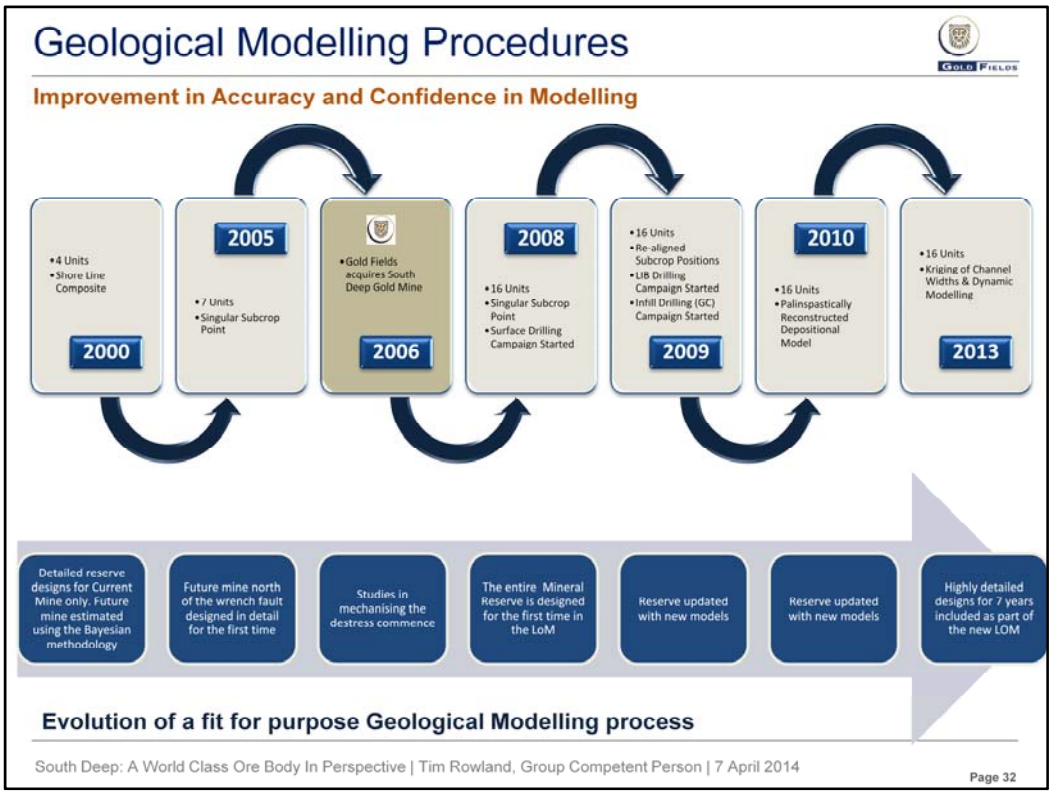
The grade control holes test the ore body between the destress cuts and into the virgin ground beyond existing development and mining.

Geological Modelling Procedures

South Deep Gold Mine

GOLD FIELDS

Geological modelling is a critically important anchor process that initiates the resource modelling value chain. The rigour required at this stage to profile the key characteristics of the ore body is vital as it provides the all important framework and context for the subsequent advanced geostatistics and estimation phases, which follow before the resource model is complete.



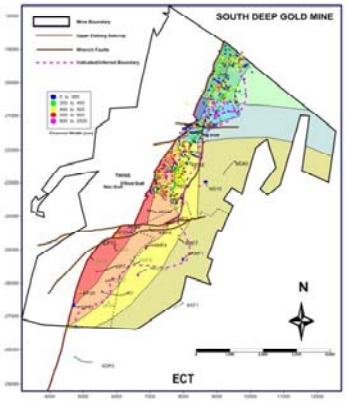
This time-line illustrates the continuous improvement programme driven by Gold Fields after taking ownership in 2006, focussed on establishing a fit for purpose geological model build process and protocol. The South Deep ore body is not inherently 'complex on a macro scale' but it is demanding based on its multiple stratigraphic reef units, proximal to distal relationships, reef width characteristics and localised structure and grade trends. GFI viewed the legacy ore body modelling as over-simplified and unable to provide meaningful information to support resource modelling that could appropriately inform the detail required for optimal mine planning.

Importantly, 16 units are now routinely and individually modelled using discrete 'variography' per unit which effectively captures the geostatisitcal DNA for each reef. Spatially correct subcrop positions, that demarcate the western edge of the Upper Elsburgs, are now pinned and a singular subcrop model has been replaced by a more detailed model accurately reflecting the on-lapping nature of the stacked units as they 'pinch-out' at the subcrop. Palinspastic means "restored to its original form" and palinspastic modeling is used at South Deep to restore the geological structure that has itself changed its configuration over geological history due to faulting and tectonic forces. When palinspastically restored the ore body can be studied in its original 3D configuration when the Upper Elsburg reefs were deposited. This methodology increases resource model accuracy through improved geostatisitical trend analysis and spatially correct kriging.

