

**CONFIDENTIAL**

# BRISTOL BEACON ASSURANCE REPORT

Due Diligence Report  
For Bristol City Council

JANUARY 2023

Revision	Date	Prepared by	Checked by	Description
Draft	15/12/2022	MG, JW, KA	PM	Draft issued ahead of meeting held on 16/12/2022
Rev.01	05/01/2023	MG, JW	PM	Changes post meeting on 19/12/2022 to reflect contingency movements and new documents ref.089 and 090

Incorporating

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# 1 EXECUTIVE SUMMARY

Arcadis (UK) Ltd, on instruction from the Client, has prepared this assurance report focused on the agreed key areas of specific client relevance; our findings are captured within this report.

We have reviewed the cost, programme, and risks for the option to complete the project with additional funding (Option 1) and we have reviewed the teams' assessments for the options to pause or terminate the project (Options 2A/2B). We have highlighted in each section of this report where there was a comprehensive assessment provided by the Delivery Team, where there was limited information and/or where we have received no information and where we feel that further development of the information or assessments is needed.

Whilst we have only had the benefit of a very short period to carry out our review, during which time many documents have been amended and revised, **we are of the opinion that entering into DoV2 and completing the project with Wilmott Dixon in line with Option 1 is an appropriate way to secure the best financial and time related conclusion to the project.**

Following a review of the information we recommend the following matters should be given further consideration.

- Further analysis of the programme for Option 1 could be undertaken to have a more accurate assessment of the floats and likely delays. We have suggested a further review of the costs and contingencies considering this programme assessment once it has been carried out. We have not undertaken a cost or programme assessment ourselves as we recommend that this is produced by the Delivery Team who are closer to the project details.
- Our review of the cost estimate currently presented and our Monte Carlo assessment of the project risks for Option 1 suggest that the additional funding requested should be sufficient to complete the project. However, the risk of cost and programme overrun remains high for all the options considered.
- Confirmation that DoV2 negotiations have been concluded and an agreement has been reached with the Main Contractor. We have produced this report on the assumption that the DoV2 agreement will be closed on the draft Terms and Conditions that we have been sent.
- Once the Delivery Team have a satisfactory completion of DoV2 programme from the Main Contractor, they should consider undertaking a forensic programme review, to assess the risk to its delivery, by thorough detailed interrogation of the software using critical path analysis (including assessment of float, activity precedence, etc). We are not aware this has been commissioned or undertaken.
- Likewise, it may be appropriate, for a detailed risk assessment to be undertaken of the remaining Client-side risks both in the delivery of the Building Contract and in the activities to deliver the BMT works prior to opening; the output being a Client-side risk management plan through to project opening.
- Most of the additional funding applied for is a risk allowance or contingency cost. Whilst we are unsighted on the Client's approval processes, or authority levels for instructions. We anticipate that the Client's team will have a process to approve/reject expenditure of the updated budget and to ensure that any unused funding is transferred back to the Client upon successful completion of the project.

[REDACTED]

[REDACTED]



## 2 INTRODUCTION

### 2.1 Background & Contents

Arcadis (UK) Limited (ARC) has been engaged to undertake an assurance report for the Bristol City Council (BCC/the Client) on the three options that are being proposed to the Cabinet to complete the project. The project known as the Bristol Beacon is a refurbishment project of an existing theatre located in the centre of Bristol.

The project is in a situation where additional funding will be sought via a Cabinet Request to complete the project. The three options that the team will present to cabinet are broadly as follows:

- Option 1 – Provide additional funding and run the Contract through to completion.
- Option 2A – Pause the Contract and resume under a new administration from Autumn 2024.
- Option 2B – Determine the current Contract and reprocure at a future time.

ARC was instructed by the Client on 17<sup>th</sup> November 2022 to carry out a high-level due diligence in the following areas as identified in the Project Plan:

- i. Robustness of the identified costs and contingencies
- ii. Robustness of the Risk Register
- iii. Robustness of the Programme for Option 1, and assessment of programme implications for Options 2A & 2B
- iv. Assessment of the Contract requirements to deliver the 3 options
- v. Assessment of the robustness of design and links to Risk Register and Contingencies
- vi. Commentary on the proposed interface methodology for interfacing the completion of the Wilmott Dixon Contract and the Operational requirements of Bristol Music Trust.
- vii. ~~Risk Impact of Bristol Music Trust funding and grant contracts, i.e. Arts Council, West of England Combined Authority, etc.~~ this section is now excluded from this report.
- viii. Monte Carlo risk assessment

An initial review of the documentation provided in a shared folder by the Delivery Team was carried out and initial questions raised. Further clarifications to questions were received through liaison between the Arcadis and the Consultants Team.

### 2.2 Due Diligence Limitations

- This report should not be wholly relied upon to inform a strategic decision but indicates progress made in the time available on the areas that the client has instructed. The client should take advice on legal, management and other matters not covered in this report to complete their own due diligence.
- We have limited our analysis to the documents shared with us and listed in Appendix C.
- Furthermore, we have not engaged with any stakeholders from the Main Contractor or Subcontractors (or any other external stakeholders) in the preparation of this report unless specifically stated.
- It should be noted that ARC have not engaged in any market testing exercises and have not received any quotations specific to the project. Our review and comments of the commercial information received from Aecom is based on our broad experience delivering complex construction projects of a similar nature to the Bristol Beacon. This report is aimed to provide an indicative assessment for the scheme's construction costs and commentary on the allowances made for fees and other soft costs.

