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**Re: Nelson Bay Iron Project Pyrite Mineralisation Study**

Reid (2011) completed a short report on some acid potential sampling for diamond drillcore around both the 2010 magnetite and DSO pit designs. Reid reported that two types of pyrite were established in the magnetite pit area only:

1. Localised pyrite blebs and disseminated pyrite were found in association with a narrow skarn lode in the hangingwall close to and on the margin of the main magnetite dyke. Some of the pyrite in this unit is classified as NAF.
2. Low grade disseminated pyrite in a medium grained siltstone found in the hangingwall of the main magnetite dyke

Reid also reported that some pyrite coexisted with some of the hanging wall quartz veins in the vicinity of the DSO pit.

Pyrite percentage was recorded in the geological logging for the majority of both the recent RC and historical diamond drillholes. In some instances it was possible to use sulphur assays from the assaying work to produce an estimated pyrite content. This involved simply doubling the sulphur value (using the pyrite formula FeS<sub>2</sub>) based on the assumption that sulphur represents 50% of the pyrite. It was also assumed that all sulphur could be attributed to pyrite (and pyrrhotite) as there were no reports of barite, anhydrite or gypsum in the logging. The generated pyrite values with their assay intervals were inserted into the pyrite percentage column in the mineral table of the H&S drillhole database.

The pyrite mineralisation in the hanging wall skarn lode is interpreted to have a dip and strike parallel to the main magnetite lode i.e. an average strike of 010° and an average dip of -75° west (H&S local grid). The pyritic siltstone was interpreted to have a similar strike but a different dip direction i.e. shallower dip of 45° to the east. Using the above information it is possible to interpret two wireframes representing both mineral styles.

For the hanging wall skarn lode, the pyrite mineralisation has been interpreted to have variable down dip continuity with the interpretation generally confined to the open pit design. Interpreted strings were completed on approximately 50m spaced sections with the strings snapped to the outer

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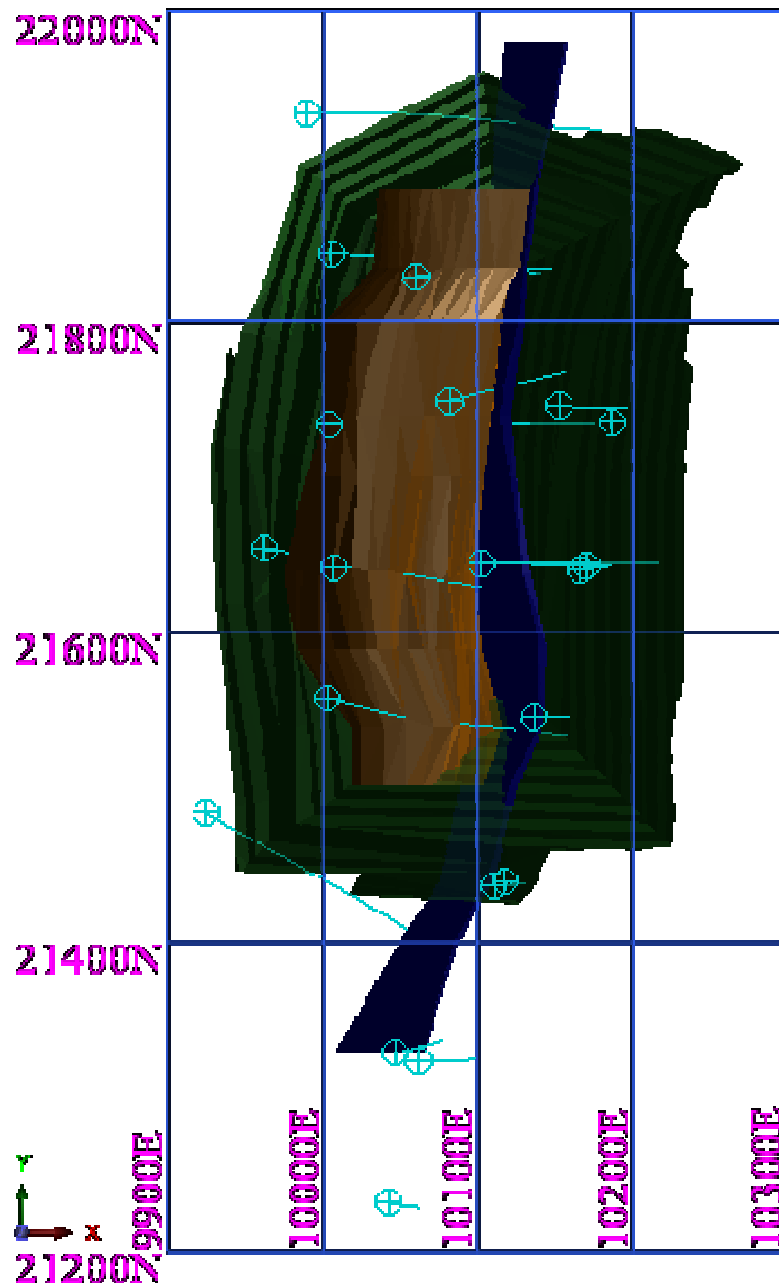
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limits of any pyrite mineralisation on the drillhole traces. The strings were then used to guide triangulation to produce solid shapes (as shown in Figure 1).