Geological Modelling Procedures

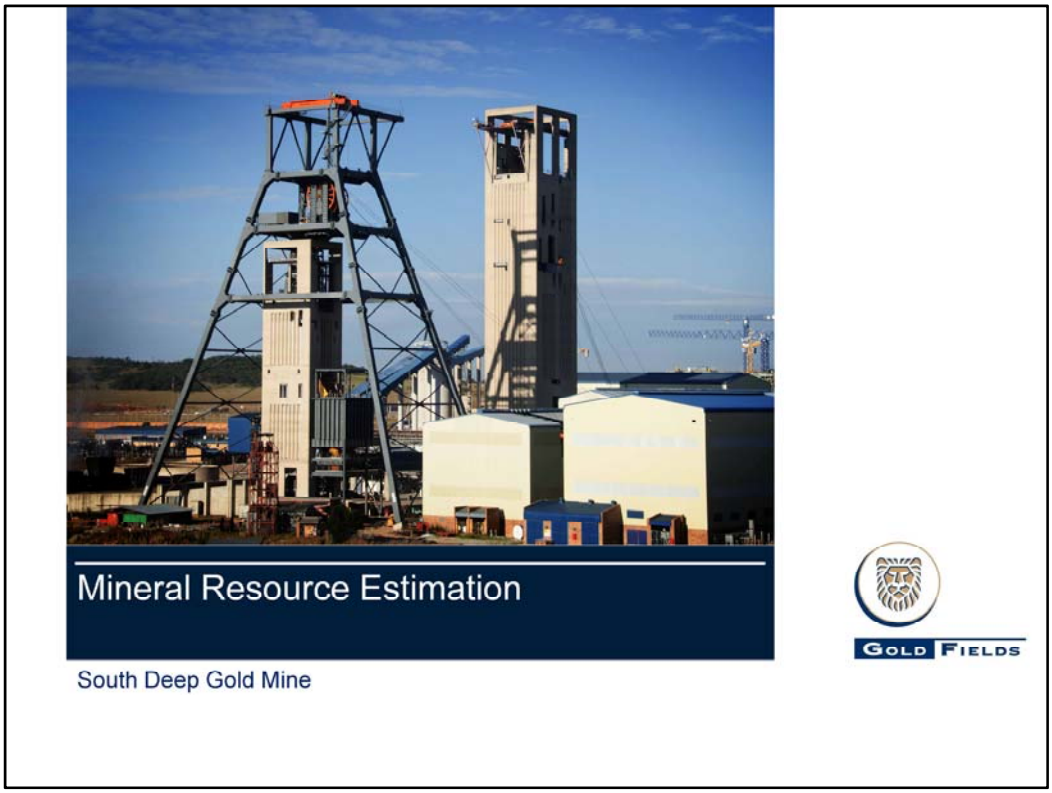
Facies and Domains

- Geological facies are areas of the ore body that have been deposited under similar conditions and correlate with gold grade distribution
- Domains are areas within a facies zone in which a consistent grade distribution occurs
- Discrete facies and domains are constructed for each of the 16 units
- Facies and domains therefore provide a geological framework for geostatistical modelling
- Channel width models of the different units are constructed to enable the modelling of individual reef volumes and tonnages

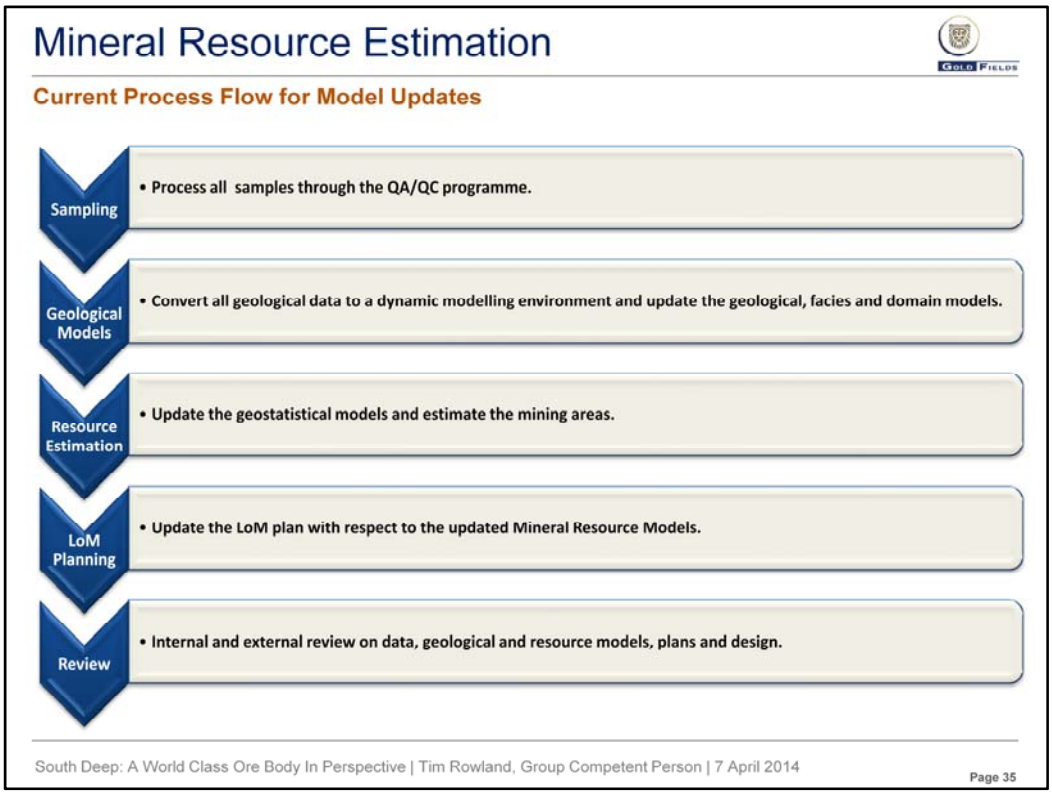


Geological modelling is heavily dependent on defining facies, which are areas with similar geological characteristics, and domains, which are sub zones with consistent grade distributions. Both facies and domains are important geological constraints on profiling the nature of the ore body and are critical for spatially controlling the application of various geostatistical techniques.

At South Deep this work is based on an extremely broad data base that is able to constrain facies and domains to a relatively high level of confidence, which provides a robust anchor to the geostatistical modelling.