- Any legal document reviewed and commented upon in the context of the report has been achieved by means of a high-level review and does not constitute an opinion as to the legal enforceability of the terms set out therein.
- We have not been asked review the planning consent and associated documents and, as such, have not reported on any costs in relation to planning. We advise that the costs associated with planning will be identified by others and reported separately.
- We have not been asked review or comment on Value for Money (VfM) of the contracts and variations and, as such, have excluded this from the scope of this report and we understand that VfM will be covered by others and reported separately.
- A key caveat of this report is the limited time available to conduct a wide ranging technical and commercial due diligence analysis and that given the evolving nature of the documents shared in the project folder we have reviewed the latest versions of these documents available to us at the time. As directed, we have limited our commentary to the key areas of interest identified above.

## 3 REVIEW

### 3.1 Robustness of the identified costs and contingencies

The additional funding required for Option 1 was estimated at £25M (total project cost of £131.9M) by the Cost Consultant. This includes the £500k to account for the additional allowance for programme mitigation measures. The overspend for Options 2A & 2B has been estimated in the region of £58.6M (total of £165.5M) and £96.6m (total of £203.5M) respectively.

#### 3.1.1 Cost Review

The cost estimate and breakdown produced by Aecom in the document ref. 089 provides a comprehensive calculation of the costs with a total estimated cost of £131,895,000 for Option 1. We have further interrogated the detail of each cost allowance and we believe that there is a total of ██████████ Contingency and Risk Allowances ██████████ and a total of £113.8M of Construction Costs and Fees; as shown in table 01;

*(table 01 omitted as costs are confidential)*

#### **Table 01 – Summary of costs included in Option1 assessment aligned to programme**

We have reviewed the detail of the £113.8M of Construction Costs and Fees and assuming DoV2 is agreed as anticipated, most of these are fixed costs which give the Client a high certainty. We understand from our meeting with the Cost Consultant that the DoV2 is being agreed in the region of ██████████ and this would include ██████████ of (Defined) Provisional Sums and ██████████ of (Undefined) Provisional Sums which carry higher cost risk for the client should these result in any delay to the project. We have commented on the Risk and Contingency levels in the next section.

The latest cost estimate for Options 2A & 2B we have received, document ref. 090, shows the estimated costs for the three options side by side. These are very high-level cost estimates for Options 2A and 2B and given the current market conditions, the cost certainty of these estimates would be very difficult to achieve, therefore there is a level of uncertainty in the estimates that needs to be understood by the Client. We have analysed the cost allowances for each heading, and we feel that these cover the key costs that can be anticipated for both scenarios 2A & 2B. We note that the base cost used for all options includes £4.7m for the risk allowance to extend the completion date from mid-August 23 to the end of November and the £500k 'Assurance' allowance, we think that these allowances should not be applied to Options 2A & 2B. If removed, the estimate of the overspend for Options 2A & 2B would be reduced to £53.4M (total of £160.3M) and £91.4m (total of £198.3M) respectively.

In summary, given the high-level nature of both Options 2A & 2B, the build-up and cost analysis produced by the Cost Consultants are, in our view, reasonable judgments and would reflect the type of additional costs likely to be incurred under these scenarios.

### 3.1.2 Contingency Overview

In carrying out our review of the contingency allowances, we have analysed the nature of the provisions.

We have broken the Contingency (or Risk Allowances) down under four key headings as follows;

- i) **Design Development Risks estimate:**
  - a. Main Contractor's Risks such as MEP detailed design
  - b. Client Risks such as detailed design of the 'Foyer Works'
- ii) **Construction Risks estimate:**
  - a. Main Contractor's Risks such as subcontractors' or suppliers' delays
  - b. Client Risks such as difference in firm costs vs. provisional sums allowed in the contract
- iii) **Employer Change Risks estimate:**
  - a. All are Client risks such as changes requested by BMT, but we understand that these are very unlikely at this stage of the project
- iv) **Employer Other Risks estimate**
  - a. All are Client risks such as additional market inflation resulting on higher professional fees or higher interest rates

For each of the above sections there will be a construction cost allowance plus a soft costs allowance where there may be additional time needed from the consultants' team or a potential project delay. Part of the risks in sections i) and ii) above have been transferred to the Main Contractor by the Building Contract and its Deed(s) of Variation(s); some risks, however, are still sitting with the Client. In regard to the risks that are sitting with the Main Contractor, there is still the need for a Risk Allowance where these risks could materialise as an overall project delay, given that the delay damages in the contract are stated at a certain level [REDACTED] and the costs for the Client would be higher.

We have allocated each of the Contingency and Risk Allowances estimated by the Cost Consultant against these headings, the detail of this is included in Appendix A. Table 02 shows a summary of these costs;

*(table 02 omitted as costs are confidential)*

#### **Table 02 – Summary of Contingency and Risk Allowances for Option1 aligned standard headings**

Following the issue of our initial analysis to the project team a meeting was held on Monday, 19<sup>th</sup> December 2022 to review our analysis. During the meeting Aecom tabled their interpretation which showed a total contingency of [REDACTED]. Following some further analysis and post meeting discussions, we are of the opinion that the sum of [REDACTED] included within the budget is representative of a contingency and risk allowance. This includes the additional sum of £500k for programme mitigation measures.

