ENGINUITY TUTORIAL

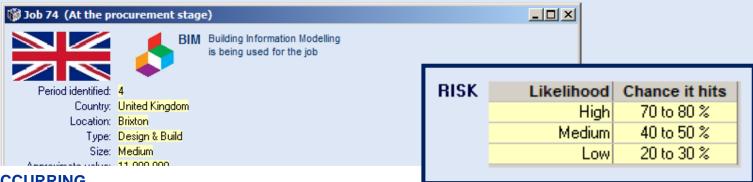




No construction project is risk free, and when a job is identified the estimators make an assessment of the potential risks that could arise on a job, which are stored in a **risk register**.

We will take a closer look at the features of each risk.

Risk description	Likelihood occurs	Impact cost	Reduction in cost if BIM used	labour
Archaeological find	Low	175,000	No	10.6 %
Personnel issues	High	51,000	No	2.6 %
Construction defects	Medium	67,000	Yes	7.5 %
Structural defects	Medium	123,000	Yes	2.2 %



LIKELIHOOD OF OCCURRING

The likelihood of the risk occurring, or level of risk, is classified as either High, Medium or Low.

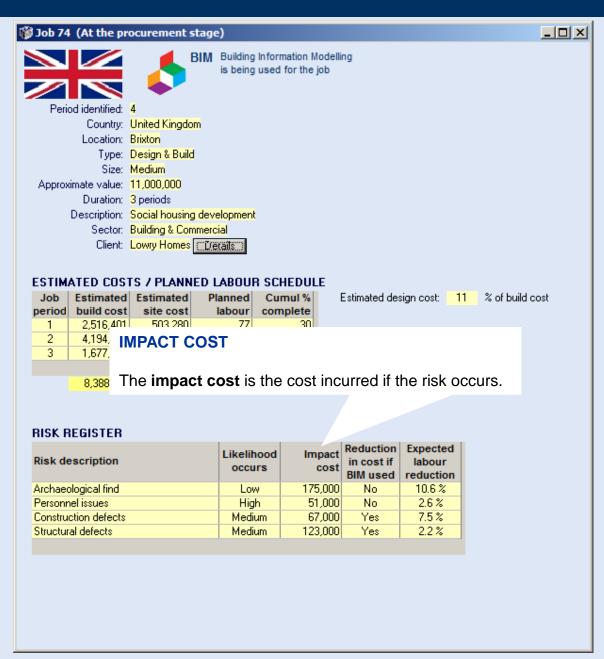
The % chance of each level happening is defined in the **Industry parameters**.

If the risks occur they **only occur once** during the planned duration of the contract.

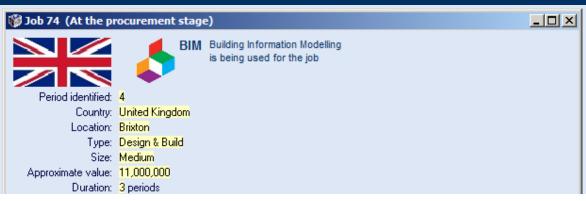
KEY POINTS

If a job is completed early there is a possibility of avoiding risks that may occur towards the end of the job.

Risk description	Likelihood occurs	Impact cost	Reduction in cost if BIM used	labour
Archaeological find	Low	175,000	No	10.6%
Personnel issues	High	51,000		2.6 %
Construction defects	Medium	67,000	Yes	7.5 %
Structural defects	Medium	123,000	Yes	2.2 %







BIM MODEL AFFECTS

If the job is using BIM (Building Information Modelling), there may be an opportunity to reduce the impact cost if the risk occurs.

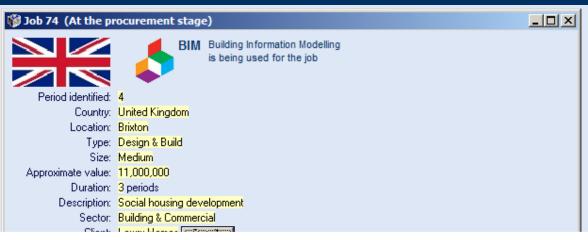
For example, if there is the risk of structural defects, these may be identified in the BIM model, and the threat mitigated.