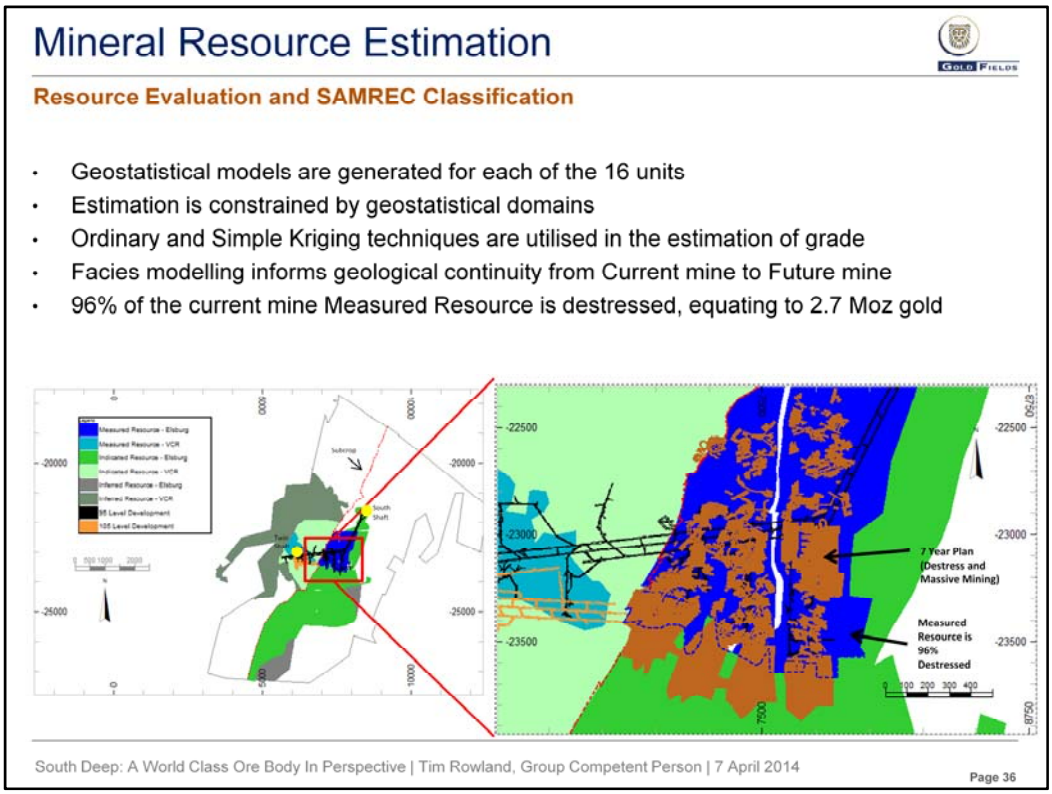


The Mineral Resource Estimation process is the next stage in the resource modelling value chain and generates the detailed resource block models that are utilised by the mine planners to complete mine design, mine layouts and production scheduling, which underpins the Operational, Production Build-Up and LoM plans at South Deep.



Quality control and assurance is a priority in the estimation process. As new samples, assays and data become available they are passed through a QA/QC programme to ensure that validated data is used for any interpretation or estimation work. All of the high confidence data is then incorporated into the geological, facies and domain models. Geostatistical models are updated with the latest validated assay results and used to drive the estimation process. The updated resource models are version controlled and made available to the mine planning team. Updated mine designs and schedules are based on the latest available resource models.

Internal and external reviews are done on a regular, but at least, annual basis to ensure data integrity and resource estimation accuracy.



All modelled units (16 lithological units) are treated as separate entities during the estimation and geological modelling procedures. Facies and domains (geostatistical domains) are utilised to constrain the estimation of an area within the reef unit illustrating similar characteristics and grade distribution. Kriging is the best estimator for gold deposits with the sedimentological and grade characteristics as experienced at South Deep. The estimation process makes use of Ordinary and Simple kriging methodologies depending on the density of data available.

Through the facies modelling procedure it is clear that geological continuity exists between the current mine and future mine areas. This enables the use of data from current mine together with that from future mine to be used during the estimation procedure.

Planning vs Measured Boundaries

Dec 2013 Measured Boundary & Dec 2014 Confidence Boundary

Planning		Dec 2013 Measured Boundary		Total
		Inside	Outside	
C2014	Tonnage (kt)	1 969	148	2 117
	%	93%	7%	100%
C2015	Tonnage (kt)	2 183	385	2 568
	%	85%	15%	100%
C2016	Tonnage (kt)	2 245	709	2 955
	%	76%	24%	100%
C2017	Tonnage (kt)	2 273	1 224	3 497
	%	65%	35%	100%

Table illustrates annual specific coverage, if calculated cumulatively, year-on -year the overall coverage is at 78% of planned mining (destress and massive) up to and including C2017 falls within the current Measured Resource boundary

On a rolling basis, year 1 of the plan will be >90% classified as Proved Reserve (i.e. destressed Measured Resource)

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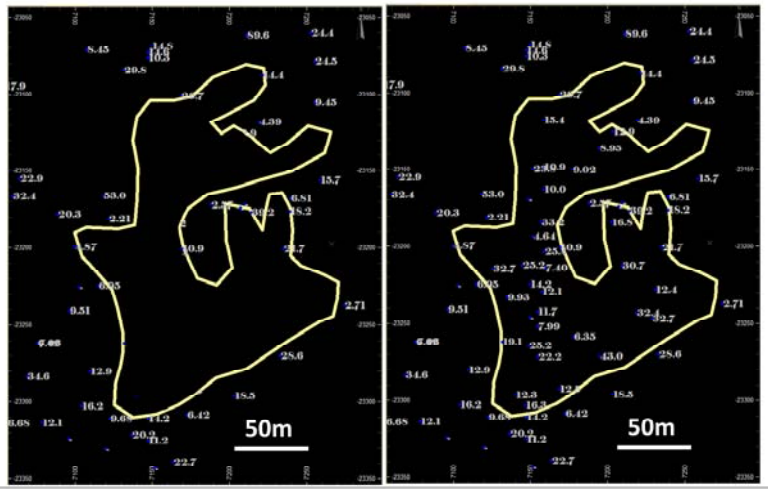
As the grade control and LIB drilling progress, approximately 90%-95% of any given production year will enjoy a mine plan based on a Measured Resource and therefore a high confidence Proved Reserve (SAMREC), which equates to the Measured Resource that has been destressed.

