Date: yyyy
From: xxx
To: David Laughton
Subject: Bidding problem

David, Please give me your thoughts on this.
We have been asked to determine a reservation bid by tomorrow.

Bidding problem

We are bidding on the rights to develop a copper deposit in Peru.

The bidding process is unusual for base metals. The main elements of the process are:

1. The bidders are to submit a "Cash Price", which is to be paid immediately to the governments, and an "Investment Commitment" which is the figure in real terms the bidder is nominating to spend over the next five years to develop the project. The rights will be given to bidder with the highest Order of Merit where

Order of Merit = Cash Price + 0.3 x Investment Commitment

A minimum cash price has been set at $17.5 million and a minimum Investment Commitment at $135 million.

2. If the winning bidder spends less than the nominated Investment Commitment in five years, there is a penalty, which in real terms, is

30% x (Investment Commitment - actual investment)

3. The price index they are using to define real cash is in accord with our inflation projections.

4. The winning bidder has the option to walk away after 2 years, returning the concessions and all studies to the government. (The company has only a 10 day period when it can exercise this option.)

All the rest of the data we give will be in real terms.

The property has been quite extensively drilled, and the grade of 40lb of Cu per tonne of ore is well determined. However there is still considerable uncertainty regarding the ore reserve size.

Further drilling and a feasibility study should resolve the reserve uncertainty.
This work will take 2 years and cost $20 million.

A number of mines have been designed on the basis of different reserve sizes.

We have found that the major differences in optimal mine design can be summarised by choice of the Cu production capacity and that the development costs are roughly linear in this capacity. The fixed development cost is $400 million and the variable development cost of $3.2 per lb per year. The development cost profile is roughly flat over the 3 year development time. The fixed operating costs are 2% of the development cost and the variable operating costs are $0.30 per lb. Decommissioning will cost 10% of the development costs.

Our current price forecast for Cu is $1.00 per lb flat real over the relevant time horizon and our best estimates of the total production are 5200, 7200 and 9200 million lbs with equal probability.

Our current WACC is 10% real.