The pyritic section of the siltstone unit is a much thicker unit than the skarn dyke, although as stated in Reid's report, most of the drilling was sub-parallel to the down dip direction of the sedimentary unit. The current open pit design for the magnetite lode was used to guide what areas were interpreted for the siltstone (Figure 2). The original strings supplied by Reid were slightly modified to better match the drillhole data.

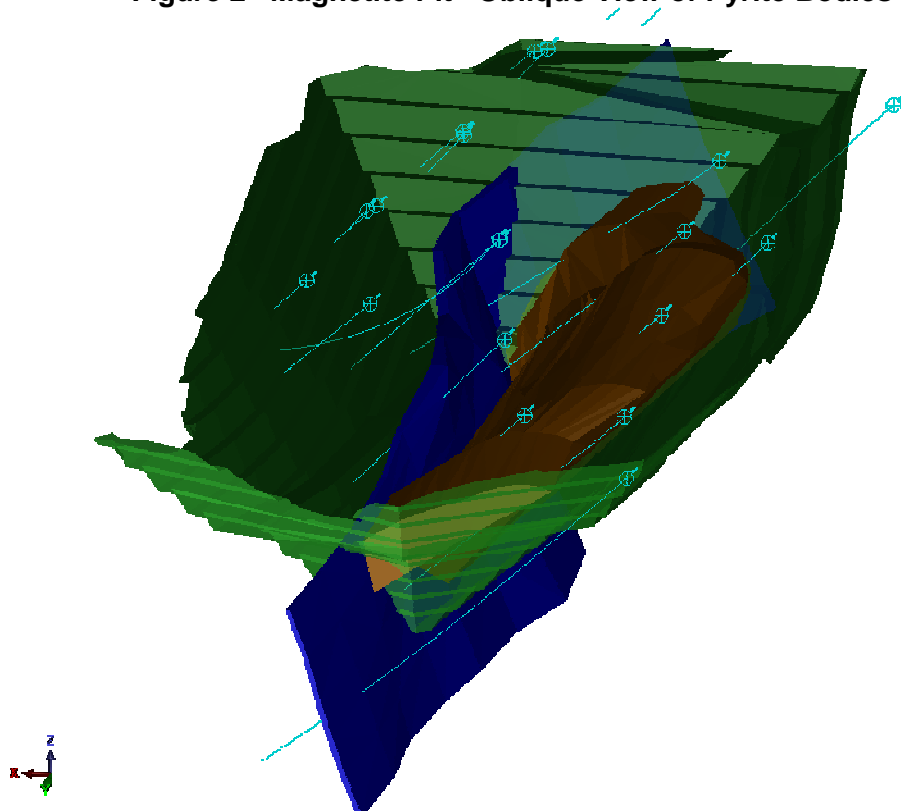
**Figure 1 Magnetite Pit Pyritic Units in Plan**



*(H&S local grid; blue = hangingwall skarn dyke, brown = siltstone unit; green = magnetite pit design; cyan = hole traces)*

