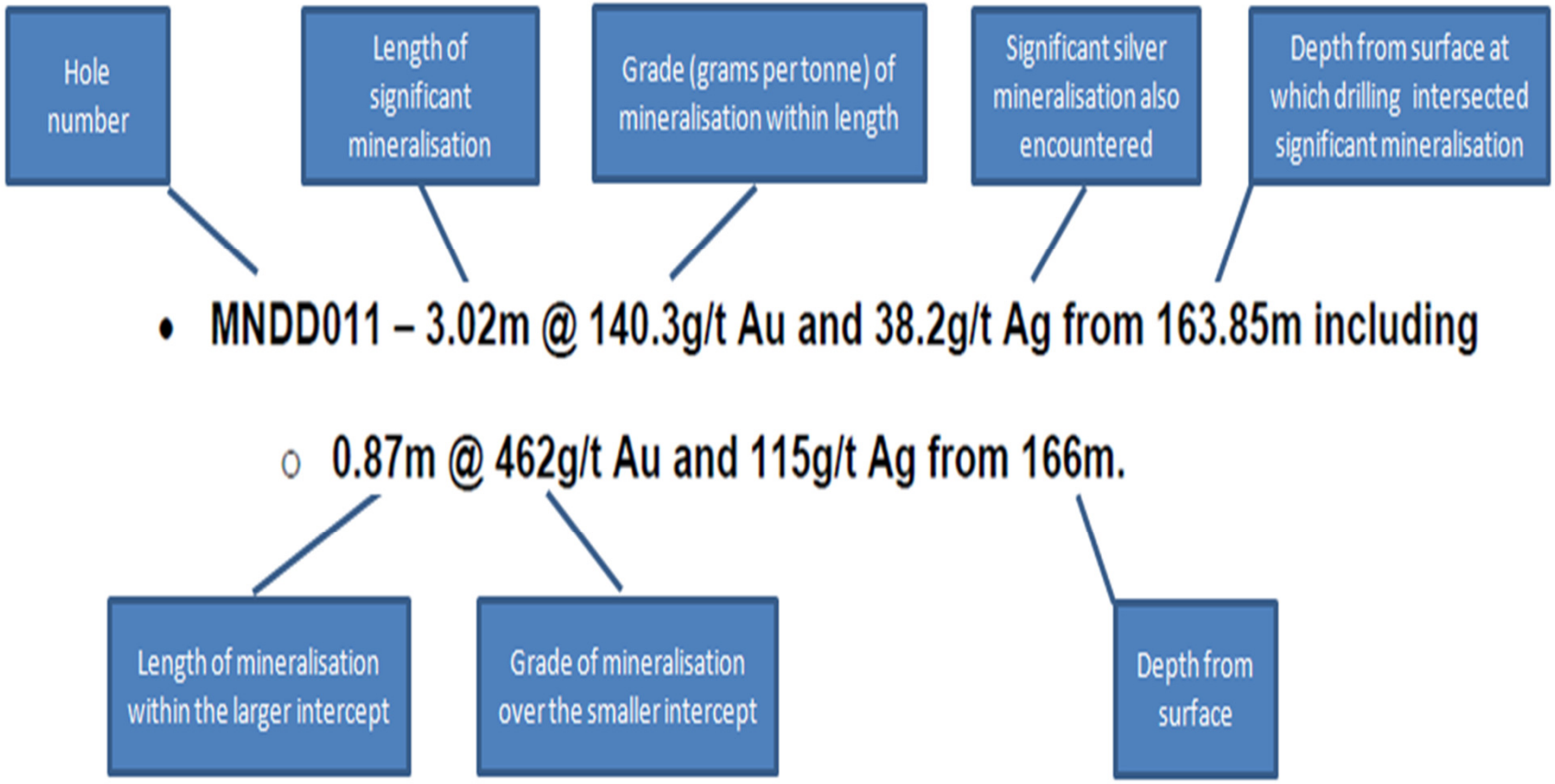
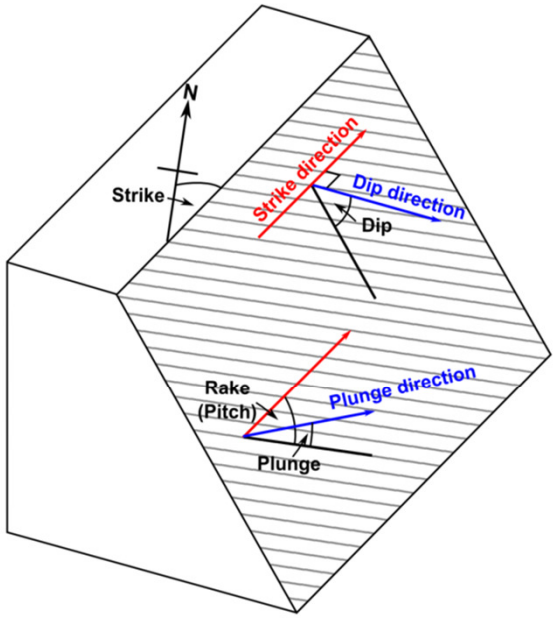
How to Interpret Mining Company Drill Reports & Announcements

A Simple Guide

amscot Stockbroking Pty Ltd – A division of State One Stockbroking Ltd (AFSL 247 100)