Mineral Resource Estimation

Grade Reconciliation – Resource Model vs Grade Control Model (MBB unit - Corridor 4)

Reef	Resource Model Grade (2011)	Grade Control Drilling Grade (2012)	Grade Control Model Grade (2013)	Percentage Change
MBB Reef (g/t)	17.11	16.77*	16.90	-1.2%

* Arithmetic mean calculated from actual raw assay results.



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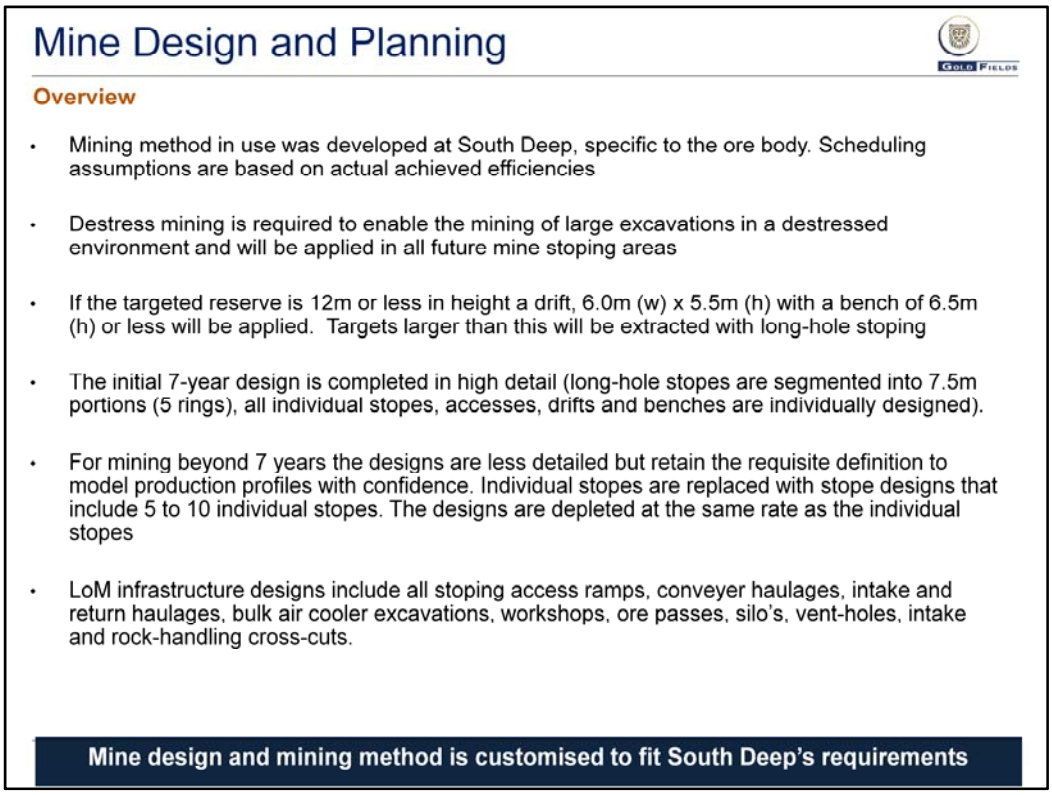
Pre-grade control drilling in the defined study area was estimated to have an average gold grade of 17.1 g/t. During the last 2 years, 34 grade control boreholes were added to the study area, yielding an average assay grade of 16.8 g/t. These boreholes were subsequently added to the database and the area was re-estimated with the benefit of the new grade control drilling. The final estimate yielded an average grade for the area of 16.9 g/t, representing a difference of only 1.2% to the original pre-grade control drilled estimate.

The study was undertaken in Corridor 4 on the MBB reef unit. This reef unit in Corridor 4 is the main carrier of grade with a variogram nugget effect of approximately 40% relative to the sill. This means that the MBB reef is one of the most variable units to estimate in the Upper Elsburg package but the study shows the high level of predictability achieved pre grade control drilling and validates the integrity in the resource model.

