

**Titanic Foundation Ltd**

**Independent Technical Advisors Review  
Titanic Signature Project, Belfast**

**Titanic Foundation Ltd**

c/o Central Procurement Directorate  
Construction Advisory Division  
Clare House, 303 Airport Road West  
Belfast, BT3 9ED



**EC Harris LLP  
Arthur House  
41 Arthur Street  
Belfast  
BT1 4GB  
United Kingdom**

**Tel: +44 28 90 44 6220  
Fax: +44 28 90 44 6211**

**7<sup>th</sup> October 2008**

## CONTENTS

	Page
<b>1.0 EXECUTIVE SUMMARY .....</b>	<b>3</b>
1.1 Report Overview.....	3
1.2 Conclusions and Recommendations.....	3
1.3 Next Steps Prior to Contract Signing.....	9
<b>2.0 INTRODUCTION .....</b>	<b>12</b>
2.1 EC Harris Appointment.....	12
2.2 Our approach.....	12
2.3 EC Harris statement and legal notice.....	13
2.4 Information received.....	13
2.5 Status of this report.....	14
<b>3.0 PROJECT OVERVIEW.....</b>	<b>15</b>
3.1 The Project.....	15
3.2 Project Objectives.....	15
3.3 Site description.....	16
3.4 Project Description.....	17
3.5 Project Parties.....	17
3.5.6 Contractor Capability Analysis.....	19
<b>4.0 PROJECT STATUS INDICATORS .....</b>	<b>20</b>
4.1 Architectural Design Review.....	20
4.2 Mechanical & Electrical Design Review.....	21
4.3 Structural and Civil Engineering Design Review.....	24
4.4 Exhibition Fit-Out Design Review.....	26
4.5 BREEAM Review.....	26
4.6 Construction Programme Review.....	29
4.7 Contractors Proposals Review.....	31
4.8 Statutory Consents Review.....	32
4.9 Procurement Review.....	33
4.10 Cost Review.....	34
4.11 Management Review.....	38

## APPENDIX

**Appendix A Titanic Signature Project Target Cost Plan**

**Appendix B Titanic Signature Project Value Engineering Tracker**

---

## ABBREVIATIONS

---

CDM	Construction (Design & Management) Regulations (2007)
DDA	Disability Discrimination Act (1995)
DETI	Department for Enterprise, Trade and Industry
ECH	EC Harris LLP
FF&E	Furniture, Fixtures & Equipment
ITA	Independent Technical Advisor
M&E	Mechanical and Electrical
NITB	Northern Ireland Tourist Board
PII	Professional Indemnity Insurance
PSI	Project Status Indicator
RIBA	Royal Institute of British Architects
TFL	Titanic Foundation Ltd
TQL	Titanic Quarter Ltd
TSP	Titanic Signature Project

## LIST OF FIGURES

Figure 3.1	Titanic Signature Project aerial view
Figure 3.3	Titanic Signature Project location
Figure 3.4	Architects impressions
Figure 3.5	Project parties

## 1.0 EXECUTIVE SUMMARY

### 1.1 Report Overview

Titanic Foundation Ltd (TFL) has been established to lead the delivery of the Titanic Signature Project, a landmark tourism, leisure and cultural facility in Belfast. It is intended that the project will be jointly funded by the private and public sectors, including the Department of Enterprise, Trade and Industry (DETI), through the Northern Ireland Tourist Board (NITB), Titanic Quarter Ltd. (TQL), Belfast City Council (BCC) and Belfast Harbour Commissioners (BHC).

EC Harris has been appointed by Central Procurement Directorate (Construction and Advisory Commission) acting as agent for TFL to provide Independent Technical Advisor and Employers Agent Services. Our focus since appointment has been in two main areas:

- To examine pre Contract, the Contractor's proposals in relation to design quality, cost and current RIBA design stage and agree a programme for satisfactory completion of Stage D with the Contractor and provide details of this in the report and a programme of activities through to the signing of the NEC3 ECC contract.
- To review the Contractor's proposals in respect of the critical factors which need to be monitored to achieve a BREEAM "Excellent" rating and the operational and health and safety considerations of the building.

Our comments and observations are based on the information received to enable us to undertake this review comprising: Stage D Report prepared by Civic Arts and Todd Architects, supporting design documentation prepared the Design Team members, including drawings, outline design strategies, draft design reports and Design Team meeting minutes.

We noted that a significant amount of documentation was in draft or outline form and we confirm the documentation is changing rapidly at this stage as the development of the brief and design continues.

### 1.2 Conclusions and Recommendations

#### 1.2.1 Design Overview

Our Design Review has to be seen against the background of the conceptual design that was prepared for the application to the Big Lottery Fund, and signed off, in principle, by the stakeholders at that time. That conceptual design therefore provides a useful baseline reference against which the current proposals can be compared. Key point of differences between the two schemes include:

- An additional two floors (one basement) are now included.
- Additional exhibition space is now provided for.

Based on our review of the information received, including the Stage D Report dated 29<sup>th</sup> August 2008 we consider the overall design proposals for the scheme to be at 95% complete towards what would reasonably be expected at RIBA Design Stage D.

The scheme is slightly unusual insofar as the design being developed by the TQL team will essentially form the basis of the Project Brief/Employer's Requirements. We note in particular that the design is still being finalised, and will require formal acceptance and sign off by the stakeholders to enable the design to be progressed to Stage E. Any delay to finalising the design, and signing off by the stakeholders/funders has the potential to have a negative effect upon finalising the architectural layouts and correspondingly the building services layouts and realisation of the Client's requirements, which is a risk to the overall integrity of the scheme.

The visitor experience, including the interactive exhibition has yet to be fully defined to enable the internal functionality of the building to be properly defined. This is contributing to the delay in completion of Stage D design.

Following the presentation by Event on 2<sup>nd</sup> October 2008 and subsequent presentation by Civic Arts, it is clear that the design of the exhibition fit-out lags significantly behind the architectural design, although it is clear that there has been interaction between these aspects to allow the flow of people around the building to be taken into account in the building design. The Client therefore needs to decide whether the functionality of the building now meets their requirements, including whether the proposed arrangement and circulation of the internal areas provides the level of flexibility necessary to be attractive to potential operators.. The essential requirement for providing 750 seats to the banqueting suite appears to have now been met.

There is a need to ensure continuing design co-ordination between disciplines as the design develops, including with respect to the exhibition fit out. There is also an immediate need to establish a robust design procurement programme that is co-ordinated with the requirements of the procurement process and the ambitious programme.

In summary, however, based on our work to date, we can confirm in principle that, from a design perspective:

- The design has developed significantly since the scheme put forward in the Big Lottery application.
- The internal building layout is a material improvement, with additional floor space, and better functionality.
- The layouts now presented give rise to a more efficient and economically designed building.

### 1.2.2 Architectural Design Review

The information received leads us to believe that design developed is at circa 95% of Stage D. Todd Architects is currently concluding, for Stage D, the buildability of the design to date with a number of changes being required particularly for circulation space, stair and lift cores (to facilitate compliance with the Disability Discrimination Act) together with public toilet facilities, and back of house accommodation.. In line with the development of the brief, design development and value engineering process, the circulation within the building is still being reviewed and developed to achieve the optimum solution.

The life expectancy of the building needs to be formally specified, but . The detailed building specification elements of the external envelope remain to be finalised, for example the type of external cladding material, although we know that a number of options and suppliers are being explored. The same holds true for the level of internal finishes specification. We consider that the Stage D design report requires to be more specific about the level of internal specification to ensure the desired quality is achieved.

If the ambitious programme for completion by Q1 2012 is to be accommodated, formal sign off of the Design Brief and the resultant Stage D design proposals and specification by the project stakeholders is required as soon as possible to allow the design to develop to Stage E. For this to be achieved robust design management procedures and buy in from the Client, Design Team and Contractor are essential.

CDMC have been appointed by TQL as Construction, Design and Management Consultants and they have confirmed that adequate consideration has been given to the health and safety aspect to the project, at this stage. Our review has confirmed this.

Moving forward we consider the main area of focus is ensuring safe access and arrangements for the maintenance of high level areas such as the façade and glazing and basement areas.

### **1.2.3 Landscaping**

The information received in relation to landscaping design is consistent with what we would expect at RIBA Stage D design. It is evident that the co-ordination between landscaping and the development of architectural design and services are yet to be fully addressed, for example; basement ventilation strategy linked to fixed external benching

We recommend that the Client and TQL finalise the Design Brief, incorporating hard and soft landscaping, in conjunction with the landscape design team. The finalised Project Brief should be presented for approval as part of the Stage D submission. The Stage D design report requires to be more specific about the outline specification to ensure the desired quality is achieved.

### **1.2.4 Mechanical and Electrical Design Review**

Following dialogues with Faber Maunsell Consulting Engineers appointed by TQL to provide mechanical and electrical design services and our review of the information received we consider the mechanical and electrical design to be approaching RIBA Stage D.

With the Design Brief yet to be fully developed we recommend a that a detailed review of the mechanical and electrical proposals is undertaken by the Design Team prior to the completion of the Stage D design to ensure a co-ordinated approach to design and compliance with Client requirements.

It is essential that there is a formal sign off process for each stage of design as part of an integrated design management process which reflects the requirement of an accepted design and procurement programme.

### **1.2.5 Structural and Civil Design Review**

Based on the information received we believe that the structural and civil engineering design is at or beyond RIBA Stage D. We consider that there is sufficient information currently available to allow for a high degree of cost certainty for the building structure and associated civil engineering works.

We recommend a detailed review of the structural and civil engineering design and Client requirements is completed prior to the sign off of Stage D to ensure a co-ordinated approach to the design development (including for the exhibition) and procurement programme.

### **1.2.6 Exhibition Fit out and Design Review**

Drawings outlining the exhibition design developed by Event in line with the exhibition brief have been provided. We understand the Event design will be further developed with the stakeholders and Design Team and will form the brief used for the specialist exhibition operator and fit out. We understand from Event that the exhibition can be accommodated within the design. Following the presentation by Event on 2<sup>nd</sup> October 2008 TQL is to submit revised costs for the fit out by 10<sup>th</sup> October 2008.

It is essential that the exhibition fit out is co-ordinated with the mechanical and electrical, structural and architectural design if future changes are to be minimised and the subsequent impact on programme and cost avoided. In the absence of an agreed operator, consideration needs to be given to maintaining an element of flexibility within the design.

### 1.2.7 BREEAM Review

BREEAM advisors, Diligentia, have been appointed and have progressed well with their assessments in the limited time they have been involved. We understand BRE has been engaged regarding setting the bespoke assessment. Although the commitment was given to achieving a BREEAM Excellent rating in the Big Lottery Application, the formal integration of the BREEAM assessment into the scheme development and its management has however come later than would normally be expected for this type of project. As a result the formal criteria against which the designs will be measured is still awaited from BRE which is after the expected sign-off for Stage D design and therefore a potential risk to a satisfactory outcome.

Diligentia has undertaken a Bespoke Design and Procurement prediction prior to Stage D. Initial assessment showed that the scheme currently achieves the required 'Excellent' rating. But this is dependent on TQL and their design team validating issues identified in the draft Criteria document. Without close collaboration amongst all the stakeholders there is a risk that an Excellent rating will not be achieved. From our experience it is essential for the team to maintain a dialogue with the key stakeholders and establish a clear understanding of the Client's environmental needs and aspirations, in developing and agreeing an appropriate set of objectives within the team. The BREEAM rating will need to be continually monitored as the design develops.

### 1.2.8 Design Programme Review

A draft design and procurement programme has been prepared by Cyril Sweett and submitted in the Stage D design report. The programme is well structured however it lacks detail and further development is required, in particular with design elements. We have not received any explanatory notes with the programme so we are not able to test and comment on any of the underlying assumptions that have been made. We note that the Stage D sign off was programmed for 17<sup>th</sup> September 2008 We anticipate from our meetings on the 2<sup>nd</sup> October that following confirmation from the design team that the internal functionality of the design meets the Client's requirements as established by the initial brief stage D design will be signed off during October.

The procurement programme for the main design and critical packages has been developed to secure a start on site in January 2009 and project completion for 1<sup>st</sup> quarter of 2012. Procurement programme packages are structured and co-ordinated with construction programme activity site start dates, with more than sufficient lead in periods for most packages.

There is an overall lack of detail to demonstrate key milestones, for example planning and statutory consents. There is also no evidence on the programme of the time allowed for key activities such as site preparation works, value engineering reviews, and contractual procedures.

To develop a robust programme it is essential that Harcourt Construction is fully engaged as soon as possible. We understand that Harcourt Construction has now appointed Cyril Sweett to provide project management, cost management and programming services. This should provide renewed focus on the agreement of a robust and coordinated Construction programme.

### 1.2.9 Construction Programme Review

We are advised through TQL that Harcourt will need to start excavation works in January 2009 in order to complete all works for 1<sup>st</sup> Quarter 2012. At this stage there is no reason to conclude otherwise, albeit design packages will need to progress beyond the start on site.



The programme we have received is not sufficiently detailed and we have not received all the requested list of assumptions used in order for sufficient programme review. However, based on our own experience, we believe that the project is deliverable by Q1 in 2012, but it is crucial that it commences by January 2009 and that design and procurement are implemented immediately and are progressed efficiently and have continuity; that there is a strong project management team in place, to monitor progress proactively, and ensure that any corrective actions needs are identified and implemented in time. It has to be recognised that this places a significant onus on the Client, in terms of the approval/decision-making process, as well as on the Harcourt Construction team.

To improve confidence in deliverability, through the development of a robust programme it is essential that Harcourt Construction is fully engaged as soon as possible. We understand that Harcourt Construction has now appointed Cyril Sweett to provide project management, cost management and programming services. This should provide renewed focus on the agreement of a robust and coordinated Construction programme, in advance of the signing of any construction contract.