Exploration Results



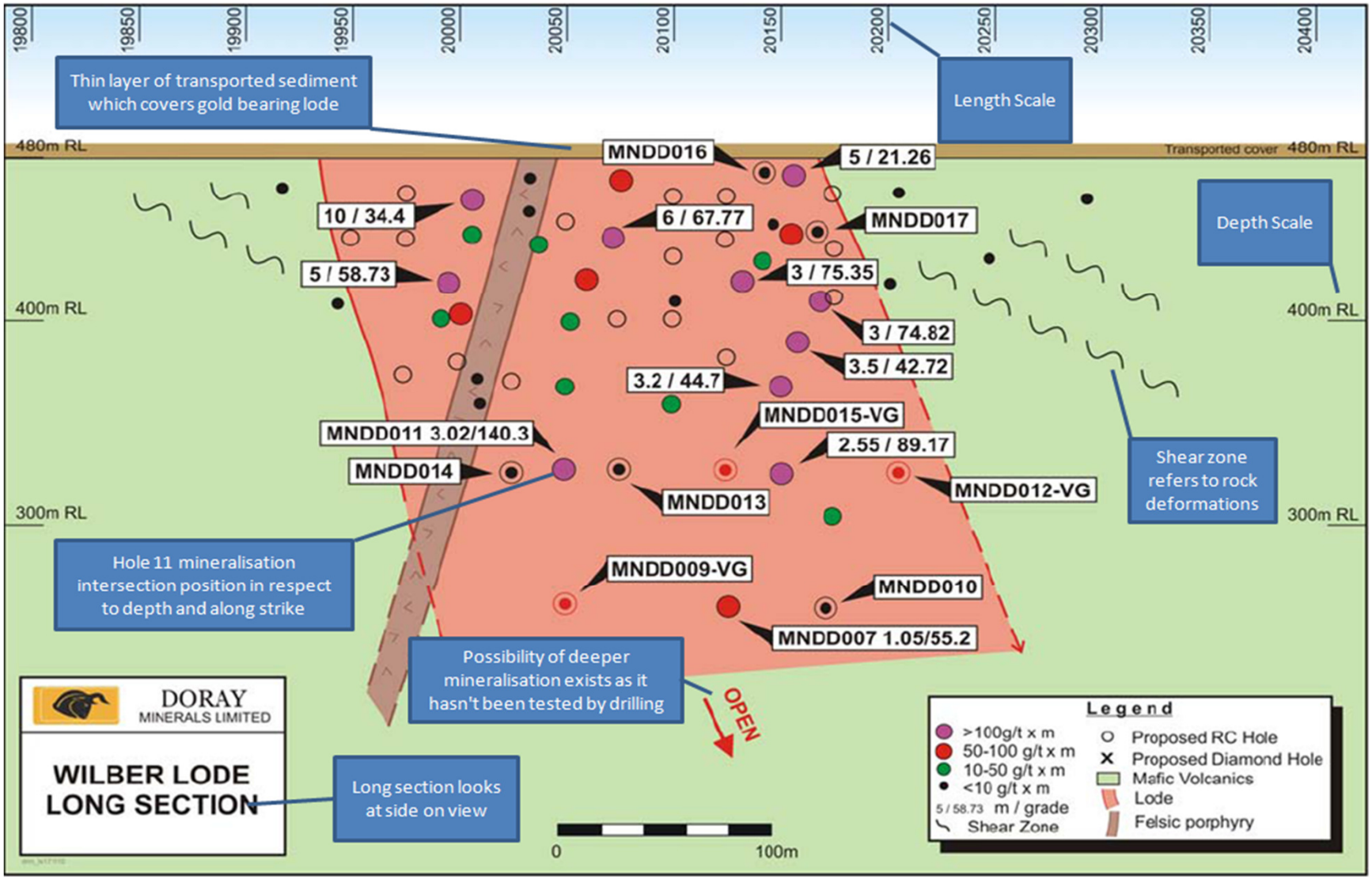


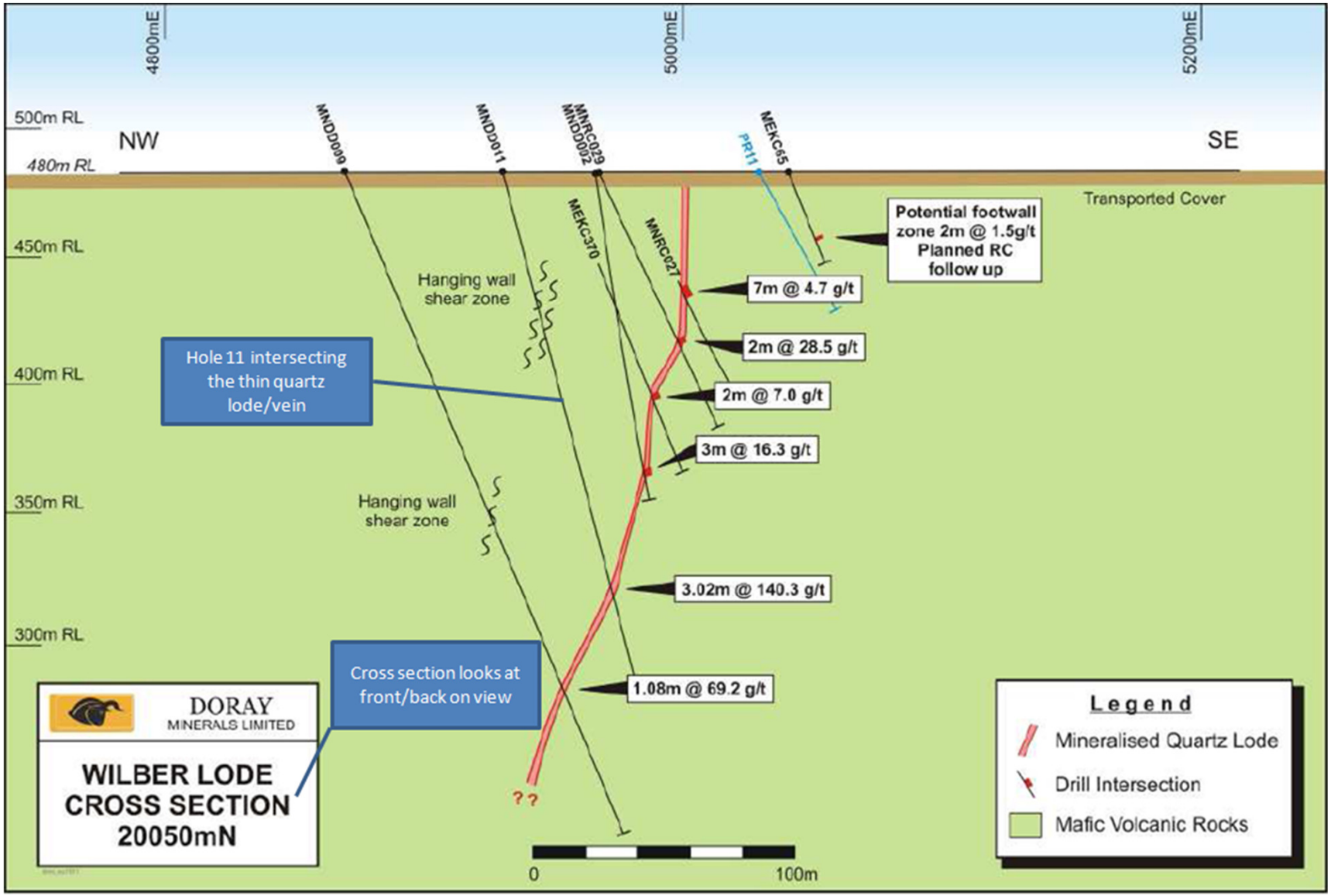
Hole coordinates. Dip refers to angle of inclination, azimuth to angle of dip direction

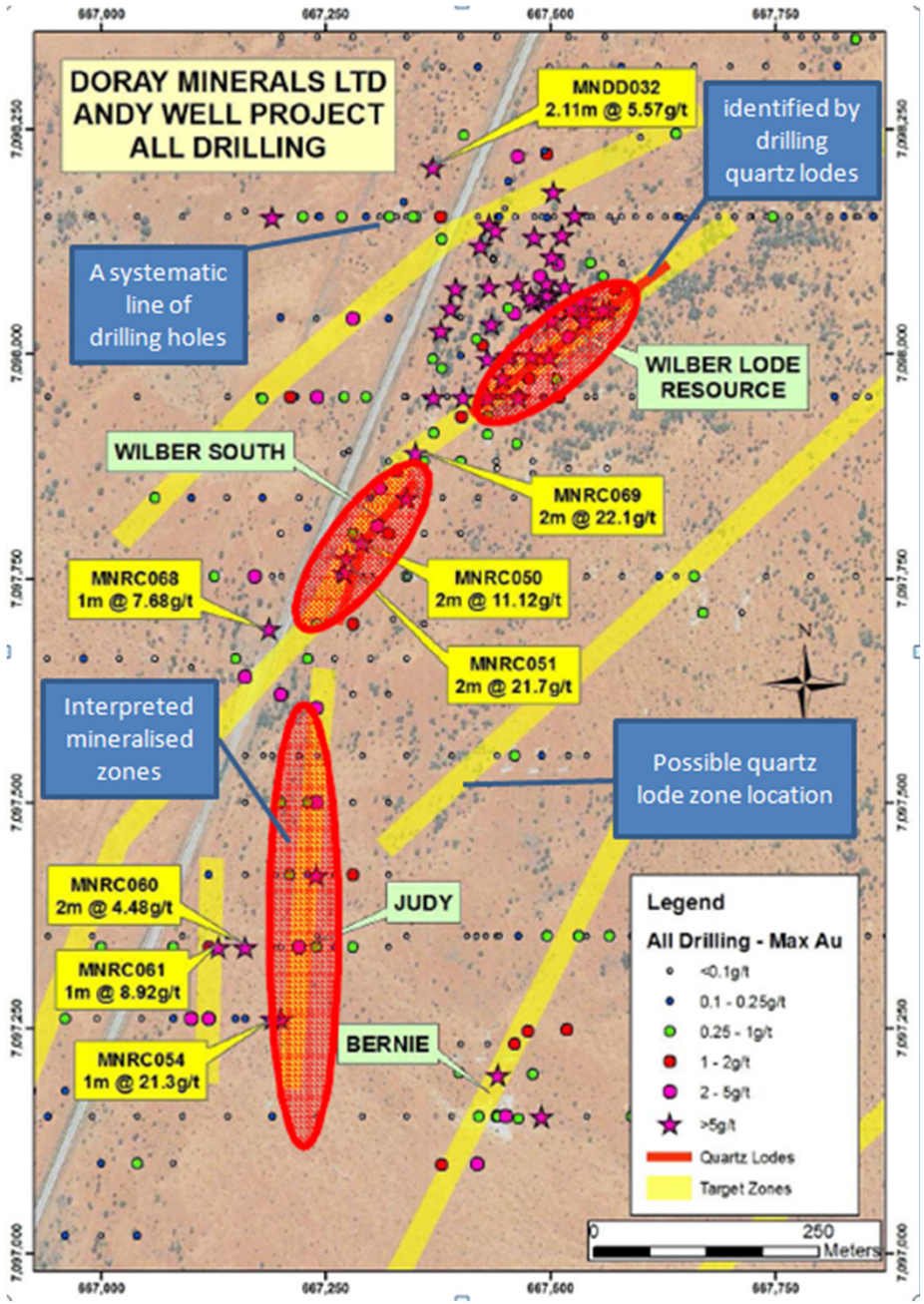
Hole (E/N/dip/azimuth)	From (m)	To (m)	Interval (m)	Au (g/t)	Ag (g/t)	Comments
MNDD011	163.8	166.8	**3.02**	**140.3**	**38.2**	3m wide quartz lode with significant visible gold
667436E 7098034N -75/135	including		**0.87**	**462**	**115**	

