

REPORT TO: POLICY AND RESOURCES COMMITTEE - 24 AUGUST 2015

REPORT ON: REVIEW OF THE CONSTRUCTION PROJECT FOR THE V&A

REPORT BY: CHIEF EXECUTIVE

REPORT NO: 296-2015

1. PURPOSE OF REPORT

To report to members on the outcome of the independent review of the construction project for the V&A and to recommend actions in response to the review.

2. RECOMMENDATIONS

It is recommended that members:

- consider the conclusions and recommendations in John McClelland's review of the construction project for the V&A Museum of Design Dundee;
- accept the recommendations in the review and authorise the Chief Executive to implement them;
- note that comprehensive reports will be submitted to the Policy and Resources Committee at key stages of the construction project through to practical completion;
- agree that the Council provides copies of the review report to partner organisations, funders and Audit Scotland for their interest.

3. FINANCIAL IMPLICATIONS

The cost of additional professional resources will be met from existing revenue budgets and the Council's approved capital plans.

4. BACKGROUND

- 4.1 At the meeting of the Policy and Resources Committee on 26 January 2015, members agreed to commission the procurement expert, John McClelland CBE, to carry out an independent review of the construction project for the V&A Museum of Design Dundee. The key focus of the review was to examine the reasons for a significant increase in the estimated construction costs of the project. Mr McClelland was asked to identify any lessons learned from the development of the V&A, from initial concept through to letting of a building contract, and to make any recommendations he felt appropriate to ensure the successful delivery of this iconic building.
- 4.2 In conducting his work, Mr McClelland interviewed many key stakeholders, partners, consultants, technical professionals and interested parties. He has also undertaken extensive desk research, document checks and file reviews in reaching his conclusions and recommendations for the Council.
- 4.3 In summary, the review has concluded that the international benchmarking approach which formed the basis of the original project cost estimates was not sufficiently robust to address the unique challenges associated with Kengo Kuma's iconic winning design for the V&A in Dundee. As the detailed design process moved forward, it became apparent that the technical requirements and construction method involved would place real pressure on the budget. In response, the project partners worked hard to refine and amend the proposals and succeeded in reducing the likely out-turn cost of the V&A by some £16.3 million prior to tender.

- 4.4 The process of competitive tendering for the project allowed further clarification of the costs involved, but did not achieve a material reduction in price. A preferred bidder was appointed, and following Committee approval to proceed, a final fixed price contract of £60.8 million for the building was agreed with BAM Construction in February 2015. Work on the V&A began on site in March and is currently on time and on budget.
- 4.5 In terms of corporate governance arrangements, Mr McClelland's review concludes that more frequent direct reporting on the V&A to members would have been helpful, following the Council's adoption of the construction element of the project in June 2011. Although a partnership joint venture, the Council carries a significant element of the risks involved in this transformational investment in the city and it is important that scrutiny and assurance arrangements are effective. Since January 2015, a Project Board has been established and regular progress reports will be submitted to the Policy and Resources Committee at key stages in the development.
- 4.6 The review of the project also makes a number of recommendations in relation to additional professional resourcing of the V&A project, the need for early finalisation of a Development Agreement between the City Council and DDL Ltd and a reconfirmation of the Furniture, Fittings and Equipment budget for the project. More generally, Mr McClelland recommends improved record keeping and improved due diligence on the cost of major projects prior to formal contractual arrangements being finalised.
- 4.7 Since January 2015, steps have been taken to further develop and improve the governance, monitoring, communication and project management arrangements for the V&A project. A Project Board is in place, supported by an officer group of senior professionals. In light of Mr McClelland's review, steps will be taken to provide additional cost and project management expertise to support the Board. Work has progressed in finalising a detailed Development Agreement between the City Council and DDL Ltd, and this will be completed in the near future. The interface between the main building contract and the provision for Furniture, Fittings and Equipment is being taken forward by a single project manager, with cost and quality control being a key focus.

5. **POLICY IMPLICATIONS**

This report has been screened for any policy implications in respect of Sustainability, Strategic Environmental Assessment, Anti-Poverty, Equality and Impact Assessment and Risk Management. There are no issues in this regard to report on.

6. **CONSULTATIONS**

The Executive Director of Corporate Services and the Head of Democratic and Legal Services have been consulted in the preparation of this report.

7. **BACKGROUND PAPERS**

None.

David R Martin
Chief Executive

..... 14/08/2015

**Review of the Construction Project for the
Victoria and Albert Museum of Design
July 2015**

John F. McClelland C.B.E.

27th July 2015

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1. **BACKGROUND**

- 1.1 On 26th January 2015 the intention was announced to proceed with the building project to house Dundee's Victoria and Albert Museum of Design. This venture is expected to be of significant importance to the future of the City of Dundee and advantageous to its citizens and businesses for generations to come. A notable increase in the number of visitors to Dundee and Scotland is just one facet of the commercial activity it is expected to generate. In addition its focus on "design" is planned to enhance learning, promote entrepreneurial initiatives and add outstanding cultural and social benefits for Scotland and Dundee.
- 1.2 At the same time it was also noted that the planned cost of this project had increased by £31.1 million since its formalisation in 2011.
- 1.3 Having, along with the project partners, raised additional funding to continue with the project, Dundee City Council decided that an independent review should be conducted to ascertain and communicate the reasons for the increase in the budgeted cost.

2. **REMIT FOR THE REVIEW AND METHODOLOGY**

- 2.1 The terms and content of the review commissioned by Dundee City Council are:

To report to the Policy and Resources Committee:

1. On the reasons why the project costs increased between 2011 and 2015 from a plan of £49 million to a new pre-construction budget level of £80.1 million.

(It should be noted that the originally planned value included a £4 million contribution from the general Waterfront Budget for site creation so, in arriving at a comparable base for analysis of the budget differences, this sum is added to the intended building cost of £45 million).
 2. To advise the Committee on any further steps the Council ought to take to ensure that the V & A Museum of Design Dundee is delivered in the timescale and to the budget which the Committee agreed on 26th January 2015.
 3. To make any recommendations to the Council regarding any further actions which should be taken in relation to the governance and monitoring of this and future major capital projects.
- 2.2 The methodology undertaken incorporated a detailed review of hundreds of documents associated with the construction element of the project and also the governance and oversight exercised by Design Dundee Limited and Dundee City Council.
 - 2.3 It was supplemented by fact finding interviews with individuals occupying key positions either within the project or within organisations having a responsibility for or interest in the project.

3. THE PROJECT AND ITS STAKEHOLDERS

- 3.1 The initial concept of having a Victoria and Albert (V&A) Museum of Design in Dundee originated from discussions conducted as early as 2007 between officials from The University of Dundee and representatives of the Victoria and Albert Museum.
- 3.2 Realisation of the potential opportunities this might bring to Dundee and Scotland was reflected in a widening of the group of interested parties, with Scottish Enterprise, Dundee City Council and Abertay University all becoming involved and expressing support.
- 3.3 A Steering Group was set up in 2008 and met regularly to pursue development of the concept and create the foundations of a plan to realise the ambition.
- 3.4 The partners within the Steering Group engaged consultants to assist in the development of the project and, later within that arrangement, a firm of chartered surveyors provided technical support including estimates of likely construction costs for the building.
- 3.5 This work was set in an international context and laid out comparisons of the cost of similar projects in the UK and further afield. The benchmarking process was finalised in late 2009.
- 3.6 Based on the consultant's analysis, and the level of local and wider support, the Design Dundee Company Limited (a registered charity) was formed. Its first board meeting took place in January 2010. Its membership and shareholding was made up of the University of Dundee, Scottish Enterprise, Dundee City Council, Abertay University and the V&A Museum.
- 3.7 At an early stage financial support was sought and obtained from the Scottish Government, other public organisations and private parties interested in contributing to this undertaking.

4. CHRONOLOGY AND KEY DATES

- 4.1 This is an extract of the timeline including identification of key dates associated with events and decisions influencing the project:

March 2008:	V&A Steering Group formed to develop the project and its business case. Initial funding included support from the Scottish Government.
November 2009:	Dundee City Council's Policy and Resources Committee agrees to contribute £30,000 to a general fund to accelerate the V&A's project development.
January 2010:	Formation of Design Dundee Company Limited (DDL) and its first Board Meeting.
February 2010:	Official Journal of the European Union (OJEU) Notice issued For the Design Competition.
May 2010:	Development of a V&A Site Formation Feasibility Study which described in detail the considerations and costs associated with positioning the building partially or completely offshore.