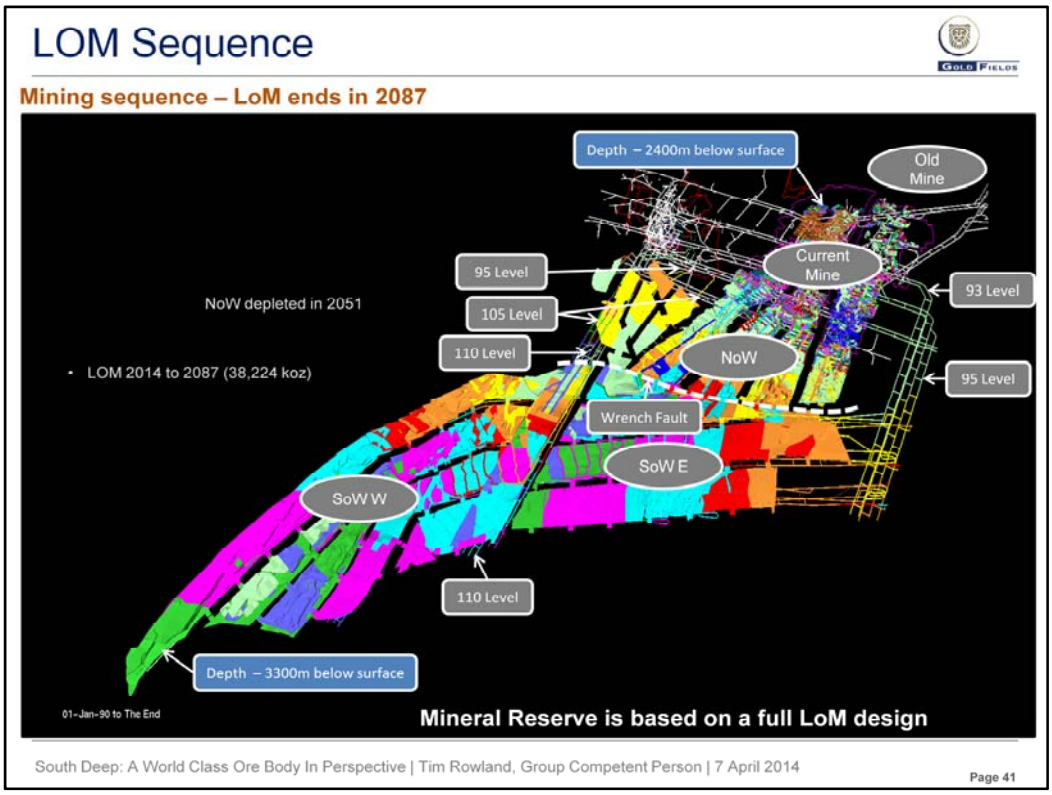
Mine Design and Planning

South Deep Gold Mine

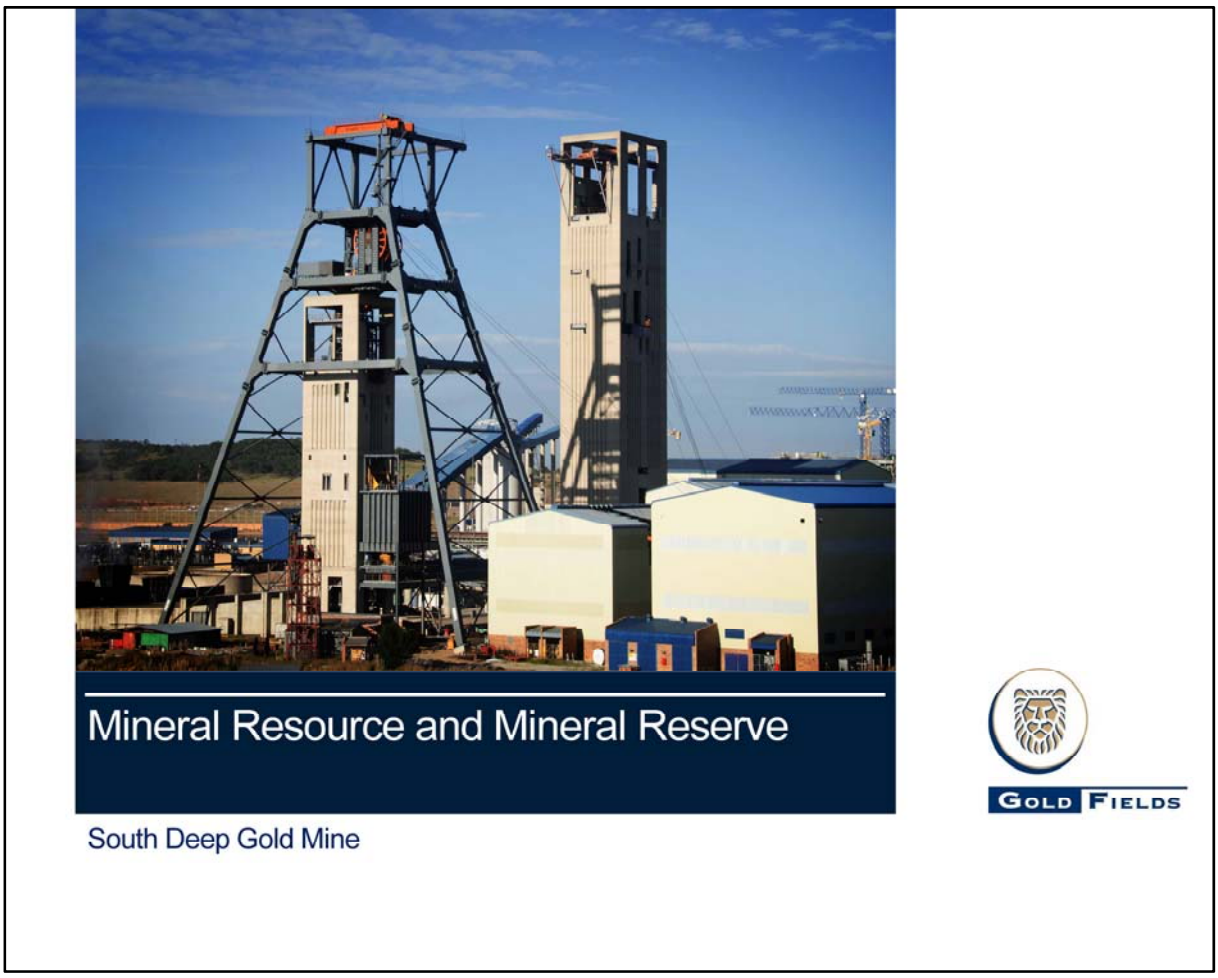
GOLD FIELDS



The mine design and mining method customised to meet the requirements at South Deep is summarised in this slide.