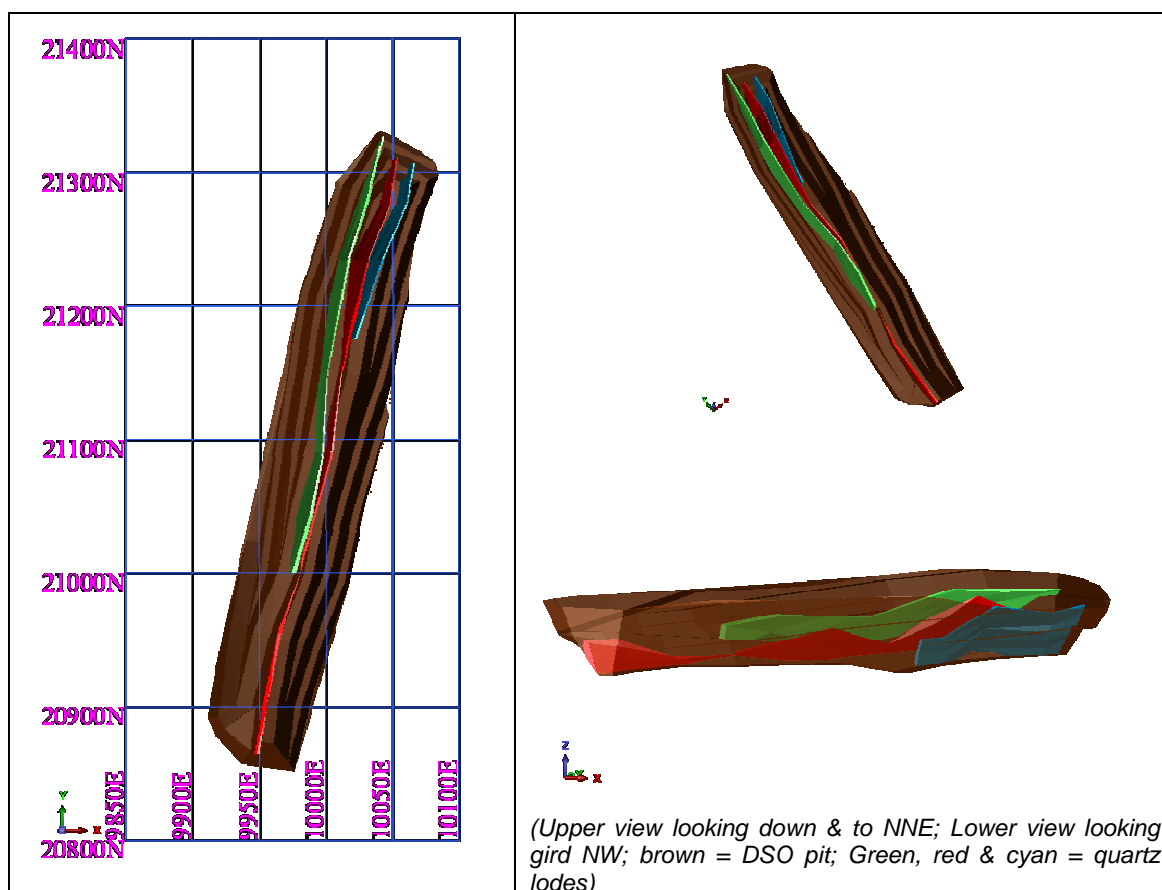
A more sophisticated interpretation based on Reid's original strings was completed for the hanging wall quartz veins in the DSO pit design. This resulted in the identification of three thin bodies steeply dipping to grid west (Figure 3).

**Figure 2 Magnetite Pit Oblique View of Pyrite Bodies**



(view looking down and to grid south southeast; H&S local grid; colours as for Figure 1)

**Figure 3 DSO Pit Plan & Oblique Views of Quartz Vein-Pyrite Bodies**



Unconstrained downhole 1m composites were generated for the pyrite percentage field.

Modelling used the Inverse Distance Squared technique on the unconstrained composite data. Details of the search ellipses used are included in Table 1. A minimum number of five data points and a maximum of 15 data points were required for each estimated block. The interpolation of block grades was constrained to the partial percent volume adjustment field for each pyrite type being >0.

**Table 1 Pyrite Model Search Ellipse Details**

Model	Rotation Angles			Anisotropy Ratios		Radius
	X	Y	Z	Major-semi	Major-minor	
Lode	10	0	78	1	5	100m
Siltstone	10	0	-45	1	3	100m

The modelled data was inserted into a newly created block model for both the magnetite and DSO pits with dimensions listed in Table 2. This block model is compatible with the current resource block model.