May 2010:	Documentation of estimated cost of the project based on the 2009 benchmarked comparison of the cost of similar developments.
May 2010:	Publication of DDL's first Business Plan
June 2010:	Brief for the Architectural Competition issued to six Architect led design teams.
August 2010:	Submission of Architectural Design bids including statements of construction costs.
September 2010:	Firm of surveyors prepare an independent summation of the Architect's fees and construction costs.
October 2010:	DDL's Architectural Competition Judging Panel evaluates bids and recommends winning architect.
November 2010:	DDL Board Meeting endorses appointment of winning architect.
March 2011:	Architect appointed following 28 th March report to Dundee City Council's Policy and Resources Committee on proposed letter of intent.
March 2011:	DDL constitutes its Building Sub-Committee and supporting Building Group.
April 2011:	Independent external Project Managers appointed by DDL.
June 2011:	Architect's Design Team issues Stage C Cost Plan.
June 2011:	City of Dundee Council's Policy and Resources Committee endorses the Council's adoption of the construction element of the project from DDL and its partners and agrees the budget for the building's construction of £45 million. This value excluded a separately agreed £4 million allowance for site creation from the overall Waterfront Project.
July 2011:	DDL appoint a full-time permanent Director to lead the overall project.
October 2011:	Architect's Design Team issues Cost Plan 1 based on Stage D.
October 2011:	Dundee City Council's Policy and Resources Committee agree on 31 st October that the Council should adopt and contract directly with the independent external Project Managers previously engaged by DDL.
December 2011:	Project Management contract extended to include "on call" independent cost management.
December 2011:	Architects Design Team issues Cost Plan 2 based on Stage D.
December 2011:	First Building Cost Reduction Action initiated.
December 2011:	On 12 th December Dundee City Council's City Development Committee notes the appointment of a contractor to conduct site investigation work.
January 2012:	Independent Cost Managers issue Commercial Review of Cost Plan 2 based on Stage D.
January 2012:	First meeting of DDL's newly constituted Audit and Risk Committee.
March 2012:	Architect's Design Team issues Cost Plan 3 based on Stage D.
March 2012:	Independent Cost Managers issue Commercial Review of Cost Plan 3 based on Stage D.
April 2012:	DDL's Building Sub-Committee approve Stage D status for the project.
September 2012:	Architect's Design Team issues Cost Plan 4 based on Stage E.
September 2012:	Second Building Cost Reduction Action initiated.

September 2012	First Planning Application approved by the Council's Development Management Committee on 17 th September.
December 2012:	Independent Cost Manager issues Commercial Review of Cost Plan 4.
February 2013:	Architect's Design Team issues Cost Plan 5 based on Stage E.
March 2013:	Independent Cost Manager issues Commercial Review of Cost Plan 5.
March 2013:	DDL's Building Sub-Committee approve Stage E status for the project.
May 2013:	Dundee City Council's Policy and Resources Committee notes that contractor appointed to conduct supplementary ground investigation.
August 2013:	Revised Planning Application approved by the Council's Development Management Committee on 12 th August.
December 2013:	Construction Invitations to Tender under OJEU issued on 18 th December.
February 2014:	Architect's Design Team issues Pre-Tender Cost Estimate showing construction cost predicted to be £6 million over plan.
April 2014:	Independent Cost Managers issue Commercial Review of the Pre - Tender Cost Estimate.
April 2014:	Construction Tenders submitted to Dundee City Council on 22 nd April.
April 2014:	Third Cost Reduction Action initiated.
May 2014:	Architect's Design Team issues Commentary on Initial Tender.
June 2014:	Scottish Government Gateway Review.
September 2014:	Council's Policy and Resources Committee advised that BAM Construction is recommended contractor.
January 2015:	Report on 26 th January to the Council's Policy and Resources Committee that the construction element of the project was £31.1 million over plan. Request for approval to proceed with a revised budget of £80.1 million granted.
March 2015:	Work begins on site.
December 2017:	Planned completion of construction.

5. COMMENTARY

- 5.1 Amongst a multiplicity of activities, events and decisions over seven years there were some that had a special significance and impact on the budget outcome. This commentary focuses primarily on those.
- 5.2 Following the creation of DDL in January 2010 one of the earliest key decisions was related to the interpretation of the Chartered Surveyor's document dated 31st May 2010. This was based on benchmarking conducted in 2009. It set out an estimate of the potential construction cost of the project. It was based on comparisons covering ten buildings of similar purpose from the UK and around the world. The comparison included The Tate Modern, the Museum of Scotland and Glasgow's Riverside Museum
- 5.3 The factor used in translating and comparing these buildings was £cost per square metre (£ psm) and this showed the average cost across the buildings to be £4,830 psm. Within this the Glasgow Riverfront Museum (completed in 2011) was positioned at £6,700 psm and the Museum of Scotland (completed 1998) was priced at £6,200 psm.

- 5.4 The value selected as a target for the Dundee Museum of Design was £4,500 psm. With a size of 6,000 square metres of gross inside area this resulted in an estimated building cost of £27 million.
- 5.5 This £4500 psm assumption (33% below Glasgow's Riverside Museum and 27% below the Museum of Scotland) was deliberately set at this lower level.
- 5.6 The rationale developed by officials at the Steering Group was that the building in Dundee should not be in the "elite" category, such as a number of the others in the comparison, but that the target should seek to obtain a quality building at a middle range price.
- 5.7 Also in May 2010 a Site Formation Feasibility Study was released. This was an extensive document, rich in technical detail, analysis and conclusions. It also included estimated costs for different methods for creating a site for the building that would be either partially or totally offshore. This document pointed out that the cost of creating the site could consume as much as one third of the £4500 psm being budgeted for the complete building.
- 5.8 DDL's first Business Plan was an extensive document and included detailed information on the overall project including an analysis of the total cost of £45 million. This included £27 million for the building before adding inflation of £1.55 million and a £4 million contribution from the Waterfront Project for site creation. It also outlined its ambitions for the building and this was carried, as described below, into the Competition Brief.
- 5.9 On June 21st 2010 the Competition Brief was issued to 6 short-listed architects. The brief required a high quality design that reflected the building's use as a national design centre and having the highest regard for excellence and sustainability. Described as a cornerstone of the Dundee waterfront development, the building was expected to become "an attractor for the city, region and the country as a whole".
- 5.10 The building was intended to have 4,400 square metres of identified spaces within a gross internal area of 6,000 square metres.
- 5.11 Included in criteria designated as mandatory was the requirement that the cost of any submitted design for the building should not exceed the £27 million ceiling referred to above.
- 5.12 This excluded inflation and furniture and fittings. The value of future inflation for the building was provided to all applicants in the brief at a level of £1.55 million.
- 5.13 Entrants had the option to propose a design located wholly or partially offshore. In recognition of this option the brief also offered advice on several potential methods of this being done. It covered the detail of different construction approaches such as a pier structure, landfill solution or a combination of both. It emphasised that it was the responsibility of the bidding Architect to decide on which site construction approach to adopt for their architectural proposal. The brief also highlighted the implications of different approaches and their technical factors. Each architect was provided with the Site Formation Feasibility Study referred to above which provided invaluable technical detail, estimated costs, and other information that allowed bidders to be well informed about this aspect of site formation so that their proposals could clearly recognise its importance when formulating their bids and costing their designs.