### **1.2.10 Contractors Proposals Review**

The finalisation of the Client's brief and sign off of Stage D design will facilitate the production and agreement of Employers Requirements, necessary to inform the Contractor's Proposals.

### **1.2.11 Statutory Consent Review**

#### **Planning Permission**

TQL have appointed Turley Associates as Planning Consultants to advise them on planning issues in relation to this development.

Outline planning permission was granted by the Planning Service towards the end of June 2008 for the development of the Titanic Phase II land including residential led mixed-use development including the Titanic Experience Building, public realm areas and associated infrastructure works, imposing 29 conditions. A programme of activities is needed urgently to facilitate expedient clearance of the Conditions.

#### **Building Regulations and Compliance**

Responsibility for compliance with Building Control and liaising with Building Control is to be agreed. In this context, we recognise the significant work undertaken towards the development of a Fire Strategy that will need to be agreed with the relevant authorities, to ensure that changes do not arise that affect the functionality of the building.

#### **Disability Discrimination Act (DDA)**

Cyril Sweett has been appointed to undertake a preliminary access audit of the design to highlight potential DDA risks. We advise that this should be completed prior to completion of Stage D design.

#### **Land Ownership**

To mitigate the design risk the actual extent of land and defined boundary for the Titanic Signature Project needs to be legally defined as soon as possible.

### **1.2.12 Procurement Review**

We are advised that the construction of the project will be carried out by Harcourt Construction with the costs still through an NEC 3 Form of Contract.

TQL advised that a conditional Construction Contract could be signed in November 2008; however, it is likely that the Contract would be qualified on both sides. To enable a start on site in January of next year a Form of Agreement would need to be reached in November 2008.



The process to enable the signing of the relevant legal agreements and the building contract is a 'Red Light' issue. There is urgency around the decision-making processes to approve funding, and the signing of on the design by the funders, and subsequently the building contract between TFL and Harcourt Construction, which means that any delays in this process could adversely impact on the delivery of the project by April 2012.

### 1.2.11 Cost Review

EC Harris has carried out a review of the Stage D, Cyril Sweett, Cost Plan totalling just under £90 million, for the delivery of the project. The building costs have been revised from £48m to £51m which is more in line with our initial review of the Cost Plan, with the changes the consequence of additional services, an increase in fit out costs and the inclusion of utilities. Overall the inclusion of these items has increased our confidence in the building cost elements within the Cost Plan. We note also the inclusion in these costs of a margin of 5%, which we consider reasonable in the current market conditions, for a scheme of this nature. However, we would point out that the Exhibition Fit-Out Costs have remained the same at £10.4 million, and highlight the lack of information behind this figure in particular. In addition, it is not clear that this figure includes for the fit-out of the temporary exhibition space for TSP opens its doors for business. Greater clarity and certainty is therefore needed in the area of the Exhibition Fit-Out, and we would identify this as a 'Red Light' issue until such times as TQL can demonstrate that the budget is sufficient to deliver a world-class visitor experience.

Taking into account all related construction costs, including building costs, exhibition fit-out, inflation projections, professional fees and design risk contingency, the construction costs in the Cost Plan amount to £73.3 million. Our own review of the construction costs, from Cyril Sweett's Cost Plan, based on industry rates and margins, is £80.4 million. On that basis therefore, we consider overall that the rates used to compile the construction costs are competitive, and if the building was to be delivered for these costs, it would represent value for money (subject to the agreement of Cyril Sweets' quantities in compiling the Cost Plan).

It is important therefore that these costs are carried through to the building contract. If they are not, we reserve the right to review our opinion in this matter. This will require a review by the Contractor taking account of the construction methodology to further increase cost certainty.

A significant risk to the Cost Plan is the application of VAT. In the Cost Plan accompanying the Stage D Report assumed 60% VAT recovery, as opposed to the previously assumed rate of 50% (a difference of circa £1.6m). This has since reverted to an assumed 50% recovery, consistent with the assumptions at the time of the Big Lottery Application. It is our understanding that the 50% recovery is generally viewed by the funders, on the basis of advice received, as a conservative assumption. However, although advice is being sought, the exact VAT position is not likely to be resolved before Contract Award. Therefore, in our view, it would be prudent to ensure that TFL has cover for an increased VAT liability should this arise, as clearly none of the parties involved are in a position to affect the decision by HMRC.

From the Value Engineering Workshop undertaken in September it was evidenced that there is confidence in the design solution and that the design is Value for Money, bearing in mind that the design is currently at 95% of RIBA Stage D.

### 1.3 Next Steps Prior to Contract Signing

#### 1. Programme

- a. A detailed programme of activities, to be agreed with TQL and Harcourt, needs to be compiled and issued to all stakeholders as a matter of urgency. This should be aligned to delivering and discharging requirements of the Funding support conditions. This requires a high level of Project Management on matters over and above the current design and cost issues. This programme should include all issues such as:
  - i. Establishment of legal framework. This is urgently required in order to allow the draft contract conditions to be prepared and a clear understanding of how the operator for the building will be procured.
  - ii. A clear timeline for the production of the required Novation and Collateral Warranty agreements.
  - iii. Progression and resolution on an agreement on the VAT issue.
  - iv. Delivery of Reserved Matters Planning Consent prior to Contract signing.
- b. The Design Programme included within the Stage D report requires collective review and revision by TQL to reflect the activities which have occurred in the past month. This should be developed to demonstrate how design will be progressed to allow the required start on site on at the start of January 2009.
- c. The Procurement Programme within the Stage D report requires further interrogation in conjunction with the Construction Programme. The key focus here is the delivery of the substructure package to the market place for tendering purpose in order to facilitate the required start on site date.
- d. The Construction programme is currently being validated and TQL have identified a Project Planner which whom we are engaging. There are no immediate red flag issues around the construction programme however the current focus on this is in respect of ensuring the methodology, sequencing and implications of the construction programme are reflected in the current costing. We would note that to date there has been no visibility around any Harcourt Construction Ltd input into this programme however we have been advised that validation of the programme by Harcourt is occurring.

#### 2. Risk Management

- a. A Risk Workshop has been held with the Stakeholders and Design Team members. The issues captured need to be included in the detailed programme of activities, referred to above, in order that they are monitored and closed out as appropriate over the forthcoming period.
- b. The detailed programme of activities referred to above should indicate how the requirements and the conditions of funding are being discharged. These include
  - i. Discharge of Outline Planning Consents e.g.
    1. Ground contamination strategy to be developed and agreed with Statutory Authority prior to commencement of the works. We have highlighted this to TQL and await confirmation as to how this will be delivered within the remaining timeframe.
    2. Archaeology Strategy to be developed and agreed with Statutory Authority prior to commencement of works. We have highlighted this to TQL and await confirmation as to how this will be delivered within the remaining timeframe.
    3. Our specific concerns on these are not necessarily the times required to compile the submission but realistic response times from the respective Statutory Authorities.
  - ii. Production of detailed cash flow forecasts. These are required as part of a validation process but also to profile the respective drawdown profiles for each funder. These need to be in place prior to Contact Signing.

- iii. Visibility of a master programme for the delivery of the external works and linkages with Titanic Assets and the Titanic Trail, i.e. a programme for delivering the adjacent areas and works, including but not limited to the Slipways, the Hamilton Dock, the H&W HQ Building, the Connsbank Junction, the Rapid Transit System, etc all for completion upon opening of the building.
- c. A DQI (Design Quality Indicator Session) needs to be programmed and facilitated with sufficient time allowed to address any key issues prior to contract signing.
- d. A date of 17<sup>th</sup> October has been identified for a MAG (Ministerial Advisory Group) Review. We understand the panel members and their requirements have now been identified. It should be noted that there is a risk that this requirement may detract key resource from Todd Architects at a crucial time in the programme as the requirements of the MAG Group are particularly onerous. We would recommend that immediate engagement with the panel is facilitated in order to agree achievable deliverables and also generally appraise them of unique nature and timeframe involved in the scheme. A negative output from the MAG Group review is a key Risk at present and all possible should be done in advance of the session to mitigate this.
- e. An OGC Gateway Review (Health Check) is required prior to signing of the Building Contract. Again this requires a panel to be identified and substantial preparation time in respect of the provision of documents etc. The key risks around this include:
  - i. Failure to have processes implemented with the required time frame
  - ii. Diversion of resource at critical time in the project
  - iii. Negative and onerous outputs from the Review which cannot be addressed within the remaining timeframe.
- f. Continuation of detail design and development of key elements of the building such as the facades prior to contract signing. This process is ongoing and should continue to mitigate risk around cost, programme and any potential dilution of stakeholder expectations. There is no specific concern around this issue at present; this is merely a reiteration of which all parties are aware of.
- g. We have requested and are awaiting a detailed report on the Planning Application for Reserved Matters and any potential conditions or issues which may arise. We have recommended that the exact timing of the final assessment and recommendation is explored in order that dialogue can take place with the Planning Authority and relevant consultant's prior to any conditions being confirmed in the associated conditions of the actual Planning Consent form.

### 3. Project Brief and Procurement

- a. Compilation and sign off of a definitive Client Brief. The current design has evolved from a combination of the original Big Lottery submission, the development of Funders requirements and expectations in respect of Quality Benchmarks and expectations and general progression of design. A clear and concise Brief is now required to capture the Employer's Requirements and to act as a benchmark for the current design and Contractor's Proposals. The past month has seen the development of the design to accommodate key requirements.
  - i. 750 space banqueting with the associated requirements such as pre function areas.
  - ii. Educational facilities
  - iii. Community facilities / function area.
- b. We would recommend that the current Stage D document is formally reviewed and signed off with the appropriate caveats in light of the developing Brief.
- c. Agreement on collateral warranties that will be required to be provided to relevant parties Funders. The scope and drafting of these collateral warranties should now be progressed urgently over the next 4 weeks.
- d. Agreement on the novation of the existing design team to Harcourt Construction with associated "ring fencing" of fees. This again will include the need to draft and agree the novation agreements and provide clarity to the Funders that appropriate fees are included for post novation services with no risk to dilution or reduction or same.
- e. Agreement on KPIs to be utilised on the scheme.

- f. Clear understanding of BREEAM rating that will be delivered. The current design is expected to deliver an Excellent rating. We would recommend that the agreement of the BRE Scoring Criteria and compilation of risk around the rating continues to be monitored and progressed. Agreement is required on how the final sign off of the Low Carbon and Sustainability elements of the design will be achieved prior to Contract signing. This should include a full cost benefit analysis for all of these elements in respect of both the capital and revenue costs over the lifespan of the building.
- g. Ensure full and robust Life Cycle Costing is undertaken for the proposed design.

#### **4. Project Management Issues**

- a. It is our view that further resource and visibility is required in order to drive the project from now until Contract Signing. This resource should drive and allocate clear ownership of all of the issues above.
- b. The full role and responsibilities of the various team members is becoming clearer. The briefing held by Event on 2<sup>nd</sup> October 2008 has led to further areas which require action planning. These include
  - i. Establishment of Project Steering Group around ownership of the exhibition and flying theatre content.
  - ii. Establishment of an accurate cost estimate with the current fixed allowance for the exhibition fit out and flying theatre areas prior to contract signing.
  - iii. Understanding of "refresh" costs of flying theatre movie reels etc.
  - iv. Validation of the Business Case in respect to the current retail, exhibition and franchise opportunities prior to Contact signing.
- c. Production of a Project Execution Plan –this is now a key activity for the forthcoming period.

#### **5. Statutory Consultations**

- a. During the forthcoming period it will be necessary to have clear visibility around the compliance of the design with the requirements of the respective statutory bodies.
  - i. Planning approval and examination of the associated conditions prior to contact signing is the first key issue.
  - ii. Building Control validation or detailed and recorded consultation to validate the compliance of the current design. This will be required to mitigate out the risk of change to the design. We would recommend that this is progressed as far as practical within the timeframe, ideally with drawing approval obtained prior to Contract signing.
- b. Fire Strategy agreement and sign off with Fire Authority and Building Control.
- c. Engagement with Utility Providers to obtain firm costs and proposals

## 2.0 INTRODUCTION

### 2.1 EC Harris Appointment

EC Harris LLP has been appointed by Central Procurement Directorate (Construction and Advisory Commission) acting as agent for Titanic Foundation Ltd to deliver Independent Technical Advisory and Employers Agent services to support the project financing and delivery of the Titanic Signature Building. This report responds to the initial scope requirement of our appointment identified from our Terms of Reference providing a technical and cost review of the Contractor's designs, specifications and construction proposals as of 2<sup>nd</sup> October 2008.

### 2.2 Our approach

Our method of undertaking this report is based on a review of all sources of information provided to us. This has been supplemented by meetings held with members of the Design Team and Contractor. The result is a focused technical review of the current status of the project opening on:

- i) The Contractor's proposals in relation to design quality, cost and current RIBA design stage.
- ii) The current status of the design, including the critical factors which need to be monitored to achieve a BREEAM "Excellent" rating.
- iii) Key operational and health and safety issues that should be addressed in the design development.
- iv) The programme of activities required through to the signing of the NEC3 ECC Option C contract.
- v) The programme for satisfactory completion of Stage D design agreed with the Contractor.
- vi) Design outputs at Stage D linked to project objectives and Design Quality Indicators for inclusion in the Design and Build Contract.
- vii) The design management framework for the project.