The Contingency for Design Development and Construction Risks sitting with the Client is [REDACTED] and the Contingency for Design Development and Construction Risks sitting with the Main Contractor is [REDACTED] contingency allocated (costs to the Client for a potential delay). There is [REDACTED] for Employer Change Risks, which we understand the team anticipates these will be minimal and [REDACTED] for Employer Other Risks. [REDACTED]

And there is c. [REDACTED] for BCC, BMT and Consultants' fees.

We recommend that once the DoV2 agreement has been finalised the Cost Consultants, Aecom, check that enough Contingency has been allowed for the Design Development and Construction risks remaining with the Client (after DoV2), such as the acoustic performance, water ingress or the design of the undefined Provisional Sums. Similarly, we would ask Aecom to check the overall delay assessed

by the Delivery Team (recommended in Section 3.3 of this report) and to realign the prolongation related Risk Allowances to this programme assessment.

Overall, we believe that Contingency and Risk for Option 1 has been well considered and the allowances included are an appropriate reflection of the potential remaining project risks. However, should the Main Contractor incur exceptional delays, there is the potential for a shortfall. [REDACTED]  
[REDACTED]. This is also linked to our recommendation that a more detailed assessment of the appropriate float periods within the construction programme.

## **3.2 Robustness of the Risk Register**

We have reviewed the Project Joint Risk Register, document ref. 010, and considered this for our Monte Carlo Risk Assessment.

### **3.2.1 Risk Overview**

Refer to Section 3.7.2.

### 3.3 Robustness of the Programme for Option 1, and assessment of programme implications for Options 2A & 2B

The Delivery Team have shared a number of programmes with us, the key versions are summarised in table 03;

Title	Date of programme	Completion date	Reference	Issued by	Status	PM Comment
DoV programme	02/02/2021	18/04/2023	Rev Vd	WD	Superseded	Accepted as part of DoV
Last accepted programme	28/01/2022	30/06/2023	Rev Wg	WD	Accepted	No CE yet implemented to deal with cost impact of change
Initial WD programme showing completion Aug '23	30/06/2022	14/08/2023	Rev Wk	WD	Submitted	Used as 'baseline' to compare subsequent changes whilst WD retain Completion on 14/08/23.
Latest programme formally submitted	11/11/2022	14/08/2023	Rev Wn2	WD	Submitted	Close to acceptance but requires revision to align dates with BMT integration programme
Commissioning sub-programme	23/09/2022	14/08/2023	File name reference date 23-9-22	WD (author; Cardiff Commissioning)	Information	Aligns with WD programme Wn2 for pre-requisites of commissioning and Completion date

**Table 03 – Summary of Main Contractor’s relevant programmes provided by ARC PM.**

Where we refer to the Main Contractor’s programme throughout this report we are referring to Rev Wn2. We are not aware of any Project Manager assessment of this programme, as to its likelihood of its success.

#### 3.3.1 Option 1 Programme Review

The Overall Project Programme for Option 1 has a number of key areas that could delay the overall completion date, these should be reviewed by the Delivery Team and assessed individually. The current risks that we have identified are summarised as follows;

- Design development taking longer than originally planned
- Changes in design or scope instructed due to issues discovered on site
- Delay in ordering some equipment and supplies, anticipated delays on receipt dates
- Delay in Client approvals of the Main Contractor’s design proposals
- Commissioning programme currently compressed could take longer than planned
- Acoustic testing programme currently compressed could take longer than planned
- BMT Integration programme currently compressed could take longer than planned
- Other currently unforeseen issues that could cause delay to the construction, such as weather conditions or water ingress

We understand from the draft DoV2 information that we have reviewed that most of the first two items and the delay caused by these have been covered in the new completion date of mid-August. However, the Project Manager’s view expressed in the November Board report, document ref. 018, suggests that there has been an unsustainable level of compression to the Main Contractor’s programme which increases the risk of any of the other items materialising on a delay to the overall completion date.



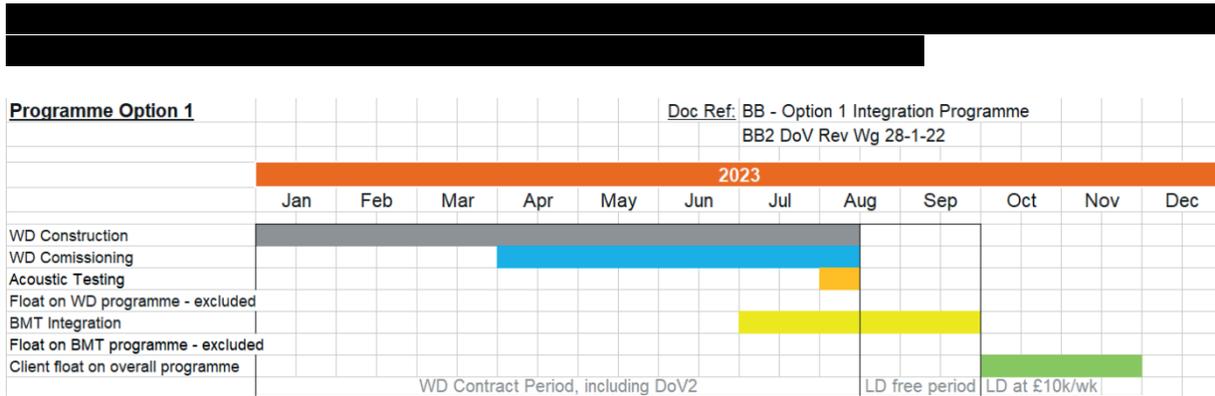
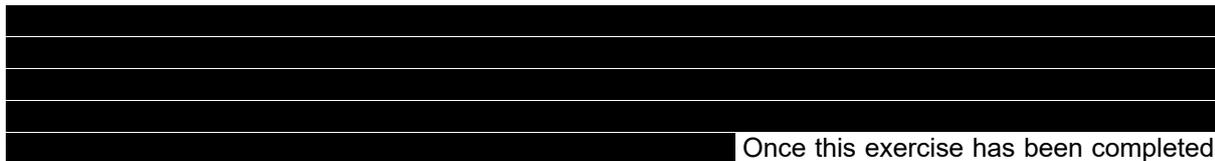