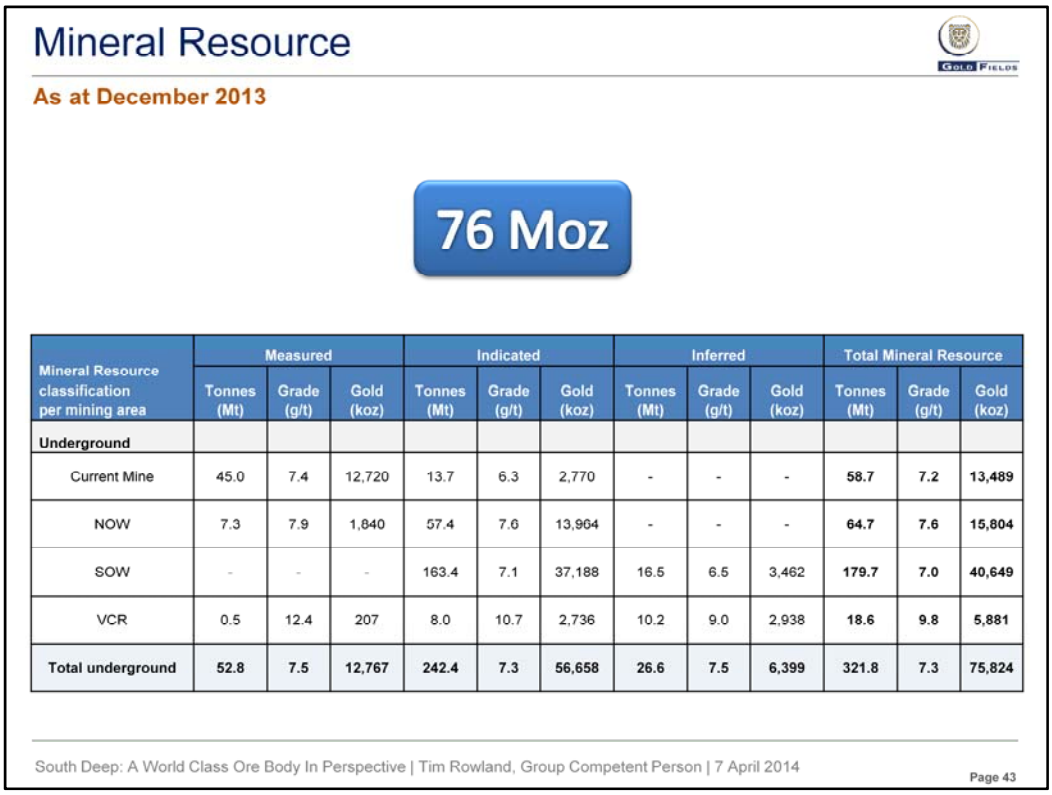


This slide illustrates the South Deep mining sequence for the full LoM showing the Current Mine, north of wrench (NoW) and south of wrench areas (SoW). Mining beyond 2087 is excluded from the reserves as the volumes are too low. The full LoM is mine designed and scheduled from its shallowest point at 2,400mbs to a maximum planned depth of 3,300mbs.



The December 2013 Mineral Resource and Mineral Reserve statement is compliant with the SAMREC 2007 Code, the updated Section 12 (Oct 2008) of the Johannesburg Stock Exchange (JSE) listing requirements, the Securities and Exchange Commission's (SEC) Industry Guide 7 and is aligned to the guiding principles of the Sarbanes-Oxley (SOX) Act of 2002.

A gold price of R460,000/kg (R420,000/kg 2012) has been used for the Mineral Resource and R400,000/kg (R380,000/kg 2012) for the Mineral Reserve compilation for December 2013's statement.



Mineral Resource

As at December 2013

76 Moz

Mineral Resource classification per mining area	Measured			Indicated			Inferred			Total Mineral Resource		
	Tonnes (Mt)	Grade (g/t)	Gold (koz)	Tonnes (Mt)	Grade (g/t)	Gold (koz)	Tonnes (Mt)	Grade (g/t)	Gold (koz)	Tonnes (Mt)	Grade (g/t)	Gold (koz)
Underground												
Current Mine	45.0	7.4	12,720	13.7	6.3	2,770	-	-	-	**58.7**	**7.2**	**13,489**
NOW	7.3	7.9	1,840	57.4	7.6	13,964	-	-	-	**64.7**	**7.6**	**15,804**
SOW	-	-	-	163.4	7.1	37,188	16.5	6.5	3,462	**179.7**	**7.0**	**40,649**
VCR	0.5	12.4	207	8.0	10.7	2,736	10.2	9.0	2,938	**18.6**	**9.8**	**5,881**
Total underground	**52.8**	**7.5**	**12,767**	**242.4**	**7.3**	**56,658**	**26.6**	**7.5**	**6,399**	**321.8**	**7.3**	**75,824**

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<u>Year-on-Year Change</u>

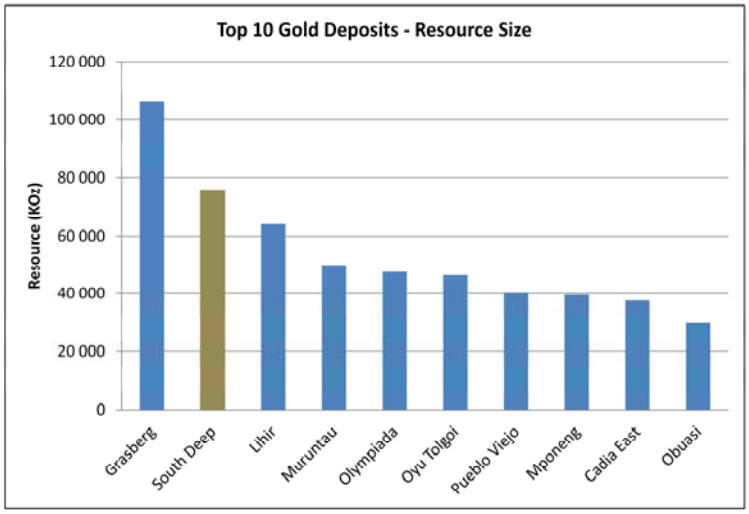
3.9% decrease relative to Dec 2012 reporting:

- 2% decrease due to cut-off grade increase
- 0.4% decrease due to mining in C2013
- 1.5% decrease due to changes in the geological model, new data and general estimation processes.

