

# NORTH STAFFORDSHIRE LOCAL AIR QUALITY PLAN

UNAPPROVED OUTLINE BUSINESS CASE

APPENDIX 17 - Quantified Risk Assessment - Preferred  
Option



# BENTLEY

PROJECT MANAGEMENT



## QUANTITATIVE RISK ASSESSMENT REPORT

Traffic Management Scheme



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Appendices

Appendix A: Qualitative Risk Register

Quantitative Data

Quantitative Output

## 1. Executive Summary

- 1.1 A quantitative risk assessment of cost was undertaken by the delivery team, facilitated by Bentley Project Management.
- 1.2 At this early stage in the project it would be beneficial to use the 85<sup>th</sup> Percentile. This would result in a risk allowance of £1,060,000.
- 1.3 It is recommended that the team update the risk register on a regular basis.
- 1.4 The QRA should be re-run when more detail is known.

## 2. Introduction

- 2.1 Bentley Project Management were commissioned to undertake a quantitative assessment of cost risks for the Traffic Management Scheme in Stoke-on-Trent, Newcastle-under-Lyme, and Staffordshire. The project is at a pre-planning stage and is in the process of submitting the outline business case.
- 2.2 The project is looking at various traffic management schemes in parts of Stoke-on-Trent, Newcastle-under-Lyme, and Staffordshire. These include bus gates, bus retro-fitting, and RTPI Facilities. It is intended that the Traffic Management Scheme will reduce air pollution within the areas of Stoke-on-Trent, Newcastle-under-Lyme, and Staffordshire where there is an illegal level.
- 2.3 Stoke-on-Trent City Council, Newcastle-under-Lyme Borough Council, and Staffordshire County Council are working together to bring the Traffic Management Scheme into force.

## 3. Objectives

- 3.1 The objective of the commission was to produce a qualitative risk register and quantitative cost risk assessment for the scheme.

QRA should

- Support the business plan;
- Be integrated with planning and cost management processes;
- Take account of both uncertainty and risk;
- Used to inform project affordability;
- Be integrated with risk management processes;
- Be reviewed by the project team on a regular basis.

## 4. QRA Methodology

- 4.1 Inputs into the QRA model are gained through identifying risk and uncertainties at risk workshops.
- 4.2 Probability of occurrence is modelled using Binomial distribution. Cost impacts are modelled depending on the nature of each risk, with highly uncertain risks modelled by Triangular distributions, whilst highly disruptive risks modelled by Pert distribution. Cost uncertainties should be modelled by Triangular distribution only.
- 4.3 The cost risk exposure should be modelled and analysed using Monte Carlo modelling technique, to provide a range of potential outcomes. The number of iterations (e.g.10,000) will be selected with reference to the number of inputs being modelled and hence the number necessary to reach a stable result.
- 4.4 The data for the risk register was collected with the project team in three risk workshops held in February 2020.

## 5. Systems and Tools

- 5.1 The QRA was produced using bespoke, Monte Carlo software, developed by Bentley Project Management.

- 5.2 Bentley Project Management facilitated three workshops. The first workshop was a group exercise to produce a qualitative risk register. The second workshop reviewed actions and agreed mitigations. The third workshop agreed the maximum, minimum and most likely cost for each risk.
- 5.3 Following the workshop, the data was reviewed by Bentley Project Management and the model was run to ensure that it produced a stable result.
- 5.4 The qualitative risk register and data was then reviewed by Stoke-on-Trent City Council, Newcastle-under-Lyme Borough Council, and Staffordshire County Council.
- 5.5 Following the feedback process, the model was run again by Bentley Project Management.

## 6. Results

6.1 The QRA results are as follows:

Percentile	Risk Allowance
50%	£880,000
85%	£1,060,000
90%	£1,090,000
99%	£1,240,000