The hole was drilled at a 75 degree angle on a south east bearing

Visual Results




4800mE
5000mE
5200mE
500m RL
480m RL
450m RL
400m RL
350m RL
300m RL
NW
SE
MNDD009
MNDD011
MNRC029
MNDD002
MEKC65
PR11
MEKC370
MNRC027
Transported Cover
Potential footwall zone 2m @ 1.5g/t Planned RC follow up
7m @ 4.7 g/t
2m @ 28.5 g/t
2m @ 7.0 g/t
3m @ 16.3 g/t
3.02m @ 140.3 g/t
1.08m @ 69.2 g/t
Hanging wall shear zone
Hanging wall shear zone
Hole 11 intersecting the thin quartz lode/vein
Cross section looks at front/back on view
??
DORAY MINERALS LIMITED
WILBER LODE CROSS SECTION 20050mN
0
100m
Legend
Mineralised Quartz Lode
Drill Intersection
Mafic Volcanic Rocks


DORAY MINERALS LTD
ANDY WELL PROJECT
ALL DRILLING
MNDD032
2.11m @ 5.57g/t
identified by drilling quartz lodes
A systematic line of drilling holes
WILBER LODE RESOURCE
WILBER SOUTH
MNRC069
2m @ 22.1g/t
MNRC068
1m @ 7.68g/t
MNRC050
2m @ 11.12g/t
MNRC051
2m @ 21.7g/t
Interpreted mineralised zones
Possible quartz lode zone location
MNRC060
2m @ 4.48g/t
JUDY
MNRC061
1m @ 8.92g/t
BERNIE
MNRC054
1m @ 21.3g/t
Legend
All Drilling - Max Au
<0.1g/t
0.1 - 0.25g/t
0.25 - 1g/t
1 - 2g/t
2 - 5g/t
>5g/t
Quartz Lodes
Target Zones
0
250
Meters
N
667,000
667,250
667,500
667,750
7,098,250
7,098,000
7,097,750
7,097,500
7,097,250
7,097,000