- 5.14 The brief also stressed that the cost of the site solution was being supported by a contribution from the Dundee Waterfront Project but only up to a maximum of £4 million and that site creation costs in excess of that amount must be met from within the budgeted cost of £27 million for the building.
- 5.15 In August 2010 the six short-listed architects submitted bids to be appointed to the project. This list had been selected from an earlier process within which 122 Stage 1 architectural submissions were vetted down to 49 and then to a short list of 6 asked to provide a Stage 2 submission.
- 5.16 The bids varied in their nature and physical profile and in dealing with the issue of being partially or completely offshore. As might be expected they also varied widely in technical design. However in terms of appearance a number of them could have been, and later were, described as “stunning”.
- 5.17 The winning design offered a building that was completely offshore and which with a gross inside area of 6,712 square metres (per the winning bid) exceeded the Competition Brief’s requirement by 12%.
- 5.18 This winning bid incorporated an elemental cost analysis totalling £26.979 million. Within this estimate it showed cost for Substructure including site formation of £2 million thus confirming that, together with the £4 million pounds being provided by the Waterfront Project, the total Substructure cost including site formation would be £6 million.
- 5.19 However in this submission the largest single element within the total cost was for its Superstructure which included the facade and external walls. At £13m this represented 48% of the £26.979 million. This Architect’s estimate plus the site creation allowance of £4 million together with the inflation assumption of £1.555 million led to a total building cost of £32.529 million for the winning proposal.
- 5.20 Evaluation of the bids was the responsibility of a Judging Panel appointed by DDL and made up of members of the DDL Board together with other experts.
- 5.21 The criteria for selection of the winning proposal were set out in the Competition Brief as follows.
- Demonstration of ability to adhere to target Construction Cost (only submissions which achieve this requirement will be considered further)
 - Architectural, functional and technical responses to the wishes and requirements set out in the Competition Brief (weight 80%).
 - Fee proposal, based on a percentage rate, for the full range of design and other services provided by each team (weight 20%).
- 5.22 The Brief went on to state that, when assessing the entries, the jury will first assess the estimated construction costs, then the architectural, functional and technical responses and then, finally, the fee required in the form of a percentage rate on construction costs will be considered. The Brief also stated that each short listed team will be given an opportunity to present its proposals to the Panel.

- 5.23 The Panel of Jurors was supported in its work by another firm of Chartered Surveyors which summated the bids and provided commentary on the architect's fees and construction issues and also a table of information comparing the elements of the construction cost from each of the architects. The firm noted in making their submissions that each of the architect's estimates had outlined "that they can do the project within the budget". This commission was for a very short piece of work and did not include any detailed analysis or investigation of the construction costs within any of the six bids.
- 5.24 Their written input did however note, in the case of the preferred submission, a concern about the cost of the Superstructure including external walls and recommended that the winning architects be questioned on whether "they could build the remainder of the design within the balance of their committed cost".
- 5.25 There was also a reference by the surveyors to concern about offshore deck works and temporary protection works during construction.
- 5.26 Despite the Competition Brief's and the Site Formation Feasibility Study's strong emphasis on the offshore aspect of the project, there is no evidence of special focus on the cost of this feature during the Panel's work.
- 5.27 The brief notes of the Panel's meeting on 30th October 2010 in commenting on the winning bid recorded outstanding concerns over "materials and details" but noted that this aspect "would need further work during the design's development".
- 5.28 However there is no detailed record of papers or information presented to the Panel's members to support their decision making. Nor is there a unique record of the interviews conducted with each of the six bidding architects. DDL's Board endorsed the Panel's recommendation at its November meeting.
- 5.29 On 28th March 2011 the winning Architect and associated Design Team was appointed to the project.
- 5.30 In that same month DDL formed a Building Sub-Committee (and a supporting Building Group) to oversee the building element of the overall concept. This work and responsibility up until then had been handled by a Delivery Group.
- 5.31 In support of this in April 2011 DDL appointed another new firm of Chartered Surveyors to act as Project Managers for the construction project.
- 5.32 In June 2011 the Architect's Design Team published a Stage C cost estimate. This showed a total building cost of £32.550 million. Details within the estimate were very close line by line and in total to the estimate issued ten months earlier at the time of the Architectural Competition and included the same value for construction inflation (£1.55 million) as provided in the Competition Brief.
- 5.33 On 13th June 2011 Dundee City Council's Policy and Resources Committee approved the adoption of the construction project from DDL into the legal responsibility of the Council.

- 5.34 The budget approved at that meeting was £45 million, not including the agreed £4 million from the Waterfront Budget. No further details on the cost were provided to the Committee. The sources of funding were shown as being £15 million each from The Scottish Government; Lottery Fund/EU; and private funding. At the same meeting it was agreed that there would be a Development Agreement between the Council and DDL regulating the way in which the relationship between the Council and DDL would work.
- 5.35 In July 2011 DDL appointed a full time permanent Director replacing a part-time Project Manager.
- 5.36 In October 2011 the Architect's Design Team submitted Cost Plan 1 based on Stage D. This showed a building cost of £33.241 million versus the £32.528 million in the Competition Bid.
- 5.37 At the end of the same month Dundee City Council's Policy and Resources Committee agreed that the Council should adopt and contract directly with the external Project Managers referred to above. In December that contract was extended to include independent "on call" cost management services for the building.
- 5.38 Just two months after Cost Plan 1, in December 2011, the Architect's Design Team released Cost Plan 2 also based on Stage D. This showed a building cost of £39.927 million i.e. £7.4 million over the Competition Bid. Within this the superstructure cost (including external walls) had moved up to just under £16 million compared to £13 million in the bid and the costs of the Substructure, including site formation costs, were at £6.7 million compared to £6 million in the bid. Also the value for Preliminary Works had increased by £2 million from the bid's £2.8 million to £4.8 million in this latest estimate.
- 5.39 Over and above this the cost of inflation, which had not been recalculated by the Design Team since the original bid, was now increased from £1.55 million to £3.20 million.
- 5.30 Shortly after this, the recently appointed independent Cost Managers issued their first Commercial Review. This report on Cost Plan 2 pointed out that the Architect's Design Team's estimates were based on a design which had not yet reached Stage D and indicated the view that the increased costs within the estimate were still understated by £2.5 million. It also referred to its own benchmarking of the project expressing the opinion that, given the building's substructure and facade design, a much higher value in terms of cost per square metre might be expected compared to the original plan.
- 5.41 As a result of the significant increase in Cost Plan 2 the first value engineering action plan was embarked upon. One of the remedial actions agreed as a result of this plan represented a "client compromise" on the specifications contained within the competition winning design. This was agreement to reduce the height of the building by 2 metres. This reduced the scale of the facade and, as a result, savings of £2 million were made in the cost of the Superstructure (including external walls). Together with other items, including a downward revision in Substructure costs, it meant that in March 2012 the Design Team's Cost Plan 3 based on the final version of Stage D showed a building cost of £34.739 million.

- 5.42 However, when the independent Cost Managers issued their commercial review of this Cost Plan 3 their view was that the values shown in the Design Team's estimates were still understated by £3.6 million. They also expressed the view that the design, although improved, had still not reached Stage D. Finally they commented on the fact that the construction programme had increased from 114 weeks to 130 weeks.
- 5.43 In April 2012 the Building Sub-Committee approved the project as having achieved Stage D.
- 5.44 On 17th September 2012 the Council's Development Management Committee approved the planning application for the building.
- 5.45 In September 2012, in Cost Plan 4 based on Stage E, the cost of Substructure, which had remained largely unchanged since the Competition Bid, escalated to £9.2 million more than the Architectural Competition bid and £7.5 million more than the previous Cost Plan 3 level of March 2012.
- 5.46 At the same time in this estimate the Superstructure cost - which had been reduced from £16 million in Cost Plan 2 (December 2011) to £12.7 million in Cost Plan 3 (March 2012) by value engineering actions, including the reduction in the building's height moved back up again to £17.5 million.
- 5.47 The consequence of this and other increases was that Cost Plan 4 showed a building cost of £46.5 million which was £14.5 million (53%) over the Architectural Competition bid. This was despite absorbing the earlier savings through "client compromise" in reducing the height of the winning design which had contributed £2 million.
- 5.48 Without this the cost at that point in time would have been sitting at least £16.5 million (61%) over the Architectural Competition bid.
- 5.49 Another value engineering cost reduction action plan was embarked upon.
- 5.50 In December 2012 the independent Cost Managers issued their Commercial Review of Cost Plan 4. This incorporated the latest plan for value engineering aimed at reducing the building's cost by nearly £12 million. It also focused on the level of market testing where many specialist contractors had declined to become involved. Indicating a concern specifically about the raking wall and facade, it highlighted both of these as continuing risks. Finally it summarised by saying "until the project is tendered on a competitive basis a true reflection of the market place cannot be obtained".
- 5.51 As part of this second cost reduction plan there was further "client compromise" in accepting a reduction in the height of the building by another 1.5 metres, saving £1.5 million.
- 5.52 However the major compromise on the part of the client was to give up a key feature of the Competition Brief and the Architect's design concept which was to build offshore. By relocating the building substantially onshore £8.5 million was saved.
- 5.53 As a result, and after execution of this redesign together with approval of a revised planning application, the Architect's Design Team issued a Stage E Cost Plan 5 dated February 2013. This showed an updated cost of £34.060 million (including inflation) which was just £2 million over the level of the Architectural Competition bid.