Image 01 – High level diagram of proposed programme for Option 1.

We feel that the Client should hold a series of floats for the key activities that could impact the critical path. We would recommend that the Delivery Team looks to assess appropriate programme floats for the headings listed above, they would then assess how each of these are independent or concurrent and what the overall impact to the anticipated completion date would be, an example is shown below.

*(image 2 omitted as delay views should be confidential)*

Image 02 – High level diagram of programme for Option 1 showing floats and delays.



Once this exercise has been completed, it would be sensible to consider what the overall Client float is and to sense check if it is a reasonable overall float.

The cashflow prepared by Aecom on the 15/08/22, document ref. 073, showed the anticipated expenditure for the Construction costs from Valuation 39 (Aug 2022) to the mid-August 2023 PC date, when compared against the actual Valuations No. 40-42 shown in the November Cost Report, document ref. 022, it shows a shortfall of [redacted] to Valuation No. 42. The shortfall identified in the November cost report is [redacted]. Either [redacted] of shortfall at a high-level this indicates a likely delay to the construction programme.

Moreover, the cashflow dated 15/08/22, showed the highest anticipated monthly spend in Valuation [redacted] Which, in our experience will be a challenge, given the lower productivity over the Christmas period. If this trend continued, the shortfall by the end of the year could be in the order [redacted]

We are aware that a DoV2 is being negotiated between the Client and Main Contractor, as a means of delivering Option 1, and that the Main Contractor is preparing an updated Programme for completion of their contract works, latest ref 'Rev Wn2'. This is intended to underpin the content of DoV2. We are not aware of any Project Manager assessment of this programme, as to its likelihood of its success.

Once the Delivery Team have a satisfactory completion programme from the Main Contractor, they should consider undertaking a forensic programme review, to assess the risk to its delivery, by thorough detailed interrogation of the software using critical path analysis (including assessment of float, activity precedence, etc). We understand this is intended to take place early in 2023.

Likewise, it may be appropriate, for a detailed risk assessment to be undertaken of the remaining Client-side risks both in the delivery of the Building Contract and in the activities to deliver the BMT works prior to opening; the output being a Client-side risk management plan through to project opening. This process has commenced, evidenced in the Options Appraisal Report dated 02/12/22 prepared by the Delivery Team, document ref. 050, pages 20 to 23.

Such a study will aid an assessment of the cost, programme and quality risks remaining. Such risks may include:-

- a. Client-side design yet to be completed
- b. Client decisions on samples, benchmarks and mock-ups yet to be presented by the Contractor
- c. Provisional sums yet to be instructed
- d. 'Discovery' in the existing building yet to be uncovered
- e. Instructions yet to be issued to the Main Contractor before PC
- f. Client contingencies yet to be spent/instructed
- g. Other Client decisions yet to be made that could affect the Main Contractor's progress
- h. Full integration of the completion of the Contractor's building works with the occupation programme and activities of the BMT

It may also be appropriate to undertake an overview of the deliverability of the Main Contractor-side risks. These may include:-

- i. Contractor-side design yet to be completed
- ii. Work packages and materials yet to be procured
- iii. Assessment of risks areas with labour supply difficulties

An assessment should be made of the remaining scope for Client generated change and its possible impact of completion of the Project. This should include a robust assessment of the plans for the integration of the BMT fit out and soft and hard opening plans.

We are aware that the BMT integration period is being reduced (in agreement with them) from 22 weeks to 12 weeks, we have received a detailed programme showing the integration of the completion of the Main Contractor's building works with the BMT's works /activities. We understand that this has been reviewed by the Delivery Team and that it has been agreed with the Main Contractor. This is essential for giving confidence with any projected opening date.

The remaining design activity needs to be integrated into the remaining procurement and construction activities in the completion programme. We are not aware this has been undertaken and reviewed by the Delivery Team.

