Memorandum re South Henty Geological Model

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Introduction
The South Henty three dimensional model covers sections from52500NHMG to 48900N HMG of the Barrick tenements at 200m intervals. This area covers from the south of the Darwin South area through to the southeastern extremity of EL 28/2001. Data came from the computerized drill hole information, extracted from all the drill holes previously drilled in the area, together with surface geology compiled from a series of available fact maps. Structure was interpreted from aeromagnetics and previous structural studies of the area.

Structure
The major structures of the area have previously been identified as the Great Lyell Fault and the Henty and South Henty Faults. They are known to be steeply dipping at surface. From examination of the Mt Julia interpreted sections, it appears that the South Henty Fault goes from being vertical at the surface to dipping westward at depth. NC3 intersected sediments at depth in a flat lying fault which has been taken to be the Great Lyell Fault at depth. Projection of the Great Lyell Fault through to this flat lying structure yields a listric character to it. This was projected through to the rest of the sections. Although this listric nature to the faults fits nicely with the model of an extensional basin, it is not an essential to the rest of the sectional model that has been constructed.
Aeromagnetic interpretation suggested a series of northeast striking faults which were imposed onto the model. Failing other indications, these were taken to be vertical, in line with the bounding Great Lyell and South Henty Faults. There did not appear to be a great deal of movement on these structures, although they were all east side up and east side north. The presence of the structures proved to be an elegant solution to the apparent differences in width of the different geological units from section to section.
Some faults were taken from surface mapping and drill hole information, but on the whole the structural complexity this would have imposed in the model precluded their being included.

Geology
The geological interpretation focused on identifying the location of the intrusive sills and the basaltic units which were taken to be marker units for the stratigraphy as a whole. Without going back to all the original drill logs and in some cases to the core itself, it was difficult to identify lavas within the different units. Some drill hole data simply identified the different groups, while others had more detailed information. Consequently the identification of lavas within the Lynchford Member and the Central Volcanic Complex is a bit ordinary. There proved to be two significant magnetic units in the southern part of the area, the hornblende bearing sill and the Ctt unit (Mt Julia Member). In the northern part of the area, south of the mine, the magnetics proved to be more difficult to directly correlate with stratigraphy.

<u>The Sills</u>
There are at least two different intrusive phases evident in the area, an andesitic composition hornblende bearing phase and a more acid quartz-feldspar porphyry phase. Due to the nature of the computerized data it was difficult to sort out one phase from the other, so that both have been included in the model together. They lie together and have probably intruded through the same pathways. The hornblende porphyry appears to be the earlier phase, with the more acid phase on its flanks. Regarding the hornblende porphyry itself, it proved impossible to separate out any andesites other than the intrusive sills, so that the model contains no andesite units within the stratigraphy beyond the sills.

<u>The Basalt Breccias</u>
There are three basaltic units within the stratigraphy which are laterally continuous through the area. They proved to be significant marker units. In some cases they were only identifiable by their association with limestones, and in some areas they were actual basalt units.
The lowermost unit is the Spillway Basalt Breccia. This lies within the Central Volcanic Complex. It can be traced from south of the Lake Newton area and the Newton Dam Spillway through to the mine. Just south of Darwin South it is the basalt unit lying stratigraphically above the A Zone mineralisation.

It passes through the Lake Newton mineralized zone. The most western of the intrusive phases may be associated with this horizon in the southern part of the EL area.
The central unit is the Lower Howards Basalt Breccia. This lies between the Central Volcanic Complex and the Tyndall Group, and has been described in the past as the Henty-Comstock Horizon. This horizon has to a large extent been displaced in the south by the largest of the sills. There remains some of it at the uppermost boundary of the sill, and on the western edge. It appears to also underlie the south eastern edge of the sill. Carbonates and breccia within the sill have been interpreted to be entrained remnants of it. The sill, replacing this unit, overlies the Lake Newton mineralized zone.

The uppermost basalt breccia zone lies within the Lynchford Member of the Tyndall Group. It has been labeled the Upper Howards Basalt Breccia. Although it is laterally traceable to the north, it is most prominent within the southern half of the area. It is associated with the known mineralisation at Tyndall Creek. Further north it does not appear to be associated with mineralisation.

Central Volcanic Complex
Apart from the porphyries and the Spillway Basalt Breccia which have been assigned to this Group, the Central Volcanic Complex in the area appears to comprise mainly volcaniclastics. There are some lava units, but these seem to be most significant in the northern part of the area. Differentiation of the volcaniclastics from the volcaniclastic sediments of the Lynchford Member appears to have been difficult, as logging of holes in some areas may have confused one of these units for the other. The Lower Howards Basalt Breccia and the replacing sill have been taken to be the unit dividing the Central Volcanic Complex volcaniclastics from the Lynchford volcaniclastic sandstones.

Lynchford Member, Tyndall Group
This appears to be mainly volcaniclastic sediments, with subordinate quartz feldspar lava units within it, particularly in the north.

Mt Julia Member, Tyndall Group
This unit has been traceable by its magnetic signature. Although continuous in the south, it is broken and discontinuous in the northern part of the area.

Yolande River Sequence
This unit, comprising siltstone, sandstones and some conglomerates underlies the Mt Read Volcanics and occupies the western boundary of the modeled area. Due to lack of data it has been difficult to identify the exact nature of its contact with the overlying stratigraphy. It does appear to underlie the entire area. This needs confirmation from drill holes which have ended in sediments in the eastern part of the area, specifically NC3, and also NC2. Surface data from Pasminco shows a conformable contact between the Yolande Group sediment and the Central Volcanic Complex in the south west, but in the northern part of the area the relationship is more difficult to ascertain. This part of the model may be described as less than satisfactory, due to lack of data.

Alteration
Most of the alteration has not been included in the model, although the main mineralized zones in the Mt Julia area and the core of the Lake Newton alteration have been noted in the model by yellow colour along the appropriate drill holes. This patchy effort is a result of the fact that many of the drill holes do not have the alteration noted. Trolling of the original drill logs would give further information if this is considered warranted. What has been readily available has indicated a spatial correlation between mine style alteration and the Spillway Basalt Breccia horizon of the stratigraphy.

Conclusions
The model at this stage could tolerate some refinement, but is useable at this stage for target definition. If further work on the model is considered justified, it is recommended that drill logs be used to identify alteration, with the database be upgraded. Following this, targets could be better defined, and possible further ones identified. The next phase, stitching the model into the existing computer model should give a better understanding of whether this further step is justifiable.