

# Technical Note

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|---------------|----------------------|---------------|--|
| Project:      | A350 Melksham Bypass |               |  |
| Subject:      | October 2021 QCRA    |               |  |
| Author:       | [REDACTED]           |               |  |
| Date:         | 08/10/2021           | Project No.:  |  |
| Atkins No.:   |                      | Icepac No.:   |  |
| Distribution: |                      | Representing: |  |

## Document history

| Revision | Purpose description | Originated | Checked | Reviewed | Authorised | Date    |
|----------|---------------------|------------|---------|----------|------------|---------|
| 1.0      | Original            | GSE        | AM      | AM       | AM         | 8.10.21 |
|          |                     |            |         |          |            |         |
|          |                     |            |         |          |            |         |

## Client signoff

|                         |                      |
|-------------------------|----------------------|
| Client                  |                      |
| Project                 | A350 Melksham Bypass |
| Project No.             |                      |
| Client signature / date |                      |

# 1. Methodology

To produce the QCRA for the A350 Melksham Bypass project the team first reviewed the project risk register and added new risks which have emerged since the last QCRA model was built. These risks were then assessed for their potential likelihood and cost impact. The pre-existing risks on the register were also reviewed and had their likelihoods and impacts updated where required. The risk register was then approved by [REDACTED] the Project Manager, for use in the model prior to uploading to the modelling software.

Once the QCRA model was built it was run on @Risk modelling software and ran for 2000 iterations which is enough to produce a smooth S-curve and a set of results that the project team can have confidence in.