Our initial review process was confined to information received during the review period. In this regard the level of review and investigation undertaken was of a comparatively high level nature, with the emphasis on discussion and high level review of documentation to establish broad project status. This approach enabled us to focus on the current status of the project covering the following key project areas:

- Design (architectural, structural and civil engineering, mechanical and electrical services, landscaping and exhibition it out)
- BREEAM
- Cost
- Procurement
- Contractor's proposals
- Programme
- Statutory consents.
- Management

Each area was identified as 'Red', 'Amber' or 'Green' depending on their overall status and the potential impact to the achievement of programme and/or containment within budget. Definition behind each rating is provided below:



Where either insufficient evidence was demonstrated or it was considered that current status observed has a high degree of potential to impact on the achievement of programme and/or budget;



Evidence presented against the status indicator leading us to conclude that there is potential for performance to be affected;



Evidence presented against the status indicator leading us to conclude that the project is at present running to plan, albeit with recommendations for consideration.

Our project status summary is provided in Section 4.0 of this report. The intention of the commentary provided and the key conclusions highlighted in Section 1.0 is to provide both the Funder and TFL with an action plan to achieve funding.

It is our intention that the report will be developed to take account of the requirements as set out in the Scope of Services and monitor against the programmes agreed as a result of this report.

### **2.3 EC Harris statement and legal notice**

EC Harris LLP has exercised reasonable skill and care in the production of this report; however, it cannot guarantee the guidance provided from parties involved in the delivery and development of the Titanic Signature Building Project.

EC Harris LLP has and shall keep in effect Professional Indemnity Insurance (PII) with a limit of liability and cover in the amount of £10 million in respect of its performance as the Client's Independent Technical Advisor/Employers Agent, so long as and to the extent it is reasonably commercially available.

EC Harris will perform the services with all-reasonable skill, care and diligence, but no liability shall be attached to EC Harris in respect of the services except such liability as covered by its Professional Indemnity Insurance.

Such liability is limited to the sum assured, provided that nothing in these terms and conditions will operate to exclude or limit the liability of EC Harris in respect of death or personal injury caused by the negligence of EC Harris.

This report is prepared for the sole use of Titanic Foundation Limited for the purpose stated and is supplied on that basis. No other person may rely on this report for any purpose. This report and the information or methods contained therein may only be used for purposes in connection with this Project.

### **2.4 Information received**

Our comments and observations are based on the information received to enable us to undertake this initial review comprising: Stage D report prepared by Civic Arts and Todd Architects, supporting design documentation prepared the Design Team members, including drawings, outline design strategies, draft design reports and Design Team meeting minutes.

We noted that a significant amount of documentation was in draft or outline form and we confirm the documentation is changing rapidly at this stage as the development of the brief and design continues.

---

## 2.5 Status of this report

The documents and information presented to us for review for this report are under constant revision as part of the project evolution and design development. As a consequence omissions, discrepancies and inconsistencies may arise between the various documents used in the review process. These will be monitored and addressed in accordance with our periodic monitoring.

Our conclusions are based on and limited to the information provided and meetings/discussions held between the various parties involved in the Project. It should be noted that any subsequent information or action that may arise after the issue of this report might impact on the conclusions of this report.

The ongoing evolution of the Project, the competency of the Project Team and the relationship between the parties involved will have a major role to play in properly managing the future risks.



### 3.0 PROJECT OVERVIEW

#### 3.1 The Project

The Titanic Signature Project (TSP) aims to create a world class visitor attraction which will showcase the Titanic story and celebrate Northern Ireland's shipbuilding and industrial heritage. The visitor attraction will be housed in an iconic building with the 'Titanic Experience' providing an interactive exhibition on the Titanic, covering its origins, construction, launch and tragic final voyage. It is intended that the building will also house multi-purpose, catering and retail space.



Figure 3.1 Aerial view of the Titanic Signature Project

It is envisaged that the TSP, together with adjacent, cultural and tourism developments will become a 'must-see' destination for the people of Belfast, Northern Ireland and visitors to the island of Ireland and is at the heart of Belfast and Northern Ireland's tourism and cultural strategy.

The project will be located on Queen's Island at the head of the slipway on which Titanic was built, and adjacent to other maritime heritage assets, such as the Thompson Dock and the Harland and Wolff Headquarters Building (where Titanic was designed). The site forms part of the 185 acre 'Titanic Quarter', a major urban regeneration programme for the former shipbuilding yards of Belfast.

The focus for completion is the 1<sup>st</sup> quarter 2012, the centenary of the Titanic's maiden voyage.

#### 3.2 Project Objectives

We understand from our Scope of Service that the objectives of the TSP are:

1. Create a world class visitor attraction based on the theme of the Titanic and the wider subject of Belfast's shipbuilding and maritime heritage, of such scale, originality and innovation that it will become Northern Ireland's largest and most successful built attraction.
2. Delivery by 1st quarter 2012.
3. Have a significant positive impact on Belfast's (and Northern Ireland's) position as a tourist destination, appealing to key market segments and the ability to attract at least 120,000 new visitors to Northern Ireland per annum.
4. Iconic in design and impact
5. Building should be capable of handling in the region of 900,000 visitors per annum, including up to 500,000 visits to see the exhibition.
6. Provide an authentic heritage-based, world class project linked to the key Titanic sites – Slipways, Drawing offices and Thompson Dock.
7. Ability to contribute to Belfast as a Cultural Heritage destination and Business Tourism destination.
8. Financially self sustainable – no requirements for Government funding with running costs underwritten by the project promoter for at least seven years.

### 3.3 Site description

The Titanic Signature Building is to be located at the heart of the 185 acre Titanic Quarter, an urban mixed-use development located on Queen's Island, 1.5km to the north east of Belfast City centre. The site is primarily a brown field site bounded to the south by Abercorn Basin, to the east by Queen's Road, and to the west and north by the River Lagan.

The proposed location is identified in Figure 3.3.



**Figure 3.3: Location of the Titanic Signature Building**

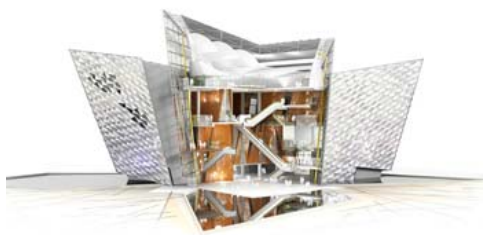
The project is located near to George Best Belfast City Airport, with close ferry connections to Scotland and England. The site is also connected to the main road network including M1, M2 and M3 motorways.

### 3.4 Project Description



The TSP is intended to provide a landmark tourism, leisure and cultural facility for Belfast. The focal point will be an iconic building built over 7 levels.

The project will house a major interactive exhibition on the Titanic and the wider story of Belfast's industrial, shipbuilding and maritime history.



The building will provide circa 13,000 square metres over 5 main galleries, housing a "Flying Theatre" giving a dramatic view of Northern Ireland, a Titanic-themed banqueting and conference suite as well as catering and retail space.

The project also includes the restoration of the Titanic and Olympic slipways, the Thompson Dock and Harland and Wolff's former Headquarters building.

Fig. 3.4 Architect's impressions

### 3.5 Project Parties

Figure 3.5 identifies the key project parties and their roles and responsibilities in the delivery of the Project.

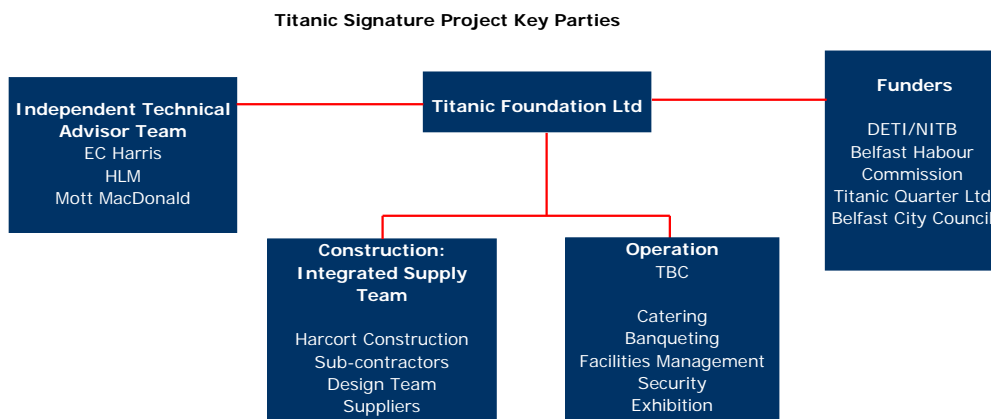


Fig 3.5 Project Parties

### **3.5.1 Titanic Foundation Ltd**

The Titanic Foundation Ltd (TFL) is a company limited by guarantee, established specifically to take the Project forward. We are informed by DETI that TFL will be seeking charitable status, and to this end, an application has been made to HMRC.

Until appropriate arrangements are completed the DETI is acting as Senior Responsible Officer, with a member of the Strategic Investment Board acting as Project Sponsor, supported by Central Procurement Directorate, acting as Client Advisor.

Currently it is proposed that the operation of the Project will be undertaken by a third party organisation. However details of how the project will be operated have yet to be finalised although a target of the end of November 2008 has been set to agree the best way forward.

### **3.5.2 Titanic Quarter Limited**

Titanic Quarter Limited (TQL) is a property development company, within the Dublin-based Harcourt Developments Ltd group of companies (although it is understood they are not a group in the formal sense). TQL are the developer for the Titanic Quarter and currently the promoter of the Titanic Signature Project.

### **3.5.3 Design and Build Contractor**

#### **Harcourt Construction (NI) Ltd**

TQL have proposed Harcourt Construction (NI) Ltd as the Design and Build Contractor for the project, as a condition of giving up their rights to the site.

### **3.5.4 Design Team Summary**

#### **Architect/Lead Consultant - Eric Kuhne and Associates / Civic Arts Project Architects - Todd Architects**

The design for the building has been developed to RIBA Stage C Design by Eric Kuhne and Associates / Civic Arts with Todd Architects to take the project through to Stage D design and carry the project forward.

#### **Exhibition Designers - Event Communications**

Event is a leading exhibition design group providing a range of design services including consultancy on master-planning, interpretative planning, 3D design, graphic design and project management.

### **Civil and Structural Engineering - RPS Group**

RPS Consulting Engineers are part of the RPS Group, an international consultancy providing advice upon the development of natural resources, land and property, the management of the environment and the health and safety of people. Formerly Kirk McClure Morton, their Belfast office has been involved in many of the landmark projects around the city, including the Waterfront Hall and the Odyssey.

### **Mechanical and Electrical Engineering - Tavakoli Associates Ltd/Faber Maunsell**

Tavakoli Associates Limited operates as a Mechanical and Electrical Engineering Consultancy Practice, providing a full range of professional services covering all aspects of the Building Services industry.

Faber Maunsell are multi disciplinary Consulting Engineers and part of the AECOM Group.

### **Quantity Surveyor - Cyril Sweett**

Cyril Sweett is an international construction and property consultancy offering expertise in cost consultancy, project management and management consultancy.

#### **3.5.5 Consultant Appointments**

We have not been required to review the terms, scope and duties of parties or warranties and agreements of the Consultants as part of this review however we advise that it would be appropriate to do so at completion of Stage D design to ensure a clear understanding of the key roles and responsibilities.

#### **3.5.6 Contractor Capability Analysis**

We undertook a high level capability analysis of the Contractor, Harcourt Construction (NI) Ltd on 29<sup>th</sup> August 2008 in order to provide confirmation of:

- Relevant company experience and capacity
- High level management structure
- Proposals for the project delivery management structure
- Skills and experience of key resource proposed with identified areas of responsibility
- Company turnover and accounts
- Current engagement on the TSP project.





We are satisfied that Harcourt Construction has the appropriate experience to successfully deliver the project. It is noted that Harcourt will rely on the consultant Cyril Sweett to provide project management, cost, programme and procurement services and agree the Construction Cost plan, Programme and procurement methodology. We remain concerned that Harcourt take ownership of these key issues as soon as possible.


We are also of the opinion that Harcourt need to appoint a Project Manager for the TSP project without delay in order to progress matters and ensure a start on site in January 2009.






## 4.0 PROJECT STATUS INDICATORS

### 4.1 Architectural Design Review






PSI Ref	Component	Current Status	Observation	Rating	Recommendations
4.1.1	Architectural Drawings	<p>The RIBA Outline Plan of Work cites Stage D definition as:</p> <ul style="list-style-type: none"> <li>▪ The development of concept design to include structural and building services systems, updated outline specifications and cost plan.</li> <li>▪ The completion of the Project Brief.</li> <li>▪ Application for detailed planning permission.</li> </ul> <p>Based on our review of the information received we consider the drawings to be 95% complete.</p>	Elevations / section reviewed were supplied by Civic Arts. Todd Architects are now employed to develop the design to Work Stage D.		A clear design management structure and sign off procedure remains to be put in place. Designs and Work Stages to be signed off by the Client TQL and key stakeholders - i.e. Exhibition operators, NI Tourist Board, etc.
4.1.2	Project Brief	The Project brief is not as fully developed as we would reasonably expect at this stage.	Completion of Finalised Project Brief is a requirement under the RIBA Outline Plan of Work 2007 for Work Stage D. Without this information in place a key risk is that the design developed does not reflect the key aspirations of the stakeholders.		We recommend a review of the Design Brief and Client requirements is completed as soon as possible and the finalised brief included as part of the Stage D report to be agreed and signed off by the Client, TQL and key stakeholders prior to moving forward to the next stage of the design.
4.1.3	Outline Specification	An initial Outline Specification has been produced by Todd Architects and covers the elements you would expect in line with the RIBA Work Stage D.	The Outline Specification is a good example of level of information we would expect to see at this stage.		Some areas of the Outline Specification need to be advanced including the external cladding and the unconfirmed internal finishes.
4.1.4	Design Management	Based on the review of Design Team Meeting Minutes, Todd Architects have produced a micro programme to highlight actions, meetings, etc. We have also reviewed the Project Director list which highlights the Companies appointed to carry out the various services.	Other than information highlighted in project status there is little evidence of a formal design management process or that this is being developed. There is no clear project management from TQL at this stage. In our experience for a project of this size you would expect a project		TQL need to appoint a Project Manager as soon as possible to provide coordination and finalise design management procedures for agreement with key stakeholders.