### **3.3.2 Options 2A & 2B Programme overview**

Regarding Programme Options 2A & 2B, we have read the Options Appraisal Report dated 02/12/22 prepared by the Delivery Team, document ref. 050. Options 2A & 2B have not been defined in anywhere near as much detail as Option 1, in terms of either cost or programme, but the Options Appraisal Report appears to include an overview of relevant considerations for these two options, including costs, project programme, risk, building contract implications, deliverability and an assessment of whole project impact: all with a comparator with Option 1. Accordingly, we have no reason to disagree with the overview assessment made by the Delivery Team on the overall programme effects of delaying the project works as intended by Options 2A & 2B. It should be noted that due to the much lesser detailed appraisal of Options 2A & 2B, the risk of their delivery, is much high than in Option 1.

Options Appraisal Report dated 02/12/22, document ref. 050, includes a statement in Section 8.0 Summary, 'As a result the PMO considers that Option 1, continuing with the project is the most predictable option, albeit there will remain risks associated with time pressures; however, this option does further mitigate against the influences of the external economic environment and the global market.' We have no reason to disagree.

## 3.4 Assessment of the Contract requirements to deliver the 3 options

### 3.4.1 Option 1 - DoV2

We are aware that a DoV2 is being negotiated between the Client and Main Contractor, as a means of delivering Option 1. We understand it is intended that this will clarify a number of previously contentious issues between the parties and give greater certainty of the delivery of the Building Contract works. The Delivery Team rightly recognise however that there will still be significant Client-side risks, both with the delivery of the Building Contract works and with the integration of the BMT works (some of which will be undertaken during the Building Contract period and the remainder after practical completion).

We understand from the draft documents that we have reviewed and conversations with the team that DoV2 will;

- Resolve any outstanding Client/Main Contractor interpretation of the responsibilities for design Inside Box/Outside Box.
- Resolve any outstanding Client/Main Contractor interpretation for MEP design responsibility and particularly between design stage 4a, 4b and 4c.
- Cover all Compensation Events, Early Warnings and EoTs commercially to the agreement date.
- Include provisions for the BMT integration requirements.

We would recommend that the delivery team ensures the above are clarified and resolved for the DoV2 agreement. Similarly, a strategy should be agreed to manage the remaining Client-side risks, such as acoustic performance, water ingress, Foyer integration or MEP access and maintenance requirements.

Whilst we have only had the benefit of a very short period to carry out our review, during which time many documents have been amended and revised, we are of the opinion that entering into DoV2 is an appropriate way to secure the best financial and time related conclusion to the project.

### 3.4.2 Options 2A & 2B

We have reviewed Section 1 of Project Mothball - Contract review, document ref. 04, prepared by the Delivery Team which sets out the contractual mechanisms to deal with the Suspension and/or Termination for options 2A and 2B respectively. We understand that for Option 2A a pause would have to be negotiated with the Main Contractor as it would exceed the period of suspension allowed under the current Building Contract (and its Deed of Variation).

We understand that DoV2 negotiations have not yet been concluded. If the DoV2 was to be finalised before the Cabinet outcome is known, it may be prudent to incorporate the amended suspension clause into the DoV2 negotiations.

### 3.5 Assessment of the robustness of design and links to Risk Register and Contingencies

The draft Design Assurance Report (P4 22-12-07), document ref. 074, prepared by the Delivery Team, makes some encouraging comments (particularly Section 3) regarding design progress in the period, and outlines improvements in the working arrangements with the Main Contractor to complete the design activities, particularly using the Design Charter.

The report is in draft and the Exec Summary yet to be written, hopefully it will include a Project Manager assessment of the risk of design and site inspection activities affecting site progress to completion.

#### 3.5.1 Design Overview

The following observations are made concerning the draft Design Assurance Report (P4 22-12-07), document ref. 074;

- **Some Client risk may remain regarding: -**
  - a. Building Control changing decisions on previously submitted information
  - b. Clarification on remaining planning submission and conditions

The report concludes that the design information production is nearing completion and there are mechanisms in place to complete the design of the outstanding items.

- **Some additional design may be required regarding: -**
  - a. The 'outer box' or Building Shell
  - b. Foyer integration
  - c. MEP access and maintenance requirements
  - d. The pavement /road works outside the boundary

### **3.6 Commentary on the proposed interface methodology for interfacing the completion of the Wilmott Dixon Contract and the Operational requirements of Bristol Music Trust.**

We have received the BMT Opening Plan, document ref. 088, which is a detailed programme showing the integration of the completion of the Main Contractor's building works with the BMT's works/activities. It is a comprehensive plan with detailed activities showing the demarcation between BMT and the Main Contractor. The BMT integration period is being reduced (in agreement with them) from 22 weeks to 12 weeks therefore this 12-week period is critical for giving confidence with any projected opening date.

We understand that this has been reviewed by the Delivery Team and that it has been agreed with the Main Contractor. We would like to highlight that with all the activities planned around the Main Contractor's PC date, it would be very disruptive for BMT and their planned activities if an anticipated completion date cannot be achieved. BMT may not be able to reschedule some of these activities with short notice, e.g. the works for the Organ installation.

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## 3.7 Monte Carlo risk assessment

### 3.7.1 Methodology

Monte Carlo Analysis is a risk management technique design to conduct a quantitative analysis of risks of any specific project.

This mathematical technique was developed to analyse on any specific project the level of either cost or programme risk, if a project has a specific this risk occurs, how will it affect the schedule or the cost of the project?

Contingent risk is an assessment of, and allowance for, unmeasured items. These may include items such as weather, geotechnical problems, political issues, design/owner requirements and other similar unknowns. These risks have a probability of less than 100% chance of occurring.