Drilling

Drill Method	Cable Tool	Auger	Rotary Air Blast (RAB)	Reverse Cycle (RC)	Diamond Core
System Operation	Winch-driven weight hammers drill pipe into ground. Winch-driven down hole drive stem breaks the hard ground. Sample sucked into wire-line baler & winched up	Rotary drill with a corkscrew action. Sample carried to the surface continuously on the auger threads. Additional rods added as required	Rotary drill and hammer action. Compressed air down drill tube. Chip samples blown up the drill hole itself to surface and laid out in rows. Additional rods added	Rotary drill & hammer action. Compressed air down the outer of two tubes pushes chip samples up centre tube to a surface cyclone to be bagged	Rotating rods cut rock and collect 3-6m continuous intact core in a core barrel. Drilling stops and drive is disconnected. Core barrel lifted to surface by wire line, next rod added and drill restarted.
Alternate Names	Percussion drill	Hollow & bucket augers	RAB	RC	DDH
Preferred ground	Soft & loose. Wet or dry	Soft dry ground	Above water table	Above water table	Best in hard ground
Target Accuracy			Poor	Poor	Excellent
Maximum Depth	300m up to 1,500m	60-80m	up to 120m using 3.5" pipe	100-365m	500-5000m
Drill Angles	Vertical only			45-90 degree angle	0-90 degree angle
Nature of Sample	Loose or fragmented rock	Loose clay, sand	Rock fragments (drill chips)	Rock fragments (drill chips)	Largely unbroken rods of rock
Cost/metre	less than $5/metre	Less than $5/m	$6-10/m	$25-35/m	$100+/m
Drilling Rate	20m/day	Varies with depth & ground	up to 20-25m/hour	40m/hour	up to 25m/h
Hole/core sizes	10-40cm	10-100cm	10cm	10cm	37-145mm
Drilling medium	Requires water for sampling	Nil	Compressed air	Compressed air	Mud lubricants and coolants
Advantages	Low capital cost equipment. Low maintenance & drilling costs. Quality sampling in poor or unconsolidated ground. Large sample sizes and large diameter, straight clean holes. Most suited to alluvial & water sampling. Rigs can be small and portable & suited to remote areas	Sampling in soft ground and for beach sands. Mine dumps and tailings. Can have large diametere holes. Well suited to geochemical deep soil & below transported surficial cover. Low cost, fast penetration in soft ground conditions. Some drills can be hand held.	Low cost & high mobility. Minimal site preparation. Large sample size and drilling rates up to 1000 metres per day in suitable ground	Continuous, uncontaminated representative sample at a third of the cost of cored holes. Rapid drilling in unconsolidated or hard ground conditions. All the samples are collected, little contamination and large sample volumes	Intact core samples & very long holes in hard rock. Maximum geological information. Accurate targetting for very long directional holes. Best drilling method below water table & for stratigraphic, geotechnical work oriented core, or structural data. Small rigs exist that are mobile for difficult access or underground
Disadvantages	Drilling rate (m/day) low. Very slow & poor penetration in hard ground. Vertical holes only. Retrieval of drill casing can be difficult due to unconsolidated ground collapse in deep holes	Requires dry soft ground. Shallow penetration. Can't handle coarse material and unsuited to gravels. Sample contamination from wall and debris accumulating at base	Potential for serious sample contamination & lack of depth penetration in hard ground. No structural data	Large heavy drill rigs. Poor hole orientation control. Some sample contamination and loss below the water table. Large power requirements, rig access can be a problem as can steep slopes	Very expensive and slow. Poor recovery of unconsolidated samples and weak rock. Some site preparation for large rigs and an adequate water supply is required

Source: R.Fagan/WASM

Metallurgy

Excellent gravity and cyanide gold recoveries from Wilber Lode indicate potential for very low processing costs.

The simpler and shorter the process, the cheaper it will be

A gravity process which liberates gold from rock/mineral

Further processing such as leaching brings gold recovery to a very high 97%

- **Gravity recoveries average ~85%**
- **Average total gold recoveries exceed 97%**
- **Low-moderate reagent consumption and rapid leach kinetics**

Transitional refers to rock/mineral (QV = quartz vein) which has been partly weathered (affected by external elements such as water and oxygen etc). Fresh means unweathered rock

The waste material that's left over is tails.

Grade of processed material is called head

Rock/mineral is ground first to make liberation easier

Sample Name	Ore Type	Gold Recovery %			Tails Grade	Calc. Head	Reagent Consumption		Grind Size
		Total	Gravity	Leach	Au g/t	Au g/t	NaCN (kg/t)	Lime (kg/t)	p80 (µm)
MNRC034 20-28 m	Transitional QV & Shear Zone	98.60%	59.57%	39.02%	0.24	16.76	0.36	0.40	125
MNRC035 45-48 m	Transitional QV	93.27%	83.15%	10.12%	0.75	11.15	0.77	0.47	125
MNRC039 98-100 m	Fresh QV	98.55%	88.40%	10.15%	0.06	4.14	0.39	0.94	125
MNRC041 97-101 m	Fresh QV	98.92%	84.22%	14.70%	0.17	15.72	0.47	0.33	125