PSI Ref	Component	Current Status	Observation	Rating	Recommendations
			manager to be appointed early in the design process to co-ordinate the design team.		
4.1.5	Landscape Drawings	Based on the information received and the definition of Work Stage D provided by the Landscape Institute, we consider the landscape proposals for the scheme to be in line with what we would expect at Stage D.	RPS is currently developing the landscape proposals with a view to issuing detailed proposals by the end of August.		Some areas of the external specification marked unconfirmed require to be advanced.

#### 4.2 Mechanical & Electrical Design Review






PSI Ref	Component	Current Status	Project Status Indicator Observation	Rating	Recommendations
4.2.1	Overall design status	Based on the information received we consider the design is progressing towards completion of RIBA Stage D	From our experience we would normally expect the Stage D report to include greater detail e.g. plant ratings, quantities, co-ordination etc.		<ul style="list-style-type: none"> <li>A detailed review of mechanical and electrical design proposals in regard to lighting, ventilation, materials, aesthetics, operating modes etc. should be completed before Stage D sign-off.</li> </ul>
4.2.2	Client brief	We have not seen evidence of a formal brief confirming the Client requirements related to mechanical and electrical design.	We would normally expect the Stage D report to refer to the requirements of the brief and the evidence of compliance therewith.		<ul style="list-style-type: none"> <li>We recommend a detailed mechanical and electrical briefing workshop takes place with the Design Team and key stakeholders as soon as possible to identify and agree the requirements for issues such as control of access, security, cash handling, audio-visual systems, IT systems, building management operation, alarm handling, metering arrangements etc.</li> </ul>
4.2.3	Schedule of accommodation	The schedule of accommodation including the banqueting suite, restaurant, retail, exhibition galleries, stair and lift locations etc. are still to be signed off.	From our experience we would expect the schedule of accommodation and architectural floor plans to be fixed at Stage D.		<ul style="list-style-type: none"> <li>There needs to be a formal acceptance and sign-off at the completion of Stage D design, including a schedule of accommodation requirements as part of an integrated design management processes.</li> </ul>








PSI Ref	Component	Current Status	Project Status Indicator Observation	Rating	Recommendations
4.2.4	Design integration	There is some evidence of a developing strategy for integration of mechanical and electrical services, particularly ventilation, with architecture and structure; however this is insufficient to demonstrate that the assumptions made are valid.	We would expect the Stage D report to contain greater detail e.g. locations, dimensions, materials, aesthetics, size of risers, quantity and location of air intake and exhaust, definition of the various demise boundaries.		<ul style="list-style-type: none"> <li>A detailed architectural review of mechanical and electrical design proposals should be completed by the Design Team and the Client before Stage D sign-off.</li> </ul>
4.2.5	Co-ordination	There is evidence of some small level of co-ordination occurring, but we consider this to be insufficient at this stage of the design development process.	At this stage of development, co-ordination with the architect and structural engineer in terms of services zones, air intakes, structural openings etc. is vital to the success of the building.		<ul style="list-style-type: none"> <li>We recommend a detailed co-ordination workshop should be convened before Stage D sign-off and finalisation of the design and procurement programme to ensure an integrated approach to design development</li> </ul>
4.2.6	Interface with exhibition designer	There appears to be no fixed information as yet from the exhibition fit-out designer	A nominal budgetary allowance appears to have been made for provision of the infrastructure requirements of the exhibition spaces		<ul style="list-style-type: none"> <li>There is a need for the Exhibition designer's proposals to be fixed and integrated into the architectural and mechanical and electrical design, and the budgetary allowance needs to be confirmed</li> <li>Risks exist where the exhibition spaces, banqueting spaces are being designed in the absence of input from the specialist operator.</li> </ul>
4.2.7	Design programme	A design programme has been included in the Stage D submission.	<p>It is vital that an integrated design and construction programme is developed, with dates for transfer of fixed information.</p> <p>The development of an integrated design and construction programme will allow the mechanical and electrical designers to adequately forward plan their resources.</p>		<ul style="list-style-type: none"> <li>A design and procurement programme has been produced by Cyril Sweett however it has yet to be agreed by key stakeholders.</li> </ul>
4.2.8	Resource	To date the labour and other resources employed by the mechanical and electrical designers has been adequate	It is important to monitor the resourcing levels to ensure that the Design Team is able to respond to the challenges of the design and procurement programme.		<ul style="list-style-type: none"> <li>Ensure resource plans are reviewed in light of the design procurement programme to be agreed to ensure the programme requirements are met.</li> </ul>



PSI Ref	Component	Current Status	Project Status Indicator Observation	Rating	Recommendations
4.2.9	Status of Client sign-off	There has been no formal Client sign-off to date.	The Client's acceptance and sign-off at each stage is vital to ensure that the project objectives are achieved.		<ul style="list-style-type: none"> <li>It is expected that there will be a formal sign-off at the completion of Stage D as part of an integrated design management processes.</li> </ul>
4.2.10	Building Regulation compliance	There is evidence that the mechanical and electrical designers are aware of their responsibilities regarding compliance with Building Regulations.	It would be expected at Stage D that the initial building thermal simulation report and Part F compliance report would be available.		<ul style="list-style-type: none"> <li>Informal discussion with Building Control on a range of topics relating to the mechanical and electrical design would provide additional comfort that all necessary aspects are being addressed to the satisfaction of the responsible officer.</li> </ul>
4.2.11	Procurement	The mechanical and electrical designers have had no input as yet regarding procurement.	The choice of procurement route will have impact upon the integrated design and construction programme.		<ul style="list-style-type: none"> <li>We recommend a procurement strategy workshop to permit all interested parties to contribute to the selection of the most appropriate procurement route, taking into account the project objectives, particularly with regard to quality, cost and programme</li> </ul>

### 4.3 Structural and Civil Engineering Design Review


PSI Ref	Component	Current Status	Project Status Indicator Observation	Rating	Recommendations
4.3.1	Overall design status	Based on the information received we consider the civil and structural design has been developed to a level equivalent to, or beyond, RIBA Work Stage D.	The design status is appropriate to the current stage of the project however we have seen limited evidence of co-ordination with the architect and mechanical and electrical engineer, including in relation to exhibition fit out. At this stage of development such co-ordination is vital to the success of the building.		<ul style="list-style-type: none"> <li>A number of comments regarding 'next steps' are identified below.</li> </ul>
4.3.2	Client Brief	Client requirements have not been formalised e.g. concerning the use of heavy goods vehicles for deliveries, design life, time to first maintenance, grade of basement car park, car park size.	In our experience these requirements would normally be formalised at Stage D.		<ul style="list-style-type: none"> <li>We recommend a detailed briefing workshop is held urgently with the stakeholders to identify stakeholder/user requirements.</li> </ul>
4.3.3	Design integration	The civil and structural design currently integrates with the requirements of the architect. However, stair and lift locations are not yet fixed.	From our experience we would expect the schedule of accommodation and architectural floor plans to be fixed at Stage D.		<ul style="list-style-type: none"> <li>A detailed architectural review of the structural design in regard to materials, aesthetics etc. should be completed before Stage D sign-off. There needs to be integration of the piling design and the mechanical design for the heat source system.</li> </ul>
4.3.4	Co-ordination	The civil and structural design has been developed with a considerable amount of co-ordination with the architectural designers and RFR for the facades and roof structure, and with the requirement for accommodation of mechanical and electrical services in mind.	Co-ordination with the mechanical and electrical designer is not yet complete. At this stage of development, co-ordination with the mechanical and electrical engineer in terms of services zones, air intakes, structural openings etc. is vital.		<ul style="list-style-type: none"> <li>We recommend a detailed co-ordination workshop should be convened before Stage D sign-off and finalisation of the design and procurement programme to ensure an integrated approach to design development.</li> </ul>
4.3.5	Interface with exhibition designer	The current design appears to reflect an exhibition strategy that was developed at an earlier stage.	There may be changes to the internal building layout to accommodate development of the exhibit space; however we do not consider that this		<ul style="list-style-type: none"> <li>There is a need for the exhibition designer's proposals to be fixed and integrated into the architectural and structural design.</li> </ul>


PSI Ref	Component	Current Status	Project Status Indicator Observation	Rating	Recommendations
			should not create major issues for the civil and structural team due to the flexibility of the current design.		
4.3.6	Design programme	A design programme has been included in the Stage D submission.	It is vital that an integrated design and construction programme is developed, with dates for transfer of fixed information		<ul style="list-style-type: none"> <li>A design and procurement programme has been produced by Cyril Sweett however it has yet to be agreed by key stakeholders.</li> </ul>
4.3.7	Resource	The civil and structural Design Team have a considerable amount of experience in designing structures of similar size and complexity within a scheduled programme. It is considered that they are adequately resourced to carry out the design responsibilities that they have been assigned both in staff and technology.	The development of an integrated design and construction programme will allow the structural designers to adequately forward plan their resources.		<ul style="list-style-type: none"> <li>An integrated design and construction programme should be developed urgently and signed off by all parties to accommodate effective resource planning.</li> </ul>
4.3.8	Status of Client sign-off	There has been no formal Client sign-off to date.	The Client's acceptance and sign-off at each stage is vital to ensure that the project objectives are achieved.		<ul style="list-style-type: none"> <li>It is expected that there will be a formal sign-off at the completion of Stage D as part of an integrated design management processes.</li> </ul>
4.3.9	Building Regulation compliance	The civil and structural design has been discussed with the appropriate Building Control primarily in relation to the fire design strategy.	RPS has considerable experience in this location and with this authority. It is our opinion that compliance with the regulations for the civil and structural design can be met and should not present a significant risk to the project.		<ul style="list-style-type: none"> <li>Continue proactive engagement with Building Control and ensure ownership of Building Control issues.</li> </ul>
4.3.10	Procurement	RPS has made contact with specialist engineering contractors to assist with their design and overall approach with respect to programme and cost.	RPS has had limited involvement in the procurement strategy and we would expect to see more involvement as the design progresses.		<ul style="list-style-type: none"> <li>A procurement strategy workshop would permit all interested parties to contribute to the selection of the most appropriate procurement route, taking into account the project objectives, particularly with regard to quality, cost and programme.</li> </ul>


#### 4.4 Exhibition Fit-Out Design Review

PSI Ref	Component	Current Status	Project Status Indicator Observation	Rating	Recommendations
4.4.1	Fit-out drawings and layouts	Outline Proposals relating to the exhibition fit out have been produced by Event. At this stage of the project we are advised the Exhibition fit out can be accommodated in the design.	The floor plan General arrangement drawings from Todd Architects 08042 indicate spaces allocated to galleries, exhibition space and the flying theatre. We would expect a greater level of detail to demonstrate that these areas meet the functional requirements.		<ul style="list-style-type: none"> <li>We recommend a review of drawings indicating layouts, including plans and sections, if required is undertaken as soon as they are available to confirm the key functionality of spaces.</li> </ul>
4.4.2	Exhibition specific Brief	The Exhibition Brief has yet to be confirmed and signed off by the stakeholders.	Due to the specialist nature of the project we would expect this information to be provided by the Exhibition designers, Event. To date this has not been available.		<ul style="list-style-type: none"> <li>The exhibition brief by 'Event' should be issued as soon as possible to enable a review of its compliance with client requirements. The Brief should cover the key areas, exhibition space, galleries, flying theatre and highlight any relevant additional requirements for the development of the design including operational issues.</li> <li>Event has taken design development to a stage of clarity. The lack of an identified operator provides opportunities to progress rapidly but there are risks associated with accommodating any specific operator requirements at a late stage.</li> </ul>

#### 4.5 BREEAM Review


PSI Ref	Component	Current Status	PSI Observation	PSI Rating	Recommendation
4.5.1	Registration of the Project	The Titanic Signature Project was registered with BRE under 2008 BREEAM bespoke assessment in August 2008. BRE have confirmed that the assessment will be BREEAM bespoke. The first draft of the required criteria has yet to be received by	The draft BREEAM credits criteria document produced by the Developer's BREEAM assessor, in advance of receiving the formal criteria from BRE, is well constructed, and follows a standard BREEAM		<ul style="list-style-type: none"> <li>To minimise the preserved risk and to meet the primary objectives of achieving an 'Excellent' BREEAM rating the Design Team will need to agree the formal criteria with BRE as a matter of priority.</li> </ul>

PSI Ref	Component	Current Status	PSI Observation	PSI Rating	Recommendation
		BRE.	format.  The introduction of the BREEAM assessment into the scheme development and its management has come later than would normally be expected for this type of project. As a result the formal criteria against which the designs will be measured have not been established yet and therefore a potential risk to a satisfactory outcome.		
4.5.2	Initial Assessment	An initial BREEAM bespoke assessment report for inclusion in the Stage D report was issued in draft 19th August and predicts a score of 75% against the BREEAM criteria. This translates into an overall BREEAM rating of Excellent.	The scoring of the initial assessment is very much reliant on the Developer and the Design Team validating the issues identified in the draft criteria document, the key elements of which include: <ul style="list-style-type: none"> <li>The carrying out of an energy performance criteria under Part F of the Building Regulations</li> <li>Confirmation that the MC operates an ISO14001 accredited EMS or equivalent scheme</li> <li>Confirmation that a Life Cycle Cost (LCC) analysis has been carried</li> <li>Confirmation that that individual occupant control will be provided to each occupied space</li> <li>Confirmation that that a feasibility study has been carried out in respect to Low or zero carbon technologies</li> <li>Confirmation that that the Main Contractor has a supply chain in place who can deliver the majority of major elements from responsible and sustainable sources as listed.</li> </ul>		<ul style="list-style-type: none"> <li>Accelerate the design development and the overall co-ordination at the next stage in order to capture the credits identified in the initial assessment report.</li> <li>Continue to hold workshops and develop the designs in a holistic manner</li> <li>Some proposals being considered under value engineering could have an effect on the overall BREEAM rating. This includes elements such as design and specification for external cladding, glazing and on a number of mechanical and electrical installations.</li> </ul>


PSI Ref	Component	Current Status	PSI Observation	PSI Rating	Recommendation
			<ul style="list-style-type: none"> <li>Confirmation that an acoustic consultant will be engaged to undertake noise survey and provide specification for attenuation and supporting calculations.</li> </ul> <p>The information received is typical of what would normally be expected at RIBA Work Stage C and in most respects Stage D. In order to satisfy the requirements for Stage D, further information is required in respect to the key elements such as environmental services strategy/design, the Health and Well-being issues and primary energy strategy/systems.</p>		
4.5.3	Responsibility	Diligentia Ltd who have been appointed by TQL as BREEAM assessor for the scheme.	The quality of the documentation, the approach by Diligentia Ltd and their experience in this type of building and bespoke assessment would suggest that the sustainability/BREEAM elements of the scheme are well understood and should be well managed.		