Resource excluding the VCR Portion:
303.2 Mt at a grade of 7.18 yielding a total of 69,943koz of gold.

Mineral Resource

As at December 2013



World's Second Largest Gold Mineral Resource

Mineral Reserve

As at December 2013

38 Moz

73 Year mine life (2014-2087)

Mineral Reserve classification per mining area	Proved			Probable			Total Mineral Reserve		
	Tonnes (Mt)	Grade (g/t)	Gold (koz)	Tonnes (Mt)	Grade (g/t)	Gold (koz)	Tonnes (Mt)	Grade (g/t)	Gold (koz)
Underground									
Current Mine	12.0	5.8	2,245	-	-	-	**12.0**	**5.8**	**2,245**
NOW	3.7	5.8	682	57.3	5.8	10,603	**61.0**	**5.8**	**11,286**
SOW	-	-	-	151.5	5.1	24,693	**151.5**	**5.1**	**24,693**
Total underground	**15.7**	**5.8**	**2,927**	**208.8**	**5.3**	**35,296**	**224.4**	**5.3**	**38,224**

In-stope waste ramping included in the 224.4Kt / 5.3g/t

Year-on-Year Changes

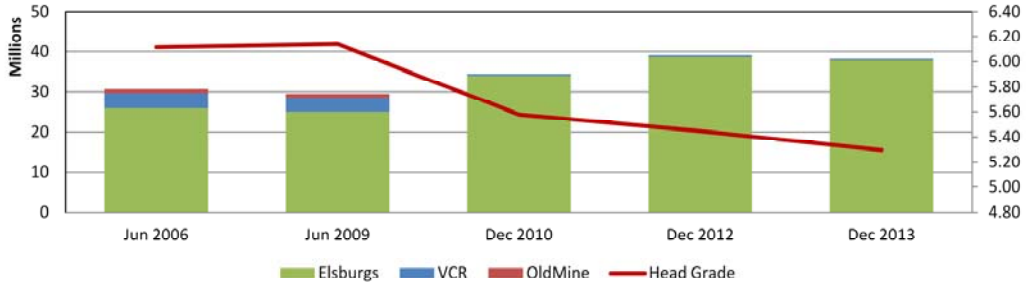
2.3% decrease relative to Dec 2012 reporting:

- 1.5% decrease due to cut-off grade increase and MCF decrease
- 0.8% decrease due to mining in C2013

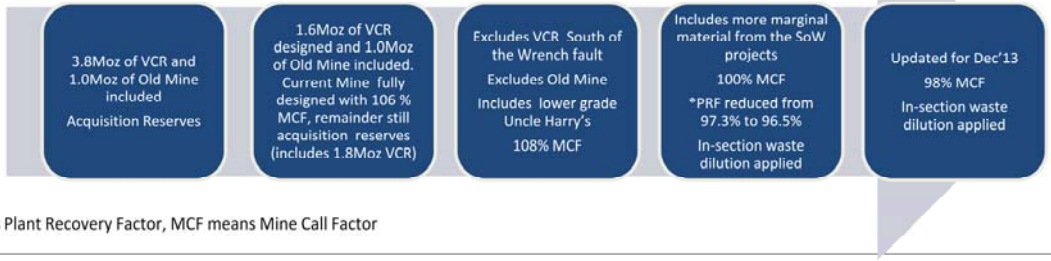
Resource to Reserve Reconciliation

Mineral Reserve Time Line

Reserve Ounces and Grades



VCR	3,793,615	3,426,755	445,037	415,160	402,876
OldMine	1,044,466	1,044,474	0	0	0
Elsburgs	25,859,092	25,014,732	34,087,489	38,696,930	37,820,670
Total	**30,697,173**	**29,485,961**	**34,532,525**	**39,112,090**	**38,223,546**
Grade	6.11	6.14	5.58	5.45	5.30



*PRF means Plant Recovery Factor, MCF means Mine Call Factor

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The historical performance of the MCF at South Deep (99% in 2011, 98% in 2012, and 98% in 2013) illustrates the robustness of both the resource estimation and planning procedures and techniques in use at South Deep.

Post June 2009 several higher grade areas were excluded from the Mineral Reserves: approximately 3 Moz of VCR at an average grade of 10.8 g/t and about 1 Moz from Old Mine at 8.7 g/t, while Uncle Harry's was included at an average grade of 4.4 g/t. These movements in line with SAMREC compliant reporting, all contributed to the decrease in the overall reserve grade over time. The current LoM plan reflects these changes but the opportunity remains in the future to potentially bring these ounces back into the plan.