JORC Resources

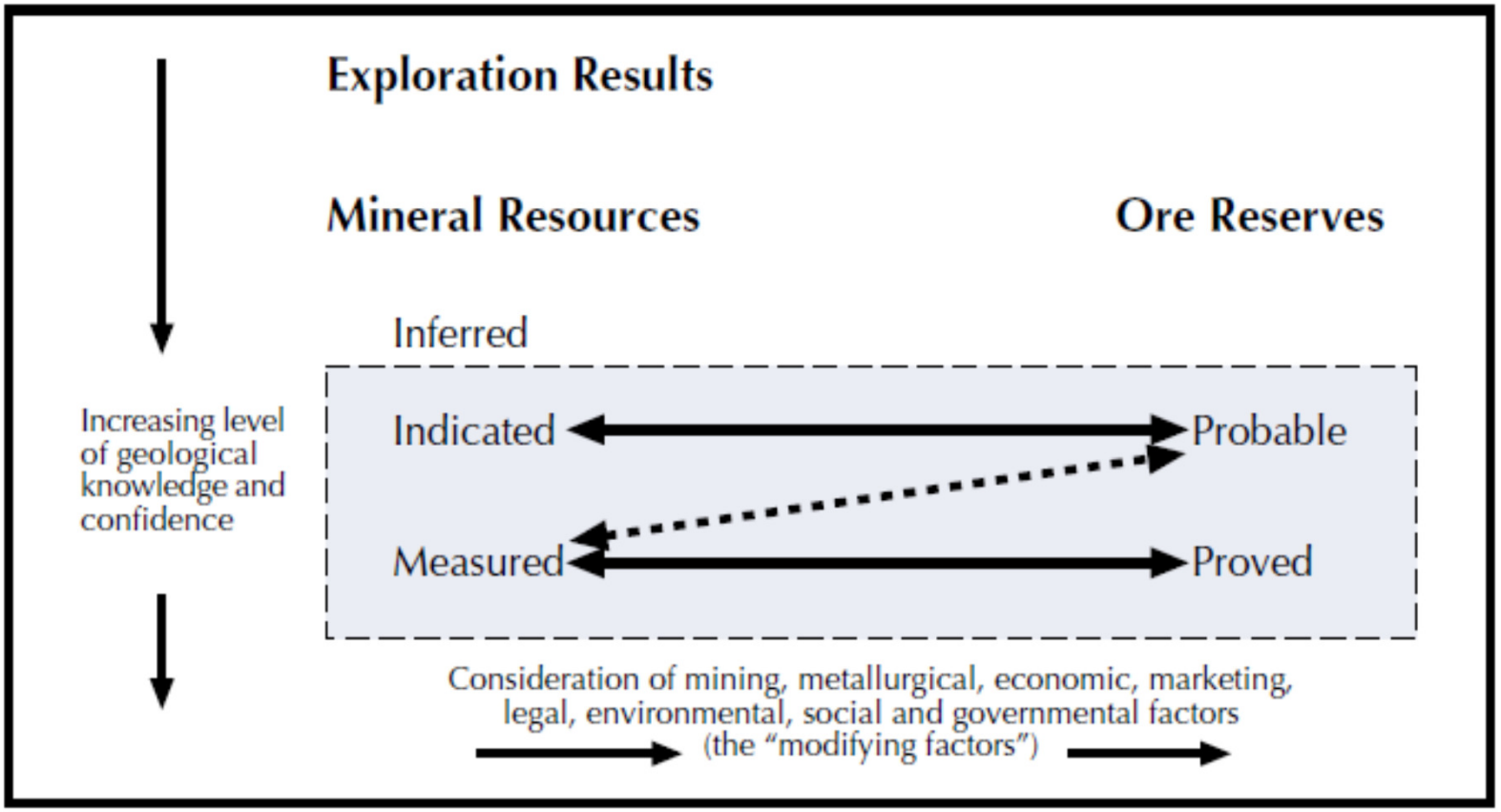


Figure 1. General relationship between Exploration Results, Mineral Resources and Ore Reserves

Source: JORC Code

211Kt of rock contains 25.3 grams per tonne of gold

Equating to 172K ounces of gold in quartz vein

- **211,000t @ 25.3g/t for 172,000ozs[1]** (Indicated & Inferred quartz vein Resource)
- **Resource open at depth and along strike**

Open at depth and along strike refers to potential of resource being larger due to mineralisation being found deeper and further along from current resource

Scale of indicated, inferred and measured resources refers to confidence level through amount and detail of drilling

	Indicated			Inferred			Total			Doray 80%
	Tonnes	*Grade (g/t)*	*Ounces*	*Tonnes*	*Grade (g/t)*	*Ounces*	*Tonnes*	*Grade (g/t)*	*Ounces*	*Ounces*
Quartz Vein	130,000	24.1	101,000	81,000	27.4	71,000	**211,000**	**25.3**	**172,000**	***137,600***
Shear Zone	100,000	0.8	2,000	-	-	-	100,000	0.8	2,000	*1,600*
Total	**230,000**	**14.0**	**103,000**	**81,000**	**27.4**	**71,000**	**311,000**	**17.5**	**174,000**	***139,200***

Note: No lower cutoff applied

In most instances a cut-off figure will be applied which refers to the grade at which a deposit is based upon

Basic Geology

Fundamental Rock Types

IGNEOUS ROCKS:

- 75% of the Earth's continental crust and over 90% of the oceanic crust

SEDIMENTARY ROCKS:

