Appendix D (addition to original report)

This appendix describes new CSAMT data collected in 2005.
It should be read as an extension of the original CSAMT report:

Copper Mines of Tasmania Pty Ltd
1M/95 Mt Lyell & EL52/94 Linda
Report on CSAMT Surveys
Muir and Morrison, May 2003

Introduction

Zonge Engineering & Research Organisation (Zonge) were contracted by CMT to collect an additional eight lines of CSAMT data during April-May 2005. These lines were in three areas;

Glen Lyell :	6000N GRL
	6250N GRL
	6600N GRL
Chamounix :	Line 1
	Line 2
	Line 3
Burbury Volcanics :	Line 1 (ultimately no data was collected for this line)
	Line 2

The locations of these lines are shown in Figure D1 to Figure D4.
Although planned, Burbury Line 1 ("baseline extension") was cancelled by CMT prior to any data being collected.

Zonge subsequently processed the raw field data for each line using "1D smooth-model inversion" to generate geophysical models of conductivity versus depth.

Transmitter locations and orientations were essentially the same as for the 2003 survey. These are shown in Figure 1 of the 2003 report. Glen Lyell and Chamounix lines used transmitter dipole "D" while the Burbury line used transmitter dipole "E".

Data

The field data have been modelled and the results are shown below as conductivity-depth cross-sections in Figure D5 to Figure D11 (see Appendix A for previous cross-sections).

Conductivity-depth slices summarise the "horizontal" conductivity variation for a specific range of depths below the topographic surface. These slices are shown in Figure D12 to Figure D33 (see Appendix B for previous depth slices). Note that for Chamounix there is insufficient data to prepare depth slices for ranges 500m-700m and 700m-900m.

Interpretation

Glen Lyell : These three lines are SW extensions to lines read in earlier surveys. While there are conductivity variations seen in the new data, these are generally from surficial sources and on an absolute scale the conductivities are very low. No anomalies are worthy of followup.

Chamounix : The new CSAMT data confirms and extends the anomaly trend that is evident in the previous surveys. The form of the anomaly in cross-section is somewhat variable from line to line, with two sections suggesting conductive material at depths of a few hundred metres (see Figures A36, D9). This suggestion of deep conductive material seems more likely to be due to noisy data rather than a genuinely deep source; Figure 9D shows a blank area in the bottom half of the cross-section which represents deeper noisy data having been rejected during the modelling. The variability seen between cross-sections in the first 200m below surface may indicate real variability in the conductive source.

The route of an old railway lies close and parallel to this CSAMT anomaly trend, however the data is not consistent with a surficial conductor as the source. If there was a response a from a narrow surficial source then the CSAMT data would be expected to show an anomaly with contours open at the surface, and most likely be restricted to only a single reading on the line. The only known trace of the railway today is a causeway constructed of ballast comprising glacial(?) material on the northern side of the road opposite drillhole 98CZD3. This material is very limited in extent compared to the CSAMT anomaly and would seem unlikely to have any significant CSAMT response. All of these factors argue against the railway being the CSAMT source. The spatial relationship between CSAMT anomaly and the railway is almost certainly coincidental.

It is enlightening to compare the line 6250N CSAMT conductivity cross-section (Figure A35) with that from the dipole-dipole survey (Figures A38 and B37) collected on the same line. The dipole-dipole data is of higher resolution and clearly shows a 200m-wide conductive zone between depths of about 30-40m down to 90-110m. The core of the CSAMT anomaly (the 64 mS/m closed contour) covers a depth range of about 50m to 120m and this will define the centre of the CSAMT source. The apparent continuation of the CSAMT conductor below this centre is largely an artefact of the CSAMT method; strong depth-limited sources tend to produce effects that bias data deeper in the section producing a kind of ghost or shadow effect. The CSAMT depth slice for 50m-100m (Figure D21) also shows a conductive zone of about the same width and position as the dipole-dipole. The CSAMT and dipole-dipole resistivity models are therefore in good agreement with each other and indicate that the anomaly source is the region between about 50m and 100m below surface.

Along strike the CSAMT conductive zone appears to extend deepest on Line 2, approximately at the point where it crosses the creek (Figures D9 and D25). However because of noisy readings in the deeper data around this station it is not clear how reliable the suggestion is of a deeper conductor extent. If noise is still adversely affecting the modelled results for the middle depths at these stations then the assumption of a deeper conductor extent on Line 2 may not be correct, and the conductive source for Line 2 may in fact be broadly similar to that on the other lines.