As such, the risk needs to be allowed for in the contingency in a probabilistic manner.

That is the cost x likelihood of occurrence (probability %).

To ascertain the appropriate risk allowance, the risks and costs are viewed as a normalised cumulative cost probability, where all identified risks are simulated over a number of scenarios probabilistically to ascertain the normal distribution of risk costs and as such give a specific level of confidence in the overall level of costs that may be incurred. It therefore follows that a P50 evaluation would indicate a 50% level of confidence that the level of costs will not be exceeded, whereas a P90 evaluation indicates a 90% level of confidence that the costs will not be exceeded.

### 3.7.2 Risk Review

Specifically in respect of Bristol Beacon, an independent review has been taken of the potential risks and opportunities based upon the current position of the project, the remaining time and cost allowances remaining to complete the project.

The Monte Carlo analysis simulation has been produced following this review with a view to being able to confirm with a level of confidence in the final costs that are likely to be incurred to complete the project with as much certainty as possible.

The review makes and number of assumptions in relation to potential issues which are impossible to ascertain show the overall probability of numerous different events occurring on the Bristol Beacon project together and what the likely impact would be on the entire project financially.

- Force Majeure - Any potential costs and programme impact of any future Force Majeure event is excluded from the analysis.
- Contractors Insurance – That the PMO team are ensuring that the Contractor has adequate insurance cover in place to cover the potential increase in contract value.
- Grant Funding – No allowance has been made in respect of the management or repayment of any grant funding that has been received in respect of the project.

During the review a number of significant risks were identified which require the attention of the PMO team.

- Seat Wagons – These are considered a major risk to the completion of the project as they do not appear to have been ordered and are due for installation in April 2023. These wagons are being manufactured in Spain and consideration needs to be given as to checking on the manufacture at regular intervals to ensure that the delivery dates are met  
Consideration also needs to be given in respect of any customs and excise paperwork that would need to be completed in a timely manner so as to avoid import delays.

- Back of House – From the site visit it was evident of the lack of progress in respect of the commencement let alone completion of these rooms which needs attention.
- Gas Installation – It was also noted that the installation of the gas into the building only commenced in November, which means that the building remains unheated with timber panelling already installed in Hall 1 ceiling. Measure may be needed when heat is applied to the building to stop this product changing shape and affecting the acoustics.
- Timber Panelling – It has been noted that the panelling has been manufacture off site and is currently stored, however the same issue as above would also apply to this panelling when it is delivered to site.
- Contractors Progress – From the limited programming information that has been seen together with the current actual cashflows, would indicate that the contractor is behind program and likely falling further behind programme. This raises significant concerns that the contractor's completion date is achievable.
- Further Change – From the analysis above and the review of the contingency budgets within the budget, that a significant amount of further change is still likely from now until completion. This would need to be minimised as on balance any further change will affect the completion of the project,

### 3.7.3 Monte Carlo Assessment Results

Following on from the review of all the information and based upon the comments above Arcadis has completed its Monte Carlo Assessment.

This assessment has identified **25** specific risks which could affect either the costs of the project directly or have an impact on the completion of the project and thus inversely affect the final costs. Due to the timing of this assessment only 24 risks have been quantified with an update required to the unpriced risk relating to Planning Conditions, for which we are still awaiting the detail

From this assessment together with the review programme and other related issue, there is clearly no float left within the programme to accommodate and further change and therefore there is a high degree of risk left on the project.

The result of this risk is that we now need to have a high level of confidence in the costs and contingencies that we are presenting.

Arcadis' view is that as a result we need to have at least a 90% confidence level that the project will complete within figures that are presented and accordingly we would suggest as a minimum using at least a P90 level assessment in terms of the Monte Carlo assessment.

As can be seen from the Monte Carlo assessment contained within appendix B this would indicate that we would need a total contingency level [REDACTED]. This figure would increase up to [REDACTED] if we wanted a higher level of certainty.

From the cost analysis, it would appear that the current level of contingency contained within the budget for Option 1 is [REDACTED]

From review of the overall budgets the total amount of contingency contained within the overall project coverage would provide us with 90-95% confidence that the overall budget would not be exceeded.

## 4 RECOMMENDED NEXT STEPS

Arcadis' review was limited to the available data, and we recognise that there will be several unsighted documents, which can influence the conclusions reached in this report in some shape or form. Hence, we recommend that the Delivery Team;

- Assess the Programme floats and likely delays for Option 1 as described in section 3.3.1
- The Cost Consultant, Aecom, reviews their cost assessment for the periods identified in the above programme assessment to confirm these can be covered
- The overall Contingency is compared and crosschecked against the Monte Carlo P90 results in section 3.7 and Appendix B
- Once the Delivery Team have a satisfactory completion of DoV2 programme from the Main Contractor, they should consider undertaking a forensic programme review, to assess the risk to its delivery, by thorough detailed interrogation of the software using critical path analysis (including assessment of float, activity precedence, etc). We understand this has been commissioned and will take place early 2023.
- Consider, if appropriate, for a detailed risk assessment to be undertaken of the remaining Client-side risks both in the delivery of the Building Contract and in the activities to deliver the BMT works prior to opening; the output being a Client-side risk management plan through to project opening.