#### 4.6 Construction Programme Review

Ref	Component	Current Status	Observation	Risk Rating	Recommendation
4.6.1	<b>Draft Design / Procurement programme</b>	<p>Cyril Sweett has prepared a Draft design and procurement programme dated August 26<sup>th</sup> 2008.</p> <p>The overall design (Stage E &amp; F) period is 20 months.</p> <p>The Duration of Stage E design is 12 months from September 18<sup>th</sup> 2008 to September 3<sup>rd</sup> 2009</p> <p>The duration of Stage F design is 8 months from September 14<sup>th</sup> 2008 to May 5<sup>th</sup> 2009.</p> <p>Package procurement and lead-in periods are based on Stage D, E and F design periods, spanning from September 1<sup>st</sup> 2008 to April 22<sup>nd</sup> 2011.</p> <p>There has been no co-ordinated design programmes received from the lead architects and Design Team members.</p>	<p>Although the design and procurement programme prepared are well structured and detailed, further development is required; in particular with regard to design elements.</p> <p>We have not received any explanatory notes with the programme so we are not able to comment on any of the underlying assumptions that have been made.</p> <p>There is no indication on the design programme for project brief development.</p> <p>Stage D sign off was programmed for September 17<sup>th</sup> 2008 although this has not yet been signed off by the Client. The Funders agreement and funding process, including application to HMRC is programmed to be completed in mid January 2009.</p> <p>We have not seen any evidence of key dates and milestones in relation to detailed planning and statutory consents.</p> <p>There is no indication of the timing for Stage E and F design for cost plan revisions, including client review and sign-off periods.</p> <p>The procurement programme for the main design and critical packages has been developed to secure a start on site in January 2009 and project completion for 1<sup>st</sup> quarter of 2012.</p>		<ul style="list-style-type: none"> <li>Project lead architects and Design Team members to produce detailed design and co-ordinated design programmes</li> <li>The design programme elements should be clearly defined and logically sequenced for each design element identified with completion dates which are suitably ahead of procurement and construction programmes to prevent any potential delays on site</li> <li>The design programme durations for Stage E and F are considered to be generous, durations could be reduced considerably and signed off in conjunction with an updated Cost Plan and construction programme</li> <li>Stage E should be completed by February / March 2009 and followed by Stage F design, in order to achieve planned construction activity start dates and to achieve earlier cost certainty</li> <li>The Design Team in conjunction with Turley Associates to provide a programme detailing when planning applications are to be made, co-ordinated with design and construction programme. The statutory period for planning and public consultation is currently 13 weeks. Any additional planning approval period is considered to be a risk to project completion</li> <li>Application for Building Regulations to be submitted on completion of Stage D design sign off</li> <li>Harcourt Construction to engage in order to prepare contract programme, construction methodology, health and safety plan, risk assessments, quality</li> </ul>




Ref	Component	Current Status	Observation	Risk Rating	Recommendation
			<p>Procurement programme packages are structured and co-ordinated with construction programme activity site start dates, with more than sufficient lead-in periods for most packages.</p> <p>For each package tender a 4 week tender period has been allowed for, with an additional 4 weeks for tender evaluation and Contract award. For some packages (such as building services, cladding and fit out) we consider the tender periods are insufficient for robust tender returns.</p> <p>There is no evidence on the programme of the time allowed for site preparation build ability and value engineering reviews, contract preparation, agreements and award.</p> <p>It is anticipated that the Contract could be signed in November 2008 on the basis of a target cost. However, the procurement and design programme demonstrates only the piling package tender is returned in October 2009 and the remainder of packages after January 2009 until mid 2010. Cost certainty for the project could only be achieved in mid 2010 as currently programmed.</p> <p>It should be noted that currently the progress of piling tender is 2 weeks behind programme for start on site 19<sup>th</sup> January 2009.</p> <p>There is no evidence of tendering for enabling, works, site establishment and diversion of services.</p> <p>Harcourt Construction has not yet</p>		<p>plans by end of October 2008, in anticipation of Contract agreement and award for November 2008</p> <ul style="list-style-type: none"> <li>• Harcourt Construction and specialist contractors to comment on design stages E and F in conjunction with Design Team members and consultants</li> <li>• Harcourt ongoing engagement with key suppliers and manufactures should be completed and results examined for compliance with design as well as build ability and value engineering issues</li> <li>• Harcourt to engage on Stage D design for market testing in anticipation to agree target cost for November 2008</li> <li>• Critical packages such as piling and ground works must be awarded as soon as possible for start on January 2009</li> </ul>


Ref	Component	Current Status	Observation	Risk Rating	Recommendation
			engaged to develop construction contract and tender programme, construction methodology, health and safety issues, risk assessments and quality plans.		
4.6.2	<b>Draft Construction Programme</b>	<p>Cyril Sweett have prepared: Draft revised construction programme (Ref: 17351/DF/DCP/001 Rev 002) dated 13<sup>th</sup> August 2008.</p> <p>The programme is a strategic programme covering construction and fit out activities.</p> <p>The overall construction period is 41.5 months and assumes a start on site with enabling works on 27<sup>th</sup> October.2008, with main Contract works commencing on the 5<sup>th</sup> May 2009 and completion by 1st quarter of 2012</p>	<p>We have not received all the requested list of assumptions used in order for sufficient programme review.</p> <p>The programme is not detailed and needs to be developed further in conjunction with Harcourt Construction</p>		<ul style="list-style-type: none"> <li>Harcourt Construction to engage as soon as possible in order to prepare detailed contract and tender programmes, construction methodology, health and safety plan, risk assessments, site logistics and layouts, method statements, craneage, site traffic , and resource analysis</li> <li>One major risk is potential archaeological findings during ground works that could slow down progress of works. The potential delay could be minimised during desk top study</li> </ul>

#### 4.7 Contractors Proposals Review


PSI Ref	Component	Current Status	Project Status Indicator Observation	Rating	Recommendation
4.7.1		No Contractor's proposals have been provided for review this is not unreasonable at this stage of the design process.	The finalisation of the Client's brief and sign off of Stage D design will facilitate the production and agreement of Employers Requirements, necessary to inform the Contractors Proposals.		Contractor's proposals will need to be developed alongside detailed design.

#### 4.8 Statutory Consents Review


PSI Ref	Component	Current Status	Project Status Indicator Observation	Rating	Recommendations
4.8.1	Status of Planning Conditions	<p>Outline Planning Permission was granted on 2<sup>nd</sup> October 2007 for the development of the Titanic Phase II land including residential led mixed-use development including the Titanic Experience Building, public realm areas and associated infrastructure works, imposing 29 conditions.</p> <p>Planning Conditions 7, 8, 9, 11 and 12 relate to conditions attached to Listed Building and Scheduled Monument Consent, remedial works for contamination and archaeological works and must be discharged before development can proceed.</p>	<p>Turley Associates have responsibility for Advising TQL on planning issues in relation to this development.</p> <p>We have not seen evidence of a clear programme of key dates and milestones in relation to the activities required to satisfy planning (and other statutory consents). The status of applications appears to be reasonable for this stage of the project but will need to be well managed and co-ordinated to minimise impact on the programme.</p>		<ul style="list-style-type: none"> <li>The Design Team in conjunction with Turley Associates to give consideration to providing a programme detailing when planning applications are to be made co-ordinated with the design programme.</li> <li>The status of planning conditions and information required should be carefully monitored.</li> <li>Discharge of the Outline Planning Approval conditions relating to Listed Buildings Consents, ground contamination and archaeology to be actioned subject to the agreed programme.</li> </ul>
4.8.2	Status of Submissions for Planning	<p>The Planning Conditions require Scheduled Monument Consent or Listed Building Consent for works that could affect the character of the former H&amp;W buildings and Hamilton dock and slip ways.</p> <p>We understand that applications for Listed Building and Schedule Monument Consent will be submitted.</p>	<p>We have not seen evidence of a clear programme of key dates and milestones in relation to planning (and other statutory consents).</p> <p>We would expect commentary on the status of applications within monthly progress reports produced by the Design Team.</p>		<ul style="list-style-type: none"> <li>The Design Team in conjunction with Turley Associates to give consideration to providing a programme detailing when planning applications are to be made co-ordinated with the design programme.</li> <li>The status of planning conditions and information required should be carefully monitored.</li> </ul>
4.8.3	Fire Safety Certificate	RPS has been appointed to advise TQL on Fire Safety matters.	<p>The integration of a fire strategy into the Design is to be finalised</p> <p>Our key observations are the requirement to ensure consideration of:</p> <ul style="list-style-type: none"> <li>Car Park Fire escape requirements</li> <li>Stair core final exit requirements</li> <li>Stair core fire fighting requirements</li> <li>General clear corridor widths and lobby sizes.</li> </ul>		<ul style="list-style-type: none"> <li>Confirmation of fire strategy and integration into design.</li> <li>The Design Team in conjunction with RPS to give consideration to providing a programme detailing when applications are to be made co-ordinated with the design programme.</li> </ul>

PSI Ref	Component	Current Status	Project Status Indicator Observation	Rating	Recommendations
4.8.4	Responsibility	TQL have appointed Turley Associates as Planning Consultants to advise them on planning issues in relation to this development.	We have not seen evidence of clear roles and responsibilities in respect of planning and fire compliance or programme of key milestone. We would expect this to be developed as Stage D is completed.		<ul style="list-style-type: none"> <li>Clear roles and responsibilities in respect of planning and fire compliance to be defined as soon as possible.</li> </ul>

#### 4.9 Procurement Review



PSI Ref	Component	Current Status	Project Status Indicator Observation	Rating	Recommendation
4.9.1	Status	Preliminary discussions are commencing between TQL and Harcourt Construction	Harcourt would need to commence procurement of the early work packages immediately to ensure a commencement of works on site in early January 2008.		<ul style="list-style-type: none"> <li>TQL have advised that a conditional Construction Contract could be signed in November 2008</li> <li>The above would enable TQL to progress with design and procurement.</li> </ul>



4.10 Cost Review

131PSI Ref	Component	Current Status	Project Status Indicator Observation	Rating	Recommendations
4.10 1	Cost Plan Review	<p>Stage D Cost Plan totalling £89.5M has been submitted and reviewed. Discussions are on going between the ITA &amp; Cyril Sweett looking at the ownership and apportionment of risk.</p>	<p>The Stage D Cost Plan revised the construction costs of the TSP building increasing it from £48M to £51M.</p> <p>This figure is more in line with our initial review of the Cost Plan; the main changes are additional services, increase on Fit Out and the inclusion of Utility costs. The additional items increase our confidence levels in the Cost Plan although we also believe there are items that would benefit from a check by the Contractor especially in relation to method related items. Our initial view that some of the rates were low in comparison to market rates has altered now as steel prices are starting to drop.</p> <p>We are still of the opinion that the allowance for the Contractor's Preliminaries is insufficient. Likewise the preliminary allowance also includes 5% Contractors overheads and profit which reduces the preliminaries to 6.5%; we believe 15 - 20% would be more realistic on a project of this nature.</p> <p>With regards to the other allowances such as fees and risk we comment as follows;</p> <ul style="list-style-type: none"> <li>• Inflation – if the steel price can be secured at its present level the allowance for inflation is reasonable.</li> <li>• Fit Out – the build up to this figure has not been refreshed</li> </ul>		<ul style="list-style-type: none"> <li>• Final review of Cost Plan following agreement of the Heads of Agreement.</li> </ul>

131PSI Ref	Component	Current Status	Project Status Indicator Observation	Rating	Recommendations
			<p>although the brief for the design is apparently being constrained by the budget.</p> <ul style="list-style-type: none"> <li>• Professional fees – we have not been party to the detail of the professional fees but the allowance is reasonable for this type of project. No separate allowance has been shown for inflation on the professional fees therefore it is deemed to be included.</li> <li>• Design Risk Contingency – we believe that a building of this nature will provide challenges in its construction, this coupled with the fact that the design will need to be developed and finalised; we believe this contingency is reasonable and necessary.</li> <li>• VAT – It was assumed in the Stage D Cost Plan that VAT could be recovered at 60%, the ITA believe that this represents a significant risk and believe that the recovery should be kept at the previous assumed rate of 50%. This still represents a risk, one which is unlikely to be established before contract award.</li> <li>• The VAT has now been applied to the Design Risk Contingency which has increased the VAT amount considerably from £4.9M to £6.5M.</li> </ul> <p>Attached in Appendix A is our view on the latest Cost Plan that also provides a tracker for the transition from Cost Plan to Target Cost, we still consider the total project cost to be under-valued particularly in connection with Preliminary Costs.</p>		