The most likely explanation for this CSAMT anomaly would appear to be that it is due some structural feature, not to a response from higher conductivity due to mineralisation. Two possible scenarios are preferential weathering along a fracture zone or increased porosity (caverns?) in the Gordon Limestone. If additional drilling is contemplated then a suggested approach is for a fence of three holes stepping out at 50m to the SW from the Chamounix Line 2 anomaly (coordinate 10075 on Figure D25). This approach would test both what could be the largest depth extent of the conductor along-strike, as well as providing a profile of any systematic changes in structure or weathering depth orthogonal to strike.

Burbury : A good conductive anomaly occurs at 10800E on Line 2. This is the first discrete CSAMT anomaly found in the limited data collected over the Burbury area. It is recommended that a geological assessment of the anomaly location be made to help determine the significance of this conductor. A conductive lithological unit such as a black shale cannot be discounted as a possible source, however the CSAMT data alone does not provide evidence for or against this particular possibility - all that the CSAMT has detected is "something" conductive.

Phil Muir
24/7/2005

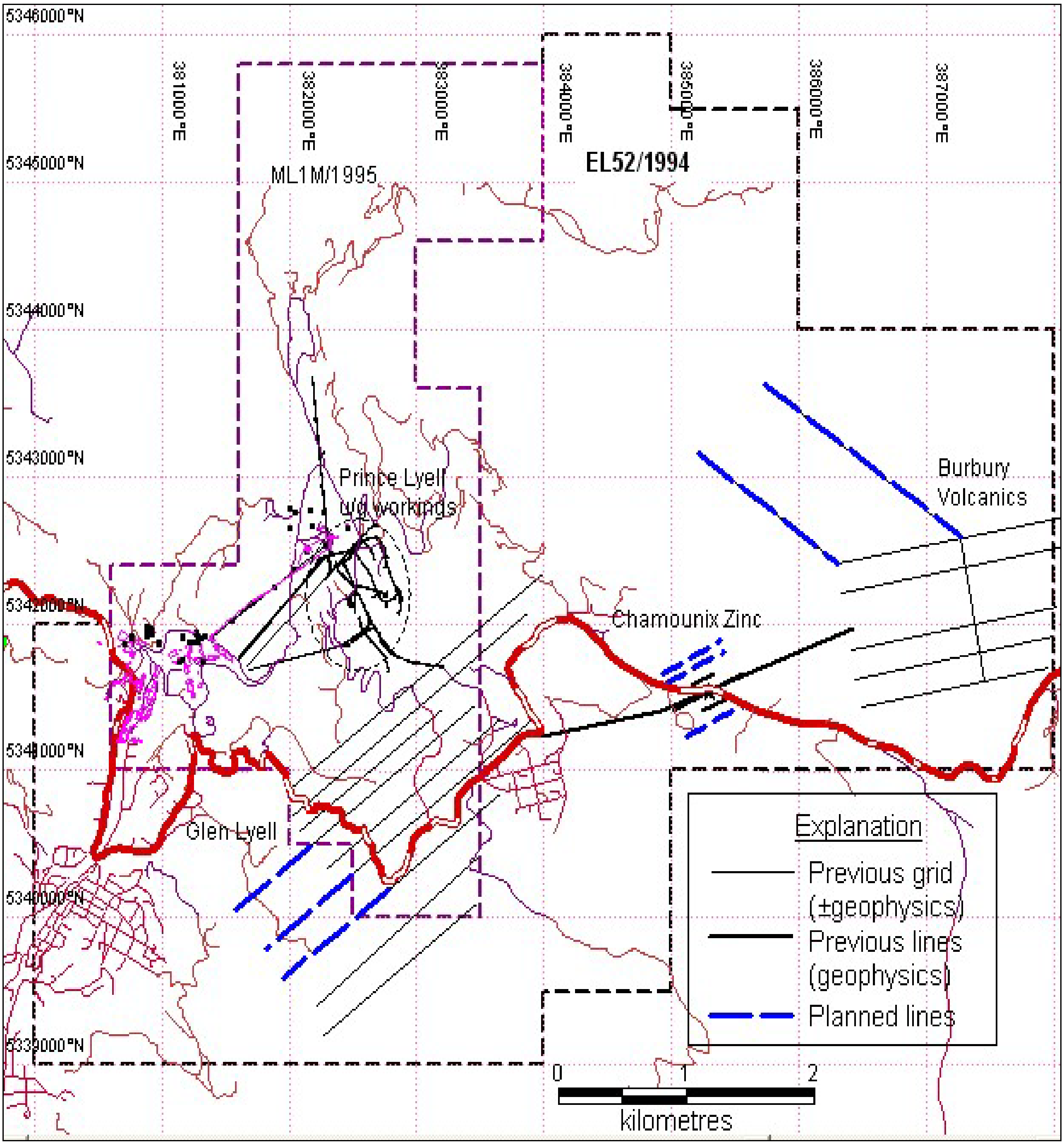

Figure D1

EL52/1994 –Tenement Location Map
showing Mining Lease and Prospect Locations
with grid lines and planned areas of exploration focus

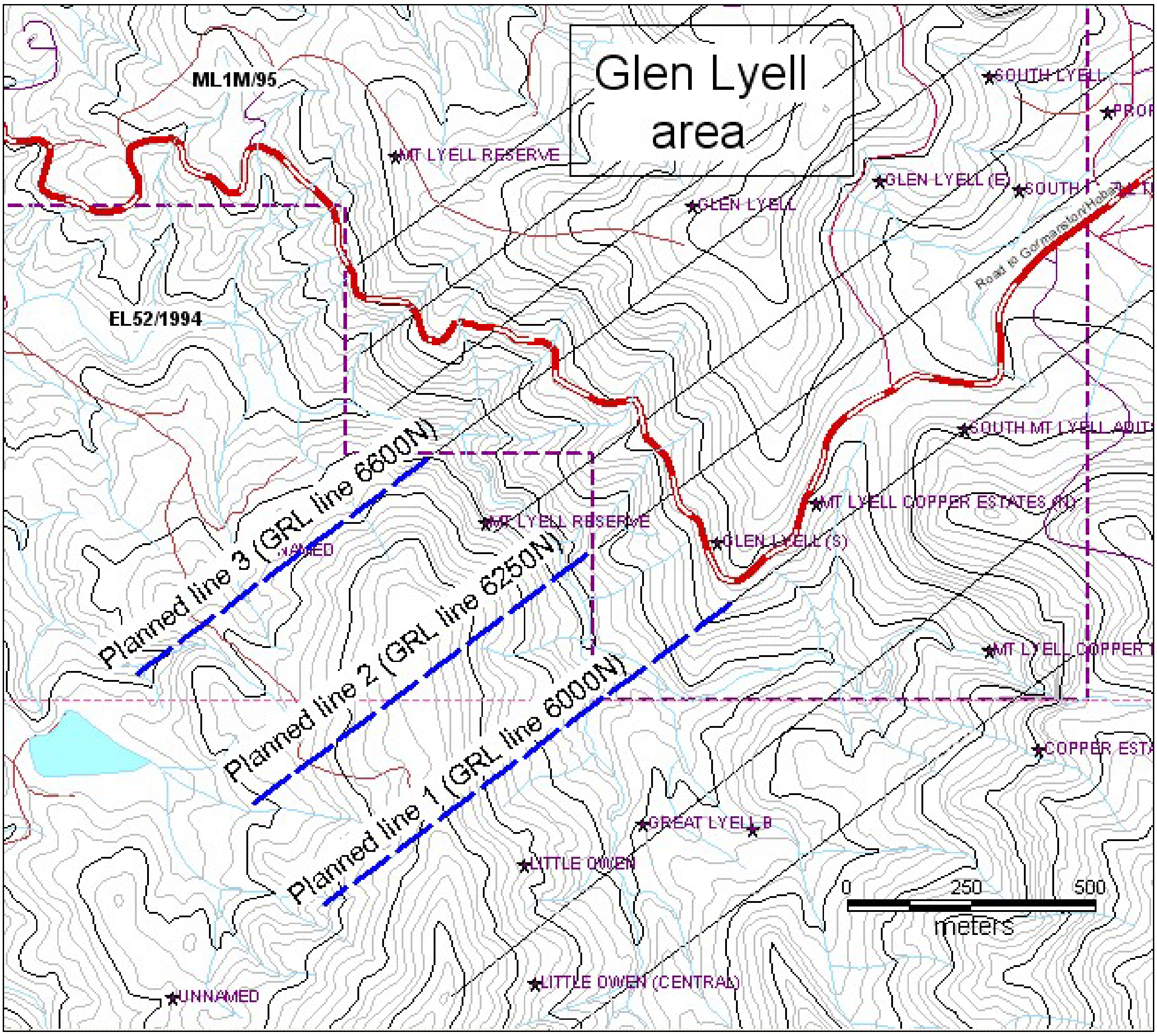

Figure D2

Glen Lyell Area
showing historical workings and lines planned for ground geophysics.
(planned lines are shown as dashed blue and are extensions of previous work)