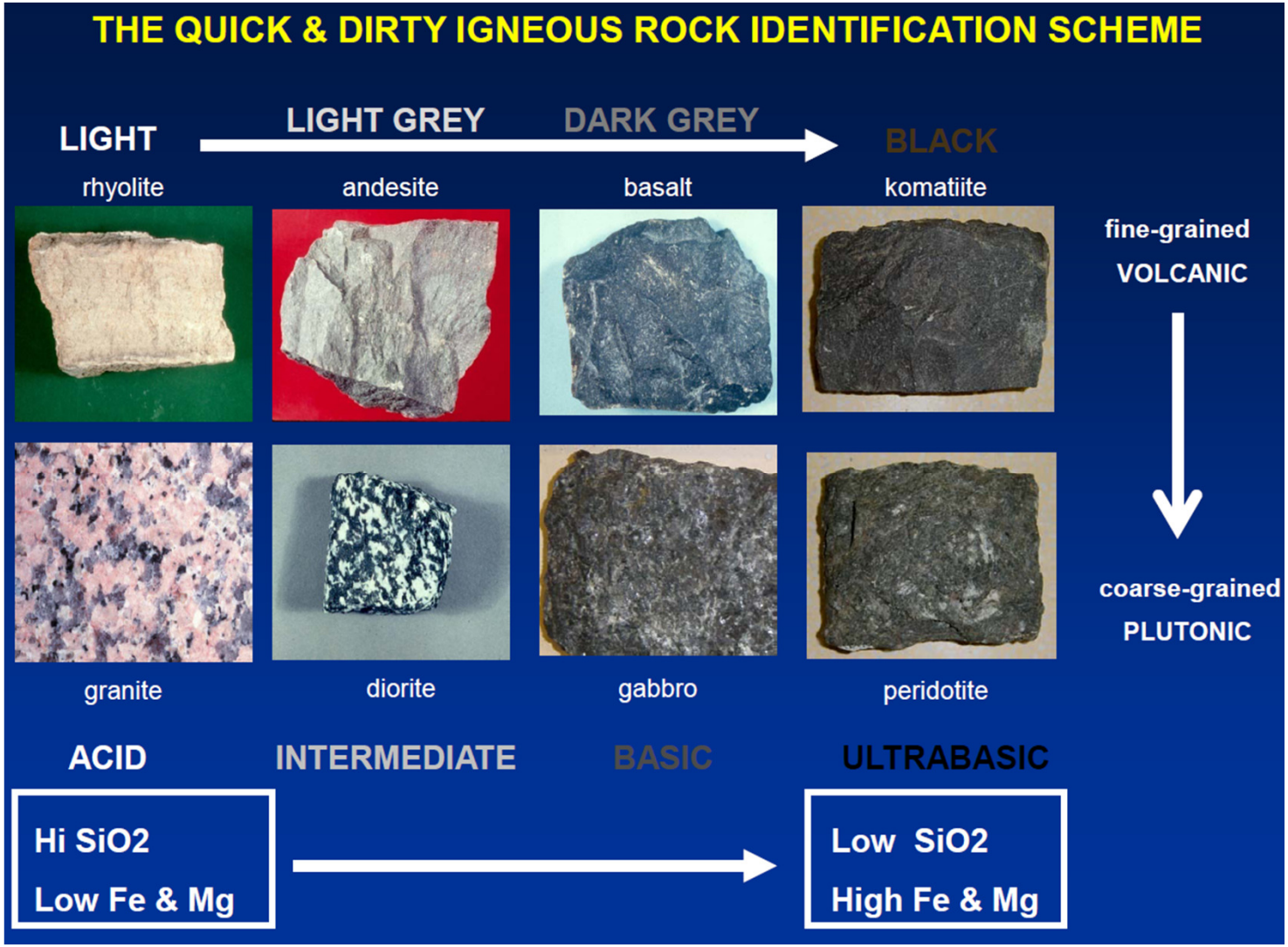
- 5-10 % of the Earth's crust by volume but cover about 75% of the continents

METAMORPHIC ROCKS:

- 15 % of rocks at the Earth's surface

Source: R.Fagan/WASM

Igneous Rocks



Source: R.Fagan/WASM

Sedimentary Rocks

CLASSIFICATION OF SEDIMENTARY ROCKS

CLASTIC SEDIMENTS (class divisons based on grain size)		CHEMICAL SEDIMENTS (class divisions based on nature of chemical precipitate)		VOLCANIGENIC SEDIMENTS (class divisions based on grain size)
COMPOSED OF EITHER MINERAL OR ROCK FRAGMENTS (brackets indicate loose sediment	GRAIN SIZE	CHEMICAL PRECIPITATE	ROCK NAME	Nomenclature is ash if loose and tuff if coherent.
CONGLOMERATE (gravel)	> 2 mm	CaCO3 (as calcite or as shell material)	LIMESTONE (bioclastic limestone if composed of shells)	AGGLOMERATE (particles > 64 mm)
SANDSTONE (sand) (quartz sand, lithic sandstone etc)	0.06 -2 mm grains are visible may be subdivided into very fine to very coarse	Iron Oxides with some SiO2	BANDED IRON FORMATIONS (BIF's)	LAPILLI TUFF (particles 2-64 mm)
SILTSTONE (silt)	4 - 60 microns invisible grains griity feel	SiO2 (may have Fe or Mn associated)	CHERT	TUFF (particles < 2 mm)
CLAYSTONE (clay)	<4 microns non gritty		JASPER (red colour due to some Fe)	
GREYWACKE (a sandstone with 15 - 75% mud)	poorly sorted well indurated muddy sandstone	metal sulphides named according to the suphide phase (eg pyritic shale)	SULPHIDIC SHALES	Commonly given a prefix depending if composed largely of crystals, rock fragments, or glass. Eg crystal tuff, lithic tuff, or vitric tuff, and the nature of the volcanic component (eg andesitic crystal tuff)

Shales are well laminated, fissile, fine sands and muds usually formed in deltaic coastal regions.
Siltstones and claystones generally grouped together as mudstones.
Carbonaceous sediments are black or grey and contain significant plant debris. If composed entirely plan debris peat, lignite or coal may be appropriate.