131PSI Ref	Component	Current Status	Project Status Indicator Observation	Rating	Recommendations
4.10.2	Agreement of Target Price	Initial discussions have been held with SIB and Cyril Sweett regarding the agreement of the Target Price.	<p>The Target Price must be based on the Schedule of Cost Components contained within the NEC form of contract. We have drafted and forwarded to Cyril Sweett an example Activity Schedule this has to be used to convert the Stage D Cost Plan into the Target Price for the contract.</p> <p>The agreement of the Target Price cannot be concluded until the Heads of Agreement between the TFL and TQL have been agreed in order to establish the risk apportionment under the contract.</p> <p>Over the next few weeks we expect to see the Heads of Agreement in place followed by the Target Price.</p>		<ul style="list-style-type: none"> <li>• The Stage D Cost plan needs to be re-drafted into the format of a priced Activity Schedule.</li> <li>•</li> <li>• The various percentage additions required under the NEC need to be agreed, this includes the fee percentage (overheads &amp; profit).</li> <li>•</li> </ul>
4.10.3	Agreement of NEC Terms & Conditions	Initial discussions have taken place with SIB and Cyril Sweett reviewing various contractual options available to the project however this item will also be influenced by the Heads of Agreement.	<p>The agreement of the main contract terms and conditions will be driven by the Heads of Agreement, the essence of which will be captured in the drafting of the contract.</p> <p>It is envisaged to restrict changes to the published conditions to a minimum.</p>		<ul style="list-style-type: none"> <li>• The NEC form of contract has been determined as the primary basis of the contract, there are a number of other issues that need to be taken into account in the drafting viz: <ul style="list-style-type: none"> <li>▪ Main Option A or C</li> <li>▪ Secondary Options</li> <li>▪ Share ranges for pain/gain sharing (Opt C).</li> <li>▪ Contractor's share percentages (Opt C).</li> <li>▪ Z Clauses (special clauses if required).</li> <li>▪ Identifying both the Works Information (Employers Requirements) and Site Information.</li> <li>▪ Agreement of the Contractor's Works Information (the contractor's proposals).</li> <li>▪ Agreement on programme (the Accepted Programme).</li> <li>▪ Completion of Contract Data parts I &amp; II.</li> </ul> </li> </ul>

131PSI Ref	Component	Current Status	Project Status Indicator Observation	Rating	Recommendations
4.10.4	Procurement of Work Packages.	Discussions have taken place with a Substructure contractor and the steel suppliers.	<p>Cyril Sweett will be commencing procurement of work package tenders shortly.</p> <p>Harcourt have had discussions with some suppliers and subcontractors but progress needs to ramp up substantially</p>		<ul style="list-style-type: none"> <li>• Terms and conditions need agreeing in relation to the subcontract work packages.</li> <li>• Procurement strategy for work packages needs agreeing with ITA PM.</li> <li>• Procurement process needs agreeing with ITA.</li> </ul>
4.10.5	Value Engineering	The first Value Engineering Workshop has been completed.	<p>Following the submission of the Stage D report a VE workshop was held and the initial review has been completed, refer to Appendix B.</p> <p>The review produced 88 VE proposals which provoked a good challenge to the design. Of the 88, 54 were convincingly turned to red meaning that they will not be considered further which implies that there is a good deal of confidence in the design solution and that the design is Value for Money.</p> <p>34 items were categorised as amber and these will be looked at again as the design proceeds, in many of these areas the current design stage is not sufficiently developed to enable critical review although the items flagged will act as an aid-memoir for the next review.</p> <p>A view has been taken on what may realistically materialise and a couple of the amber items will be taken into account within the next draft of the Cost Plan these are:</p> <ul style="list-style-type: none"> <li>• Omission of the Photovoltaic solution -£260K</li> <li>• Reduction in Mezzanine floor area</li> </ul>		<ul style="list-style-type: none"> <li>• The design solution and the capital cost of the building demonstrate value for money when compared to market rates and the design which is providing a one-off iconic structure/building.</li> </ul>

131PSI Ref	Component	Current Status	Project Status Indicator Observation	Rating	Recommendations
			<p>-£250K</p> <ul style="list-style-type: none"> <li>• Omit feature stairs to diamond wings -£324</li> <li>• Reduction to M &amp; E -£130K</li> <li>• Filling 4<sup>th</sup> floor voids in slab +£35K</li> </ul> <p>Total potential saving £929K</p> <p>The fact that no items were given green status is not a concern as it proves that the design is efficient and economical for an iconic building of this type.</p>		

#### 4.11 Management Review

PSI Ref	Component	Current Status	Project Status Indicator Observation	Rating	Recommendation
4.11.1	Harcourt Construction (NI) Ltd	Harcourt Construction (NI) Ltd is a subsidiary of Harcourt Development. The company was set up in 2007 as a construction management team to particularly deliver the regeneration of the Titanic Quarter.	<p>Harcourt offices, located along the Queen's Road, Belfast are well established and encompass appropriate administrative, financial and technical facilities.</p> <p>We are satisfied that Harcourt have the appropriate experience to successfully deliver the project, subject to the appropriate resources been allocated to the project.</p>		<ul style="list-style-type: none"> <li>• Harcourt and their consultants Cyril Sweett need to fully engage in the TSP through design novation, programming, procurement, costing and project management to ensure a start on site in January 2009.</li> <li>• There has been little evidence of Harcourt's involvement to date, although we understand that the lack of any formal contractual arrangements for external funding has had a significant influence on the development of the project beyond the Stage D design report.</li> <li>• A site visit is required to review methodology, process, administration and Health and Safety.</li> <li>• We further recommend that Harcourt provide a management structure for the level of appropriately skilled resource for the project.</li> </ul>

**APPENDIX A**

**Titanic Signature Project**

**Target Cost Plan**

Element	CS 30/09/2008		Target Price 01/10/2008		ITA Target		Difference
	£	Omit from Target Price £	£	£	£	£	
<b>A</b> Building Costs; as per C Sweett - 30/09/08							
1 Substructure							
2 Superstructure							
3 Finishes							
4 Fittings & Furnishings							
5 Services							
8 External Works							
9 Prov Sum for previously excluded work							
10 <b>Potential VE (including OH/P)</b>	<b>-929,000</b>		<b>-929,000</b>		<b>-929,000</b>		<b>0</b>
Sub Total	42,803,953				43,003,953		200,000
11 Preliminaries				15.00%	6,390,593		1,290,593
12 OH/Profit				5.00%	2,469,727		2,469,727
13 Contingency				5.00%	2,469,727		469,727
<b>Total Building Cost</b>	<b>49,903,952</b>	<b>0</b>	<b>49,903,952</b>		<b>54,334,001</b>		<b>4,430,049</b>
<b>B</b> Exhibition Fit-Out	10,400,000	0	10,400,000		10,400,000		0
<b>C</b> Inflation Projection							
Building	4.00%	2,004,558	0	2,004,558	6.18%	3,370,819	1,366,261
Fit-Out	7.00%	728,000	0	728,000	10.81%	1,124,240	396,240
<b>D</b> Professional Fees							
Building	10.00%	5,190,851	0	5,190,851	10.00%	5,770,482	579,631
Fit-Out	12.84%	1,335,360	0	1,335,360	12.84%	1,335,360	0
Planning Fee		60,000	0	60,000		60,000	0
Building Control		150,000	0	150,000		150,000	0
<b>E</b> SUB-TOTAL	69,772,721	0	69,772,721		76,544,902		6,772,181
<b>F</b> DESIGN RISK CONTINGENCY	5.00%	3,488,636	0	3,488,636	5.00%	3,827,245	338,609
<b>G</b> Target Price Total	73,261,357	0	73,261,357		80,372,147		7,110,790
VAT @ 8.75% (assumes 50% recovery)	8.75%	6,410,369	-6,410,369	0	0		0
<b>H</b> SUB-TOTAL (incl VAT)	79,671,726	-6,410,369	73,261,357		80,372,147		7,110,790
<b>J</b> Additional Costs							
ITA Team		2,100,000	-2,100,000	0	0		0
TFL Costs		500,000	-500,000	0	0		0
TSP Pre-Opening Costs		0	0	0	0		0
Bank Guarantee		500,000	-500,000	0	0		0
VAT recovery @ 8.75% on ITA and TFL costs		227,500	-227,500	0	0		0
<b>K</b> TOTAL ESTIMATED COSTS	82,999,226	-9,737,869	73,261,357		80,372,147		7,110,790
Land value	7,000,000	-7,000,000	0		0		0
<b>L</b> TOTAL ESTIMATED COSTS	89,999,226	-16,737,869	73,261,357		80,372,147		7,110,790

### Non Construction Costs

1	VAT @ 8.75% (assumes 50% recovery)	6,410,369	7,032,563	622,194
2	ITA Team	2,100,000	2,100,000	0
3	TFL Costs	500,000	500,000	0
4	TSP Pre-Opening Costs	0	0	0
5	Bank Guarantee	500,000	500,000	0
6	VAT recovery @ 8.75% on ITA and TFL costs	227,500	227,500	0
7	Land Costs	7,000,000	7,000,000	0
	<b>Total</b>	<b>89,999,226</b>	<b>97,732,210</b>	<b>7,732,984</b>

**APPENDIX B**

**Titanic Signature Project  
Value Engineering Tracker**

**Titanic Signature Project  
Value Engineering Tracker**

COST PLAN UPDATE ?

VALUE ENGINEERING PROPOSALS



Ref	Description	Linked	Stage D Cost Plan £	£ VE Savings (Proposed)	£ VE Savings (Accepted)	£ VE Savings (Not Accepted)	Champion	Comments
	<b>Substructures</b>		<b>£5,597,573.00</b>					
	<b>Basement construction and use - does the TSP building need 2 levels of basement?</b>							
Sub P1	Can the TSP basement be contained on one level - if so would the footprint at Level -1 need to be increased?						Sam Tavakoli	The plantroom layout can be arranged for all plant to be located on one single floor. However, this would impact the current provisions for Stores, WCs, Lobbies, etc shown within the adjacent areas, including car park design. <b>Impacts on footprint of Basement Level -1, structural slab thickness under service bay,</b>
Sub P2	Is the number of car parking spaces driving the need for a double basement?							'Normal Day' – visitor attraction 212 + 50 staff = 262 spaces (possible reduction in 50 spaces) This is potentially achievable on 1 level subject to plant space provision being available elsewhere (previously 350 sqm available within building). Levels regarding service yard depth also would require further more detailed consideration. . 'Event and peak occupancy' consideration has also been included for TSP major event (requested via Roads Services consultation / procedures). Requirement of 577 spaces. This will necessitate 2 levels of basement to achieve the required capacity.
Sub P3	Review whether it is feasible to move the Group Resource area to an upper floor level.						Paul Crowe	Group resource – potential to relocate does exist. 'Employers requirements' / brief of use and operation needed. We believe lower ground (-1 level) is appropriate to location based on previous consultation with NITB. Confirm area requirement, use, access, flexibility. <b>ER to keep Study Group in Basement out of Public Area - need specific requirements re: numbers, eating area, lockers?</b>
Sub P4	Review the allowance for storage space - what is the effect of omitting the storerooms.						Paul Crowe	'Employers requirements' area schedule for storage provision has not been confirmed. Confirm who to make this decision / provide adequate briefing to allow omission or replanning distribution. Current proposal accepted by NITB. <b>ER need requirements around storage space, food storage, type of storage?</b>
Sub P5	Review space requirement for Plant and Equipment in basement areas - can this be contained on one level?	MS P1					Sam Tavakoli	See comments on item Sub P1 above.
Sub P6	Review the impact on the useable space if the two scenic lifts are removed (or one recited within diamond wing).	L P1					Paul Crowe	Under review in context of banqueting facility. Further work required. <b>A change is likely - to be agreed and developed into an ER.</b>
Sub P7	Are all the Stair Cores required for the TSP building or are they providing access to and from the car park.						Paul Crowe	Stairs are providing fire escape routes from car park at lower ground levels -1 and -2 and may also be used as accommodation stairs for TSP. They are required otherwise 'additional' stairs will be required to service car park fire escape.
Sub P8	Can the Service Yard be moved to level one with a step in the slab and a loading bay for lorries and ramped access for vans and pallets? Would this provide more car parking spaces below the yard?						Barry McAlister	As currently designed the service yard allows service vehicles to enter, turn and unload beneath the piazza slab. This means that the clear head room required in this area is in the order of 4.65m, significantly greater than the 2.8m clear height of the car park levels. In addition, the depth of structure is 1.2m above the service area. The finished levels of the piazza are lower above the service yard to tie in with the levels of the existing drawing office. All of the above factors combine so that the most logical place for the service yard slab is at its currently location and level -2.550m, level -2.  In summary the service yard is 1 ½ storeys high and it has been placed in a location with 1 ½ stories available, without increasing the depth of excavation. To install a level of car parking beneath the service yard slab would mean increasing the depth of excavation in this area and using a substantial reinforced concrete slab to carry the high imposed loads from the service yard. As such any car park spaces gained would be at a very high cost.  The alternative is to provide a significant open area in the landscaped piazza to



**Titanic Signature Project  
Value Engineering Tracker**

COST PLAN UPDATE ?