- 5.54 In March 2013 the independent Cost Managers published their Commercial Review of Cost Plan 5. This summarised the savings targeted between Cost Plan 4 and Cost Plan 5 at £11.7 million.
- 5.55 On 13th November 2013 the independent Cost Managers produced a report for Dundee City Council reviewing the project to date. In this they confirmed their earlier concerns that the Architect's original cost estimates had been "excessively optimistic".
- 5.56 In December 2013 Invitation to Tender documents were issued to four contractors. This followed an OJEU process during which five contractors reached the PQQ stage at which one was eliminated.
- 5.57 Two months after the initiation of the tender process, in February 2014, the Architect's Design Team presented a Pre-Tender Cost Estimate. Including inflation and adjusted for other items this showed a cost of £41 million compared to the Architectural Competition bid and Budget of £32.5 million and Cost Plan 5 of £34.1 million also including inflation.
- 5.58 On 22nd April 2014 only two of the four tenders originally anticipated were submitted as the other two candidate construction companies withdrew. Both tenders offered construction prices in excess of the Architect's Design Team's estimates. However, although individual sub-elements of cost differed between the bids, the overall totals were reasonably close to each other.
- 5.59 The independent Cost Managers were not requested to produce a report on the submitted tenders.
- 5.60 In June 2014 a Scottish Government Gateway Review 3 was conducted. The review expressed concerns about the need for additional skilled project management and the absence of integrated planning. It also highlighted ambiguity of responsibility for governance between DDL and Dundee City Council and a concern that responsibility and authority might not sit in one place.
- 5.61 Dundee City Council on 27th June 2014 switched the procurement process to a negotiated procedure with both contractors still involved.
- 5.62 Subsequent to this, further cost reduction work was embarked upon and a number of potential actions considered. One of these was to further reposition the building to eliminate its overhang of the water. This would have saved approximately £6 million. However the Building Sub-Committee proposed to the DDL Board that this action should not be pursued as it would have seriously compromised the aesthetics of the building as seen both from the landside and the water.
- 5.63 On 8th September 2014 the Council's Policy and Resources Committee endorsed BAM as the recommended contractor. The BAM tender price was not included in the paper submitted to the Committee.
- 5.64 Negotiations and revisions to the tender price continued and finally, on 26th January 2015, the project was re-approved by the Council's Policy and Resources Committee including a new budget of £80.1 million. This included a building contract cost of £60.8 million.

6. ANALYSIS AND CONCLUSIONS – INCREASE IN BUDGET

6.1 OVERVIEW

- 6.1.1 This section of the report addresses the main reasons behind the £31 million increase in the budget from £49 million approved by the Policy and Resources Committee on 13th June 2011.
- 6.1.2 There is no original document recording the breakdown of the budget, but in March 2015 Council officials provided the following analysis (not including the contribution from the overall Waterfront Project)

	£
Construction Cost	26,998,000
Furniture, Fittings & Equipment	4,550,000
Professional Fees	2,828,000
Inflation to Construction Cost	1,550,000
Inflation to F,F&E	250,000
Other Related Costs	240,000
Client Contingency	8,584,000
TOTAL BUILDING BUDGET	45,000,000

- 6.1.3 To assist in the understanding of the changes from this original budget of June 2011 through to January 2015 the following comparison sets out a breakdown of the major elements of the budget. To ensure an effective comparison, the contribution of the £4 million from the wider Waterfront Project budget has been included in this original budget. Also the value of inflation planned for both the building project and furniture and fittings has been consolidated into the original budget value for each of these elements. This shows that the increase consists of: £28 million in building construction cost; £4.9 million for professional fees; and £1.8 million credit from reduced contingencies. The Furniture, Fittings and Equipment element of the budget at £4.8 million is unchanged at this time.

ORIGINAL AND NEW BUDGET COMPARISON

£ Million	June 2011	January 2015	Change
Construction Cost	32.8	60.8	+28.0
Professional Fees	2.8	7.7	+ 4.9
Client Contingencies	8.6	6.8	- 1.8
Furniture and Fittings	4.8	4.8	-
	49.0	80.1	+ 31.1

6.2 BUDGET SETTING

- 6.2.1 In explaining the overall increase in the budget it is important to consider how the budget was set. There are two areas where this is particularly relevant. The first of these is related to the interpretation and decision making within the budgeting process based on the benchmarking and cost estimates prepared by the firm of chartered surveyors in 2009.

- 6.2.2 Steering Group officials selected, and DDL subsequently adopted, a target cost per square metre of £4,500 for the V&A building budget which was just below the average cost of a number of similar projects and 33% less than Glasgow's Riverside Museum. This was deliberately intended to lead to a building which was less aspirational than the "elite" category of some of the other projects in the 2009 comparison but was expected to deliver a high quality building at a middle of the range price.
- 6.2.3 The Competition Brief continued with this below average cost target although within its narrative it emphasised that the building itself should be an "attractor to the city, region and the country as a whole".
- 6.2.4 As a separate issue it is also not clear how the selected cost of £4,500 psm would have been able to fully cope with the intent to have the building constructed fully or partially offshore.
- 6.2.5 The Brief stressed that there would be significant cost associated with building offshore and provided bidders with estimated costs for different solutions within the Site Feasibility Study attached to the Brief. This Study pointed out that up to one third of the £4,500 psm cost could be consumed by building offshore. Although it could be argued that provision for this was covered by the £4 million contribution from the Waterfront Budget, this turned out not to be the case.

CONCLUSION A:

There was a mismatch between the lower aspirations for the building's design on which the £27 million budget was based and the elite level of the design implied in the competition brief and eventually selected by the Panel.

CONCLUSION B:

The target cost set for the building also incorporated the risk that the cost of having it offshore would be difficult to cover within the budget even after adding a £4 million contribution from the Waterfront Budget.

- 6.2.6 Professional Fees is the second category where the budget setting process created an issue. As shown at 6.1.3 above, the budget for professional fees was set at £2.8 million by Council officials. In doing this they provided only for the Architect's Design Team fees and took no account of, nor therefore planned for, "other" professional fees.
- 6.2.7 Architect's fees as at the revised budget phase in January 2015 have accumulated to £4.5 million. Although this sum includes unplanned additional payments to the architect, the design fees have not moved directly with the escalation in the cost of the building.
- 6.2.8 Now with "other" fees totalling £3.2 million, the new budget of £7.7 million shows an increase of £4.9 million compared to the detail of the plan behind the budget presented to and approved by the Policy and Resources Committee in June 2011.
- 6.2.9 This is made up of £1.7 million of additional architect's fees and £3.2 million of "other" professional fees which should have been planned for.

6.3 THE COMPETITION BRIEF AND ARCHITECT SELECTION

- 6.3.1 The task of recommending the winning design fell to the Judging Panel. Although there are some brief meeting notes, there is not a complete and comprehensive record of the information provided to the panel or of the deliberations of the Panel. As a result it was not possible to validate if, when making their recommendation, the Architect's ability to deliver the bids within target was fully demonstrated to the Panel as required by the Competition Brief.
- 6.3.2 In particular there may have been confusion about the depth of analysis conducted by the Chartered Surveyors on the six entrants' costs estimates and especially on the winning bid. Also it is not clear if they were briefed about, and took on board, the advice and concerns of those professional advisers, especially on the subject of the Superstructure cost.
- 6.3.3 Finally it is also not clear whether Panel Members were alerted to the fact that, with 6,712 square metres of gross inside area, the winning building design actually had a cost per square metre of £4,023 which was 11% below their V&A target and 40% below the cost per square metre of the Glasgow Riverside Museum.
- 6.3.4 However, Panel members feel they were assured by their officials that the independent Chartered Surveyor had validated that all bids including the winning one could be delivered for the target price.
- 6.3.5 The conclusions and recommendations from the Judging Panel were presented to and endorsed by the Board of DDL. Board members believe that they were assured by officials that the winning bid had a cost of design that could be delivered within budget. This was confirmed in the relevant Board meeting minutes.