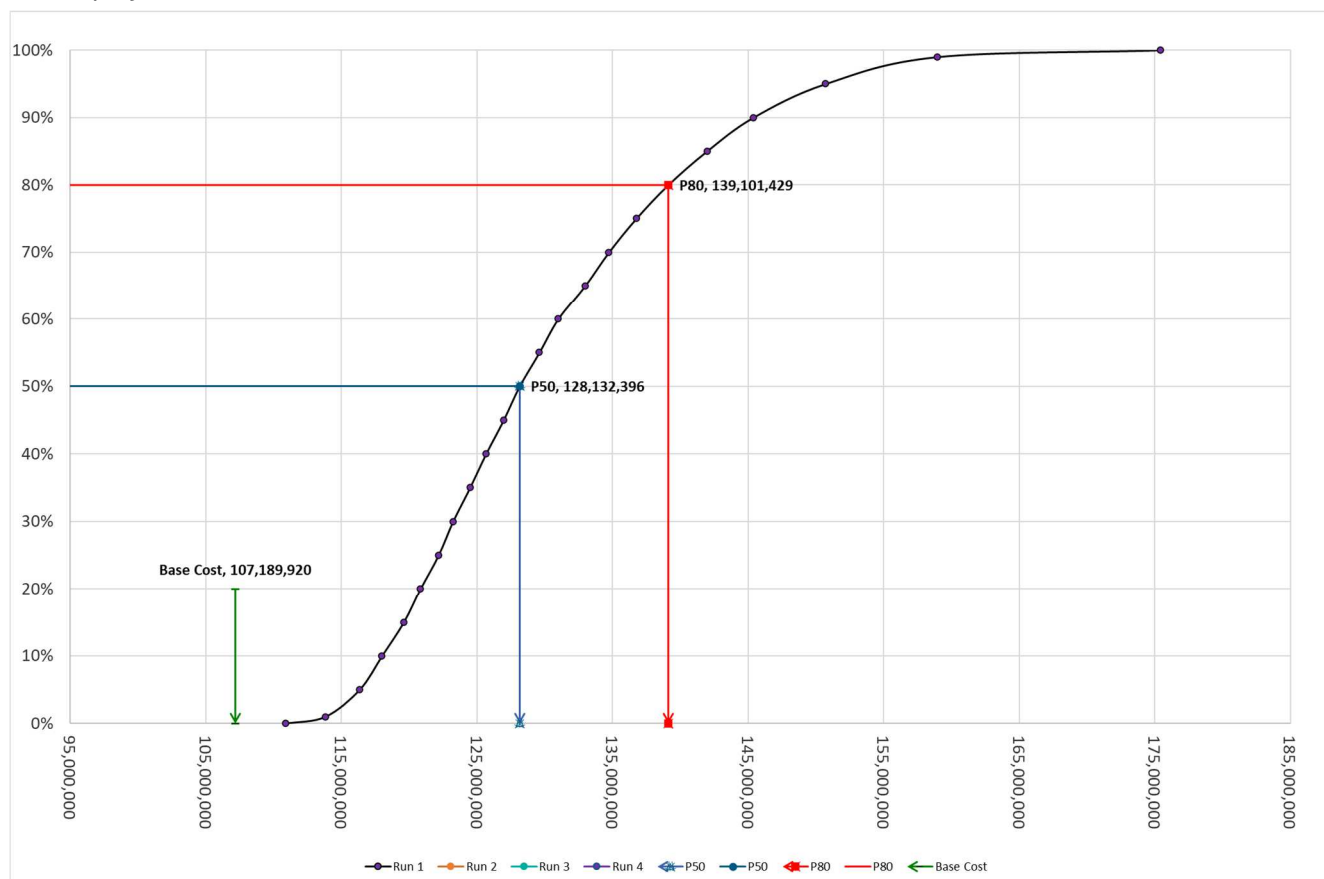
# 2. Outputs

| Base Cost                                 | Risk Exposure      | Confidence Level           |                    |                    |                    |                    |                    |                    |
|---|--------------------|----------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
|   |                    | Mean                       | P50*               | P80*               | P85*               | P90*               | P95*               |                    |
| Cost of Work Done (COWD)                  | 0                  | 4,315,734                  | <i>3,916,089</i>   | <i>5,967,217</i>   | <i>6,501,970</i>   | <i>7,141,482</i>   | <i>8,138,683</i>   |                    |
| Costs to Go (CTG)                         | 107,189,920        | 18,763,968                 | <i>17,026,388</i>  | <i>25,944,292</i>  | <i>28,269,293</i>  | <i>31,049,769</i>  | <i>35,385,403</i>  |                    |
| <b>Total Base Cost</b>                    | <b>107,189,920</b> | <b>23,079,702</b>          | <b>20,942,476</b>  | <b>31,911,509</b>  | <b>34,771,263</b>  | <b>38,191,252</b>  | <b>43,524,087</b>  |                    |
| Probability of achieving within Base Cost | 0.0%               | Risk - uplift to Base Cost | 21.5%              | 19.5%              | 29.8%              | 32.4%              | 35.6%              | 40.6%              |
|   |                    | Risk - % of CTG            | 21.5%              | 19.5%              | 29.8%              | 32.4%              | 35.6%              | 40.6%              |
|   |                    | <b>Total AFC</b>           | <b>130,269,622</b> | <b>128,132,396</b> | <b>139,101,429</b> | <b>141,961,183</b> | <b>145,381,172</b> | <b>150,714,007</b> |

\*'Splits' (in italics) at different confidence levels are based on pro-rating the mean

The results above show that the project is currently holding a risk allowance of 29.8% (P80) which for a conventional build project which is in the early stages of design and development is in line with where it is expected to be.

Below is the S-curve output from the model which shows the build-up of the confidence level from P0 to P100 for the project.



The S-curve output is highlighting the P50 and P80 confidence markers for the project based on the risk register used in the model.

The mean value of the risk register prior to modelling is £18,781,333 including an opportunity offset of £387,500. At the P80 output this risk value increase to £25,944,292 with an additional £5,967,217 for Estimating Uncertainty giving the project team a total contingency of £31,911,509.

### 3. Next Steps

The risks are lacking pre-mitigation/current assessments for likelihood and cost meaning that it is not possible for the project to assess the current magnitude of the risk they face when trying to deliver this project. This information is vital to allow the delivery team to know which risks they need to focus on managing and which can be given a watching brief to see if they start trending towards impacting the project.

The QCRA model is based on the post mitigated/target value for each risk and as such assumes that mitigating action will be taken to reduce the likelihood and/or impact of each risk. It is important that each risk has mitigation actions captured against it that will achieve these reductions from the pre-mitigation/current position otherwise the post-mitigation/target will be unachievable and the output of this model will become unreliable as it is based on incorrect risk data.

I recommend that the pre-mitigation/current assessments are completed along with mitigation actions for each risk and then the model is run with both sets of data so the project team can see the difference between their pre and post/current and target risk positions.