VALUE ENGINEERING PROPOSALS



Ref	Description	Linked	Stage D Cost Plan £	£ VE Savings (Proposed)	£ VE Savings (Accepted)	£ VE Savings (Not Accepted)	Champion	Comments
Sub P9	Where does the power fed to the Car Park from (smoke extract fans) - does it share services with TSP?	MS P9					Sam Tavakoli	Currently all supplies are planned to emanate from the TSP switchgear. If dedicated services are to be provided for car park areas, this would necessitate space and provision for own power supply, switchgear, generator, car park ventilation, etc. <b>No value in servicing the car park separately - but there is a cost included within the TSP budget; possible contribution from Car Park? Ownership/Legal issues?</b>
Sub P10	What is the effect of changing the sequence of constructing the basement so that the outer Car Park walls are constructed before the Basement Core?						Frank Rooney	There are construction difficulties with open excavation - either Secant or Sheet Pile, see P11
Sub P11	Use steel sheet piling in lieu of Secant piling.						Barry McAlister	In proposing a structural solution for the basement consideration was given to a number of solutions namely:  <ul style="list-style-type: none"> <li>• Secant pile wall</li> <li>• Contiguous Pile wall</li> <li>• Steel Sheet pile wall.</li> </ul> <p>The contiguous pile wall was discounted due to the lack of control over the extent of ground water that could enter the building. The basement is located well below the general water table and as such a contiguous pile wall was considered to be unsuitable.</p> <p>With regards to secant v's steel sheet pile the following were considered to be advantages in favour of the secant solution:</p> <ul style="list-style-type: none"> <li>• More able to deal with underground obstructions than steel piles</li> <li>• Steel piles are more prone to damage and de-clutching where obstructions are encountered.</li> <li>• Steel sheet piles currently have a long lead in period (in the range 20-25 weeks)</li> <li>• The cost of constructing steel piles is now at or slightly more than the cost of installing secant piles</li> <li>• Water tightness is more difficult to achieve when using steel piles</li> </ul> <p>Given the above and discussions with an experienced basement contractor secant piles were considered to be the favoured solution. Not feasible in terms of</p>
Sub P12	Could the basement slab be reduced in thickness?						Barry McAlister	The thickness of the basement slab has been determined by the requirement of the slab to resist uplift pressures from elevated ground water levels. To rationalise the slab thickness the piles have been designed to assist in resisting the uplift forces by acting in tension. The pile caps have been integrated within the depth of the slab to remove the requirement for down stand reinforcement and formwork. As the piles are contractor designed items, once a piling contractor is appointed, the design will be refined to obtain the optimal solution in terms of pile spacing and subsequent rationalisation of reinforcement quantities within the basement slab. <b>Not feasible would impact on design elsewhere and increase construction cost and design.</b>
Sub P13	Do the energy piles provide value for money? Would the removal of them adversely effect BREEAM rating?						Sam Tavakoli	Yes, they certainly do. Their omission will require additional heating & cooling plant and external chiller on roof. It will also reduce the BREEAM credits by 6 points, resulting in the BREEAM rating to fall below excellent rating.
13								
	<b>Frame</b>		<b>£4,318,659.00</b>					
FR P1	Does the building need to step out or can it be vertical - would this save on the transfer slab?						Paul Crowe	The building needs to step out / not vertical as confirmed at Employers Requirements meeting. This is also fundamental to the current conceptual approach and planning application. I would question saving on transfer slab as this will be needed in any case.
FR P2	The Diamond Glazed Wings are likely to become vertical rather than raked to allow the provision of a lift rather than a staircase - what is the impact on the cost of the frame?	Sub P6; UF P4; SB P1; EW P2; MS P2					Barry McAlister	<b>Still being considered but unlikely to happen.</b>

**Titanic Signature Project  
Value Engineering Tracker**

COST PLAN UPDATE ?

VALUE ENGINEERING PROPOSALS



Ref	Description	Linked	Stage D Cost Plan £	£ VE Savings (Proposed)	£ VE Savings (Accepted)	£ VE Savings (Not Accepted)	Champion	Comments
FR P3	Can the frame be constructed out of insitu concrete rather than S/Steel?						Barry McAlister	<p>At concept stage a range of framing options were considered including concrete and steel. The concrete option was reviewed with a formwork contractor and the steel option with a steel fabricator. The feedback from the formwork contractor was that whilst it was achievable to construct the frame in concrete that the non repetitive nature of the frame and the inclined facades would drive the need for a more complex arrangement of formwork and temporary works to support same.</p> <p>The steelwork contractor that we consulted with did not identify any similar constraints.</p> <p>Concrete for a more traditional form of structure would be the favoured solution in cost terms however given the bespoke nature of the signature project and the inability to get repeatability in the use of formwork and the knock on effect on temporary works, the steel option offered a better value solution.</p>
FR P4	Can the risk of inflation on steel prices be capped by placing an early order to secure the price?						Jim Gillen	<p><b>A discussion has taken place with a steelwork fabricator who provided assistance with buildability of the structure and current pricing trends for steel structures. The advice given was that:</b></p> <ul style="list-style-type: none"> <li>• A rise in steel prices may materialise in October but that this was not a certainty.</li> <li>• Steel prices are reaching a plateau and it was considered that any rise in price in October was likely to represent a peak in prices with costs either levelling out or dropping</li> <li>• A number of stockholders have previously bought in steel while prices were on the rise in an attempt to reduce their exposure to ongoing price rises. Stockholders who have built up an extensive stock holding are now keen to off load material.</li> <li>• The advice given regarding rates for a range of structural steel elements could be maintained until the end of 2008.</li> </ul> <p><b>It should be noted that this advice was given without prejudice and that the steelwork package has not been tendered on the open market and as such the comments made above should be viewed as the best advice that we can currently offer following discussions with a large steelwork fabricator.</b></p>
FR P5	Can the Stair Cores be constructed using Steel in lieu of insitu concrete, what benefit would this provide?						Barry McAlister	<p>We have consulted with Corus and a local steel fabricator regarding the use of Corefast. Corefast is a proprietary product offered in lieu of the more traditional reinforced concrete core. Below are some of the benefits noted on Corus's website;</p> <p>Corefast enables lift/stair cores, often on a project's critical path, to be erected up to six times faster than a reinforced concrete core. The technology also brings many other benefits to the project.</p> <ul style="list-style-type: none"> <li>• Highly flexible – each solution is designed to meet specific requirements</li> <li>• Improved efficiency – due to better build sequence and reduced site congestion</li> <li>• Enhanced site safety – no formwork required, resulting in fewer hours working at height</li> <li>• Greater accuracy – improved interface with adjoining steelwork</li> <li>• Increased capital values – slimmer walls can release additional lettable floor space <b>£500/m2 plus others total cost £2m + increase of £1m over and above insitu concrete</b></li> </ul>

**Titanic Signature Project  
Value Engineering Tracker**

COST PLAN UPDATE ?

VALUE ENGINEERING PROPOSALS



Ref	Description	Linked	Stage D Cost Plan £	£ VE Savings (Proposed)	£ VE Savings (Accepted)	£ VE Savings (Not Accepted)	Champion	Comments
FR P6	Is there a benefit in replacing the castellated beams?						Barry McAlister	Omission of castellated beams will require the installation of horizontal services distribution under the beams and will reduce the available headroom. It will also limit the flexibility for future modifications to services installations. <b>(ST)</b> Castellated beams have been proposed to facilitate services distribution throughout the building now and in future adaptation. The structure incorporates long span construction to provide column free flexible spaces within the galleries and to accommodate the long spans deep beams are required for maximum structural efficiency both in strength and stiffness terms. Using cellular beams addresses the need for increased beam depth and maximises the efficiency of the material whilst accommodating the installation of services without having to increase the building height to run services below the beams. The use of slim deck is not considered appropriate given the shallow nature of this construction and the lack of stiffness that it offers in long span construction. The use of traditional universal beam sections would require a deep beam coupled with the need to increase the building height to allow services to run below. The use of cellular beams also has the added advantage of offering increased flex <b>(BMC)</b>
FR P7	If the Banqueting Hall was relocated what effect would it have on the frame?	UF P2					Barry McAlister	The banqueting suite is a large space and requires a column free environment. In its present location at the top level of the building it is supported on the columns from the floors below. The roof over the banqueting suite is clear span to omit the need for columns in it. Relocating the banqueting suite to a lower level will still require a column free space to allow it to function effectively. To achieve this structurally will require the introduction of a very significant transfer structure on the floor level below. Structurally whilst viable, this is considered to be highly inefficient and would invoke the need for a fundamental reevaluation of the frame and the distribution of loads within it.
FR P8	Will the omission of the scenic lifts have an impact on the frame?						Barry McAlister	The scenic lifts offer no support for the building structure nor do they provide any lateral stability to it. Other than the need to infill the void left by the omission of the lifts there are no other structural implications.
FR P9	Are the mega columns required, can the roof be supported off the frame?						Barry McAlister	The "mega" columns provide two structural functions as follows: • Support to the roof over the banqueting suite • Support to the glazed peaks on each elevation Structurally the roof could be supported by columns at a higher level in the building and in this respect the columns may be considered to be redundant. However their omission has a more significant impact on the glazed facades. Omitting the columns will necessitate the introduction of an alternative secondary glazing support. In this respect we would argue that the columns are necessary and that any alternative proposals are unlikely to offer any significant saving.
FR P10	Would there be a benefit from standardising the floor heights?	UF P5					Barry McAlister	Standardising the floor to floor levels offers some benefit in respect of rationalizing stair cores in so far as the stair treads can be rationalized and the extent of the cores slightly reduced. Overall, structurally, the most efficient solution is to reduce the floor to floor levels to the minimum acceptable level however this clearly needs to be balanced with the use of the building and the need for the structure to compliment the internal spatial planning of the building. Standardising the floor to floor height rationalizes the secondary steelwork used to support the external cladding and as such this would offer a degree of efficiency. <b>Lots of potential - being earnestly considered.</b>

**Titanic Signature Project  
Value Engineering Tracker**

COST PLAN UPDATE ?

VALUE ENGINEERING PROPOSALS



Ref	Description	Linked	Stage D Cost Plan £	£ VE Savings (Proposed)	£ VE Savings (Accepted)	£ VE Savings (Not Accepted)	Champion	Comments
FR P11	If the Mezzanine floor was omitted what effect would it have on the frame.	UF P1					Barry McAlister	The mezzanine floor is located over the banqueting suite and given the need for column free space in the banqueting suite, a vierendeel structure has been proposed to create the column free space. A vierendeel has been proposed to omit diagonal bracing elements that would be present in a truss configuration and which are considered to be unacceptable visually in this building. As such the omission of the mezzanine level would generate a saving in the cost of steelwork. See UF P1.
11								
	<b>Upper Floors</b>		<b>£1,491,935.00</b>					
UF P1	Is there a need for the Mezzanine floor in the Banqueting Hall - can it be omitted? What is driving the need for it, what is its use? What are the implications of omitting it?	FR P11		<b>-£250,000.00</b>			Bryan Gregory	An area needs to be included for restaurants and Mezz provides that now but maybe moved at later stage. £250,000. Impact on B. Hall if this is used as Public Restaurant - need to check C Plan for screening in lieu of balustrade. Operator issue - needs resolving at later stage.
UF P2	Can the Banqueting Hall be relocated to another floor?	FR P7					Barry McAlister	Refer to comments FR P7 above.
UF P3	Are the floors providing maximum beneficial usage?			<b>£35,000.00</b>			Paul Crowe	How do we quantify 'maximum beneficial usage'. This needs to be subject to further design development and review requiring further time and consideration. Potential review of floor space and usage but not for VE purposes more for Operational Issue.
UF P4	What is the effect of the expansion of the Diamond Wings?	Sub P6; UF P4; SB P1; EW P2; MS P2					Paul Crowe	Expansion of diamond wings – part of current review of banqueting provisions. Requires further consideration and may not be required.
UF P5	Would there be a benefit from standardising the floor heights?	FR P10					Paul Crowe	We believe there is benefit in standardising floor to floor height in respect of stair core efficiency and perhaps in repeatability of other elements e.g. structure / cladding. Requires further design development and analysis.
5								
	<b>Roof</b>		<b>£1,088,653.00</b>					
RF P1	What is the roof finish and is it the most economical? What specification has been costed in the Cost Plan?						Paul Crowe	A standing seam zinc roof is costed. Confirm interpretation of most economical / cheap(?) regarding roof. This is a very visible element and requires careful material selection and detailing in context of this 'iconic building'. Design has changed from pyramid panels to standard roof covering.
RF P2	Reduction in rake of roof could reduce the height of the cladding - is this feasible?	EW P4					Barry McAlister	The rake in the roof is an architectural feature of the building which is one of the components that adds to its iconic form. Structurally there is no requirement for the roof to be set on a rake and as such if it was flat or had a slight fall it would be practical to reduce the extent of cladding between the upper floor and eaves level of the roof. See item under ext walls.
RF P3	What would be the effect on the roof if the rainwater harvesting was omitted?	MS P10					Sam Tavakoli	No real impact on the M&E installations, except for higher water consumption
RF P4	Are the terraces required at Mezz level - not currently in the Cost Plan.						Bryan Gregory	Being considered but not as a VE issue but as a commercial operating issue.
4								
	<b>Stairs &amp; Balustrades</b>		<b>£1,008,500.00</b>					
SB P1	Can one or both Diamond Wing Stairs be omitted?	Sub P6; UF P4; SB P1; EW P2; MS P2		<b>-£324,000.00</b>			Paul Crowe	Currently under review – suggest at least 1 no. to be omitted at this stage. Being considered potential £215,000
SB P2	Can the specification for the handrails and balustrades to stairs and walkways be reduced?						Paul Crowe	We will review handrails / balustrades as part of the design development (Stage E) and would comment at this stage – it is a prospect / reduced to what? Potential £100,000
2								

**Titanic Signature Project  
Value Engineering Tracker**

COST PLAN UPDATE ?