CONCLUSION C:

There was insufficient investment in providing external professional support to the project particularly in its early stages. In the case of the Judging Panel, the depth of independent technical investigation and analysis of the six cost estimates, particularly in relation to the cost of their design concepts and complexity, could have been deeper and more extensive. This is, of course, especially appropriate to the winning design.

CONCLUSION D:

The depth of scrutiny able to be exercised by the Judging Panel in selecting the winning bid and understanding whether its design could be delivered within the estimated costs is difficult to assess due to incomplete records. For the same reason there is a lack of clarity about the information and briefing they were provided with, including on the rationale used in developing the original budget, the depth of independent adviser investigation of the bids and the adviser's concerns about the achievability of the winning bid. However, leaving aside how well supported and informed it was, the Panel's process led to the selection of a winning bid that proposed an elite building, built over water, and estimated to be delivered at a cost per square metre which was 11% less than their own budget which was originally set on an aspiration for a building that would be of high quality rather than elite.

6.4 THE WINNING DESIGN AND ITS COST

- 6.4.1 Having made the choice on Architect and design, and as the process proceeded, it might have been expected that as the design developed there would be cost changes and possibly increases as the detail behind the design progressed from Stage C onwards to the final contracted cost.
- 6.4.2 During this review, when conducting analysis of the difference between the original Stage C estimate (June 2011) and the finally contracted cost, some difficulty was encountered.
- 6.4.3 Firstly, as mentioned elsewhere in the report, there is no comprehensive and complete project file held by the clients.
- 6.4.4 Secondly, although the nomenclature used for major cost element categories in the original estimate and the contractor's contracted price are similar, the interpretation as to which category the many thousands of items of individual cost are allocated into often differed between the buyer and seller thus making comparisons dependent upon focused reconciliations.
- 6.4.5 Finally, Dundee City Council had not conducted a numerical analysis of the original budget to new budget increases and the financial data and comparisons held by the external Project Manager and the Design Team were primarily conducted from Cost Plan to Cost Plan rather than from the original plan until final tender. However it has been possible to identify the main areas of difference and increase.
- 6.4.6 This building is not only striking in its appearance but is complex in its use of materials, structures and particularly challenging from a construction standpoint. Its structure of "inverted pyramids", flowing profile concrete panel surface with stone planks attached and its partial reliance on securing of the roof to finally bind it has resulted in significant premium costs. The fact that the original design was fully offshore added even more to this complexity.
- 6.4.7 However the increases in estimated cost developed by the Architect's Design Team materialised early in the process and accelerated in later cost plans. It must have been concerning for the clients to see the pattern of increases offset by cost reductions followed by further increases and further cost reductions followed by further cost increases.
- 6.4.8 During these fluctuations there was a consistent trend of upward cost pressure reported as the design's complexity, and in particular the cost of building it, was realised. The phrase "buildability" appears frequently within DDL records and especially its Risk Registers.
- 6.4.9 The main areas behind this were the cost elements of Superstructure and Substructure including site formation.

6.4.10 Superstructure Cost

- (a) The Superstructure cost was identified as a concern at the Architectural Competition stage principally because it made up such a large proportion of the estimated cost and might put the overall budget at risk. However, as its design was further developed, it became more obvious that the level of detail in the design of the original concept had not allowed the Design Team's Quantity Surveyors to take full account of the complexity and resultant cost of materials. Nor had their Architectural Competition level cost estimate been able to recognise the full cost of actually building such a unique design.
- (b) As an example, between Stages C and D there was a major design change that recognised that the original approach proposed in the winning design for creating the frame and facade was not feasible and a different method of creating the same effect was developed.
- (c) The provision for Superstructure cost in the Architect's June 2011 C level estimate was £12.4 million. However the final contracted cost of this element was £18 million more.
- (d) The first indication of cost increases in this category as the concept design was further developed came in the Design Team's Cost Plan 1 and then again more significantly in Cost Plans 2 and 4 and in their Pre- Tender Cost Estimate.
- (e) Whilst the costs of materials and some specific sub elements within the Superstructure have exceeded those contained in the Competition Bid and the Design Team's Stage C Cost Estimate, the cost of temporary works, site works and other preliminary cost which were not covered in these original estimates make up the major part of the Superstructure cost change and also a considerable part of the overall budget increase.
- (f) For example, within the contract price for Superstructure there is a premium of £12.8 million attributable to specialised construction methods and associated equipment required to build the superstructure's design. This is made up of:
 - The special and individually designed formwork (or moulds) for fabricating the external concrete panels which create the building exterior's irregular flowing effect, and which are fabricated on site, will cost £2 million. This formwork, because it is unique to this building, can be used just once and has only residual scrap value.
 - Because of the steeply sloping angle of the walls, and the requirement to support the structure until the roof is finally added, the method of construction not only needs the use of temporary shoring but also for much longer than would normally be the case. The cost of assembling and dismantling the shoring, including the hire of the equipment, is £6.6 million.
 - This fabrication and construction work requires specialised sub-contractors and equipment, including platforms and cranes, to be on site for a considerable time thus incurring site and preliminary works costs only for the Superstructure of £4.2 million.
- (g) Other issues of budget increase within the Superstructure category such as those associated with the cost of the external walls and facade account for nearly all of the rest of the Superstructure budget difference of £5.3 million.

- (h) Some of this part of the upward movement was included by the Design Team in the Pre Tender Cost Estimate, which for Superstructure estimated £18 million compared to £12.43 million in the June 2011 Stage C estimate.
- (i) The over budget situation on Superstructure remains the largest single reason for the overall budget increase despite on two occasions, as part of cost reduction actions, the height of the building being lowered thus reducing the volume of the facade and saving cumulatively £3.5 million.

6.4.11 Substructure and Site Formation

- (a) In the cost element of Substructure, including site formation, there was a similar issue over time of design development and market testing leading to an increased estimate of the real cost of building offshore. Within the Architectural Competition bid this element was estimated to cost £6 million and sums of around this value were repeated in the Stage C estimate of June 2011 (£5.9 million) and in Cost Plans 1, 2 and 3. The estimated cost shown in Cost Plan 3 of March 2012 was £5.7 million.
- (b) In September 2012 the Design Team's Cost Plan 4 showed an increase to £13.2 million, a growth of £7.2 million over the Architectural Competition bid of August 2010. It was therefore two years from the original bid before any major risk to the originally planned cost of building offshore was identified.
- (c) As a result the building was repositioned substantially onshore to offset this cost. This saved approximately £8.5 million. However, although the full cost of building completely offshore was avoided, the outward facing part of the superstructure (known as the prow) overhangs the water.
- (d) To allow the construction of this, a coffer dam is required. The cost of this temporary structure is £3.2 million and this is the major contributor to the net difference in cost in the category of Substructure including site formation.

6.4.12 Other Cost Changes

- (a) In other parts of the building's design there were similar problems with increased cost, in a number of cases because the design was updated by the Architect or at the request of the client. An assessment of the cost of client driven design changes would indicate that around £3 million is attributable to this factor and is spread amongst the various elements of the building's cost.
- (b) For example, in the category of Internal Finishes there is around £1 million of additional cost mainly due to floors and ceilings. The floor design is of natural stone and Scottish Oakwood and the original estimate provided £0.7 million for this whereas the final cost is £1.2 million. In the case of the ceilings, the original estimate provided £0.4 million for standard ceilings whereas the final design incorporates acoustic ceilings, baffles and feature ceilings in the main hall, all at a cost of £0.9 million. The Design Team's overall estimate for this category was £1.5 million but this had been increased to £2.4 million in their pre-tender estimate of February 2014. The actual contract cost is £2.5 million.

- (c) The Services category is also substantially over the original budget by £3.9 million. In the original estimate of June 2011, the Design Team estimated a total cost of £5.1 million within which heating, air conditioning, electrical services and lifts represented the largest areas. In the Design Team's Pre-Tender Estimate of February 2014 this had grown by 43% to £7.3 million and in the construction tender the contractor's bid included £9 million for Services. A large part of this additional cost arose in the area of Electrical Services (£1 million) with lifts adding another £0.2 million.
- (d) Finally it is assessed that embedded within the various categories of building expenditure there are other value engineering savings of £4.3 million. These are over and above the £12 million gained from reducing the building's height and relocating it onshore. In this respect, and leaving aside the cost increases, the Design Team, the external Project Manager and all involved should take credit for the ingenuity and effort involved in identifying and executing within the design these value engineering changes. Also, as a result of effective reshaping and improved utilisation of internal space, the building's gross internal area has increased to 8,499 square metres (net area 4,645 square metres) which also reduces the cost psm of the building.