KEY POINTS

The cost reductions are graded depending upon the particular risk, and the reductions to date across all jobs can be found in the Main menu/Assessing performance/Job performance.

Risk description	Likelihood occurs	Impact cost	Reduction in cost if BIM used	labour
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EXPECTED LABOUR REDUCTION

If a job is won, and being progressed, any risk that strikes can **delay the job**, resulting in a % reduction in the effectiveness of the labour on site in the period when the risk strikes.

Action can be taken to deal with potential job delays by adjusting the labour allocated to site when the job is being progressed, and is discussed in a separate topic.



The nature of the potential risks, particularly the likelihood and impact cost, may be some of the deciding factors in determining whether or not the company bids for a job, along with factors such as the job sector, location, size, client etc.

Risk description	Likelihood	Impact cost	Reduction in cost if BIM used	Expected labour reduction
Archaeological find	Low	175,000	No	10.6 %
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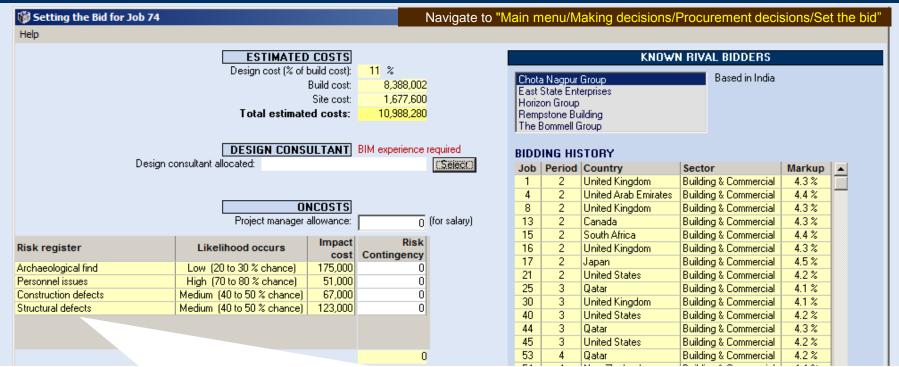
If the decision is made to bid for the job, what mitigating actions can be taken to deal with each risk, and the potential cost incurred?

The action taken depends upon each risk element.

RISK REGISTER

Likelihood occurs	Impact cost	Reduction in cost if BIM used	Expected labour reduction
Low	175,000	No	10.6 %
High	51,000	No	2.6 %
Medium	67,000	Yes	7.5 %
Medium	123,000	Yes	2.2 %
	Low High Medium	occurs cost Low 175,000 High 51,000 Medium 67,000	occurs cost in cost if BIM used Low 175,000 No High 51,000 No Medium 67,000 Yes





LIKELIHOOD AND IMPACT COST

For each risk in the risk register the bid itself contains a **contingency** for the likelihood of the risk occurring, and the potential impact cost.

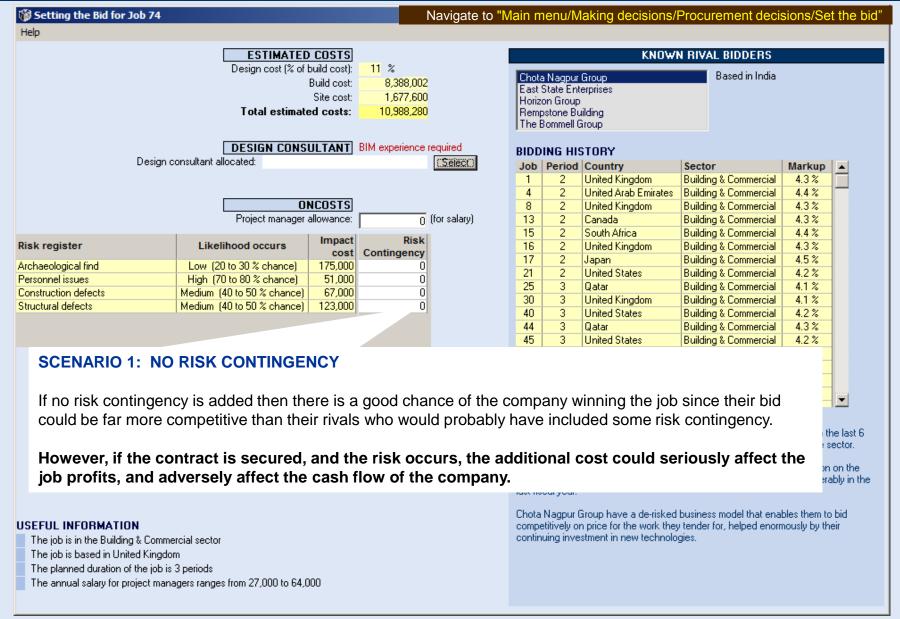
The company are bidding for a job that has a risk register consisting of 4 potential risks.