**Table 2 Pyrite Block Model Details**

Type	Y	X	Z
Minimum Coordinates	20010	9757.5	-305
Maximum Coordinates	22250	10252.5	115
User Block Size	20	5	10
Min. Block Size	20	5	10
Rotation	0	0	0

The estimates for each pyrite type from the magnetite pit are reported in Table 3 at a 0.5% pyrite cut off within the relevant wireframes with a volume adjustment for blocks partly within the wireframe and within the planned magnetite pit area.

**Table 3 Magnetite Pit Estimates of Pyrite Material**  
(0.5% pyrite cut off)

Lode	Volume (m <sup>3</sup> )	Py %
Siltstone	1,507,020	1.50
Skarn Lode	164,729	2.68
<b>Totals</b>	<b>1,671,749</b>	<b>1.64</b>

The difference in volume between the above figure and Reid's figure is not considered significant. The difference in the pyrite grade is due to the more sophisticated modelling method used for the above figures i.e. Inverse Distance Squared compared to a simple sectional polygonal.

The estimates for the pyrite type from the DSO pit are reported in Table 4 at a 0.5% pyrite cut off within the relevant wireframe with a volume adjustment for blocks partly within the wireframe and within the planned DSO pit area.

**Table 4 DSO Pit Estimates of Pyrite Material**  
(0.5% pyrite cut off)

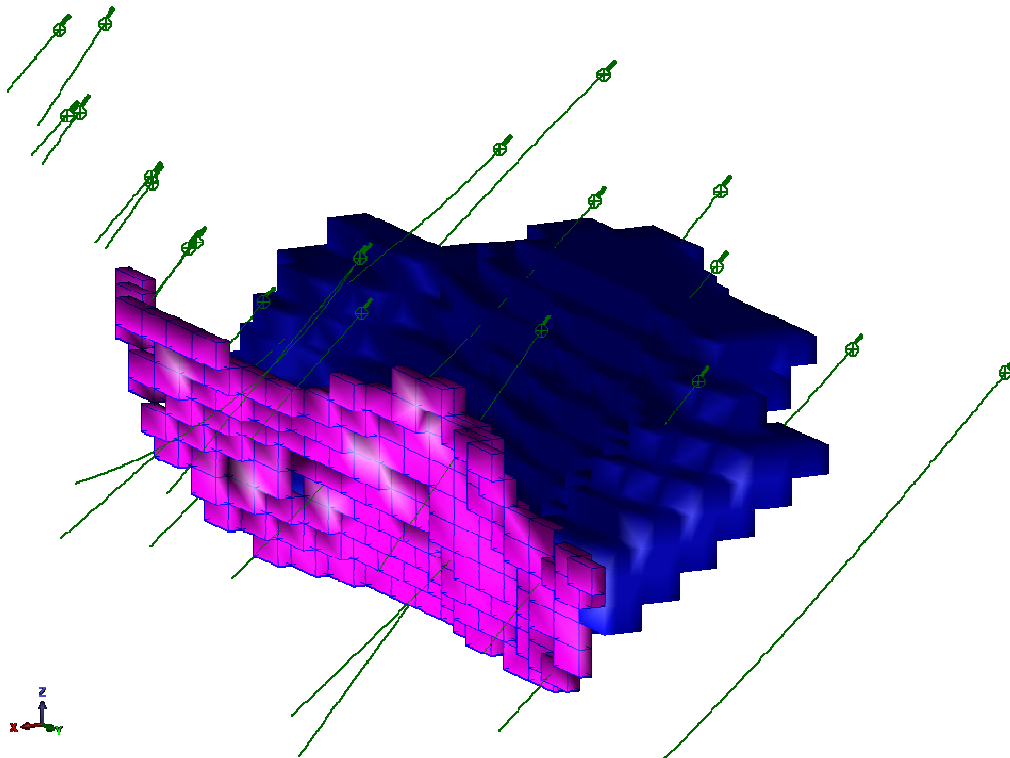
Lode	Volume (m <sup>3</sup> )	Py %
Quartz Vein	12,951	2.15
<b>Total</b>	<b>12,951</b>	<b>2.15</b>

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The above DSO figures are slightly lesser than the original figures reported by Reid. This is due to additional data being used and a more sophisticated modelling method including more tightly defined geological wireframes. Reid also used a simplified pit shape to constrain the resources whereas the current figure is based on the actual pit design shape.

An example of the pyrite type block distribution for the magnetite pit is included as Figure 4.