6.4.13 General Preliminary Works

Within the original Design Team cost estimate there was a provision of £2.8 million for Preliminary Works. As indicated above, this excluded preliminary and site works associated with the Superstructure. However, based on limited information available at that time, it also did not provide for the full extent of general site facilities and support including the hire of equipment. The final cost of this is £2.4 million more at a total of £5.2 million.

6.4.14 Client Compromise

From a client perspective it must have been disappointing to recognise that the major parts of the cost reduction plans referred to above depended upon "client compromise". This took place twice in reducing the building height and also significantly in forfeiting the highly desirable feature within the Competition Brief of having the building completely or partially offshore. These compromises saved £12 million.

6.4.15 Main Contractor Overhead and Profit

Finally it should be noted that in the original cost estimate the Design Team, based on a cost of just under £27 million, provided a sum for Main Contractor's Overhead and Profit of £0.8 million. This was embedded through an uplift to individual cost elements rather than shown as a separate item. The amount included now in the final contract price for this element, based of course on a more expensive building, is £2.7 million more at £3.5 million.

CONCLUSION E:

The original Architectural Competition Bid Cost Estimate and, as a consequence, the Dundee City Council Budget of June 2011 were both understated. In particular, at that stage the level of development of the winning design did not allow full account to be taken in cost estimates of the complexity of the structure and within that was especially short in providing for the temporary works costs associated with actually building the design's extraordinary Superstructure. It also did not provide fully for the cost of building over water and this resulted in the building being relocated onshore thus sacrificing a key feature of the Competition Brief and the Design Competition.

CONCLUSION F:

It took time to identify all of the inherent upward cost pressures within the original estimate. Their materialisation in a series of different Cost Plan episodes, followed by value engineering redesigns over a three year time span, caused delays and disruption to the programme.

CONCLUSION G:

The design development issues and design changes were almost completely driven by the complexity of the design and in particular the challenges associated with its "buildability". Client changes to the original design caused a relatively small part of the increase in cost. In fact these changes were more than offset by the results of "client compromise" in forfeiting the offshore feature of the original design and in agreeing on two occasions to reduce its height.

6.5 PROGRAMME DELAYS

- 6.5.1 Within the overall programme the construction schedule current as at April 2011 showed a start of construction in August 2012. Completion was planned for December 2014.
- 6.5.2 This formed the basis of the decision and budget proposed to the Council's Policy and Resources Committee.
- 6.5.3 Compared to the schedule currently being pursued of completion at the end of December 2017 this results in a three year delay in realising the project originally envisaged in 2007.
- 6.5.4 A number of implications arise from this slippage and one of the most significant is that of the cost impact of three additional years of inflation. This is dealt with below at **6.7**. However it is also important to have an understanding of the causes behind the delay.
- 6.5.5 As explained earlier, the budget difference in construction cost has been driven very much by the complexity of the design and especially its "buildability". This can be seen both in the cost of materials and in the work content associated with building the design.
- 6.5.6 The work content factor has not only increased the basic cost of the design but has also caused an increase in the length of the construction period, from 114 weeks to 143 weeks.

- 6.5.7 However, the majority of the programme delay can be attributed to taking longer to develop and finalise the building's design, exacerbated by the need as that design developed to embark upon a series of cost reduction actions and redesigns. For example, following the second redesign there was the need for a second planning application. This second approval took place nearly one year later than the first approval.
- 6.5.8 Finally, when "over budget" bids were received from contractors there was a considerable period of negotiation, another value engineering exercise and a round of discussions and reviews with stakeholders, funders and partners.
- 6.5.9 In summary, my assessment is that the overall delay of 36 months is attributable to:
- Increased construction period due to the design's work content: 5 months
 - Design related delays due to design development and multiple cost action plans and redesigns: 25 months
 - Post tender delays due to negotiation, value engineering and new fund raising activities: 6 months

6.6 INFLATION

- 6.6.1 In all building projects being able to anticipate future inflation is an important aspect of accurately estimating costs for a building undergoing construction anytime between months or years forward from the point in time of the estimate of the elemental costs of construction. The Royal Institute of Chartered Surveyors (RICS) publishes indices to support construction professionals in conducting this task.
- 6.6.2 In 2010 the firm of Chartered Surveyors, using the cost per square metre target selected by DDL of £4,500, calculated a building cost of £27 million. In estimating the inflation to be added to this and to reflect the planned future programme they calculated £1.55 million as being the future impact of inflation.
- 6.6.3 In my view this value was understated at the time of calculation and Council officials in preparing the competition Brief and the budget did not develop a recalculation of inflation but simply picked up and used this same possibly understated figure. Also the inflation calculation was applied only to the base figure of £27 million and excluded the additional £4 million being provided from the Waterfront Project.
- 6.6.4 However the financial impact of the programme delay is significant and I estimate the inflation based on RICS indices from the date of the original estimate (3Q2010) to the midpoint of the current building programme (3Q2016) to be £7.9 million. It should be noted that the indices used show that construction industry inflation is now very much higher than it was three years earlier during the recession so this effect is included in the value calculated.
- 6.6.5 Thus in the context of the overall budget increase the financial impact of general industry inflation is £7.9 million less the £1.55m already planned i.e. a net £6.35million.

CONCLUSION H:

It is likely that general construction industry inflation was not fully provided for in the June 2011 budget. However, when inflation is recalculated using current higher indices and recognising the 3 year programme delay described above, the additional inflation impact is £6.35 million.

6.7 IMPACT OF CONSTRUCTION INDUSTRY COMPETITION

- 6.7.1 A few years ago, when there was excess capacity in the construction industry, there is no doubt that bids were sometimes made at lower than market value to win business, ensure continuity of companies and retain capacity for the future.
- 6.7.2 Since then, the industry's workforce in the UK has reduced and in Scotland alone tens of thousands of people have left employment in the sector. This, together with some restoration of economic growth, including significant public sector investment in construction projects, has resulted in capacity being much tighter. This general situation is reflected in an upturn in the inflation indices issued by the RICS.
- 6.7.3 In the case of this V&A project, given that there were in the end only two bids, the question has been raised as to whether an exceptional impact of lack of competition arises.
- 6.7.4 Given current market conditions, and the challenges through the supply chain of building this unique and complex design, it is unlikely in my view that a project of this nature would be a prime candidate for any contractor to take additional risk in offering lower than market prices to win business. The sophisticated and specialised nature of the building's Superstructure, calling in turn for specialised sub-contractors, would be a very relevant example of this.
- 6.7.5 The aspect of risk not only mitigates against lower than market prices it also inhibits interest in projects seen as risky and this is underlined by the winning contractor's experience of a low ratio of sub-contractor tenders returned compared to tenders issued.
- 6.7.6 In summary, it seems clear that this quite unique project did not benefit from risk taking and lower than market prices, as it might have done had it come to the market three years earlier. However this is a moot point and also one that could be considered to be already addressed through the use of higher current inflation indices when calculating the additional inflation impact of £6.35 million at **6.6**.
- 6.7.7 The overhead and profit shown by the winning contractor in its bid is included in the analysis at **6.10**. At approximately 5.5% this is at a reasonable level. However there is a £2.7 million difference compared to the lower % level and lower building cost within the original budget.

6.8 CONTINGENCIES

- 6.8.1 In preparing the June 2011 Plan Council officials included a total value of client held and controlled contingencies of £8.6 million. This was set potentially for the life of the project through to completion. Having now embarked on the construction phase a level of contingency is being maintained but at a reduced level. By carrying a client contingency of £6.8 million to the next part of the programme this releases £1.8 million and this appears as a credit within the analysis of the £31.1 million budget increase detailed in this report.

6.9 FURNITURE, FITTINGS AND EQUIPMENT

Dating back to 2009, and then incorporated in Dundee City Council's June 2011 budget, there is a value of £4.8 million for furniture, fittings and equipment for the building. This will be installed post completion of the construction phase and the budget is at this time still unchanged. There is therefore no increase in budget for this category of spend within the overall change.