One of the identified risks is 'Structural defects', which is classified as having a **Medium** likelihood of occurring, and this implies a 40-50% chance the risk will occur **at some point** during the progressing of the job.

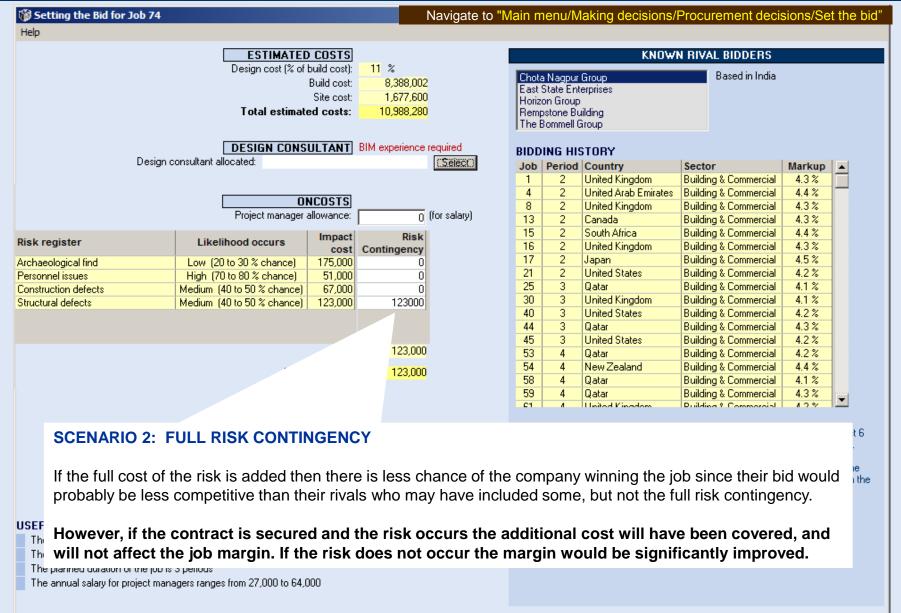
If the risk strikes there will be an **impact cost** of 123,000.

There are 3 possible scenarios for determining the risk contingency, and we will investigate each one in turn.

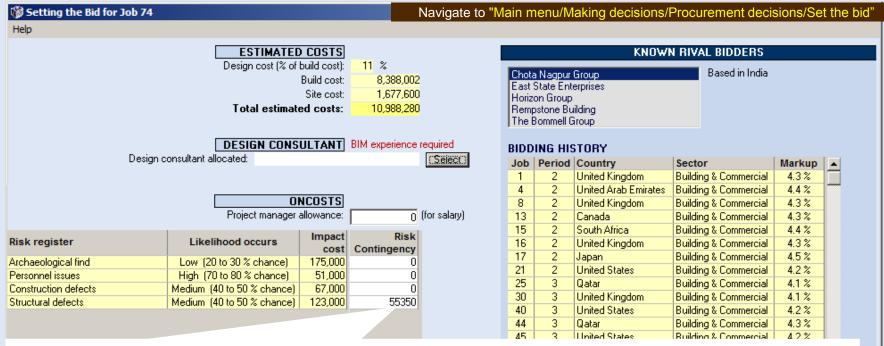












SCENARIO 3: 'SENSIBLE' RISK CONTINGENCY

If a sensible level of contingency is added the bid will still be competitive, and the company have partly covered themselves in case the risk occurs.