VALUE ENGINEERING PROPOSALS



Ref	Description	Linked	Stage D Cost Plan £	£ VE Savings (Proposed)	£ VE Savings (Accepted)	£ VE Savings (Not Accepted)	Champion	Comments
<b>External Walls</b>			<b>£8,134,200.00</b>					
EW P1	Review the cladding specification; shape, profile, material, functionality (also ability to have images projected on to the surface).	WED P2					Paul Crowe	The cladding is under review / design development and we have engaged some specialist subcontractor assistance. Requires further time to bring forward technical solutions. <b>Ongoing discussions with contractor - awaiting response. Potential to realise a saving on the C Plan.</b>
EW P2	Review impact of omitting rake to full height of Diamond Wings Glazing.	Sub P6; UF P4; SB P1; EW P2; MS P2					Paul Crowe	Under review – performance to retain take / no cost benefit understood. <b>Potential operational advantages but likely to add cost without other items affecting it such as lift relocation.</b>
EW P3	If views are not available from the Banqueting Hall can the high level glazing be omitted - if so what is the impact?						Paul Crowe	High level glazing to be retained – fundamental to concept. It may be practical to 'open up' controlled viewpoints from banqueting.
EW P4	Can the height of the cladding be reduced - if so by how much and would there be any effect on planning?	RF P2					Paul Crowe	Potential exists to reduce height of cladding – requires further detailed consideration of all implications and reasoning for doing this. This would deviate from current planning application. <b>Planning is low risk hopefully with other changes need to be debated.</b>
EW P5	Standardise louvres?						Paul Crowe	Louvres are proposed conceptually in different materials – this should be retained. <b>Insubstantial saving, needed for astetic reasons</b>
EW P6	The cost plan excludes the cost of providing projection equipment and services to enable the projection of images on to the external facades - it is assumed that the equipment will be provided by an operator but should the project provide the services up to a point within the perimeter?						Bryan Gregory	Potential to cause problems in terms of sighting of projector - an allowance to be made for plug & play with supply and control in basement adjacent to slipways. Needs to be resolved with ER's.
6								
<b>Windows &amp; External Doors</b>			<b>£88,000.00</b>					
WED P1	Can the 4 entrances at ground floor be reduced?						Paul Crowe	4 points of egress required – entry points are an operational issue.
WED P2	Is there a requirement for vision through the cladding - if so what is the impact on cost?	EW P1					Paul Crowe	Suggest that certain areas could benefit from glazing insertion to cladding – to be progressed in design development via Employers Requirements. <b>In some areas yes - this is an ER issue.</b>
<b>Internal Walls &amp; Partitions</b>			<b>£1,197,418.00</b>					
IWP P1	If Fit Out is omitted what is the effect on Internal Walls & Partitions?	OP P3					Jim Gillen	<b>Potential £87,000 for omitting shop-fronts ground floor.</b>
IWP P2	What is the effect if the Mezz flr is omitted?	UF P1					Jim Gillen	
2								
<b>Internal Doors &amp; Screens</b>			<b>£341,300.00</b>					
IDS P1	Item 9.0 e - the cost of the double doors seems high can this be explained						Jim Gillen	<b>Agreed as reasonable for height, etc.</b>
IDS P2	If Fit Out is omitted what is the effect on Internal Doors & Screens?	OP P3					Jim Gillen	<b>None all cores</b>
IDS P3	What is the effect if the Mezz flr is omitted?	UF P1					Jim Gillen	
3								
<b>Wall Finishes</b>			<b>£653,551.00</b>					
WF P1	If Fit Out is omitted what is the effect on Walls Finishes?	OP P3					Jim Gillen	<b>£6K retail. B Hall £97K</b>
WF P2	Can plastering be omitted?						Paul Crowe	Assume plastering required.
WF P3	Is there a need for an allowance for enhanced finishes?						Paul Crowe	Confirm which areas require 'enhancement' allowance – suggest atrium area only. <b>Could be needed for accoustics?</b>
WF P4	What is the effect if the Mezz flr is omitted?	UF P1					Jim Gillen	
4								
<b>Floor Finishes</b>			<b>£889,589.00</b>					
FF P1	The Cost Plan takes for ceramic/stone floor finishes to levels 2 (1st Flr) & 3 (2nd Flr) & 5 (4th Flr) & 6 (5th Flr) - these should be carpet as floors above.						Jim Gillen	<b>Hard finish required spec tba. Resin/Tile</b>
FF P2	If Fit Out is omitted what is the effect on Floor Finishes?	OP P3					Jim Gillen	<b>Retail £2K B Hall £135K</b>
FF P3	What is the effect if the Mezz flr is omitted?	UF P1					Jim Gillen	
3								
<b>Ceiling Finishes</b>			<b>£1,207,640.00</b>					
CF P1	Review the amount included within the cost plan for the B Hall (£570K) - what does this buy? Specification needs to be developed or ceiling omitted as part of future Fit Out package.	OP P3					Paul Crowe	Confirm approach to fit out. Requires further Stage E design development to confirm ceiling design / specification. <b>Specification needs defining potential for reduction?</b>

**Titanic Signature Project  
Value Engineering Tracker**

COST PLAN UPDATE ?

VALUE ENGINEERING PROPOSALS



Ref	Description	Linked	Stage D Cost Plan £	£ VE Savings (Proposed)	£ VE Savings (Accepted)	£ VE Savings (Not Accepted)	Champion	Comments
CF P2	Review the amount included within the cost plan for the Atrium (£101K) - can a more economic ceiling be specified.						Paul Crowe	Confirm make up of allowance – requires integration with elements of exhibition as atrium is crucial visual part of the experience. Suggest this to remain until design evolves further. <b>Potential.</b>
CF P3	Cost Plan item 12.00 e - Aluminium Plank ceiling; where is this for and can a more economic alternative be specified?						Paul Crowe	Employers requirements to be developed to inform further. <b>Potential.</b>
CF P4	If Fit Out is omitted what is the effect on Ceiling finishes?	OP P3					Jim Gillen	
CF P5	What is the effect if the Mezz flr is omitted?	UF P1					Jim Gillen	
5								
	<b>Fittings &amp; Furnishings</b>		<b>£485,000.00</b>					
FXF P1	The amount included for signage is £250K - what is this for and can it be reviewed for economies?						Paul Crowe	Cannot comment on signage requirements at this stage as no design has been initiated. This is a cost allowance figure. <b>Potential depending upon spec.</b>
FXF P2	If Fit Out is omitted what is the effect on Fittings & Furnishings?	OP P3					Jim Gillen	<b>£25,000 for B Hall stage.</b>
FXF P3	What is the effect if the Mezz flr is omitted?	UF P1					Jim Gillen	
3								



**Titanic Signature Project  
Value Engineering Tracker**

COST PLAN UPDATE ?

VALUE ENGINEERING PROPOSALS



Ref	Description	Linked	Stage D Cost Plan £	£ VE Savings (Proposed)	£ VE Savings (Accepted)	£ VE Savings (Not Accepted)	Champion	Comments
<b>Mechanical Services &amp; Lifts</b>			<b>£7,869,750.00</b>					
MS P1	Review possibility of rationalising the use of the Basement plant rooms.	Sub P5					Sam Tavakoli	See comments on item Sub P1 above.
MS P2	Would the change to the Diamond Wings provide better distribution for services - if so what is the effect?	Sub P6; UF P4; SB P1; EW P2; MS P2					Sam Tavakoli	This change would not provide any benefit and would, in fact, adversely affect the external louvre installation and ventilation distribution for WCs and the Kitchen. <b>Potential negative effect on services.</b>
MS P3	Can the Photovoltaic & Solar panels be omitted?						Sam Tavakoli	Could be omitted, but would result in the loss of at least 1 credit in BREEAM rating. <b>Is this acceptable? Low return on investment? Cheap BREEAM point to</b>
MS P4	Could the Photovoltaic & Solar panels be built into the structure and if so what effect would this have?			<b>-£260,000.00</b>			Sam Tavakoli	The intention was to make the PV and solar thermal panels as an integral part of the roof structure, rather than a bolt-on system. <b>Worthy of further consideration.</b>
MS P5	Can the Cores or Atrium be used to circulate air in lieu of ducting?						Sam Tavakoli	No. This is not viable for the atrium and would make the environmental quality of the stairwell shafts very poor. It would also introduce additional smoke dampers, louvres, maintenance, etc.
MS P6	Is the Emergency Voice Alarm system over specified?						Sam Tavakoli	No, it is not.
MS P7	Has any allowance been made for the Fit Out of the Exhibition - if so what?	OP P3					Sam Tavakoli	Cost for fit-out of exhibition spaces were advised to Cyril Sweett as separately identifiable figures. Cyril Sweett to advise further. <b>Services provided up to the Fit Out areas - none allowed for within F/O areas.</b>
MS P8	Review all mechanical services for efficiencies and economies.						Sam Tavakoli	This was further reviewed with Mott MacDonald team. It was concluded that the current design proposals are generally the most cost effective solutions.
MS P9	Does the TSP provide services for the Car Park?	Sub P9					Sam Tavakoli	Refer to comments under item Sub P9 above. <b>Look into energy and maintenance costs for long term.</b>
MS P10	What is the cost benefit of rainwater harvesting - what is the effect on the whole-life cost and BREEAM if it is removed?	RF P3					Sam Tavakoli	Cost benefit is being looked at presently and can be advised at next week's meeting. The omission of rainwater harvesting would result in the loss of 2 credits in BREEAM rating and would increase water consumption costs.
MS P11	If Fit Out is omitted what is the effect on the Services?	OP P3					Sam Tavakoli	No impact on the plant provisions. However, fit-out costs can be deducted from the overall M&E costs advised by Cyril Sweett. <b>Retail £90K B Hall £615K</b>
MS P12	What is the effect if the Mezz flr is omitted?	UF P1					Sam Tavakoli	This would have very little impact on the plant provisions. Fit-out costs would be reduced. Cyril Sweett to comment further on the potential cost reduction.
12								
L P1	Omit one or both scenic lifts	Sub P6					Sam Tavakoli	This would result in an entirely unacceptable level of service with regard to people transport within the building. <b>Dependant upon what is put back in its place?</b>
L P2	Would there be any benefit in replacing the large escalators with stairs or lifts?						Sam Tavakoli	This is an operational decision. However, it would make the building very much user / elderly unfriendly!
L P3	Can the escalator at basement level be omitted?						Sam Tavakoli	As item LP2 above. It would also impact access through car park levels. <b>No escalator in basement.</b>
L P4	Can the scissor lift be omitted?						Sam Tavakoli	This is an operational decision. Evet to comment further. <b>Should it be part of Fit Out/Exhibit £10.4?</b>
4								
<b>Electrical Services</b>			<b>£4,838,950.00</b>					
ES P1	Review electrical services for efficiencies and economies.						Sam Tavakoli	As item MS P8 above.
ES P2	If Fit Out is omitted what is the effect on the Services?	OP P3					Sam Tavakoli	No impact on the plant provisions. However, fit-out costs can be deducted from the overall M&E costs advised by Cyril Sweett.
ES P3	What is the effect if the Mezz flr is omitted?	UF P1					Sam Tavakoli	As item MS P12 above.
ES P4	Review extent of Feature Lighting for economies and efficiencies.						Sam Tavakoli	This is a provisional sum at present, the amount of which is dependent on the Client's aspirations. <b>Potential for scope definition and change - ER's</b>
4								
<b>External Works</b>			<b>£1,951,235.00</b>					
Ewks P1	The cost of the external paving is £1.2M - review specification and extent for economies.						Paul Crowe	CS to comment on cost reductions specification as per Stage D report.
Ewks P2	Reduce external lighting.			<b>-£130,000.00</b>			Paul Crowe	Certain reduction in external lighting budget / refer NITB Benchmarks and Employers Requirements meeting. Not designed. <b>Potential for overlap between this and Services P Sums - but needs scoping.</b>



**Titanic Signature Project  
Value Engineering Tracker**

COST PLAN UPDATE ?

VALUE ENGINEERING PROPOSALS



Ref	Description	Linked	Stage D Cost Plan £	£ VE Savings (Proposed)	£ VE Savings (Accepted)	£ VE Savings (Not Accepted)	Champion	Comments
Ewks P3	Omit reflecting pools.						Paul Crowe	No to omission of reflecting pools – integral to concept / iconic building as presented and planning approvals.
3								
	<b>Preliminaries</b>		<b>£5,100,000.00</b>					
	<b>Fit Out/ Exhibition</b>							Need to drill down into allowance and understand demarkation between Shell & Core and Fit Out.
	<b>Other Proposals</b>							
OP P1	Omit conference centre facility.						Bryan Gregory	Services in connection with Conference Centre have not been considered.
OP P2	Omit a floor.						Paul Crowe	Confirm employers requirements / what can be omitted. Principals are as inherited by Todd Architects which had evolved beyond BLF stage. This will impact on planning application significantly.
OP P3	Omit Fit Out (B. Hall; Shop Fronts, Food Halls, etc) & Exhibition costs to provide Shell & Core only.	IWP P1					Bryan Gregory	
OP P4	Omit Ground Floor Retail facilities.						Paul Crowe	Operational issue – suggest no as adds dimension of social and commercial function and flexibility.
4								
88	<b>Possible Value Engineering Total</b>		<b>£46,261,953.00</b>	<b>-£929,000.00</b>	<b>£0.00</b>	<b>£0.00</b>		£ -

**Contact:**

Colm Lavery  
EC Harris LLP  
Arthur House  
41 Arthur Street  
Belfast  
BT1 4GB  
United Kingdom

Tel: +44 28 90 44 6220  
Fax: +44 28 90 44

[www.echarris.com](http://www.echarris.com)