6.10 SUMMARY OF ANALYSIS OF INCREASES IN BUDGET

£ Millions	June 2011	January 2015	Change
Construction Cost	32.8	60.8	+28.0
Professional Fees	2.8	7.7	+ 4.9
Client Contingencies	8.6	6.8	-1.8
Furniture and Fittings	4.8	4.8	-
	49.0	80.1	31.1

Based on **6.2-6.9** above, the overall increase of £31.1 million can be analysed into its main constituent elements as shown below. To allow the incorporation of the elements of Inflation and Contractors Overhead and Profit into the analysis the values shown at **6.2 - 6.9** have been adjusted to remove these factors.

OVERALL BUDGET DIFFERENCE ANALYSED (MAJOR ITEMS)

	£Millions
Additional Inflation Impact	6.4
<u>Superstructure</u>	
Temporary and Site Works	9.8
Other Cost Increases	<u>4.2</u>
	14.0
Substructure and Site Formation	11.1
Relocation On Shore	<u>(8.5)</u>
General Site Preliminary Works	2.6
Building Services	1.9
Internal Finishes	3.1
Main Contractor Overheads and Profit	0.8
Original Plan Design Team Contingency	2.1
	(2.9)
Building Budget Difference	28.0
Professional Fees	4.9
Client Contingencies	(1.8)
	31.1

Looked at from the standpoint of causal factors I assess the split of the above to be:

- Underestimates within the original budget - £18.1 million (58.2%)
- Impact of programme delays - £5.4 million (17.4%)
- Cost increases and design changes - £7.6 million (24.4%)

CONCLUSION I:

The largest single cause of the increase of £31.1 million in the budget for Dundee's V&A Museum of Design was an understatement of the original budget.

7. ANALYSIS AND CONCLUSIONS – GOVERNANCE AND PROCEDURES

- 7.1 The overall concept, including the building project, was carried forward initially by a group made up of the various partners (University of Dundee, Scottish Enterprise, Dundee City Council, Abertay University and the Victoria & Albert Museum). It was adopted in January 2010 by Design Dundee Ltd (DDL) when that company, a registered charity, was formed. The company held its first board meeting on 29th January 2010. Up until March 2011 the building element of the project was overseen by a Delivery Group.
- 7.2 DDL's approach to overseeing the building project incorporated the formation of a Building Sub-Committee in March 2011. This Sub-Committee was chaired by a board member of DDL who was also an official at Dundee City Council and its membership included other DDL board members and individuals with experience of estates. This structure was supplemented by the formation of a "Building Group" which operated at a more detailed level. This Group was also chaired by a Dundee City Council official and also supported by the external Project Manager when he came on board at the end of March 2011
- 7.3 In general the governance at DDL was in my view competent in terms of procedures and structures and provided the only source of continuous records (although primarily based on papers for and minutes of meetings). However, as mentioned earlier, for the important matter of the Competition Panel's deliberations in 2010 records were incomplete.
- 7.4 DDL's governance on matters related to the overall project was further strengthened in January 2012 with the establishment of an Audit and Risk Committee.
- 7.5 During 2012 and in the early months of this Committee its risk register highlighted the issue and cost consequences of the "buildability" of the building not being fully understood. This same issue was displayed to and commented upon at full DDL Board meetings. Over the period, at the DDL Board and subsequently the Audit and Risk Committee, there was an appropriate level of questioning on matters pertaining to the building project.
- 7.6 This included in November 2010 the Board being given assurance that the winning architects bid could be built within the budget outlined in the Competition Brief.
- 7.7 The Board and the Audit and Risk Committee placed heavy reliance on the Building Sub-Committee and its supporting Building Group.

CONCLUSION J:

The administrative procedures pursued and governance exercised by DDL were generally competent. This was particularly the case from early 2011 onwards when its structures were considerably strengthened with new committees and the engagement of externally contracted support. However in 2010, at the time of the Architectural Competition and its Judging Panel, there could have been more rigorous recording and information reporting.

- 7.8 The building element of the project has relied almost completely on the use of external professional services. Over the project to date, three different firms of Chartered Surveyors have been engaged in supporting the project. The first firm's remit laid out the options and costs associated with a budget for the building.
- 7.9 The second firm was engaged for two days of work at the time of Competition Bid in September 2010. This project seems not to have been intended (nor could it have been possible) to validate within the extent of the work the achievability of the six Architects' cost estimates.
- 7.10 It would obviously have been more critically useful if an in-depth review had taken place for all bids and that work once completed had then been extended to an independent "bottom up" cost estimate for the winning bid prior to appointment of the Architect in March 2011. In this context it should be noted that all of the formal cost estimates from the Competition Brief through to the Pre-Tender Cost Estimate originated from the Architect's Design Team.
- 7.11 In March 2011 a new firm was appointed as Project Managers and at the end of that year their contract was extended to providing "on call" cost management services. This engagement effectively created for the first time a Project Management function.

CONCLUSION K:

There has been an under-investment in skilled and experienced in-house technical and project management resources for this project. Although the use of externally contracted support has added value and capability, that type of full time assistance came only in March 2011. It is primarily a project management role and one that has proved crucial to the project to date. However neither at DDL nor at Dundee City Council has there been a building project manager involved full time and fully accountable for this project and only this project.

CONCLUSION L:

There has been no continuous ongoing Quantity Surveyor or Cost Manager for the project, meaning no independent day by day monitoring of the cost estimating and other financial work of the Design Team. Although the extension of the external project management contract to include cost management services added value, their engagement was "on call" and they were not in place until the end of 2011 with their first report in January 2012

- 7.12 Prior to June 2011 Dundee City Council's involvement was limited to being full partners in the Steering Group and eventually members and shareholders in DDL Limited. However in June 13th 2011 the Council's Policy and Resources Committee approved that Dundee City Council should become the "client for the delivery of the building and its owner thereafter". However, rather than treat it the same way as the Council would other projects, reliance continued to be placed on the governance, administration and mechanisms of DDL Limited.
- 7.13 For other projects, particularly of this scale, a Project Board within the Council would have been formed and through this Project Board engagement and interaction with Council Committees such as the City Development Committee, which engages with key aspects of the Council's portfolio of construction and infrastructure projects including schools. Council projects benefit also from the day to day engagement and support from officers within the City Architect's team in the City Development Department and the Corporate Services Department. These departments have professional staff including surveyors, architects and accountants.
- 7.14 As a result of treating the V & A building as a partnership project rather than "the norm" it meant that little of the engagement and support described above applied to the V & A project. However a small number of senior officials did participate part-time in leadership roles within the structures of DDL.
- 7.15 Consistent with this approach there was no complete project file maintained within the Council and it was difficult to establish historical facts or track down back-up information.
- 7.16 Also, as indicated above, the Council did not have a full-time in-house project manager. An implication of these issues was that all monitoring and reporting of status arising within DDL's committees was channelled through to DDL's Board which, with only a few exceptions, was well informed and abreast of all the challenges being encountered including design and cost issues over the life of the project. At the same time it resulted in a situation where officials not directly involved in DDL, and also all Council Members, were not recipients of the same information flow as the DDL Board. However, on the few occasions when standing orders required a decision or other approval by a Committee, papers were developed and submitted as required.

CONCLUSION M:

Dundee City Council continued to treat the V&A project as an external partnership venture and did not integrate it into the normal work of the Council in the same way as other construction projects. As a result not only was there no single accountable project manager within the Council but the project did not benefit from access to and support from the full range of professional services such as quantity surveying and financial management. There was also ambiguity about responsibility and accountability for the building project between DDL and Dundee City Council and the intended Development Agreement setting out the terms of the relationship was not formalised.

CONCLUSION N:

Within Dundee City Council there was no central project file and all day to day governance, monitoring and regular reporting of status took place within DDL and not the Council. However when formal approvals or notifications were strictly required these were referred to appropriate Committees.