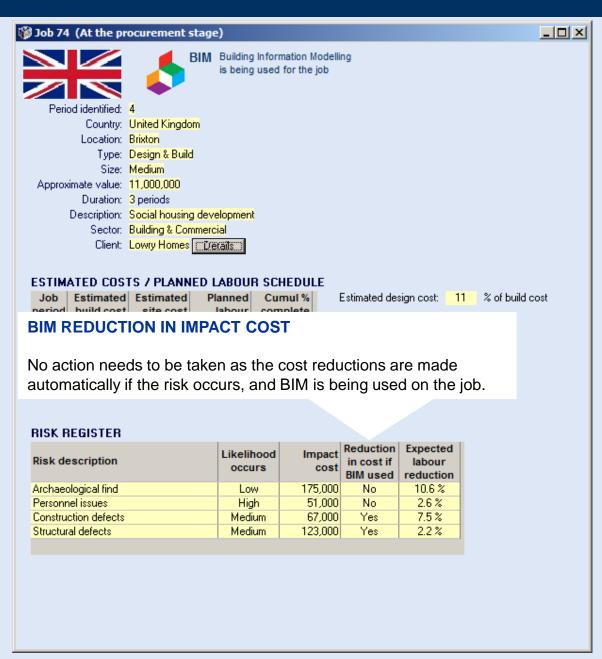
Since there is a 40-50% chance of the risk occurring, based upon probability it is reasonable to cover 45% of the risk cost, or 55,350.

If the risk occurs, the company has to find the other 55% of the risk cost, or 67,650, which eats into the margin. If the risk does not occur then the 55,350 is additional margin.

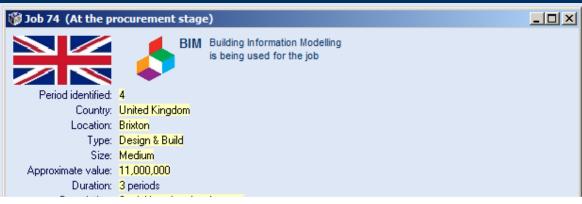
The job is based in United Kingdom

The planned duration of the job is 3 periods

The annual salary for project managers ranges from 27,000 to 64,000







MITIGATING ACTIONS TO REDUCE RISK COSTS

As we have seen, **setting 'sensible' levels** of risk contingency in a bid can keep a bid competitive in relation to rival bids, and cover the company for a proportion of the risk cost if a risk occurs.

In addition, if a job is secured and being progressed, the impact costs of any risks incurred can be reduced by taking a number of **mitigating actions**.

We will examine possible mitigating actions further.

Risk description	Likelihood occurs	Impact cost	Reduction in cost if BIM used	Expected labour reduction
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Investment Details



THE JT FLOWER PARTNERSHIP

Desc: Management consultants

Profile: The JT Flower Partnership was established over 30 years ago in the UK by two friends, John Morton and Thomas White, and since its inception the company have built up an enviable global reputation for providing specialist risk management solutions to contractors in the building and commercial sector of the construction industry, and they have saved their clients millions of pounds in the process.

The company have just relocated their head office to Westminster in London, and are also in the process of establishing offices in Toronto and Johannesburg to meet their continued expansion, and they have invested heavily in the latest digital technologies to keep at the forefront of their industry.