**APPENDIX A**

**Commercial Analysis**

*(Appendix A omitted as costs are confidential)*

**APPENDIX B**

**Monte Carlo Risk Assessment**

# APPENDIX C

## Documentation

The following documents have been received

**BRISTOL BEACON ASSURANCE REPORT - Documentation**

05/01/2023

Reference	Document Title	Dated	Received on	Revision	Comments	Actions
001	BB - Design Assurance Report P2 22.11.08		18/11/2022		SS by new version	Not to be considered
002	BB -Project Mothball Report -Final		18/11/2022		SS by next document	Not to be considered
003	BB -Project Mothball -Final Draft V2		18/11/2022			Review
004	BB - Project Mothball - contract review – clean		18/11/2022			Review
005	BB - Project Mothball - contract review – tracked		18/11/2022		SS by clean version	Not to be considered
006	WD Summary of Prices for DOV Contract Rev B		18/11/2022			Not to be considered
007	Beacon cost overview final DOV position 31 March 21		18/11/2022			Not to be considered
008	Appendix B - Bristol Beacon Cost Report Nr RB20 prev 40 Issue to Board V4	19/10/2022	18/11/2022		SS by new version. For reference if needed	Not to be considered
009	BMT Business Plan First Full year calcs shown		18/11/2022			Not to be considered
010	BB - Whole Project Joint Risk Register - Master - November Board		18/11/2022			Review
011	Bristol Beacon - PEP V11 22.10.04		18/11/2022		For reference if needed	Not to be considered
012	Bristol Beacon- Project Directory V10 25.04.22		18/11/2022		For reference if needed	Not to be considered
013	Arcadis Team Structure - 2022.10.21		18/11/2022		For reference if needed	Not to be considered
014	Mothball back up	03/10/2022	18/11/2022			
015	Mothball 4 October 22 estimate	04/10/2022	18/11/2022		SS by new version, document ref. 075	Ask Aecom which one to review. Consider for Options 2A/B only
	<u>November 2022 Project Board report including:</u>					
016	Bristol Beacon - Project Board Meeting Minutes - October 2022 (1)		21/11/2022			Review for background informatic
017	BB -Project Directors Executive Summary Nov 22 - Final		21/11/2022			Review for background informatic
018	BB - Project Board Report - November 2022		21/11/2022			Review for background informatic
019	BB - Project Board Agenda		21/11/2022			Review for background informatic
020	Bristol Beacon - Project Board Action Tracker October 22		21/11/2022			Review for background informatic
021	Appendix A - BB - Whole Project Strategic Programme - Nov Board 22 (End Of Oct 22)		21/11/2022			Review for background informatic
022	Appendix B - Bristol Beacon Cost Report Nr RB21 prev 41 Issue to Board Rev B		21/11/2022			Review for background informatic
023	Appendix C - Contractor Report - 11-11-22 (1)		21/11/2022			Review for background informatic
024	Appendix D - WD Summary Programme - End of Oct 22 (1)		21/11/2022			Review for background informatic
	<u>DoV2</u>					
025	WORK_46727321_2_Deed of variation to building contract (BS DRAFT 09.11.22 no sum)		21/11/2022		SS by new version	Not to be considered

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Reference	Document Title	Dated	Received on	Revision	Comments	Actions
026	Package Responsibility Schedule v5 - 22.11.09		21/11/2022			Review
027	Clarifications - update rev K		21/11/2022		IMPORTANT	Review
028	Box in Box_Principles_0.1 - 22.11.09		21/11/2022			Review
029	Arup Fire Strategy Report: CH2-ARP-ZZ-XX-RP-Z-0001 RevC_Highlight_Issue		21/11/2022			Review
030	ARUP MEP appendices: Appendices A, B, C, D, E, F1, F2, F3, G1, G2, H, J, K, L, M		21/11/2022			Review
031	2648B_5.3_Building Control Condition Tracker Report_Rev L		21/11/2022			Review
032	2648B_5.3_Building Control Derogation - Clarification Tracker Report_Rev F		21/11/2022			Review
033	Planning Consent Notices: Application 21-02325-X, LBC Application 21-02296-LA		21/11/2022			Review
<u>Current DOV2 Proposals</u>						
034	WORK_46727321_5_Deed of variation to building contract (BS DRAFT 17.11.22)		21/11/2022		SS by new version	Not to be considered
035	WORK_46891074_1_Redline - DoV 2 09.11.22 vs DoV 2 17.11.22		21/11/2022		SS by new version	Not to be considered
036	BMT briefing for cabinet		21/11/2022			Excluded
037	BB2 DoV Rev Wg 28-1-22		21/11/2022		Programme for referenc	Review
038	Bristol Beacon Programme Rev Wg -28-1-22		21/11/2022		Programme for referenc	Review
039	CE, PMI and EWN Register.xlsx		25/11/2022			Review
040	Extract of materials on and off site end oct 22		29/11/2022			Review
041	WORK_46727321_7_Deed of variation to building contract (BS DRAFT 24.11.22)		29/11/2022		Latest DoV2 version	Review
042	Bristol Beacon Emerging Position and Final Account 161122		29/11/2022		IMPORTANT	Review
043	BB - Strategic Programme - MASTER V1 30.11.22		02/12/2022		IMPORTANT	Review
044	BB - Design Assurance Report P3 22.11.29		02/12/2022		SS by new version	
045	BB - Whole Project Joint Risk Register - Master - November Board1		02/12/2022		Received in ref. 010 above, same version	
<u>1.Jan 23 -Cabinet Report</u>						
046	Appendix A Bristol Beacon Inflation Impact Rev 22 Nov 22		05/12/2022			Review
047	Appendix 2 - Technical Issues Report Rev D		05/12/2022			Review
048	Structural Issues since DoV1 - Rev. A		05/12/2022			Review
049	Appendix 3 - BB -Project Mothball -Final Draft V2_tracked PWJ		05/12/2022			Review