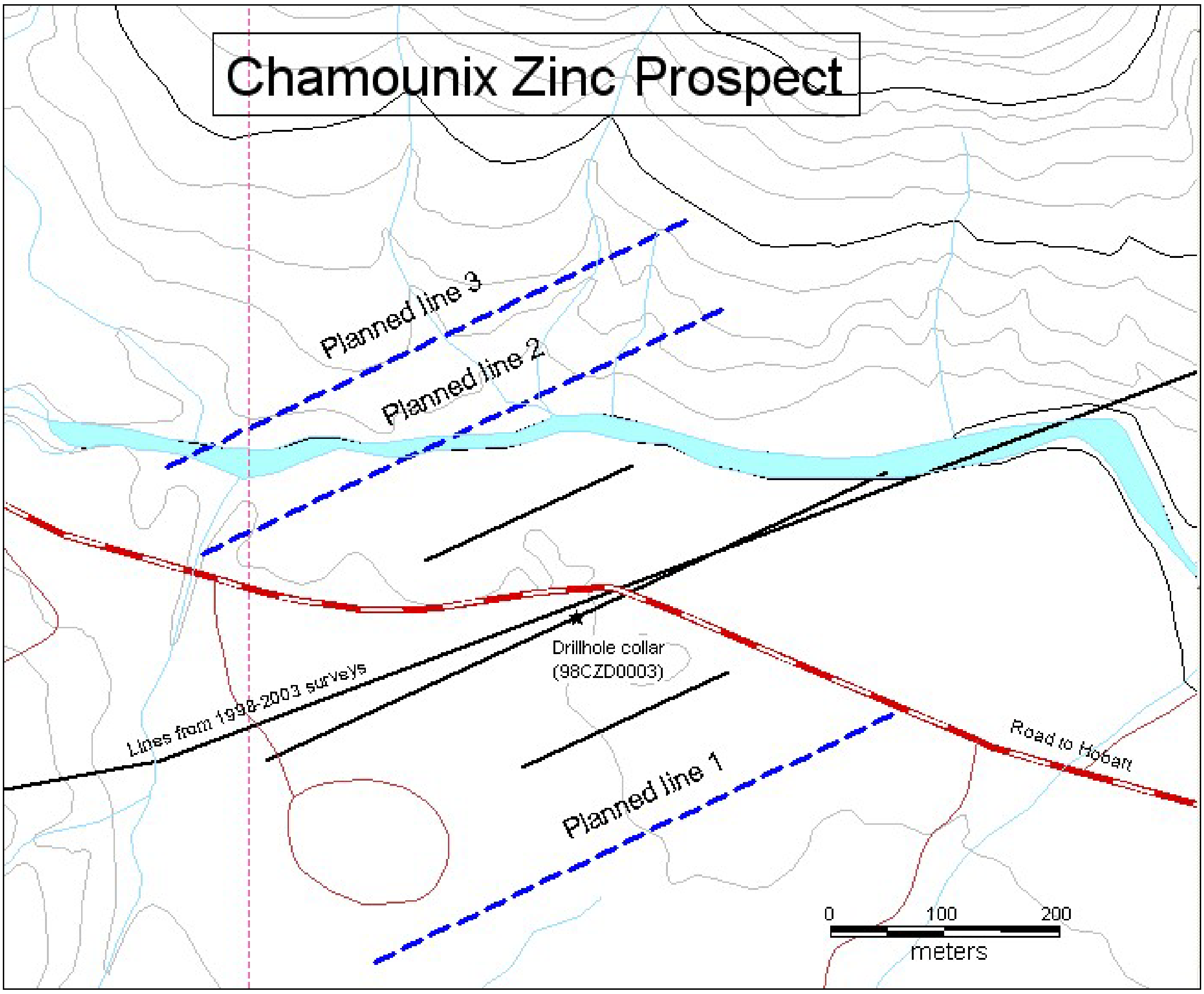

Figure D3

Chamounix Zinc Prospect
showing lines planned for ground geophysics work and lines from previous work.
(planned lines are shown as dashed blue)