PERFORMANCE HISTORY

PERIOD RETURNS

		Company n		
Period	% return to investors	Amount invested	Investment return	Information for investors
1	2.7 %	0	0	Nothing to report
2	2.5 %	0	0	Nothing to report
3	2.8 %	0	0	Nothing to report
4	2.5 %	0	0	Nothing to report
5	2.6 %	100,000	2,600	Nothing to report
6	2.5 %	202,600	5,065	Nothing to report
7	2.3 %	207,665		Nothing to report
8	2.2 %	212,441	4,674	Nothing to report

BENEFITS - REDUCTION IN JOB COSTS

	Build cost	Risk cost	% of total
Industrial	0	0	0%
Building & Commercial	0	80,359	100 %
Transport	0	0	0%
Energy	0	0	0%
Water & Sewage	0	0	0%
	0	80,359	

TARGETED INVESTMENTS

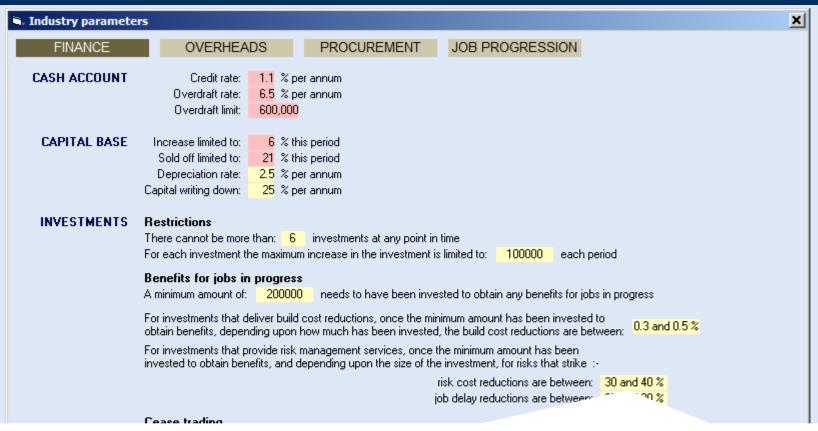
Target investments on the Financial Decisions Screen into risk management consultants to the construction industry can reduce any risk costs incurred.

The profile of the **JT Flower Partnership** shows that they appear to be an ideal company to invest in for reducing risk costs on building and commercial contracts, and to date risk costs have been reduced by over 80,000.

KEY POINTS

Although there are a number of risk management companies, many management consultants do not specialise in this area, and would not reduce risk costs on job s undertaken. The clues always lie in the investment profile.





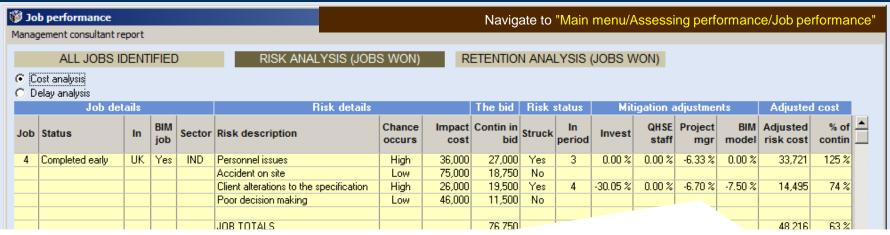
The **Industry parameters** show the risk cost reductions that can be achieved if investments are targeted effectively.

KEY POINTS

If the company are already investing in an appropriate risk consultant e.g., that serves the sector of a job being bid for, then the risk contingency in the bid may be reduced below the 'sensible' level. This would make the chances of securing the job even better, in the knowledge that should any of the job risks strike, they will be reduced by the investment made.

Can vary each period





As well as targeted investments, risk costs incurred can be reduced by employing a **good project manager**, who will be able to identify and address the potential effects of the risk.

Conversely, risk costs may be increased if the project manager is inadequate, or if the QHSE Department is understaffed.

In addition, where BIM (Building Information Modelling) has been used on a job, some risk costs may be reducing by using the BIM model, but this will not apply to all risks.

The Risk analysis for all jobs won and progressed displays a detailed risk analysis for all jobs progressed.

					JOB TOTALS			108,400							54,155	50%
					Specification issues need resolving	Medium	98,000	44,100	Yes	6	-30.04 %	0.00 %	-4.70 %	-10.00 %	54,155	123 %
					Structural defects	Medium	89,000	40,050	No							
9	Completed early	US	Yes	B&C	Unable to work at nightime	Low	97,000	24,250	No							
					JOB TOTALS			64,100							42,918	67 %
					Site access issues	Low	74,000	18,500	No							