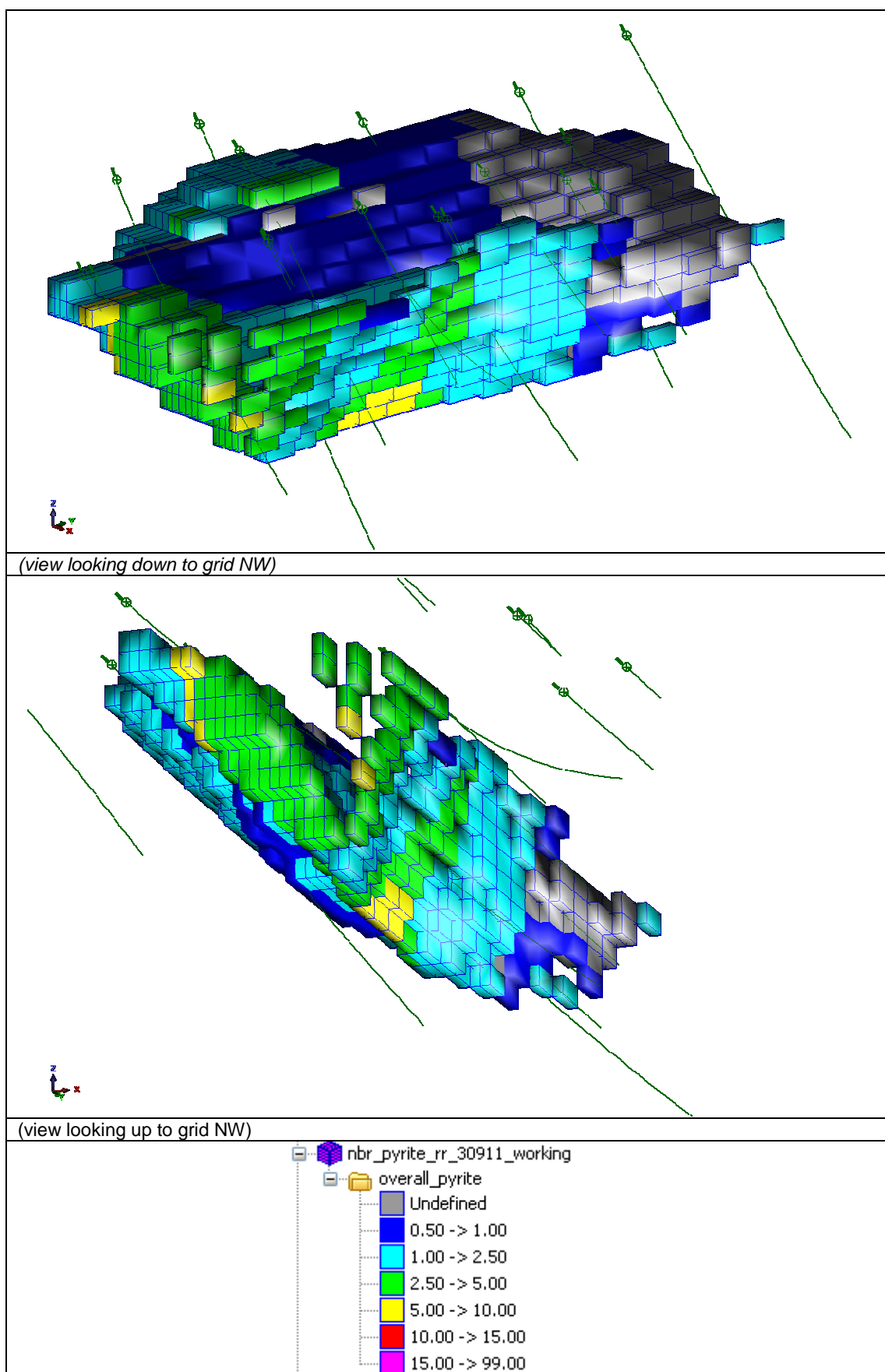
**Figure 4 Magnetite Pit Pyrite Type Block Distribution**



*(view looking down to grid SW; H&S local grid; purple = HW skarn lode; blue = siltstone unit)*

An example of the block grade distribution for pyrite is included as Figure 5. No diagrams are included for the pyrite block grade distribution in the DSO pit as the narrowness of the lodes in relation to the block size would create a misleading representation.

**Figure 5 Magnetite Pit Pyrite Block Grade Distribution**



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