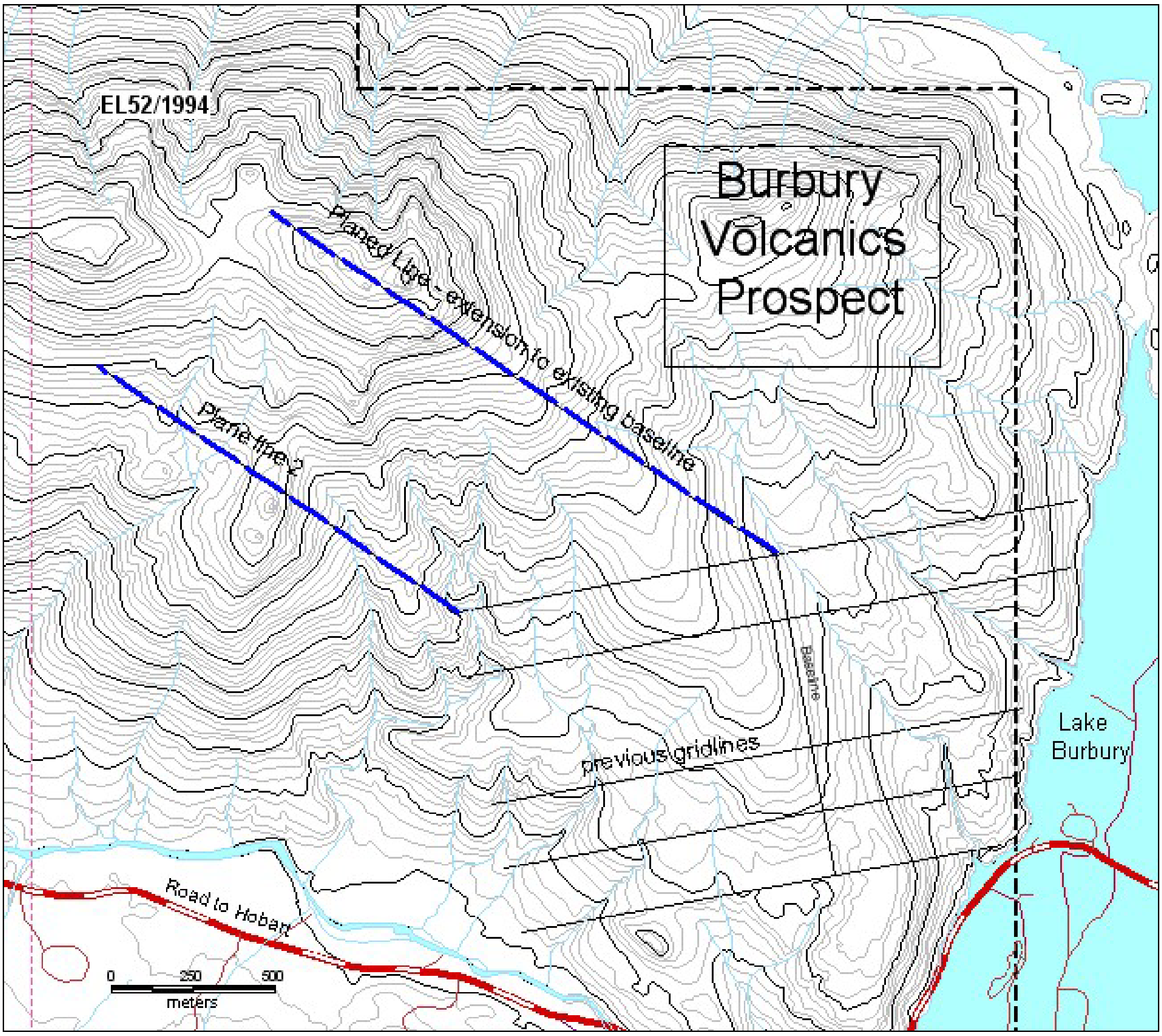

Figure D4

Burbury Volcanics Prospect
showing planned new lines for geophysical work and grid used in earlier exploration
(planned lines are shown as dashed blue)

Figure D5

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Figure D33

the originals of these figures were written direct to PDF format
so are not available in this Word document.