**BRISTOL BEACON ASSURANCE REPORT - Documentation**

05/01/2023

Reference	Document Title	Dated	Received on	Revision	Comments	Actions
050	BB -Project Mothball -Working Draft V2		05/12/2022			Review
051	BB - Mothball Programme Jan Cabinet (002)		05/12/2022			Review
052	BB - Option 1 Integration Programme		05/12/2022			Review
053	BMT briefing for cabinet		05/12/2022		Appendix 6	Excluded
054	BB - Design Assurance Report P1		05/12/2022			
055	BB - Design Assurance Report P2 22.11.08		05/12/2022			
056	BB - Design Assurance Report P3 22.11.29		05/12/2022		Received in ref. 044 above, same version	
057	BB -Project Directors Base Case Proposal		05/12/2022			Not to be considered
058	2021.03.02 - Reviewable Design Data_Rev_03f.1		05/12/2022			Review
059	BB - Principal Outstanding Contractor Design Information Rev B		05/12/2022		Appendices of design assurance report	Review
060	Package Responsibility Schedule v4		05/12/2022			Review
061	BB - Leads Comments on Appendices		05/12/2022			Not to be considered
062	BB - Mothball Programme (1)		05/12/2022		Same version ref. 051	Not to be considered
063	Bristol Beacon DoV1 Risks and Contingencies 181122		05/12/2022		SS by new version below	Not to be considered
064	Bristol Beacon DoV2 Risks and Contingencies 021222		05/12/2022			Review
065	Original NEC3 Contract with WD dated 28th May 2019		02/12/2022		Folder including all documents, not listed	Review
066	DoV1 with WD dated 29th April 2021		02/12/2022			Review
067	Bristol Beacon Programme Rev Wn2 - 11-11-22 Dov2		06/12/2022		DoV2 Programme	Review
068	Bristol Beacon - Commissionng Sub programme 23-9-22		06/12/2022			
069	BB - Strategic Programme - MASTER V1 30.11.22				No linked activities. SS by next document	
070	BB - Strategic Programme - MASTER 02.12.2022 (IB)		07/12/2022		No linked activities	
071	221114 Bristol Beacon - Lead Report, Metrics & Risk Assessment - Programme (IB) (1)		08/12/2022		IMPORTANT	Review
072	221114 Period metrics for Rev Wn		08/12/2022		IMPORTANT	Review
073	Bristol Beacon Project Cashflow V2 150822		08/12/2022		IMPORTANT	Review
074	BB - Design Assurance Report P4 22.12.07		12/12/2022		IMPORTANT	Review
075	Bristol Beacon Emerging Position and Final Account 161122 plus options for presentation		12/12/2022		IMPORTANT. Partly SS by ref. 089 for Option 1 costs	Review
076	BB - GC, TQ update		12/12/2022			Review

**BRISTOL BEACON ASSURANCE REPORT - Documentation**

05/01/2023

Reference	Document Title	Dated	Received on	Revision	Comments	Actions
077	Red List - 22.12.06 <u>1.Jan 23 -Cabinet Report (updated draft reports)</u>		12/12/2022			Review
078	Appendix A Bristol Beacon Inflation Impact Rev 7 Dec 22		14/12/2022		Conflicts with other information	Excluded
079	Appendix 2 - Technical Issues Report Rev E		14/12/2022			Review
080	BB Options Summary - Mayor Briefing_12.12.22		14/12/2022			Review
081	DOV 2 Clarifications 13 December 2022		14/12/2022		Received too late	Excluded
082	WORK_46727321_9_Deed of variation to building contract (BS DRAFT 13.12.22)		14/12/2022		Received too late	Excluded
083	WORK_46814132_5_Box in Box_Principles_0.2 (BS DRAFT 13.12.22)		14/12/2022		Received too late	Excluded
084	WORK_46883346_3_Package Responsibility Schedule v5 (BS DRAFT 13.12.22)		14/12/2022		Received too late	Excluded
085	WORK_47135746_1_Redline DoV - 24.11.22 draft vs 13.12.22 draft		14/12/2022		Received too late	Excluded
086	WORK_47136308_1_Redline BiaB Document - 24.11.22 draft vs 13.12.22 draft		14/12/2022		Received too late	Excluded
087	WORK_47136722_1_Redline PRS - 24.11.22 draft vs 13.12.22 draft		14/12/2022		Received too late	Excluded
088	BMT Opening Plan 07.07.2022 Issue 3		15/12/2022			Review
089	Proposed Revised Budget version X		03/01/2023		IMPORTANT	Review
090	Beacon Appendix 3 options comparison table		05/01/2023		IMPORTANT	Review

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