	Risk Allowance
Mean	£823,643
Median	£890,000
Mode	£910,000
Iterations	10,000

The Bentley Project Management Quantitative Risk Assessment Tool

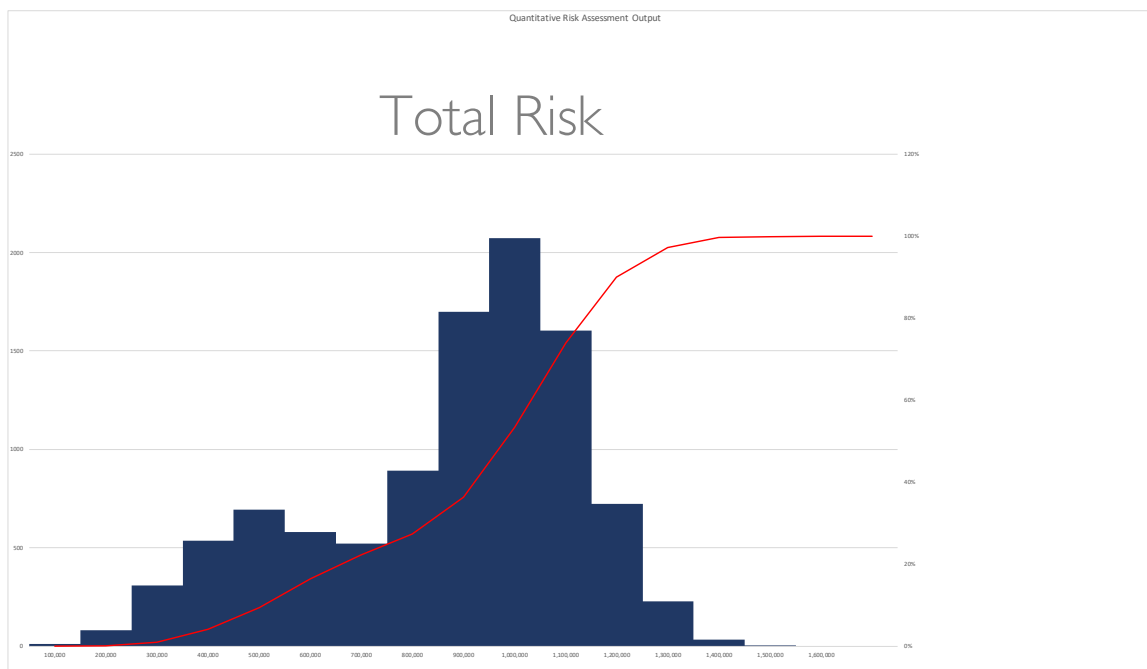
Project Title: Traffic Management Scheme | Document Owner: M Morrell | Update: 22 April 2020

Results

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90%	£1,090,000
99%	£1,240,000



	Risk Allowance
Mean	£823,643
Median	£890,000
Mode	£910,000
Iterations	10,000





6.2 At this early stage in the project it would be beneficial to use the 85<sup>th</sup> Percentile. This would result in a risk allowance of £1,060,000.

6.3 The top risk identified on the project are:

Risk ID	Risk Title	Risk. There is a risk that..	Mitigated Probability	Mitigated Impact	Mitigated Risk	Status
I.009	HE Network	HE insist on having network upgrades	3	3	9	Open
I.032	Coronavirus	Design build and procurement risk due to Coronavirus	3	3	9	Open
I.006	Public acceptance	Public / businesses do not accept proposal for bus gates	3	2	6	Open
I.012	Data protection	Data protection / GDPR issues arise	2	3	6	Open
I.013	Utility costs	Utility costs are higher than expected due to timescales available to do site investigations and estimate costs	2	3	6	Open
I.014	Terms and Conditions	Terms and Conditions and back-office agreements take longer to resolve than programmed	2	3	6	Open
I.015	Camera interface software	Camera interface software	2	3	6	Open
I.019	Timescales	Timescale for retro-fit to be delivered - UK wide demand	2	3	6	Open
I.022	Power location	Getting power to location and electrical connection issues	2	3	6	Open
I.023	Permit system	New permit system results in delay	2	3	6	Open
I.024	Traffic management clashes	Roadworks clashes	2	3	6	Open
I.026	Detail design period	There is insufficient time to complete business case, detailed design and acceptable costs	2	3	6	Open
I.027	RSA	RSA content causes delay	2	3	6	Open
I.029	Insufficient funding	Delays in funding / insufficient funding from JAQU	2	3	6	Open
I.034	Government/local authority criticised	Government/local authority criticised for progressing delivery of the scheme following an international pandemic and global recession	3	2	6	Open



6.4 The top financial risks are noted in the table below:

Risk ID	Risk Title	Risk. There is a risk that..	Minimum	Most Likely	Maximum	%
I.033	Changes due to Coronavirus	A change in national policy as a result in the changes in travel behaviour caused by the Coronavirus	£250,000	£750,000	£1,000,000	10%
I.009	HE Network	HE insist on having network upgrades	£50,000	£250,000	£1,000,000	75%
I.032	Coronavirus	Design build and procurement risk due to Coronavirus	£100,000	£200,000	£500,000	75%
I.014	Terms and Conditions	Terms and Conditions and back-office agreements take longer to resolve than	£40,000	£100,000	£200,000	50%
I.031	Traffic calming	Outcome of community consultations on Victoria Road result in amendments to the traffic calming scheme	£5,000	£85,000	£100,000	50%
I.010	Enforcement	Enforcement action fails	£10,000	£80,000	£150,000	5%
I.016	Break downs	System breaks down	£60,000	£80,000	£120,000	10%
I.030	ULEV exemptions	Refinement of the scheme to include ULEV exemptions at the two bus gates	£5,000	£80,000	£130,000	50%
I.024	Traffic management clashes	Roadworks clashes	£30,000	£60,000	£200,000	50%