Executive Summary

This summary provides a result analysis and evaluation of the optimal strategy of a bid plan after simplification. First, we analyse the application in three scenarios, and then analyse the advantages (including practicability and robustness) and risk of application. Finally, we provide some constructive suggestions.

Results of data analysis show that our bid plan can help company gain maximum profit in low risk and low computational cost. We analysed our bids strategy with three scenarios. From scenario 1 to 3, the total amount of glass we can collected for the whole year is increasing steadily. Meanwhile, the corresponding profit is growing steadily, too, which is reasonable. The profit and cost we calculated with our bid strategy can be seen below:

Results summary			Unit: million pound
	Scenario 1	Scenario 2	Scenario 3
Revenues	117.44	130.95	144.56
Transportation costs (areas to facilities)	13.50	15.28	16.76
Transportation costs (facilities to factories)	6.65	7.92	10.37
Processing costs	41.67	46.49	51.62
Profits	55.62	61.26	65.81

Advantages

- The bids strategy will match the same facilities to the same factories, despite the uncertainty of the overall amount of raw glass obtained each year.
- After simplifying the model, the time spent on resolving problem in software is reduced to around 40 minutes, which is acceptable. When the bid changes, it is possible to run multiple bidding rounds per day.
- After applying our scheme to 3 scenarios respectively, we can get an optimal bid plan, which can be applied in different scenarios well (As the amount of raw glass varies, our scheme will keep the same in reality).
- Our scheme is elastic enough and allows a certain degree of deviation, because our solution of the amount of different cullet each factory receives will not deviate from their expected demand too much.

Risk

- When the amount of raw glass obtained in one year is less than our expectations, we may face risks that cannot be able to meet the needs of two facilities.

Suggestions

- Reduce the collection frequency in collection areas where can only provide raw glass less than 25 tons.
- Negotiate with facilities and pay them to keep certain amount of surplus raw glass until next month.
- Negotiate with factories to provide them more cullet in a lower price for the surplus.

To sum up, our scheme is applicable after reasonable simplification.