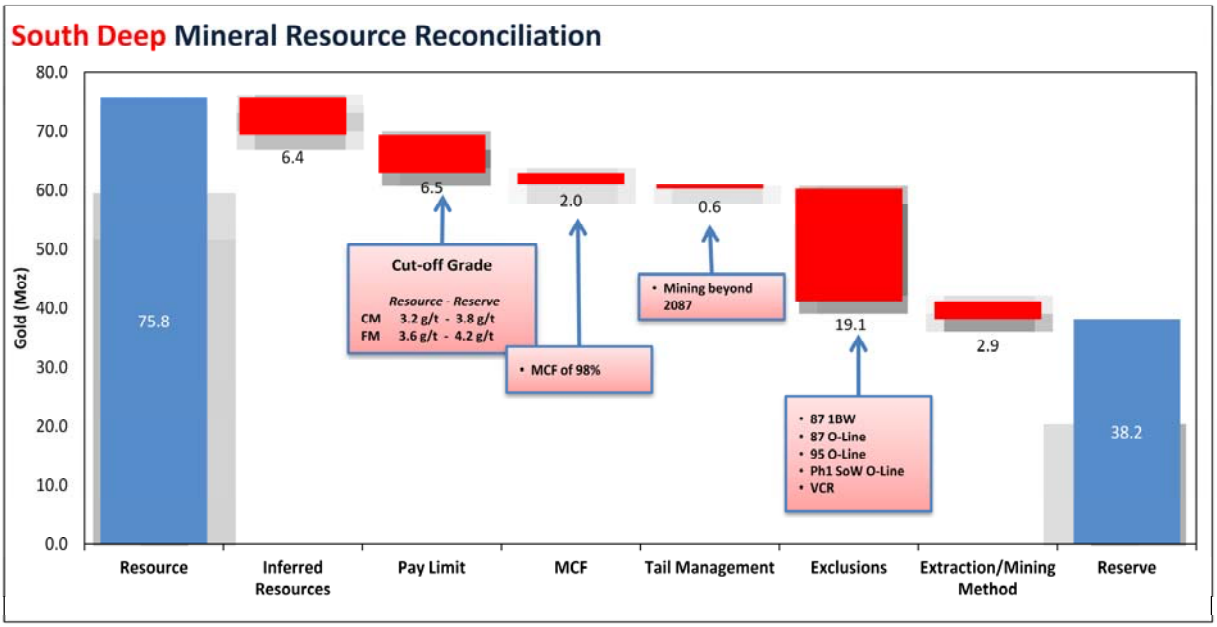
Resource to Reserve Reconciliation

South Deep Gold Mine

GOLD FIELDS

Resource to Reserve Reconciliation

Ounces

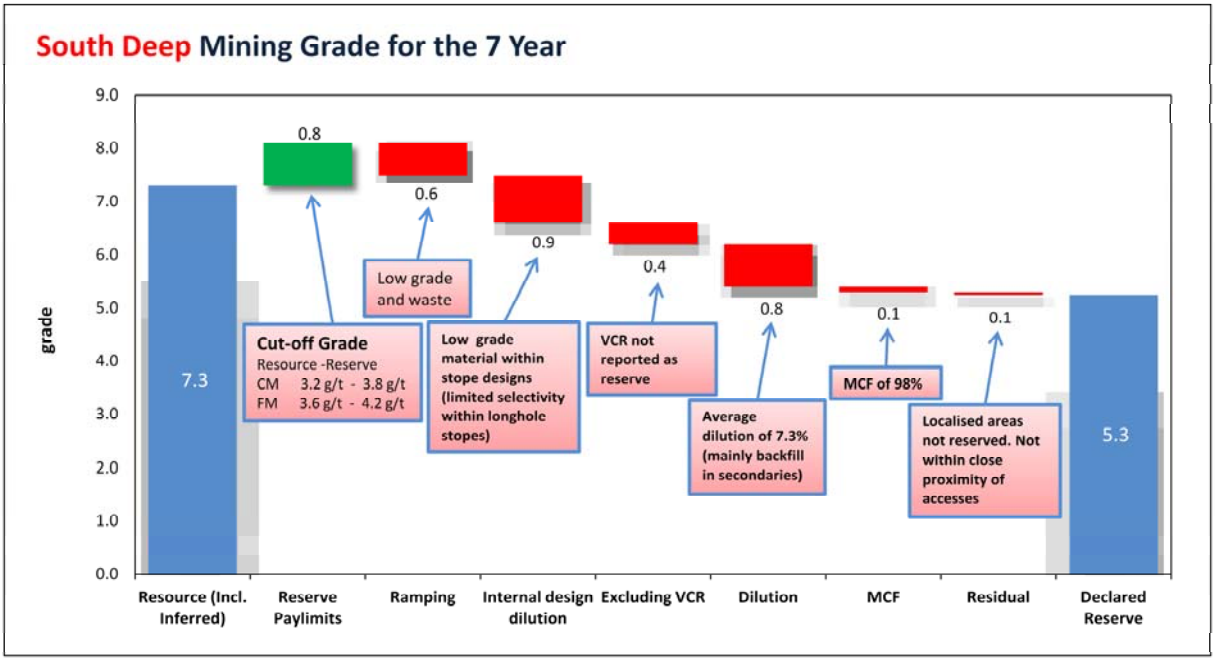


This waterfall chart shows the reconciliation of the resource ounces to the reserve ounces, highlighting the impact of the cut-off grades, exclusions and the Inferred resource component that cannot be converted to a reserve.

The life of mine extends to 2087 from an economical viability point of view. The remainder of the scheduled reserves, 0.6 million ounces, were excluded from the declaration as depicted in the Tail Management component in the graph due to economies of scale.

Resource to Reserve Reconciliation

Grade



CM is Current Mine
FM is Future Mine (south of the Wrench fault)
MCF is Mine Call Factor

This waterfall chart shows the reconciliation of the resource grade to the reserve grade, highlighting the impact of mine design, dilution and exclusions.

The stated declared reserve includes 1.792 million tonnes of in-section waste but the capital waste is excluded.

Summary

Key Points

- ✓ Continuous data supplied by sequential, rolling drilling programs
- ✓ Robust geological modelling with appropriate resolution.
- ✓ Resource estimation embodies a high level of ore body granularity
- ✓ Ore body dictates relevant mine design and mining method
- ✓ Good reconciliation between resource model and mining achieved
- ✓ Technically assured Resource and Reserve

Thank you

South Deep Gold Mine

GOLD FIELDS