Source: R.Fagan/WASM

Metamorphic Rocks

CLASSIFICATION OF METAMORPHIC ROCKS

CONTACT METAMORPHISM (No preferred orientation of minerals)	REGIONAL METAMORPHISM (preferred orientation of minerals)		INDEX MINERALS (first appearance of)	METAMORPHIC GRADE	GRAIN SIZE increases downwards
ALL CALLED HORNFELS generally prefixed with some index mineral names, eg pyroxene hornfels or parent rock name, eg basic hornfels	SLATE	A planer preferred orientation of platy mica minerals, not visible to naked eye, giving a rock cleavage but no reflection sheen.	muscovite 250 deg chlorite serpentine	very low	
	PHYLLITE	As above but does give a sheen in reflected light.	biotite 300 deg talc	low	
	SCHIST	A planer preferred orientation of abundant micas visible to the naked eye. A strongly developed foliation.	garnet, 400 deg andalusite, cordierite staurolite	medium	
	GNEISS	Coarse grained but lacks abundant mica (generally some biotite) and possess only a weak-to-moderaste foliation.	hornblende 550 deg kyanite, sillimanite alkali feldspar	high	
	GRANULITE	Mainly granular equant minerals with no preferred orientation or 'foliation but may be compositionally banded.	700 deg pyroxenes in absence of amphiboles & micas	very high	

The metamorphic rock name may be prefixed with an index mineral name, eg andalusite cordierite hornfels, or garnet schist.
Sometimes a non foliated metamorphosed rock may be called after the recognised parent rock type, eg metabasalt, metasandstone.

Special cases

MARBLE: a metamorphosed limestone composed largely of calcite.
QUARTZITE: a metamorphosed rock composed largely of quartz.
AMPHIBOLITE: a metamorphic rock consisting of amphibole and plagioclase.
MIGMATITE: mixed rock consisting of partially melted and non-melted metamorphic materials

Source: R.Fagan/WASM

Ore Grades

METAL BACKGROUND VALUES, ORE GRADES, ORE ENRICHMENT FACTORS & METAL PRICES

Element	Average Crustal Abundance (ppm)	Mineable Ore Grade (ppm)	Enrichment Factor	Metal prices July (2010)
Mercury	0.89	1,000	11,200	$700 $/Flask
Tungsten	1.1	4,500	4,000	$17.00 USD/lb
Lead	12	40,000	3,300	$0.78/lb
Chromium	110	230,000	2,100	$2.50 USD/lb
Tin	1.7	3,500	2,000	$7.93 USD/lb
Silver	0.0750	100	1,330	$18 USD/Troy Oz
GOLD	0.0035	1	286	$1200 USD/Troy Oz
Molybdenum	1.3	1,000	770	$35.00 USD/lb
Zinc	94	35,000	370	$0.80 USD/lb
Uranium	1.7	700	350	$60.00 USD/lb
Carbon	320	100,000	310	Sold as graphite of variable quality
Lithium	21	5,000	240	$50.00 USD/lb
Manganese	1,300	250,000	190	$1.60 USD/lb
Nickel	89	9,000	100	$9.00 USD/lb
Colbalt	25	2,000	80	$40.00 USD/lb
Phosporous	1,200	88,000	70	$2500/tonne variable
Copper	63	3,500	56	$3.00 USD/lb
Titanium	6,400	100,000	16	$20.00 USD/lb
Iron	68,000	200,000	3.4	$100 AUS/tonne ore grade
Alumium	83,000	185,000	2.2	$0.90 USD/lb

Ore grades are a function of metal price which may fluctuate widely depending on market demand.
10,000 ppm = 1% by weight. One ppm = one gram per tonne.
1 Pound = 0.00045359237 tonnes or 2204.6 pounds = a tonne.

Source: R.Fagan/WASM

Coal

Coal Chemistry

These are givein what is called a **proximate analysis** as the coal is heated.

QUALITY OF AUSTRALIAN BLACK COALS

Locality (and Seam)	Geological Age	Inherent Moisture	Volatile Matter	Fixed Carbon	Ash	Total Sulfur	Gross Specific Energy MJ/kg
NSW							
Wollongong (Bulli)	Permian	0.9	20.0	68.5	10.6	0.35	31.8
Newcastle (Borehole)	Permian	2.5	35.1	52.3	10.1	0.46	30.4
Newcastle (Gt Northern)	Permian	3.3	29.2	52.7	14.8	0.37	27.3
Singleton (Liddell)	Permian	2.7	35.8	51.9	9.6	0.54	29.9
Cessnock (Greta)	Permian	2.2	40.1	50.1	7.6	0.81	31.3
Oaklands	Permian	12.5	24.8	45.3	17.4	0.45	20.9
Qld							
Baralaba	Permian	1.0	12.4	79.1	7.5	0.65	33.2
Goonyella	Permian	1.8	25.4	65.2	7.6	0.54	33.0
Blair Athol	Permian	8.0	27.4	56.8	7.8	0.22	27.4
Callide	Triassic	11.5	24.9	48.6	15.0	0.13	22.1
Millmerran	Jurassic	5.0	42.0	36.8	16.2	0.53	26.7
Vic							
Wonthaggi	Cretaceous	8.4	30.1	52.2	9.3	—	27.4
SA							
Lake Phillipson	Permian	21.0	39.5	33.1	6.4	—	—
Leigh Creek	Triassic	32.5	21.0	30.6	15.9	0.40	15.8
WA							
Collie	Permian	27.5	26.4	42.1	4.0	0.52	20.1
Tas							
Fingal	Triassic	4.2	26.2	46.8	22.8	0.30	23.8

Specific energy is the heat energy of the coal (calorific value). The higher the better.

Sulphur content is a concern in atmospheric pollution or as a steel contaminant

Ash is the leftover non-combustible waste product, the lower the better.

Salt (chloride) content if formed in brackish estuarine water may also be a problem

Source: R.Fagan/WASM