- 7.17 In the context of governance it is particularly relevant to establish that EU and Scottish Government public procurement rules were followed. Also in this regard the involvement of the Council's Procurement Department is highly desirable. In the case of the Architectural Competition, a process under the rules of the EU was operated and an OJEU Notice issued in February 2010 in the name of Dundee City Council. Through this process the number of interested Architects was reduced from an original number of 122 down to the 6 finalists. However the Procurement section at Dundee City Council was not formed at that time and therefore not involved in this process which was operated within DDL with other Council Officers administering it. The manager of the Procurement team within Dundee City Council was however fully engaged in the administrative processes associated with the pre tender and tendering activities for the building project.
- 7.18 At the final stages the tendering process, initiated originally under the EU Restricted Procedure, was switched to a Negotiated Procedure and this was dealt with appropriately.
- 7.19 The issue of both finalists' bids being technically non-compliant was also effectively dealt with and both agreed to make their bids compliant and continue within a Negotiated Procedure. On 9th September 2014 both bidders were properly informed that the intention was to proceed with a contract with BAM Construction Ltd.

CONCLUSION O:

EU procurement rules were followed both in the case of the Architectural Competition and the Construction Tender. The Council's Procurement section was appropriately involved in the Construction Tender OJEU process but not the earlier process for the Architectural Competition. At that time there was not a central procurement function within Dundee City Council. Not only is this team now well established but its staffing includes expertise in construction projects.

8. SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

- 8.1 In my opinion this project had, from the beginning, little prospect of being delivered for the original budget due to an accumulation of factors that mitigated against that outcome being achieved.
- 8.2 Firstly, the budget of £27 million and its base of £4,500 psm was deliberately set at a middle of the range value with the intent of having a building of high quality but not an elite structure such as a number of others, including the Glasgow Riverside Museum at £6,700 psm.
- 8.3 The fact that this below average estimate was also expected to cater for a building built offshore added to the risk.

- 8.4 When faced with the opportunity within the Design Competition to select a potentially elite building it is not clear how the Judging Panel's deliberations dealt with this aspect of the decision making.
- 8.5 In dealing with this issue, Panel members needed to be supported by in depth investigation of the technical and cost implications of the bids and in particular the preferred design. It is also not clear if they had access to the limited information available, including independent professional concern about the achievability of the winning bid's cost estimate given the disproportionately high cost of the facade.
- 8.6 As a result it may not have been possible at that stage to appreciate that in choosing the stunning winning design the complexity and challenge of actually building it would generate very significant cost premiums, some of which were neither provided for in the Architect's bid nor later in the June 2011 budget. Once the Design Team and its building design was selected, the prospects of an early realisation of the scale of the problem was made difficult by a succession of cost increases materialising as the design developed over a series of Design Team cost plans. These increases were in turn substantially offset by cost reduction and value engineering exercises. Within these "client compromise" on the height of the building and forfeiture of the offshore feature contributed £12 million of savings. Without these compromises the original building on its original offshore site would have cost at least £72.8 million.
- 8.7 This disrupted process also caused significant programme delays and the project is now running three years later than the plan as at June 2011, with a resultant cost impact from additional inflation. Five months of this delay is due to a longer period of construction, 114 to 143 weeks.
- 8.8 As the design developed, and more market testing was conducted, more cost was added. Finally when tenders were received they contained significant items of cost not included in the original estimate.
- 8.9 The following table analyses the main constituents of the budget increase of £31.1 million. The values shown below have been adjusted to allow the inclusion of Inflation and Contractor's Overheads and Profit.

OVERALL BUDGET DIFFERENCE ANALYSED (MAJOR ITEMS)

		£Millions
Additional Inflation Impact		6.4
<u>Superstructure</u>		
Temporary and Site Works	9.8	
Other Increases	<u>4.2</u>	14.0
Substructure and Site Formation		
Relocation On Shore	<u>(8.5)</u>	2.6
General Site Preliminary Works		1.9
Building Services		3.1
Internal Finishes		0.8
Main Contractor Overheads and Profit		2.1
Original Plan Design Team Contingency		(2.9)
Building Budget Difference		28.0
Professional Fees		4.9
Client Contingencies		(1.8)
		31.1

8.10 Looking at this analysis from the standpoint of causal factors, I assess the breakdown of the £31.1 million as falling into the following categories:

- Underestimates within the original budget - £18.1 million (58.2%)
- Impact of programme delays - £5.4 million (17.4%)
- Cost increases and design changes - £7.6 million (24.4%)

As can be seen the greatest single cause of the increase in budget was the underestimation of not only the building's cost but also other costs in the original budget.

8.11 Although procedures and governance improved, especially from early 2011, it was in 2010 that there would have been most opportunity for sharper focus and particularly investment in better support to change the budget outcome. For example, had there been a full time project manager with construction experience and also strong full-time technical and cost management support during the Architectural Competition then there might have been a different decision or at a minimum an opportunity to reconsider budget setting at that time

8.12 Beyond that point I believe that although integration of the project in June 2011 into Dundee City Council's mainstream processes may not have changed the final budget outcome it would in my view have assisted in bringing matters more quickly to a conclusion. It would also have addressed the issues of project management, the absence of project files, information, communications and wider stakeholder engagement.

8.13 However at the final stage of the pre-construction process and once additional funding had been negotiated it was in my view the right decision to proceed with the building contract and at the price of £60.8 million.

8.14 This is based firstly on my review which leads me to believe that, for building this complex and sophisticated design, the contracted price is credible.

- 8.15 This credibility is further supported when the price is considered alongside the cost of other buildings. Now at a cost of £7,153 psm of gross inside area the V&A building when completed in 2017 will be, allowing for inflation, consistent with other elite buildings including Glasgow's Riverside Museum shown in the original benchmarking as completed in 2011 at £6,700 psm.
- 8.16 My recommendations, including those for the future management of this and other projects, are as follows.

Recommendation 1:

Decision making for major projects including the selection of designs should be supported by fully detailed cost estimates prepared either in-house or externally by independent quantity surveyors. These should be available prior to a binding contract.

Recommendation 2:

Complete and detailed records should be maintained covering the deliberations and decisions of all Panels or Committees involved in the selection of contractors or service providers.

Recommendation 3:

Dundee City Council should fully adopt and integrate the V&A project into its existing structures for dealing with construction projects and fully allocate accountability and responsibility across appropriate Council functions and departments. (This action was taken prior to completion of this report and is being implemented under the oversight of a V&A Project Board).

Recommendation 4:

Dundee City Council should appoint a full time in-house project manager for the V&A building with full accountability and responsibility for delivering the project on schedule and within the new budget. Consistent with this and recommendation 3, a comprehensive project records file should be established and maintained.

Recommendation 5:

The V&A building project should have its own full time Cost Manager to support the Project Manager in all matters of cost, including in particular the evaluation of ongoing changes and use of remaining contingencies.

Recommendation 6:

The relationship, responsibilities and accountabilities between Dundee City Council and DDL for delivery of the building and all other aspects of the operation of the V&A project should be documented and agreed within a Development Agreement.

Recommendation 7:

The Council should consider creating internally a Building Support Group which has the capability, including appropriate construction expertise, to support the new Project Board.

Recommendation 8:

Given that the budget of £4.8 million for Furniture, Fittings and Equipment was developed in 2010 there should be an urgent review to reconfirm that value or take appropriate action.

I thank all who provided information and data to me during my review and also those who offered input and advice on matters of concern or areas for special focus.

A list of individuals and organisations engaged with during the review is shown in Appendix A.

John F McClelland C.B.E.

27th July 2015

Appendix A: Review of the Construction Project for the V&A Museum of Design

List of Contributors to the Review

Dundee City Council:

Councillor Ken Guild
Councillor Kevin Keenan
Councillor Fraser Macpherson
Councillor Jimmy Black
Councillor David Bowes
Councillor Bill Campbell
Councillor Will Dawson
Councillor Richard McCready
David Martin, Chief Executive
David Dorward, Former Chief Executive
Mike Galloway, Director of City Development
Rob Pedersen, City Architect
Marjory Stewart, Director of Corporate Services
Karen Lawson, Corporate Procurement Manager

Other:

Lesley Knox, Chair of Design Dundee Limited
Philip Long, Chief Executive of Design Dundee Limited
Gail Wilkie, Finance Manager of Design Dundee Limited
David Thomson, Board Member of Design Dundee Limited
Professor Pete Downes, University of Dundee
Graham McKee, University of Dundee
Professor Graeme Hutton, University of Dundee
Professor Nigel Seaton, Abertay University
Jim Eyre, Wilkinson Eyre Architects
John Tavendale, Turner and Townsend
Representatives of CBA Chartered Quantity Surveyors
Representatives of Doig and Smith
Representatives of BAM Construction Limited